HA Design Group

Proposal to the State of Nebraska State Purchasing Bureau

ORIGINAL

Proposal for the TO: 5820 Z1 Network Management Control System

May 31, 2018

HA Design Group LLC
6700 Springfield Center Drive Suite J
Springfield, Va. 22150
Mr. Willy Halla
whalla@hadesign.net
(703) 778-8760 Ext. 101

SECTION 1 - FORM A - BIDDER CONTACT SHEET

Request for Proposal Number 5820 Z1

Form A should be completed and submitted with each response to this RFP. This is intended to provide the State with information on the bidder's name and address, and the specific person(s) who are responsible for preparation of the bidder's response.

Preparation of Response Contact Information	
Bidder Name:	HA Design Group LLC
Bidder Address:	6700 Springfield Center Dr. Suite J Springfield, Va. 22150
Contact Person & Title:	Steve Lewis Director of Development
E-mail Address:	slewis@hadesign.net
Telephone Number (Office):	703-778-8760 x104
Telephone Number (Cellular):	703-981-0590
Fax Number:	703-778-8759

Each bidder should also designate a specific contact person who will be responsible for responding to the State if any clarifications of the bidder's response should become necessary. This will also be the person who the State contacts to set up a presentation/demonstration, if required.

Communication with the State Contact Information	
Bidder Name:	HA Design Group LLC
Bidder Address:	6700 Springfield Center Dr. Suite J Springfield, Va. 22150
Contact Person & Title:	Willy Halla Pres./CEO
E-mail Address:	whalla@hadesign.net
Telephone Number (Office):	703-778-8760 x101
Telephone Number (Cellular):	571-232-5401
Fax Number:	703-778-8759

REQUEST FOR PROPOSAL FOR CONTRACTUAL SERVICES FORM

BIDDER MUST COMPLETE THE FOLLOWING

By signing this Request for Proposal for Contractual Services form, the bidder guarantees compliance with the procedures stated in this Request for Proposal and agrees to the terms and conditions unless otherwise indicated in writing and certifies that bidder maintains a drug free work place.

Per Nebraska's Transparency in Government Procurement Act, Neb. Rev Stat § 73-603 DAS is required to collect statistical information regarding the number of contracts awarded to Nebraska Contractors. This information is for statistical purposes only and will not be considered for contract award purposes.

N/A NEBRASKA CONTRACTOR AFFIDAVIT: Bidder hereby attests that bidder is a Nebraska Contractor. "Nebraska Contractor" shall mean any bidder who has maintained a bona fide place of business and at least one employee within this state for at least the six (6) months immediately preceding the posting date of this RFP.

N/A I hereby certify that I am a Resident disabled veteran or business located in a designated enterprise zone in accordance with Neb. Rev. Stat. § 73-107 and wish to have preference, if applicable, considered in the award of this contract.

N/A I hereby certify that I am a blind person licensed by the Commission for the Blind & Visually Impaired in accordance with Neb. Rev. Stat. §71-8611 and wish to have preference considered in the award of this contract.

FORM MUST BE SIGNED USING AN INDELIBLE METHOD (NOT ELECTRONICALLY)

FIRM:	HA Design Group LLC
COMPLETE ADDRESS:	6700 Springfield Center Dr. Suite J Springfield, Va. 22150
TELEPHONE NUMBER:	703-778-8760
FAX NUMBER:	703-778-8759
DATE:	MAY 29, 2018
SIGNATURE:	
TYPED NAME & TITLE OF SIGNER:	WILLY HALLA PRES./CEO

Table of Contents

May 31, 2018

Nancy Storant/Dianna Gilliland
State Purchasing Bureau
1526 K Street, Suite 130
Lincoln, NE 68508
Telephone: 402-471-6500

Dear Nancy Storant & Dianna Gilliland:

This letter will document HA Design Group's strong interest in proposing to perform the Network Management Control System contract-generated technical services and requirements for Nebraska Educational Telecommunication Commission (NETC) Request for Proposal (RFP) No. 5820 Z1. We have reviewed the RFP documents along with the subsequent amendment documents and participated in the mandatory Pre-Proposal Conference held on Thursday, April 19, 2018 at the Terry Carpenter Building.

Per the RFP's section § VII instructions, we will provide requested information and details that address how HA Design Group's efficient business practices, past performance examples, and current management of technical resources have prepared us to successfully meet NETC's requirements. HA Design Group LLC is a veteran-owned small business in operation since 2004.

HA Design Group has a demonstrated history of expertise on numerous large broadcast, audiovisual, multimedia, and related technical solution projects. We believe our experience and knowledge derived from these will demonstrate our technical project expertise. HA Design Group will respond to task orders with high quality Deliverables, 100% technically compete projects, services, and staffing:

- Our time-tested project methodology begins with close and continuous coordination and communications with the Project personnel to ensure that our solutions satisfactorily meet the required RFP-defined missions

- Our ongoing focus with contract documentation, communications, approved methods, and reports allows us to be continuously responsive to NETC Project Manager's, end-users, and missions.

- HA Design Group technical project team members have decades of knowledge regarding broadcast industry design, information technology (IT) industry design, efficient workflows, and vendors' solutions

- Our previous NETC service and supply contracts between 2013 and today resulted in dozens (20) of successful contract awards/modifications. These project awards involved mainly integrated systems and services at NETC and the transmitter sites as well as the PBS DDMS broadcast NOC, co-located within the NETC Lincoln broadcast facilities.

In addition to our technical expertise and longstanding vendor relationships within the broadcast television and radio industries, HA Design Group is a certified partner with major IT technology vendors including Microsoft, Hewlett Packard, IBM, and Cisco.

Regards,

Mr. Willy Halla
President and CEO
HA Design Group LLC
6700 Springfield Center Drive Suite J
Springfield, Virginia 22150
Office: 703 778-8760 Fax: 703 778-8759

P.S.

There is a link for on-line exploration and examples at:

www.Dataminer.tv
username: David Stewart
password: vadrlZi5_i

H A Design Group

SECTION 1 - CORPORATE OVERVIEW

1.1 EXECUTIVE SUMMARY

HA Design Group LLC was established in 2003 to provide Broadcast and Professional Engineering Services to the broadcast industry. Originally, HA Design Group LLC was a working group of industry professionals that catered to the broadcast industry needs by providing design, consulting, research, and management services for today's systems. We are now a Veteran owned Small Business of approximately 40 employees and 10 million/year revenue.

1.1.1. Broadcast Engineering Expertise

HA Design Group engineers have been the pioneers in digital broadcasting with such projects as:

- The DTV Express, the first ever digital HDTV system from glass to glass.
- Digital Radio - WorldSpace and XM Satellite Radio's first ever all digital system to the consumer.
- DTV - Georgia Public Television's first all-digital SDI system.
- Audio – NPR's new HQ, where we engineered and implemented their latest studios and systems (20+).
- PBS DDMS --a lights-out, fully capable PBS Network Operations Center (NOC) origination facility that is a completely software abstracted broadcast system, which currently backs up the main PBS SOC in Virginia.
- Ohio BEMC Centralized Master Control for the 8 PBS member stations within the State of Ohio. The BEMC solution design is a totally IP based system utilizing software on Virtual stacks to provide 42 channels to 8 Ohio PTV stations as well as the capability to provide Over the Top (OTT) distribution to the web and AWS Content Delivery Platform.

The HA Design Project practices and technical team can handle the largest projects with any mix of formats, integrated systems and communications technologies.

HA Design Group Engineers have completed projects for the last 20 years that are at the front end of technology. We have designed, integrated, and utilized wide-ranging

system solutions involving analog, to digital hardware, to digital software, to virtual machine, and then to cloud.

1.1.2. Industry Relationships and Services

HA Design Group has current relationships with most of the broadcast and IT manufacturers; This industry awareness keeps us abreast of the changing equipment vendor climate and the innovations and advances in technology.

With this expertise, we then can provide our customers with unprecedented information and exceptional choices, allowing them to select the best, long-lasting alternatives for their projects.

1.1.3. Consulting and Partnerships

When you are developing a media facility such as a broadcast station, production unit, network distribution center, data centers, or high-technology A/V; you need expertise in a host of fields.

Systems engineers/consultants like those in the HA Design Group can look at your requirements, make a practical and realistic solutions for what is required, provide realistic budgets, draw up detailed design plans, and keep your project moving forward throughout the process.

We are architects who understand the unique needs of broadcast and other media facilities. We understand these needs are unique in terms of design, materials, acoustic issues, power, heat loads and much more.

We are acoustical engineers who can help you deal with sound issues, ranging from isolation and dampening, to fine tuning a room for just the sound you are looking for.

We are HVAC specialists who have an understanding of the challenges of a media/data – intensive plant, which can be considerably different than a general-purpose building.

We are Monitoring and Control experts such as Skyline Communications which provides software to most of the world in end-to-end multi-vendor network management and OSS solutions for the broadcast, satellite, cable, telco and mobile industry. Skyline Communications' flagship DataMiner® network management platform has received various prestigious awards, enables end-to-end integration of the most complex technical ecosystems and has been deployed by leading operators around the world. Skyline has the most extensive driver set of any M & C vendor in the industry. Skyline also has an ever-growing human interface repertoire that responds to their customers

with a tailored user interface that is uncluttered and easily useable. Skyline Communications will join HA Design Group in the HA Design Group Team for this project. Our previous project experience with Skyline Communications, since 2015, has successfully integrated legacy broadcast equipment with new broadcast and IT software and hardware systems.

At HA Design Group, we have specialized expertise in systems design and development that few can match. Additionally, we have developed working relationships with some of the best technical consultants and IT specialists in the country. We can provide a comprehensive design team that suits your needs, or help you find the specialist that fills the void in your current team.

1.2 CORPORATE PROFILE

Corporate Profile

1.2.1. Introduction

HA Design Group LLC is located in the Internet capital of the world, just a few miles south of Washington, D.C. in Springfield, VA. Serving the Broadcasting, Audio Visual, and Media Data Center community locally and worldwide, HA Design offers a variety of engineering services for our customers.

HA Design Group incorporates a wealth of experience, talent and skills, to provide complete consulting, design, and documentation services for the professional community requirements.

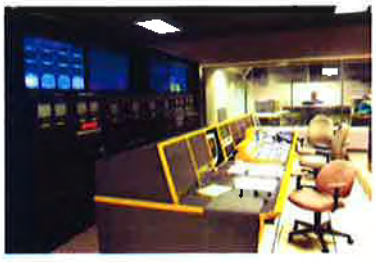
The HA Design engineers are always staying abreast of new technologies and innovations, looking to the future, merging today's requirement with tomorrow's technology. Some of our accomplishments are outline below:

DTV Express*

At the request of Harris Broadcast, our engineers performed the engineering and design of the DTV Express*, the groundbreaking, first HDTV system ever, built in a truck that traveled the nation as a mobile TV station to educate broadcasters on the ins and outs of integrating D-TV, HDTV, and NTSC in a single facility. (*DTV Express is a registered trademark of Harris Corporation)

WTVI

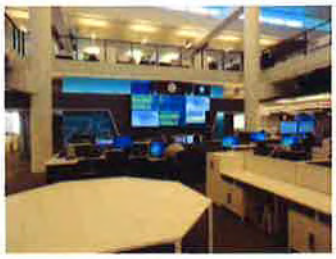
Our engineers designed and project managed the installation of WTVI's new HDTV broadcast facility in Charlotte, NC, including master control, automation, transmitter, production studios, control rooms, and three (3) editing suites. Beyond HDTV, this is also the first broadcast facility in the U.S. to implement Dolby Digital fully operating under automation.



MTN

In September of 2003, the design for a facility to broadcast news to the Arabic world was started. This network became the Middle East Television Network, the Alhurra Channel, and was launched on 14 February 2004. MTN was the first server centric facility with a 30 TB system on line and 200 TB of near line storage. It encompasses 160 workstation all capable of doing online editing in high resolution.

NPR Headquarters



National Public Radio (NPR) contracted with HA Design Group for turnkey project services from 2010 to 2013 to design, transition, and build new technical broadcast facilities at its new headquarters location in Washington DC. The new integrated design and multimedia capabilities support NPR's expanding array of media workflows that presently deliver its daily content including streaming, podcasts, live news, and other distributed audio programming:

The NPR technical center with it equipment racks (150+) is designed as a Tier 3 Data Center with fault tolerant back-up technical power systems using independent switching The NPR Production Engineering studios and facilities incorporate an assortment of production spaces including standalone news areas, self-operated production studios, and larger studios with control rooms to support more sophisticated programming and content.

PBS DDMS

The PBS Network senior management decided to create a back-up facility to its main network operations center (NOC) facility in Alexandria, Virginia. This new origination facility was design, based upon new concepts using software codecs and applications running on commodity hardware, was integrated offsite for completion and completed in May 2014. The software platform was chosen and includes all facets of the broadcast chain from Ingest, traffic handling to Media Asset Management to automated Playout and transmission support, tightly integrated with a large MS SQL Server database and an online/tape archive.

PBS NOC Replacement

Currently the Public Broadcasting System (PBS) is migrating to cloud-based delivery of program streams and video clips. Along with other vendors such as Amagi we are proposing a solution to migrate PBS from their hardware-based Network Operations Center (NOC) distribution approach to the more flexible cloud alternative.

Doing this allows them to manage all broadcast services from within the cloud. This brings simplicity, advanced automation, and transparency to the entire broadcast operation, be it for traditional TV or next-gen multiscreen platforms. This new software cloud approach enables TV networks to launch, operate, scale when needed, and monetize channels anywhere in the world. It provides targeted advertising solutions to thousands of brands, shaping the future of TV and media-wide advertising. The software to accomplish this is finely tuned to the AWS platform.

1.2.2. Keys to Successful Projects

HA Design has been a developer of many "digital firsts" within the Systems Integration and Broadcast arenas. We have our clients to thank for allowing us to push the envelope in the migration from Analog to Digital environments, High Definition Television, and Server Centric systems to Cloud based systems. They have given us the opportunity to be at the helm of many emerging technological advances.

Years of working at the forefront of broadcast technology have taught us a great deal. We have discovered that the following four keys are central to developing a successful project.

Economic Feasibility

Our Design Engineers go to great lengths to create custom designs that address each client's particular needs and requirements. HA Design Group designs incorporate the best equipment available for the customer's needs within budget. Although initial cost is a consideration to our designers, long term "cost effectiveness" is their prime concern.

The equipment selected will be the most reliable and have a technology longevity that will give the customer the best return for their investment.

Design for the Future

Upgradability, allowing for the integration of future technology, is another basic concept used by our engineers. We have all seen that the rate at which technology is growing often renders a new piece of equipment obsolete in only a short period of time. This is a problem our engineers have been able to minimize in their systems by keeping current on present and future technologies.

HA Design engineers are utilizing state-of-the-art digital technology in its designs to the fullest advantage. In one of our project, our engineers worked with Harris Broadcast Systems, Belden, and ADC, introduced a new digital wire and patch bay configuration to be used in digital plants. Also, our engineers have worked closely with Nvision, Leitch, Miranda, Nagra, Avid, Cinegy, VCS, Virage, Fast, and several other manufactures on interfaces and technology changes dealing with HDTV, UDTV and other digital techniques and server technology.

- **User Friendliness**

Ease of operation is another priority that our engineers take into consideration when designing a system or facility. As technology advances so does the complexity of the equipment. System automation now plays an important role in the creation of user friendly systems. Our designers incorporate equipment that utilizes a substantial amount of control automation and computer-assisted controls to eliminate most of the labor-intensive aspects of production, thereby reducing the manpower requirements. Aspects such as camera and lighting calibrations and setups, the recording and playback of programs and advertisements, program delay, automated satellite operations, and audio mixing are among the elements our engineers consider.

- **Flexibility**

System flexibility is another aspect of our design process that adds significantly to the cost-effectiveness and value of the system. Through the use of digital technology, automated machine control, and patching systems, our engineers are able to create a flexible system that can interconnect several devices from various locations throughout the facility or the world. This equipment can be linked together into a system configuration using an operational model that fits into the customer's current business model for today and into the future.

This means a substantial reduction in the number of redundant pieces of equipment needed for today's facility. Instead of designing studios and production suites with discreet equipment, our engineers use software and virtual machine approach in the designs to reduce resources required.

HA Design is effectively positioned to maintain a current perspective on the latest changes in technology. As a representative of several major manufacturers of quality equipment, we have continuing access to the technology changes and improvements which drive our industry. This gives our engineers the resource to be able to advise our customers with confidence.

1.3 HA Design Group Project Capabilities and Infrastructure

HA Design Group is located in a modern 15,000 square foot combined manufacturing and office facility located at 6700 Springfield Center Drive, Suites I-J-K, Springfield, Virginia 22150. This facility was designed specifically to facilitate the design and building of complex television and radio broadcast and audiovisual systems. It was designed for of modern dedicated engineering, technical services, cable making, integration, and warehousing areas to facilitate the seamless design, integration, testing, and shipping of digital radio, television, and audiovisual system solutions.

In addition to its Springfield, Virginia location, HA Design Group has also arranged access to an additional 9,000 SF warehouse nearby in order to accommodate offsite inventory storage and other project requirements as needed.

1.3.1. Project Related Infrastructure

As an experienced radio, television broadcast, and audio/visual integration engineering services firm, HA Design Group understands that the ability of its personnel to perform is directly related to the networked hardware and software tools available. HA Design Group maintains network-based tools, computers, and reproduction systems that include workstations, large plotters, printers, fax machines, and reproduction machines.

This networked infrastructure allows HA Design Group to effectively utilize an integrated in-house Computer Aided Design (CAD) system AutoCad and Revit from AutoDesk, which significantly enhances our ability to streamline the engineering process. All documentation is computer generated and produced on printers or large-format plotters such as Savin 4800WP and HP 42" Color DesignJet Plotters (drawings from A through E size).

Our redundant broadband internet connection allows us to collaborate with our clients with ease and speed. We also utilize the latest in Document Management Systems, namely Microsoft SharePoint 2013, allowing HA Design Group to collaborate with clients providing fast information/file dissemination and collection during the project process including the tracking of all document revisions and iterations.

As important as engineering is to a project, to be successfully realized, the PBS project must be implemented by qualified technicians and installation managers through excellent organization, planning, and tools. HA Design Group has a very talented Installation Manager that has years of experience.

1.3.2. Business Financial Resources and Insurance

As a company whose core business is providing television/radio facility solutions, digital media, and audiovisual engineering with technical support services to the federal and commercial market, HA Design Group maintains business insurance. Currently E & O is with CNA, and CNA has the remaining policies. Certificates can be provided.

1.4 EXPERIENCE AND CONTRACT PERFORMANCE

HA Design engineers have a long history in the Broadcast Market. They have designed and built facilities of various sizes and designs in their own right. They have worked on some of the highest profile and technically advanced projects in the United States and international clients. The following is a snapshot of 20 years of history with our engineers.

SUMMARY OF RECENT PROJECTS

1.4.1. PBS Time Zone Servers and DHS WARN Projects

Where?
Alexandria, Virginia

Project Type:
Subcontractor
Design, Build, and Support for the:
The rollout of TZD servers to 55 stations
PBS WARN Distribution Infrastructure for DHS

Project Size:
$500,000

Technologies:
Evertz, Thomson

Contact:
Calburk Consultants
Mr. Ed Caleca, President
(571) 215-8816

PBS Time Zone Server Roll-out

HA Design Group successfully completed the design, project management, QC & offsite preparations, delivery, training, and support for the Public Broadcasting Services (PBS) Time Zone Delay (TZD) Project. The goals for the TZD Project were to provide an HD primetime Time Zone Delay capability that would be compatible with and integrated into the current broadcast systems at the eligible PTV stations in the Central and Mountain Time Zones, Alaska, Hawaii, American Samoa and Guam.

The goal of the HD server was to integrate seamlessly into the individual PTV stations master control operation and provide for the time delayed play out of programming which is acquired by the stations from the public television Satellite Interconnection System.

HA Design Group established a web-based helpdesk system to capture the key PBS member station information relating to the project and the associated technical elements, training, installation issues, and timeline. The helpdesk system proved instrumental in coordinating and managing the sequenced rollout of the Thomson TZD Server solution.

PBS Testing sites for DHS National WARN messaging system

PBS and its member station community have committed to play a distribution role for the US Federal Govt WARN system under the direction of Department of Homeland Security. The redundant NOC encoding systems at dual PBS NOC locations are being prepared in 2013 with the initial 4 stations' trial systems being deployed in anticipation of a larger rollout across the country after testing.

1.4.2. Voice of America NYC Design/Build New Construction Project

Where?
Washington, D.C.

Project Type:
Prime Contactor
New Control Room

Project Size:
$1,800,000

Technologies:
Evertz MVP, Sony Mixers, Wheatstone Audio Systems.

Contact:
Steve Hocker
202-203-4661
shocker@voanews.com

The HA Design Group team successfully completed the across-the-board renovation of the VOA New York City-based television and radio facilities in 2013. The new VOA broadcast facilities in lower Manhattan, near the United Nations location, provides daily television studio broadcasts supporting its multilingual, international newscasts that are distributed via satellite and internet worldwide. Collaboration with the VOA Washington DC-based engineering team produced:

Studio A Sets: The existing Studio A set was refreshed with a new graphics treatment and an entire new set was also designed and constructed utilizing a 3 by 2 video wall to enhance the new VOA over-the-shoulder news programming anticipated. Rounding out the Studio A live production options is an automated green screen that can be lowered to insert multimedia visuals into the VOA Language Service news programming and shows.

Skyline Studio Set: A sweeping new set was designed and constructed that incorporates 8 windows to the outside. Multiple camera angles of the attractive set visuals with New York City views will be utilized in forthcoming VOA live news.

New Studios' Control Room: VOA's upgraded control room is now used for both studios' production with live video and controls integrated with the VOA technical plant in Wash DC.

IT and offices' network installations: As part of the NY facility project design was the build out of new VOA IT infrastructure that included installation of office-wide Cat 6 drops and fiber links connecting the Cisco-based networking across the NY studios, technical facilities, and new office space layout. The VOA New York broadcast facilities are tightly integrated with their Washington DC-based broadcast distribution functions through Harris NetVx links.

New Studio Lighting Systems: New lighting grids and fixtures including LED mixed with incandescent systems were added to light the studio set visuals & numerous daily shows.

1.4.3. National Public Radio Los Angeles

Where?

Washington, DC, Los Angeles, CA.

Project Type:

Prime Contactor
New facility

Project Size:
$2,000,000

Technologies: AES, Routing, Master Control, Centralized workflow, Connecting facilities from across the country.

Provided workflow analysis, design, and final system test for National Public Radio network's new west coast facility.

Designed and integrated multiple control rooms, several studios and a unique interconnection with NPR in Washington, D.C allowing either facility to act as the master or slave facility.

Integrated Klotz boards and Dalet editing and automation, that allowed the control and usage of any resource from any of the studios, i.e. A microphone or machine in Studio 1 by the console in Studio 2.

Streamlined workflow, allowing more work to be accomplished with the same number of people. This was accomplished by utilizing a server -centric model for audio production, thereby allowing instance distribution and editing capabilities anywhere in the plant, with instant playback. What used to take minutes or hours to prepare for air now takes seconds with half the personnel.

Worked with the architects, and NPR staff, on project concept workflow, design, integration, and architectural reviews.

Met with the architectural firm to determine their plan actually works with the equipment and consoles that have been supplied, thereby providing further coordination to reduce the likelihood of coordination error between building and integrator.

1.4.4. VOA IDAPS-2

Where:
Washington, DC

Project Type:
Prime Contactor Integrated Digital Audio Production System

Project Size:
$4,000,000

Partners?
Dalet Media (Paris)

Technologies: ATM, Digital audio, networked storage, near line archive, Asset management, audio editing, IP Transmission

Contact:
Steve Hocker
202-203-4661
shocker@voanews.com

HA Design Group has been engaged in a very exciting project here in the Washington, DC area: The Voice of America - International Broadcasting Bureau Integrated Digital Audio Production Systems 2 project.

HA Design Group was teamed with Dalet Digital Media Systems of Paris, France to provide VOA with a complete upgrade of the Digital Audio system for all VOA Radio broadcasters. This encompasses replacing all of the currently systems that are currently used at VOA.

The Voice of America facility, by itself, is a massive plant. It encompasses forty-three (43) Studios in forty-seven (47) different language services, each representing an individual broadcast channel. In twenty-six (26) of the language areas there are additional smaller studio areas for uncomplicated mixing and dubbing. To aid the language services, there is a central recording facility, which has numerous automated playback units along with many duplication and recording facilities. For transmission there is an automated 100 channel Master Control along with a Satellite Control Center to monitor and control the various transponders that VOA-USIA has around the world.

Currently over 1500 workstations and various play out and recording units are already connected in this system. More than 10 Clustered Audio Servers consisting of HP Gen8 class servers running in cluster mode with up to 20 TB of disk storage on each one. Two Clustered Database servers, and Robotic archiving units.

This will upgrade VOA's digital system that allows them to instantly access any material they need from anywhere on the network. A truly Integrated Digital Audio Production System.

1.4.5. WTVI

Where?
Charlotte, NC

Project Type?
Prime Contactor
HDTV Conversion

Project Size?
$10,000,000

Technologies: HD and SD, Switching, Automation, Control Systems, Routing, AES audio, Editing, Graphics, RF, Traffic Interface, Networking, Near line archive, Broadcast servers

Managed the designed and built of the HDTV production facility. WTVI is the first completely HD Television Production Facility for a PBS affiliate.

System consists of one (1) main Television Production Studio, one (1) small Production Studio, and one (1) Control Room. The Master Control, which is capable of four (4) standard definition channels and one (1) high definition channel. Post Production facilities which included three (3) full Editing Rooms, one (1) Audio Post Production Room. Graphics Suite with high definition workstations.

Designed and integrated the RF Transmission plant.

The first Dolby-E implementation in a U.S. Broadcast facility.

Consulted with and assisted WTVI in RFP preparation for equipment.

1.4.6. DTV Express

Where?
Florence, Ky.

Project Type?
Subcontractor
HDTV First System

Project Size?
Industry Donations

Technologies: HD and SD, Switching, Automation, Control Systems, Routing, AES audio, RF, Networking, Near line archive, Broadcast servers

- The DTV Express is a demonstration and laboratory vehicle that was built for the Broadcast community to show that HDTV could be built and could be implemented.
- Willy Halla undertook this project in Jan of 98 with Harris Corporation, then designed and completed the drawing set, supervised the building, and showed the system in Washington, D.C. on 23rd of March 98. Much of the equipment was specified by Willy and built specifically for this project. The entire system is digital utilizing full bandwidth component signal to included 1.5 Gbs, 270 Mbs, and 48 Khz AES streams.
- The system is fully functional from camera all the way through to transmitter and receivers for both precision and consumer products. This system showed that contrary to industry experts a comprehensive HDTV system could be built. This included the first delivered HDTV routing switch that would handle up to 256 x 128 1.5 Gbs ports. All of the equipment utilized in the project is now commercially available.
- The system included a complete four (4) channel Master Control for SDV and multi-channel, and an NTSC input into the system. This showed that Broadcasters could enter the DTV arena at just about any level, be it NTSC, SDV, or HDTV.
- The DTV Express is an industry-chartered system from some 43 manufacturers and companies. Its sole purpose is to show and teach broadcasters, government, and media officials that HDTV is here, it is a technology for today, and to give broadcasters a hands-on approach to learning how this technology can be implemented. The tour went through some 40 cities and last approximately 15 months. During this time the system was continuously updated with new equipment as it becomes available.
  * DTV Express is a registered trademark of Harris Corporation

1.4.7. National Public Radio New York Bureau

Where?
New York City, NY

Project Type?
Prime Contactor
New Network Bureau

Project Size?
$2,000,000

Technologies: AES, MADI Core Routing, Centralized workflow, Connecting facilities from across the country.

In January 2006, HA Design Group LLC has been awarded the contract to design the new state-of-the-art broadcast facility for National Public Radio's Manhattan facility, New York, NY. The facility provides services for two daily shows as well as both national, and international news.

Provided workflow analysis, conceptual designs, and final system designs for National Public Radio network's New York facility.

Designed and integrated two (2) control rooms, five (5) studios and a unique interconnection with NPR in Washington, D.C and NPR LA allowing either facility to act as the control room to the studio's in New York

Integrated Klotz boards and Dalet editing and automation, that allowed the control and usage of any resource from any of the studios.

Worked with the architects, and NPR staff, on architectural concept, and design.

HA Design worked closely with NPR for a comprehensive design, integration collaboration and a project that was done on schedule and within budget.

1.4.8. Voice of America Control Room 49

Where?
Washington, D.C.

Project Type?
Prime Contactor
New Control Room

Project Size?
$2,000,000

Technologies:
Evertz MVP, Kalypso Mixers, Wheatstone Audio Systems.

15 August 2008 -- HA Design Group LLC has completed the project for designing, project management, and training for the Control Room 49 project for the Voice of America Television (VOA TV). The system encompasses an Evertz MVP Multi-screen display system as well as multiple LCD screen for real-time display of cameras and some playback sources. Grass Valley Group Kalypso was utilized for the video switcher. Wheatstone D-9 audio systems were customized to include PFL panels for producers and directors, announce booth systems, and IFB/Intercom channels.

The room was design to have 8 full time positions, each with their own monitors and intercom, lines has additional monitor for remote lines and IFB/telco lines. It has separate playback control, audio control room, video control, and announce booths.

The system was built with total flexibility in mind, able to be used with any studio both in Washington D.C., New York NY, and Los Angeles, Ca.

Evertz MVP Monitor Wall consisting of 4 large LCD Screens, 5 individual camera monitors, and remote monitor at various positions in the room.

Grass Valley Group Kalypso Switcher.

Chyron Graphics.

Wheatstone Audio Systems.

1.4.9. PBS NOC Enhancements in Virginia

Where?
Alexandria, Va.

Project Type?
Prime Contactor Network Operations Center

Project Size?
$4,000,000

Technologies: Nexio Video servers, Centrio MVP, Facility SNMP and Control Systems

Contact:
Jim Cutright
(703) 739-5208
jccutright@pbs.org

15 July 2009 -- HA Design Group LLC, partnered with PBS Project Group, has completed the drawings, software, installation, and commissioning of the PBS New NOC. PBS, with its 356 member stations, offers all Americans the opportunity to explore new ideas and new worlds through television and online content. Each week, PBS reaches more than 65 million people and invites them to experience the worlds of science, history, nature and public affairs; hear diverse viewpoints; and take front row seats to world-class drama and performances. The NOC originates these 11-national channel/feeds for stations nationwide.

The project was to develop, design, and implement a New Network Operations Center that utilized new servers and routers, and existing automation and media asset management systems. Make it as resilient as possible, and operationally intuitive.

After several iterations of concept design, the design phase was begun with the Project Team consisting of HA Design and PBS personnel. Once the design was approved, the system was installed.

Then began the task of workflow implementation and software adjustments to the system. It was soon evident that new ops interfaces were needed so HA Design set to the task of writing new interfaces. After coordination with PBS personnel these were completed and the system was then put into parallel ops and later on the air.

1.4.10. NPR New HQ Building in Washington DC

Where?
Washington, D.C.

Project Type?
Prime Contactor
Move Headquarters

Project Size?
$4,000,000

Technologies:
Lawo Audio, Server Playback, Digital and IP Routing.

After nearly two decades at 635 Massachusetts Avenue, NW, in Washington, D.C., NPR relocated its headquarters to 1111 North Capitol Street, NE. The building's construction, which began three years prior, was completed in December and the interior was finished in March. Following several weeks of testing and training on new broadcast, digital, and production equipment, NPR staff moved into the new building in phases beginning in Late March and concluding in late April.

The new NPR headquarters comprises two integrated blocks: the bulk of a historically preserved four-story 1920's era warehouse and a new, modern seven-story office block that rises behind. HA Design did the systems design as well as integration of the systems in the building which comprises approximately 330,000 square feet of above-grade space and 440,000 total square feet.

The heart of the building is a two-story open newsroom with broadcast and production studios to accommodate NPR's round-the-clock schedule. NPR's news, music, programming and digital staff are co-located on these floors. In addition to serving as center for NPR's operations, the building is also home to the Public Radio Satellite System, an independent distribution system that moves public radio content across the country.

1.4.11. Ohio BEMC Shared Master Control Facility

Where?
Columbus, Oh.

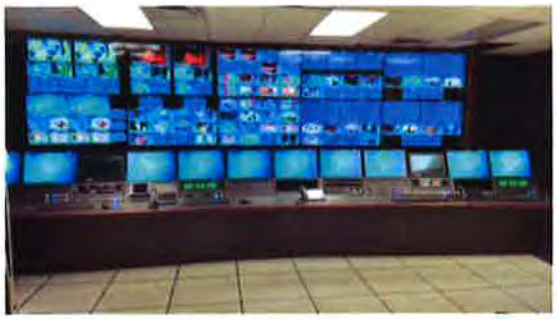
Project Type?
Prime Contactor
Network Operations Center

Project Size?
$3,000,000

Technologies:
Cinegy Video servers, HP Servers and WS, Facility SNMP and Control Systems

August 2017 - The BEMC centralized Joint Master Control (JMC) has enhanced its automated play out by establishing Myers ProTracks' close BXF integration with IP broadcast play out software from Cinegy. The bidirectional BXF exchange is performing "live update" media processing in support of BEMC's digital programming channels (42) on behalf of Ohio's group of eight PBS member stations and The Ohio Channel.

Starting with the award of a design and installation contract in April 2015, HA Design Group has worked closely with the Columbus, Ohio based Broadcast Educational Media Commission (BEMC) and the Ohio Educational Television Stations, PBS member stations in 8 markets, who are linked together through the state-wide OARnet® IP network. The goals of the BEMC system upgrade include increased operational efficiency and reduced long term capital cost for the Stations and the State of Ohio, while modernizing the Network Operations Center that BEMC provides to benefit multiple constituencies in Ohio. Early in the process, the Stations identified facilitating future digital services, and providing for a centralized origination center in Columbus as important goals the project is designed to achieve. These future digital services include OTT and cloud-based Content Delivery Networking.



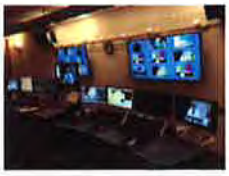
1.4.12. NIH Television Operations Facility

Where?
Bethesda, Md...

Project Type?
Prime Contactor Network Operations Center

Project Size?
$1,400,000

Technologies:
Cinegy Video servers, HP Servers and WS, Facility SNMP and Control Systems



HA Design Group designed and deployed a new NIH television operations center (TOC) to enhance the campus-wide support and dissemination of live meeting and campus events. This brought together world-class scientists to exchange and communicate NIH's world-renowned biological and medical research. The digital media TOC solution gives the NIH Events Management staff in their support mission for the NIH community. Under a contract with IDR, an NIH contractor, we designed, installed and commissioned the new NIH TOC in rooms B2L319 and B2L113 Building 10, the largest hospital in the US. The HA Design Group engineering and installation teams became certified for NIH Information Security and Privacy Awareness and NIH Secure Remote Computing. We worked with multiple other contractors while continuously coordinating with the NIH General Contractor on work schedules, work assignments/ work area, shipping and receiving. The new A/V equipment included three new 55" screen TV monitors in the TOC and five new racks containing nineteen new HP ProLiant DL380p Gen9 servers. This is an upgrade of the NIH TOC operation from its current analog machine-based architecture to IP/IT software driven audio/ visual television production system. Included was a large tape archive system using Spectralogic-Xendata technology. We installed all the cables on cable trays to connect room B2L319 to room B2L113. Additionally, in room B2L113, we demolished and removed eleven existing racks and their equipment while repurposing two existing racks. We installed three new operator consoles along with the three 55" monitors mounted on the wall in front of the operators. The Broadcast application included an IT/IP-centric solution developed into a cost-effective commercial off-the-shelf IT hardware server system architected around software modules and a Media Asset Management system. This allows NIH to stream live and recorded audio/video of their unique research presentations and support 14,000 Scientific lectures, conferences and meetings; Broadcast Video distribution- webcasting, satellite, IPTV, fiber, YouTube and Distance Learning. We conducted maintenance, administrator and operator training and are currently conducting warranty maintenance and helpdesk service.

1.5 REFERENCES

PROJECT CLIENT	CLIENT CONTACT	CONTACT PHONE NUMBER	CONTACT EMAIL
BBG - Voice of America	Steven Hocker MGR of Broadcast Engineering	(202) 203-4661	shocker@voanews.com

PROJECT CLIENT	CLIENT CONTACT	CONTACT PHONE NUMBER	CONTACT EMAIL
NPR National Public Radio	Shawn Fox NPR Engineering Director	202 513-2490	Sfox@npr.org

PROJECT CLIENT	CLIENT CONTACT	CONTACT PHONE NUMBER	CONTACT EMAIL
PBS (Public Broadcasting Service)	Jim Cutright, Senior Project Manager	202 739-5208	jccutright@pbs.org

1.6 FINANCIAL STATEMENTS

HA Design Group LLC has provided its CPA-approved financial statements for 2015 and 2016 on the following pages. HA Design is a privately held Virginia based LLC, whose principal ownership is Willy Halla.

HA Design has been in business since November 2004. Currently we have 28 employees and a client base that is diverse between Private, public and government clients. Our primary business is Broadcast Engineering, Integration, and Sales.

As can be seen from the company descriptions in the document we have a strong engineering background and have done many broadcast firsts. We continue to move the industry forward as it comes to the software implementation stage of its history. Currently we have started to hire software engineers to turn the corner of our business to the new horizons on the technology front.

