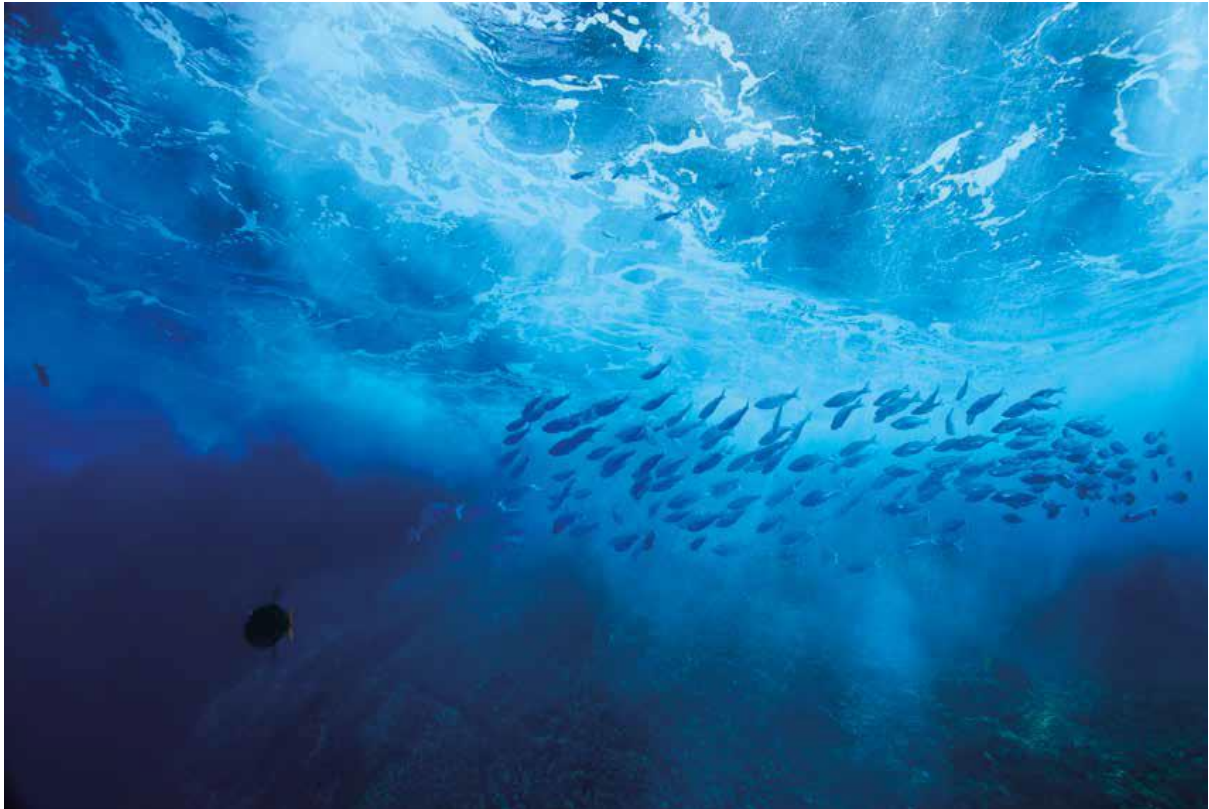


Delivering

- > Agility
- > Innovation
- > Performance



Nu-Wave Network Management System (NMS)

This document provides high level details of Xtera's Nu-Wave Network Management System (NMS).

Please note that changes in future releases may impact features and capabilities described below and that this description does not represent a contractual commitment.

For more information:

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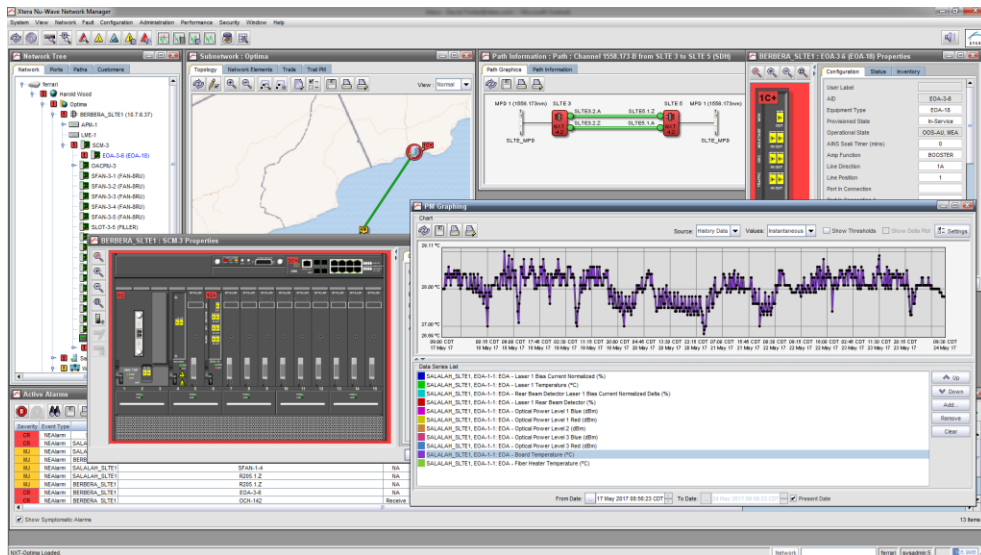


The Nu-Wave NMS is a fully featured, powerful, and intuitive Network Management System provided to monitor all of the products that Xtera offers for your terrestrial and submarine networks. The NMS is based on a client/server architecture with full redundancy to provide a highly available monitoring system.

