

ROSA EM Element Management System



The ROSA Element Manager (EM) is specifically designed to cost effectively monitor and control the transmission network of headends, hub sites, HFC outside plants, and transmitter sites. This unit manages the equipment that is co-located at the site where the ROSA EM resides, whether this equipment has an SNMP, serial (RS-232/422/485) or contact closure interface.

Figure 1. ROSA EM – Element Management System



The main functions of the ROSA EM are to:

- Monitor the health of the transmission network
- Act as an SNMP proxy
- Send alarm notifications when a problem occurs
- Automatically backup failed devices
- Perform local automation tasks

The ROSA EM supports several hundred Cisco SPVTG and third-party devices. Support for new devices is continuously being added to the ROSA EM, which can be imported to existing installations with a simple software upgrade.

The ROSA EM is a polling engine that actively polls all of the devices that it manages looking for problems and in the event a problem is detected, ROSA EM will send alarm notifications to the appropriate personnel via SNMP trap, Email, Pager or SMS. ROSA EM communicates with the managed devices via their proprietary protocols or contact closures then translates this information to SNMP, which can be passed to a higher level network management system. When ROSA EM is configured to perform backup protection it will automatically initiate pre-defined backup schemes that reroutes signals, activates and configures standby devices all within seconds of a device failure. ROSA EM is fully integrated on the ROSA Network Management (NMS) and ROSA Video Service Management (VSM) systems.

The ROSA EM is a 2 RU high, 19-inch rack-mount embedded platform that operates without a monitor or keyboard. The operator uses a standard web interface with the ROSA EM via a simple easy-to-use GUI. Communication to the ROSA EM can be established over any LAN/WAN network that supports Ethernet. In addition, dial-in and dial-out (e.g., ISDN) is supported for cases where only a switched connection is available.

Features

- Cost-effective solution for management of devices in all locations (large headend to small hubs/OTN)
- Manages Cisco SPVTG and third-party equipment via proprietary protocol, SNMP, or contact closures
- Translates proprietary protocols to SNMP and passes configuration/alarm information to upper level network managers
- Highly reliable (no fans, no hard drive) hardware and software solution
- Alarm notification with Email, Pager or SMS
- Easy to use, intuitive Web browser interface
- Provides easy integration with multiple client options – Web browser, TNCS, ROSA NMS, Third-party NMS
- Open standards based interfaces (SNMP, HTTP, FTP, HMS, DateTime, etc.)
- Delivered with software already installed
- Software can be upgraded remotely over LAN/WAN
- Automatic remote backup and restore to save the entire configuration of the ROSA EM
- Seamless integration into currently installed TNCS and ROSA systems
- Dual temperature probes available as an option
- Automatic row and rack graphic creation
- 2 RU, 19-inch rack-mount chassis

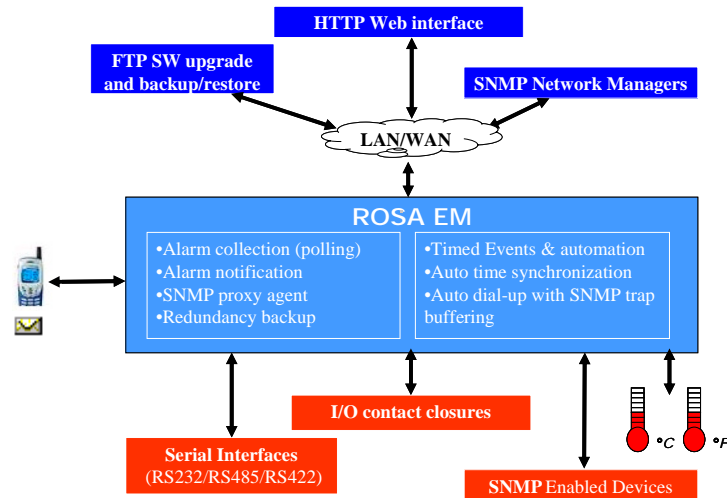
Note: For an alphanumeric pager application, a modem is required.

System Description

Operation

ROSA EM supports open standards interfaces, which enable cost-effective integration of equipment into the ROSA EM, as well as cost-effective integration of the ROSA EM into upper-level network managers.