HA Design Group LLC
Income Statement
For the Twelve Months Ending December 31, 2016

	Current Month		Year to Date	
Revenues				
Sales Income	$ 0.00	0.00	$ 0.00	0.00
Administrative Income	5,740.00	0.10	5,740.00	0.10
Consulting Income	936,604.18	15.82	936,604.18	15.82
Drafting Income	3,380.00	0.06	3,380.00	0.06
Engineering Income	1,171,346.01	19.79	1,171,346.01	19.79
Integration Income	224,510.00	3.79	224,510.00	3.79
Equipment Income	3,431,263.89	57.97	3,431,263.89	57.97
Commission Income	0.00	0.00	0.00	0.00
Project Management Income	33,345.00	0.56	33,345.00	0.56
Service Income	0.00	0.00	0.00	0.00
Interest Income	28.87	0.00	28.87	0.00
Other Income	94,212.94	1.59	94,212.94	1.59
Income Tax Refund	0.00	0.00	0.00	0.00
Finance Charge Income	0.00	0.00	0.00	0.00
Shipping Charges Reimbursed	18,310.99	0.31	18,310.99	0.31
Fee Refunds	0.00	0.00	0.00	0.00
Fee Discounts	0.00	0.00	0.00	0.00
Total Revenues	5,918,741.88	100.00	5,918,741.88	100.00
Cost of Sales				
Cost of Sales	2,298,873.97	38.84	2,298,873.97	38.84
Cost of Sales - Associates	(23,374.07)	(0.39)	(23,374.07)	(0.39)
Cost of Sales-Salaries and Wag	13.78	0.00	13.78	0.00
Freight Charges	20,674.07	0.35	20,674.07	0.35
Total Cost of Sales	2,296,187.75	38.80	2,296,187.75	38.80
Gross Profit	3,622,554.13	61.20	3,622,554.13	61.20
Expenses				
Default Purchase Expense	400.00	0.01	400.00	0.01
Advertising Expense	0.00	0.00	0.00	0.00
Amortization Expense	0.00	0.00	0.00	0.00
Auto Expenses	15,936.74	0.27	15,936.74	0.27
Bad Debt Expense	0.00	0.00	0.00	0.00
Bank Charges	11,416.98	0.19	11,416.98	0.19
Blueprints and Photostats Exp	0.00	0.00	0.00	0.00
Cash Over and Short	0.00	0.00	0.00	0.00
Charitable Contributions Exp	0.00	0.00	0.00	0.00
Commissions and Fees Exp	95,093.23	1.61	95,093.23	1.61
Conference Expenses	9,339.80	0.16	9,339.80	0.16
Consulting Fees Expense	679.75	0.01	679.75	0.01
Employee Benefit Programs Exp	64,204.68	1.08	64,204.68	1.08
Pension P/S	0.00	0.00	0.00	0.00
Dues and Subscriptions Exp	502.00	0.01	502.00	0.01
Depreciation Expense	4,400.00	0.07	4,400.00	0.07
Freight Expense	409.87	0.01	409.87	0.01
Gifts Expense	2,208.04	0.04	2,208.04	0.04
Income Tax Expense	7,798.00	0.13	7,798.00	0.13
Insurance Expense	27,041.99	0.46	27,041.99	0.46
Interest Expense	3,380.46	0.06	3,380.46	0.06
Laundry and Cleaning Exp	5,760.00	0.10	5,760.00	0.10
Legal and Professional Expense	32,964.02	0.56	32,964.02	0.56
Licenses Expense	0.00	0.00	0.00	0.00
Loss on NSF Checks	1.10	0.00	1.10	0.00
Maintenance Expense	3,166.94	0.05	3,166.94	0.05
Marketing and Sales Expense	2,046.98	0.03	2,046.98	0.03
Meals and Entertainment Exp	13,669.03	0.23	13,669.03	0.23

HA Design Group LLC
Income Statement
For the Twelve Months Ending December 31, 2016

	Current Month		Year to Date	
Moving and Relocation Expense	0.00	0.00	0.00	0.00
Payroll Tax Expense	120,570.88	2.04	120,570.88	2.04
Penalties and Fines Exp	323.76	0.01	323.76	0.01
Other Taxes	25,705.25	0.43	25,705.25	0.43
Office Expense	5,353.43	0.09	5,353.43	0.09
Postage Expense	701.99	0.01	701.99	0.01
Printing and Reproduction Exp	195.00	0.00	195.00	0.00
Professional Development Exp	0.00	0.00	0.00	0.00
Professional Salaries-Nonbills	0.00	0.00	0.00	0.00
Professional Salaries-Billable	0.00	0.00	0.00	0.00
Software Expenses	8,723.17	0.15	8,723.17	0.15
Salaries Expense - Office	61,938.61	1.05	61,938.61	1.05
Salaries Expense - Officers	100,499.88	1.70	100,499.88	1.70
Wages Expense - Employees	1,212,163.37	20.48	1,212,163.37	20.48
Repairs Expense	0.00	0.00	0.00	0.00
Research and Development Exp	0.00	0.00	0.00	0.00
Rent or Lease Expense	118,635.96	2.00	118,635.96	2.00
Security System Expense	549.40	0.01	549.40	0.01
Subcontractor Expense	488,997.00	8.26	488,997.00	8.26
Supplies Expense	346.57	0.01	346.57	0.01
Telephone Expense	17,650.95	0.30	17,650.95	0.30
Travel Expense	227,276.15	3.84	227,276.15	3.84
Utilities Expense	11,081.64	0.19	11,081.64	0.19
Proposals Expense	0.00	0.00	0.00	0.00
Other Expense	296.26	0.01	296.26	0.01
Sales Tax Paid	0.00	0.00	0.00	0.00
Purchase Disc-Expense Items	(92.36)	0.00	(92.36)	0.00
Non-Deductible Expense	0.00	0.00	0.00	0.00
Gain/Loss on Sale of Assets	0.00	0.00	0.00	0.00
Total Expenses	2,701,336.52	45.64	2,701,336.52	45.64
Net Income	$ 921,217.61	15.56	$ 921,217.61	15.56

HA Design Group LLC
Income Statement
For the Twelve Months Ending December 31, 2015

	Current Month		Year to Date	
Revenues				
Sales Income	$ 6,223,484.08	98.98	$ 6,223,484.08	98.98
Interest Income	40.49	0.00	40.49	0.00
Other Income	48,535.65	0.77	48,535.65	0.77
Income Tax Refund	0.00	0.00	0.00	0.00
Finance Charge Income	0.00	0.00	0.00	0.00
Shipping Charges Reimbursed	15,317.87	0.24	15,317.87	0.24
Fee Refunds	0.00	0.00	0.00	0.00
Fee Discounts	434.79	0.01	434.79	0.01
Total Revenues	6,287,812.88	100.00	6,287,812.88	100.00
Cost of Sales				
Cost of Sales	3,652,406.78	58.09	3,652,406.78	58.09
Cost of Sales - Associates	955,823.61	15.20	955,823.61	15.20
Cost of Sales-Salaries and Wag	76.37	0.00	76.37	0.00
Freight Charges	24,991.58	0.40	24,991.58	0.40
Total Cost of Sales	4,633,298.34	73.69	4,633,298.34	73.69
Gross Profit	1,654,514.54	26.31	1,654,514.54	26.31
Expenses				
Default Purchase Expense	0.00	0.00	0.00	0.00
Advertising Expense	181.92	0.00	181.92	0.00
Amortization Expense	0.00	0.00	0.00	0.00
Auto Expenses	13,575.88	0.22	13,575.88	0.22
Bad Debt Expense	0.00	0.00	0.00	0.00
Bank Charges	13,785.95	0.22	13,785.95	0.22
Blueprints and Photostats Exp	0.00	0.00	0.00	0.00
Cash Over and Short	0.00	0.00	0.00	0.00
Charitable Contributions Exp	0.00	0.00	0.00	0.00
Commissions and Fees Exp	322,932.71	5.14	322,932.71	5.14
Conference Expenses	11,339.16	0.18	11,339.16	0.18
Consulting Fees Expense	0.00	0.00	0.00	0.00
Employee Benefit Programs Exp	50,548.32	0.80	50,548.32	0.80
Pension P/S	0.00	0.00	0.00	0.00
Dues and Subscriptions Exp	540.00	0.01	540.00	0.01
Depreciation Expense	4,400.00	0.07	4,400.00	0.07
Freight Expense	424.34	0.01	424.34	0.01
Gifts Expense	2,600.00	0.04	2,600.00	0.04
Income Tax Expense	1,332.00	0.02	1,332.00	0.02
Insurance Expense	26,668.34	0.42	26,668.34	0.42
Interest Expense	7,911.85	0.13	7,911.85	0.13
Laundry and Cleaning Exp	4,080.00	0.06	4,080.00	0.06
Legal and Professional Expense	27,151.75	0.43	27,151.75	0.43
Licenses Expense	0.00	0.00	0.00	0.00
Loss on NSF Checks	0.00	0.00	0.00	0.00
Maintenance Expense	3,756.63	0.06	3,756.63	0.06
Marketing and Sales Expense	7,254.47	0.12	7,254.47	0.12
Meals and Entertainment Exp	14,550.80	0.23	14,550.80	0.23
Moving and Relocation Expense	84.00	0.00	84.00	0.00
Payroll Tax Expense	110,284.27	1.75	110,284.27	1.75
Penalties and Fines Exp	459.00	0.01	459.00	0.01
Other Taxes	11,199.44	0.18	11,199.44	0.18
Office Expense	8,479.33	0.13	8,479.33	0.13
Postage Expense	778.65	0.01	778.65	0.01
Printing and Reproduction Exp	350.00	0.01	350.00	0.01
Professional Development Exp	0.00	0.00	0.00	0.00
Professional Salaries-Nonbilla	0.00	0.00	0.00	0.00

HA Design Group LLC
Income Statement
For the Twelve Months Ending December 31, 2015

	Current Month		Year to Date	
Professional Salaries-Billable	0.00	0.00	0.00	0.00
Software Expenses	4,678.74	0.07	4,678.74	0.07
Salaries Expense	55,753.92	0.89	55,753.92	0.89
Salaries Expense - Officers	81,172.98	1.29	81,172.98	1.29
Wages Expense	0.00	0.00	0.00	0.00
Repairs Expense	0.00	0.00	0.00	0.00
Research and Development Exp	0.00	0.00	0.00	0.00
Rent or Lease Expense	117,166.86	1.86	117,166.86	1.86
Security System Expense	341.93	0.01	341.93	0.01
Subcontractor Expense	174,168.62	2.77	174,168.62	2.77
Supplies Expense	70.00	0.00	70.00	0.00
Telephone Expense	15,745.09	0.25	15,745.09	0.25
Travel Expense	42,248.42	0.67	42,248.42	0.67
Utilities Expense	14,654.88	0.23	14,654.88	0.23
Proposals Expense	0.00	0.00	0.00	0.00
Other Expense	81.71	0.00	81.71	0.00
Sales Tax Paid	12.06	0.00	12.06	0.00
Purchase Disc-Expense Items	(290.30)	0.00	(290.30)	0.00
Non-Deductible Expense	0.00	0.00	0.00	0.00
Gain/Loss on Sale of Assets	0.00	0.00	0.00	0.00
Total Expenses	1,150,473.72	18.30	1,150,473.72	18.30
Net Income	$ 504,040.82	8.02	$ 504,040.82	8.02

HA Design Group LLC
Balance Sheet
December 31, 2015

	Current Year	
ASSETS		
Current Assets		
Petty Cash	$ 690.22	
Regular Checking Account	232,281.14	
Payroll Checking Account	901.43	
Savings Account	3,787.76	
Accounts Receivable	566,243.94	
Inventory	973,749.98	
Total Current Assets		1,777,654.47
Property and Equipment		
Furniture and Fixtures	25,374.47	
Equipment	17,691.80	
Leasehold Improvements	186,848.85	
Building Improvements	3,468.86	
Computer Equipment	88,271.30	
Accumulated Depreciation	(57,662.99)	
Total Property and Equipment		263,992.29
Other Assets		
Total Other Assets		0.00
Total Assets		$ 2,041,646.76
LIABILITIES AND CAPITAL		
Current Liabilities		
Accounts Payable	$ 155,681.99	
Total Current Liabilities		155,681.99
Long-Term Liabilities		
Notes Payable-Noncurrent	115,500.00	
Line of Credit	132,820.00	
Total Long-Term Liabilities		248,320.00
Total Liabilities		404,001.99
Capital		
Common Stock	30.00	
Retained Earnings	1,133,573.95	
Net Income	504,040.82	
Total Capital		1,637,644.77
Total Liabilities & Capital		$ 2,041,646.76

HA Design Group LLC
Balance Sheet
December 31, 2016

ASSETS

Current Assets		
Bank Of America New Account	$ 57,798.70	
Bank Of America Expens Account	583.47	
Savings Account	3,788.61	
Accounts Receivable	2,769,459.32	
Inventory	966,226.23	
Prepaid Taxes	(5,082.64)	
Total Current Assets		3,792,773.69
Property and Equipment		
Furniture and Fixtures	25,374.47	
Equipment	17,691.80	
Leasehold Improvements	186,848.85	
Building Improvements	3,468.86	
Computer Equipment	88,271.30	
Accumulated Depreciation	(62,462.99)	
Total Property and Equipment		259,192.29
Other Assets		
Total Other Assets		0.00
Total Assets		$ 4,051,965.98

LIABILITIES AND CAPITAL

Current Liabilities		
Accounts Payable	$ 1,527,378.40	
Amex Credit Card Payable	8,744.89	
Visa Credit Card Payable	(12,011.07)	
SLewis Payable	168,176.46	
401K Deductions Payable	88.76	
Federal Payroll Taxes Payable	1,571.88	
FUTA Tax Payable	(36.23)	
VA State Payroll Taxes Payable	1,935.20	
MD State payroll Taxes Payable	64.56	
DC State payroll Taxes Payable	(1.00)	
SUTA Payable	(132.90)	
DCUTA Payable	(626.61)	
Total Current Liabilities		1,695,152.34
Long-Term Liabilities		
Notes Payable-Noncurrent	152,136.36	
Line of Credit	109,251.34	
Total Long-Term Liabilities		261,387.70
Total Liabilities		1,956,540.04
Capital		
Common Stock	30.00	
Retained Earnings	1,174,178.33	
Net Income	921,217.61	
Total Capital		2,095,425.94

HA Design Group LLC
Balance Sheet
December 31, 2016

Total Liabilities & Capital	**$ 4,051,965.98**

1.6.1. Litigation Statement

No Legal Proceedings. HA Design Group LLC is not subject to any pending, or to its Knowledge, threatened, Legal Proceedings against or affecting it, its business, assets, or property, and to HA Design's knowledge there are no grounds on which any Legal Proceeding could be brought against or affecting it, its business, assets, or property, that could reasonably be expected to cause a Material Adverse Change to HA Design or otherwise materially inhibit its ability to perform its obligations under this agreement.

1.7 Company Division/Division Address, Identifying Codes, and Applicable Designations

HA Design Group LLC
6700 Springfield Center Dr. Suite J
Springfield, Virginia 22150
Phone: (703) 778-8760
Fax: (703) 778-8759

EIN: 54-2134218

DUNS# 14-254-1536

CAGE CODE: 3QFP8

Type of Business: LLC (Corporation)

State of Incorporation: Virginia

Date Incorporated: 15 December 2003

OWNERSHIP: Willy Halla – President/CEO

Contract Contact:
Steven Lewis
HA Design Group LLC
6700 Springfield Center Dr. St. J
Springfield, Va. 22150
Ph – 703-778-8760 x104
Fax – 703-778-8759

1.8 Relationships With The State

HA Design Group LLC is a registered Foreign LLC with the stat of Nebraska and is authorized to do business in the state.

Currently there are no previous contracts with the state of Nebraska.

1.9 Project Manning/Management Approach and Resumes

After years of experience with projects for major broadcasting clients that are similar in scope to the NETC requirements, HA Design Group has developed a set of time-tested project methods that it uses for its technical approach for broadcast projects. In this section HA Design Group outlines its business and technical capabilities with the resources to meet the specified requirements.

The HA Design Group implementation methodologies will incorporate the use of prevailing television broadcast industry standards for the PBS project. As performed in past HA Design Group projects with other clients, it is important that quality objectives are met and NETC remains informed throughout the performance of this project.

We are accustomed to our client technical team's sharing specific operational practices and project preferences during past collaborations and we look to be responsive to the wide range of technical, operational, and environmental issues associated with the NETC NMC Project.

It is HA Design Group's intent to use accepted industry engineering practices and technical approaches to accomplish the project requirements. We expect to coordinate closely with the NETC technical and management team during the project process in responding and developing optimum approved solution approaches. HA Design Group and staff team members have extensive relevant experience and have delivered a wide variety of technical project solutions over the years involving all aspects of radio and

television broadcast and multimedia systems involving design, acquisition, installation, commissioning, training, transition plans, documentation, and other broadcast integration project deliverables.

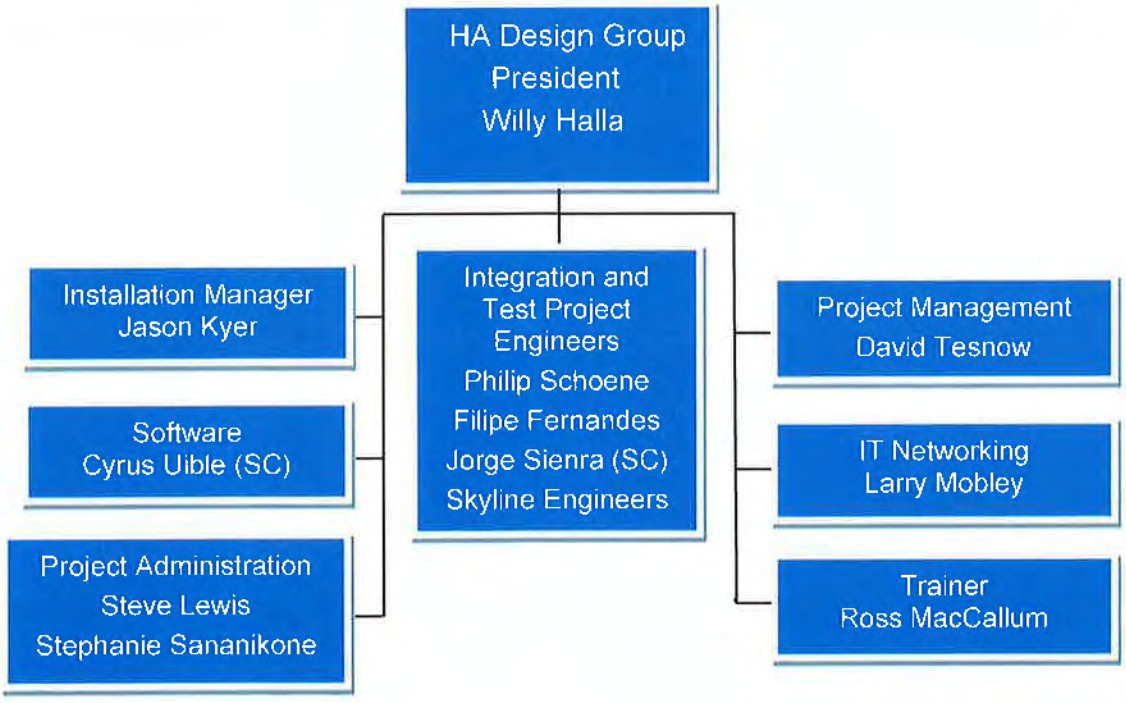
1.9.1. Management Approach

In this section HA Design Group discusses its management, organizational structure, processes, and methodologies to be applied to the PBS Project requirements and collaboration with the management team.

1.9.1.1. Project Management and Staffing Approach

From our substantial experience in the successful performance of broadcast projects requiring similar types of design, engineering, installation, and technical support services required for the NETC project, HA Design Group has found that careful planning, clear communication, and close coordination with the client team during the project process leads to project success.

1.9.2. HA Design Group Team Corporate Structure:



(SC) denote Skyline Communications

1.9.3. Key Elements to a Successful Design and Solution Effort

1.9.3.1. Professional Management Personnel

Due to the strategic importance of the long-term NETC relationship to HA Design Group, responsibility for the overall project management and supervision of the HA Design Group solution is delegated to David Tesnow who is a professional project manager. Other HA Design Group engineers and technical staff will be assisting in the PBS project efforts. The assignment of these management and other technical staff members will contribute significantly to the overall quality, efficiency and effectiveness of our efforts to perform within the approved schedule and deliver the NETC NMC Project.

1.9.3.2. Provide Adequate Properly Skilled Staff

The NETC Project will require a variety of highly technical skills to successfully manage, build, and support the integrated solution that is driven by the project team's technical requirements. To accommodate the requirements, HA Design Group is prepared to assign a combination of labor skill levels that ensures the availability of the proper personnel to meet the specific project requirements.

1.9.3.3. Quality Control for Integration and Management Services

Each and every project contract requires performance on a broad combination of concurrent technical and administrative tasks, each with specific needs that require adequate planning, coordination, and control to manage the many work activities associated with the client-driven project requirements. Past project experience with other large broadcasting companies has taught HA Design Group that to be successful, project quality, schedule, and cost must be proactively controlled.

The optimum quality result for the Project will, in part, result from HA Design Group's close coordination with the management and technical staff as well as from other suggested internal and external stakeholders. HA Design Group is fully prepared to document project developments as project progress develops as well as to coordinate with the entire team during the course of the Project.

1.9.3.4. Long-Term Satisfaction of Clients through Quality is the Goal

The significant measure of the success of any company is the quality of the product(s) and/or services that it provides to its customers. HA Design Group owes its success to the hard work of its personnel and remains focused on providing quality solutions, technical services, and post-sales support. Our sophisticated computerized engineering, acquisition, warehousing/inventory, project planning, and implementation systems all contribute to our high-quality offerings which involve all members of the project team, the administration of HA Design Group, and the customer as important stakeholders during the project process.

1.9.4. Preferred Technology Partner

HA Design Group works with many vendors in the industry, for the NETC NMC project we have chosen to work with Skyline Communications. They are a Broadcast Software vendor that has an end to end solution. We have been working with them since 2015 on various workflow products, and today I believe that they have achieved a strong solution.

1.9.5. Resumes

The following are the key person resumes for this project:

1.9.5.1. Willy Halla

Position: President, HA Design Group LLC

Duties: Responsible for the design, installation and management of video and audio systems; managing the Corporation.

Education: University of Oklahoma Engineering School
Rose State College

Licenses & Certifications: F.C.C. General Class Radiotelephone License
Certified Broadcast Professional Engineer

Professional Affiliations: SBE (Society of Broadcast Engineers)
SMPTE (Society of Motion Picture & Television Engineers)

Experience: Recent projects include:
*WHYY HD Upgrade
*PBS New NOC
* NPR NY
* WFUV
* MTN Sawa
* MTN (Alhurra)
* WTVI
* VOA IDAPS
* WorldSpace
* DTV Express
* Discovery Channel Latin America
* Georgia Public Broadcasting
* VOA
* Old Executive Office Building
* National Republican Congressional Committee
* AVS Post
* National Public Radio, Washington DC, and LA
* Atlantic Video

Willy Halla (continued)

Experience:

February 2004 - Present --- President/CEO HA Design Group LLC. Responsible for Engineering of video and audio systems for the Broadcast Industry.

January 1997 – Feb 2004 — Executive V/P, TGS, Inc.
Responsible for the design, installation and management of video and audio systems; managing the Engineering Department.

1991-January 1997 -- V/P Engineering, King Video Associates, Inc. Responsible for the project management and also design and installation of engineering projects.

1986-1991 -- Chief Engineer, Atlantic Video, Inc. Responsible for the management, design, installation, and maintenance of two AVI facilities that included 22 editing and post production video and audio suites as well as 4 studios.

1981-1986 -- Chief Engineer, Greenhouse Productions. Responsible for the design and maintenance of a mobile production unit.

1979-1981 -- Technician, ITT & Business Telephone Systems. System installation and customer support.

1973 – 1979 -- Technician, US Air Force, Communications Service of the USAF working for the Joint Chiefs of Staff.

1.9.5.2. David Tesnow

Position:	Program Manager, HA Design Group LLC
Duties:	Responsible for HA Design Group Project/Program Coordination and Management
Education:	Master of Business in Public Administration. Lewis University, Romeoville, Illinois Teacher Certification and Secondary Education Major. Findlay University, Findlay, Ohio Bachelor of Science in Chemistry. Bowling Green State University, Bowling Green, Ohio
Certifications:	Certified Government Meeting Professional (CGMP) - Society of Government Meeting Professionals Government Contract Officers Technical Representative Certification - Management Concepts Inc.
Experience:	Recent projects include: * FedEx Media Asset Management and Master Control Design * PBS Interconnect Version Six Test * PBS Disaster recovery, Diversity, and Maintenance Site (DDMS)-Lincoln NB * VOA NYC Studios * NPR Production Engineering HQ New Building * NPR PRSS HQ New Building, Wash DC. HA Design Group, LLC. 8/2012 to Present Program Manager; overall responsibility for project team coordination, client relations and communications, conducts client kick-off meetings, provides the MS Project Schedule with manning and cost loading, sets schedule for the weekly project management meetings, produces weekly/monthly status reports, sets up and conducted multiple design review meetings and IPRs, assists in the development of the equipment list, monitors the procurement of equipment , tracks the receipt of CFE equipment, monitors the receipt of procured equipment, conducts off-site and on-site equipment inventory confirmation, tracks the assembly and integration, manages the off-site and on-site integration schedule, manages re-packing and shipping procedures,

manages the development of training materials, reviews and presents documentation for client review and sign-off, tracks the production of the final drawing construction set, manages the completion of the Phase Three punch list completion, produces the "as installed" inventory and produces final facility/plant level acceptance documents for client review and sign-off.

Professional & Scientific Associates, Inc., Reston, VA. A ($50M/year in revenue) government contractor offering logistics, communications, branding and product development. 2005 to 2012 Project Director/Program Manager. Managed clients include: US Department of Health and Human Services; National Institutes of Health (NIH); Department of Defense and the National Science Foundation.

Supervised eight project program managers on budget, delivery and compliance for multiple and diverse projects averaging $17M in revenue annually over that last five years.

Developed, tracked and reported on programs in project management software applications.

Conducted client kick off meeting, scheduled and held in progress review meetings with client and staff.

Supervised multidisciplinary, diverse team of program managers, technical advisors and administrative staff.

Organized and lead collaborative sessions focused on new ideas and solutions to complex tasks.

Prepared and presented high level program and project status reports to Senior Executives.

Developed policies and procedures to implement new solutions to contract tasks.

Authored quality assurance plans and monitored compliance with government Quality Assurance Surveillance Plans.

Trained program managers on budget management, government contracting and risk assessment.

Oversaw logistics operations for material and equipment acquisitions, inventory and shipping and receiving.

Laurel International, LLC, Baltimore, MD

Laurel International small is a defense industry consulting firm with domestic and international clients.

As a Senior Analyst / Consultant, researched and conducted cost/benefit analysis on potential military intended material or equipment to determine viability for use by US Military. Created and presented progress reports to program officers at top US companies including Raytheon, Northrop Grumman, Battelle

Memorial Laboratory and foreign companies, i.e. FORIR (Belgium).

National Guard Association of the United States, Washington, DC. The Association represents its members before Congress and the US Government.

As the Industry Customer Relationship Manager

Responsible for membership and customer relationship within the US Defense Industry and the Department of Defense, Army and Air National Guard and state level commanders.

Planned and conducted in progress reviews of national issues with NGAUS lobbyists, National Guard members and Defense Industry Project Officers.

Developed educational programs to attract new Industry members, encourage and motivate the interaction between industry and the military.

Planned, designed and set up NGAUS exhibit at the National Convention and Industry Days.

United States Army

Commissioned Officer

Action officer served in the Pentagon on the Army Staff in a Three Star Office.

Coordinated actions for Flag Officers and Chiefs of Staff with Army and Air Staff

Prepared and presented situation reports

Retired as a Lieutenant Colonel.

1.9.5.3. Philip Schoene

Position:	Senior Design Engineer,
Duties:	Responsible for HA Design Group Engineering Design Solutions
Education:	**Virginia Tech:** Bachelor of Science in Electrical Engineering (BSEE). Emphasis on computer engineering, digital and VLSI circuit design. Graduate course in Alternative Energy Systems. **PBS University:** Adaptive Leadership, Managing at PBS, Management & the Law, Time Management, Preventing Harassment, Welcoming Diversity. **Other:** Cinegy Partner training, HP Routers and switches, Windows Server 2003, Active Directory and SQL Server courses
Certifications:	Member of the Society of Motion Picture and Television Engineers Member of the Society of Broadcast Engineers.
Professional Experience:	**Public Broadcasting Service (PBS),** Alexandria, Virginia **Media Systems Engineering Manager** **2017-April 2018** • Technical Team Leadership • Production System Design & Integration • Robust, Secure Systems **Senior Director,** Engineering & Technical Maintenance **2015- 2017** Lead the Engineering and Technical Maintenance groups for the PBS NOC, MOC, SOC and DDMS, the operational facilities for the distribution services of PBS. Develop and manage the $5M engineering department budget and 26 associates. • Direct the activities of the engineering managers and their teams, and activities of the Director of Facilities. • Ensure the effective operation of the PBS Satellite Operations Center and the management of the PBS Interconnection system. • Manage the operation of the PBS non-real time file delivery system which delivers up to 1000 hours of content each month to the Public Television stations. • Define and budget engineering projects, manage RFP writing and response evaluation, manage project contracting and execution.

- Manage relationships with stations accessing the PBS interconnection services, file delivery system, and PBS provided IRDs, encoders and modulators.
- Manage relationships with key NOC, SOC and MOC vendors.
- Represent PBS at the annual PBS TechCon through development and delivery of presentations and moderating of technical sessions.

Key Accomplishments:

- Continuous operation of the PBS non-real time file delivery system since 2014
- Harden cyber security posture for the PBS NOC and Media processing facilities through deployment of internal firewalls and aggressive access restrictions
- Lead design and implementation of master control and transmission facilities expansion to launch a third 24x7 PBS channel dedicated to Kids programming, on budget and ahead of schedule.
- Lead the final commissioning, issue resolution and on-air testing of the PBS DDMS, a remote facility capable of providing all PBS interconnection services for disaster recovery or maintenance purposes which impair the PBS NOC.

Director, NOC Technical Maintenance & Engineering
2012- 2015

Manage NOC Engineering and Technical Maintenance Groups

- Manage the activities of the engineering team consisting of professional engineers, systems administrators and draftsmen.
- Manage the operations and maintenance of the head end of the PBS Non-Real-Time file delivery system.

Key Accomplishments:

- Maintain service availability for PBS interconnection system well above target of 99.95% while supporting the major renovation of the PBS Technology Center. The renovation included replacing the backup generators, power distribution and ATS system, replacing all building HVAC and replacing the roof membrane and building skin.
- Manage the replacement of the MPEG2 encoding system with an MPEG4 encoding system including encoding systems at the PBS SOC, disaster recovery site, and four regional uplink sites. Project also included issue resolution for the deployment of 1600 IRDs to the PTV station community.

Senior Systems Engineer
2009- 2012

Subject Matter Expert for Omnibus automation system, Miranda PresMaster, I-Control monitoring & control, MassTech asset management, Volicon air loggers, and MPEG encoding system.

- Investigate critical system issues and manage resolution of issues with key PBS vendors and PBS technicians.
- Manage technical support of Ace Station systems including design and development services, problem solving, vendor management and oversight of training and routine maintenance.

Key Accomplishments:

- Lead product evaluation effort for replacement of PBS distribution encoding system. This effort included conducting functional testing of MPEG4 encoders, multiplexers, and IRDs, designing and implementing subjective viewer testing conforming to industry standard protocols, analytical evaluation of system throughput, and extensive project communication efforts.
- Stimulated the research, testing and installation for a series of upgrades to the 'New NOC Automation System' required before launching the system on-air and resulting in vital system reliability improvements since launch.
- Provided technical leadership for Ace Station Support hand off, including: envisioning, developing and delivering a series of live recorded webinars for the ACE station engineers, ad hoc one-on-one training to station personnel, identifying, gathering, and creating all necessary system support documentation and software for packaged station delivery.

Schoene Television Consulting, Falls Church, VA
1999- 2009

Project Manager and Consulting Engineer for broadcasters, production companies and production facilities.

- **Public Broadcasting Service:** ACE Systems support engineer. Analyze and correct all aspects of the automated master control systems at several PBS stations and provide technical support and guidance for the station engineers and operators. **National Geographic TV & Film**
- **NBC Television Stations Division (TVSD)**
- **News Hour with Jim Lehrer**
- **WETA Channel 26**.
- **Mobile Video Services**

ASTEC Engineering Corporation, Arlington, VA
1994- 1999

President and Co-owner

Principle operator of a business performing contract engineering in the television industry. Direct all personnel, legal and accounting activities of the business of five employees.

1.9.5.4. Filipe Fernandes

Position: Software Design Engineer

Duties: Software Development and support for broadcast software clients

Professional Affiliations: SBE (Society of Broadcast Engineers)

Education: George Mason University, May 2016 (cum Laude)

Experience: Recent projects include:

Broadcast Educational Media Commission (BEMC) Columbus OH
National Institutes of Health (NIH)
WOSU Columbus Ohio

Mr. Fernandes joined HA Design Group having graduated cum laude from George Mason University in May 2016. With a strong background in software and database development tools, he is performing engineering services on several of HA Design Group's broadcast solution projects including the National Institutes of Health's Television Operations Center and Ohio BEMC's PBS statewide IP broadcast platform.

The BEMC software system incorporates an updated Protracks BXF traffic system for scheduling the play out of 42 channels for eight Ohio-based PTV station's HD and SD digital programming. Filipe's efforts has refined the SNMP, database, and monitoring client solutions using tools from Grass Valley (iControl), JavaScript, C#, SQL, and other Microsoft system GUI/console applications.

1.9.5.5. Larry Mobley

Larry A. Mobley, CCIE # 9175, HP Master ASE, is one of the industry's best technical instructors. Mr. Mobley is an expert in BGP, MPLS VPNs, and IP Multicast. More importantly, he has mastered the art of presenting complex technical concepts in an understandable manner. With twenty years of experience providing technical instruction on networking concepts and protocols, Mr. Mobley consistently receives exceptional feedback from students.

Mr. Mobley has worked with HA Design Group in an IP/networking training/support role in recent projects and has presented to numerous large organizations, ISPs, and networking hardware vendors in 15 countries around the world.

Larry has been a certified Cisco Systems instructor since 1995 and earned the top-level technical certification, Certified Cisco Systems Engineer, in 2002. Mr. Mobley served as a lead instructor to train and certify the first set of HP instructors established in 2010 when HP first entered the US market with the A-series or Comware switches. As a lead HP instructor, Mr. Mobley taught Comware technology to HP instructors, developed courses and labs for the official HP Networking curriculum, and served as a consultant to HP for lab design, curriculum content, and certification assessment. Larry is the author of the HP course "BGP and MPLS Technologies".

Professional Instructor of Network Technology classes

Authorized Instructor for Cisco classes at the CCNP and CCIE level.

Course Developer and Instructor for A-series courses provided for Hewlett Packard personnel.

Used for Network Technology training provided to PBS Network staff involving full range of IP Network Technology instruction.

Overall Subject Matter Expert (SME)

CCIE #9175

CCSI # 95033

Expertise in BGP, Border Gateway Protocol

Expertise in MPLS, Multi-Protocol Label Switching

Expertise in MPLS Layer-3 and Layer-2 VPNs

Expertise in IP version 6

1.9.5.6. Ross MacCallum

Position: Broadcast Media Operation Consultant, HA Design Group LLC

Duties: Broadcast Programming & Operations Executive/staff Support

Education: The Pennsylvania State University
BA in Speech Communication with Honors
University of Manchester, England
Certificate in the British Media

Experience: 2009 to present
HA Design Group Springfield, VA
Professional broadcast training including presentation skills, show content planning, presentation techniques, and application training for Dalet and DaletPlus. Leads team of 5 broadcast trainers at VOA to enhance on-air programming and assist 45 language services with all facets of television programming. Part of training mission includes the consultation with clients and subsequent planning, document preparations, and delivery of training in a classroom setting as well as on an individual basis.

2002 to 2009: WJLA-TV, Washington, D.C. Sports Producer

1995 to 2002: NewsChannel 8/Washington, D.C.-Maryland-Virginia, Executive Sports Producer/Sports Anchor

1995: WTKR-TV, Norfolk, Virginia News Producer

1993 to 1995: WAVY-TV, Portsmouth, Virginia, News/Special Projects Producer

CORE BROADCAST MEDIA/OPERATIONS CAPABILITIES:

Leadership / Management
Able to generate ideas that evolve to viable programming
Writing for Air / Internet:
News and Sports
Excellent Line Producer
Both on-air and behind the scenes talent

BROADCAST MEDIA EXPERTISE:

Have produced both short and long form specials
Election Night Coverage (both production and on-air)
Numerous special projects
Developed and produced the Capital Golf Weekly show: a sponsor driven seasonal, weekly show that has maintained both revenue and viewership success for twelve years.

BROADCAST HONORS AND ACOMPLISHMENTS:

National Capitol Chesapeake Bay Region Emmy Award--
Outstanding Sports, 2005
National Sportscasters & Sportswriters Association--
Powerade Sports Story of the Year, 1999
National Local Cable Ace Awards--
Nominations, Best Sports Program, 1997 & 1998
H.R.B.M.P. Excel Awards--
Best Sports Feature, 1991 & 1992
National Association of Local Television Sportscasters
Diamond Awards-- Best Feature, 1988

1.9.5.7. Steve Lewis

Position: Project Administration, HA Design Group LLC

Duties: Responsible for the project contracts administration, communication of project information, and technical information deliverables.

Education: Lafayette College, BA Degree in Geology B.A.

University of San Francisco, Master of Business Administration (MBA) program

Experience: 2010 to Present - Director; HA Design Group LLC.

Responsibilities include development and management of commercial and federal government client relationships. Assist in the planning, coordinating and executing of client project activities.

Management of the client projects, contractual issues, documentation preparations, technical development activities, and overseeing ongoing customer service to achieve successful customer project deliverables.

2003 to 2010 - Business Manager; Innovative Technologies, Inc.

Responsibilities include development and managing federal government sales. Assist in the planning, coordinating and executing of business activities within the federal government. This included managing the client relationships, contractual issues, documenting activities, and overseeing ongoing customer service to achieve successful customer project deliverables.

1995 to 2003 - Director of Sales & Marketing; Communications Engineering, Inc. (CEI)

Developed, directed and delivered comprehensive sales and marketing efforts for CEI's engineer partners and business operation. The sales accomplishments included lead generation and prospecting, client relationship building, project development efforts, vendor relationship building and coordination, direct sales, and client project consultations. Reported to CEO/COO. Managed initial design consultations, pursued sales opportunities directly with commercial clients (PBS, WETA- TV, Discovery Channel,

CNN-Time Warner), government clients, (DoD, US Customs, HCFA, Naval Media Center) and other clients (AARP, Red Cross, Newseum). Customized solutions involved comprehensive digital television (DTV) technology vendor solutions for server/storage/archive systems (Grass Valley, Pinnacle Systems, Omneon, StorageTek, Sony), production and post-solutions (Sony, Thomson, Avid, Chyron), signal processing and routing systems (Grass Valley, Miranda, Leitch) and broadcast automation solutions (Harris, Avalon, Front Porch Digital).

1993 to 1995 - Account Representative; Silicon Graphics, Inc.

Developed and implemented sales and marketing efforts at large commercial and government accounts in the Washington DC area including Bell Atlantic (Verizon), Harris, The National Institutes of Health, and The National Cancer Institute. Directed internal and external resources to develop sales activities including product rollouts, close interactions with information systems (IT) personnel, executive visits to company headquarters, and participation in client demonstrations.

1988 to 1993 - National Account Executive Apple Computer Inc.

Managed selling and marketing efforts at Fortune 500 accounts in the Washington and Baltimore Region including Gannett/USA Today, Westinghouse Electric, GE Information Services, Bell Atlantic, MCI Telecommunications, Mitre Corp., and Marriott Corporation. Developed and implemented selling strategies to account's senior management, information systems organization and end user departments resulting in consistent sales acceptance with new usage areas and departments. Participated and involved customers in activities including national and local technology briefings and user group meetings. Developed and managed account technology exchanges and meetings with Apple senior management, product divisions, research and development, and national projects team.

1986 to 1988 - Electronic Publishing Representative; Xerox Corporation

Managed district sales and marketing efforts towards publishing opportunities (100K to $500K) at commercial and government accounts resulting in installations at aerospace and transportation clients. Also managed federal and state clients. Evaluated and marketed to a variety of system environments to sell integrated Xerox publishing and office system products.

1.10 SUBCONTRACTORS

On this project HA Design has brought on Skyline Communications, makers of the DataMiner software to be a partner in the HA Design Group Team. DataMiner is the most advanced end-to-end multi-vendor network management and Orchestration solution available for the broadcast, satellite, cable, telco and mobile industry. The platform offers a plethora of functions including unlimited web access, alarm monitoring, email and SMS notification, long-term trending, professional reporting, advanced automation, intelligent correlation and root cause analysis, service management, real-time SLA monitoring, user-definable key performance indicator dashboards, spectrum monitoring, mobile access, powerful CPE management, inventory and asset management, and much more. The DataMiner interface can manage your entire operational ecosystem, across any vendor and technology boundaries, results in a significant reduction of operational expenses and increased quality of service. This solution is integrated with over 5500 drivers to interface with devices and systems from more than 600 key industry suppliers. It enables end-to-end integration of the most complex technical ecosystems and is been deployed by customers around the world.

1.10.1. About SKYLINE COMMUNICATIONS

Skyline Communications is the global leading supplier of end-to-end multi-vendor network management and OSS software solutions for the industry. Its flagship DataMiner network management platform enables end-to-end integration of the most complex technical ecosystems. The company has offices in Belgium, Portugal, Singapore and the US, a permanent presence in Brazil, Colombia, France, Germany, India, Indonesia, Malaysia, Mexico, Philippines, Russia, and the UK, and a vast network of local partners around the world.

Founded in 1985, Skyline has decades of industry-specific NMS and OSS expertise. Not only Skyline's DataMiner platform has received various prestigious awards, but the company itself has also been awarded multiple times for innovation, growth and excellence.

1.10.2. SKYLINE COMMUNICATIONS Key Facts And Figures

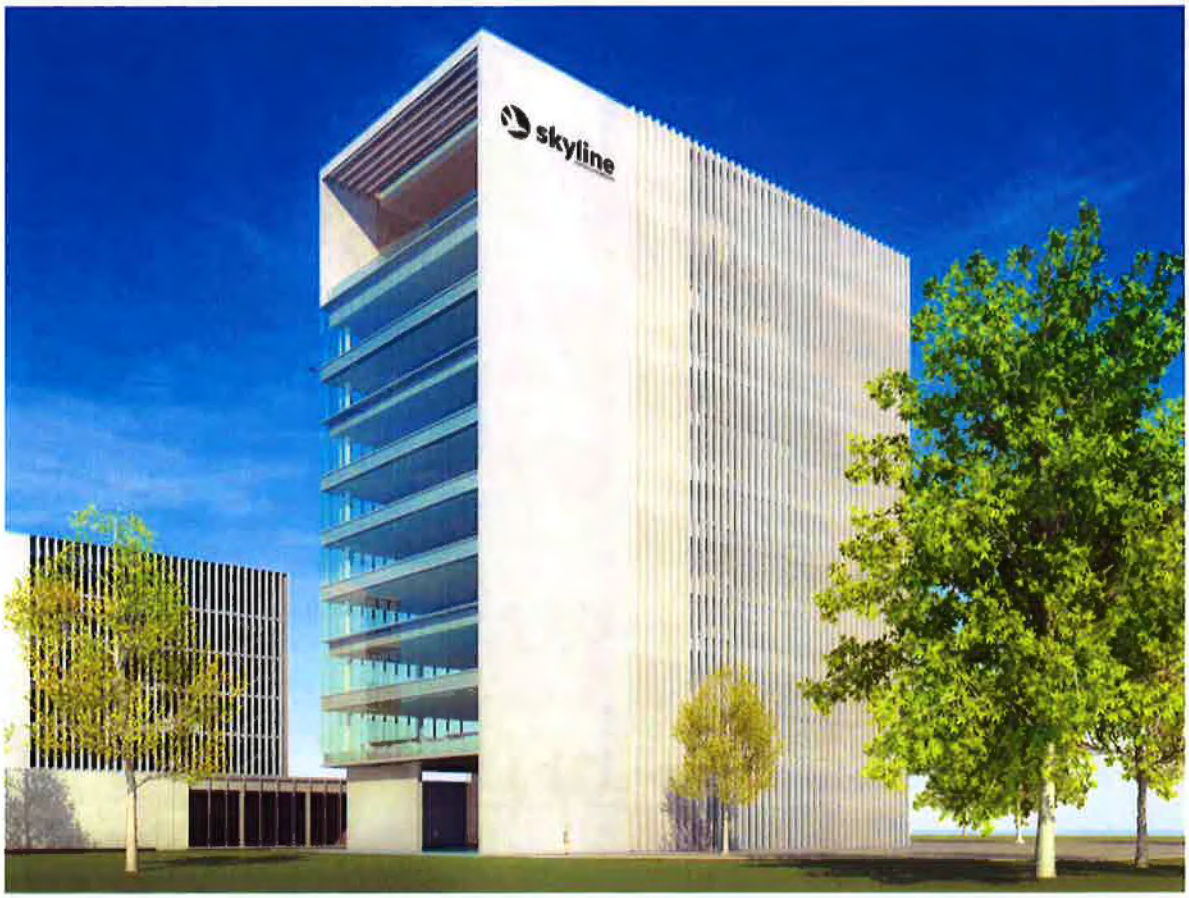
- 300+ employees
- 1000+ customers across all continents
- 125+ different countries
- 5500+ drivers for interfacing with devices and
- systems from more than 600 different vendors
- 6000+ systems deployed

Awards:

- Export Lion 2017 & 2012 by
- Flanders Investment & Trade
- Teleport Technology of
- the Year 2016 by WTA
- Technology Fast50
- 2016, 2015 & 2014 by Deloitte
- Top 50 Belgian Entrepreneurs 2013
- by De Tijd
- Most Promising Enterprise 2011 by Ernst & Young
- Best Network Management Solution
- Best Teleport Technology

Skyline Communications is very committed to its long-term technology leadership in the field of end-to-end multi-vendor network management and OSS for the HFC broadband, satellite,

broadcast, IPTV and mobile industry. That's why, from early 2017, the construction of a 50-meter-high, 12-story, state-of-the-art office tower, has started, next to its current offices. This new facility will provide Skyline Communications with the physical space required to support our continuous growth.



1.10.3. ABSTRACT

The HA Design Group Team including Skyline Communications would like to thank Nebraska Educational Telecommunications Commission for the opportunity to present an offer for the supply of a comprehensive and professional Network Management System using DataMiner and accompanying professional services, a solution that will surely comply with all requirements and expectations of Nebraska Educational Telecommunications Commission.

The HA Design Group Team will use DataMiner, an off-the-shelf solution, with a pronounced open architecture, which allows easy integration with all the aspects of the operational

environment and with other software applications (e.g. trouble ticketing solutions, external databases, file-based systems, etc.). Some unique conceptual features make HA Design Group Team's DataMiner also the most flexible and cost-efficient solution available in the industry, which can easily be scaled from smaller applications to corporate wide deployments.

DataMiner is built around 4 strategic pillars:

- operational processes

  Full integration and automation from a business perspective, including integration with inventory & asset management, ticketing, customer and service portals, billing, ordering, marketing, etc.

- Proactive Management

  Big data strategy, store-everything architecture, advanced analytics, artificial intelligence, self-learning software... providing unprecedented proactive insight in your operation.

- End to End Integration

  Unconditional and unconstrained integration of any product from any vendor, irrespective of the interface or protocol.

- orchestration and automation

  Transparent end-to-end cross-vendor and cross-technology automation, including profile management, service & resource management, driving your services.

In addition, DataMiner is also a complete solution including modules for real-time data interaction, trend analysis, professional alarm management in a multi-user environment, notification via e-mail and/or SMS, bubble-up & drill down graphical interface compatible with MS® Visio®, scheduling, automation, bi-directional SMS interfacing, rules and connectivity based alarm correlation, spectrum analysis interfacing, video thumbnail confidence monitoring, service-centric monitoring, SLA management, reporting including e-mail reporting, adapted GUI for intuitive and secured matrix management, KPI Dashboards, CPE Management etc.

The HA Design Group Team has been prepared our response with great care and can provide any additional information requested. Considering the complexity of the subject Network Management Systems in general, and the fast-evolving industry and hence requirements, The

HA Design Group Team is committed to work towards a strong continuing partnership with Nebraska Educational Telecommunications Commission, in which an ongoing dialog between both partners combined with our Team expertise and DataMiner technology will guarantee that Nebraska Educational Telecommunications Commission will have a fully reliable, state-of-the-art Network Management System for its operations, today and in the years to come.

Network Management System (NMS) and Operations Support Systems (OSS) solutions are our HA Design Group Team's core business and, as no other, we understand that we can only be successful if we assure that our customers are successful, and we achieve that by providing them with the means to drive down operational expenses, to improve business processes and to raise their technical standards in a continuous process of improvement.

SECTION 2 - TECHNICAL APPROACH

2.1 UNDERSTANDING OF THE PROJECT REQUIREMENTS

In this technical response to the RFP 5820 Z1 Network Management Control System, HA Design Group Team provides a complete discussion of our System Integration (SI), Project Management (PM) and overall technical project approach to meeting the identified requirements and information requests discussed in the RFP.

Our Technical Understanding of the Network Management Control System are well within HA Design Group Team's technical project solution capabilities. We will further describe our engineering background and technical approach to the identified requirements in this technical response document.

An organizational chart below shows the staffing that is available for the RFP 5820 Z1 Network Management Control System project.

HA Design Group Team created the SNMP network management software, based on iControl®, and developed custom user interface GUIs and software to monitor/ manage/ configure the broadcast functions and integration across dual PBS NOCs' (Alexandria, VA and Lincoln, Ne. systems and solution. To accommodate the RFP-identified requirements, HA Design Group Team is prepared to assign a combination of technical and project skills that ensures the availability of the proper personnel to meet the specific project requirements.