The NMS is separated into 2 clients and an Oracle or Linux server:

Network Manager Client

The Network Manager is an application used to monitor the network day-to-day, provision new client services, and troubleshoot problems.



All of the features you would expect for day to day monitoring, provisioning, and troubleshooting are provided, as described below:

Fault Monitoring

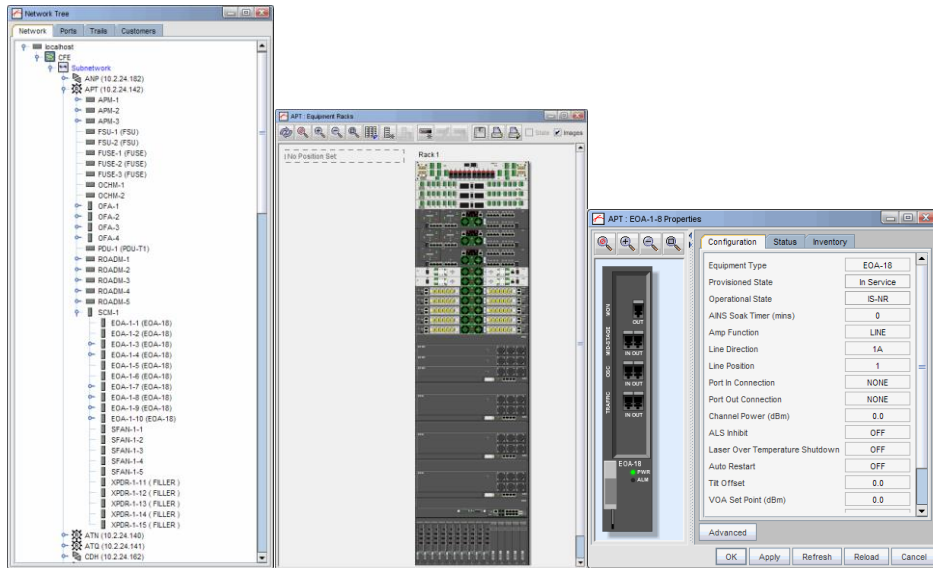
A full set of Event and Alarm windows including Standing Conditions, Transient Conditions, All Conditions, and Event History.

Severity	Event Type	Parent	Source	Direction	Date	Action	Condition Type	Alarm Type	Des
MIN	NEAlarm	SLTE23	Rack 1/Subrack 2/SLTESlot 6/BCA 23	NA	14 Jun 2011 10:43:01 CDT	RAISE	Y ACM Not present	NORMAL	
MIN	NEAlarm	AC 1-C-3	AC 1-C-3	NA	14 Jun 2011 08:17:25 CDT	RAISE	Inter SLTE Comms Failure	NORMAL	
NA	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 4 AIS inserted	NORMAL	
NA	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 3 AIS inserted	NORMAL	
NA	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 2 AIS inserted	NORMAL	
NA	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 1 AIS inserted	NORMAL	
MJ	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 4 SFP Absent	NORMAL	
MJ	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 3 SFP Absent	NORMAL	
MJ	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 2 SFP Absent	NORMAL	
MJ	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 5/1004 4	NA	14 Jun 2011 08:16:01 CDT	RAISE	Client 1 SFP Absent	NORMAL	
NA	NEAlarm	SLTE23	Rack 3/2.5G Subrack 2/EkinopsSlot 1/MGNT 2	NA	14 Jun 2011 08:15:57 CDT	RAISE	Power input B fail	NORMAL	
NA	NEAlarm	SLTE23	Rack 1/2.5G Subrack 1/EkinopsSlot 3/1004 1	NA	14 Jun 2011 08:15:50 CDT	RAISE	Client 4 AIS inserted	NORMAL	
NA	NEAlarm	SLTE23	Rack 1/2.5G Subrack 1/EkinopsSlot 3/1004 1	NA	14 Jun 2011 08:15:50 CDT	RAISE	Client 3 AIS inserted	NORMAL	
NA	NEAlarm	SLTE23	Rack 1/2.5G Subrack 1/EkinopsSlot 3/1004 1	NA	14 Jun 2011 08:15:50 CDT	RAISE	Client 2 AIS inserted	NORMAL	