Figure 2. ROSA EM – Northbound and Southbound Management Interfaces



The northbound management interfaces are composed of:

- Web browser client interface on the ROSA EM that allows management of network devices as well as viewing real-time status and alarms.
- The SNMP agent in ROSA EM provides a northbound SNMP interface to higher level Network Management Systems (supports TRAPS, GETS and SETS).
- Utilizes FTP to remotely upgrade ROSA EM software as well as the backup and restoration of ROSA EM configuration data.

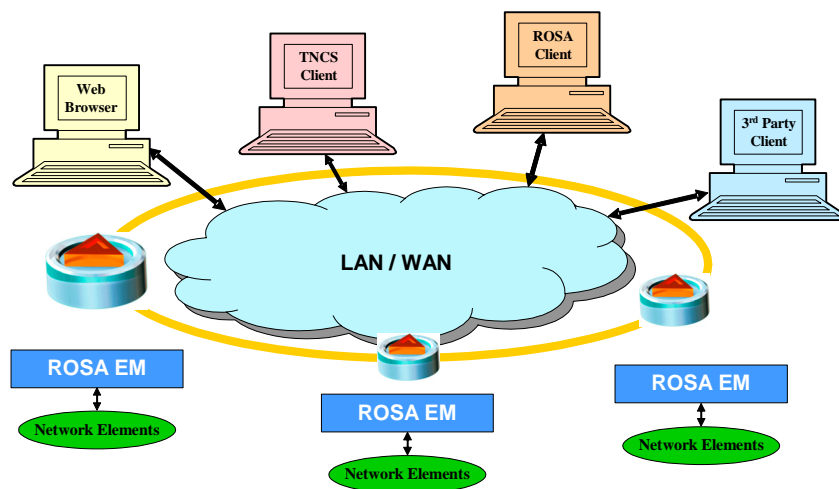
The southbound management interfaces are designed to communicate with the managed devices and consist of:

- Multiple serial ports (RS-232, RS-485, RS-422)
- Digital and analog I/O contact closures interface
- SNMP Manager
- Temperature probes
- Network interface card

Operation

There are four fundamental client options available for the ROSA EM; a simple Web browser, TNCS client, ROSA NMS client and third party Network Management Systems each designed to meet specific needs of the user. ROSA EM can be configured to do as much or as little as required to meet the needs of the technicians and engineers charged with managing the broadband network.

Figure 3. ROSA EM – northbound and southbound management interfaces



ROSA EM can support one, two, three or all four client applications simultaneously.

Simple Web Browser

- The user will open a Web browser window for each ROSA EM site. This is an ideal application for small systems that have only one or two sites with ROSA EM installed.

TNCS Client (legacy Cisco Product)

- The TNCS client will aggregate all of the ROSA EM sites to produce a single network view that is easy to understand. In addition, TNCS will aggregate the alarms, perform multi-site backup schemes and retain historical logs for alarms, system executables, and software status for all of the ROSA EM sites.

ROSA NMS Client

- A ROSA client provides all of the TNCS functionality as well as a relational database that enables the operator to produce performance and trending reports on the network, the managed devices, and overall system performance. ROSA also has several modular advanced tasks that provide significant added value to system operators, engineers and managers.

Third-party Client

- ROSA EM is ideally suited to integrate into an overall third-party NMS via SNMP. The northbound SNMP interface in ROSA EM supports Traps, Gets and Sets allowing the overall NMS to have control of the managed devices. Launching the Web browser in ROSA EM allows the NMS operator to easily view the details of any managed device from the operations center.

Product Specifications

Table 1. Basic Configuration

Specification	Value
Remote Control and Configuration Ports (*)	
Ethernet Management Port (Note 1)	
Number of Ports	2
Connector Type	RJ-45
Physical layer	10/100BaseT
LED indication	LINE and ACT
Dielectric isolation	1.5 kV AC
RS-232 Serial Ports	
Number of Ports	4
Connector type	Male, 9-pin Sub-D
Pin Layout	Standard DTE
Physical Layer	RS-232
Baud Rate	Up to 38.4 kbaud
Protocol	RCDS, SMC or other
ESD	Max. 15 kV Performance Criterion B
RS-232 / RS-485 / RS-422 Serial Ports (Configurable)	
Number of Ports	4
Connector type	Male, 9 pin Sub-D
Pin Layout	Configurable (for RCDS or SMC pin layout refer to user guide)
Physical Layer	RS-232, RS-422, RS-485
Baud Rate	Up to 38.4 kbaud
Protocol	RCDS, SMC or other
ESD	Max. 15 kV Performance Criterion B