The requirements as laid out in the RFP doc, 21&26 Maxview Docs, and associated drawings shows what Maxview currently controls and the screen shots associated with them. It is HA Design's understanding that first priority is to replace the Maxview System. And then to have a system with enough capability to add the future requirements of providing an interface that can be unified to control most of the rest of the plant as detailed in the RFP.

The proposed HA Design Group Team solution is based on Skyline's DataMiner, the ultimate end-to-end multi-vendor network management, orchestration and OSS fabric for your entire operation. HA Design Group Team's DataMiner system (DMS) offers a very advanced end-to-end multi-vendor network management software platform available for the broadcast, satellite, cable, telco and mobile industry. The platform enables its operators and users to integrate their entire operational eco-system end-to-end, across any vendor and technology boundaries. One interface to manage the entire operation results in a significant reduction of operational

expenses and an increased quality of service. The core of the system is a cutting-edge multi-vendor protocol engine, enabling integration of any device or system from any vendor, regardless of its interface or protocol. The flexibility and the scalability of DataMiner will allow Nebraska Educational Telecommunications Commission to cover all its requirements regarding professional and future-proof network management.

The Implementation has been divided into parts;

The main NETC and 9 Transmitter Sites
Ancillary Television and Radio Satellite Teleport Control Points
Ancillary Television and Radio Building Facilities Controls
Television and Radio Terminal Equipment and Production Matrix Routers
Television and Radio Master Control, Production Studios and Remote Systems
Television and Radio Web Services and IT Networking Systems
NETC Government Services Audio-Video Systems

2.1.1. Dataminer Introduction

The system chosen is the Dataminer system, it is highly extensible and robust.

DataMiner is an off-the-shelf solution with a pronounced open architecture, such that it can easily be integrated with all the aspects of the operational environment and with other software applications (e.g. trouble ticketing solutions, external databases, file-based systems, etc.). Some unique conceptual features make DataMiner also the most flexible and cost-efficient solution available in the industry, which can easily be scaled from smaller applications to corporate wide deployments.

DataMiner is also a very complete solution including modules for real-time data interaction, trend analysis, professional alarm management in a multi-user environment, notification via e-mail and/or SMS, bubble-up & drill down graphical interface compatible with MS® Visio®, scheduling, automation, bi-directional SMS interfacing, rules and connectivity based alarm correlation, spectrum analysis interfacing, video thumbnail confidence monitoring, service-centric monitoring, SLA management, reporting including e-mail reporting, adapted GUI for intuitive and secured matrix management, KPI Dashboards, CPE Management etc.

2.1.1.1. Dataminer Advantages

We will summarize some of the main advantages offered by DataMiner solutions:

• STANDARD OFF-THE-SHELF SOLUTION: HA Design Group Team's offering is based on the standard off-the-shelf DataMiner solution and doesn't include any bespoke software development.

• AWARD-WINNING: DataMiner was awarded by a global independent jury of industry experts the 'Best Network Management Solution of the Year'. In 2011 among many other awards throughout the years.

• VENDOR INDEPENDENT: Skyline Communications, the parent company of Dataminer software, is a vendor independent supplier and is no supplier of other industry technology nor does it have exclusive ties with equipment vendors, guaranteeing that DataMiner can easily be integrated with any product from any vendor, today and in the future.

• PROVEN TECHNOLOGY: The standard off-the-shelf DataMiner solution has been selected and deployed by renowned corporations such as BT (British Telecom), Deutsche Telekom, Etisalat, Eutelsat, GlobeCast, Liberty Global, Ooredoo, PT (Portugal Telecom), Vodafone and many more. This illustrates the leading position of the solution and its flexibility to be deployed for a plethora of different network management applications.

• INDUSTRY STANDARD HARDWARE: DataMiner is a powerful software solution which runs in combination with industry standard hardware, readily available from different vendors. By avoiding specialized hardware, operators will be able to drive down the cost of ownership (lower cost per unit because of the wide availability, lower cost for spare or replacement parts, etc.) and will remain also vendor independent in terms of hardware components, today and in the future.

• INDUSTRY STANDARD INTERFACES: DataMiner has a pronounced open architecture and uses industry standards such as SNMP and ASCII sockets to the maximum extend. This guarantees that DataMiner, today or tomorrow, can easily be integrated with other third-party software applications to further enhance the operations.

• MULTI-VENDOR: DataMiner is the only true multi-vendor solution in the industry and can be integrated with any device from any vendor, irrespective if that device has a standard or proprietary interface. Today more than 5000 different devices from more than 600 different vendors have already been integrated and new drivers are added on a weekly basis.

• OPEN DRIVER FORMAT: all drivers in a DataMiner System are designed in an open XML format and hence anybody can create new drivers or modify existing drivers. This guarantees that the users are completely independent from Skyline Communications as technology supplier and if it deems necessary it can interface the platform with any new device, including proprietary devices or systems.

• ACCESSIBLE: because of its open policy for client interfacing and its powerful web-based user interface, DataMiner is one of the most accessible solutions in the industry. This way

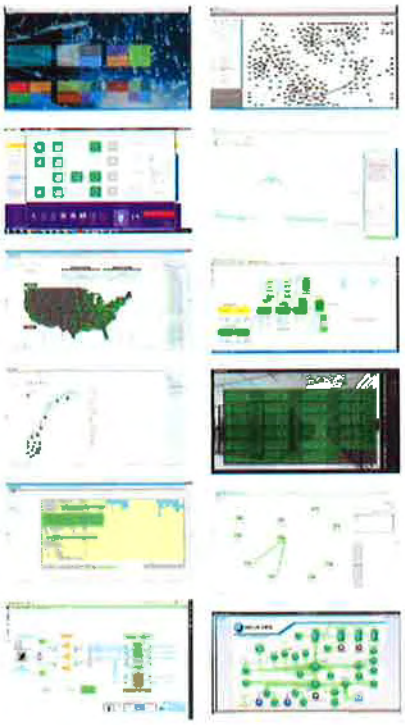
operators can rest assured that the platform can be accessed from any location, at any time considered necessary.

▪ SCALABLE: because of its unique distributed intelligence architecture, DataMiner can be deployed in small configurations up to large corporate configurations, with no compromises in terms of performance and storage capacity. The distributed architecture provides also the ultimate flexibility and allows operators to choose between a centralized, regionalized or distributed architecture. Today, the largest DataMiner Systems literally spans around the globe and manage several millions of devices. At the heart of this technology is the Casandra database which is highly extensible and used by the likes as Amazon and Google.

▪ PROACTIVE MAINTENANCE & SUPPORT: A DataMiner system comes default with a set of features and capabilities which increase the availability and which enable pro-active maintenance & support. This includes for example: Automatic & user-definable reboot procedure, Generic watch dog strategy, Automatic collection and e-mail forward of fault & logging information, Automated back-up, Scheduled e-mail health reporting, Self-maintaining database with user-definable settings, etc.

2.1.1.2. Controlling The Operation

DataMiner can control the entire operation in a single pane of glass

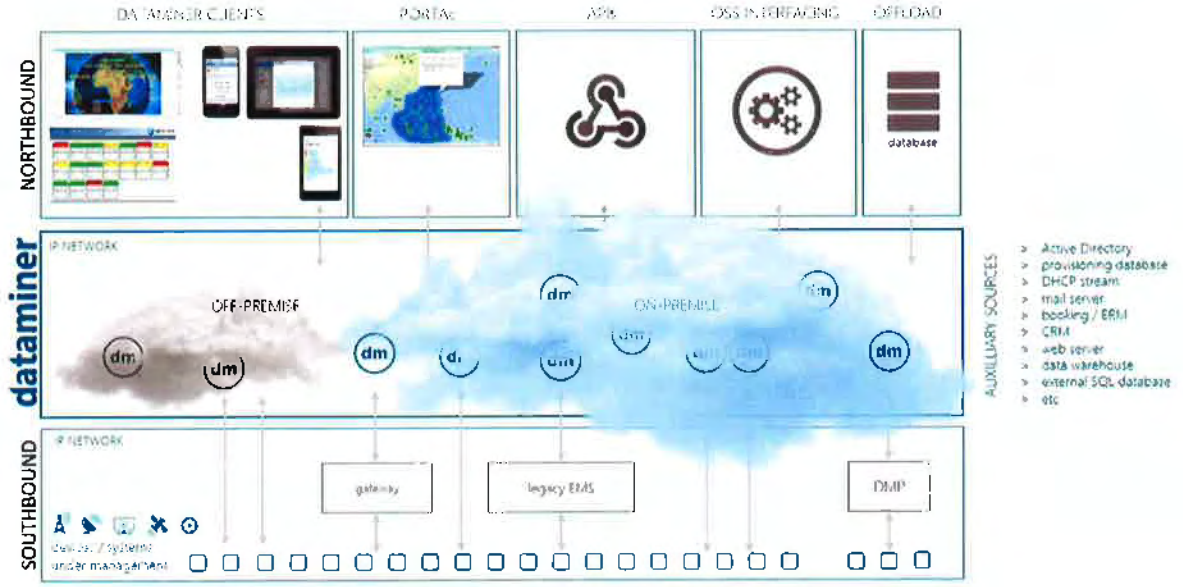


- multi-screen video headend (legacy and cloud) & OTT multi-screen platforms
- media & broadcast data centers
- ad-insertion monitoring, from planning to execution
- VOD platform asset management including QC verification & file flow management • broadcast SNG, contribution & exchange
- master control room, studio and playout
- IP MPLS, SDH, CDN network
- DTT (DVB-T2 / ISDB-T / ATSC)
- enterprise / B-2-B service platforms
- satellite earth stations for video, SCPC/MCPC and VSAT
- satellite mobility, broadband, IP trunking & mobile backhaul
- IT network infrastructure and data centers

One of the main objectives of an NMS/OSS platform is to strip down the complexity of having multiple isolated operation silos and enable all stakeholders' end-to-end visibility:

2.1.2. INTRODUCTION TO THE DATAMINER NMS SOLUTION

DataMiner system (DMS) offers a very advanced end-to-end multi-vendor network management software platform available for the broadcast, satellite, cable, telco and mobile industry. The platform enables its operators and users to integrate their entire operational eco-system end-to-end, across any vendor and technology boundaries. One interface to manage the entire operation results in a significant reduction of operational expenses and an increased quality of service. The core of the system is a cutting-edge multi-vendor protocol engine, enabling integration of any device or system from any vendor, regardless of its interface or protocol.



2.1.2.1. DataMiner System Architecture

As said, DataMiner is already integrated with more than 5500 products from more than 600 industry suppliers, this means that whatever products you have today, or will be deploying in the future, you can rest assured that DataMiner will manage all of it more efficiently than ever before from one single consolidated platform.

While DataMiner is a proven and widely deployed standard-off-the-shelf platform, it features a highly pronounced open architecture. That is exactly the unrivalled signature of DataMiner: the unique combination of an off-the-shelf solution, that offers you the full freedom to get it tightly integrated with your own operational ecosystem.

2.1.2.2. Conceptual overview of a DataMiner System

Typical for this type of projects, DataMiner will be interfacing with all kinds of devices and applications from different brands, no matter the protocol of the interface, from contribution till distribution if needed. Basically, DataMiner interfaces with 3 categories of devices:

- First there are the network devices itself. DataMiner is really capable of talking to any active component from any vendor; data network equipment (like routers), pc workstations, audio mixers, encoders, decoders, video processors, Glue etc. With 'system' is meant that DataMiner also interfaces with any 3rd party application like ScheduAll and vendor specific Element Management Systems (EMS) that might be used.

- Secondly, there is also equipment with test and measurement purposes, like all kinds of analyzers. This kind of equipment becomes more and more important, because it measures the real service for the end-customer.

- And last but not least, because often used, DataMiner also interfaces with all kinds of environmental probes in order to interact with temperatures, rainfall (heavy rainfall having impact on satellite signals), wind but also with access control systems, UPS's, air conditioning systems etc. By doing so, DataMiner provides comprehensive and professional management, via collecting data from numerous devices and applications distributed across the network and aggregating all data to create an intuitive service perspective on the operations.

The complete ecosystem can be intuitively managed through the DataMiner web client and includes powerful MS® Visio® compliant graphical presentations (including real-time alarm color coding, display of key performance information such as link bandwidth etc.), multi-user alarm management (including filtering, sorting, exporting, masking, commenting, root-cause-analysis), tree navigation, element and resource lists and much more.

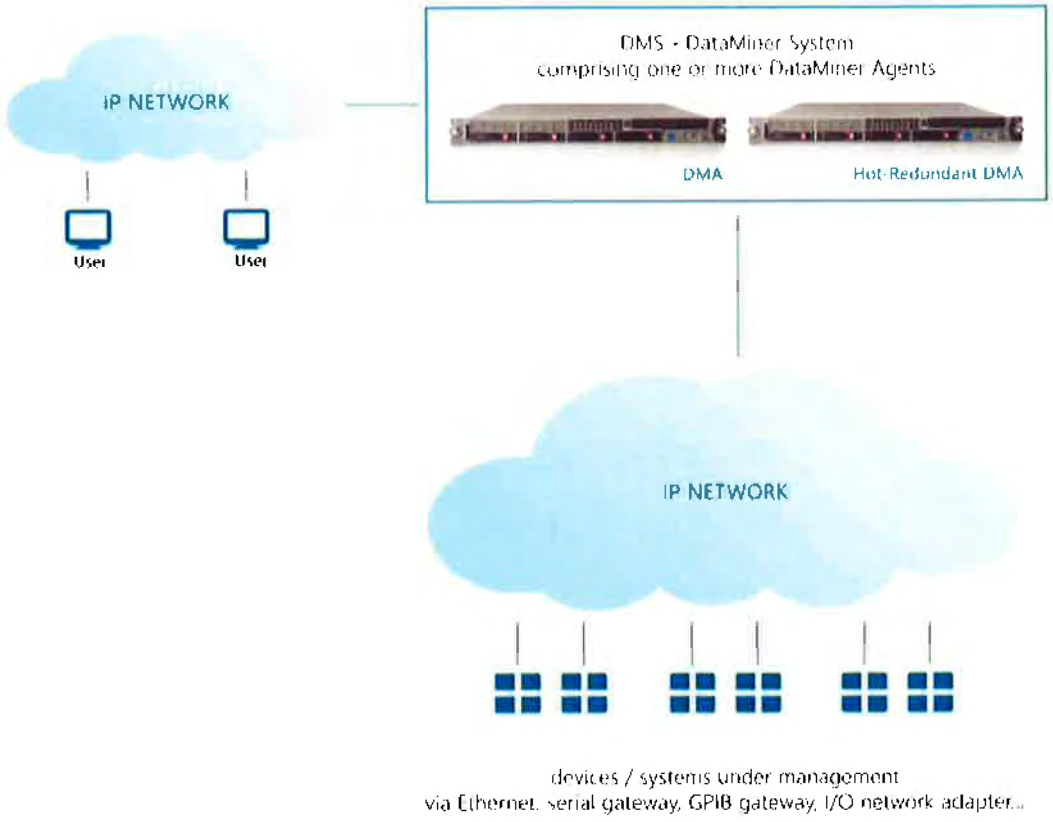
In short, DataMiner offers endless possibilities to provide state-of-the-art and end-to-end network management of Nebraska Educational Telecommunications Commission's technology infrastructure exactly the way the customer wants, from one single screen, resulting in very tangible operational benefits:

- A very unique general experience with the implementation of this type of solutions. This is what we do, this is our business and as no other we understand what it takes to implement and deploy this type of solutions.

- Very specific experience with the implementation of the DataMiner product. The solution has been developed by HA Design Group Team from the ground up and has been implemented throughout the cable, IPTV, satellite and broadcast industry. So, we

know the solution that we offer to Nebraska Educational Telecommunications Commission inside out and we have extensive experience implementing it in the most complex operational environments.

- Total control of the solution as opposed to general purpose solutions from very large corporations, implemented by general purpose system integrators. We can guarantee Nebraska Educational Telecommunications Commission that we can react promptly to possible system issues and to new emerging requirements over the years to come and where necessary we can adjust our development roadmap in a close partnership with Nebraska Educational Telecommunications Commission. In a nutshell, we know what advanced multi-vendor network management in this industry is about, this is what we do every day, we know the product that we offer inside out and we have extensive experience with the implementation of this specific product and we own and control this solution.



2.1.2.3. Configurability

Thanks to DataMiner's wealth of features (being part of the standard core software) and supplementary modules the system can be expanded over time in a virtually unlimited way, both in terms of functionality and in size of the network, thanks to DataMiner's open architecture and industry standard interfaces.

From an architectural point of view, DataMiner can be deployed in different ways, being centralized, regionalized or fully distributed. In your system we are starting with centralized.

A customer solution with DataMiner is typically very transparent and fairly simple and straightforward and basically embodies the deployment of:

- One or more DataMiner core components (Agents): A DataMiner System (DMS) can consist of just one single so-called DataMiner Agent (DMA) or multiple DMA's connected together into an IP-cluster. The number of DMA's depends on both the required capacity and the optimal system architecture.

- A number of DataMiner Drivers: A Driver enables DataMiner to communicate with a specific type of device or application. The number of drivers that is needed corresponds to the number of device-types and application-types, DataMiner shall interface with. One driver is needed per TYPE of device and application, no matter how many of these devices and applications there are in the network.

- One or more supplementary modules (optional, i.e. according to the requirements of the customer), extending the standard functionality and set of features with very specific functionality, like DataMiner Redundancy (hot and/or cold fail-over), DataMiner OSS/BSS Inventory and Asset Manager Gateway, DataMiner Service and Resource Manager, DataMiner CPE Manager, etc. From a high-level perspective, three principal layers can be distinguished in the solution:

- Data Acquisition: Through DataMiner's multi-protocol engine and multitude of data collection techniques, DataMiner is gathering real-time information from all devices and applications in the network. For this a DataMiner driver is needed per type of device. Drivers are at runtime adaptable and have the open XML format.

- The acquired data is then to be processed in order to create added value for the customer. That is where DataMiner engines like automation, correlation, reporting, dashboarding, alarming etc. come into play. DataMiner disposes of a wealth of features allowing a customer to fulfil any requirement in terms of monitoring and control. A nice example is the possibility to execute redundancy switching in any n+m configuration, based on easily customizable parameters and automation scripts. - Finally, the third layer is the data presentation. DataMiner provides an intuitive multi-user UI, containing a

consolidated overview of all managed assets through unlimited web-based access. Any view is compatible with MS Visio and hence fully customizable.

More details on the above, including examples, are given in the following chapters of this document.

2.1.3. DATAMINER SYSTEM REQUIREMENTS

2.1.3.1. Hardware

The DataMiner multi-vendor network management platform is a powerful software solution that runs on industry standard hardware or virtual machines, readily available from different vendors.

By avoiding specialized hardware, operators are able to:

- Reduce the cost of ownership. There is a lower cost per unit because of the wide availability, a lower cost for spare or replacement parts, etc.
- Remain vendor-independent in terms of hardware components, today and in the future.

Although small standalone and/or trial installations can run on a desktop server, DataMiner server software will typically be deployed on 1U 19" rack mounted or blade servers. Depending on the edition of the DataMiner software, server hardware has to comply with the following minimum requirements:

Hardware DataMiner Professional Edition DataMiner Enterprise Edition

- Processor
- One CPU Intel Core i5/i7, Xeon or similar Passmark CPU mark: >5000
- One CPU Intel Xeon or similar PassMark CPU mark: >10000
- Memory 16 GB (min. 8 GB). 32 GB (min. 16 GB)
- Hard disk
- 500 GB SATA (min. 250 GB) (*) We recommend to locate an intensively used Cassandra database on a separate disk.

Network Dual Ethernet interfaces recommended Dual Ethernet interfaces recommended Power supply Single, or Redundant (hot-pluggable) Redundant (hot-pluggable) recommended

2.1.3.2. Virtual Servers

While DataMiner software can be run on a virtual server as long as it has sufficient resources available (CPU, memory, hard disk space and throughput, etc.), as indicated in the above minimum requirements. In the NETC installation and with the use of the Cassandra DB we will be using a multi node system.

2.1.4. SOFTWARE

2.1.4.1. Operating System

DataMiner Edition Supported operating systems DataMiner Professional Edition Windows 7/8/10 Professional, or Windows Server 2008/2012/2016 Standard Edition DataMiner Enterprise Edition Windows Server 2008/2012/2016 Standard Edition DataMiner CPE Edition Windows Server 2008/2012/2016 Standard Edition

2.1.5. DATAMINER – FUNCTIONALITY SET

This chapter elaborates on DataMiner's most important features and capabilities. The following paragraphs show the features in DataMiner, as well as optional features, that may or may not be part of the quotation, based on the requirements of Nebraska Educational Telecommunications Commission.

2.1.5.1. Multi-Vendor Technology

DataMiner is the only true multi-vendor solution in the industry and can be integrated with any device from any vendor, irrespective if that device has a standard or proprietary interface. Today more than 5000 different devices from more than 600 different vendors have already been integrated and new drivers are added on a weekly basis. In fact, HA Design Group Team delivers the DataMiner platform with the guarantee that it can be interfaced with any device or system from any possible vendor, irrespective the interface required, today and in the future. One platform enabling you to manage your entire operational systems, whatever devices and systems you have today or will be buying in the future.

Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor specific protocols.

2.1.5.2. High Availability Architecture

The DataMiner solution, because of its unique distributed intelligence architecture, offers operators a unique opportunity to deploy the optimal solution for its individual requirements, whether that is centralized, regionalized or fully distributed.

In the NETC system we are proposing a redundant centralized system, with new layer 3 IP managed switches which will enhance the connectivity between sites. Along with that we are proposing the Burk remote site systems that also allow for a dialup connection should all else fail, thereby giving NETC a fully redundant system with backup paths.

3.2 DataMiner Distributed Intelligence Architecture against failures and bottlenecks

Due to its Distributed Intelligence Architecture, DataMiner protects against failures and bottlenecks as well as allowing scalability to offer a solution for 10, 20 or 30 devices up to large corporate configurations, without compromises in terms of performance and storage capacity.

Also, the upscaling, i.e. starting with a small system and growing to a bigger one, is something that has been given some thought and can be done at run-time. This results in an increased uptime. Note that this scalability is reflected in DataMiner's licensing structure.

Due to its architecture, DataMiner is extremely resilient to all types of failures, also because this architecture has no single point of failure.

Noteworthy is the fact that a DataMiner Agent can at run-time be added to an existing DataMiner System, without interrupting or affecting the on-going operations.

2.1.5.3. Compliance with Industry Standards

DataMiner is an off-the-shelf solution with a very pronounced open architecture and industry standard interfaces. This makes it possible to take the standard DataMiner software platform and to put it into any potential company and integrate it entirely into their environment, talking to the devices and the applications of that network environment.

Obviously, the core platform is developed by Skyline Communications, but everything related to the integration of that platform with the operational environment for a specific customer is based on open technology. And the philosophy of HA Design Group and Skyline has been and will continue to be that "anything that WE can do, as technology companies, is something that a customer – must be capable of doing as well". This means that there must be nothing proprietary about DataMiner.

As a result, Nebraska Educational Telecommunications Commission can rest assured that it will have extensive opportunities with DataMiner to build internal expertise and to continuously extend, modify and fine-tune the DataMiner configuration, in order to enhance and optimize the Monitoring and Control aspects of the network. And of course, at any time, you can call upon the expertise of the HA Design Group and Skyline's DataMiner Application Engineering team.

A first example is that DataMiner typically runs on an industry standard 1U 19" rack-mounted server or on a single blade of a blade server. A DataMiner Agent contains all functionalities and capabilities and essentially constitutes a fully operational DataMiner platform.

Other examples are:

- All drivers are in open XML format
- UI compatible with MS® Visio®
- Automation scripting supporting JScript and C#.

Drivers in open XML format

As mentioned elsewhere in this document, DataMiner drivers are designed in an open XML format, such that any party can create drivers or modify existing drivers (including Nebraska Educational Telecommunications Commission). New drivers, or new versions of existing drivers, can be uploaded and added to the system at run-time, i.e. without interrupting the on-going operations. Multiple versions of a single driver can co-exist in the same operational system. When a new driver is added to an operational system, a single device can be transferred to start using that new driver and once the new driver is qualified then a single click of a button ('Set as Production') is sufficient to merge all devices that use the driver to the new version. Note that new drivers are added on weekly basis and are typically created on demand of the existing customers. Currently Skyline Communications has more than 5000 drivers to interface with devices and systems of more than 600 different vendors.

For the driver development process as the drivers are designed in an open XML format they can be designed and edited with any standard XML editor. It should also be noted that the DataMiner XML drivers can also contain C# code, such that when certain data manipulations are not possible with the standard DataMiner XML drivers, the user can escape into a C# routine unleashing unlimited possibilities and optionally even call upon the features and capabilities contained in external / third party dll's. C# routines embedded in DataMiner XML drivers are run-time compiled and processed by the DataMiner System (after all DataMiner drivers can be loaded and updated at run-time in an operational DataMiner System, without any interruption in the ongoing operations).

But the development of the drivers can be also done through our dedicated development kit, the so called DataMiner Integration Studio (DIS) that facilitates the driver development, testing and deployment process. This full-blown professional environment enables anybody to tap into the unlimited capabilities of the most powerful multi-vendor protocol engine ever available in the industry. And, to develop, test and deploy interface drivers for any product or system from any vendor in no time, irrespective of the interface protocol required. Packed with features such as intuitive navigation, intelligent code completion, code snippets, SNMP MIB conversion, automated quality assurance validation and much more, the DataMiner Integration Studio is the key to the ultimate operational freedom.

2.1.5.4. DataMiner XML Driver

DATAMINER INTEGRATION STUDIO (DIS)

DataMiner Integration Studio (DIS) makes creating, updating, troubleshooting and publishing DataMiner Drivers easier and more efficient than ever before.

DataMiner Integration Studio

DataMiner Integration Studio is a powerful professional plug-in for MS Visual Studio, facilitating the development of interface drivers for DataMiner and allowing to integrate any product from any vendor, irrespective of the interface required, leveraging the standard features and capabilities of MS Visual Studio.

DataMiner Integration Studio offers a wealth of features and capabilities, including:

✓ driver loading & retrieving
✓ navigation
✓ driver editing
✓ data display editor
✓ table editor
✓ MIB browser & import
✓ C# injection & code step-through
✓ QA validator

Using extensive libraries with premade code snippets, DIS users can create drivers that can be published on a DataMiner System with a click of a button. While DataMiner is already integrated with many thousands of devices, now with DIS, the integration of any product from any vendor, regardless of interface or protocol required, is even further facilitated.

2.1.5.5. Accessibility – Professional Security

Accessibility is another important asset of DataMiner. Because of its powerful web-based user interface, providing unlimited and simultaneous user access without client-based licensing,

DataMiner is one of the most accessible solutions in the industry. This way the customer and any stake holders can rest assured that the platform can be accessed at any time and from any location, regardless the number of concurrent users.

DataMiner's advanced professional security model, enables roles-based and domain-based management.

DataMiner Security features full LDAP integration, facilitating the provisioning and management of users and groups. Any user activity is stored in the DataMiner Security Audit trail, which can be easily consulted via the DataMiner Cube client UI.

Access to the DataMiner Network Management System environment is based on three principal concepts:

- DMS Rights: determine what parts of the DataMiner System and what actions in the DataMiner System the user has access to.
- DMS Views: the administrator can create in the DataMiner System any number of user-defined views, which is a collection of elements (e.g. a view called Region X which includes all the devices of that region, a view called ACU which includes all ACU devices from different sites, etc.).
- DMS Access Levels: allow the administrator to determine to what extent a user can control a device, provided that he has been assigned access to that device.

Note also that based on the above three concepts, the administrator can design an unlimited set of profiles (i.e. DataMiner does not limit the administrator to the use of a limited set of pre-defined user profiles).

2.1.5.6. Dataminer Visual Overview (User Interface)

From a user-perspective, DataMiner provides all the means to ensure that everybody can easily an intuitively access information contained in the DataMiner platform, whenever needed. This is end-to-end, ranging from the NMS/OSS professionals working at a NOC or MCR for example, across all other people in the organization who may have a wide range of other responsibilities, all the way even to external partners of the organization.

End-to-end visibility

DataMiner provides three principal access tiers, designed for different target users:

1) DataMiner Cube, is the full-fledged and fully featured principal DataMiner client application, designed for the NMS/OSS professionals, who's primary responsibility is to manage and run the operation of the organization (e.g. NOC operators, MCR staff, Engineering, Operators, etc.). Amongst advanced operational management capabilities & functions designed to manage complex operations intuitively and easily end-to-end, DataMiner Cube also provides all the administrative functions required to set-up, configure and maintain the DataMiner System itself.

2) DataMiner Cube Mobile, is a light-weight HMTL5 client user interface, which is designed for people within the same organization whose primary responsibility is not necessarily NMS/OSS related, but who can largely benefit from being able to access the wealth of data contained in an end-to-end DataMiner System (e.g. field engineering, system engineering, finance, maintenance, help desk, management, etc.). DataMiner Cube Mobile provides access to DataMiner from different angles, such as remote monitoring & control, dashboard perspective and a ticket perspective. DataMiner Cube Mobile is designed to be used on desktops, tablets and mobile platforms, across different operating systems.

3) DataMiner Cloud Platform, is an on-line cloud platform to support and facilitate the management of your end-to-end operation, offering innovative fully-integrated added-value services to support your day-to-day operations.

2.1.5.7. Dataminer Cube

As one of the crown jewels of the DataMiner platform, DataMiner Cube enables operators to graphically represent their entire operational ecosystem, end-to-end across any vendor and technology boundaries, in an unprecedented fully immersive and interactive graphical way. Whether you need to show a system block diagram, switch to rack views, check and manage complete service flows, control individual devices, or provide an instant system-wide overview, it is all right there at your fingertips.

DataMiner Cube is the cutting-edge user interface for the DataMiner end-to-end multi-vendor network management platform. DataMiner Cube, conceived as a state-of-the-art user-centric application, has redefined the way operators can interact with the most complex environments.

DataMiner provides one of the most comprehensive and most powerful and fully user-definable UIs for displaying of mimic diagrams, which are compatible with MS® Visio®, such that operators can leverage existing MS® Visio® drawings and the power of MS® Visio® to create appealing and fully customized graphical presentations of the operational ecosystem managed by DataMiner. Any part of the customer's network can graphically be presented exactly in a way that fits the customer's needs, on any level of the network and completed with any requested real-time data.

DataMiner Cube features amongst other:

- Full compatibility with MS® Visio®, enabling any graphical presentation (rack views, hardware layout, service flow diagrams, etc.)
- Real-time alarm color coding for devices and parameters
- Display of real-time key performance indicators
- Rotating or hiding objects based on user-defined conditions

• Buttons linked to powerful automation scripts to trigger procedures (e.g. redundancy switching)

• Bar, pie and line charts showing key data in real-time

• Easy bubble-up and drill-down navigation

3.10 Navigation with embedded links in the Visio drawing allowing for easy drill down

• Use of multiple tab pages to display the systems from different perspectives

• Dynamic population of managed objects

• Same visual overview graphics serve as components to create dashboards, e-mail/pdf reports and online customer portals

• Automatic device connection display

• Easy modification of graphics with MS® Visio®

• Live updates of graphics in an operational environment

• Possibility to display across multiple screens: o within one single screen o multiple screens inside DataMiner Cube o multiple external screens using the undock-feature

• Fully integrated with OSS/BSS modules e.g. for ticketing, inventory and asset management, etc.

With DataMiner in place for the management of all network components, Nebraska Educational Telecommunications Commission can be rest assured that it can benefit from very powerful graphical displays of the entire operational ecosystem, which can easily be updated and adapted at any time by Nebraska Educational Telecommunications Commission, HA Design Group Team or 3rd party system integrators. Using DataMiner as the end-to-end management system for the entire environment also ensures a seamless navigation experience for the operators, throughout the entire system.

DataMiner Cube also includes fully user-definable rotary buttons and sliders, to design highly interactive studio type applications, as well as dynamic free path drawing capabilities, enabling an unlimited range of applications ranging from graphical audio console filter displays to an intuitive graphical satellite bandwidth utilization display.

It is important to note that Skyline's Network Management Solutions are not restricted to Operations only, but can also be deployed for:

1. NOC
    - Engineering and architecture teams
    - Procurement / Capacity planning
    - Marketing
    - CFO and CEO (giving visibility, helping in the decisions process)
    - Maintenance planning / field maintenance • Helpdesk / Customer Care
    - confidence monitoring at the ingress and/or distribution points of the network
    - adaptive multi-viewer control to service schedules and service health conditions • monitor by exception
    - comprehensive task prioritization based on alarms on aggregated KPIs instead of browsing through massive network element alarms

2. Operations
    - end to end monitoring and control of all services and devices
    - remote troubleshooting
    - trouble ticketing creation
    - proactive network maintenance scheduling
    - root cause analysis of network degradations (proactive) and outages (reactive)

3. Engineering, Planning
    - detailed view over network availability, performance and utilization
    - infrastructure utilization per service, location, time, • congestion-related performance KPIs
    - identify degrading behaviors and critical network weak spots, for capacity planning

4. Field Operations:
    - access to location-specific stats and KPIs
    - real-time and historical information
    - status and alarm history
    - control over network devices • instant subscriber status update
    - trouble ticketing statistics and ticket overview

2.1.5.8. Dataminer Mobile Gateway – Dataminer Cube Mobile

Two-way interaction with the DataMiner system is not restricted to access via the classic web-based application known as DataMiner Cube.

The DataMiner Mobile Gateway provides access via several other methods:

- Text messaging (SMS)
- iPhone/iPad native apps
- Windows Phone apps
- Any HTML 5 capable browser

The DMS Mobile Gateway provides access to your systems from anywhere in the world in a uniform and transparent manner.

DataMiner Cube Mobile is a lightweight cross-platform UI and uses the same DataMiner security as can be found in DataMiner Cube; it is ideal for the purpose of consulting settings on systems, controlling parameters as well as easy and fast access to the fault and performance management modules of the solution.

DataMiner Cube Mobile has a consistent design, look & feel to align with DataMiner Cube and includes:

- Real-time monitoring and control
- Fault and performance management
- Trouble ticketing
- Reporting and Dashboards

Features:

- one secured mobile application across your entire operation
- be instantly aware of any breaking developments in your operation
- improve operator productivity and satisfaction
- reduce response time for on-call tech support resources
- instantly access relevant information in meetings with your customers
- drive down field operation cost by providing access to remote systems

2.1.5.9. Dataminer Cloud Platform (DCP)

The DataMiner Cloud Platform offers operators the option to expand access to their DataMiner NMS/OSS platform beyond their own organization, i.e. to share real-life updated data from within their operations with third parties (such as customers, resellers, technology partners, consultants, system integrators, etc.) in a secured and easy to manage fashion. DCP offers innovative fully-integrated added-value services to support your day-to-day operations.

Projects and Support:

- New and enhanced intuitive user interface
- Tracking of your orders and projects
- Technical support services:
- Tracking your technical support requests
- A single source for all technical information
- Inventory overview of all your license assets
- Automatically generate new licenses
- Automatic delivery of software upgrades & updates
- Core DataMiner software platform & DataMiner drivers
- Fully integrated in DataMiner Cube

2.1.5.10. DataMiner TV:

A new video platform to share knowledge with an ever growing global DataMiner community, empowering partners & users to leverage the unique capabilities of DataMiner, such as:

- interactive live broadcasting, providing continuous learning
- extensive on-demand video library fully integrated in DCP

DataMiner TV provides knowledge on different topics, such as
:

- how-to's
- in-depth and technical hands-on sessions
- practical use cases & real-life case studies
- new product introductions
- technology partner cases
- etc.

2.1.5.11. DataMiner Driver Catalog:

- facilitate access to the entire DataMiner Driver library supporting over 5000 products from over 600 vendors

- complete up to date overview of all available DataMiner Drivers, including comprehensive details
- automated delivery of purchased drivers & update for deployed drivers
- easily deploy any existing DataMiner Driver for testing & evaluation
- facilitate exchange of DataMiner Drivers between third parties
- providing DataMiner Driver related on-line cloud services, fully integrated in DataMiner Cube and DataMiner Integration Studio (DIS)

2.1.5.12. Dataminer Data Sharing Services (DDS)

The new DataMiner Data Sharing Services (DDS) facilitate sharing information from your DataMiner system with third parties.

2.1.5.13. Dataminer Maps

Every view can be enhanced with background graphics to provide even more insight. This feature comes in handy when setups to be implemented comprise components which are installed on various sites (links with 3rd parties for instance). Fixed drawings can be used for this purpose or, when used in combination with Google maps, overlays can be added to provide real-time status information or even historical overviews of how the site or systems residing over there are performing at that very moment.

DataMiner Maps integrates with existing geographical information systems (GIS) or mapping tools (e.g. Google Maps (*)), allowing:

- to map objects managed by DataMiner (like STB)
- to display connections and other services
- real-time status information and historical overviews
- to visualize object details in tabbed balloon pop-ups
- user-definable KPI display (KPI parameters/graphs to be displayed in the pop-up balloon)
- seamless navigation from the native DataMiner UI

(*) This may require a separate third-party license (e.g. Google license allowing to use its maps)

2.1.5.14. Monitor And Control (M & C)

With its uniform and consistent access method, any user can interact with any device or system under management in one and the same way.

Values are not just made available in alpha-numerical format but can also be represented in a visual manner. The latter includes LED bar readings, controls, input validation, alarm indications, locking, data exporting, matrix controls, access to device web interface, etc. These graphical enhancements offer the advantage that entries can be made or altered in a very intuitive way by providing extra information like boundaries and/or ranges or alternative methods besides typing.

2.1.5.15. Fault Management

By tapping into every piece of the actual installed base, DataMiner provides a real-time end-to-end view of the complete ecosystem. To leverage all these data, DataMiner - as one of the most powerful fault management solutions in the industry - brings a suite of new fault management related innovations, enabling operators to pinpoint and resolve operational issues faster than ever before, by providing them with an intuitive multi-user management of active and historical alarms.

This ranges from small gems such as highly user-definable device icons, which offer at-a-glance historical fault context information, to a new notification banner including service impact analysis data and revamped data tables with heat map overlays and integrated histogram analysis. Furthermore, the core engine offers sophisticated off the-shelf self-learning algorithms to intelligently and effortlessly monitor and track the most challenging operational metrics, including traffic loads, slowly degrading quality metrics and much more.

Highlights of DataMiner Fault Management:

1. User-defined alarm thresholds (relative and absolute thresholds, hysteresis, etc.) for each single metric/parameter.
2. The alarm templates created by the user can be applied to each device type or a particular subset of devices of the same type.
3. The user can easily select other levels of severity, besides the ones provided by the device or system (e.g. warning, minor low, critical low, critical high) and assign/correct the thresholds as required.
4. DataMiner allows the user to test the alarm templates created, against historical performance data, i.e. test how many alarms would have been created with a given threshold, before applying it.
5. Alarm heat maps for visual historical context of alarms
6. Alarm console supporting masking, commenting, sorting, filtering, customization, taking ownership, audible notification, alarm enrichment (asset, ticket), alarm forwarding,

alarm detail cards, history linking, service impact, root cause analysis, device grouping, alarm grouping, copy to clipboard and export, etc.

7. Alarms can be stored in the local (or, central) database for detailed history tracking, allowing the operator to roll back in time to retrieve the entire history of alarms (snapshots of past situations)

2.1.5.16. Proactive Management - Performance Monitoring

DataMiner Performance Monitoring keeps track of detailed historical key performance readings for any metric (including calculated metrics, like KPIs and KQIs).

Keeping this performance data is not only useful to learn, analyze and report past behavior but also to support proactive management techniques provided by analytics' tools. With that in mind, this large volume of historical data can:

(1) be exported to a central database from where it can be accessed by third party systems to perform their own analytics.

(2) be used locally by DataMiner Advanced Analytics (DAA) (as explained in the chapter below).

2.1.5.17. Dataminer Advanced Analytics (DAA) Engine

DataMiner Advanced Analytics is a generic all-round Artificial Intelligence (AI) engine built into the core of DataMiner 9.5, which exploits the unique wealth of data contained in a DataMiner System, to perform predictive analytics, such as:

- Behavioral Anomaly Detection (BAD)
- Learn how an arbitrary metric is behaving, autonomously and at runtime and identify any deviations from normal behavior
- Trend forecasting
- Accurately and fully autonomously forecast values at run-time for any metric managed by DataMiner
- E.g. forecasting SLA behavior or identify degradation of KPIs/KQIs related to User Experience.
- Intelligent data clustering
- Objective is to detect outliers and groups
- Typically oriented towards device configurations and locating potential misconfigurations
- Deviations in performance readings, considering the overall configuration of the device
- Alarm level nominal baseline calculated from forecasted data
- DataMiner self learns and adjusts the thresholds dynamically, based on pattern recognition.

- e.g. the number of registered STB will be higher at peak hours than it is during the afternoon period, this doesn't necessarily imply an error, it may rather be due to subscriber behavior; because of such cases, the threshold needs to be dynamic.
- Correlation rule suggestion engine
- Suggestion on the relation between different alarms in the network based on past behavior.

2.1.5.18. Dataminer Unified Notifications

DataMiner features consolidated and user-centric notifications, i.e. the possibility of configuration and management of users' personal notifications.

The default notification method informs users via e-mail in case of alarms or other events triggered by correlation or invoked by automation scripts. A sufficient set of options and mechanisms are foreseen to configure this feature avoiding (filter) unnecessary messaging.

Alternative delivery methods, like text messaging (SMS), are available via the DataMiner Mobile Gateway Module (DMS-MGW-II).

2.1.5.19. Key Quality Index Manager

DataMiner Key Quality Index Manager enables operators to measure and track business objectives continuously across the most complex and diverse technology ecosystems, in a consistent and very tangible manner.

KQI definitions can be created and tweaked on the fly by means of an easy-to-use user interface, tapping into any metric across an entire operational system. The KQI Manager also allows operators to easily test and validate new KQI definitions based on the vast historical data available in a DataMiner System and to subsequently activate the KQIs for continuous around-the-clock tracking and reporting.

2.1.5.20. Real End-2-End Service Quality Management

Service Quality Management takes Service Monitoring to the next level. It is an operational framework that:

- turns your customers into happy customers, by achieving target service quality, avoiding variations in user experience and warning your customers proactively of degradations and/or outages
- reduces your OPEX and CAPEX, by providing a more effective infrastructure utilization, a proactive network maintenance, simplified operations and company-aligned decision making and helping you to meet your business targets

• Also, DataMiner covers all parts involved in SQM for End User experience (whatever the technology may be) – Source, Processing, Network, Subscriber – and can be integrated in your platform at any time:

2.1.5.21. Processing

DataMiner integrates all devices and systems, in order to build a consolidated service monitoring view for all technologies, e.g. at Headend level. DataMiner acts as the Umbrella manager, centralizing all components (allowing for example correlation, root cause analysis, redundancy switching, reporting, service/SLA monitoring (see respective chapters in this document)).

2.1.5.22. Networks

Monitoring the performance and quality (KPI/KQI) of the actual network serving the customer (access networks, DSLAM, OLT, CDN, ...), in order to give context to subscriber service quality. This will also allow to identify potential sources of errors impacting subscribers' experience, or degradations on the serving network (that can impact subscribers' future experience (proactive monitoring)). E.g.: allow field teams to pinpoint the source of problems/network degradations much accurately and faster (topology aggregation and correlation).

2.1.5.23. Subscriber

Monitoring End user's device (STB, OTT clients, modems, ONT, Access points ...) to obtain key statistics on how the service is received by each subscriber. E.g. allows help desk to filter by household/subscriber and have a consolidated view of all KPI/KQI for each contracted service, whatever the technology may be. Some actions can even be executed remotely, such as rebooting the STB.

2.1.6. BASIC ARCHITECTURE

The screen capture below shows a part of the DataMiner UI, with a simple example illustrating how DataMiner enables operators to manage their operational environment from a device, service and business perspective – real-life scenarios are typically far more complicated and the DataMiner SLA Management technology offers a large array of professional features to deal with those efficiently.

