

CSP-NMS

CYBER SECURITY DIVISION

TETRA Network Management System



CSP ecosystem is a telecommunication solutions designed to provide professional users with integrated network and services across heterogeneous technologies and to bring in professional broadband environment the same level of functionalities, services and reliability supplied by narrowband technologies.

The **CSP Network Management System (CSP-NMS)** provides integrated network management functions and is characterized by the state of the art user interfaces and high level scalability allowing the Leonardo customers to manage in an efficient way all the possible configurations of the CSP platform.

The CSP-NMS is designed according to the network management principles of the Telecommunication Management Network (TMN) platform as per M.3000, M.3010, M.3100, M.3200, M.3400 ITU recommendations whose architecture is based on functional hierarchical levels.

The interaction between the CSP-NMS and supervised network elements takes place via a manager-agent paradigm, with the manager running in the NMS server and the agent in each supervised network element. Manager and agents comply with CORBA standard and communicate via IIOP protocol (Internet Inter-ORB Protocol) transported over TCP/IP.

Although the manager operates over a native MIB (Model Information Base) compliant with ITU-T M-3100, it also manages MIB-II databases accessed via SNMP protocol. This enables the simple and fast integration of third party devices in the NMS server application, with the benefit of having a centralized point of control for the entire integrated network.

The agent application is installed in any CSP components to manage the local MIB database and forward alarms and events to the manager running in the CSP-NMS. A MIB database storing network elements' configuration parameters is physically present in each network element. Network element configuration parameters can be remotely modified by properly privileged NMS operators. The CSP-NMS can provide an SNMP-based North Bound Interface.

MAIN FEATURES

The CSP-NMS is designed to support the following features:

- > Network monitoring with faults detection and proposition of corrective actions.
- > Maintaining, monitoring and adapting the configuration of network elements.
- > Commissioning of new network elements.
- > Monitoring and analysis of network performance.

Specifically, the management features concern:

- > Faults (alarms management, alarm display, trouble ticketing, etc.).
- > State (state presentation, state propagation, etc.).
- > Events (event storage, event display, etc.).
- > Subscribers (by NMS GUI can be open a subscriber GUI on PC client for define/modify/delete individual subscriber and groups).
- > Configuration (configuration of physical and logical resources, configuration display, etc.).
- > Software (software distribution, software activation, etc.).
- > Performance (performance management, performance data collection, etc.).
- > Accounting (call log record collection, call log record display, etc.).
- > Security (user access management, operator activity logging, etc.).

NETWORK MANAGEMENT SERVICES

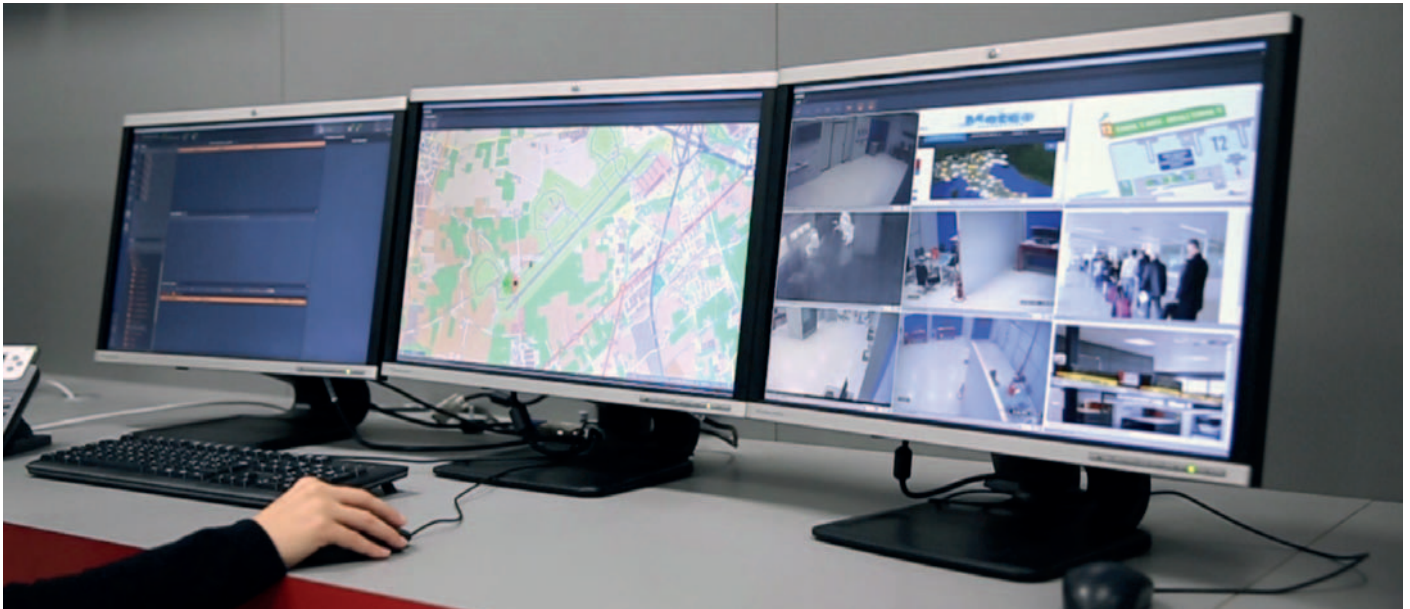
All CSP network elements support:

- > Remote SW download from the CSP-NMS for easy and cheap maintenance.
- > "Plug & Play" facility for fast installation and easy network deployment and setup.