Specification	Value
Remote Control and Configuration Ports (*)	
Digital Input Ports	
Number of Ports	108
Connector type	Female, 25 pin Sub-D
Contacts per port	2
Decision threshold	TTL / CMOS
Input Voltage Range	Max. $\pm 15V$
ESD	Max. 15 kV Performance Criterion B
Galvanic Isolated Digital Input Ports	
Number of Ports	12
Connector type	Female, 25-pin Sub-D
Contacts per port	2
Decision threshold	Low: $< 0.8V$, High: $> 2V$
Differential overvoltage protection	Max. $\pm 15V$
Common mode input voltage	Max. 60 V DC or 42 V AC
ESD	Max. 15 kV Performance Criterion B
Dielectric isolation	500 V port to port
Relay Outputs	
Number of Ports	24
Connector type	Female, 25-pin Sub-D
Contacts per port	3 (common, normally open, normally closed)
Maximum voltage	42 VAC / 60 VDC
Maximum load current	1A @ 30 VDC
Dielectric isolation	500 V
Load	Resistive load
External Temperature Sensor (Note 2)	
Number of Ports	2
Analog Inputs	
Number of Ports	8
Connector type	Female, 25-pin Sub-D
Contacts per port	2
Input range	0 to +15 V by default, configurable to 0 to +60 V
Type	Differential input
Resolution	8-bit (55 mV step with 15 V input range, 250 mV step with 60 V input range)
Input impedance	$> 100\text{ k}\Omega$
Analog Outputs	
Number of Ports	2
Connector type	Female, 25-pin Sub-D
Contacts per port	2
Output voltage range	0 to +10V
Resolution	8-bit (40 mV step)
Output impedance	1 k Ω
Craft Interface	
Number of Ports	1
Connector type	Male, 9-pin Sub-D

Specification	Value
Remote Control and Configuration Ports (*)	
Pin Layout	Standard DTE
Physical Layer	RS-232
Baud Rate	Up to 38.4 kbaud (default 19.2 kbaud)
ESD	
Keyboard and Mouse	
Number of Ports	2
Connector type	PS/2
Pin Layout	Standard PS/2
Physical Layer	RS-232
ESD	Max. 15 kV
Monitor	
Number of Ports	1
Connector type	DB15H
Pin layout	VGA
Resolution	Up to 1024 x 768 (SVGA)

(*) Note concerning Safety Extra-Low Voltage (SELV) Circuit Warning

Notes

- To avoid electric shock and in order to comply with the product's regulatory safety compliance certifications:
- Do not connect any I/O, signal or communication port to circuits falling beyond the requirements for SELV circuits
- Always verify voltage, current and energy levels of connected circuits against SELV requirements (for a full definition of SELV requirements, refer to UL, EN or IEC 60950 standards for limit values).
- Ensure that only 'Digital Input Ports', Galvanic Isolated Digital Input Ports' or 'Relay Outputs' are connected to outdoor circuits.
- Important:
 - SELV voltage limits for indoor connections are < 60 VDC (or peak) or < 42.4 VAC RMS.
 - SELV voltage limits for outdoor connections are lower than those for indoor connections.
 - Outdoor voltages should be no greater than 15 Vrms, 21.2 Vpk, and 30 VDC under normal operating conditions.
 - Cabling of outdoor circuits must be shorter than 140 feet or 42 meters.
 - In all cases it is needed to protect outdoor cabling by means of a Primary Surge Protector at the position where the wiring enters the building.
 - Outdoor cabling should be routed away and spaced with adequate clearances from power and lighting conductors.
 - For installations in the United States, refer to the appropriate sections in the National Electrical Code (NEC).
 - For installations in other countries, ensure that the installation complies with the National requirements taking in account the above-mentioned recommendations.
- In case a client (simple Web browser, TNCS client, ROSA NMS client or third-party NMS) is used in combination with ROSA EM, it must be possible to perform a successful ping command between ROSA EM and the client in both directions.
- Temperature sensors are available as an option.