As depicted in the UI, the system shows a number of satellite receivers (IRDs) in a double redundant configuration. The selection of the operational IRD is done via a switch, of which the status is shown in real-time in UI. The satellite receivers are used for the acquisition of a service called 'Warsaw Euro Service'. The UI shows three different perspectives on this simple setup:

- Device Layer: shows the setup from a physical device perspective (i.e. four IRDs in a double redundant architecture (London Main, London Backup, Paris Main and Paris Backup), with a switch to select which IRD is in service).
- Service Layer: shows the setup from a service perspective, i.e. at all times the operator can see the status of the service, irrespective if that service is going via main or backup IRD.
- Business Layer: shows the setup from a business perspective, i.e. it shows the status of the SLA related to the service 'Warsaw Euro Service' – health status of the service taking into account its historical performance measured against the service level agreed upon for that service.
- Integrated in DataMiner network management and OSS solution, enabling data to be taken into account from virtually any device or system from any vendor.
- Designed on top of the awarded DataMiner dynamic service technology, which run-time tracks the usage of resources for specific services. This enables DataMiner SLA Management for example to take into account the status of any redundancy architecture, while calculating SLA compliance.
- Calculates and presents SLA information in real-time (as opposed to solutions that only provide post analysis of SLA performance).
- Open XML format for definition of SLA metrics, such that virtually any SLA scheme can be quickly defined and deployed in the operational environment.
- Update SLA definitions at run-time with no interruption of the operational environment.
- Manage both internal and external services and incoming as well as outgoing services.
- Ability to cater for delay times and to suspend SLA tracking on services either manually, triggered by user-defined system events or triggered by a time schedule (e.g. for time-based services or to accommodate for maintenance windows).
- Track key SLA metrics such as total violation time, number of violations and duration of individual violation events.
- Choose to track absolute usage of SLA margins, relative usage of SLA margins or remaining SLA margins.
- Use predicted compliance to trigger warnings when SLAs have a projected breach at the end of their current evaluation time frame, enabling proactive corrections.
- Configure SLAs for any user-definable time span, supporting both fixed and sliding time windows.
- Real-time SLA Data Display, enabling operators to track in detail all SLA metrics defined in their system.
- User-definable alarm thresholds, to issue early warnings for operators such that appropriate actions can be taken before SLA breaches occur.
- Ability to send e-mail and text message notifications when certain important user-defined SLA events occur.

- Forward SLA related events and alarms to third party applications via SNMP or TCP sockets (e.g. trouble ticket applications, alarm managers, reporting applications, etc.)
- Trending of SLA metrics (e.g. available time) for detailed historical analysis, with features to load trend graphs, to export trend information to spreadsheets, etc.
- Extensive web-based SLA Compliance reporting with ability to publish reporter content into third party production web environments (e.g. secured customer support Internet pages).
- E-mail reporting triggered by a time schedule or by user-defined system events.
- User-definable SLA web dashboards, showing a summary overview of all SLAs, including real-time readings of key metrics.
- Intelligent correlation of SLA events (e.g. automatically escalate SLA events that remain unresolved for too long, escalate alarms on non-operational back-up devices when SLAs exhibit poor condition, automatically re-allocate backup resources to services exhibiting a poor SLA status, etc.)
- Access to all SLA related information via mobile devices such as tablets and smartphones, using the DMS Mobile Gateway web access.
- Integrated into the Visual Overview topological graphical user interface, with support for display of real-time SLA readings.

2.1.6.1. Scheduling Engine

The scheduler is about time-based action, i.e. the ability to do or execute certain tasks on a time-based schedule. These 'tasks' can be anything, like

- dispatching reports (alarm reports, SLA-reports – in fact any kind of report) to be prepared with DataMiner's Reporter)
- Modifying of alarm threshold on devices, e.g. to have different alarm criteria during the night, compared to the day.)
- Providing services, on a regular basis or on occasional use. This can be to set up any kind of connection, like uplinks, downlinks, sharing channels etc.

DataMiner provides a professional scheduling application, DataMiner Scheduler, which allows, amongst others, to schedule the execution of automation scripts. DataMiner Scheduler provides a wealth of features and capabilities, including but not limited to:

- Wizard for easy creation of schedules:

Next to the Wizard interface, it is also possible to use the enhanced and intuitive UI, allowing drag-and drop to schedule tasks based on predefined Event Types and Profiles. An Event Type is basically a script that is going to provide certain functionality, like configuring a Satellite Uplink or a network connection. For every Event Type, one can specify one or more profiles, like for a typical network connection, these are the pre-defined profiles one can choose. When creating a task in the scheduler, User Settings can also be chosen, e.g. in case of an

Event Type being certain Network Connection with a certain Profile, this is the source and that is the destination of my connection.

Execution at a single specific point in time.

Execution of an event at repetitive user-defined points in time (e.g. daily, weekly, etc.) or multiple times with a user-defined time interval at repetitive time intervals (e.g. 10 times each 5 minutes every day)

Run only at specific times of the week (e.g. only on specific days, not in the weekend, etc.) or month (e.g. not in a specific month, not on specific days of the month, etc.)

Definition of a start and stop time, or scheduling for indefinite time

Execution of special tasks when executed for the last time (e.g. send a notification e-mail, run a special wrap-up script, etc.)

Enabling and disabling schedules, without losing the configuration

Real-time overview of the pending schedules

Calendar overview of past and on-going scripts, as well as overview of scripts that will run on specific days in the future, etc.

Overview of last execution and next scheduled execution of each task and the result of the last execution (failed or succeeded).

Ability to duplicate existing schedules, allowing easy configuration of multiple similar schedules.

2.1.6.2. Automation Engine

The DataMiner Automation Engine allows operators to fully automate operating and business procedures, thereby reducing drastically the operational expenses.

With its extensive capabilities, it covers everything to replace any action that an operator used to execute manually in the past. It is the most suitable method to control or operate all procedures described in the contingency plans by automation.

Automation scripts can be used in a lot of applications among which intelligent back-up and service-healing routines, guided troubleshooting for operators, automatic configuration, provisioning of services and many, many more.

These scripts, once created, can be triggered in a variety of ways, ranging from manual operator initiation, to event based and scheduled execution. Today the Automation Engine is used throughout different industries, fitting countless applications, all targeted at reducing the response times, increasing the quality of service and availability, enforcing corporate operating procedures and ensuring managed operations. This very powerful feature is part of the open architecture and allows for any user to create and modify scripts in an easy and fast manner via the embedded and intuitive graphical IDE (Integrated Development Environment). 3.67 Automation Graphical IDE

2.1.6.3. Correlation Engine

To further increase the efficiency of the end-to-end network management operations, DataMiner offers a professional alarm and system correlation solution, referred to as the DataMiner Correlation Engine.

This fully integrated module is a valuable asset for operators who wish to reduce the time-to-repair by means of automated root-cause-analysis and who wish to move towards a proactive operation.

Correlation Engine provides the technology to further enhance the alarm detection on the operational environment by processing the raw alarm information based on a user defined knowledge base, in real-time as events occur. It's capable of:

- Detecting single alarm events as well as patterns of alarm occurrences across the entire system
- Checking real-time values of parameters prior to making any decisions and taking actions
- Detecting single occurrences, persistent occurrences or recurring occurrences of single alarms events or alarm patterns across the entire operational environment
- Taking actions when certain conditions occur in the operational environment, including generating new alarm messages for the operator (i.e. most probable cause), triggering automation scripts (e.g. to take automatic corrective measurements), notifying operators via SMS or e-mail, etc. Correlation Engine identifies the most complex system behaviors, based on real-time, trend and alarm data fed by the DataMiner System and acts upon those with specific algorithms. The solution includes powerful rules-based correlation, relationship-based root cause analysis and multidimensional data aggregation.

DataMiner also includes Root Cause Analysis based on connectivity information. Connectivity information can be fed into the system via the integrated connectivity editor, or by linking the DataMiner System to a third-party connectivity database. DataMiner RCA provides a very intuitive way for the operator to find the most probable cause and to filter out sympathetic alarms. This is achieved by assigning a so-called RCA level to each alarm. The RCA level indicates how far away the device is located from the most probable cause.

The RCA level of an alarm is displayed in a separate column in the Alarm Console and hence the operator can very easily filter a series of alarms, such that the alarms from the most probable cause are listed on the top of his list.

Furthermore, the Alarm Console also has an RCA slider, which enables the operators to filter the alarm list based on RCA level. Hence, when the Alarm Console is overwhelmed with too many alarm messages during an alarm storm, the operator can immediately reduce the number

of alarms by moving the RCA slider in the Alarm Console and immediately the list will be reduced to the alarms that are coming from the most probable cause of the alarm storm.

Note that the operator can also right-click any alarm in the Alarm Console and recall the Connectivity Viewer to locate the associated device in the connectivity database to see its relationship relative to the other devices in the system.

2.1.6.4. Dataminer Reporter And Dashboards

DataMiner Reporter provides operators with the key-functionality to better understand how their systems behave in user-defined timespans. Through DataMiner Reporter, operators have a wealth of statistics and operational metrics available, allowing them to pinpoint the weakest points in their system and to make well-founded investment decisions.

DataMiner Reporter comes as an out-of-the-box web-based environment and offers powerful statistics based on active alarms, historical alarms, trend data, real-time data, etc.... With a single click of a button operators can get an overview of the devices that are generating the majority of alarm messages, detailed information about the duration of alarm events, distribution of alarms across time and much, much more.

In addition, DataMiner Reporter provides any of the available statistical graphs in any existing third-party web environment for publishing. This allows operators to publish targeted network management information on intranet web pages or on-line web portals, without the need to provide these same users access to the actual network management environment.

DataMiner Reporter also features a comprehensive report builder allowing operators to create custom report templates. These templates can then be used to automatically distribute professional e-mail reports to the different stakeholders. E-mail reports can be triggered by a time schedule or by events occurring in the operational system.

DataMiner Dashboards is a comprehensive web application enabling operators to efficiently tap into the vast amount of valuable real-time and historical information which is available in the DataMiner multi-vendor network management environment. Dashboards allows operators to create highly interactive, visually appealing, real-time-updated dashboards that consolidate all essential information and Key Performance Indicators (KPI) from the managed devices, locations, services and business SLA's. This application significantly reduces the response time to system issues and enables users at all levels of the corporation to get a better understanding of the operations. With one click stakeholders can now instantly visualize and track a selection of key performance indicators in affected system segments, while managers can view comprehensive real-time and historical SLA information.

From DataMiner 9.5 onwards, DataMiner Reporter & Dashboards has been completely renewed, resulting in a brand new analytical reporting & dashboards solution, providing maximum flexibility combined with ease-of-use.

The objective in terms of use is twofold

1) Build professional analytical reports & dashboards on the fly
2) Perform quick ad-hoc advanced data analysis routines

The new engine is purpose built and natively integrated with the DataMiner core engine and User Interfaces (UIs), providing an immersive experience. It is designed to run across desktops, tablets and mobile platforms, using a HTML5 responsive design.

reporter & dashboards

DataMiner comes with an off-the shelf set of Key Performance Indicators (KPIs).
Some examples:

- capacity management (per channel, BG, SG, node, CMTS, etc. capacity measurement and utilization calculation)
- network performance (US and DS power, SNR, MER, CCR, CER, etc.)
- network availability (CER, HFC network element uptime, flaps counts, reregistration, T4 timeouts, etc.)
- service delivery performance (number of re-buffering events, average latency, peak jitter, etc.) • NQI - network quality index (user-defined weighted quality index)
- operational performance (MTTR, number of tickets, time to closure, etc.)

Equally, DataMiner 9.5 comes with a set of highly customized service Key Quality Indexes (KQIs) for subscriber service experience, such as:

- TV, IPTV, XoD, TVE, voice service availability (%)
- TV, IPTV, XoD, TVE, voice service availability (%) to the x% worst-served subscribers
- % of subscribers that reach y% of the billboard speed
- weighted availability % of TVE channels, averaged over the subscriber base
- % of successful OTT views to the total number of views

DataMiner Reporter & Dashboards is fully integrated with the DataMiner platform:

- Single sign-on security & consolidated management of access rights and levels, including audit trailing

- Optimized performance for quick results

- Easy contextual access from within the core applications, such as DataMiner Cube
- Easy configuration and intuitive field selections
- Integrated time and event-based report dispatching
- Available as an app in DataMiner Cube Mobile

A rich library of sophisticated & intuitive graphical components is included:

All traditional components including bar graph, pie diagram, line diagram, scatter graphs, etc. Purpose-built graphical components:

graphical presentation of data clusters

graphical display of KPI/KQI metrics o mapping of geo-coded objects o CPE management tailored components

etc.

Comprehensive and customizable dashboards, providing a single view for all stakeholders

As a result, flexible email, PDF and web-based reports and dashboards extract essential information for each role in the organization, including overview of KQIs, KPIs and real-time aggregated data, each with historical trend and alarm status.

2.1.6.5. Dashboard Gateway

Dashboards in DataMiner can be easily configured with all sorts of data combination. As DataMiner allows tapping into every piece of your operations – devices, 3rd party systems (like ticketing), inventory sources, etc. – it has access to all sources of information, which can then be combined and easily added to create/edit all sorts of dashboards.

Further, with Dashboard gateway the customer can also embed standard DataMiner reporter/dashboard components (HTML5 objects) in 3rd party portals (e.g. CRMs). This is especially useful when the customer wants to expose some metrics/KPI to externals while not granting them access to the NMS/OSS solution.

2.1.6.6. Document Management

DataMiner integrates the functionality for documents and resource management. This functionality is useful to give to the user instant access when he needs information contained in manuals, troubleshooting guides, procedures, firmware, etc.

2.1.6.7. Dataminer Northbound Interface

Through the use of drivers, interfacing for the purpose of two-way communication with any system is possible.

The interface (driver) contains all the logic to translate the embedded DataMiner logic into any language understandable by the system(s) it is interacting with.

Access to external systems via the so-called third-party interfaces is an extremely flexible feature as almost every protocol, syntax or language can be implemented which is made available by the vendors of the third-party systems.

2.1.6.8. SNMP Trap Forwarding

DataMiner features various methods for northbound interfacing, i.e. to provide third party software applications with information about the status of the ecosystem. This includes an SNMP trap forwarding interface, which supports user-definable filtering and user-definable alarm storm prevention algorithm and various user-definable TCP sockets. Furthermore, the open architecture of DataMiner, based on open XML definitions also enables the addition of other custom developed interfaces.

2.1.6.9. Web Services

For more advanced applications, DataMiner also provides northbound Web Services APIs.

A Standard Public Interface, Web Services APIv0, is included in DataMiner, supporting SOAP and XML-RPC.

Equally, the more advanced Web Services APIv1 is a standard feature in DataMiner, supporting SOAP, XML-RPC and JSON and adding more functions (extended command set) when compared with v0.

2.1.6.10. Custom Interfaces

On top of all available private and public interfaces, highly specialized, custom interfaces can be developed to allow your DataMiner System to integrate seamlessly into your existing infrastructure.

2.1.6.11. Live Online Services

DataMiner is much more than a world-class next-generation software technology. With the DataMiner Maintenance & Support Service our customers also benefit from an all-inclusive

care-free support package. One platform managing your entire operation end-to-end across any vendor and technology boundaries and one support package bringing together everything you will ever need to get the maximum out of your state-of-the art next-generation network management platform.

And because DataMiner is also all about efficiency and ease-of-use, to drive down operational cost and focus on the things that really matter, we offer our customers live online update services as part of this all-inclusive carefree package. Whenever we have an update or upgrade available, whether it is for your core DataMiner software or for any of the drivers that interface your platform with your devices and systems, you are automatically instantly notified and a single click is all it takes to deploy that update in your operation.

2.1.6.12. IP Network Manager

DataMiner contains an out-of-the-box end-to-end management solution for IT infrastructure – DataMiner IP network manager application.

DataMiner IP network manager allows auto-discovery of IT devices (like routers, switches or servers) and network configurations, mapping them and providing management and report capabilities, with the objective of easily monitor and manage IT services and network health/response, while facilitating complex network configurations.

Main features include:

Scheduled or manually triggered auto-discovery
Configurable network discovery
User definable network and IP seeds
different checks (ICMP, SNMP, WMI, etc.)
Map visibility based on additional connection discovery
Physical connectivity
Service flow through network (VLAN, Multicast)
Drill-down to see more details.
Access to IP Network Manager Reports
Ability to detect non-IT devices
Automatically start service tests, based on standard DataMiner Generic Network Services driver, including service monitoring such as ping, FTP, DNS, SMTP, HTTP, web service, database, TCP, RTSP, RTMP, TFTP, etc.
allow the customer to browse his network and IT assets from different perspectives – like by subnet, by type of device etc.

2.1.6.13. Planned Maintenance

The processing and mapping of planned maintenance work is an example of an automated workflow.

DataMiner is able to automatically ingest a variety of information about planned maintenance, both from internal service teams as well from external parties such as utility companies that perform work on the utility power grid that can cause outages in the network.

Amongst others, DataMiner automatically matches incidents with planned maintenance information and uses that information to enrich alarm events and properly document associated trouble tickets.

2.1.6.14. End-To-End Service Orchestration - Dataminer Servce & Resource Manager

Delivering first-rate services from the very first time, keeping operational expenses down, maximizing utilization of system network resources and bolstering your organization to turn new business ideas into services as quickly as possible... All this is perfectly achievable with the DataMiner Service & Resource Manager (SRM) suite. Its far-reaching automation and powerful service orchestration will ensure that you can unlock every single business opportunity coming your way.

2.1.6.15. Multi-Vendor, Multi-Domain, Multi-Tenant Service Orchestration

DataMiner Service and Resource Manager (SRM) is a unique suite of 7 DataMiner functions that together form a state-of-the-art, multi-vendor service orchestration solution. SRM manages services independently of the underlying infrastructure, whether it is bespoke, virtualized or hybrid. The suite interoperates with any technology and is tailored for media and broadband service orchestration, monitoring and performance and SLA management.

There is no limitation to what services and workflows can be orchestrated. Examples include network services (L2/L3 IP, MPLS, SDN, SDH, etc.), video services (linear broadcast, OTT, network DVR, TSTV, etc.) and broadband services (CIN network, broadband data headend, etc.). The suite interoperates with any hardware technology and software functions (NFV) from any vendor.

2.1.6.16. Dataminer SRM Multi-Domain Orchestration

DataMiner Service and Resource Manager can be deployed as a domain orchestrator, as an end-to-end top-layer orchestrator, or as both. The open architecture of SRM facilitates easy integration into greenfield or brownfield networks, affiliates and data centers.

In the following example, a complex service needs to be set up to capture a live news feed and distribute this feed to a DTH platform and an OTT platform. This service spans across multiple domains. Each of the domains operates its services independently of the others.

In DataMiner terms, a domain is called a DataMiner Virtual Platform. In essence, a Virtual Platform has its own service catalogue, service profiles, resources and capacity, scheduling and service life cycle management. A Virtual Platform also contains the full automation logic to orchestrate all underlying infrastructure elements and systems. A DataMiner Virtual Platform also monitors availability (alarming) and performance (SLA) of services that exist within the domain. Within a DataMiner System, access control to a given Virtual Platform can be restricted to specific operational teams or even third-party Virtual Network Operators (VNO).

DataMiner Virtual Platforms expose services to other DataMiner Virtual Platforms, called contributing services. As such, it is easy to also use DataMiner SRM as the top-level orchestrator managing services composed of contributing services from other DataMiner Virtual Platforms and even third-party orchestrators.

2.1.6.17. Dataminer SRM Workflows

Different organizations can operate very differently. For this reason, DataMiner has a fine-grained Authentication and Authorization system, allowing administrative users to assign workflows to specific teams. The roles and workflows assigned to each team are fully configurable in DataMiner. However, a typical workflow management setup may look like this:

2.1.6.18. Engineering Workflows

Engineering departments are responsible for setting up platforms to deliver a given set of services.

As such, in DataMiner, engineering teams typically:

- Create the service catalog.
- Set up physical connectivity (manually or via import from a topology or CMDB database).
- Compose service definitions, including the behavior of those services in all of their life cycle states.
- Compose infrastructure deployment services (contributing or hosting services).
- Define the detailed technical profiles to be used by the operations team (processing and transmission profiles).
- Determine capacity constraints of the network and underlying infrastructure.

• Allocate resources and resource pools that can be used by operations teams to deliver the services.

2.1.6.19. Operational Workflows

Operations teams manage the day-to-day life cycle of services. These can be permanent services, occasional-use services and recurring services. The process of managing services is generally referred to as bookings management, since all services in DataMiner are orchestrated taking resource and capacity constraints into consideration.

As such, operations teams typically:

• Spin up new services, remove them or edit services.

• Monitor service availability (alarms) and performance (visual monitoring and SLA tracking).

• Restore services (switch to redundant resources, switch to a backup service). The DataMiner Automation engine takes care of those workflows autonomously if preferred.

• Book new services ahead of time by selecting source feeds, destinations, a time schedule with optional pre- and post-roll, a service definition, service profiles and resources. At any moment in time, DataMiner will only propose resources to the operator if these are available during the requested time window and support the requested service profiles. The DataMiner booking wizard can also be configured to select the resources fully automatically from a pool of resources.

• Make in-service last-minute updates, such as extending/shortening service schedules (overrun/ underrun), changing configuration profiles on running services, etc. Such changes can safely be made, as DataMiner SRM always checks resource and capacity availability before accepting any change. In case of resource conflicts, the operator will be notified and guided to resolve these.

• Rebook a service to a later moment in time.

• Duplicate services (copy/paste).

• Handle customized workflows.

2.1.6.20. Service Lifecycle Management Tailored To Your Business

Services in DataMiner are well-defined objects of which the performance and availability can be orchestrated, monitored and tracked continuously. During their lifetime, services are cycled through different states, according to a defined yet customizable state-transition rule set. The life cycle starts when the service is deployed, either in a staging environment or instantly in the production environment. The cycle ends when a service is retired. In between this, the operator can cycle across different states using simple point-and-click actions. At no point do any service life cycle transitions affect the health of other services.

2.1.6.21. Dataminer Service Assurance

The DataMiner orchestration layer comes with full service health monitoring that is constantly aligned with the service life cycle state. Multiple metrics of a service are monitored, giving the operator full visibility on the service at all times:

2.1.6.22. Schedule-Aware Monitoring

To make operations easier, DataMiner provides schedule-aware monitoring with automated probe and T&M infrastructure orchestration as part of the service life cycle management. Whenever a service starts, pauses, stops or retires, DataMiner will fully automatically orchestrate the monitoring and test devices, aligned with the service schedule. On the one hand, this ensures that a service is consistently monitored at the times when it is supposed to be running, while on the other hand it also ensures that operators will not receive meaningless alarms at any time while the service is not in running state. 3.27.7 BUILDING BLOCKS OF SRM

As mentioned higher, DataMiner Service and Resource Manager (SRM) is a unique suite of 7 DataMiner functions that together form a state-of-the-art, multi-vendor, multi-domain, multi-tenant service orchestration solution:

2.1.6.23. Service Manager

DataMiner SRM Service Manager is a generic service configuration and management framework that allows operators to model and manage services end to end across any network and infrastructure deployment. A service can be defined in the broadest sense, making DataMiner SRM the ideal solution for a vast number of different applications.

Examples:

• occasional-use (OU) services over fiber, over satellite or hybrid • SNG (Sports & Events), both for broadcast or OTT • MPLS services • SDN-controlled routing and switching (unicast/multicast) • SDH fiber services (PTP, PTMP transport over Ethernet, MPEG-TS, etc.) • satellite services (bandwidth or Mbps, single hop/dual hop, etc.) • broadcast and OTT TV channels • IT services (virtual machines, container manager services) • broadcast studio configurations

Service definitions act as templates that enable quick service creation. The creation of the actual services in the network is controlled by the DataMiner booking manager (cfr 3.27.3 DataMiner SRM Workflows). The booking manager creates service instances by applying DataMiner Profiles to the available DataMiner Resources according to the requested time schedule. All of this complex orchestration takes place in a fully automated manner.

Key features:

- Graphical service definition editor facilitates easy selection and linking of virtual functions.
- Virtual function grouping with color coding facilitates consolidated monitoring of complex services with many functions and enables selection of multiple virtual functions from a single hosting network element to boost performance.
- Intelligent connection compatibility checks of well-known DataMiner interface types (e.g. TSoIP, ASI, MPLS, L2-VLAN, etc.).
- Option to create fixed and/or default configurations in the service definition that apply to all service instances.
- Profile inheritance across virtual function interfaces and processing functions eliminates configuration inconsistencies.
- A service definition can be linked to DataMiner SRM Source and Destination resources.
- Service definitions may rely on other contributing services, such as e.g. network services and hosting services.
- Fully automated service instantiation and life cycle management.
- Supports DataMiner built-in life cycle transitions, as well as custom service state transitions such as service redundancy switching, moving services from on-premises to off-premises cloud infrastructure, etc.
- Elaborate service metadata management including administrative data, service visuals and icons, service profiles and resources, etc.
- Elaborate audit trail of user-initiated and DataMiner automation activities.
- Documented NBI facilitates interaction with third-party systems to ingest jobs, manage the service life cycle and report service availability and performance.
- Runtime creation, changing, reading and deletion of service definitions and workflows – full DevOps support.

2.1.6.24. Virtualization Engine

The elementary network components that are part of a service definition are called DataMiner virtual functions. A DataMiner virtual function is an abstraction layer that represents complex hardware and software as a set of elementary and individual bookable functions. For example, a dual-channel IRD is represented by two independent DataMiner virtual functions, each one independently bookable for one or multiple services, each with its own time schedule.

A DataMiner virtual function is independent of the underlying technology. Binding of a virtual function to a specific infrastructure element in the network or data center can either happen at the time of the booking, or last-minute when the service starts (late binding during pre-roll). This means that operators can book capacity for virtual functions without knowing exactly which network element will actually be used once the service is running. The hosting network

elements of virtual functions may even be reassigned dynamically while a service is running, as is often the case in virtualized and containerized deployments.

Each virtual function has processing capabilities and one or multiple interfaces (in, out or in/out). As such, virtual functions can easily be connected to create an end-to-end service workflow definition in DataMiner SRM.

Key features:

- Performs vendor-agnostic virtualization of your system resources.
- Breaks down your available resources & technology assets to their essential functions.
- Supports both hardware & software products and on-premises & off-premises assets.
- True mediation between service workflows and underlying hardware, software and microservices.
- Seamless combination and stitching together of legacy and new technology.
- Templated configuration of alarm monitoring and performance behavior.
- Alarm and status information from physical network elements is intelligently promoted to the affected virtual functions, which in turn contribute to the overall service operational health status (service impact and root cause analysis).
- Virtual functions are fully managed DataMiner resources and expose their maximum bookable capacity to the booking manager (e.g. max bitrate, maximum number of flows or maximum number of video transcodes).
- Orchestrated by loading configuration profiles (via DataMiner Service Manager).
- Represented in DataMiner Visual Overview with a unique graphical representation and element card.
- DataMiner contributing services are represented as virtual functions, which can be included in other DataMiner service definitions.

2.1.6.25. Resource Manager

DataMiner Resource Manager controls and monitors the availability timeline of all resources in DataMiner SRM. In essence, Resource Manager prevents the use, or the booking ahead of time, of any resource that is not available in the desired time slot or time slot series. As a result, Resource Manager is of strategic importance to any operation using today's complex and dynamic broadband, data and media platforms, as it is the central intelligence assuring that not only all current services can rely on the availability of the booked resources, but also all planned service changes and new service launches in the future.

A resource in DataMiner is a generic object representing a physical device, a virtual function, capacity (e.g. bandwidth or bitrate), or any other object that requires booking (e.g. an IP address). A resource has different user configurable properties, including the maximum number of concurrent bookings but also the maximum capacity available for use by the service. For

example, a 1 Gig Ethernet port may be booked up to at most 980 Mbps in total for up to 250 services.

In DataMiner, resources are always monitored and tracked in terms of availability. This means that during the booking process, the operator can always be assured that the selected resources are really there for operational use and not planned for maintenance, repair or other planned activities. DataMiner also supports creation of 'non-existing' inventory and the simulation of bookings on these nondeployed resources. As such, DataMiner simulates service creation on non-existing inventory (e.g. virtual machines that have not been spun up yet in the data center). Of course, at any moment in time, the operator is notified and reminded of service bookings on inventory that is not available or in alarm.

Key features:

- Keeps a repository of all bookable resources in DataMiner.
- Supports hardware network elements, software appliances and microservices.
- DataMiner virtual functions and other virtual resources such as pools of IP addresses, pools of MPEG TS SIDs and PIDs, satellite transponder capacity, license pools etc.
- Operators can add customized resource metadata such as priority in the pool, total available capacity, accounting data and rate cards, etc.
- Groups resources into resource pools enabling automated resource selection during the booking process or during service life cycle transitions.
- Assigns resource pools to DataMiner Virtual Platforms enabling faultless operation of multiple teams using the same infrastructure.
- Advanced yet reliable sharing of resource pools across different DataMiner Virtual Platforms (e.g. to reserve a pool of resources used as redundant capacity to multiple DataMiner Virtual Platforms, sharing a single satellite transponder slot as a backup for multiple fiber-optic services).
- Visualization of resource status and occupancy on the resource reservation timeline.
- Support for many complex booking paradigms, including intentional overbooking of resources, intentional booking of non-existing resources (simulation workflows) and late binding of capacity to underlying virtualized/containerized infrastructures.

2.1.6.26. Profile Manager

DataMiner SRM Profile Manager not only simplifies service instantiation, but also makes service life cycle workflows independent of the underlying infrastructure. A DataMiner profile is a named group of parameters that describes how virtual functions of a service and their interfaces, need to be orchestrated. For instance, a 'Satellite transmission profile' may describe the RF settings for SCPC carriers, while an 'MPLS' profile describes the properties of a tunnel and a 'media' profile describes video, audio and metadata properties.

One and the same profile can be applied to virtual functions hosted by different technologies and vendors. For example, a 'High quality video' profile can be applied to compression hardware and software solutions from different vendors and can even be shared between on-premises and off-premises workflows. DataMiner Profile manager truly makes workflows agnostic to the underlying infrastructure.

A profile in DataMiner does not only contain configuration parameters. One profile may consume more resources than another. For example, an UHD transcoder needs more capacity in the data center compared to an SD service. As such, DataMiner profiles also contain the capacity requirements from the contributing hosting resources. In order to monitor services end-to-end, the DataMiner profiles also contain the list of KPI's that need to contribute to the overall service health status.

Key features:

- Facilitates and centralizes management of service profiles.
- Fully user-definable and vendor- & technology-agnostic service profile and quality levels.
- Mediation of configuration between configuration workflows and underlying network elements (hardware or software).
- Hierarchal mapping of profile definitions into other profiles, including parameter value inheritance.
- Quick and consistent profile instance creation derived from profile definitions.
- Engineering can define fixed and/or default profile parameters in the profile definition that apply to all service instances.
- Supports a wide range of profile types and applications, such as device setting profiles, transport stream profiles, encoding profiles,
- transmission profiles, etc.

2.1.6.27. Connectivity Framework

The DataMiner Connectivity Framework (DCF) is a fully dynamic framework that manages connectivity between physical network elements and logical connectivity between virtual functions. Logical connectivity serves as the primary service connectivity model in DataMiner.

This model effectively contains the orchestrated flow through the network for each individual service instance and manages capacity on network ports and processing functions to avoid oversubscription. The logical connectivity model is automatically created and always kept up to date by DataMiner SRM as part of service life cycle management. In exceptional cases, it is desirable to also import or input the physical wiring into DataMiner. The latter may for instance be used to let DataMiner find the most optimal path through a complex IP or SDH network.

Key features:

- Fully user-definable standard framework to model connectivity and logical service flows in multi-vendor ecosystems.
- Captures and manages both physical and logical connections.
- Logical connections are created and managed fully automatically as part of the service life cycle, without operator input.
- Physical connectivity can be input or automatically ingested in DataMiner using the DataMiner IAM option.
- Applicable to a wide range of applications (IP L2/L3, MPLS, multicast, SDH, satellite, SDI, ASI, ...).
- Open architecture and fully integrated with the entire DataMiner SRM software suite.
- Shows the actual path of every service through the network (path highlighting).
- Allows tracing of error conditions and fault locations (alarm propagation coloring).
- The service path can be resolved across multiple subdomains.

Intelligent Network Routing Paradigms:

DataMiner allows different service routing paradigms to coexist in the network. For each service definition, specific routing algorithms can be configured. As such, different services in the network may use different routing paradigms.

Intelligent Microservice Hosting Paradigms:

Similar to intelligent network routing paradigms, DataMiner SRM can be configured to provide different hosting options for microservices. Microservices can be hosted on bare metal (e.g. software that is dynamically deployed on FPGA blades or COTS servers), on virtual machines, containers, or in a hybrid deployment.

2.1.6.28. Automation Engine

The DataMiner SRM Automation engine performs all automation tasks in the ecosystem. DataMiner SRM solutions come with a full set of pre-defined automation scripts that automate all service life cycle transitions such as starting a service, stopping a service, etc. The pronounced open architecture of the DataMiner Automation engine enables operators to easily customize script behavior to their specific environment at any time.

The Automation engine is not only used by DataMiner SRM to execute service life cycle transitions. Any other task in DataMiner can be automated, including service redundancy switching, disaster recovery, active service and application testing (synthetic testing), creation of reports, distributing emails and much more. Simply put: anything that can be configured manually in DataMiner can be automated.

Even if tasks are automated, the operator always remains in control. Not only is there a full audit trail of the executed tasks, the operator can also opt to interact with the Automation engine at runtime: DataMiner interactive automation scripts can be set up to prompt for operator input and use that to automate further actions.

Automation scripts can be developed, tested and deployed at runtime. Using built-in version control, operators can easily use DevOps practices to respond to the ever increasing dynamic and rapid changes in today's networks, data centers and service offerings.

Key features:

- Open-architecture, user-definable automation engine.
- Full and customizable service life cycle automation.
- Unlimited automation of redundancy switching, disaster recovery workflows, synthetic service testing, etc.
- Automated infrastructure deployment and optional triggering of third-party playbooks.
- Intuitive graphical and textual script editor with IntelliSense automatic code insertion.
- Included script actions like get value, set value, activate alarm & trend template, if/then/else conditions, sleep, send email or text message, upload to FTP and much more.
- Modular nested scripting.
- Interactive automation enables operators to provide input to the behavior of scripts at runtime.
- Trigger scripts manually, based on a time schedule or with system events such as service life cycle transitions, correlation rules, etc.
- Upload and roll back using version control.
- Develop, test, debug, deploy at runtime (adheres to DevOps practices).

2.1.6.29. Scheduling Engine

The DataMiner SRM Scheduling engine organizes and maintains schedules of services and resources. The rich feature set enables scheduling of both simple and extremely complex sessions and events. Deeply embedded in DataMiner SRM, Scheduler is at the heart of triggering service life cycle transitions right on time.

Using DataMiner Scheduler, operations teams can reduce reliance on manual work to execute tasks. In addition to managing the service life cycles, the SRM Scheduler can be used to automatically trigger just about any activity. This includes overnight planned maintenance workflows, active service verification and testing during quiet times, as well as just about any operational task you can think of.

Key features:

- Extensive, fully user-definable scheduling capabilities.
- Supports single-shot, recurring and all-day events, as well as permanent services.
- Schedules services and manages the booking timeline of each and all individual virtual function and network elements.
- Allows seamless navigation between service and resource booking timelines.
- Option to add pre-roll and post-roll events as well as single-shot events during the life cycle of a service (e.g. active service verification during the running state of the service).
- Real-time drag-and-drop service schedule changes with operator notifications in case resources are not available.
- Intuitive graphical overview of planned, ongoing and historical tasks.
- Real-time overview of the pending schedules.
- Ability to duplicate existing schedules.
- Quick navigation to actual time, tomorrow, next week, yesterday or last week.
- Support for planned maintenance resource reservations (requires DataMiner Planned Maintenance OSS option).
- Full audit trail of scheduler task execution.
- Imports schedules from third-party ERP systems.

2.1.6.30. Interfacing With Off-Line Booking and Reservation Systems

Most often, so-called 'off line' booking systems make assumptions on resource availability, such as video receivers, antenna's, bandwidth on satellite and IP networks, etc.... Those resources are allocated against the booking, not necessarily taking into account the actual status of the network and its resources. Naturally, since the bookings are made upfront, the resources that are assumed to be available may not be available in the network at all at the start of the session. As a result, bookings can fail in case network configuration changes, network elements fail or are put in maintenance, etc....

Secondly, off-line booking systems are often blind in terms of creating accurate billing records and reporting service level agreements (SLA). The root cause is that the off-line booking systems may not be informed properly about the actual status and performance of the booked service.

This is where DataMiner's open and bi-directional architecture comes into play. DataMiner has the capability to interface with industry-standard and proprietary booking and scheduling systems regardless of the protocol used (file exchange, RESTful, SOAP, etc....). Since booking records are different depending on the service and end customer, DataMiner can easily adapt to the existing booking-records and extract the necessary information it needs to start the automated workflow to start the session.

2.1.6.31. Dataminer Service Visual Overview

To allow effective monitoring of services, the orchestration layer also needs to create an end-to-end, service centric visual overview. In DataMiner, this visual overview is automatically created for all services, without operator intervention. The graphical representation of the service topology includes:

The processing functions from source(s) to destination(s) filtered down to a single service

The alarm status of each of the virtual functions that contribute to the service

The connections between all virtual functions, with active path highlighting

Real-time status and KPI updates

Media thumbnail visualization

Instant access to historical KPI performance trends

Drill-down to individual virtual functions, elements and software applications

An automatically generated UI, customizable using Microsoft Visio

2.1.6.32. East-West Service Topology View

Since DataMiner is aware of the service flows from source(s) to destination(s), the east-west topology visualizes the exact path of a service through the network.

2.1.6.33. North-South Service Topology View

DataMiner understands the way microservices are deployed on the hosting infrastructure. As a result, the operator can also visualize how and where microservices are running. This view is called the north-south view, as it depicts the deployment from the microservice layer down to the hardware layer across all operating systems, virtual machines and containers.

2.1.6.34. Deeply Integrated In All Aspects of Operations

DataMiner automation and orchestration are deeply embedded in all aspects of the organization. This deep linking is fundamental to accomplish the planned return on investment. Unlike standalone automation systems, DataMiner comes with a huge set of tangible benefits:

- Far-reaching automation from customer demand to service delivery
- Alignment of the teams with corporate processes such as customer management, implementation, change management, planned maintenance, inventory management, etc.
- Consistent, repeatable and predictable operations
- Rich operational environment that facilitates fast and accurate decision making
- Automated end-to-end KPI management and availability reporting (internal and external SLA)
- Fully automated and bi-directional machine-to-machine (M2M) synchronization across NMS, OSS and BSS
- And much more

2.1.6.35. Eventually Everything Connects

On top of the best-of-breed orchestration capabilities of DataMiner Service and Resource Manager, DataMiner connects people, networks and services.

DataMiner OSS/BSS gateway functions are highly customizable and therefore adhere to existing operational and business workflows and systems. The supported workflows are bi-directional, meaning DataMiner can Create, Read, Update and Delete (CRUD) information from any OSS/BSS system, whether it is an industry-standard system or a proprietary, in-house developed application.

From an operational perspective, the OSS/BSS gateway functions are deeply integrated into the day-to-day workflows. To list a few examples: an operator can instantly create a trouble ticket that is pre-populated with all relevant infrastructure, service and environmental information. DataMiner SRM can calculate cost during the booking process, helpdesk operators instantly know which customers are affected in case of outages, business customers can enter jobs (work orders) directly in the system and track their SLA levels, DataMiner prevents booking of services on infrastructure that is or will be under maintenance and much more.

2.1.6.36. Spectrum Analysis

DataMiner Spectrum Analysis provides operators with the unique opportunity to integrate any spectrum analyzer from any vendor, or even more specialized carrier management systems and to benefit from real-time RF spectrum monitoring, alarming and performance management. And this fully integrated in the overall end-to end management of the entire operation, resulting in powerful cross-correlation and root cause analysis.

The DMS Spectrum Analysis solution can be deployed in a wide variety of applications, including:

- Forward and return path monitoring in HFC broadband networks
- RF performance monitoring in broadcast systems
- RF carrier monitoring of satellite uplink and downlinks, etc.
- Satellite operators
- National media and broadcast corporations
- Terrestrial broadcasting networks
- Government regulatory authorities
- Wireless network operators

Because DataMiner unconditionally integrates any spectrum analyze, operators can leverage on existing analyzers and expand further with equipment that suits their application and their specific requirements in terms of technical features and cost.

Any spectrum analyzer can also be combined with any third-party RF switch, such that a single analyzer can be deployed for performance monitoring on various test points in the operational system.

DMS Spectrum Analysis provides real-time remote interfacing via its web UI. Not only can operators now perform RF measurements remotely, but a single spectrum analyzer can also be shared by multiple concurrent users, each individually with his settings and preferences without any constraints or conflicts. This feature of DMS Spectrum Analysis significantly improves the ROI on measurement equipment by optimizing its use throughout the corporation. The real-time spectrum analysis UI is uniform across any spectrum analyzer from any vendor and offers a plethora of features for the operator.

DMS Spectrum Analysis offers also around-the-clock performance monitoring. With extensive but highly intuitive scripting capabilities, operators can automate just about every measurement. With these automated RF performance measurements, operators can track any vital RF parameters (such as Eb/No, carrier levels, C/N, carrier power, average power, etc.) and generate alarms whenever one of those goes out of range. Operators can also perform long-term trend analysis on those parameters to identify emerging RF problems before they affect services.

2.1.7. NETC System

The HA Design Group Team sees that with all of the power and agility of the Dataminer system to duplicate the Maxview system with a modern twist will require the core servers which are enterprise class units from Hewlett Packard, add to that serial interfaces from Moxa, trying to

standardize the system around these for serial communication. Then for GPI interface Control by Web X332 or similar.

For the transmitter sites, we suggest standardizing on the Burk Technologies ARC Plus line with their transmitter interfaces, GPI/O and analog interfaces. This then gives us a dual connection with the sites. The state ethernet connection and if there is a failure on that then we propose that the RSI modules be installed in the ARC Plus for a telco backup, since most of the site only have the two connections. This also give NETC the ability to utilize their smart phones with the backup connection.

This will then replicate the existing systems, however with the flexibility of the Dataminer system we would suggest several planning meetings as the initial system is composed.

2.1.8. Proposed development approach

DataMiner will be interfacing with all kinds of devices and applications from different brands, no matter the protocol of the interface, from contribution till distribution if needed. Basically, DataMiner interfaces with 3 categories of devices:

First there are the network devices itself. DataMiner is capable of talking to any active component from any vendor; data network equipment (like routers), pc workstations, audio mixers, encoders, decoders, video processors, Glue etc. With 'system' is meant that DataMiner also interfaces with any 3rd party application like ScheduAll, and vendor specific Element Management Systems (EMS) that might be used.

Secondly, there is also equipment with test and measurement purposes, like all kinds of analyzers. This kind of equipment becomes more and more important, because it measures the real service for the end-customer.

And last but not least, because often used, DataMiner also interfaces with all kinds of environmental probes in order to interact with temperatures, rainfall (heavy rainfall having impact on satellite signals), wind but also with access control systems, UPS's, air conditioning systems etc.

DataMiner provides comprehensive and professional management, via collecting data from numerous devices and applications distributed across the network and aggregating all data to create an intuitive service perspective on the operations.

The complete ecosystem can be intuitively managed through the DataMiner web client and includes powerful MS® Visio® compliant graphical presentations (including real-time alarm color coding, display of key performance information such as link bandwidth etc.), multi-user alarm management (including filtering, sorting, exporting, masking, commenting, root-cause-analysis), tree navigation, element and resource lists, and much more. In short, DataMiner offers endless possibilities to provide state-of-the-art and end-to-end network management of Nebraska Educational Telecommunications Commission's technology infrastructure exactly the way the customer wants, from one single screen, resulting in very tangible operational benefits. Note also that Skyline offers a superior NMS specifically designed by Skyline for this type of applications. As opposed to some general-purpose system integrators, Skyline proposal offers important benefits, such as:

A very unique general experience with the implementation of this type of solutions. This is what we do, this is our business and as no other we understand what it takes to implement and deploy this type of solutions.

