

KEY FEATURES & BENEFITS

- Single multi-function tool for managing devices, services and networks
- Complete end-to-end monitoring and management for both WDM and OTN platforms—links, spans, wavelengths, trails and services
- Full flexgrid and contentionless wavelength management capability
- Multi-layer alarm correlation and suppression
- Node Controller feature for managing a group of Ekinops chassis as a single network element
- Multiplay function eliminates screen toggling between views
- Integrated Craft interface
- Integrated network modeling tool
- Encryption management with separate, secure login
- Integrated OpenStreetMap® with up to 18 zoom levels
- Optional High Availability (HA) configuration
- Open NETCONF/YANG architecture compatible with SDN-managed environments



OpenStreetMap® is built by a community of mappers and allows comprehensive network views, zooming in easily from a very high-level, entire-network view to a detailed view. Celestis NMS supports - by default - maps up to level 8 equivalent to a 1:200000 scale in offline mode. Higher scales such as 1:35000 are supported in online mode (and in offline mode if storage is large enough).

OVERVIEW

Ekinops Celestis NMS is both a network and service-layer management application. By organizing the network into a system of physical, virtual and logical resources, Celestis NMS simplifies network monitoring and diagnostics, correlating key network information to services. Operators can more easily identify—and even anticipate—events and anomalies and more quickly isolate faults in the event of a failure. Integrated geographical network views enhance the user interface and user experience.

Celestis NMS provides a single network platform to manage all service types and rates delivered by the Ekinops360 platform for WDM-only, OTN-only and mixed WDM plus OTN configurations. Using the same system, a network operator can configure a wavelength plan at a ROADM site, establish an OTN trail between two terminal locations, and provision client services such as Ethernet, OTN, Fibre Channel and SONET/SDH at many different rates from 100Mbps up to 400GbE across the entire infrastructure.

Whether for simple, single-channel point-to-point connectivity or complex, multi-wavelength colorless/directionless/contentionless/gridless (CDCG) ROADM configurations, Celestis NMS provides a full set of capabilities to ease the installation, commissioning, monitoring and management of your Ekinops360 network.

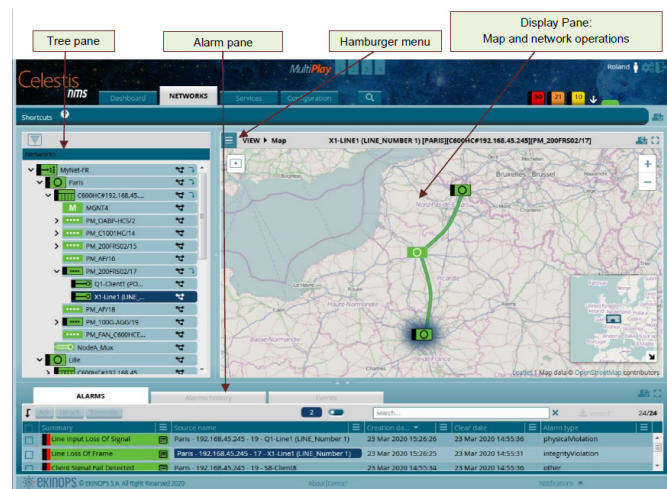


Figure 1: Ekinops Celestis NMS user interface

ARCHITECTURE

Ekinops Celestis NMS facilitates the user experience through its highly developed framework that simplifies deployment and operation by eliminating the need to install software, firmware or applications on client computers. The novel architecture of Ekinops Celestis NMS increases application performance, an important consideration for users performing frequent operations on the network. Its graphical user interface (GUI) is intuitive for all equipment and any network configurations. It complements the modular, easy-to-use approach that Ekinops has always built into its network equipment

High Availability (HA) mode is an optional feature in which two servers, each with its own IP address, operate in a primary/backup relationship. In this configuration, the database content is replicated between the two servers. When the backup server detects a problem with the primary, it triggers a failover of the database.

NETWORK VIZUALISATION

Celestis NMS is one of the first optical network management systems fully integrated with a real world map provided by OpenStreetMap® and the user interface and user experience are enhanced with integrated graphical network views. With up to 18 levels of zoom, network views can be fine-tuned from a global perspective all the way down to street and address level.