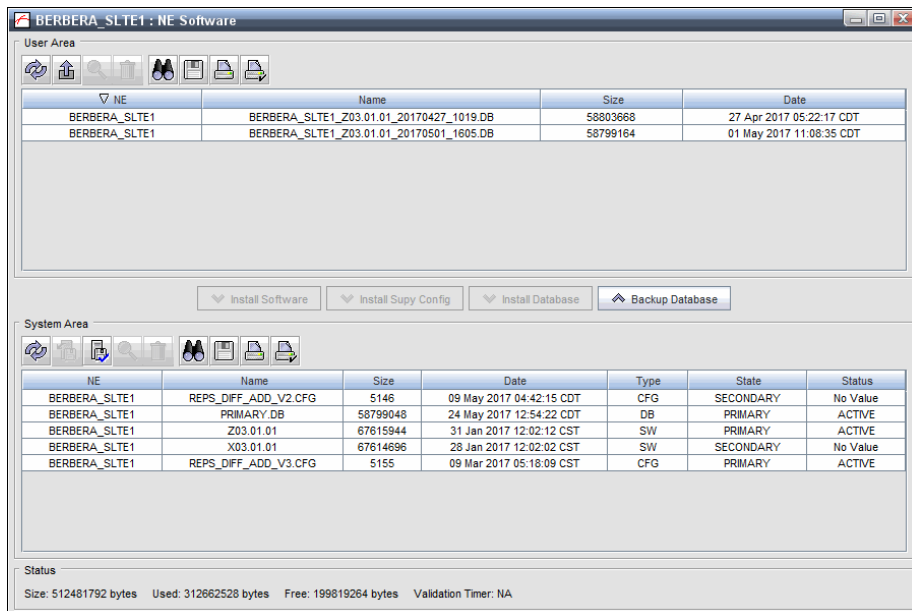
Configuration Management

Windows for equipment/facilities tables and properties dialogs.



Administration

All of the windows needed for software download and upgrades, database backups, file transfers, communications settings, task scheduling and NTP configuration.



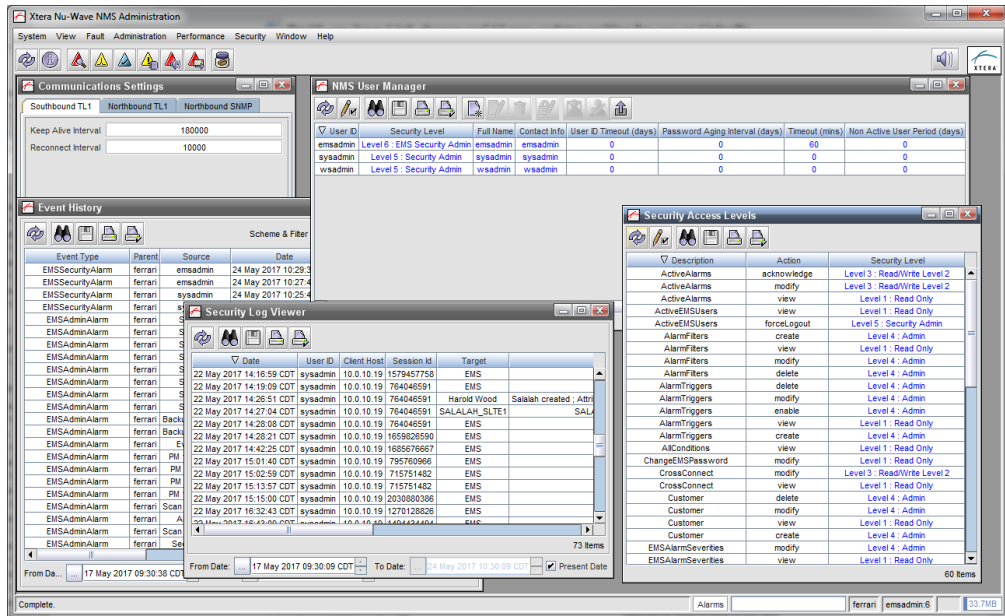


Security

The NMS has windows for controlling security at the Network Element level, managing NE user profiles across multiple NEs, and controlling access based on a user's security level.

NMS Administration Client

The Administration client separates the user profile management, activity monitoring, and server health from the NOC activities so that the customer can control access to these features.



NMS Server

The NMS Server can be deployed on either Oracle Solaris or Red Hat Linux platforms. VMWare image installation is also supported.



The NMS is a Java based application which uses an Oracle Database and a Tomcat Webserver.



Key parameters

Server:	
Software	All Java based application Oracle Database Tomcat Webserver
Northbound Interfaces	XML/SOAP, SNMP, TL1
Southbound Interfaces	TL1, SNMP, XML
Minimum Hardware Specs	3.0 GHz processors 16GB Memory 300GB Hard Drive Space
Supported OS Platforms	Oracle Solaris 10g RedHat Linux 6.5 or later
Client:	
Network Manager	Java based application supporting all Optima NEs, Repeater, BU and PFE management from a single application. Installer can be downloaded from the NMS web page.
Administration Client	Java based application for Windows XP/7/10 Installer can be downloaded from NMS Web page.
Craft Interfaces	Java-based application supporting local and remote access over TCP/IP. Installer can be downloaded from the NE web page.