Table 2. Management Interfaces

Management Interfaces
Number of managed devices depends on license with an absolute maximum of 1000 devices
Maximum number of simultaneously connected web browser sessions is 12
Maximum number of simultaneously connected TNCS clients is 8

Table 3. Environmental Specifications

Environmental Specification	Value
Within specifications	+10°C to +45°C / +50°F to +113°F
Operating temperature	0°C to + 50°C / +32°F to +122°F
Storage temperature	- 20°C to + 70°C / -4°F to +158°F
Power Supply AC (Dual Power Supply)	
Nominal voltage range	2 x 100 – 240 VAC
Full voltage range	90 – 264 VAC, 47 – 63 Hz
Ripple & Noise	Compliant with ETSI ETS 300-132-1
Maximum power consumption	25 W
Power Supply DC	
Nominal voltage	-48 VDC
Ripple & Noise	Compliant with ETSI ETS 300-132-2
Maximum power consumption	25 W

Table 4. Mechanical Specifications

Mechanical Specification	Value
Height	88 mm / 3.5 in. (2 RU)
Width	482 mm / 19 in.
Depth	470 mm / 18.5 in.
Weight	Approx. 5 kg / 11.02 lbs

Ordering Information

Table 5. Ordering Information Cisco ROSA EM – North and Latin America

Description	Part Number
ROSA EM AC version	
ROSA EM,V2 DUAL 110-220VAC US DCL CL1 (0-10 Devices)	40053262
ROSA EM,V2 DUAL 110-220VAC US DCL CL2 (0-25 Devices)	40053702
ROSA EM,V2 DUAL 110-220VAC US DCL CL3 (0-50 Devices)	40053712
ROSA EM,V2 DUAL 110-220VAC US DCL CL4 (0-100 Devices)	40053722
ROSA EM,V2 DUAL 110-220VAC US DCL CL5 (0-250 Devices)	40053732
ROSA EM,V2 DUAL 110-220VAC US DCL CL6 (0-500 Devices)	40053742
ROSA EM,V2 DUAL 110-220VAC US DCL CL7 (0-750 Devices)	40053752
ROSA EM,V2 DUAL 110-220VAC US DCL CL8 (0-1000 Devices)	40053762
ROSA EM DC version	
ROSA EM, -48 V DC US, DCL Class 1 (0-10 devices)	4006322
ROSA EM, -48 V DC US, DCL Class 2 (0-25 devices)	4007210
ROSA EM, -48 V DC US, DCL Class 3 (0-50 devices)	4007211
ROSA EM, -48 V DC US, DCL Class 4 (0-100 devices)	4007212
ROSA EM, -48 V DC US, DCL Class 5 (0-250 devices)	4007213
ROSA EM, -48 V DC US, DCL Class 6 (0-500 devices)	4007214
ROSA EM, -48 V DC US, DCL Class 7 (0-750 devices)	4007215
ROSA EM, -48 V DC US, DCL Class 8 (0-1000 devices)	4007216

Table 6. Ordering Information Cisco ROSA EM – EMEA (Europe, Middle-East, Africa) and AP (Asia, Pacific)

Description	Part Number
ROSA EM Headend	
ROSA EM,V2 HEADEND DUAL,100-240 VAC EU (0-250 HE Dvcs)	40053172
ROSA EM,V2 HEADEND DUAL,100-240 VAC UK (0-250 HE Dvcs)	40053202
ROSA EM,V2 HEADEND DUAL,100-240 VAC AUS (0-250 HE Dvcs)	40053232
ROSA EM Headend, -48 V DC DCL Class 5 (0-250 headend devices)	4007217
ROSA EM Hub & HFC	
ROSA EM,V2 HUB&HFC DUAL 100-240 VAC EU (0-500 Hub,HFC Dvcs)	40053182
ROSA EM,V2 HUB&HFC DUAL 100-240 VAC AUS (0-500 Hub,HFC Dvcs)	40053242
ROSA EM,V2 HUB&HFC DUAL 100-240 VAC UK (0-500 Hub,HFC Dvcs)	40053212
ROSA EM Hub & HFC, -48 V DC DCL Class 6 (0-500 Hub & HFC network devices)	4007218
ROSA EM Transmitter Sites	
ROSA EM,V2 TX SITE DUAL 100-240 VAC EU (0-50 Dvcs Tx Sites)	40053192
ROSA EM,V2 TX SITE DUAL 100-240 VAC UK (0-50 Dvcs Tx Sites)	40053222
ROSA EM,V2 TX SITE DUAL 100-240 VAC AUS (0-50 Dvcs Tx Sites)	40053252
ROSA EM Tx Site, -48 V DC DCL Class 1 (0-10 devices at transmitter sites)	4007219