Very specific experience with the implementation of the DataMiner product which is subject of this proposal. The solution proposed by Skyline has been developed by Skyline from the ground up, and has been implemented by Skyline throughout the cable, IPTV, satellite and broadcast industry. So, we know the solution that we offer to Nebraska Educational Telecommunications Commission inside out, and we have extensive experience implementing it in the most complex operational environments.

Total control of the solution – as Skyline has developed this solution from the ground up, and continues to do so – as opposed to general purpose solutions from very large corporations, implemented by general purpose system integrators, we can guarantee Nebraska Educational Telecommunications Commission that we can react promptly to possible system issues and to new emerging requirements over the years to come, and where necessary we can adjust our development roadmap in a close partnership with Nebraska Educational Telecommunications Commission.

2.1.8.1. Technical considerations

The solution proposed by The HA Design Group Team is a deployment of its standard Data-Miner software technology, which has been deployed by various industry leaders, and is running on industry standard hardware. Thanks to DataMiner's wealth of features (being part of the standard core software) and supplementary modules (to be added as extra license for particular application specific functionality, like Spectrum Analysis) the system can be expanded over time in a virtually unlimited way, both in terms of functionality and in size of the network, thanks to DataMiner's open architecture and industry standard interfaces. From an architectural point of view, DataMiner can be deployed in different ways, being centralized, regionalized or fully distributed (for details refer to chapter 3.1 below). A customer solution with DataMiner is typically very transparent and fairly simple and straightforward, and basically embodies the deployment of:

For the NETC system Dataminer will start with a two-node system to provide the redundancy that the RFP calls for. These will be located at the Lincoln NOC.

A number of DataMiner Drivers: A Driver enables DataMiner to communicate with a specific type of device or application. The number of drivers that is needed corresponds to the number of devicetypes and application-types, with which DataMiner shall interface. One driver is needed per TYPE of device and application, no matter how many of these devices and applications there are in the network. In the NETC system the current count is 26 drivers.

One or more supplementary modules, extending the standard functionality and set of features with very specific functionality, like DataMiner Redundancy, DataMiner OSS/BSS Inventory and Asset Manager Gateway, DataMiner Service and Resource Manager, DataMiner CPE Manager, etc. (some of these are optional, see the costing proposal)

From a high-level perspective, three principal layers can be distinguished in the proposed solution:

Data Acquisition: Through DataMiner's multi-protocol engine and multitude of data collection techniques, DataMiner is gathering real-time information from all devices and applications in the network. For this a DataMiner driver is needed per type of device. Drivers are at runtime adaptable and have the open XML format.

The acquired data is then to be processed in order to create added value for the customer. That is where DataMiner engines like automation, correlation, reporting, dashboarding, alarming etc. come into play. DataMiner has a wealth of features allowing a customer to fulfil any requirement in terms of monitoring and control. A nice example is the possibility to execute redundancy switching in any n+m configuration, based on easily customizable parameters and automation scripts.

Finally, the third layer is the data presentation. DataMiner provides an intuitive multi-user UI, containing a consolidated overview of all managed assets through unlimited web-based access. Any view is compatible with MS Visio and hence fully customizable.

2.1.8.2. Detailed project work plan

In terms of system implementation, i.e. design and deployment, Nebraska Educational Telecommunications Commission can rest assured that the HA Design Group and Skyline Team engineers will deliver a solution in compliance with the Nebraska Educational Telecommunications Commission's requirements, following a seasoned methodological plan of action. The Team is renowned for its technical services and its close cooperation with its customers.

Short after the awarding of the project, a project deployment plan will be started, which contains,

from a high-level perspective – the following action steps:

- Kick-Off Meeting (KOM): the HA Design Group Team's PM's will be the Single Point of Contact (SPOC) for the NETC. The PM will contact the customer to kick-off the project.

- Project Plan: this timeline is one of the main results of the KOM. The project plan contains – among others – the project phases as well as the activities to be carried out.

- Roles & Responsibility matrix: is a second important result of the KOM. This R&R-matrix is typically shared in pre-sales phase already but finalized during KOM at the latest.

- Risk Management: (in case customer requests) is another important part of the project deployment. All involved parties shall list the risks on their end, incl. description of the consequences, mitigation plan etc.

- Project questionnaire: A list of all information that The Team needs from the customer related to the Network Management Control System in general. This will help with any overlooked items that were not addressed in the RFP.

- Functional Design Specification (FDS): An iterative document, established by The Team architects, both HA Design and Skyline, in close cooperation with a representative from the customer, describing the Network Management Control System in detail, like the UI, monitored parameters, architecture, specific requirements etc. to be finalized and mutually agreed upon before implementation phase starts.

- Final Project Plan (FPP) or Construction Set, based on the above, the FPP is agreed upon.

2.1.8.3. Kick Off Meeting

We look to conduct a kick-off meeting with all personnel involved in the design and management of the project, which will be held at the BEMC NOC. In advance, we will prepare an agenda in coordination with BEMC.

2.1.8.4. Update Project Schedule.

The Project Schedule will be established early in the Project. Once established, the project schedule baseline will only be modified if there are changes in the project. The approved baseline will be utilized for all project metrics reported in the monthly status report. This project schedule will be cost loaded.

2.1.8.5. Quality Control for Design, Integration and Management

Each and every project requires performance on a broad combination of concurrent technical and administrative tasks, each with specific needs that require adequate planning, coordination, and control to manage the many work activities associated with the client-driven project requirements. Past project experience with other large broadcasting companies has taught HA Design Group that to be successful, project quality, schedule, and cost must be proactively controlled. Through planned and systematic activities, implemented within our quality design and integration project processes, we make certain that high-quality results for the NETC solution requirements are fulfilled.

The optimum quality result for the NETC NMC System will, in part, result from HA Design Group's close coordination with the NETC management and technical staff as well as from other NETC-suggested internal and external stakeholders. HA Design Group is prepared to fully document project developments as project progress develops as well as to coordinate with the entire team during the course of the NMC Project.

Inclusive in this phase Roles and Responsibilities Matrix and Risk Assessments for the Skyline Group. These will establish responsibilities and identify any gaps in the preliminary concept.

2.1.8.6. Long-Term Satisfaction of Clients through Quality is the Goal

The significant measure of the success of any company is the quality of the product(s) and/or services that it provides to its clients. HA Design Group owes its success to the hard work and expertise of its personnel and it remains focused on providing quality solutions, technical services, and post-sales support. Our sophisticated computerized engineering, acquisition, warehousing/inventory, project planning, and implementation systems all contribute to our high-quality offerings which involve all members of the project team, the administration of HA Design Group, and the client as important stakeholders during the project process.

Next the major objectives of the Analysis, Design, and Development task are as follows:

- Perform a workflow analysis to gain a detailed understanding of the BEMC NOC Modernization project operational requirements.
- Confirm the operational requirements specified in this RFP and supporting documents.
- Complete a high-level conceptual design for all systems.
- Complete detailed design and documentation necessary to facilitate installation and system integration.

2.1.8.7. Requirements Analysis and System Definition

HA Design Group will meet with the NETC staff to document the requirements for the NETC NMC system that starts with the existing NETC ideas and concepts that have been presented in the RFP. Technical, functional, and operational information will be gathered and assessed to document the existing systems. Out of these investigations and client meetings, a requirements document will be generated to identify the full range of needs for the NETC-specified NMC solution including workflow documents and charts. Based on the feedback from the client review, a final requirements document will be presented to determine the detailed design direction.

2.1.8.8. Conceptual Phase

The conceptual diagrams will be constructed by the HA Design team to illustrate the abstract functional requirements from the requirements document to include any building requirements, workflow, and equipment that can provide the functionality required.

2.1.8.9. Preliminary Design Phase

The Preliminary Design Review of the conceptual diagrams will be constructed by the HA Design team to illustrate the abstract functional requirements from the requirements document to include any building requirements, workflow, and equipment that can provide the functionality required. As part of the preliminary design phase there will be a proof of concept for the workflow as envisioned.

2.1.8.10. Detailed Design and Engineering Phase

With NETC approval of the completed preliminary design phase, the detailed design can then begin with consoles and equipment taking shape on paper. This is the time for fine tuning of the design and even changes when things are unforeseen. Changes on paper are much easier than change orders. Also, in this phase, we will take a strong look at the ergonomic implications of equipment and human interfaces through research and evaluation. These ergonomic considerations will then be reflected in the detailed design to provide an enhanced user-friendly environment.

Documentation will include all wiring and construction drawings for the system integration, bill of materials, software by machine, IP, and router and a test plan.

In order to prepare written documentation, HA Design Group relies on its technical infrastructure (software and hardware) to prepare the appropriate documentation requested by the NETC project. The technical drawings are created from the AutoCAD drawing package (Version 2018) in the file format of .dwg, .pdf, or other requested formats support by the AutoCAD software system. The Microsoft Office family of products is utilized including Word, Excel, and Project to prepare the necessary documentation, project schedule, cable listings, test results, equipment list with serial numbers, and other technical data as required in the NETC project deliverables.

The detailed design will require several intermediate design reviews leading into the Critical Design Review for the NETC-approval process to complete. This will enhance the interaction between the HA Design team and the NETC team. With the NETC team's Critical Design Review approval, a construction set of documents will be generated that integration uses to build the system. This system build will be performed in two stages (Offsite and Onsite) as described in the following paragraphs.

2.1.8.11. Implementation

The Team's implementation services capabilities include offsite integration and testing services in support of the RFP in a secure facility designed for such activity. Following offsite integration actions, the system is packed up and transported to the on-site location by licensed and insured carrier XPO Logistics, Inc. XPO, a U.S. corporation, is one of the world's ten largest providers of transportation and logistics services.

At the NTEC site(s) our integration team will then assemble the equipment, racks and etc. for a completed system ready for final configuration, testing, and training. The Team will conduct through coordination with NETC engineering, technical, and operations staff on all important steps structured into the project plan to involve the NETC organization with a minimum interruption to regular staff operations and activities. An important aspect of the proposed solution and its implementation is the station-by-station deployment process and the monitoring and control system.

Contractor Responsibilities

During implementation, the HA Design Group Team will be responsible for the deployment and installation of the solution until the implementation task has been successfully completed. The Team will be responsible for all software interfaces necessary to make all systems fully functional as proposed, and the installation and debugging of all hardware and software systems involved. The HA Design Group Team will assist during shadowing of existing services prior to cutover to new delivery platforms and software.

Offsite Actions

In order to meet the NETC schedule and reduce cost of integration, HA Design Group Team plans to create, configure, and test the Network Management Control System and functional subsystems on a documented scheduled basis. To control integration costs, the new designed solution will require pre-built subsystems that are individually tested and verified. We propose that these offsite prebuild integration activities will take place at the HA Design Group Team's Springfield, Virginia location and will accommodate oversight, inspection, and coordination from the NETC team. The offsite integration and testing activities are open to NETC staff that can assist in the knowledge transfer to the NETC technical team. We have found that customer personnel can benefit from the scheduled hands-on observation of project subsystems and functional systems progression at these stages.

Equipment Arrival Inspection/Testing

Upon receipt of manufacturers' equipment, The HA Design Group and Skyline Team will inspect and verify the NETC equipment with an initial visual inspection of shipping containers along with the enclosed equipment. At a later date we will confirm functionality and correct any deficiencies under manufacturer's warranty.

Integration, Configuration, and Testing

The Network Management Control System Installation/Integration process applies standard industry practices for the installation and testing of broadcast; and IT systems. HA Design Group Team staff will employ the proper installation (i.e. cabling, connector) tools and test equipment. Offsite testing exercises will be performed per the project requirements to meet the schedule requirements. Among the installation and configuration actions are the following steps:

- The prepared cables, and connectors will be tested and verified.
- The audio, video and IT equipment will be tested for performance in accordance with the equipment manufacturer's specifications.
- The functionality of the equipment inputs and outputs as well as the control and remote-control devices will be tested.
- The installed system and subsystems will be tested for full functionality as documented in the technical drawings. Signal problems associated with the integration process and other problems will be uncovered during this testing process.
- Telecom, Broadcast and audiovisual equipment that requires balancing, tuning, and level adjustment will be adjusted for optimum performance. Control settings will be recorded in the appropriate instruction manuals.

As each system or subsystem nears the end of integration, testing begins to ensure compliance with technical standards and manufacturer specifications, operational specifications, and functional requirements. All aspects of the system shall be checked to ensure the finest quality workmanship and an operationally sound system.

Completion of off-site Prebuilt Systems

As part of our subsequent integration and testing of each equipment item and/or configured subsystems, The HA Design Group Team will verify the operational functionality of each system per the approved test plan. We will document and remedy any problems encountered during this process.

On-Site Actions

The implementation plan must demonstrate to the NETC how the HA Design Group Team will deploy the solution. The plan must detail the approach for coordinating the following:

- Technical preparation and system solution changeover activities;
- Deployment schedule; and
- Development and submission of a plan for review and acceptance by NETC for Acceptance

Significant planning, coordination, and preparations are needed to ensure a smooth and successful onsite implementation effort in the midst of an ongoing live broadcast transmission operation. The implementation plan will be reviewed and approved by the NETC team regarding deployment schedule, coordination around existing operations, and testing regimen.

Transportation between Offsite, Onsite, and Storage

The HA Design Group Team is responsible and will arrange for transportation to the NETC facility location for all authorized new equipment and offsite pre-built systems as scheduled. HA Design Group Team will assure that our movement of NETC systems is insured against the risk of loss, if any, through delivery to the site. The HA Design Group Team coordinated transportation actions include all preparation, packing, crating, loading, shipping, unloading, unpacking, and placing into the defined NETC location.

As part of this transportation effort, HA Design Group will work with an experienced regional transportation partner, namely XPO of Sterling, Virginia. The professional staff and freight shipping experts are fully trained to meet the NETC's transport logistics needs. HA Design Group Team has worked with XPO for past broadcast customers' transportation requirements, such as PBS DMS, VOA, NPR and can attest to their high-quality approach to the shipping process including preparation and follow-through into the customer's location.

The HA Design Group Team's insured secure location will also be used for systems testing. The systems are subsequently shrink-wrapped into palletized systems prior to final shipment. All systems/subsystems will be available for NETC's scheduled inspection as needed.

Onsite Phase

When the system arrives onsite and installation commences at the NETC facility, care is taken to adhere to building codes and standard wiring practices. The transportation and installation actions include the delivery, unloading, uncrating, setting in place, fastening to walls, floors, ceilings, counters, or other structures where required. The installation effort includes the interconnecting and wiring of the components for the system as well as equipment alignment and adjustment as called for by the manufacturer.

The installation schedule and implementation sequence during the onsite phase is driven by the technical design documentation and the NETC technical team's schedule to ensure that any nearby NETC technical or operations activities are unaffected during the installation and configuration services effort. As part of the overall project schedule, the new technical/signal interconnections within the new NETC plant and existing technical areas require prior planning, regular communications between the HA Design Group Team and NETC technical staff, and quality-control procedures so that other technical systems being installed and/or in use throughout the plant remain fully functional and unaffected.

Station Integration

When the NETC NMC installation is further along and ready for integration with the individual stations and outlining systems, a coordinated integration effort will take place initially at the KUON location utilizing connections back to the newly installed NETC NOC. Closely following the NOC system installation will be the phased start-up of the NOC's new monitoring applications and systems, station-by-station, back to the NETC facility, which will have been successfully addressed first at the local KUON facility.

Next the ancillary items such as Satellite Farm and Production equipment will be addressed. Most of these are straight forward and device drivers have been addressed, however there are a few that will need further discovery and development, these may include the various router interfaces, switcher interfaces, and audio and video equipment. We have tried to identify these in the costing schedule.

Second the Gensets at the NOC and the stations, most remote communications are by the IP interface module in the ATS system that runs the genset. By the answers given we are not sure if these modules are in the ATS. If not, then these should be acquired to provide full functionality of the genset. ASCO unit is model 5150 and is in the options section.

Implementation Certification

The HA Design Group Team will provide an Implementation Certification Letter that certifies that the solution is ready for Acceptance Testing. The Certification letter will confirm that the system solution is ready for testing at each location.

Acceptance Test Plan.

The HA Design Group Team will develop the proposed NMC system solution test plan prior to the Test date. The HA Design Group Team will work with NETC to develop such test plan and is subject to NETC approval. The plan must clearly set forth how the system solution test will fully test the system solution and its features. The plan must identify the inputs to the test, the steps in the testing process and the expected results. The plan must also identify any software tools used during testing and all the NETC resources needed.

The plan will provide a description of the test environment, methods, workflow, and the management of the system solution testing process and the defect identification and resolution processes to be executed during the system test.

This plan will be submitted for the proposed system for approval from the NETC team.

Upon completion of the testing phase for the particular system/sub-system The Team will provide a letter certifying that the NMCS System/Sub-system has been successfully tested using the Acceptance Test Plan.

Punch-List

As the testing progresses, a project punch list will be jointly developed between NETC and the HA Design Group Team so that the NETC team can be assured that all required items in the NMCS System have been installed, configured, and completed to the proper specifications. An acceptance document and process will document that the completed NMCS System and the associated integrated sub-NMCS Systems are working properly. Part of the final project crew activities is clean-up of the work area and the removal of refuse and unused parts and materials no longer required by the installation crew. As the punch list phase comes to completion, the training for the customer personnel will be progressing. This final training encompasses the training for operations, technical maintenance, and repair/maintenance as requested in the RFP requirements.

2.1.8.12. Training

The HA Design Group Team has reviewed the RFP requirements and understands the training delivery process required by the NMCS project including a Training Plan to be approved, Training Materials to be approved, and a Letter certifying completion of training.

We will work with the appropriate NETC staff to schedule and the technical and operational training from Dataminer as detailed below:

Making sure that you get the maximum out of your investment has never been easier with the DataMiner Training & Certification Program. We offer you a complete modular professional training & certification program for all stakeholders in your corporation.

DataMiner Training Services have been top rated by renowned corporations and are praised for its superior quality and its high added value. These services are delivered by seasoned Subject Matter Experts in the field of corporate network management and DataMiner technology and include theoretical presentations, demonstrations and hands-on lab exercises.

The Subcontractor Skyline Communications offers several training courses. Some of them are listed below.

- DataMiner Operator Training (2 days)

This course provides a complete overview of the standard DataMiner System and how to use the platform to interact with the managed operational ecosystem. It teaches the trainee to access and use the system to consult active and historical alarms, to start real-time sessions with managed devices, to navigate through the system and to use any of the operator user interfaces.

- DataMiner Administrator Training (2 days)

This course teaches the trainees everything about setting up and maintaining a DataMiner System. This includes adding new devices, new drivers, managing user accounts, setting up back-up policies, creating graphical Visual Overview presentations, defining alarm thresholds, etc. (Prerequisites: DataMiner Operator Training.)

- DataMiner Advanced Applications Training (1 day)

This course teaches the trainees everything about the configuration and use of advanced DataMiner applications, including correlation and automation. This includes creating correlation logic, connectivity chains, creating and testing automation scripts, etc. (Prerequisites: DataMiner Administrator Training.)

Note that Skyline Communications provides Private Training Sessions, as well as Open Training Sessions and Worldwide Training Tours (at different locations across the globe).

- Private On-Site Training (2, 4 or 5 days)

This training package is for a group of employees and is given on-site at customer's premises.

- Open DataMiner Training (2, 4 or 5 days)

Each attendee can opt to participate in one, two or all three modules mentioned above (Operator, Administrator, Advanced).

- Worldwide Training Tour (2, 4 or 5 days)

The DataMiner Worldwide Training Tour brings specialized DataMiner training to a location near you, creating the perfect opportunity to learn all about DataMiner. The DataMiner Worldwide Training Tour features sessions in Australia, Brazil, France, Malaysia, Russia, South Africa, the UAE, the UK and the USA, all led by seasoned subject matter experts.

The DataMiner Certification Program offers everyone the opportunity to test their DataMiner knowledge and skills, across different domains within the DataMiner platform and ranging from entry-level to advanced knowledge and to obtain an official DataMiner Certificate to attest their expertise. Certification can be executed online and is available free of charge for all HA Design Group Team customers and business partners. Upon successful completion of the test, the candidate receives an official digital certificate and badge.

Note that The HA Design Group Team continuously invests into ensuring that its customers and business partners can take maximum benefit of the tremendous wealth of features and capabilities of the DataMiner platform. This includes the availability of not only comprehensive

manuals and user guides, but also the recently launched DataMiner.TV platform, which provides on-line video-based education (ranging from comprehensive full technical training sessions to brief bite-size how-to sessions).

2.1.8.13. Warranty.

HA Design Group provides clients with post-implementation support and warranty. HA Design Group will provide a warranty against defects and failures to perform as follows:

1. All defects in HA Design Group-acquired equipment will be facilitated for correction with the manufacturer for a period of that warranty.

2. All defects arising from a failure in custom software or in integration services will be corrected at no cost to NETC for a period of 1 year after acceptance of the contract.

3. HA Design Group will warranty all system wiring for one year. We will warranty all HA Design Group software configurations for 1 year based upon the specific hardware, firmware, and software versions delivered by the manufacturer at the time of system acceptance.

2.1.8.14. Service Support.

HA Design Group will provide a layered approach to help desk service responses and maintenance upkeep that will support the network monitoring system. Using a web-based support platform and trouble ticket system, HA Design Group will provide Tier 1 service that will be the initial source that assesses the issues and problems before then escalating to additional service support sources.

Other identified software vendors and support arrangements will be documented by HA Design Group involving escalated support for Tier 2, level 1, level 2, and level 3 technical support:

1. Skyline for Dataminer Support
2. HA Design Group for monitoring system and components.
3. HA Design Group for hardware
4. HA Design Group for system updates and system migration actions

The system we will use is called Web Help Desk® from SolarWinds®. We have used this system and associated help desk procedures in past project support efforts including the roll-out of the PBS Time Zone Delay Servers to PBS member stations involving approximately 70 servers into the Mountain/West Coast/Pacific regions, WARN Deployments, as well as V6 deployments, and Ohio BEMC This project support infrastructure incorporates the following:

- Fully integrated ticketing and asset management server system
- All-in-one help desk with centralized help desk management

- Automated ticketing and IT asset management
- Documented time-to-resolution of trouble tickets

In summary, the Web Help Desk® we will use retains the NETC system asset information and helps us automate the service responses with follow-up data and reports.

In addition, HA Design Group proposes 4 quarterly visits for system checkups through-out the year. This will enhance the NETC experience and help with maintenance and finding small problems before they get BIG.

2.1.8.15. Standard Warranty from Skyline

HA Design passes the warranty through from Skyline Communications which warrants to the Customer that commencing from the date of delivery to the Customer and continuing for a period of 12 months, to substantially conform in all material respect to the printed specifications for the Software, which has been delivered to the Customer in connection with the Customer's purchase of the Software. Skyline Communications does not warrant that the Software is error free or that the Customer will be able to use the Software without problems or interruptions. This standard Limited Warranty voids if the Customer fails to use or maintain the Software in accordance with Skyline's specifications or instructions, or if the Software has been subject to any unauthorized modifications, improper operation, user negligence, service by unauthorized persons and/or third parties, accident neglect, misuse, tampering, acts of God, or any other event other than the ordinary use.

This standard Limited Warranty only covers the original Licensee of the Software and Skyline's sole obligation and the Customer's sole remedy for any failure of the Software is limited to the repair or replacement of the Software at Skyline's discretion. Skyline's liabilities are limited to the amount paid for the Software. Skyline shall not be liable for indirect, special, consequential or liquidated damages or penalties, including claims for lost revenues, profits or business opportunities, even if Skyline Communications had or should have had any knowledge, actual or constructive, of the possibilities of such damages. This unless otherwise explicitly agreed to in a separate agreement.

2.1.8.16. Skyline DMS Maintenance & Support

In addition to the Limited Warranty, the Customer can enjoy the benefits of the DMS Maintenance & Support service, which provides (1) unlimited technical support during EST business hours (assuming that the Customer's staff has successfully completed the standard DataMiner training program) and (2) all DataMiner Software Upgrades (minor and major) at no additional charge.

DMS Maintenance & Support is supplied at no charge commencing the date of delivery to the Customer and continuing for a period of 6 months. After this initial period, the DMS Maintenance & Support Service can be purchased on an annual base, at a percentage of the cost of the deployed Software licenses (assuming remote access is available for tech support services). Optionally this service can be upgraded for 24/7 technical support.

Updates and Upgrades are available for both (a) the common standard off-the-shelf Software platform as well as for (b) the Software drivers purchased from Skyline or HA Design Group which are deployed to interface the standard Software platform with specific third-party products.

New Updates and Upgrades of the Software are delivered to the Client at Skyline's sole determination and decision, subject to availability and where necessary aligned with the support priorities defined herein and based on the technology innovations that take into account the general interest of all Software users and the overall roadmap of the Software and Skyline's business.

2.1.8.17. Upgrade Policy & Timing

Skyline Communications maintains a monthly cycle of small updates and a yearly cycle of major updates. The objective of the monthly upgrade cycle is the introduction of minor enhancements and bug fixes, while the annual major release typically introduces ground breaking new innovations and enhancements. Every available release is announced with comprehensive Release Notes, containing detailed descriptions of all software modifications, which are automatically delivered to the users via the DMS Tech Flash e-mail distribution channel. DataMiner is based on a non-exclusive upgrade model, meaning that Customers can skip any of the available updates and then only install the most recent upgrade, which automatically brings along all previous upgrades.

2.1.8.18. Technical Support Escalations and SLA's

HA Design Group and Skyline Team's Maintenance & Support includes telephone and e-mail support, online documentation and a web-based portal for submitting and tracking of cases of failures and/or malfunctioning (a "Fault") in the Software encountered by the Client ("Support").

A Fault that needs a corrective action can be reported through HA Design Group Web Help Desk which will then be evaluated and elevated to DataMiner Integrated Operations Center (IOC) if it includes Dataminer.

A Fault shall be determined as non-conformity with respect to the user documentation or training material and/or a failure with respect to the functionalities of the solution and/or a deviation to the normal functioning of the operational system. A Fault can for example be a software bug.

Support is available during business hours, which is 9:00 a.m. to 5:00 p.m., Monday through Friday, EST, excluding HA Design Group's pre-scheduled and official public holidays ("Regular Business Hours"). If a Fault in the Software is reported by means of a telephone call, Client shall confirm the call within 2-hours by sending an e-mail to HA Design Group Web Helpdesk IOC.

Support priorities are assigned by HA Design Group and Skyline Team based on the impact of the problem on Client's environment:

Tier 1: a condition or fault of the hardware that influences the normal behavior of the system in a way that it becomes impacted for Client and no alternatives are available.

Level 1: a condition where the Fault continuously and/or intermittently influences the normal behavior of the Software in a way that it becomes entirely useless for Client and no alternatives are available.

Level 2: a condition where the Fault affects the Software, or a part of the Software, but where it does not render it entirely useless for Client (possibly by means of workarounds or fall back mechanisms).

Level 3: a condition where the Fault does not really impact on the use for Client, but which possibly could affect the Software at a later time, or which potentially could escalate to a Level 2. Level 3 will also be applicable for all Faults which cannot be classified as Level 2 or Level 1.

Availability Targeted Response Time

Targeted Fix Time:

LEVEL 1 Regular Business Hours 1 business hour 8 business hours 5 business days

LEVEL 2 Regular Business Hours 8 business hours 16 business hours 30 business days

LEVEL 3 Regular Business Hours 24 business hours 48 business hours 90 business days

"Response" time means the time required by HA Design Group and Skyline Team to provide a notification of proper receipt and follow-up to the Client.

"Workaround" time means the time required by HA Design Group and Skyline Team to put in place a temporary remedy to eliminate the Fault. A Workaround solution may cause minor restrictions in the Software or system's performance or availability. A successful Workaround will deescalate the Fault to the subsequent lower priority level and its prolonged Targeted Fix time will then be applicable, with as a minimum the level 3 timings.

"Fix" time means the time required by HA Design Group and Skyline Team to prevent the reoccurrence of the Fault and any underlying causes of it. When a Fix is implemented, the system is restored to full functionality and performance.

Workaround and Fix times will start counting as soon as HA Design Group and Skyline Team is able to reproduce the Fault.

Around the clock 24/7 Support (optional)

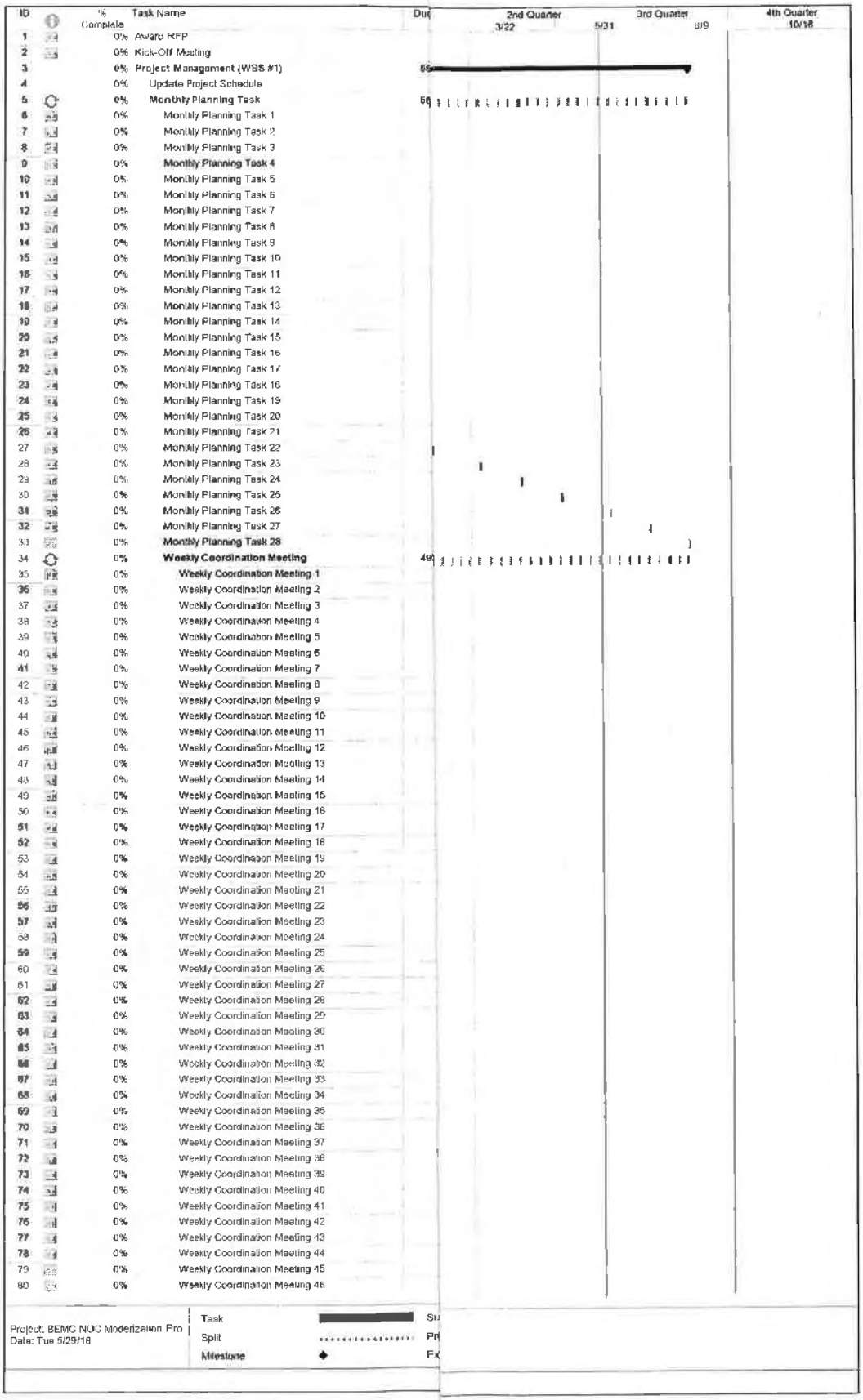
The optional "around the clock 24/7 support" includes support over the phone 24 hours per day, 7 days a week. For this purpose, Client will have access to a dedicated 24/7 hot line, which will be activated in between Regular Business Hours ("24/7 Support").

The aforementioned 24/7 Support is, due to its nature, available for priority Level 1 Faults only and limited to a registration of the Fault by HA Design Group and Skyline Team and where possible, a Workaround or Fix.

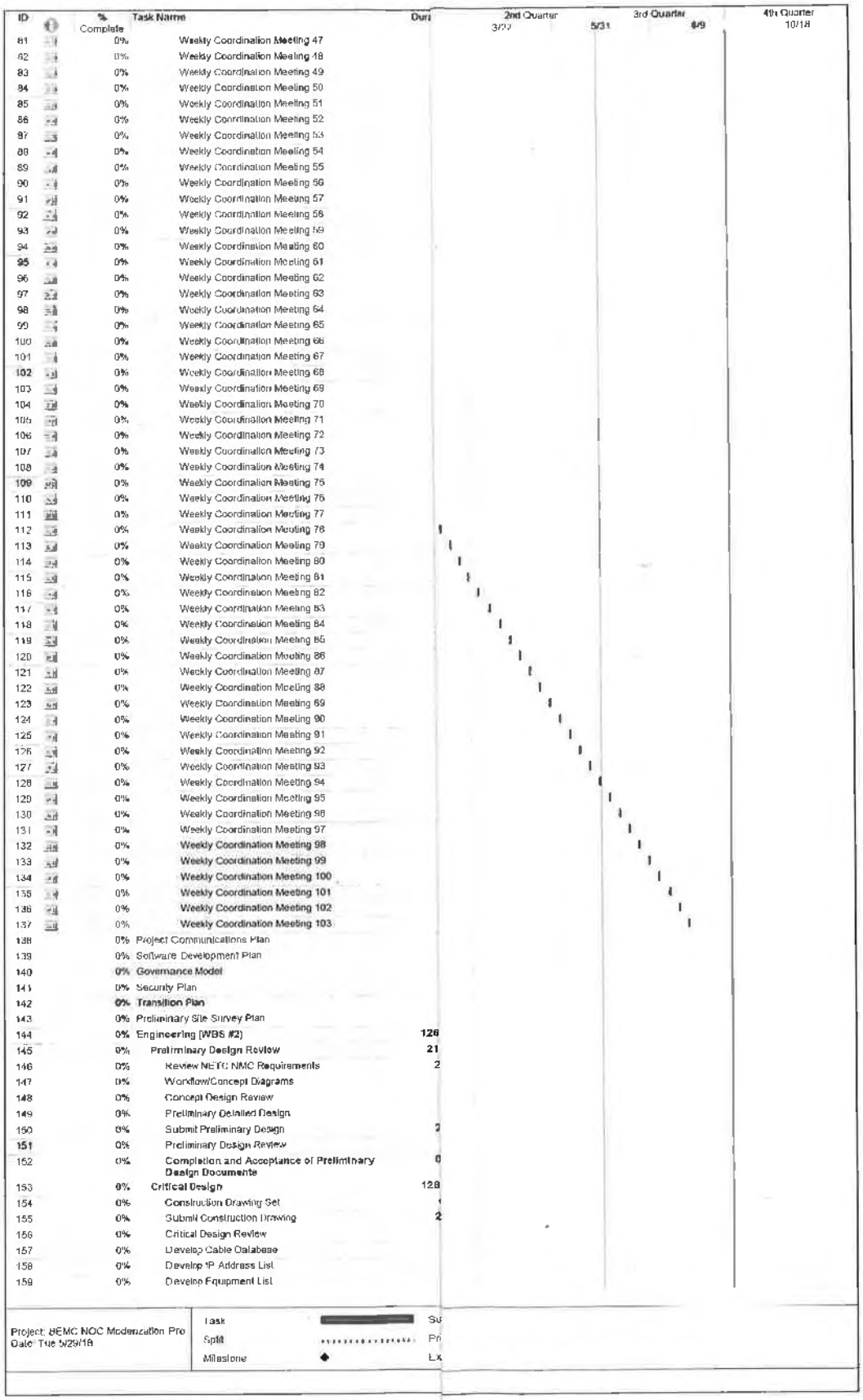
Minimizing the impact of the Fault on the Software and the Client's system will be the main priority of HA Design Group and Skyline Team under 24/7 Support. A Fault reported during 24/7 Support, will be followed-up with full in-depth Support as soon as the next Regular Business Hours period starts.

2.1.9. Project Schedule

The following pages are the project schedule as envisioned. Basically, the project timeline involves a two-year endeavor with annual supports and any additional amendments after that.

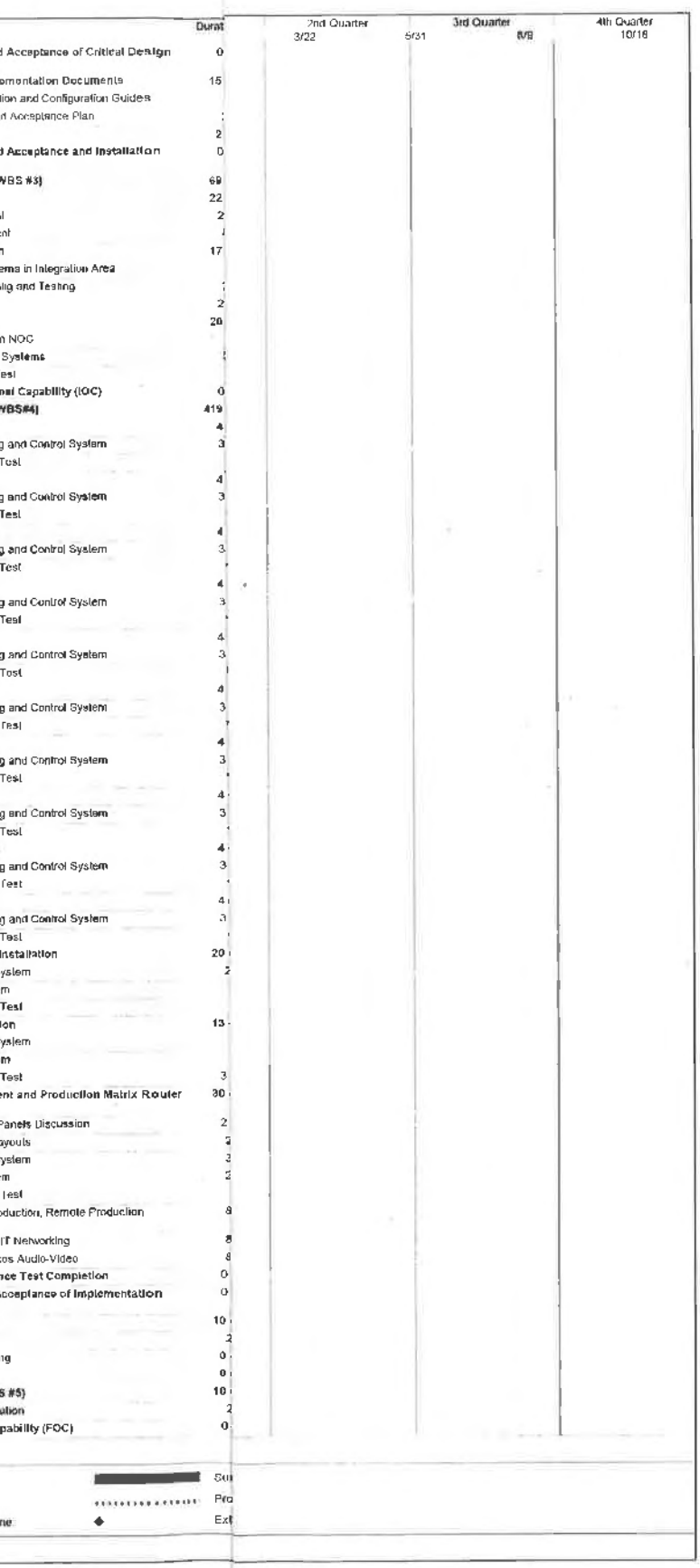


ID	% Complete	Task Name	Du
1	0%	Award RFP	
2	0%	Kick-Off Meeting	
3	0%	**Project Management (WBS #1)**	59
4	0%	Update Project Schedule	
5	0%	**Monthly Planning Task**	56
6	0%	Monthly Planning Task 1	
7	0%	Monthly Planning Task 2	
8	0%	Monthly Planning Task 3	
9	0%	**Monthly Planning Task 4**	
10	0%	Monthly Planning Task 5	
11	0%	Monthly Planning Task 6	
12	0%	Monthly Planning Task 7	
13	0%	Monthly Planning Task 8	
14	0%	Monthly Planning Task 9	
15	0%	Monthly Planning Task 10	
16	0%	Monthly Planning Task 11	
17	0%	Monthly Planning Task 12	
18	0%	Monthly Planning Task 13	
19	0%	Monthly Planning Task 14	
20	0%	Monthly Planning Task 15	
21	0%	Monthly Planning Task 16	
22	0%	Monthly Planning Task 17	
23	0%	Monthly Planning Task 18	
24	0%	Monthly Planning Task 19	
25	0%	Monthly Planning Task 20	
26	0%	Monthly Planning Task 21	
27	0%	Monthly Planning Task 22	
28	0%	Monthly Planning Task 23	
29	0%	Monthly Planning Task 24	
30	0%	Monthly Planning Task 25	
31	0%	Monthly Planning Task 26	
32	0%	Monthly Planning Task 27	
33	0%	**Monthly Planning Task 28**	
34	0%	**Weekly Coordination Meeting**	49
35	0%	**Weekly Coordination Meeting 1**	
36	0%	Weekly Coordination Meeting 2	
37	0%	Weekly Coordination Meeting 3	
38	0%	Weekly Coordination Meeting 4	
39	0%	Weekly Coordination Meeting 5	
40	0%	Weekly Coordination Meeting 6	
41	0%	Weekly Coordination Meeting 7	
42	0%	Weekly Coordination Meeting 8	
43	0%	Weekly Coordination Meeting 9	
44	0%	Weekly Coordination Meeting 10	
45	0%	Weekly Coordination Meeting 11	
46	0%	Weekly Coordination Meeting 12	
47	0%	Weekly Coordination Meeting 13	
48	0%	Weekly Coordination Meeting 14	
49	0%	Weekly Coordination Meeting 15	
50	0%	Weekly Coordination Meeting 16	
51	0%	Weekly Coordination Meeting 17	
52	0%	Weekly Coordination Meeting 18	
53	0%	Weekly Coordination Meeting 19	
54	0%	Weekly Coordination Meeting 20	
55	0%	Weekly Coordination Meeting 21	
56	0%	Weekly Coordination Meeting 22	
57	0%	Weekly Coordination Meeting 23	
58	0%	Weekly Coordination Meeting 24	
59	0%	Weekly Coordination Meeting 25	
60	0%	Weekly Coordination Meeting 26	
61	0%	Weekly Coordination Meeting 27	
62	0%	Weekly Coordination Meeting 28	
63	0%	Weekly Coordination Meeting 29	
64	0%	Weekly Coordination Meeting 30	
65	0%	Weekly Coordination Meeting 31	
66	0%	Weekly Coordination Meeting 32	
67	0%	Weekly Coordination Meeting 33	
68	0%	Weekly Coordination Meeting 34	
69	0%	Weekly Coordination Meeting 35	
70	0%	Weekly Coordination Meeting 36	
71	0%	Weekly Coordination Meeting 37	
72	0%	Weekly Coordination Meeting 38	
73	0%	Weekly Coordination Meeting 39	
74	0%	Weekly Coordination Meeting 40	
75	0%	Weekly Coordination Meeting 41	
76	0%	Weekly Coordination Meeting 42	
77	0%	Weekly Coordination Meeting 43	
78	0%	Weekly Coordination Meeting 44	
79	0%	Weekly Coordination Meeting 45	
80	0%	Weekly Coordination Meeting 46	



