

# MN9300

## Network Management System

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The GEPON network management system implements Fault, Configuration, Accounting, Performance and Security (FCAPS) functions of the element management layer to ensure the proper management of services provided by each NE and the network layer functionality. It also provides a system interface to core network operations

The EMS provides full FCAPS functionality via a Graphical User Interface (GUI). It can manage up to 50 fully-equipped FTTH systems (i.e., 50 OLTs each with the maximum number of subtending ONUs), and supports up to 100 simultaneous GUI users.

In addition to FACPS, the NMS also supports the following features:

- FTP, SNMP v1 & v2c, DHCP, Telnet, CLI console interface
- In-band/Out-band management
- Auto ONU discovery and management

The EMS also provides the following OAM functions:

- Loop test
- Port status monitoring
- Environment monitoring

### **NMS**

The NEC GEPON system can be managed via different management mechanisms:





- From the console port using the CLI
- Out-band management via the CLI over telnet and SNMP V2 agent
- In-band management via the CLI over telnet and SNMP v2 agent.

### **FAULT MANAGEMENT**

The NMS fault management functions handle all alarms reported by the managed devices, and those generated from the modules within the network management system.

When the system receives a trap notification from the NE, it will classify the trap record as event or alarm based on the predefined event/alarm discrimination policy. The system stores event messages in the event database and alarm messages in the alarm database. The system also immediately sends an alert to the operator. Alarm and event filters can also be used for sorts and filtering specific events and alarms.

There are four alarm severity levels in the GEPON system. They are described below :

Alarm Severity Level	Description	Color	Code
Critical	Critical alarms indicate that a service-affecting condition has occurred and immediate corrective action is required.		C
Major	Major alarms indicate that a service-affecting condition has developed and immediate corrective action is required.		MJ
Minor	Minor alarms indicate the existence of a non-service-affecting fault condition and that corrective action should be taken in order to prevent a more serious fault from developing.		MN
Warning	Warning alarms indicate the detection of a potential or impending service-affecting fault, before any significant effects have resulted.		W

## ALARM CATEGORY

GEPON alarms are grouped into several categories. These alarm categories and their descriptions are shown below in

## GEPON ALARM CATEGORIES

Alarm Category	Description
Communication	Communications failures between NEs, or between NEs and subscribers
Quality of Service (QoS)	Alarms raised because of a Performance Monitoring (PM) threshold-crossing
Equipment	Refers to unit failure
Processing Error	Software and/or troubleshooting process related alarm
Environment	Site environmental condition, such as high humidity, temperature, etc.

## Fault Management Functions

GEPON NMS Fault Management provides the following functions:

- Real-time alarm/event surveillance
- Operational view based alarm and event browsing
- Automatic alarm and event suppressing, alarm correlation and RCA (Root Cause Analysis)
- Alarm acknowledgement and clearing
- Alarm filtering and severity redefinition
- Alarm history management
- Alarm and event statistics and reporting
- Threshold crossing alert (TCA)
- Fault diagnosis, localization and troubleshooting
- Pop-up notification for specified alarms
- Alarm Notification Service via email or short message

## Performance Monitoring

The MN9300 for GEPON NMS can monitor the performance of a large network with many NE devices connected. This enables the entire network performance to be evaluated and allows the operator to proactively manage NEs by analyzing this performance data. This information can be used to evaluate the performance of specific pieces of equipment and, assess the necessity of upgrades or software downloads, and identifying problem areas in the network.

## Performance Management functions

GEPON NMS performance management provides the following functions:

- NE and network-wide performance statistics and measurements
- Performance threshold management
- Table and chart based performance reports
- Performance monitoring (PM) data management, including retrieve, delete and archive
- Performance trend analysis and network optimization

## Performance Parameters

GEPON Performance Data is collected at 15-minutes and 24-hour intervals. All performance parameter thresholds can be set and queried. The system will report a performance threshold crossing alert event and/or generate the relevant alarm on the OMC-D management system.

## Accounting Management

Accounting management is supported by the RADIUS server.

## Security Management

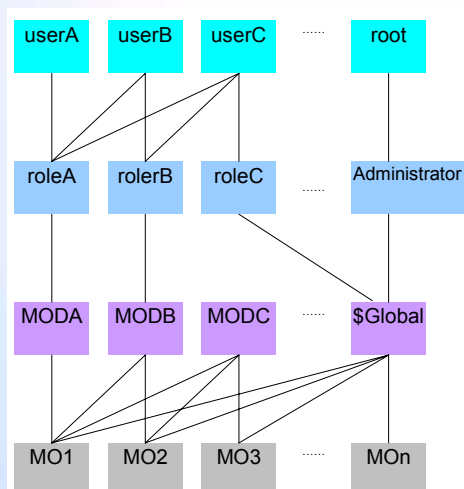
Security management controls access to the system, preventing unauthorized operators from accessing network resources and network management functions.

Security management involves all management functions, including, setting operator levels and privileges and access control, data security and operation log management.

Before a user can manage BBS system via the OMC-D GUI, the OLT must be assigned to a Management Object Domain (MOD). Then the MOD needs to be assigned to a Role and Role operation privileges are assigned. Then a new User must be created and a Role assigned to that User.

# Technical Summary

## Security Management Implementation



As shown in above diagram, the relations between user, Role, MOD and MO are as follows:

An MOD can consist of one or more Management Objects (MO), while a MO (NE) can belong to different MODs simultaneously

A Role can only be assigned one MOD, while a MOD can be assigned to one or more Roles simultaneously

A user can be assigned one or more Roles, and a Role can be assigned to one or more users simultaneously

## Configuration Management

Configuration management is the system activity that controls and monitors the system, including the following:

Common configuration management

EPON configuration management

Service configuration management

L2 configuration management

L3 configuration management

ACL configuration management

QoS configuration management

Multicast configuration management

IAD configuration management

Configuration consistency check: The system can check whether the configuration data of the NMS and that of the equipment are consistent, and provide a report.

Hardware may vary according to the server capacity and/or network design



### Safety Precautions

★ Before installing, connection or using this product, be sure to carefully read and observe the cautionary and prohibited matters provided in the instruction manual.

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