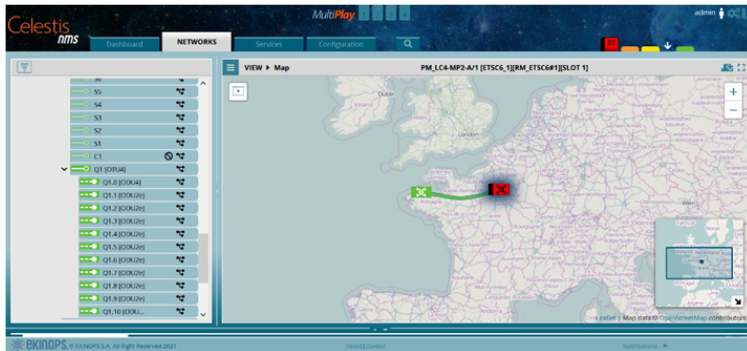


Figure 2: Network Vizualization at Country Level

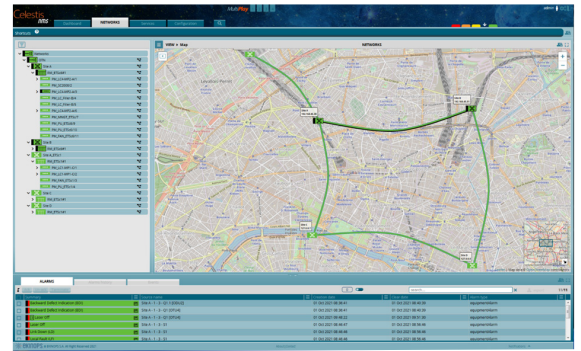


Figure 3: Network Visualization at Street Level

Likewise, different functional views can be selected including Dashboard, Networks and Services allowing the operator to drill down to the individual port, span and client level to achieve the optimal level of detail for monitoring and management. The Dashboard provides a summary view of all networks and services along with their associated alarms for an at-a-glance assessment of network status. It also provides access to the maintenance schedule, a health overview on the system, and the background tasks. The Networks view represents the networks logical and physical components while the Services view represents the services delivered to customers as a hierarchical tree of service layers. The Configuration view is used to modify the settings of network elements and is available at different levels—element, chassis, module and port.

NETWORK & SERVICE MANAGEMENT

Ekinops Celestis NMS provides all of the simplicity and clarity for day-to-day work that are key to successful network operations. It provides one common tool for equipment provisioning, network monitoring, and service level operations for both WDM and OTN elements and services. Using Celestis NMS, the operator can perform tasks ranging from controlling the speed of an individual fan to setting the output power of an amplifier to commissioning an entire network all from the NOC. Software upgrades can be activated on either individual network elements such as line cards, or entire networks with the same ease and can even be scheduled for a future date and time such as a known maintenance window.

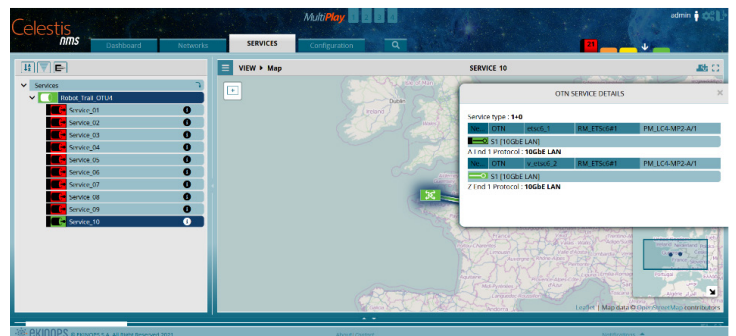
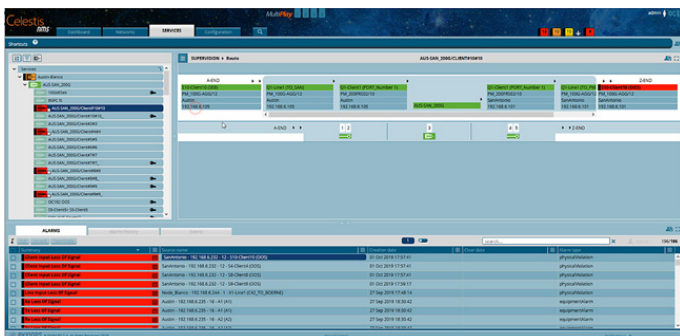


Figure 4: Celestis NMS services management interfaces

Advanced system automation features including auto-discovery, auto-commissioning and auto-power balancing are built-in to Celestis NMS to fully exploit the capabilities of the Ekinops360. Auto-discovery and auto-commissioning enable full topology and service discovery along with link, span and service creation while the auto-power balancing feature monitors and adjusts the output power of each wavelength for optimal performance. Auto-power balancing also corrects for power level changes due to new channel insertion and allows for NOC-controlled remote adjustment of power levels to compensate for changes due to fiber aging.