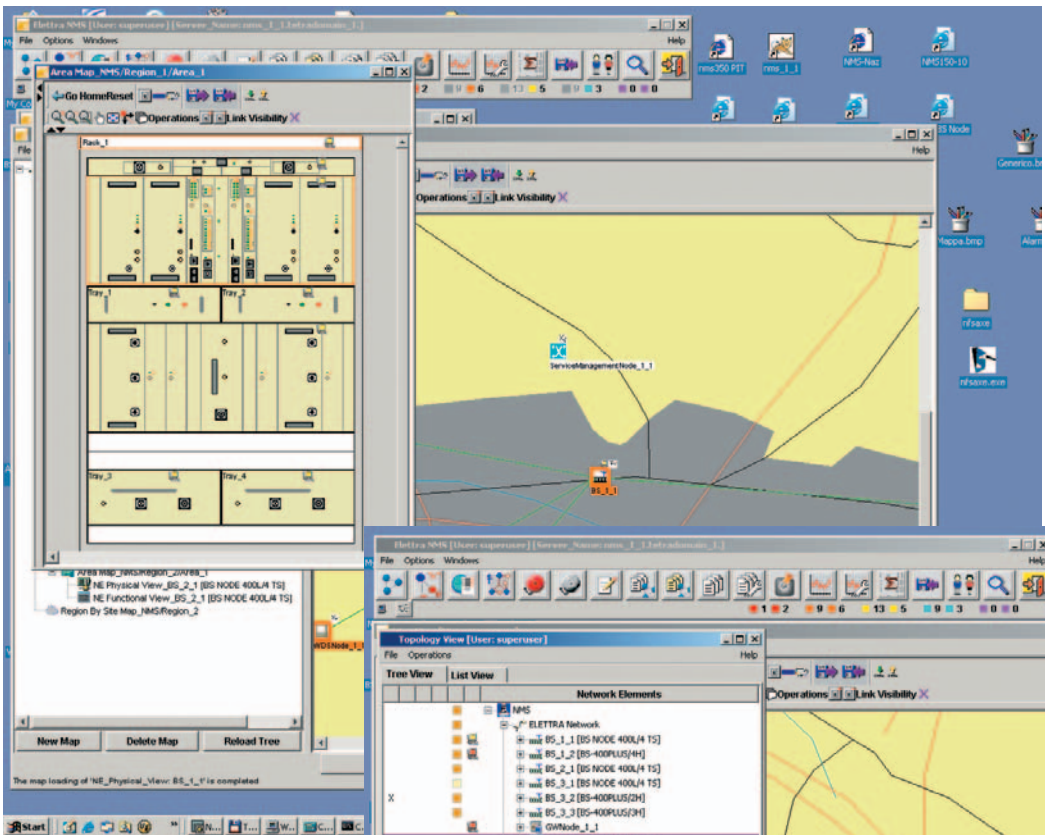
The high level of modularity and scalability within the product family enables it to manage any of a wide range of TETRA networks, from single-site to regional as below:

NETWORKS DIMENSION	NMS-50	NMS-150	NMS-350
Local and metropolitan coverage	X		
Large metropolitan and regional		X	
Regional, multi-regional up to national			X
TETRA carriers (max)	120	600	3,000
Network elements access (max)	32	200	1,200
Clients (max)	10	10	20