Table 7. ROSA EM Upgrades

Description	Part Number
ROSA EM Device Class License (DCL) Upgrade	
ROSA EM Device Count License Class (DCL) Upgrade from 10 to 25 Devices. Include SERIAL NUMBER on Purchase Order.	40053770001
ROSA EM Device Count License Class (DCL) Upgrade from 25 to 50 Devices. Include SERIAL NUMBER on Purchase Order.	40053770002
ROSA EM Device Count License Class (DCL) Upgrade from 50 to 100 Devices. Include SERIAL NUMBER on Purchase Order.	40053770003
ROSA EM Device Count License Class (DCL) Upgrade from 100 to 250 Devices. Include SERIAL NUMBER on Purchase Order.	40053770004
ROSA EM Device Count License Class (DCL) Upgrade from 250 to 500 Devices. Include SERIAL NUMBER on Purchase Order.	40053770005
ROSA EM Device Count License Class (DCL) Upgrade from 500 to 750 Devices. Include SERIAL NUMBER on Purchase Order.	40053770006
ROSA EM Device Count License Class (DCL) Upgrade from 750 to 1000 Devices. Include SERIAL NUMBER on Purchase Order.	40053770007

Table 8. ROSA EM Options

Description	Part Number
External Temperature Sensor	
ROSA EM external temperature sensor, maximum 2 per ROSA EM (cable length 15 m / 50 ft)	4005382

Table 9. Related Products - Cisco ROSA NMS

Type	Description	Part Number
NMS Platform		RSPNxxxxxxxxxxxxxx (Note 1) RSPMxxxxxxxxxxxxxx (Note 1)
	ROSA System - Hardware, Software, Database and OS Licenses (Includes Installation DVD with latest NMS software version, server hardware, Operating System, Power Supplies) High-Availability Upgrade Package available (Requires NMS License Options)	(Note 2)
NMS License Options		RSN1Fxxxxxxxxxxxxxx (Note1)
	NMS Base Licenses (e.g., Client Server / Single User / High Availability)	(Note 2)
	NMS Drivers	(Note 2)
	NMS Task Licenses (e.g., Digital Headend Backup / Performance Logging / Notification)	(Note 2)
	NMS Macro Licenses (e.g., DCM macros, ENCODER macros)	(Note 2)
	NMS Add-On Components (e.g., Profile Manager / SNMP Agent / Groupwise Equipment Manager)	(Note 2)

Table 10. Related Products - Cisco ROSA VSM

Type	Description	Part Number
VSM Platform		RSPVxxxxxxxxxxxxxx (Note 1) RSPVxxxxxxxxxxxxxx (Note 1)
	ROSA System - Hardware, Software, Database and OS Licenses (Includes Installation DVD with latest VSM software version, server hardware, Operating System, Power Supplies) High-Availability Upgrade Package available (Requires VSM License Options)	(Note 2)
VSM License Options		RSV0Fxxxxxxxxxxxxxx (Note1)
	VSM Base Licenses (eg Service Configuration / Topology Manager / Service Bandwidth Manager)	(Note 2)
	VSM Service Scheduler	(Note 2)
	Simulcrypt EIS-SCS and CA Management	(Note 2)
VSM Service License Counts		RSV0Cxxxxxxxxxxxxxx (Note1)
	NMS Service License Counts	(Note 4)

Note 1. Configured Part number, please use ROSA Product Configurator to configure Part Number.

Note 2. These part numbers are not shippable as such, but used in the ROSA Product Configurator to create the Configured Part number as referred to under Note 1.

Note 3. xxx = configured by the ROSA Product Configurator.

Note 4. Service License counts are calculated using the ROSA Product Configurator, a combination of the amount of services processed on supported devices.



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