With the Node Controller feature, Celestis NMS allows multiple network devices to be logically associated under a single IP address and managed as a single element. Node Controller simplifies the management process by eliminating the need to toggle between screens or swivel from monitor to monitor in order to provision a service or troubleshoot an alarm.

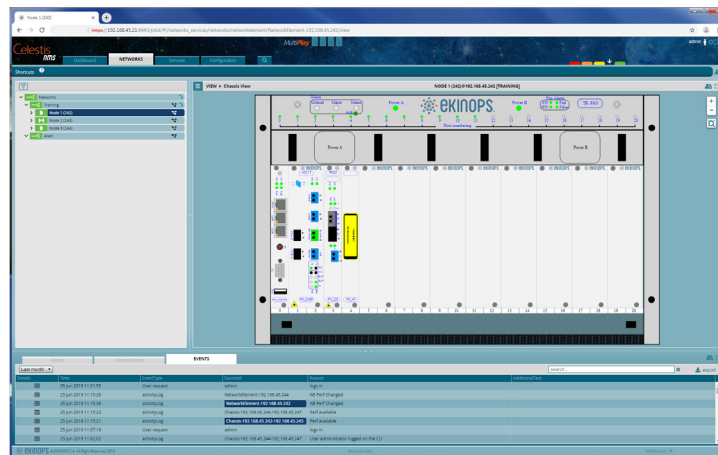


Figure 5: Celestis NMS chassis view

Service-level features include the ability to create end-to-end routes by provisioning and activating capacity across individual links and spans as well as complete monitoring of the service and all linked services with complete visibility into individual service availability to determine compliance with the established service level agreement (SLA).

The integrated Design Management tool allows the network operator to import a design file, align the configuration design with the actual network configuration, export the actual network configuration to a design file and then configure the network resources via the design file. The Design Management tool is based on Celestis D&Q design and quote tool used by Ekinops' engineers so it is highly functional in allowing network planners to model changes to their networks prior to implementation.

MultiPlay provides a convenient way to synchronize several Celestis NMS views across different tabs, windows and screens. It 'memorizes' up to four selection contexts that are accessible through numbered icons located at the top of the header that is common to all Celestis NMS views.



Figure 6: Multiplay facility

ENCRYPTION MANAGEMENT

Integrated within Celestis NMS but functionally isolated from standard NMS functions, the CRYPTO Management function manages all client services with encrypted endpoints on Ekinops' PM_CRYPT0 module. CRYPTO Management has a specific tab on the Services panel that requires a separate login to access the monitoring, configuration, key exchange and password management. NMS users can be assigned as either a CRYPTO Officer or CRYPTO User depending on the required level of access.

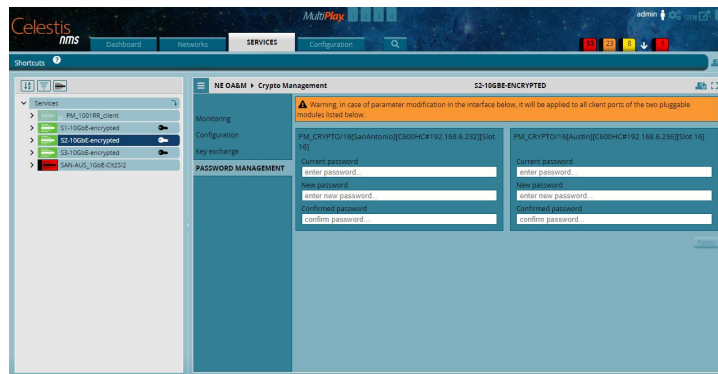


Figure 7: Crypto Management display

SYSTEM SPECIFICATIONS

CLIENT INTERFACE

- Chrome v70 and higher
- Firefox v68 and higher
- Microsoft Edge V44 and higher

OPERATING SYSTEMS

- Linux Ubuntu 20.04 LTS (64 bits)

INTERFACES

- Northbound: REST/JSON and SNMPv2c API
- Southbound: NETCONF/ConfD

ORDERING INFORMATION

LICENSES

PRODUCT CODE	DESCRIPTION
NMS_License initial	CELESTIS NMS initial License (1 year warranty) - includes management capacity of 5 N.E.s Software licenses only. This does not include the hardware.
NMS License additional-NE	Price per additional N.E.s after initial CELESTIS NMS license.
NMS_Additional Server	Additional CELESTIS NMS Server Software License beyond the first. Software licenses only. This does not include the hardware.

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