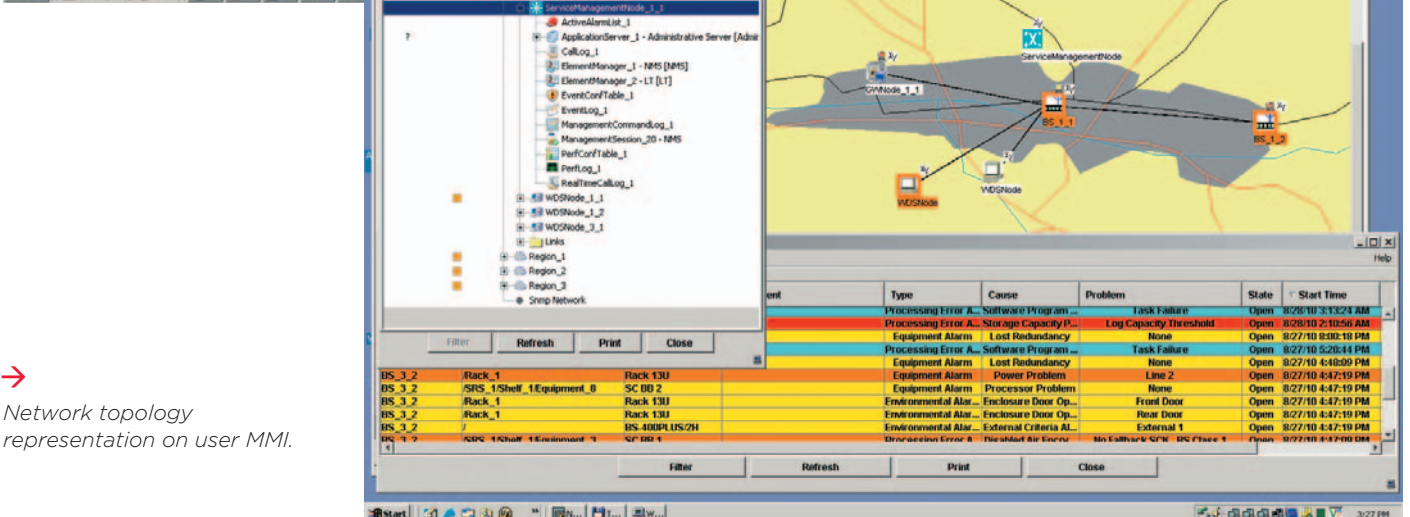
In typical markets where the robustness is an important features, the NMS client application can be installed in a semi-rugged laptop PC used as in military and critical infrastructure sectors.



↑ CSP-NMS MMI in typical operator position



← Network topology representation on user MMI. Zooming on network element (base station)



→ Network topology representation on user MMI.

TECHNICAL DATA

The technical data and the environmental specifications listed here, are refer to a CSP-NMS server HW configuration and NMS client.

PC SERVER SPECIFICATIONS

Dimensions (HxWxD)	88 mm (2U) x 483 mm (standard 19" rack) x 450 mm [3,46x19,02x17,72 in]
Weight	About 10kg (fully equipped) [22,05 lb]
Cooling system	Air forced cooling system front to rear
Power input	<ul style="list-style-type: none">› <u>Single VAC</u>: PS2 ATX12V PSU, 400W, AC input (90-240 VAC), PFC w/metal clip and powercord› <u>Redunded VAC</u>: Industrial redundant PSU 420W ATX w/PFC dual AC input (90-264 VAC)› <u>VDC</u>: PS2 ATX PSU, 400W, input -48 VDC (range -36 to -72 VDC)
Power consumption	Max. 160 W (fully equipped)
SBC Processor Unit	<ul style="list-style-type: none">› SBC full size over PCI -X - FSB 1333/1066 MH› Intel Quad Core Xeon, with 2,33 GHz clock each and 12 MB cache› Dual GigaBit Ethernet Intel 82575› 2 x USB 2.0 port
Backplane	PICMG 1.3 passive backplane 4 slot x PCI-X 64bit@100MHz (6.4Gbit)
RS 232	2x serial port RS-232
LAN4 GigaBitEth	Intel QUAD LAN 10/100/1000 BASE-T

ENVIRONMENTAL CONDITIONS

Operation	Compliant to ETSI ETS 300 019-1-3 class 3.1 standard (+5° to +40°C) [41°F to 104°F], (5% to 85% relative humidity)
Storage	Compliant to ETSI ETS 300 019-1-1 class 1.2 standard
Protection degree	IP 20
EC marking	CSP is compliant to the essential requirements of the directives 2014/30/EU, 2014/35/EU and 2011/65/EU
EMC	Compliant to CENELEC EN 55022 and CENELEC EN 55024 standard. Emission limits class A.
Safety	Compliant to CENELEC EN 60950-1 standard.

PC CLIENT MINIMUM SPECIFICATION

Operating System	Genuine Windows® 7 Professional 32-Bit (English)
Processor	Intel® Xeon® - 4GB
Memory	8GB (1x8GB) DDR4 2666MHz RDIMM ECC
Graphics controller	1GB DDR3 (video resolution 1280x1024)
Storage	2x HD 500GB (minimum) RAID1 controller, 7200 rpm (redundant)
Storage controller	RAID 0/1/5/10, SATA and PCI
I/O ports	USB 2.0, RS-232, LAN, VGA
Networking	LAN server adapter PCI - 10/100/1000 Mbit/s dual (redundant)
Audio output	Stereo high definition, 24 bit conversion
Optical drive	1 x 8x DVD +/-RW
Power supply	Input voltage 100-240 VAC, 47/63Hz
Power consumption	About 150 watt maximum (fully equipped)



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