ID	% Complete	Task Name	Dura
81	0%	Weekly Coordination Meeting 47	
82	0%	Weekly Coordination Meeting 48	
83	0%	Weekly Coordination Meeting 49	
84	0%	Weekly Coordination Meeting 50	
85	0%	Weekly Coordination Meeting 51	
86	0%	Weekly Coordination Meeting 52	
87	0%	Weekly Coordination Meeting 53	
88	0%	Weekly Coordination Meeting 54	
89	0%	Weekly Coordination Meeting 55	
90	0%	Weekly Coordination Meeting 56	
91	0%	Weekly Coordination Meeting 57	
92	0%	Weekly Coordination Meeting 58	
93	0%	Weekly Coordination Meeting 59	
94	0%	Weekly Coordination Meeting 60	
95	0%	Weekly Coordination Meeting 61	
96	0%	Weekly Coordination Meeting 62	
97	0%	Weekly Coordination Meeting 63	
98	0%	Weekly Coordination Meeting 64	
99	0%	Weekly Coordination Meeting 65	
100	0%	Weekly Coordination Meeting 66	
101	0%	Weekly Coordination Meeting 67	
102	0%	Weekly Coordination Meeting 68	
103	0%	Weekly Coordination Meeting 69	
104	0%	Weekly Coordination Meeting 70	
105	0%	Weekly Coordination Meeting 71	
106	0%	Weekly Coordination Meeting 72	
107	0%	Weekly Coordination Meeting 73	
108	0%	Weekly Coordination Meeting 74	
109	0%	Weekly Coordination Meeting 75	
110	0%	Weekly Coordination Meeting 76	
111	0%	Weekly Coordination Meeting 77	
112	0%	Weekly Coordination Meeting 78	
113	0%	Weekly Coordination Meeting 79	
114	0%	Weekly Coordination Meeting 80	
115	0%	Weekly Coordination Meeting 81	
116	0%	Weekly Coordination Meeting 82	
117	0%	Weekly Coordination Meeting 83	
118	0%	Weekly Coordination Meeting 84	
119	0%	Weekly Coordination Meeting 85	
120	0%	Weekly Coordination Meeting 86	
121	0%	Weekly Coordination Meeting 87	
122	0%	Weekly Coordination Meeting 88	
123	0%	Weekly Coordination Meeting 89	
124	0%	Weekly Coordination Meeting 90	
125	0%	Weekly Coordination Meeting 91	
126	0%	Weekly Coordination Meeting 92	
127	0%	Weekly Coordination Meeting 93	
128	0%	Weekly Coordination Meeting 94	
129	0%	Weekly Coordination Meeting 95	
130	0%	Weekly Coordination Meeting 96	
131	0%	Weekly Coordination Meeting 97	
132	0%	Weekly Coordination Meeting 98	
133	0%	Weekly Coordination Meeting 99	
134	0%	Weekly Coordination Meeting 100	
135	0%	Weekly Coordination Meeting 101	
136	0%	Weekly Coordination Meeting 102	
137	0%	Weekly Coordination Meeting 103	
138	0%	Project Communications Plan	
139	0%	Software Development Plan	
140	0%	Governance Model	
141	0%	Security Plan	
142	0%	Transition Plan	
143	0%	Preliminary Site Survey Plan	
144	0%	Engineering (WBS #2)	126
145	0%	Preliminary Design Review	21
146	0%	Review NETC NMC Requirements	2
147	0%	Workflow/Concept Diagrams	
148	0%	Concept Design Review	
149	0%	Preliminary Detailed Design	
150	0%	Submit Preliminary Design	2
151	0%	Preliminary Design Review	
152	0%	Completion and Acceptance of Preliminary Design Documents	0
153	0%	Critical Design	126
154	0%	Construction Drawing Set	1
155	0%	Submit Construction Drawing	2
156	0%	Critical Design Review	
157	0%	Develop Cable Database	
158	0%	Develop IP Address List	
159	0%	Develop Equipment List	

ID	% Complete	Task Name	Durat
160	0%	Completion and Acceptance of Critical Design Documents	0
161	0%	Construction/Implementation Documents	15
162	0%	Develop Installation and Configuration Guides	
163	0%	Develop Test and Acceptance Plan	
164	0%	Submit Plans	2
165	0%	Completion and Acceptance and Installation Plans	0
166	0%	**NETC NMC System (WBS #3)**	69
167	0%	**Procure**	22
168	0%	Order Equipment	2
169	0%	Deliver Equipment	
170	0%	**Off-Site Integration**	17
171	0%	Mock Core Systems in Integration Area	
172	0%	System Pre Config and Testing	
173	0%	Pack and Ship	2
174	0%	**On-Site**	20
175	0%	Set Equipment in NOC	
176	0%	Configuration of Systems	
177	0%	NETC System Test	
178	0%	Initial Operational Capability (IOC)	0
179	0%	**Station Installation (WBS#4)**	419
180	0%	**KUON Installation**	4
181	0%	Install Monitoring and Control System	3
182	0%	Station System Test	
183	0%	**KHNE Installation**	4
184	0%	Install Monitoring and Control System	3
185	0%	Station System Test	
186	0%	**KLNE Installation**	4
187	0%	Install Monitoring and Control System	3
188	0%	Station System Test	
189	0%	**KMNE Installation**	4
190	0%	Install Monitoring and Control System	3
191	0%	Station System Test	
192	0%	**KPNE Installation**	4
193	0%	Install Monitoring and Control System	3
194	0%	Station System Test	
195	0%	**KRNE Installation**	4
196	0%	Install Monitoring and Control System	3
197	0%	Station System Test	
198	0%	**KTNE Installation**	4
199	0%	Install Monitoring and Control System	3
200	0%	Station System Test	
201	0%	**KXNE Installation**	4
202	0%	Install Monitoring and Control System	3
203	0%	Station System Test	
204	0%	**KYNE Installation**	4
205	0%	Install Monitoring and Control System	3
206	0%	Station System Test	
207	0%	**KUCV Installation**	4
208	0%	Install Monitoring and Control System	3
209	0%	Station System Test	
210	0%	**Satellite Teleport Installation**	20
211	0%	Install Control System	2
212	0%	Configure System	
213	0%	Station System Test	
214	0%	**Facilities Installation**	13
215	0%	Install Control System	
216	0%	Configure System	
217	0%	Station System Test	3
218	0%	**Terminal Equipment and Production Matrix Router Installation**	30
219	0%	Screen Layout Panels Discussion	2
220	0%	Construct the Layouts	2
221	0%	Install Control System	3
222	0%	Configure System	2
223	0%	Station System Test	
224	0%	Master Control, Production, Remote Production	8
225	0%	Web Services and IT Networking	8
226	0%	Government Services Audio-Video	8
227	0%	**Certified Acceptance Test Completion**	0
228	0%	**Completion and Acceptance of Implementation Certification**	0
229	0%	**Training (WBS #4)**	10
230	0%	Training	2
231	0%	**Completed Training**	0
232	0%	**Certified Cutover**	0
233	0%	**Documentation (WBS #5)**	10
234	0%	**As-Built Documentation**	2
235	0%	**Final Operational Capability (FOC)**	0



Attachment One
RFP # 5820 Z1
Requirements Traceability Matrix
Network Management Control System (NMCS)

Bidders shall complete a Traceability Matrix to provide Network Management Control System. Bidders are required to describe in detail how their proposed solution meets the specifications outlined within each Requirement.

The Traceability Matrix is used to document and track the project requirements from the proposal through testing to verify that the requirement has been completely fulfilled. The contractor will be responsible for maintaining the contract set of Baseline Requirements. The Traceability Matrix will form one of the key artifacts required for testing and validation that each requirement has been complied with (i.e., 100% fulfilled).

The Traceability Matrix must indicate how the bidder intends to comply with the requirement and the effort required to achieve that compliance. It is not sufficient for the bidder to simply state that it intends to meet the requirements of the RFP. The State will consider any such response to the requirements in this RFP to be non-responsive. The narrative should provide the State with sufficient information to differentiate the bidder's technical solution from other bidders' solutions.

The bidder must ensure that the original requirement identifier and requirement description are maintained in the Traceability Matrix as provided by the State

How to complete the traceability matrix:

Column Description	Bidder Responsibility
Req #	The unique identifier for the requirement as assigned by the State, followed by the specific requirement number. This column is dictated by this RFP and must not be modified by the bidder.
Requirement	The statement of the requirement to which the bidder must respond. This column is dictated by the RFP and must not be modified by the bidder.

Req #	Project Requirements	Existing Capabilities	In Development	Customized for NETC
PRM #1	The NMCS bid shall provide the ability to control and monitor the NETC NMCS systems via Virtual Private Network (VPN) using Standard Ethernet Internet Protocols, and a mechanism for backup monitor and control capabilities over dial up telephone when terrestrial IP connectivity is not available The NMCS shall provide monitor and control capabilities whether that be alternate connectivity or a desperate system.	x		
Bidder Response: FULLY COMPLIANT DataMiner is able to interface with any 3rd party system, as long as there is an available API that allows that. The method employed in this solution is to utilize the Burk ARC unit that allow for remote control by dialup. Also, for DataMiner which needs an IP connection it can communicate with the dialup modem (over e.g. the internal ethernet network or similar means), to be able to setup the connection, an automation script can be used to set up the backup connection.				
PRM #2	The NMCS bid shall provide the ability to communicate with remote devices over dial up telephone modems, direct connection and Ethernet IP.	x		
Bidder Response: FULLY COMPLIANT DataMiner is the real end-to-end, multivendor solution, being able to integrate any device or system, regardless of the interface or protocol. Today it counts with a library of more than 5500 drivers to interface with devices and systems of more than 600 industry vendors – making it, by far, the largest integration in the industry. For each different device/system model you need one driver, regardless the quantity of devices of that type. DataMiner enables end-to-end integration of the most complex technical ecosystems; it can serve as a centralized solution to monitor and control all the elements in the network, regardless of the interface type or protocol. This means any protocol, such as, but not limited to: Modbus, soap, xml, api, ICMP, corba, wmi, sql, html, telnet, ssh, snmp (v1, v2, v3) and including proprietary vendor specific protocols. To conclude, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.				
PRM #3	The NMCS bid shall provide the ability for simultaneous control and monitoring from all or multiple workstations, by single and multiple operators connecting to similar or divergent NMCS systems	x		
Bidder Response: FULLY COMPLIANT Accessibility is an important asset of DataMiner: Because of its powerful web-based user interface, providing unlimited and simultaneous user access without client-based licensing (DataMiner license model does not limit the number of concurrent/parallel users), DataMiner is one of the most accessible solutions in the industry. This way the customer and any stakeholders can rest assured that the platform can be accessed at any time and from any location, regardless the number of concurrent users.				
PRM #4	The NMCS components bid shall provide the ability to be addressable using standard IPV4 addressing and have the ability to be run locally and remotely.	x		
Bidder Response: FULLY COMPLIANT				

DataMiner supports both IPv4 and IPv6 and can be accessed by means of a standard browser, locally and remotely. DataMiner Cube is the main user interface, conceived as a state-of-the-art user-centric application it has redefined the way operators can manage the most complex environments. This innovative web-based application provides smooth and intuitive navigation through your entire operation. A powerful MS Visio-compatible graphical display, comprehensive alarm and performance management tools, user collaboration capabilities, and much more—everything is transparently available at your fingertips across all your devices and systems, from all vendors. It can either be used as an XAML browser application (XBAP) or as a standalone application.

PRM #5	The NMCS bid shall provide the ability of executing simultaneous commands or instructions to multiple remote devices at multiple diverse sites.	x		

Bidder Response: FULLY COMPLIANT

DataMiner allows to manage and control a separate device at a time, or to perform bulk sets to multiple devices (of the same provider and/or model, or using other filters), at multiple sites. It's possible to schedule an action to load a given configuration to multiple devices at the same time.

PRM #6	The NMCS bid shall provide the ability to execute preprogrammed events at specified times and/or in response to external triggers which may or may not be tied to automation events using synchronized time clock and/or GPI/GPO, serial, or ethernet interfaces.	x		

Bidder Response: FULLY COMPLIANT

The integrated Automation Engine allows operators to fully automate operational and business workflows. Scripts created with the intuitive graphical user interface, provide extensive capabilities to cover any action that an operator would execute manually and much more. Once created, they can be triggered in a variety of ways, ranging from manual operator initiation, to event based or scheduled execution. DataMiner has an integrated scheduling engine but can equally integrate with a 3rd party scheduling application should it be required.

PRM #7	The NMCS bid should have an open architecture protocol to allow for integration with existing and future third party systems.	x		

Bidder Response: FULLY COMPLIANT

DataMiner is an off-the-shelf solution with a very pronounced open architecture and industry standard interfaces. Skyline's philosophy is "anything WE can do, as a technology company, is something that a customer must be capable of doing as well".

This means that, besides the core platform, nothing is proprietary.

Meaning that anything Skyline does to maintain the platform, NETC is also capable of doing.

Some examples of this openness and simplicity are:

- All drivers are in open XML format
- UI compatible with MS® Visio®

- Automation scripting supporting JScript and C#.

Obviously, the core platform is developed by Skyline Communications, but everything related to the integration and configuration of that platform with the operational environment for specific applications is based on open technology.

As a result, NETC can rest assured that it will have extensive opportunities with DataMiner to build internal expertise and to continuously extend, modify and fine-tune the DataMiner configuration, in order to enhance and optimize the Monitoring and Control aspects of the network. And of course, at any time, as desired by NETC, it can call upon the expertise of the Skyline DataMiner Application Engineering team or H.A. Design to assist with tasks when resources at NETC are not available, or if it concerns specific tasks where NETC still needs to gain experience.

PRM #8	The NMCS bid shall be capable of generating reports showing all commands issued, alarm and fault status, and system configurations. Reporting mechanism shall be capable of logging and reporting of system, service level, and device specific events.	x		

Bidder Response: FULLY COMPLIANT

DataMiner features DMS Reporter, a powerful, web-based tool that allows the creation of customized graphical reports which can be generated at regular intervals (e.g. daily, weekly, monthly) or even triggered by events.

These reports can contain any type of calculations, statistics and operational metrics available, including but not limited to: top-X (5, 10, 50...) with the highest Y parameter (e.g. CPU utilization), top-X of devices that generated most of the alarms, top-x of devices that were the longest time in alarm (duration of alarms), time distribution of alarm activities, traffic stats, device time lines, alarm scatter charts (plotting number of alarms against duration of alarm) status reports with a complete overview of all settings of a device, trend reports, query reports, spectrum buffer images, etc.

PRM #9	The NMCS bid shall have provisions for redundancy, for both hardware and software systems.	x		

Bidder Response: FULLY COMPLIANT

Due to its architecture, DataMiner is extremely resilient to all types of failures, also because this architecture has no single point of failure.

To increase resilience, we propose a 1+1 configuration, hot synched in real-time and user-definable failover, with a main and hot-backup DataMiner license. The decision when to failover from main to the redundant DMA can be taken either by a person (i.e. manual failover) or by the DMAs themselves (i.e. automatic failover). In the latter case, the two DMAs in the team will check each other's status by exchanging heartbeats.

PRM #10	The NMCS bid shall specify operating system software and versions for all software including third party software. Any server, terminal, workstation, or peripheral software required bur not included shall be specified.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner multi-vendor network management platform is a proven and widely deployed standard-off-the-shelf platform which runs on industry standard hardware (rack or blade servers) or virtual machines (such as VMWare, etc.), running Windows Server OS, readily available from different vendors. By avoiding specialized hardware, this enables to:

(1) reduce the cost of ownership (there is a lower cost per unit because of the wide availability, a lower cost for spare or replacement parts, etc.),

(2) remain vendor-independent in terms of hardware components, today and in the future.				
PRM #11	The NMCS bid should state any special "value added" features such as self-diagnostics, virtualization, accessibility, etc.....	x		

Bidder Response: FULLY COMPLIANT

First of all, Skyline knows what advanced multi-vendor network management and orchestration in this industry is about, this is what we do every day, we know the product that we offer inside out and we have extensive experience with the implementation of this specific product, and we own and control this solution.

DataMiner is a single standard-off-the-shelf platform used by all our customers in over 125 countries around the world, managing a wide variety of broadcast and media platforms. The solution has a tremendous amount of fully user-definable capabilities, and Skyline is continuously investing in expanding the platform. One of the key benefits for NETC is that it can hence benefit from all those features and capabilities, which are introduced based on feedback from leading providers around the world.

Skyline Communications also has a proven track record for consistent innovation, i.e. continuously Skyline is looking for new innovative and even disruptive paradigms to manage the ever more complex and demanding broadcast and media ecosystems more efficiently and more intuitively than ever before. Skyline has also by far the largest R&D capacity in the industry, focused on this specific type of applications (i.e. operators choose Skyline DataMiner because not only do they know that they will have the most advanced and sophisticated end-to-end network management and orchestration platform that there is available in the industry today, but they will have that for many years to come).

Skyline is a **vendor independent supplier** and is no supplier of other industry technology nor does it have exclusive ties with equipment vendors, guaranteeing that DataMiner can easily be integrated with **any product from any vendor, today and in the future**.

Equally, DataMiner is not limited to interface with specific equipment/brands. The choice of manufacturer is the sole responsibility of the customer, Skyline ensures it will be interfaced, giving a huge flexibility and comfort to the customer.

Accessibility is an important asset of DataMiner: Because of its powerful web-based user interface, providing unlimited and simultaneous user access without client-based licensing (DataMiner license model does not limit the number of concurrent/parallel users), DataMiner is one of the most accessible solutions in the industry. This way NETC and any stakeholders can rest assured that the platform can be accessed at any time and from any location, regardless the number of concurrent users.

DataMiner provides one of the most comprehensive and most powerful and fully user-definable UIs for displaying of mimic diagrams, which are compatible with MS® Visio®, such that operators can leverage existing MS® Visio® drawings and the power of MS® Visio® to create appealing and fully customized graphical presentations of the operational ecosystem managed by DataMiner. Any part of the customer's network can graphically be presented exactly in a way that fits the customer's needs, on any level of the network and completed with any requested real-time data.

DataMiner's UI features amongst other:

- Full compatibility with MS® Visio®, enabling any graphical presentation (rack views, hardware layout, service flow diagrams, etc.)
- Real-time alarm color coding for devices and parameters
- Display of real-time key performance indicators
- Rotating or hiding objects based on user-defined conditions
- Buttons linked to powerful automation scripts to trigger procedures (e.g. redundancy switching)
- Bar, pie and line charts showing key data in real-time
- Easy bubble-up and drill-down navigation
- Use of multiple tab pages to display the systems from different perspectives
- Dynamic population of managed objects
- Same visual overview graphics serve as components to create dashboards, e-mail/pdf reports and online

customer portals

- Automatic device connection display
- Easy modification of graphics with MS® Visio®
- Live updates of graphics in an operational environment
- Possibility to display across multiple screens: a) within one single screen b) multiple screens inside DataMiner Cube c) multiple external screens using the undock-feature)

Any parameter or metric that is available through the interface can be made visible and controlled in the desired control interface. It's user definable and includes drag 'n drop functionalities.

DataMiner allows a **scalability** to offer a solution for 10, 25, 50 or 500 devices up to large corporate configurations, with literally millions of devices, without compromises in terms of performance and storage capacity. A DataMiner System can consist of just one single so-called DataMiner Agent (DMA) or multiple DMA's connected together into an IP-cluster. The number of DMA's depends on both the required capacity and the optimal system architecture.

A DataMiner system comes default with a set of **features and capabilities which increase the availability, and which enable pro-active maintenance & support**. This includes for example: Automatic & user-definable reboot procedure, Generic watch dog strategy, Automatic collection and e-mail forward of fault & logging information, Automated back-up, Scheduled e-mail health reporting, self-maintaining database with user-definable settings, OS management (of the server where the DMA is running) including alarming, trending, etc.

The platform/database is fully self-maintaining and hence does not need a manual action to maintain the performance. As the platform is running on standard solutions – audits can be easily performed ad-hoc or automated (e.g. create an error notification report to be send out whenever there is a storage/integrity problem).

Equally to be considered as a value-added feature from DataMiner, is the **huge flexibility** that the platform offers:

DataMiner is an off-the-shelf solution with a very pronounced **open architecture and industry standard interfaces**. Skyline's philosophy is "anything WE can do, as a technology company, is something that a customer – or a system integrator – must be capable of doing as well". This means that there must be nothing proprietary about DataMiner.

Some examples of this openness and simplicity are:

- All drivers are in open XML format
- UI compatible with MS® Visio®
- Automation scripting supporting JScript and C#.

As drivers are designed in an **open XML format,** anybody can create new drivers or modify existing drivers (in its latest release, Skyline launched DIS - DataMiner Integration Studio - which facilitates the creation, validation, debugging, testing and publishing of drivers). This DataMiner openness guarantees that NETC is completely independent from Skyline Communications as technology supplier.

Different architectures are possible, as **DataMiner is flexible to be centralized, regionalized or fully distributed** - the experience is **transparent** to the end operator. A DataMiner system scales "nearly" linear, so by adding extra servers (extra capacity) NETC is able to expand its architecture.

DataMiner features a **drill-down/bubble-up graphical interface compatible with MS Visio** so, in terms of graphical representation is very flexible, allowing NETC to define how it wants to see the system, and allowing NETC to change it on its own, later on, if needed.

DataMiner features flexible, **fully configurable reports and dashboards**. Nothing is hardcoded, the customer is fully independent from Skyline to, for e.g. create its own custom reports or publish DataMiner calculated KPIs and/or KQIs and other metrics to external portals.

DataMiner provides a **flexible data storage**:

- big database with various deployment options (centralized, de-centralized, high availability)
- smart storage keeps database size to a minimum
- built-in database maintenance options (size, time)
- runs on **bare metal or virtualized in datacenters**

Flexibility is also reflected in **KPI (KQI) aggregation**:

- Any topology / aggregation logic can be defined with multiple levels (service, network, geographical topologies) – e.g. per CPE group, DSLAM port, DSLAM, distribution router, etc.
- Continuous KPI/KQI calculation and aggregation, including KPI alarming, KPI trending and Raw data, e.g.: Network availability, Network performance, Operational KPI, etc.

DataMiner Advanced Analytics is a generic all-round Artificial Intelligence (AI) engine built into the core of DataMiner 9.5, which exploits the unique wealth of data contained in a DataMiner System, to perform predictive analytics, such as:

- Behavioral Anomaly Detection (BAD): Learn how an arbitrary metric is behaving, autonomously and at run-time, and identify any deviations from normal behavior
- Trend forecasting: Accurately and fully autonomously forecast values at run-time for any metric managed by DataMiner (E.g. forecasting SLA behavior or identify degradation of KPIs/KQIs related to User Experience)
- Intelligent data clustering: Objective is to detect outliers and groups. It's typically oriented towards device configurations and locating potential misconfigurations. Deviations in performance readings, considering the overall configuration of the device
- Alarm level nominal baseline calculated from forecasted data: DataMiner self learns and adjusts the thresholds dynamically, based on pattern recognition
- Correlation rule suggestion engine: Suggestion on the relation between different alarms in the network based on past behavior.

...and much more...

PRM #12	The NMCS bid should be capable of interoperability with other systems. These systems should be specified, e.g. automation, machine control, GPI/GPO, matrix routers, tally, etc...	x		

Bidder Response: FULLY COMPLIANT

Through the use of drivers, interfacing for the purpose of two-way communication with any system is possible. Besides the examples mentioned higher, it's also possible to interface other systems like trouble-ticket applications, asset management systems, alarm managers, log files, databases, CRM solutions, ERP platforms etc.... Access to external systems via the so-called third-party interfaces is an extremely flexible feature as almost every protocol (not limited to SNMP traps), syntax or language can be implemented which is made available by the vendors of the third-party systems.

DataMiner establishes a bidirectional link between your DataMiner System and your OSS/BSS solutions.

Same for devices, as DataMiner is capable of interfacing with any device from any vendor, no matter the kind of protocol of the 3rd party interface on a device or system, including standard SNMP, but also any other interface like SSH, Telnet, Netconf, WMI, any XML API, Modbus, RS232/485/..., and even proprietary interfaces as well.

Whatever the device/system API exposes to the outside world, DataMiner is able to implement on the interface driver.

PRM #13	The levels of technical and operational support shall be specified for the NMCS bid.	x		

Bidder Response: FULLY COMPLIANT

In addition to the Limited Warranty, the Customer can enjoy the benefits of the DMS Maintenance & Support service, which provides (1) unlimited technical support during EST business hours (assuming that the Customer's staff has successfully completed the standard DataMiner training program) and (2) all DataMiner Software Upgrades (minor and major) at no additional charge.

DMS Maintenance & Support is supplied at no charge commencing the date of delivery to the Customer and continuing for a period of 6 months. After this initial period, the DMS Maintenance & Support Service can be purchased on an annual base, at a percentage of the cost of the deployed Software licenses (assuming remote access is available for tech support services). Optionally this service can be upgraded for 24/7 technical support.

Updates and Upgrades are available for both (a) the common standard off-the-shelf Software platform as well as for (b) the Software drivers purchased from Skyline which are deployed to interface the standard Software platform with specific third-party products.

New Updates and Upgrades of the Software are delivered to the Client at Skyline's sole determination and decision, subject to availability and where necessary aligned with the support priorities defined herein and based on the technology innovations that take into account the general interest of all Software users and the overall roadmap of the Software and Skyline's business.

Skyline's Maintenance & Support includes telephone and e-mail support, online documentation, and a web-based portal for submitting and tracking of cases of failures and/or malfunctioning (a "Fault") in the Software encountered by the Client ("Support").

A Fault that needs a corrective action can be reported through HA Design Helpdesk and then it may be passed to Skyline's DataMiner Integrated Operations Center (IOC).

A Fault shall be determined as non-conformity with respect to the user documentation or training material and/or a failure with respect to the functionalities of the solution and/or a deviation to the normal functioning of the operational system. A Fault can for example be a software bug.

Support is available during business hours, which is 9:00 a.m. to 5:00 p.m., Monday through Friday, EST, excluding Skyline's pre-scheduled and official public holidays ("Regular Business Hours"). If a Fault in the Software is reported by means of a telephone call, Client shall confirm the call within 2-hours by sending an e-mail to Skyline's IOC.

Support priorities are assigned by Skyline based on the impact of the problem on Client's environment:

Level 1: a condition where the Fault continuously and/or intermittently influences the normal behavior of the Software in a way that it becomes entirely useless for Client, and no alternatives are available.

Level 2: a condition where the Fault affects the Software, or a part of the Software, but where it does not render it entirely useless for Client (possibly by means of workarounds or fall back mechanisms).

Level 3: a condition where the Fault does not really impact on the use for Client, but which possibly could affect the Software at a later time, or which potentially could escalate to a Level 2. Level 3 will also be applicable for all Faults which cannot be classified as Level 2 or Level 1.

Priority Level	Availability	Targeted Response Time	Targeted Workaround Time	Targeted Fix Time
LEVEL 1	Regular Business Hours	1 business hour	8 business hours	5 business days
LEVEL 2	Regular Business Hours	8 business hours	16 business hours	30 business days
LEVEL 3	Regular Business Hours	24 business hours	48 business hours	90 business days

"Response" time means the time required by Skyline to provide a notification of proper receipt and follow-up to the

Client.

"**Workaround" time** means the time required by Skyline to put in place a temporary remedy to eliminate the Fault. A Workaround solution may cause minor restrictions in the Software or system's performance or availability. A successful Workaround will deescalate the Fault to the subsequent lower priority level, and its prolonged Targeted Fix time will then be applicable, with as a minimum the level 3 timings.

"**Fix" time** means the time required by Skyline to prevent the reoccurrence of the Fault and any underlying causes of it. When a Fix is implemented, the system is restored to full functionality and performance.

Workaround - and Fix times will start counting as soon as Skyline is able to reproduce the Fault.

The optional "around the clock 24/7 support" includes support over the phone 24 hours per day, 7 days a week. For this purpose, Client will have access to a dedicated 24/7 hot line, which will be activated in between Regular Business Hours ("**24/7 Support**").

The aforementioned 24/7 Support is, due to its nature, available for priority Level 1 Faults only, and limited to a registration of the Fault by Skyline, and where possible, a Workaround or Fix.

Minimizing the impact of the Fault on the Software and the Client's system will be the main priority of Skyline under 24/7 Support. A Fault reported during 24/7 Support, will be followed-up with full in-depth Support as soon as the next Regular Business Hours period starts.

Priority level	Availability	Targeted Response time	Targeted Workaround time	Targeted Fix time
24/7 Support	24 hours per day, 7 days a week	30 minutes	2 hours	According to its priority level; and starting from next Regular Business Hours

PRM #14	The NMCS bid shall have all system single-points-of-failure clearly indicated in the bid response.	x			

Bidder Response: FULLY COMPLIANT

Due to its architecture, DataMiner is extremely resilient to all types of failures, also because this architecture has no single point of failure. NETC can e.g. benefit from a geographical redundant solution i.e. the fail-over DMA is installed on another site (e.g. disaster recovery site) in another location, where this failover unit will continuously be synchronized so that, at all times, it is ready to take over from its team member the moment that one fails.

Related to the network elements, DataMiner controls network element redundancy, redundancy of functions in the data center, transport redundancy (single/dual illumination), service redundancy and geo redundancy. Redundancy can be fully automated, semi-automated or triggered by operator.

Regardless of the architecture choice the system will behave as a single consolidated system, i.e. for the end-user this process will be transparent and it will look like a single platform.

PRM #15	A clearly defined list of proprietary and off-the-shelf technology for the NMCS bid shall be submitted for all hardware and software.	x			

Bidder Response: FULLY COMPLIANT

For the software part:

DataMiner is an off-the-shelf solution with a very pronounced open architecture and industry standard interfaces. Skyline's philosophy is "anything WE can do, as a technology company, is something that a customer – or a system integrator – must be capable of doing as well".

This means that, besides the core platform, nothing is proprietary.

Meaning that anything Skyline does to maintain the platform, NETC is also capable of doing.

Some examples of this openness and simplicity are:

- All drivers are in open XML format
- UI compatible with MS® Visio®
- Automation scripting supporting JScript and C#.

Obviously, the core platform is developed by Skyline Communications, but everything related to the integration and configuration of that platform with the operational environment for specific applications is based on open technology.

As a result, NETC can rest assured that it will have extensive opportunities with DataMiner to build internal expertise and to continuously extend, modify and fine-tune the DataMiner configuration, in order to enhance and optimize the network management aspects of the network.

For the hardware part:

The DataMiner multi-vendor network management platform is a proven and widely deployed standard-off-the-shelf platform which runs on industry standard hardware, readily available from different vendors. By avoiding specialized hardware, this enables to:

(1) reduce the cost of ownership (there is a lower cost per unit because of the wide availability, a lower cost for spare or replacement parts, etc.),

(2) remain vendor-independent in terms of hardware components, today and in the future.

PRM #16	The NMCS bid shall have provisions for secure access, and customizable rights and permissions for all users of the system and be capable of supporting single sign-on through authentication.	x		

Bidder Response: FULLY COMPLIANT

DataMiner security enables roles-based and domain-based management. It provides the administrator with a simple tool to define in detail, what each account or group is allowed to do/see – views (write, configure, visibility), permissions (access, add, edit, delete, import, properties, lock, unlock, pause, stop, etc.), access levels - the administrator can create as many groups/profiles as he wants.

DataMiner supports two principal schemes to manage the actual user accounts (i.e. username and password):

• Standalone: as with any other typical solution, DataMiner allows the administrator to create all user accounts (username/password) from scratch on the DataMiner System.

• Domain integrated: rather than adding all the user accounts separately in the DataMiner System, DataMiner can simply be pointed to an existing Windows domain.

Moreover, DataMiner provides a very powerful security system, allowing the user to define to a highly detailed level the permissions to each user, based on three principal concepts:

• DMS Rights: determine what parts of the DataMiner System, and what actions in the DataMiner System the user has access to.

• DMS Views: the administrator can create in the DataMiner System any number of user-defined views, which is a collection of elements (e.g. a view called Region X which includes all the devices of that region, a view called ACU which

includes all ACU devices from different sites, etc.).

• DMS Access Levels: allow the administrator to determine to what extent a user can control a device, provided that he has been assigned access to that devices.

DataMiner security supports AD/LDAP authentication, facilitating the provisioning and management of users and groups. (not exclusive, there are other options that you can use). Any user activity is stored in the DataMiner Security Audit trail, which can be easily consulted via the DataMiner Cube client UI, also keeping a detailed log of all user activity.

PRM #17	The NMCS bid shall be scalable, capable of being upgraded and expanded due to improvements and/or enhancements to the infrastructure of the NETC system and/or systems capabilities	x		

Bidder Response: FULLY COMPLIANT

DataMiner Agents can be clustered to manage more elements, which means that a DataMiner System (DMS) is extremely scalable. DataMiner allows a scalability to offer a solution for 10, 25, 50 or 500 devices up to large corporate configurations, with literally millions of devices, without compromises in terms of performance and storage capacity. A DataMiner System can consist of just one single so-called DataMiner Agent (DMA) or multiple DMA's connected together into an IP-cluster. The number of DMA's depends on both the required capacity and the optimal system architecture. The largest DataMiner systems today have more than 4 Million devices and keep on expanding on a monthly basis.

Different architectures are possible, as DataMiner is flexible to be centralized, regionalized or fully distributed - the experience is transparent to the end operator, who will see a single consolidated platform.

This scalability is also reflected in DataMiner's licensing structure:

Licensing is based on 3 main concepts: (1) number of elements; (2) model variety of devices/systems to interface; and (3) specific modules for added functionality.

1) Core platform (DataMiner Agent(s) in cluster) which implements all functionality (Monitor and Control (M&C), Fault Management, Performance Monitoring, DataMiner unified notifications, etc.). Each DataMiner Agent license can manage a number of elements (e.g. 100, 250 or 500 elements, depending on the complexity)

2) To interface with the different devices and systems, you have drivers, one per each model type (device and system drivers, from less complex type I, to more complex type III), i.e. you only buy one driver per device/system type once, you can use it for hundreds of same type devices across your operations.

3) Modules to add specific functionality to your system (e.g. Inventory and Asset Manager, IP manager, etc.).

PRM #18	The NMCS bid shall be capable of executing automated workflows related to equipment failovers, conditional variables, and backup solutions.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner Automation Engine allows operators to fully automate operating and business procedures, thereby reducing drastically the operational expenses. Automation scripts can be used in a lot of applications among which intelligent back-up and service-healing routines, guided troubleshooting for operators, automatic configuration, provisioning of services and many more.

For instance, related to equipment failover, DataMiner controls network element redundancy, redundancy of functions in the data center, transport redundancy (single/dual illumination), service redundancy and geo redundancy. Redundancy can be fully automated, semi-automated or triggered by operator.

Regardless of the architecture choice the system will behave as a single consolidated system, i.e. for the end-user this process will be transparent and it will look like a single platform.

Also, on DataMiner you can configure automated actions – like automatic backup or produce/load configuration changes –

that will be run at regular intervals on scheduled times. However, if necessary, you can also take ad-hoc backups whenever required.				
PRM #19	The NMCS bid shall be capable of issuing alarms relative to equipment and environment status viewable by all users and have the capabilities for multiple alarm monitoring and masking options. Alarms must be able to be propagated to the top most level.	x		
Bidder Response: FULLY COMPLIANT As one of the most powerful fault management solutions in the industry, DataMiner brings a suite of new fault management related innovations, enabling operators to pinpoint and resolve operational issues faster than ever before. This ranges from highly user-definable device icons, which offer at-a-glance historical fault context information, to a new notification banner including service impact analysis data, and data tables with heat map overlays and integrated histogram analysis. Furthermore, the core engine offers sophisticated off-the-shelf self-learning algorithms to intelligently and effortlessly monitor and track the most challenging operational metrics, including traffic loads, slowly degrading quality metrics, and much more. DataMiner allows the user to select other levels of severity (e.g. warning, minor low, critical low, critical high…). DataMiner's alarm console updates in real time and keeps track of date and time of every occurrence (like alarms and information events). The alarm console supports masking, commenting, sorting, filtering, customization, taking ownership, audible notification, alarm enrichment (asset, ticket), alarm forwarding, alarm detail cards, history linking, service impact, root cause analysis, device grouping, alarm grouping, copy to clipboard and export, etc. Equally supported are topological views with zoom in / out and hierarchical propagation of alarm status.				
PRM #20	The NMCS bid shall be capable of monitoring and controlling external or internal tally systems viewable within the system and on connected multiviewers, including the support for under monitor displays (UMD).	x	x	
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, including tally systems and multiviewers, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.				
PRM #21	The NMCS bid shall be capable and compatible with common network security protocols to protect connections to the system that involve multiple VLANs in accordance with NETC Information Security Policies, Standards and Procedures.	x		
Bidder Response: FULLY COMPLIANT As far as DataMiner is concerned, DataMiner can work under any of your existing network security components (like firewalls and antivirus), provided they don't consider DataMiner processes as threats, and don't use resources required by				

DataMiner (e.g. scanning the servers where DataMiner is installed and taking (e.g.) 80% CPU load for half an hour).

DataMiner runs on industry standard components constantly patched, protecting any type of attacks, bugs, etc. Please note that a DataMiner environment is typically isolated in the technical network and not directly connected to the internet/outside world, the latter would be done through secured gateway options.

DataMiner is running on a standard Windows environment and the latest Microsoft patches are applicable and to be installed. Meaning any leak detected, fixed by MS can be implemented instantly.

Please note that all communications between DataMiner Agents; DataMiner/Client are encrypted by default. The interfacing with a third-party device is done through a so-called DataMiner driver, optionally the driver can be encrypted - the communication protocol on itself can be secured/encrypted based on what's possible by the third-party system.

NETC Information Security Policies, Standards and Procedures to be mutually agreed for the parts that are applicable for DataMiner.

PRM #22	The NMCS bid shall be capable of monitoring by exception with industry and user defined parameters, and user-defined graphic views/dashboards and pop-up alerts.	x	x	

Bidder Response: FULLY COMPLIANT

Monitoring by exception, or the so-called Penalty Box feature, is a solution that Skyline already has implemented for key operators and broadcasters.

Recurring to its correlation and automation engines (together with some extra logic for priority handling) DataMiner is able to implement the logic for monitoring by exception, automatically assigning the affected video part(s) to monitor wall(s).

DataMiner can perfectly interface with existing Mosaic displays (multiviewer) solutions to automatically display an e-2e service view either ad-hoc generated by the operator or automated – in case of service failure, configure the multiviewer to display the service alarm and configure the mosaic showing the e2e service flow & related video thumbnails.

Graphical views, dashboards and pop-up alerts are fully customizable.

PRM #23	The NMCS bid shall have the capability to filter and notify multiple users or groups via email and SMS or MMS messaging of any alarm conditions at any of the locations. The ability to activate external audio and or visual alarms via GPI or other protocol should also be part of the system.	x		

Bidder Response: FULLY COMPLIANT

Based on the rules set by the user, DataMiner can send notifications via SMS (using DataMiner Mobile Gateway) or email, so that operators are informed of certain events/alarms. To note that DataMiner Cube Mobile, using DataMiner Mobile Gateway, is much more than just a module to send SMS notifications, it allows two-way interaction with the DataMiner system (native HTML5 capable browsers).

DataMiner features consolidated and user-centric notifications, i.e. the possibility of configuration and management of users' personal notifications. The default notification method informs users via e-mail in case of alarms or other events triggered by correlation or invoked by automation scripts. A sufficient set of options and mechanisms are foreseen to configure this feature avoiding (filter) unnecessary messaging.

PRM #24	All device drivers that are **not** fully pointed drivers, allowing for all parameters as designed by the manufacturer, shall be indicated.	x		

Bidder Response: FULLY COMLIANT DataMiner drivers can implement all parameters that are made available by the API of the devices				
PRM #25	The NMCS bid shall have the ability to create custom panels, layouts and views made up from any and all elements within the system.	x		
Bidder Response: FULLY COMPLIANT DataMiner provides an intuitive multi-user drill-down/bubble-up graphical user interface, containing a consolidated overview of all managed assets and functions through unlimited web-based access. Any view is compatible with MS Visio and hence fully customizable. Also, every view can be enhanced with background graphics to provide even more insight. This feature comes in handy when setups to be implemented comprise components which are installed on various sites. Fixed drawings can be used for this purpose. But when used in combination with Google maps (DataMiner features Google Maps integration) overlays can be added to provide real-time status information or even historical overviews of how the site or systems residing over there are performing at that very moment. DataMiner features Google Maps integration with the following features: • Map objects managed by DataMiner • Display connections and other services • Real-time information about the managed objects (e.g. alarm status coloring) • Visualize object details in balloon pop-ups • User-definable KPI display (KPI parameters/graphs to be displayed in the pop-up balloon) • Embed in Visual overview • Seamless navigation from the native DataMiner UI Users can edit Views at run-time with comprehensive version control capabilities, including live validation. The live update process enables a seamless propagation of the updated views across the network to all impacted users, at run-time and seamlessly. The Dataminer Views are packed with features & capabilities: › full vector rendering › DCF-based path auto-highlighting › tabbed/card views › and much more ... Summarized: everything is transparently available at your fingertips across all your devices and systems, from all vendors.				
PRM #26	All cabling shall conform to NETC cable specifications* and industry standard best practices. (See Exhibit A)			
Bidder Response: HA Design has reviewed Exhibit A and will comply with the wire type called out in the spreadsheet.				
PRM #27	The NMCS bid shall provide detailed approaches addressing cyber security concerns including but not limited to architecture design, prevention, detection and response, and security audit.	x		

Bidder Response: FULLY COMPLIANT

DataMiner is today widely used by many leading broadcaster/operators/telco's etc. in the world, hence it's been proven to be secure in more than 125 countries each having their own security evaluations. DataMiner is also working with the standard security standards such as encryption of communication or HTTPs etc. In addition, there are 3rd party firewalls, antivirus products that are also protecting the ecosystem beyond DataMiner.

Please note that Skyline as an organization has a large QA (Quality Assurance) team, which is constantly doing security, stability & regression tests on any software component leaving the building – this team ensures that Skyline software can be considered as a professional software product proven in the market.

PRM #28	The NMCS bid should be capable to recall system settings such as equipment setup, signal routes, router mnemonics and UMD settings for quick and easy deployments of applicable systems and/or equipment.	x		

Bidder Response:

This functionality is easily configurable in Dataminer.

Integrating a device/system covers all the remote capabilities of the device, meaning integrating all the monitoring & control KPIs available. The latter means in case available DataMiner is capable of recalling those system settings such as KPIs, signal routes, UMD settings & configuration details.

BRM #	Business Requirements	Existing Capabilities	In Development	Customized for NETC
BRM #1	The NMCS bid shall specify any and all equipment required but not included in the RFP response. Projected cost for specified hardware, software, licenses, drivers, and any other equipment needed for the NMCS shall be specified in detail.	X		
Bidder Response: All equipment is specified in the costing section, both in scope and optional, as well as any software and ancillary options.				
BRM #2	The NMCS bid shall have provisions for future expandability. Projected cost for system expandability concerning hardware, software, licenses, device drivers, and any other equipment needed for expansion shall be specified in detail including required steps.	x	x	

Bidder Response: FULLY COMPLIANT

Dataminer Agents can be clustered to manage more elements, which means that a DataMiner System (DMS) is extremely scalable. DataMiner allows a scalability to offer a solution for 10, 25, 50 or 500 devices up to large corporate configurations, with literally millions of devices, without compromises in terms of performance and storage capacity. A DataMiner System can consist of just one single so-called DataMiner Agent (DMA) or multiple DMA's connected together into an IP-cluster. The number of DMA's depends on both the required capacity and the optimal system architecture. The largest DataMiner systems today have more than 4 Million devices and keep on expanding on a monthly basis.

This scalability is also reflected in DataMiner's licensing structure.

In case of future extensions: Additional devices/systems can be added (device/system drivers to be purchased in case you don't have them yet) as long as the hardware is capable of dealing with it (Skyline can check this by means of a sanity check, to make sure that DataMiner performs optimally), until you reach the imposed element limit of the DataMiner Agent. Then you need to buy an additional DMA license, that covers the extra quantity of devices. Each Agent manages a part of the total device pool. Noteworthy is that the agents are clustered, resulting in transparency for the user. The user will see all the elements monitored and controlled by each server as if they were monitored and controlled by one server i.e. only one single consolidated NMS platform, managing all the elements.

In order to provide the projected costs, more detailed information will be needed from NETC.

BRM #3	The NMCS bid shall have provisions for a tiered support contract. Technical support shall be in the form of documentation, on-line, telephone, and/or in person on-site. Levels of support shall be specified in detail including limitations and liabilities.	x		

Bidder Response: FULLY COMPLIANT

HA Design Group will supply the tier 1 support that encapsulates the hardware warranties and will be a help and conduit for the Skyline IOC system.

Skyline's Maintenance & Support includes telephone and e-mail support, online documentation, and a web-based portal for submitting and tracking of cases of failures and/or malfunctioning (a "**Fault**") in the Software encountered by the Client ("**Support**").

A Fault that needs a corrective action can be reported through Skyline's DataMiner Integrated Operations Center (**IOC**).

A Fault shall be determined as non-conformity with respect to the user documentation or training material and/or a failure with respect to the functionalities of the solution and/or a deviation to the normal functioning of the operational system. A Fault can for example be a software bug.
Support is available during business hours, which is 9:00 a.m. to 5:00 p.m., Monday through Friday, EST, excluding Skyline's pre-scheduled and official public holidays ("Regular Business Hours"). If a Fault in the Software is reported by means of a telephone call, Client shall confirm the call within 2-hours by sending an e-mail to Skyline's IOC.

Support priorities are assigned by Skyline based on the impact of the problem on Client's environment:

Level 1: a condition where the Fault continuously and/or intermittently influences the normal behavior of the Software in a way that it becomes entirely useless for Client, and no alternatives are available.

Level 2: a condition where the Fault affects the Software, or a part of the Software, but where it does not render it entirely useless for Client (possibly by means of workarounds or fall back mechanisms).

Level 3: a condition where the Fault does not really impact on the use for Client, but which possibly could affect the Software at a later time, or which potentially could escalate to a Level 2. Level 3 will also be applicable for all Faults which cannot be classified as Level 2 or Level 1.

Priority Level	Availability	Targeted Response Time	Targeted Workaround Time	Targeted Fix Time
LEVEL 1	Regular Business Hours	1 business hour	8 business hours	5 business days
LEVEL 2	Regular Business Hours	8 business hours	16 business hours	30 business days

LEVEL 3	Regular Business Hours	24 business hours	48 business hours	90 business days

"**Response" time** means the time required by Skyline to provide a notification of proper receipt and follow-up to the Client.

"**Workaround" time** means the time required by Skyline to put in place a temporary remedy to eliminate the Fault. A Workaround solution may cause minor restrictions in the Software or system's performance or availability. A successful Workaround will deescalate the Fault to the subsequent lower priority level, and its prolonged Targeted Fix time will then be applicable, with as a minimum the level 3 timings.

"**Fix" time** means the time required by Skyline to prevent the reoccurrence of the Fault and any underlying causes of it. When a Fix is implemented, the system is restored to full functionality and performance.

Workaround - and Fix times will start counting as soon as Skyline is able to reproduce the Fault.

Around the clock 24/7 Support (optional)

The optional "around the clock 24/7 support" includes support over the phone 24 hours per day, 7 days a week. For this purpose, Client will have access to a dedicated 24/7 hot line, which will be activated in between Regular Business Hours ("**24/7 Support**").

The aforementioned 24/7 Support is, due to its nature, available for priority Level 1 Faults only, and limited to a registration of the Fault by Skyline, and where possible, a Workaround or Fix.

Minimizing the impact of the Fault on the Software and the Client's system will be the main priority of Skyline under 24/7 Support. A Fault reported during 24/7 Support, will be followed-up with full in-depth Support as soon as the next Regular Business Hours period starts.

Priority level	Availability	Targeted Response time	Targeted Workaround time	Targeted Fix time
24/7 Support	24 hours per day, 7 days a week	30 minutes	2 hours	According to its priority level; and starting from next Regular Business Hours

BRM #4	The NMCS bid shall have provisions for system training at all levels. Training options shall include price per person, including all associated expenses for factory and/or on-site training. Training options should remain in effect during the entire time that the NMCS is under a support contract.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner Training Program has been highly rated by renowned corporations and is praised for its superior quality and high added value. This service is delivered by seasoned subject matter experts in the field of corporate network management and DataMiner technology. The training includes theoretical presentations, demonstrations, and hands-on

lab exercises. DataMiner Training is available both on site and at our corporate headquarters (Belgium and US), either upon request or during the multiple open-training sessions we lecture in our offices every year. Also, no-cost, on-demand video training is available to Dataminer customers at www.Dataminer.tv

BRM #5	The NMCS bid shall have provisions for warranty coverage of all hardware supplied with the system including third party hardware, with provisions for extending warranty coverage.	X		

Bidder Response:

Hardware warranties will be part of the MMA and will be extended for the initial 5 years.

BRM #6	All items requested in this RFP shall be supplied by a single vendor or reseller. It is up to the bidder to make sure that all items integrate into a complete NMCS.	X		

Bidder Response:

HA Design Group will be that single vendor.

BRM #7	The bidder awarded the NMCS shall coordinate and work with the NETC NMCS Project Manager to establish a workable timeline for planning, installation, implementation, integration, configuration, and testing of the system or systems in all sections of this RFP prior to deployment.	x		

Bidder Response: FULLY COMPLIANT

HA Design Group LLC will have Dave Tesnow as our project manager who will work closely with NETC and the Skyline staff.

Skyline Communications has over 300 staff, consisting of ICT, telecom, broadcast and media experts that work day-in day-out on the implementation of state-off-the-art end-to-end multi-vendor network management and orchestration platforms exclusively for the media and broadcast industry.

In terms of system implementation, i.e. design and deployment, NEC can rest assured that Skyline's engineering team will deliver a solution according to NETC's requirements, following a seasoned methodological plan of action. Skyline is renowned for its superior technical services and its close cooperation with its customers.

Short after the awarding of the project, a professional and mature project deployment plan will be started, which contains – from a high-level perspective – the following action steps:

1. Kick-Off Meeting (KOM): one of Skyline's PM's (who's the SPOC towards the customer) will contact the customer to kick-off the project.

2. High level project plan: this timeline is one of the main results of the KOM. The project plan contains – among others – the project phases as well as the activities to be carried out.

3. Roles & Responsibility matrix: is a second important result of the KOM. This R&R-matrix is typically shared in pre-sales phase already but finalized during KOM at the latest.

4. Risk Management: (in case customer requests) is another important part of the project deployment. All involved parties shall list the risks on their end, incl. description of the consequences, mitigation plan etc.

5. Project questionnaire: A list of all information that Skyline needs from the customer related to the DataMiner System in

	general. 6. Functional Design Specification (FDS): An iterative document, established by a Skyline architect, in close cooperation with an architect from the customer, describing the DataMiner System in detail, like the UI, monitored parameters, architecture, specific requirements etc. To be finalized and mutually agreed upon before implementation phase starts. 7. Final Project Plan (FPP): Based on the above, the FPP is agreed upon. Note that this also contains a plan regarding the number of on-site visits and the progress calls. 8. Implementation: Contains numerous steps on its own. Clearly communicated at the right time by the PM, of course. 9. Site Acceptance Testing (SAT): although sometimes we can also do Factory Acceptance Testing (FAT) 10. Training There are a lot more details about it, of course, and NETC-people involved in the project will be perfectly guided from the Skyline team, including documentation explaining certain procedures, test plans etc. Typically for a project like this, Skyline sets up a project team consisting of different subject matter experts, including but not limited to: • A Project Manager coordinating all activities ranging from device driver interface development, to the design of work flows and UIs, and ensuring an on-time delivery of the proposed solution. • A Technical SPOC (Single Point of Contact) to NETC: a TAM (Technical Account Manager) is responsible for the day-to-day activities and interactions with the customer. They are highly experienced DataMiner professionals and will know in detail the solution(s) implemented at their customer(s), being in a good position to capture and analyze customers' requirements and advise on improvements. TAMS are internally orchestrating all tasks such as steering driver developers; steering QA testing; FU project calls; etc. • Steering call representative: management representative holding a monthly steering call with the key stakeholders on management level. Goal: a monthly birds-eye overview of the project above the daily work, steering resources where required, addressing any open issues/conflicts, etc. This team - working together with internal resources (e.g. driver developers, system engineers, system architects, etc.) will provide the necessary level of services to deploy the DataMiner software solution. For that we offer a complete turn-key delivery of the software (including software installation, initial software configuration, provisioning all devices, creating graphical presentations and UIs, initial set-up of alarm, fault & performance management thresholds and automation/correlation scripts; initial set-up of reports & dashboards and including dedicated Skyline project management & acceptance testing). For better coordination of both teams, the turn-key delivery will also include visits of our engineer(s), on site at NETC, for kick-off, scope definition, acceptance, etc. The actual timeline is subject to our internal planning (resource availability) at the time of order and a detailed evaluation of your requirements by our project management team together with the System Architect and Technical Account Manager. A project plan for a DataMiner rollout typically consists of the following high-level processes in parallel: 1) FDS/Scope definition (kick-off on site visit, draft FDS system design...). 2) Driver development (highly depends on the number of drivers already available) 3) DMA and existing components installation (typically after step 1) 4) Project Implementation & Integration (configuration of the different components of the solution, typically after step 1) 5) Acceptance Testing 6) Training			
BRM #8	NET intends to replace the existing NMCS with the NMCS bid and further extend the NMCS bid to other listed technical functional areas. The NMCS bid shall monitor and control all devices listed in this RFP, and support technology advancement and industry standards change.	x		

Bidder Response: FULLY COMPLIANT DataMiner is already integrated with more than 5500 products from more than 600 industry suppliers, this means that whatever products you have today, or will be deploying in the future, you can rest assured that DataMiner will manage all of it more efficiently than ever before from one single consolidated platform. Skyline guarantees to interface any device/system/application you have today or will have in the future. The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. As mentioned, today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. Noteworthy also, is that the DataMiner multi-vendor network management platform is a powerful software solution that runs on industry standard hardware (rack or blade servers) or virtual machines (such as VMWare, etc.), running Windows Server OS, and readily available from different vendors. By avoiding specialized hardware, operators are able to: • Reduce the cost of ownership. There is a lower cost per unit because of the wide availability, a lower cost for spare or replacement parts, etc. • Remain vendor-independent in terms of hardware components, today and in the future Related to industry standards, DataMiner has a pronounced open architecture, and uses industry standards such as SNMP and ASCII sockets to the maximum extend. This guarantees that DataMiner, today or tomorrow, can easily be integrated with other third-party software applications to further enhance the operations. All drivers in a DataMiner System are designed in an open XML format, and hence anybody can create new drivers or modify existing drivers. This guarantees that the users are completely independent from Skyline Communications as technology supplier, and if it deems necessary it can interface the platform with any new device, including proprietary devices or systems.				
BRM #9	The NMCS bid shall be integrated with NETC's Network Nebraska's terrestrial delivery network, University of Nebraska-Lincoln regional networks, NETC's virtual systems and multiple LAN environments in accordance with NETC Information Security Policies, Standards and Procedures.	x		
Bidder Response: FULLY COMPLIANT Compliancy with NETC Information Security Policies, Standards and Procedures to be mutually agreed for the parts which are relevant to DataMiner. Currently the State has not granted us access to the Security Policy so it will have to be reviewed after award. Otherwise the network and Dataminer software should be compliant with the state of Nebraska.				
BRM #10	The NMCS bid shall have high availability, be able to automatically reconnect all devices, retain latest captured status and regain control functions after	x		

	power and /or network outages.			

Bidder Response: FULLY COMPLIANT

Related to DataMiner:

During the loss of connectivity/downtime: DataMiner displays the latest polled/retrieved parameter value indicated by a time-out indication on the element. When the connection comes back automatically the polling to the element will restart and the new values will be updated in the NMS. Depending the type of device and protocol this could be a complete re-sync either command by command or in one bulk (e.g. SNMP GET BULK, or XML query). In other cases, there could be a possibility to resync all device alarms (in case the device generates alarms) and to import these in the DataMiner history taking in account the initial alarm timers (anti-dating) so a complete picture of the behavior of the device is restored. Note that all resync & polling timers are user-definable and on-the-fly changeable without the need to reboot the NMS platform.

BRM #11	The NMCS bid shall be media and hardware agnostic.	x		

Bidder Response: FULLY COMPLIANT

As a software house focused in its core capabilities, Skyline's offer is limited to its global leading end-to-end multi-vendor network management and OSS solution – DataMiner – and the services necessary to configure, install and maintain it. i.e. it excludes hardware, network and infrastructure and its related works.

Note that, Skyline is completely vendor agnostic and all Hardware components (e.g. servers) that will be required are industry standard components, readily available from various industry vendors. Also, Skyline has the huge advantage of being 100% independent, having no links or ties with hardware manufacturers, giving NETC the freedom to purchase from its preferred vendors, the ones with which you already have special conditions in place; or re-use hardware components of the existing NETC Management System. This under the condition that it fulfills the minimum DataMiner System Requirements for the proposed system.

TRM #	TECHNICAL REQUIREMENTS	Existing Capabilities	In Development	Customized for NETC
TRM #1.1.0	The NMCS specified shall provide the ability to control and monitor the NETC Television and Radio Broadcast Transmission Sites (Exhibit B). The NMCS should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Sites (Exhibit C).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts,

using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.1	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KUON - Mead (Exhibit D).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.2	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KHNE - Giltner (Exhibit E).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.3	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast	x		

	Transmission Site KLNE - Atlanta (Exhibit F).			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.4	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KMNE - Bassett (Exhibit G)	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.5	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KPNE - Sutherland (Exhibit H).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.6	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KRNE - Merriman (Exhibit J).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.7	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KTNE - Angora (Exhibit K).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.8	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KXNE - Carol (Exhibit L).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.9	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KYNE - Omaha (Exhibit M).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.1.10	The NMCS bid should be able to control and monitor all existing and future equipment for the NETC Television and Radio Broadcast Transmission Site KUCV - Hallam (Exhibit N).	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.2.0	The NMCS bid shall have the ability to communicate with transmission equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial Communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

TRM #1.3.0	The NMCS bid shall have the ability to communicate with transmission equipment via IP, TCP, UDP, HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify exactly how ethernet communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #1.4.0	The NMCS bid shall have the ability to communicate with transmission equipment GPI and GPO	x		

	interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.			

Bidder Response:

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #1.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to transmission equipment providing analog contacts. Bidder should specify exactly how analog measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #1.6.0	The NMCS bid shall be able to communicate with the Harris Platinum ATSC high power television transmitter via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.7.0	The NMCS bid shall be able to communicate with the Harris Sigma CD ATSC high power television transmitter via discrete parallel connections, providing direct monitor and control via GPI, GPO, and analog interfaces.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.8.0	The NMCS bid shall be able to communicate with the Thales DCX Millennium ATSC high power television transmitter via multiple serial connections, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.8.1	The NMCS bid shall be able to communicate with the Thales ADAPT DTV Exciter via RS232 serial connections, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.8.2	The NMCS bid shall be able to communicate with the Comark Exact-ATSC Exciter via ethernet connections, providing direct SNMP monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.9.0	The NMCS bid shall be able to communicate with the GatesAir Maxiva ATSC high power television transmitter via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.10.0	The NMCS bid shall be able to communicate with the Nautel NV5, NV20, and NC30 high power FM radio transmitter via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.11.0	The NMCS bid should be able to communicate with the Belar FMHD-1, FM modulation monitor via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http	x		

Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.				
TRM #1.12.0	The NMCS bid should be able to communicate with the K-Tech DVM-150E DTV Demodulator/Decoder via SNMP and proprietary ethernet, providing direct monitor and control via SNMP and the Ktech proprietary GUI.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.				
TRM #1.13.0	The NMCS bid should be able to communicate with the K-Tech DCC-150E 8VSB DTV digital processor via SNMP and proprietary ethernet, providing direct monitor and control via SNMP and the Ktech proprietary GUI.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH,				

SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.14.0	The NMCS bid should be able to communicate with the K-Tech FRQ-200 ASI-to-310 converter via SNMP and proprietary ethernet, providing direct monitor and control via SNMP and the Ktech proprietary GUI.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.15.0	The NMCS bid should be able to communicate with the Evertz 7880IP ASI-to-IP converter via SNMP and proprietary Evertz VistaLink ethernet, providing direct monitor and control via SNMP and the Evertz VistaLink proprietary GUI.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM	The NMCS bid shall be able to communicate with	x		

#1.16.0	the Motorola DSR4410 Integrated Receiver Decoder via SNMP, providing direct monitor and control.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.17.0	The NMCS bid shall be able to communicate with the Sencore 3187A Modular Receiver Decoder via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.18.0	The NMCS bid shall be able to communicate with the Sencore 3187B Modular Receiver Decoder via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH,

SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.19.0	The NMCS bid shall be able to communicate with the Sencore MRD4400 Modular Receiver Decoder via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.20.0	The NMCS bid shall be able to communicate with the Evertz X9504 digital baseband routing switcher via GVG TenXL RS232 and RS422 serial protocols, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.21.0	The NMCS bid shall be able to communicate with the Videotek RS12A analog audio/video baseband routing switcher via GVG Performer ASCII RS232 and RS422 serial protocol, providing direct monitor	x		

	and control.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.22.0	The NMCS bid shall be able to communicate with the Videotek RS-12 MPEG digital baseband routing switcher via GVG Performer ASCII RS232 and RS422 serial protocols, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.23.0	The NMCS bid should be able to communicate with the Sage Digital Endec EAS Encoder/Decoder Model 3644 via 10/100 Base-T LAN protocol, providing direct monitor and control and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH,

SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.24.0	The NMCS bid shall be able to communicate with the Best Power Axxium 2000 UPS's via SNMP and HTTP protocol, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.25.0	The NMCS bid shall be able to communicate with the APC 2000 UPS's via SNMP and HTTP protocol, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.26.0	The NMCS bid should be able to communicate with the Xytronix Research & Design Control by Web	x		

	X310 and X332 products via SNMP and HTTL protocol, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.27.0	The NMCS bid should be able to communicate with the EECI (Electronic Energy Control, Inc.) ADC-16 analog to digital converter via serial protocol, providing direct monitor and control	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.28.0	The NMCS bid should be able to communicate with the HVAC systems in place at the remote transmission sites, providing monitoring and limited control where applicable	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts,

using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #1.29.0	The NMCS bid should be able to communicate with the electrical generator systems in place at the remote transmission sites, providing direct monitoring	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #30.0	The NMCS bid should be able to communicate with the tower lighting systems in place at the remote transmission sites, providing direct monitoring	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM	Provide NMCS as Specified for NETC	Existing	In	Customized

#2.0	Satellite Teleport Systems.	Capabilities	Development	for NETC
TRM #2.1.0	The NMCS bid shall provide the ability to control and monitor the NETC Ku-Band and C-band Satellite Teleport Systems. The NMCS should be able to control and monitor all existing and future equipment for the NETC Ku-Band and C-band Satellite Teleport Systems.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.2.0	The NMCS bid shall have the ability to communicate with teleport equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

TRM #2.3.0	The NMCS bid shall have the ability to communicate with teleport equipment via IP, TCP, UDP, HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify	x		

	exactly how ethernet communications will be established, administered, maintained, and operated.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #2.4.0	The NMCS bid shall have the ability to communicate with teleport equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #2.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to teleport equipment providing analog contacts. Bidder should specify exactly how analog measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #2.6.0	The NMCS bid should be able to communicate with the Vertex 7134 Antenna Controller via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.7.0	The NMCS bid shall be able to communicate with the Andrew APC100 Antenna Controller via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.8.0	The NMCS bid shall be able to communicate with the Research Concepts RC1000 Antenna Controller via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.9.0	The NMCS bid shall be able to communicate with the Research Concepts RC2000 Antenna Controller via serial protocol, providing direct monitor and control	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to

retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.10.0	The NMCS bid shall be able to communicate with the Miteq/MCL MT3200 Ku-Band High Power Amplifier via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.11.0	The NMCS bid shall be able to communicate with the Miteq/MCL MT4000 Ku-Band High Power Amplifier via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.11.1	The NMCS bid shall be able to communicate with the Miteq/MCL PSU 1:4 HPA protection Switch via serial and HTTP protocol, providing direct monitor and control via serial communications, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or

will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.12.0	The NMCS bid shall be able to communicate with the Miteq/MCL MT4000 C-Band High Power Amplifier via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.12.1	The NMCS bid shall be able to communicate with the Miteq/MCL MXC-VPC Variable Phase Combiner via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.13.0	The NMCS bid shall be able to communicate with the CPI VZU-6994AD Ku-Band High Power Amplifier via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.13.1	The NMCS bid shall be able to communicate with the CPI VZU-CMPA 1:1 Redundancy Switch via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.14.0	The NMCS bid shall be able to communicate with the Miteq/MCL U-9653-3 C-Band Upconverter via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.15.0	The NMCS bid shall be able to communicate with the Miteq/MCL U-9696 Ku-Band Upconverter via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.16.0	The NMCS bid shall be able to communicate with the Miteq/MCL U-9656-6-1K Ku-Band Upconverter via Serial, and SNMP protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.16.1	The NMCS bid shall be able to communicate with the Miteq/MCL NSU 1:4 Redundancy Switch via Serial and SNMP protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or

protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.17.0	The NMCS bid shall be able to communicate with the Radyne SFC-1450 Ku-Band Upconverter via Serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.18.0	The NMCS bid shall be able to communicate with the Newtec M6100 DVBS Modulator via SNMP and HTTP protocol, providing direct monitor and control via SNMP communications, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.18.1	The NMCS bid shall be able to communicate with the Newtec AZ202 1:7 Protection Switch via SNMP and HTTP protocol, providing direct monitor and control via SNMP communications, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or

will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.19.0	The NMCS bid shall be able to communicate with the Miteq DVM100 DVBS Modulator via Serial, SNMP and HTTP protocols, providing direct monitor and control via Serial or SNMP communications, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.20.0	The NMCS bid shall be able to communicate with the Radyne DM240 DVBS Modulator via Serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.20.1	The NMCS bid shall be able to communicate with the Radyne DM240 1:1 Redundancy Switch via Serial protocol, providing direct monitor and	x		

	control.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.21.0	The NMCS bid shall be able to communicate with the Miteq RSU 1:1 Redundancy Switch via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.22.0	The NMCS bid should provide the ability to control and monitor the Adtec Digital EN210 Multi-codec Encoder via GPIO, serial, IP and/or other means as allowed by the manufacturer.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact

to IP convertor devices.				
TRM #2.23.0	The NMCS bid should be able to communicate with the Agilent E-Series Spectrum Analyzer via GPIB protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

In addition, DataMiner's Spectrum Analysis module provides real-time remote interfacing via its web UI. Not only can operators perform RF measurements remotely, but a single spectrum analyzer can also be shared by multiple concurrent users, each individually with his settings and preferences without any constraints or conflicts. This feature of DMS Spectrum Analysis significantly improves the ROI on measurement equipment by optimizing its use throughout the corporation. The real-time spectrum analysis UI is uniform across any spectrum analyzer from any vendor and offers a plethora of features for the operator.

TRM #2.24.0	The NMCS bid shall be able to communicate with the Hewlett Packard 8595E Spectrum Analyzer via Serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

In addition, DataMiner's Spectrum Analysis module provides real-time remote interfacing via its web UI. Not only can operators perform RF measurements remotely, but a single spectrum analyzer can also be shared by multiple concurrent users, each individually with his settings and preferences without any constraints or conflicts. This feature of DMS Spectrum Analysis significantly improves the ROI on measurement equipment by optimizing its use throughout the corporation. The real-time spectrum analysis UI is uniform across any spectrum analyzer from any vendor and offers a plethora of features for the operator.

TRM #2.25.0	The NMCS bid shall be able to communicate with the Hewlett Packard 8590L Spectrum Analyzer via Serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

In addition, DataMiner's Spectrum Analysis module provides real-time remote interfacing via its web UI. Not only can operators perform RF measurements remotely, but a single spectrum analyzer can also be shared by multiple concurrent users, each individually with his settings and preferences without any constraints or conflicts. This feature of DMS Spectrum Analysis significantly improves the ROI on measurement equipment by optimizing its use throughout the corporation. The real-time spectrum analysis UI is uniform across any spectrum analyzer from any vendor and offers a plethora of features for the operator.

TRM #2.26.0	The NMCS bid shall be able to communicate with the Quintech SRR-2150 16x1 L-Band Routing Switcher via SNMP protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.27.0	The NMCS bid shall be able to communicate with the Standard Communications MT-930 Satellite Receiver via Serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.28.0	The NMCS bid shall be able to communicate with the Sencore 3187A Modular Receiver Decoder via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.29.0	The NMCS bid shall be able to communicate with the Sencore 3187B Modular Receiver Decoder via SNMP and HTTP protocols, providing direct monitor and control via SNMP, and access to the integrated browser interface via http	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to

retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.30.0	The NMCS bid should be able to communicate with the Xytronix Research & Design Control by Web X310 and X332 products via SNMP and HTTL protocol, providing direct monitor and control via SNMP, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #2.31.0	The NMCS bid should be able to communicate with the EECI (Electronic Energy Control, Inc.) ADC-16 analog to digital converter via serial protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.0	Provide NMCS as Specified for NETC Television and Radio Facilities.	Existing Capabilities	In Development	Customized for NETC
TRM #3.1.0	The NMCS bid shall provide the ability to control and monitor the NETC Television and Radio	x		

	Facilities.			
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.				
TRM #3.2.0	The NMCS bid shall have the ability to communicate with facilities equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices. Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com				
TRM #3.3.0	The NMCS bid shall have the ability to communicate with facilities equipment via IP, TCP, UDP, HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify exactly how ethernet communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #3.4.0	The NMCS bid shall have the ability to communicate with facilities equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #3.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to facilities equipment providing analog contacts. Bidder should specify exactly how analog	x		

	measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #3.6.0	The NMCS bid should be able to communicate with the Lieberts HVAC systems via SNMP protocol, providing direct monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.7.0	The NMCS bid should be able to communicate with the Cummins/Onan generators, providing direct monitoring.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.8.0	The NMCS bid shall be able to communicate with various models of APC UPS systems via SNMP protocol, providing direct monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.9.0	The NMCS bid shall be able to communicate with various models of Best Power UPS systems via SNMP protocol, providing direct monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or

protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.10.0	The NMCS bid shall be able to communicate with various models of Powerware UPS systems via SNMP protocol, providing direct monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.11.0	The NMCS bid should be able to communicate with the Pelco DX4800 security camera systems, providing direct monitor and control. NET is looking to modernize its existing outdated analog security camera system, bidder should provide a list of specified solution currently supported security camera systems.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM	The NMCS bid should be able to communicate with	x		

#3.12.0	the HID security door system, providing direct monitor and control.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #3.13.0	The NMCS bid should be able to communicate with the Vesda Fire detection systems, providing direct monitoring.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #4.0	**Provide NMCS as Specified for NETC Television and Radio Terminal Equipment and Production Matrix Routing Switcher Systems**	**Existing Capabilities**	**In Development**	**Customized for NETC**
TRM #4.1.0	The NMCS bid should have provisions for future expandability to provide control and monitoring of the NETC Television and Radio Terminal Equipment and Production Matrix Routing Switcher Systems. The future expandability provision should allow for control and monitoring of existing and future equipment for the NETC Television and	x		

	Radio Terminal Equipment and Production Matrix Routing Switcher Systems.			

Bidder Response:

Due to its Distributed Intelligence Architecture, DataMiner allows a scalability to offer a solution for 10, 20 or 30 devices up to large corporate configurations, without compromises in terms of performance and storage capacity - Today the largest DataMiner systems manage millions of devices.

By adding servers (DataMiner agents) the user can scale its NMS platform to accommodate much more elements. These DMAs can, at run-time, be added to an existing DataMiner System, without interrupting or affecting the on-going operations. Also, for each new type of device a new driver will be needed.

Besides the scalability, it's also noteworthy the transparency for the user. The user will see all the elements monitored and controlled by each server as if they were monitored and controlled by one server i.e. Only one consolidated NMS platform monitoring all the elements.

Skyline Communications' sole activities are its leading NMS solution – DataMiner. Please note that Skyline has been profitable since its inception and is today considered as the leading supplier of multi-vendor NMS/OSS Solutions in the market. Skyline Communications has extensive business contracts with the larger telco/broadcasters/operators around the globe working hand-in-hand on long-term future next generation platforms. In other words, DataMiner is already in the market since many years and is here to stay in the coming years. Reflecting the latter is also that Skyline Communications is investing a lot in expansions both on HR & Real Estate (Offices) around the world.

TRM #4.2.0	The NMCS bid shall have the ability to communicate with terminal and routing switcher equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

TRM #4.3.0	The NMCS bid shall have the ability to communicate with terminal and routing switcher equipment via IP, TCP, UDP, HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify exactly how	x		

	ethernet communications will be established, administered, maintained, and operated.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #4.4.0	The NMCS bid shall have the ability to communicate with terminal and routing switcher equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #4.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to terminal and routing switcher equipment providing analog contacts. Bidder should specify exactly how analog measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #4.6.0	The NMCS bid should be able to communicate with Evertz 7700FR and 7800FR Frames via SNMP and GPI/GPO communications, providing monitor and control of frame and module status.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #4.7.0	The NMCS bid should be able to communicate with various Evertz 7700 and 7800 modules via ethernet communications, providing monitor and control utilizing SNMP, or access via Evertz Vistalink proprietary NMS.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #4.8.0	The NMCS bid should be able to communicate with the Utah Scientific UTAH-300 analog matrix routing switcher.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #4.9.0	The NMCS bid should be able to communicate with the Grass Valley Venus Wideband digital matrix routing switcher.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #4.10.0	The NMCS bid should be able to communicate with the Imagine Communications Platinum VX 3G Digital matrix routing switcher.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.				
TRM #4.11.0	The NMCS bid should be hardware and media agnostic, that is able to provide routing switcher control for the routing switchers referred to in section 4.8, 4.9, and 4.10. As well as IP based layer 2 and layer 3 ethernet switches which comply with Professional Media Over Managed IP Networks suite of standards such as SMPTE ST2022, and ST2110.	x		
Bidder Response: FULLY COMPLIANT DataMiner has a powerful multi-vendor protocol engine and has been integrated already with more than 5500 devices and systems from more than 600 different industry vendors, including Utah Scientific, Grass Valley and Imagine Communications. DataMiner provides the guarantee to interface with any device or system from any vendor, proprietary or standard. Similarly, router control UI and functionality on the SDI router & IP switching fabric.				
TRM #4.11.1	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the routing switchers through a series of mapping tables in order to create a "Hybrid" routing switcher made up of gateways, processors, and converters providing logical signal flow between systems and end-to-end service level events.	x		

Bidder Response: FULLY COMPLIANT

DataMiner allows to intuitively configure all matrices in your DataMiner System in a single, customizable user interface.
It also provides seamless management of all your signal routing through a highly user-definable lay-out and wide range of functions and options, including embedded visual overview graphics in your router control and full integration with the DataMiner automation engine.

DataMiner is capable of controlling the router switchers individually – as a consequence of its full integration of the router switchers/integrated equipment. Please note that DataMiner is capable of reading a mapping table and through its embedded automation engine can trigger a series of actions across multiple type of devices – orchestrating the signal flow e2e. Important to note is that the "hybrid' routing is not hardcoded and can be updated at any point in time within the DataMiner Automation Engine. In addition, through the standard SRM (Service & Resource Manager) component in DataMiner, DataMiner not only can orchestrate the signal flow (and even trigger it as a scheduled component), it's also capable of tracking the resources in real-time preventing resources (cross-points, KPIs) being double used.

TRM #4.11.2	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the routing switchers through both software and hardware panels. Panels should be capable of full X-Y switching, limited X-Y switching, and button-per-source switching.	x		

Bidder Response: FULLY COMPLIANT

DataMiner provides a fully user customizable UI which enables operators the ability to present their system exactly the way they want to. Switching capabilities can be presented via a soft X-Y panel (custom UI), whilst still being able to switch using traditional hardware X-Y panels. The Software Control Panel will be responsible for configuring appropriate multicast addresses at the destination to affect a switch through the selected Router. The same control panels can be used for SDI/ASI & IP routing.

TRM #4.11.3	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the existing Grass Valley CP300 and CP328 hardware panels. Panels should be capable of full X-Y switching, limited X-Y switching, and button-per-source switching where applicable.	x		

Bidder Response: FULLY COMPLIANT

As mentioned above, soft X-Y panels are supported, as well as switching using traditional X-Y panels. As DataMiner integrated with any device or system, control of a Grass Valley CP300 and CP328 hardware panel can be established by means of a DataMiner driver, and only limited by the capabilities of the API of these devices.

TRM #5.0	Provide NMCS as Specified for NETC Television and Radio Master Control, Production Studios and Remote Systems.	Existing Capabilities	In Development	Customized for NETC
TRM #5.1.0	The NMCS bid should have provisions for future expandability to provide control and monitoring of the NETC Television and Radio Master Control, Production Studios and Remote Systems. The future expandability provision should allow for control and monitoring of existing and future equipment for the NETC Television and Radio Remote Systems.	x		

Bidder Response: Due to its Distributed Intelligence Architecture, DataMiner allows a scalability to offer a solution for 10, 20 or 30 devices up to large corporate configurations, without compromises in terms of performance and storage capacity - Today the largest DataMiner systems manage millions of devices. By adding servers (DataMiner agents) the user can scale its NMS platform to accommodate much more elements. These DMAs can, at run-time, be added to an existing DataMiner System, without interrupting or affecting the on-going operations. Also, for each new type of device a new driver will be needed. Besides the scalability, it's also noteworthy the transparency for the user. The user will see all the elements monitored and controlled by each server as if they were monitored and controlled by one server i.e. Only one consolidated NMS platform monitoring all the elements. Skyline Communications' sole activities are its leading NMS solution – DataMiner. Please note that Skyline has been profitable since its inception and is today considered as the leading supplier of multi-vendor NMS/OSS Solutions in the market. Skyline Communications has extensive business contracts with the larger telco/broadcasters/operators around the globe working hand-in-hand on long-term future next generation platforms. In other words, DataMiner is already in the market since many years and is here to stay in the coming years. Reflecting the latter is also that Skyline Communications is investing a lot in expansions both on HR & Real Estate (Offices) around the world.				

TRM #5.2.0	The NMCS bid shall have the ability to communicate with Master Control, Production Studios and Remote Systems equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices. Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com			

TRM #5.3.0	The NMCS bid shall have the ability to communicate with Master Control, Production Studios and Remote Systems equipment via IP, TCP, UDP, HTTP, SNMP, FTP, and Telnet protocols using ethernet communications. Bidder should specify exactly how ethernet communications and IP protocols will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices. Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.				
TRM #5.4.0	The NMCS bid shall have the ability to communicate with Master Control, Production Studios and Remote Systems equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		
Bidder Response: FULLY COMPLIANT The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols. In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers. To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices. Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0				
TRM #5.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to Master Control, Production Studios and Remote Systems equipment providing analog contacts. Bidder should specify exactly how analog	x		

	measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM # 5.6.0	The NMCS bid should have the ability to respond to SNMP traps sent from the Imagine Communications Version Integrated Video Server (Channel-in-a-box).	x		

Bidder Response: FULLY COMPLIANT

Access to external systems via the so-called third-party interfaces is an extremely flexible feature as almost every protocol (not limited to SNMP traps), syntax or language can be implemented which is made available by the vendors of the third-party systems.

TRM #5.7.0	The NMCS bid should be able to communicate with the Sage Digital Endec EAS Encoder/Decoder Model 3644 via 10/100 Base-T LAN protocol, providing monitor and control and access to the integrated browser interface via http.	x		

Bidder response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.8.0	The NMCS bid should be able to communicate with the Euphonic System 5 Audio Mixing Console via Leucon/SNMP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM # 5.9.0	The NMCS bid should be able to communicate with the Grass Valley Kayak HD and Carrera/K-Frame Vision Mixer, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.10.0	The NMCS bid should be able to communicate with the Vert Treo Graphics System via SNMP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface

or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.11.0	The NMCS bid should be able to communicate with the AVID Thunder Video Server System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.12.0	The NMCS bid should be able to communicate with the Grass Valley Summit K2 Video Server System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.13.0	The NMCS bid should be able to communicate with the EVS XT3 System via Truck Manager proprietary EVS protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.14.0	The NMCS bid should I be able to communicate with the Harris Predator Multiviewer System via SNMP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.15.0	The NMCS bid should be able to communicate with the Grass Valley Trinix NXT Multiviewer, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.16.0	The NMCS bid should be able to communicate with the Bosch (RTS / Telex) Intercom System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.17.0	The NMCS bid should be able to communicate with the Grass Valley LDK3000 Camera System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.18.0	The NMCS bid should be able to communicate with the Grass Valley LDK80 and LDX86N Camera System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.19.0	The NMCS bid should be able to communicate with the AJA FS2 Frame Synchronizer System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.20.0	The NMCS bid should be able to communicate with the For-A FA-9500, 9520, and 505 Frame Synchronizer Systems, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.21.0	The NMCS bid should be able to communicate with the For-A FVW5-00HS Elastrator via SNMP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.22.0	The NMCS bid should be able to communicate with the Atomos Shogun Studio via serial RS422 and ethernet connection for using AMP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.23.0	The NMCS bid should be able to communicate with the ETC Express 48/96 Lighting Board System via DMX protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or

will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.24.0	The NMCS bid should be able to communicate with the Newtec Tricaster Model 460 and Model 8000 Vision Mixer via serial protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.25.0	The NMCS bid should be able to communicate with the Broadcast Pix Slate-HD Vision Mixer System via VDCP protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.26.0	The NMCS bid should be able to communicate with the Yamaha 02V96 Audio Mixing Console via MIDI protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.27.0	The NMCS bid should be able to communicate with the Image Video TSI3000 Tally System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.28.0	The NMCS bid should be able to communicate with the Tektronix SPG8000 Master Clock/Sync System, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH,

SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.29.0	The NMCS bid should be able to communicate with the Grass Valley Trinix Wideband digital matrix routing switcher.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.29.1	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the routing switchers through a series of mapping tables in order to create a "Hybrid" routing switcher made up of gateways, processors, and converters providing logical signal flow between systems and end-to-end service level events.			

Bidder Response: FULLY COMPLIANT

DataMiner allows to intuitively configure all matrices in your DataMiner System in a single, customizable user interface.
It also provides seamless management of all your signal routing through a highly user-definable lay-out and wide range of functions and options, including embedded visual overview graphics in your router control and full integration with the DataMiner automation engine.

DataMiner is capable of controlling the router switchers individually – as a consequence of its full integration of the router switchers/integrated equipment. Please note that DataMiner is capable of reading a mapping table and through its embedded automation engine can trigger a series of actions across multiple type of devices – orchestrating the signal flow e2e. Important to note is that the "hybrid' routing is not hardcoded and can be updated at any point in time within the DataMiner Automation Engine. In addition, through the standard SRM (Service & Resource Manager) component in DataMiner, DataMiner not only can orchestrate the signal flow (and even trigger it as a scheduled component), it's also capable of tracking the resources in real-time preventing resources (cross-points, KPIs) being double used.

TRM #5.29.2	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the routing switchers through both software and hardware panels. Panels	x		

	should be capable of full X-Y switching, limited X-Y switching, and button-per-source switching.			

Bidder Response: FULLY COMPLIANT

DataMiner provides a fully user customizable UI which enables operators the ability to present their system exactly the way they want to. Switching capabilities can be presented via a soft X-Y panel (custom UI), whilst still being able to switch using traditional hardware X-Y panels. The Software Control Panel will be responsible for configuring appropriate multicast addresses at the destination to affect a switch through the selected Router. The same control panels can be used for SDI/ASI & IP routing.

TRM #5.29.3	The NMCS bid should be able to provide a routing switcher control system which should be capable of controlling the existing and additional Grass Valley CP300, CP330, CP328 and SXY hardware panels. Panels should be capable of full X-Y switching, limited X-Y switching, and button-per-source switching where applicable.	x		

Bidder Response:

As mentioned above, soft X-Y panels are supported, as well as switching using traditional X-Y panels. As DataMiner integrated with any device or system, control of a Grass Valley CP3xx and SXY hardware panel can be established by means of a DataMiner driver, and only limited by the capabilities of the API of these devices.

TRM #5.30.0	The NMCS bid should provide the ability to control and monitor the Broadcast Electronics' AudioVAULT system via GPIO, serial data (where applicable) and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.31.0	The NMCS bid should provide the ability to control and monitor the Broadcast Electronics' AVFlex automation and playout system via GPIO, serial data (where applicable) and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.32.0	The NMCS bid should provide the ability to control and monitor the Broadcast Tools Streaming Sentinel 4 via GPIO, SNMP, and access to the integrated browser interface via http, and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.33.0	The NMCS bid should provide the ability to control and monitor the Broadcast Tools WVRC-8 Dial-up Remote Control System via GPIO, SNMP, and access to the integrated browser interface via http, and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.34.0	The NMCS bid should provide the ability to control and monitor the International Datacasting Pro Audio EXP Satellite Receiver via GPIO, SNMP, and access to the integrated browser interface via http, and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.35.0	The NMCS bid should provide the ability to control and monitor the International Datacasting SR2000 Pro Satellite Receiver via GPIO, SNMP, and access to the integrated browser interface via http, and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.36.0	The NMCS bid should provide the ability to control and monitor the Nautel HD Radio Importer Plus via GPIO, SNMP and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.37.0	The NMCS bid should provide the ability to control and monitor the Nautel HD Radio Exporter Plus via GPIO, SNMP and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.38.0	The NMCS bid should be able to communicate with the Sage Digital Endec EAS Encoder/Decoder Model 3644 via 10/100 Base-T LAN protocol, providing monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to

retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #5.39.0	The NMCS bid should provide the ability to control and monitor the Telos Pathfinder Routing Control Software Suite via GPIO, serial and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

RM #5.40.0	The NMCS bid should provide the ability to control and monitor the Telos ZIP/One IP Audio Link via GPIO, HTTP and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts,

using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #5.41.0	The NMCS bid should provide the ability to control and monitor the Moseley Startlink 9003Q Microwave STL via GPIO, serial and/or other means allowed by manufacturer. Bid response should specify exactly how communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g. dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #6.0	Provide NMCS as Specified for NETC Television and Radio Web Services and IT Networking Systems	Existing Capabilities	In Development	Customized for NETC
TRM #6.1.0	The NMCS bid should have provisions for future expandability to provide control and monitoring of the NETC Television and Radio Web Services and IT Networking Systems. The future expandability provision should allow for control and monitoring of	x		

	existing and future equipment for the NETC Television and Radio Web Services and IT Networking Systems.			

Bidder Response:

Due to its Distributed Intelligence Architecture, DataMiner allows a scalability to offer a solution for 10, 20 or 30 devices up to large corporate configurations, without compromises in terms of performance and storage capacity - Today the largest DataMiner systems manage millions of devices.

By adding servers (DataMiner agents) the user can scale its NMS platform to accommodate much more elements. These DMAs can, at run-time, be added to an existing DataMiner System, without interrupting or affecting the on-going operations. Also, for each new type of device a new driver will be needed.

Besides the scalability, it's also noteworthy the transparency for the user. The user will see all the elements monitored and controlled by each server as if they were monitored and controlled by one server i.e. Only one consolidated NMS platform monitoring all the elements.

Skyline Communications' sole activities are its leading NMS solution – DataMiner. Please note that Skyline has been profitable since its inception and is today considered as the leading supplier of multi-vendor NMS/OSS Solutions in the market. Skyline Communications has extensive business contracts with the larger telco/broadcasters/operators around the globe working hand-in-hand on long-term future next generation platforms. In other words, DataMiner is already in the market since many years and is here to stay in the coming years. Reflecting the latter is also that Skyline Communications is investing a lot in expansions both on HR & Real Estate (Offices) around the world.

TRM #6.2.0	The NMCS bid shall have the ability to communicate with NETC Web Services and IT Networking Systems equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		

Bid Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

TRM #6.3.0	The NMCS bid shall have the ability to communicate with NETC Web Services and IT Networking Systems equipment via IP, TCP, UDP,	x		

	HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify exactly how ethernet communications will be established, administered, maintained, and operated.			

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #6.4.0	The NMCS bid shall have the ability to communicate with NETC Web Services and IT Networking Systems equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g.

dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0				
TRM #6.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to NETC Web Services and IT Networking Systems equipment providing analog contacts. Bidder should specify exactly how analog measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #6.6.0	The NMCS bid should be able to communicate with the Imagine Communications (Digital Rapids) Broadcast Manager Streaming Scheduler, providing monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be

foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #6.6.1	The NMCS bid should be able to communicate with the Imagine Communications (Digital Rapids) SelinoFlex Live and StreamZ Streaming Encoders, providing monitor and control, and access to the integrated browser interface via http.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #6.7.0	The NMCS bid should be able to communicate with the NETC Nagios Core and Nagios Network Analyzer software systems, providing monitor and control for network infrastructure and alerting for servers, switches, applications and services.	x		

Bidder Response: FULLY COMPLIANT

DataMiner provides a fully transparent SNMP proxy for northbound interfacing. This means that traps can be forwarded to third party applications (like to the OSS platforms you already have) for alarms generated by devices managed by DataMiner (independent of the actual protocol used by DataMiner for the management of those third-party devices). And a third-party application can also perform SNMP Gets and Sets on the various parameters of any of the managed third-party devices. For more advanced applications, DataMiner also provides northbound Web Services APIs (SOAP XML, XML-RPC, JSON). In addition to that, it is also possible to build custom northbound APIs, tailored to the specific needs of the customer.

TRM #6.8.0	The NMCS bid should be able to communicate with the NETC SolarWinds Network Analyzer software systems, providing monitor and control for network infrastructure.	x		

Bidder Response: FULLY COMPLIANT

DataMiner provides a fully transparent SNMP proxy for northbound interfacing. This means that traps can be forwarded to third party applications (like to the OSS platforms you already have) for alarms generated by devices managed by DataMiner (independent of the actual protocol used by DataMiner for the management of those third-party devices). And a third-party application can also perform SNMP Gets and Sets on the various parameters of any of the managed third-party devices. For more advanced applications, DataMiner also provides northbound Web Services APIs (SOAP XML, XML-

RPC, JSON). In addition to that, it is also possible to build custom northbound APIs, tailored to the specific needs of the customer.

TRM #6.9.0	The NMCS bid should be able to communicate with the NETC KACE enterprise systems inventory, ticketing system, providing intractability between the NMCS and the KACE system.	x		

Bidder Response: FULLY COMPLIANT

DataMiner has a pronounced open architecture and uses industry standards such as SNMP and ASCII sockets to the maximum extent. This guarantees that DataMiner, today or tomorrow, can easily be integrated with other third-party software applications to further enhance the operations.

DataMiner supports OSS/BSS components such as billing, ticketing, inventory, CRM, customer self-service portals, CMBD, using OSS/BSS Gateways, facilitating those types of integrations and providing a level of OSS/BSS.

DataMiner establishes a bidirectional link between your DataMiner System and your OSS/BSS solutions.

• In one direction DataMiner takes information from your 3rd party data source and uses that information inside DataMiner – e.g. associate subscriber info to SLA and equipment.

• In the other direction, DataMiner provides information about the actual status of the installed base, which can then be used by your OSS/BSS solution – e.g. to consolidate knowledge base or to update/generate trouble ticket info.

Through the use of drivers, interfacing for the purpose of two-way communication with any system is possible. It's also possible to interface other systems like trouble-ticket applications, alarm managers, log files, databases, CRM solutions, ERP platforms etc.... Access to external systems via the so-called third-party interfaces is an extremely flexible feature as almost every protocol (not limited to SNMP traps), syntax or language can be implemented which is made available by the vendors of the third-party systems.

TRM #6.10.0	The NMCS bid should be able to communicate with the NETC Snort IPS (intrusion prevention system), providing intractability between the NMCS and the Snort system.	x		

Bidder Response: FULLY COMPLIANT

Through the use of drivers, interfacing for the purpose of two-way communication with any system is possible. Access to external systems via the so-called third-party interfaces is an extremely flexible feature as almost every protocol (not limited to SNMP traps), syntax or language can be implemented which is made available by the vendors of the third-party systems.

TRM #7.0	**Provide NMCS as Specified for NETC Government Services Audio-Video Systems.**	**Existing Capabilities**	**In Development**	**Customized for NETC**

Bidder Response: *we believe no response is applicable here*

TRM	The NMCS bid should have provisions for future	x		

#7.1.0	expandability to provide control and monitoring of the NETC Government Services Audio-Video Systems. The future expandability provision should allow for control and monitoring of existing and future equipment for the NETC Government Services Audio-Video Systems.			

Bidder Response:

Due to its Distributed Intelligence Architecture, DataMiner allows a scalability to offer a solution for 10, 20 or 30 devices up to large corporate configurations, without compromises in terms of performance and storage capacity - Today the largest DataMiner systems manage millions of devices.

By adding servers (DataMiner agents) the user can scale its NMS platform to accommodate much more elements. These DMAs can, at run-time, be added to an existing DataMiner System, without interrupting or affecting the on-going operations. Also, for each new type of device a new driver will be needed.

Besides the scalability, it's also noteworthy the transparency for the user. The user will see all the elements monitored and controlled by each server as if they were monitored and controlled by one server i.e. Only one consolidated NMS platform monitoring all the elements.

Skyline Communications' sole activities are its leading NMS solution – DataMiner. Please note that Skyline has been profitable since its inception and is today considered as the leading supplier of multi-vendor NMS/OSS Solutions in the market. Skyline Communications has extensive business contracts with the larger telco/broadcasters/operators around the globe working hand-in-hand on long-term future next generation platforms. In other words, DataMiner is already in the market since many years and is here to stay in the coming years. Reflecting the latter is also that Skyline Communications is investing a lot in expansions both on HR & Real Estate (Offices) around the world.

TRM #7.2.0	The NMCS bid shall have the ability to communicate with NETC Government Services Audio-Video Systems equipment via serial RS232, RS422, and RS485 protocol. Bidder should specify exactly how serial communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Serial Communications can be established, administered, maintained, and operated by using serial to IP convertor devices, e.g. https://www.moxa.com

TRM #7.3.0	The NMCS bid shall have the ability to communicate with NETC Government Services Audio-Video Systems equipment via IP, TCP, UDP, HTTP, SNMP, FTP, Telnet and Networked Media Open Specifications protocols. Bidder should specify exactly how ethernet communications will be established, administered, maintained, and operated.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Ethernet communications will be established, administered, maintained, and operated by means of the DataMiner drivers, used to interface the DataMiner Agent with the particular devices or systems.

TRM #7.4.0	The NMCS bid shall have the ability to communicate with NETC Government Services Audio-Video Systems equipment GPI and GPO interfaces. Bidder should specify exactly how parallel discrete GPI and GPO communications will be established, administered, maintained, and operated. The proposed system shall be able to support single and multiple bit drivers for alarm, status, and command functions as provided by discrete connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

Parallel discrete GPI and GPO communications can be established, administered, maintained, and operated by using e.g.

dry contact to IP convertor devices, such as http://www.advantech.com/products/modular-i-o-system-adam-5000-series/sub_1-368qr0

TRM #7.5.0	The NMCS bid shall have the ability to display analog measurements from direct connection to NETC Government Services Audio-Video Systems equipment providing analog contacts. Bidder should specify exactly how analog measurements will be established, administered, maintained, and operated. The proposed system should be able to support drivers for analog measurements of percentage, amps, milliamps, micro amps, degrees-Fahrenheit, volts, kilovolts, psi, ratio, threshold, and watts as provided by discrete analog connections.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

To establish, administer, maintain, and operate analog measurements (temperature, voltage, pressure, amps,), a convertor/sensor is needed (e.g. http://www.akcp.com/).

TRM #7.6.0	The NMCS bid should be able to communicate with the Crestron Pro2 Controller via SNMP, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #7.7.0	The NMCS bid should be able to communicate with the Yamaha DME 64/24 Audio Processor via ethernet and/or serial protocol, providing monitor and control.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #7.8.0	The NMCS bid should be able to communicate with Evertz 7700FR and 7800FR Frames via SNMP and GPI/GPO communications, providing monitor and control of frame and module status.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

TRM #7.9.0	The NMCS bid should be able to communicate with various Evertz 7700 and 7800 modules via ethernet communications, providing monitor and control utilizing SNMP, or access via Evertz Vistalink proprietary NMS.	x		

Bidder Response: FULLY COMPLIANT

The DataMiner platform can be interfaced with any device or system from any possible vendor, regardless of the interface or protocol. One platform enabling you to manage the entire operations, whatever devices and systems you have today or

will be buying in the future. Today more than 5500 different devices/systems from more than 600 different vendors have already been integrated, and new drivers are added on weekly basis. Current integrations include interfacing via physical interfaces such as Ethernet, RS232, synchronous and asynchronous RS485/RS422, GPIB, analog and digital contacts, using both standard (including but not limited to Modbus, SOAP, XML, APIs, CORBA, WMI, SQL, HTML, telnet, SSH, SNMP, etc.) and full proprietary and vendor-specific protocols.

In a nutshell, DataMiner unconditionally interfaces with any device, system or application regardless of its interface or protocol, therefore as long as the information is made available by the API of any of these systems, DataMiner is able to retrieve it via the use of DataMiner drivers.

To note that, independent of the protocol and interface type of each individual device, IP connectivity needs to be foreseen via direct connection, LAN/WAN network or interface conversion. Examples of the latter are serial or dry contact to IP convertor devices.

SECTION 3 - TERMS AND CONDITIONS REQUIREMENTS

3.1 NETC CONTRACT TERMS AND CONDITIONS

Bidders should complete Sections II through VI as part of their proposal. Bidder is expected to read the Terms and Conditions and should initial either accept, reject, or reject and provide alternative language for each clause. The bidder should also provide an explanation of why the bidder rejected the clause or rejected the clause and provided alternate language. By signing the RFP, bidder is agreeing to be legally bound by all the accepted terms and conditions, and any proposed alternative terms and conditions submitted with the proposal. The State reserves the right to negotiate rejected or proposed alternative language. If the State and bidder fail to agree on the final Terms and Conditions, the State reserves the right to reject the proposal. The State of Nebraska is soliciting proposals in response to this RFP. The State of Nebraska reserves the right to reject proposals that attempt to substitute the bidder's commercial contracts and/or documents for this RFP.

The State will not consider incorporation of any document not submitted with the bidder's proposal as the document will not have been included in the evaluation process. These documents shall be subject to negotiation and will be incorporated as addendums if agreed to by the Parties.

If a conflict or ambiguity arises after the Addendum to Contract Award have been negotiated and agreed to, the Addendum to Contract Award shall be interpreted as follows:

If only one Party has a particular clause then that clause shall control;

If both Parties have a similar clause, but the clauses do not conflict, the clauses shall be read together;

If both Parties have a similar clause, but the clauses conflict, the State's clause shall control.

GENERAL

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The contract resulting from this RFP shall incorporate the following documents:

Request for Proposal and Addenda;
Amendments to the RFP;

Questions and Answers;
Contractor's proposal (RFP and properly submitted documents);
The executed Contract and Addendum One to Contract, if applicable; and,
Amendments/Addendums to the Contract.

These documents constitute the entirety of the contract.

Unless otherwise specifically stated in a future contract amendment, in case of any conflict between the incorporated documents, the documents shall govern in the following order of preference with number one (1) receiving preference over all other documents and with each lower numbered document having preference over any higher numbered document: 1) Amendment to the executed Contract with the most recent dated amendment having the highest priority, 2) executed Contract and any attached Addenda, 3) Amendments to RFP and any Questions and Answers, 4) the original RFP document and any Addenda, and 5) the Contractor's submitted Proposal.

Any ambiguity or conflict in the contract discovered after its execution, not otherwise addressed herein, shall be resolved in accordance with the rules of contract interpretation as established in the State of Nebraska.

NOTIFICATION

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Contractor and State shall identify the contract manager who shall serve as the point of contact for the executed contract.

Communications regarding the executed contract shall be in writing and shall be deemed to have been given if delivered personally or mailed, by U.S. Mail, postage prepaid, return receipt requested, to the parties at their respective addresses set forth below, or at such other addresses as may be specified in writing by either of the parties. All notices, requests, or communications shall be deemed effective upon personal delivery or three (3) calendar days following deposit in the mail.

Vendor Contract Manager - Steven Lewis

Vendor - HA Design Group LLC
Vendor Street Address – 6700 Springfield Center Dr. St. J
Vendor City, State, Zip – Springfield, Va. 22150

GOVERNING LAW (Statutory)

Notwithstanding any other provision of this contract, or any amendment or addendum(s) entered into contemporaneously or at a later time, the parties understand and agree that, (1) the State of Nebraska is a sovereign state and its authority to contract is therefore subject to limitation by the State's Constitution, statutes, common law, and regulation; (2) this contract will be interpreted and enforced under the laws of the State of Nebraska; (3) any action to enforce the provisions of this agreement must be brought in the State of Nebraska per state law; (4) the person signing this contract on behalf of the State of Nebraska does not have the authority to waive the State's sovereign immunity, statutes, common law, or regulations; (5) the indemnity, limitation of liability, remedy, and other similar provisions of the final contract, if any, are entered into subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity; and, (6) all terms and conditions of the final contract, including but not limited to the clauses concerning third party use, licenses, warranties, limitations of liability, governing law and venue, usage verification, indemnity, liability, remedy or other similar provisions of the final contract are entered into specifically subject to the State's Constitution, statutes, common law, regulations, and sovereign immunity.

The Parties must comply with all applicable local, state and federal laws, ordinances, rules, orders, and regulations.

BEGINNING OF WORK

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The bidder shall not commence any billable work until a valid contract has been fully executed by the State and the successful Contractor. The Contractor will be notified in writing when work may begin.

CHANGE ORDERS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The State and the Contractor, upon the written agreement, may make changes to the contract within the general scope of the RFP. Changes may involve specifications, the quantity of work, or such other items as the State may find necessary or desirable. Corrections of any deliverable, service, or work required pursuant to the contract shall not be deemed a change. The Contractor may not claim forfeiture of the contract by reasons of such changes.

The Contractor shall prepare a written description of the work required due to the change and an itemized cost sheet for the change. Changes in work and the amount of compensation to be paid to the Contractor shall be determined in accordance with applicable unit prices if any, a pro-rated value, or through negotiations. The State shall not incur a price increase for changes that should have been included in the Contractor's proposal, were foreseeable, or result from difficulties with or failure of the Contractor's proposal or performance.

No change shall be implemented by the Contractor until approved by the State, and the Contract is amended to reflect the change and associated costs, if any. If there is a dispute regarding the cost, but both parties agree that immediate implementation is necessary, the change may be implemented, and cost negotiations may continue with both Parties retaining all remedies under the contract and law.

NOTICE OF POTENTIAL CONTRACTOR BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

If Contractor breaches the contract or anticipates breaching the contract, the Contractor shall immediately give written notice to the State. The notice shall explain the breach or potential breach, a proposed cure, and may include a request for a waiver of the breach if so desired. The State may, in its discretion, temporarily or permanently waive the breach. By granting a waiver, the State does not forfeit any rights or remedies to which the State is entitled by law or

equity, or pursuant to the provisions of the contract. Failure to give immediate notice, however, may be grounds for denial of any request for a waiver of a breach.

BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Either Party may terminate the contract, in whole or in part, if the other Party breaches its duty to perform its obligations under the contract in a timely and proper manner. Termination requires written notice of default and a thirty (30) calendar day (or longer at the non-breaching Party's discretion considering the gravity and nature of the default) cure period. Said notice shall be delivered by Certified Mail, Return Receipt Requested, or in person with proof of delivery. Allowing time to cure a failure or breach of contract does not waive the right to immediately terminate the contract for the same or different contract breach which may occur at a different time. In case of default of the Contractor, the State may contract the service from other sources and hold the Contractor responsible for any excess cost occasioned thereby.

The State's failure to make payment shall not be a breach, and the Contractor shall retain all available statutory remedies and protections.

NON-WAIVER OF BREACH

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The acceptance of late performance with or without objection or reservation by a Party shall not waive any rights of the Party nor constitute a waiver of the requirement of timely performance of any obligations remaining to be performed.

SEVERABILITY

Accept	Reject	Reject & Provide	NOTES/COMMENTS:

(Initial)	(Initial)	Alternative within RFP Response (Initial)	

If any term or condition of the contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the provision held to be invalid or illegal.

INDEMNIFICATION

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

GENERAL

The Contractor agrees to defend, indemnify, and hold harmless the State and its employees, volunteers, agents, and its elected and appointed officials ("the indemnified parties") from and against any and all third party claims, liens, demands, damages, liability, actions, causes of action, losses, judgments, costs, and expenses of every nature, including investigation costs and expenses, settlement costs, and attorney fees and expenses ("the claims"), sustained or asserted against the State for personal injury, death, or property loss or damage, arising out of, resulting from, or attributable to the willful misconduct, negligence, error, or omission of the Contractor, its employees, Subcontractors, consultants, representatives, and agents, resulting from this contract, except to the extent such Contractor liability is attenuated by any action of the State which directly and proximately contributed to the claims.

INTELLECTUAL PROPERTY

The Contractor agrees it will, at its sole cost and expense, defend, indemnify, and hold harmless the indemnified parties from and against any and all claims, to the extent such claims arise out of, result from, or are attributable to, the actual or alleged infringement or misappropriation of any patent, copyright, trade secret, trademark, or confidential information of any third party by the Contractor or its employees, Subcontractors, consultants, representatives, and agents; provided, however, the State gives the Contractor prompt notice in writing of the claim. The Contractor may not settle any infringement claim that will affect the State's use of the Licensed Software without the State's prior written consent, which consent may be withheld for any reason.

If a judgment or settlement is obtained or reasonably anticipated against the State's use of any intellectual property for which the Contractor has indemnified the State, the Contractor shall, at the Contractor's sole cost and expense, promptly modify the item or items which were determined to be infringing, acquire a license or licenses on the State's behalf to provide the necessary rights to the State to eliminate the infringement, or provide the State with a non-infringing substitute that provides the State the same functionality. At the State's election, the actual or anticipated judgment may be treated as a breach of warranty by the Contractor, and the State may receive the remedies provided under this RFP.

PERSONNEL

The Contractor shall, at its expense, indemnify and hold harmless the indemnified parties from and against any claim with respect to withholding taxes, worker's compensation, employee benefits, or any other claim, demand, liability, damage, or loss of any nature relating to any of the personnel, including subcontractor's and their employees, provided by the Contractor.

SELF-INSURANCE

The State of Nebraska is self-insured for any loss and purchases excess insurance coverage pursuant to Neb. Rev. Stat. § 81-8,239.01 (Reissue 2008). If there is a presumed loss under the provisions of this agreement, Contractor may file a claim with the Office of Risk Management pursuant to Neb. Rev. Stat. §§ 81-8,829 – 81-8,306 for review by the State Claims Board. The State retains all rights and immunities under the State Miscellaneous (Section 81-8,294), Tort (Section 81-8,209), and Contract Claim Acts (Section 81-8,302), as outlined in Neb. Rev. Stat. § 81-8,209 et seq. and under any other provisions of law and accepts liability under this agreement to the extent provided by law.

The Parties acknowledge that Attorney General for the State of Nebraska is required by statute to represent the legal interests of the State, and that any provision of this indemnity clause is subject to the statutory authority of the Attorney General.

ATTORNEY'S FEES

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

In the event of any litigation, appeal, or other legal action to enforce any provision of the contract, the Parties agree to pay all expenses of such action, as permitted by law and if order by the court, including attorney's fees and costs, if the other Party prevails.

RETAINAGE

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The State will withhold ten percent (10%) of each payment due as retainage. The entire retainage amount will be payable upon successful completion of the project phase. Upon completion of the project, the Contractor will invoice the State for any outstanding work and for the retainage. The State may reject the final invoice by identifying the specific reasons for such rejection in writing to the Contractor within forty-five (45) calendar days of receipt of the final invoice. Otherwise, the project will be deemed accepted and the State will release the final payment and retainage in accordance with the contract payment terms.

ASSIGNMENT, SALE, OR MERGER

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Either Party may assign the contract upon mutual written agreement of the other Party. Such agreement shall not be unreasonably withheld.

The Contractor retains the right to enter into a sale, merger, acquisition, internal reorganization, or similar transaction involving Contractor's business. Contractor agrees to cooperate with the State in executing amendments to the contract to allow for the transaction. If a third party or entity is involved in the transaction, the Contractor will remain responsible for performance of the contract until such time as the person or entity involved in the transaction agrees in writing to be contractually bound by this contract and perform all obligations of the contract.

CONTRACTING WITH OTHER NEBRASKA POLITICAL SUB-DIVISIONS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor may, but shall not be required to, allow agencies, as defined in Neb. Rev. Stat. §81-145, to use this contract. The terms and conditions, including price, of the contract may not be amended. The State shall not be contractually obligated or liable for any contract entered into pursuant to this clause. A listing of Nebraska political subdivisions may be found at the website of the Nebraska Auditor of Public Accounts.

FORCE MAJEURE

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Neither Party shall be liable for any costs or damages, or for default resulting from its inability to perform any of its obligations under the contract due to a natural or manmade event outside the control and not the fault of the affected Party ("Force Majeure Event"). The Party so affected shall immediately make a written request for relief to the other Party and shall have the burden of proof to justify the request. The other Party may grant the relief requested; relief may not be unreasonably withheld. Labor disputes with the impacted Party's own employees will not be considered a Force Majeure Event.

CONFIDENTIALITY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

All materials and information provided by the Parties or acquired by a Party on behalf of the other Party shall be regarded as confidential information. All materials and information provided or acquired shall be handled in accordance with federal and state law, and ethical standards.

Should said confidentiality be breached by a Party, the Party shall notify the other Party immediately of said breach and take immediate corrective action.

It is incumbent upon the Parties to inform their officers and employees of the penalties for improper disclosure imposed by the Privacy Act of 1974, 5 U.S.C. 552a. Specifically, 5 U.S.C. 552a (i)(1), which is made applicable by 5 U.S.C. 552a (m)(1), provides that any officer or employee, who by virtue of his/her employment or official position has possession of or access to agency records which contain individually identifiable information, the disclosure of which is prohibited by the Privacy Act or regulations established thereunder, and who knowing that disclosure of the specific material is prohibited, willfully discloses the material in any manner to any person or agency not entitled to receive it, shall be guilty of a misdemeanor and fined not more than $5,000.

EARLY TERMINATION

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The contract may be terminated as follows:

The State and the Contractor, by mutual written agreement, may terminate the contract at any time.

The State, in its sole discretion, may terminate the contract for any reason upon thirty (30) calendar day's written notice to the Contractor. Such termination shall not relieve the Contractor of warranty or other service obligations incurred under the terms of the contract. In the event of termination, the Contractor shall be entitled to payment, determined on a pro rata basis, for products or services satisfactorily performed or provided.

The State may terminate the contract immediately for the following reasons:

if directed to do so by statute;

Contractor has made an assignment for the benefit of creditors, has admitted in writing its inability to pay debts as they mature, or has ceased operating in the normal course of business;

a trustee or receiver of the Contractor or of any substantial part of the Contractor's assets has been appointed by a court;

fraud, misappropriation, embezzlement, malfeasance, misfeasance, or illegal conduct pertaining to performance under the contract by its Contractor, its employees, officers, directors, or shareholders;

an involuntary proceeding has been commenced by any Party against the Contractor under any one of the chapters of Title 11 of the United States Code and (i) the proceeding has been pending for at least sixty (60) calendar days; or (ii) the Contractor has consented, either

expressly or by operation of law, to the entry of an order for relief; or (iii) the Contractor has been decreed or adjudged a debtor;

a voluntary petition has been filed by the Contractor under any of the chapters of Title 11 of the United States Code;

Contractor intentionally discloses confidential information;

Contractor has or announces it will discontinue support of the deliverable; and,

In the event funding is no longer available.

CONTRACT CLOSEOUT

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Upon contract closeout for any reason the Contractor shall within 30 days, unless stated otherwise herein:

Transfer all completed or partially completed Deliverables to the State;

Transfer ownership and title to all completed or partially completed Deliverables to the State;

Return to the State all information and data, unless the Contractor is permitted to keep the information or data by contract or rule of law. Contractor may retain one copy of any information or data as required to comply with applicable work product documentation standards or as are automatically retained in the course of Contractor's routine back up procedures;

Cooperate with any successor Contactor, person or entity in the assumption of any or all of the obligations of this contract;

Cooperate with any successor Contactor, person or entity with the transfer of information or data related to this contract;

Return or vacate any state owned real or personal property; and,

Return all data in a mutually acceptable format and manner.

Nothing in this Section should be construed to require the Contractor to surrender intellectual property, real or personal property, or information or data owned by the Contractor for which the State has no legal claim.

CONTRACTOR DUTIES

INDEPENDENT CONTRACTOR / OBLIGATIONS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

It is agreed that the Contractor is an independent contractor and that nothing contained herein is intended or should be construed as creating or establishing a relationship of employment, agency, or a partnership.

The Contractor is solely responsible for fulfilling the contract. The Contractor or the Contractor's representative shall be the sole point of contact regarding all contractual matters.

The Contractor shall secure, at its own expense, all personnel required to perform the services under the contract. The personnel the Contractor uses to fulfill the contract shall have no contractual or other legal relationship with the State; they shall not be considered employees of the State and shall not be entitled to any compensation, rights or benefits from the State, including but not limited to, tenure rights, medical and hospital care, sick and vacation leave, severance pay, or retirement benefits.

By-name personnel commitments made in the Contractor's proposal shall not be changed without the prior written approval of the State. Replacement of these personnel, if approved by the State, shall be with personnel of equal or greater ability and qualifications.

All personnel assigned by the Contractor to the contract shall be employees of the Contractor or a subcontractor and shall be fully qualified to perform the work required herein. Personnel employed by the Contractor or a subcontractor to fulfill the terms of the contract shall remain under the sole direction and control of the Contractor or the subcontractor respectively.

With respect to its employees, the Contractor agrees to be solely responsible for the following:

Any and all pay, benefits, and employment taxes and/or other payroll withholding;

Any and all vehicles used by the Contractor's employees, including all insurance required by state law;

Damages incurred by Contractor's employees within the scope of their duties under the contract;

Maintaining Workers' Compensation and health insurance that complies with state and federal law and submitting any reports on such insurance to the extent required by governing law; and

Determining the hours to be worked and the duties to be performed by the Contractor's employees.

All claims on behalf of any person arising out of employment or alleged employment (including without limit claims of discrimination alleged against the Contractor, its officers, agents, or subcontractors or subcontractor's employees)

If the Contractor intends to utilize any subcontractor, the subcontractor's level of effort, tasks, and time allocation should be clearly defined in the bidder's proposal. The Contractor shall agree that it will not utilize any subcontractors not specifically included in its proposal in the performance of the contract without the prior written authorization of the State.

The State reserves the right to require the Contractor to reassign or remove from the project any Contractor or subcontractor employee.

Contractor shall insure that the terms and conditions contained in any contract with a subcontractor does not conflict with the terms and conditions of this contract.

The Contractor shall include a similar provision, for the protection of the State, in the contract with any Subcontractor engaged to perform work on this contract.

EMPLOYEE WORK ELIGIBILITY STATUS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor is required and hereby agrees to use a federal immigration verification system to determine the work eligibility status of employees physically performing services within the State of Nebraska. A federal immigration verification system means the electronic verification of the work authorization program authorized by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program, or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility status of an employee.

If the Contractor is an individual or sole proprietorship, the following applies:

The Contractor must complete the United States Citizenship Attestation Form, available on the Department of Administrative Services website at http://das.nebraska.gov/materiel/purchasing.html

The completed United States Attestation Form should be submitted with the RFP response.

If the Contractor indicates on such attestation form that he or she is a qualified alien, the Contractor agrees to provide the US Citizenship and Immigration Services documentation required to verify the Contractor's lawful presence in the United States using the Systematic Alien Verification for Entitlements (SAVE) Program.

The Contractor understands and agrees that lawful presence in the United States is required and the Contractor may be disqualified or the contract terminated if such lawful presence cannot be verified as required by Neb. Rev. Stat. §4-108.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND EQUAL OPPORTUNITY EMPLOYMENT / NONDISCRIMINATION (Statutory)

The Contractor shall comply with all applicable local, state, and federal statutes and regulations regarding civil rights laws and equal opportunity employment. The Nebraska Fair Employment Practice Act prohibits Contractors of the State of Nebraska, and their Subcontractors, from discriminating against any employee or applicant for employment, with respect to hire, tenure, terms, conditions, compensation, or privileges of employment because of race, color, religion, sex, disability, marital status, or national origin (Neb. Rev. Stat. §48-1101 to 48-1125). The Contractor guarantees compliance with the Nebraska Fair Employment Practice Act, and breach of this provision shall be regarded as a material breach of contract. The Contractor shall insert a similar provision in all Subcontracts for services to be covered by any contract resulting from this RFP.

COOPERATION WITH OTHER CONTRACTORS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Contractor may be required to work with or in close proximity to other contractors or individuals that may be working on same or different projects. The Contractor shall agree to cooperate with such other contractors or individuals and shall not commit or permit any act which may interfere with the performance of work by any other contractor or individual. Contractor is not required to compromise Contractor's intellectual property or proprietary information unless expressly required to do so by this contract.

PERMITS, REGULATIONS, LAWS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The contract price shall include the cost of all royalties, licenses, permits, and approvals, whether arising from patents, trademarks, copyrights or otherwise, that are in any way involved in the contract. The Contractor shall obtain and pay for all royalties, licenses, and permits, and approvals necessary for the execution of the contract. The Contractor must guarantee that it has the full legal right to the materials, supplies, equipment, software, and other items used to execute this contract.

OWNERSHIP OF INFORMATION AND DATA / DELIVERABLES

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The State shall have the unlimited right to publish, duplicate, use, and disclose all information and data developed or obtained by the Contractor on behalf of the State pursuant to this contract.

The State shall own and hold exclusive title to any deliverable developed as a result of this contract. Contractor shall have no ownership interest or title, and shall not patent, license, or copyright, duplicate, transfer, sell, or exchange, the design, specifications, concept, or deliverable.

INSURANCE REQUIREMENTS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor shall throughout the term of the contract maintain insurance as specified herein and provide the State a current Certificate of Insurance/Acord Form (COI) verifying the coverage. The Contractor shall not commence work on the contract until the insurance is in place. If Contractor subcontracts any portion of the Contract the Contractor must, throughout the term of the contract, either:

Provide equivalent insurance for each subcontractor and provide a COI verifying the coverage for the subcontractor;

Require each subcontractor to have equivalent insurance and provide written notice to the State that the Contractor has verified that each subcontractor has the required coverage; or,

Provide the State with copies of each subcontractor's Certificate of Insurance evidencing the required coverage.

The Contractor shall not allow any Subcontractor to commence work until the Subcontractor has equivalent insurance. The failure of the State to require a COI, or the failure of the Contractor to provide a COI or require subcontractor insurance shall not limit, relieve, or decrease the liability of the Contractor hereunder.

In the event that any policy written on a claims-made basis terminates or is canceled during the term of the contract or within one (1) year of termination or expiration of the contract, the contractor shall obtain an extended discovery or reporting period, or a new insurance policy, providing coverage required by this contract for the term of the contract and one (1) year following termination or expiration of the contract.

If by the terms of any insurance a mandatory deductible is required, or if the Contractor elects to increase the mandatory deductible amount, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

Notwithstanding any other clause in this Contract, the State may recover up to the liability limits of the insurance policies required herein.

WORKERS' COMPENSATION INSURANCE

The Contractor shall take out and maintain during the life of this contract the statutory Workers' Compensation and Employer's Liability Insurance for all of the contactors' employees to be engaged in work on the project under this contract and, in case any such work is sublet, the Contractor shall require the Subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all of the Subcontractor's employees to be engaged in such work. This policy shall be written to meet the statutory requirements for the state in which the work is to be performed, including Occupational Disease. **The policy shall include a waiver of subrogation in favor of the State. The COI shall contain the mandatory COI subrogation waiver language found hereinafter.** The amounts of such insurance shall not be less than the limits stated hereinafter. For employees working in the State of Nebraska, the policy must be

written by an entity authorized by the State of Nebraska Department of Insurance to write Workers' Compensation and Employer's Liability Insurance for Nebraska employees.

COMMERCIAL GENERAL LIABILITY INSURANCE AND COMMERCIAL AUTOMOBILE LIABILITY INSURANCE

The Contractor shall take out and maintain during the life of this contract such Commercial General Liability Insurance and Commercial Automobile Liability Insurance as shall protect Contractor and any Subcontractor performing work covered by this contract from claims for damages for bodily injury, including death, as well as from claims for property damage, which may arise from operations under this contract, whether such operation be by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by either of them, and the amounts of such insurance shall not be less than limits stated hereinafter.

The Commercial General Liability Insurance shall be written on an **occurrence basis**, and provide Premises/Operations, Products/Completed Operations, Independent Contractors, Personal Injury, and Contractual Liability coverage. **The policy shall include the State, and others as required by the contract documents, as Additional Insured(s). This policy shall be primary, and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory. The COI shall contain the mandatory COI liability waiver language found hereinafter.** The Commercial Automobile Liability Insurance shall be written to cover all Owned, Non-owned, and Hired vehicles.

REQUIRED INSURANCE COVERAGE	
COMMERCIAL GENERAL LIABILITY	
General Aggregate	$2,000,000
Products/Completed Operations Aggregate	$2,000,000
Personal/Advertising Injury	$1,000,000 per occurrence
Bodily Injury/Property Damage	$1,000,000 per occurrence
Medical Payments	$10,000 any one person
Damage to Rented Premises (Fire)	$300,000 each occurrence
Contractual	Included
XCU Liability (Explosion, Collapse, and Underground Damage)	Included
Independent Contractors	Included
Abuse & Molestation	Included
If higher limits are required, the Umbrella/Excess Liability limits are allowed to satisfy the higher limit.	
WORKER'S COMPENSATION	
Employers Liability Limits	$500K/$500K/$500K
Statutory Limits- All States	Statutory - State of Nebraska
USL&H Endorsement	Statutory

Voluntary Compensation	Statutory
COMMERCIAL AUTOMOBILE LIABILITY	
Bodily Injury/Property Damage	$1,000,000 combined single limit
Include All Owned, Hired & Non-Owned Automobile liability	Included
Motor Carrier Act Endorsement	Where Applicable
UMBRELLA/EXCESS LIABILITY	
Over Primary Insurance	$5,000,000 per occurrence
PROFESSIONAL LIABILITY	
All Other Professional Liability (Errors & Omissions)	$1,000,000 Per Claim / Aggregate
COMMERCIAL CRIME	
Crime/Employee Dishonesty Including 3rd Party Fidelity	$1,000,000
CYBER LIABILITY	
Breach of Privacy, Security Breach, Denial of Service, Remediation, Fines and Penalties	$10,000,000
MANDATORY COI SUBROGATION WAIVER LANGUAGE	
"Workers' Compensation policy shall include a waiver of subrogation in favor of the State of Nebraska."	
MANDATORY COI LIABILITY WAIVER LANGUAGE	
"Commercial General Liability & Commercial Automobile Liability policies shall name the State of Nebraska as an Additional Insured and the policies shall be primary and any insurance or self-insurance carried by the State shall be considered secondary and non-contributory as additionally insured."	

If the mandatory COI subrogation waiver language or mandatory COI liability waiver language on the COI states that the waiver is subject to, condition upon, or otherwise limit by the insurance policy, a copy of the relevant sections of the policy must be submitted with the COI so the State can review the limitations imposed by the insurance policy.

EVIDENCE OF COVERAGE

The Contractor shall furnish the Contract Manager, with a certificate of insurance coverage complying with the above requirements prior to beginning work at:

Nebraska Educational Telecommunications

Attn: Contract Manager
1800 N. 33rd Street
Lincoln, NE, 68503

These certificates or the cover sheet shall reference the RFP number, and the certificates shall include the name of the company, policy numbers, effective dates, dates of expiration, and amounts and types of coverage afforded. If the State is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall be responsible for all reasonable costs properly attributable thereto.

Reasonable notice of cancellation of any required insurance policy must be submitted to the contract manager as listed above when issued and a new coverage binder shall be submitted immediately to ensure no break in coverage.

DEVIATIONS

The insurance requirements are subject to limited negotiation. Negotiation typically includes, but is not necessarily limited to, the correct type of coverage, necessity for Workers' Compensation, and the type of automobile coverage carried by the Contractor.

ANTITRUST

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor hereby assigns to the State any and all claims for overcharges as to goods and/or services provided in connection with this contract resulting from antitrust violations which arise under antitrust laws of the United States and the antitrust laws of the State.

CONFLICT OF INTEREST

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

By submitting a proposal, bidder certifies that there does not now exist a relationship between the bidder and any person or entity which is or gives the appearance of a conflict of interest related to this RFP or project.

The bidder certifies that it shall not take any action or acquire any interest, either directly or indirectly, which will conflict in any manner or degree with the performance of its services hereunder or which creates an actual or an appearance of conflict of interest.

The bidder certifies that it will not knowingly employ any individual known by bidder to have a conflict of interest.

The Parties shall not knowingly, for a period of two years after execution of the contract, recruit or employ any employee or agent of the other Party who has worked on the RFP or project, or who had any influence on decisions affecting the RFP or project.

STATE PROPERTY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor shall be responsible for the proper care and custody of any State-owned property which is furnished for the Contractor's use during the performance of the contract. The Contractor shall reimburse the State for any loss or damage of such property; normal wear and tear is expected.

SITE RULES AND REGULATIONS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor shall use its best efforts to ensure that its employees, agents, and Subcontractors comply with site rules and regulations while on State premises. If the Contractor must perform on-site work outside of the daily operational hours set forth by the State, it must make arrangements with the State to ensure access to the facility and the equipment has been arranged. No additional payment will be made by the State on the basis of lack of access, unless the State fails to provide access as agreed to in writing between the State and the Contractor.

ADVERTISING

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor agrees not to refer to the contract award in advertising in such a manner as to state or imply that the company or its services are endorsed or preferred by the State. Any publicity releases pertaining to the project shall not be issued without prior written approval from the State.

NEBRASKA TECHNOLOGY ACCESS STANDARDS (Statutory)

Contractor shall review the Nebraska Technology Access Standards, found at http://nitc.nebraska.gov/standards/2-201.html and ensure that products and/or services provided under the contract are in compliance or will comply with the applicable standards to the greatest degree possible. In the event such standards change during the Contractor's performance, the State may create an amendment to the contract to request the contract comply with the changed standard at a cost mutually acceptable to the parties.

DISASTER RECOVERY/BACK UP PLAN

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The Contractor shall have a disaster recovery and back-up plan, of which a copy should be provided upon request to the State, which includes, but is not limited to equipment, personnel, facilities, and transportation, in order to continue services as specified under the specifications in the contract in the event of a disaster.

DRUG POLICY

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Contractor certifies it maintains a drug free work place environment to ensure worker safety and workplace integrity. Contractor agrees to provide a copy of its drug free workplace policy at any time upon request by the State.

PAYMENT

PROHIBITION AGAINST ADVANCE PAYMENT (Statutory)

Payments shall not be made until contractual deliverable(s) are received and accepted by the State.

TAXES (Statutory)

The State is not required to pay taxes and assumes no such liability as a result of this solicitation. Any property tax payable on the Contractor's equipment which may be installed in a state-owned facility is the responsibility of the Contractor.

INVOICES

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Invoices for payments must be submitted by the Contractor to the agency requesting the services with sufficient detail to support payment. Invoices for payment shall be submitted to Nebraska Educational Telecommunications 1800 N. 33rrd Street, Lincoln, Nebraska, 68503. The terms and conditions included in the Contractor's invoice shall be deemed to be solely for the convenience of the parties. No terms or conditions of any such invoice shall be binding upon the State, and no action by the State, including without limitation the payment of any such invoice in whole or in part, shall be construed as binding or estopping the State with respect to any such term or condition, unless the invoice term or condition has been previously agreed to by the State as an amendment to the contract.

INSPECTION AND APPROVAL

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

Final inspection and approval of all work required under the contract shall be performed by the designated State officials.

The State and/or its authorized representatives shall have the right to enter any premises where the Contractor or Subcontractor duties under the contract are being performed, and to inspect, monitor or otherwise evaluate the work being performed. All inspections and evaluations shall be at reasonable times and in a manner that will not unreasonably delay work.

PAYMENT

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

State will render payment to Contractor when the terms and conditions of the contract and specifications have been satisfactorily completed on the part of the Contractor as solely determined by the State. (Neb. Rev. Stat. Section 73-506(1)) Payment will be made by the responsible agency in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. §81-2401 through 81-2408). The State may require the Contractor to accept payment by electronic means such as ACH deposit. In no event shall the State be responsible

or liable to pay for any services provided by the Contractor prior to the Effective Date of the contract, and the Contractor hereby waives any claim or cause of action for any such services. No payment shall be made prior to the delivery of any hardware or software; all shipments will be FOB destination.

LATE PAYMENT (Statutory)

The Contractor may charge the responsible agency interest for late payment in compliance with the State of Nebraska Prompt Payment Act (See Neb. Rev. Stat. §81-2401 through 81-2408).

SUBJECT TO FUNDING / FUNDING OUT CLAUSE FOR LOSS OF APPROPRIATIONS

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The State's obligation to pay amounts due on the Contract for a fiscal year following the current fiscal year is contingent upon legislative appropriation of funds. Should said funds not be appropriated, the State may terminate the contract with respect to those payments for the fiscal year(s) for which such funds are not appropriated. The State will give the Contractor written notice thirty (30) calendar days prior to the effective date of termination. All obligations of the State to make payments after the termination date will cease. The Contractor shall be entitled to receive just and equitable compensation for any authorized work which has been satisfactorily completed as of the termination date. In no event shall the Contractor be paid for a loss of anticipated profit.

RIGHT TO AUDIT (First Paragraph is Statutory)

Accept (Initial)	Reject (Initial)	Reject & Provide Alternative within RFP Response (Initial)	NOTES/COMMENTS:

The State shall have the right to audit the Contractor's performance of this contract upon a 30 days' written notice. Contractor shall utilize generally accepted accounting principles, and shall maintain the accounting records, and other records and information relevant to the contract

(Information) to enable the State to audit the contract. The State may audit and the Contractor shall maintain, the Information during the term of the contract and for a period of five (5) years after the completion of this contract or until all issues or litigation are resolved, whichever is later. The Contractor shall make the Information available to the State at Contractor's place of business or a location acceptable to both Parties during normal business hours. If this is not practical or the Contractor so elects, the Contractor may provide electronic or paper copies of the Information. The State reserves the right to examine, make copies of, and take notes on any Information relevant to this contract, regardless of the form or the Information, how it is stored, or who possesses the Information. Under no circumstance will the Contractor be required to create or maintain documents not kept in the ordinary course of contractor's business operations, nor will contractor be required to disclose any information, including but not limited to product cost data, which is confidential or proprietary to contractor.

The Parties shall pay their own costs of the audit unless the audit finds a previously undisclosed overpayment by the State. If a previously undisclosed overpayment exceeds one percent (.1% of the total contract billings, or if fraud, material misrepresentations, or non-performance is discovered on the part of the Contractor, the Contractor shall reimburse the State for the total costs of the audit. Overpayments and audit costs owed to the State shall be paid within ninety days of written notice of the claim. The Contractor agrees to correct any material weaknesses or condition found as a result of the audit.