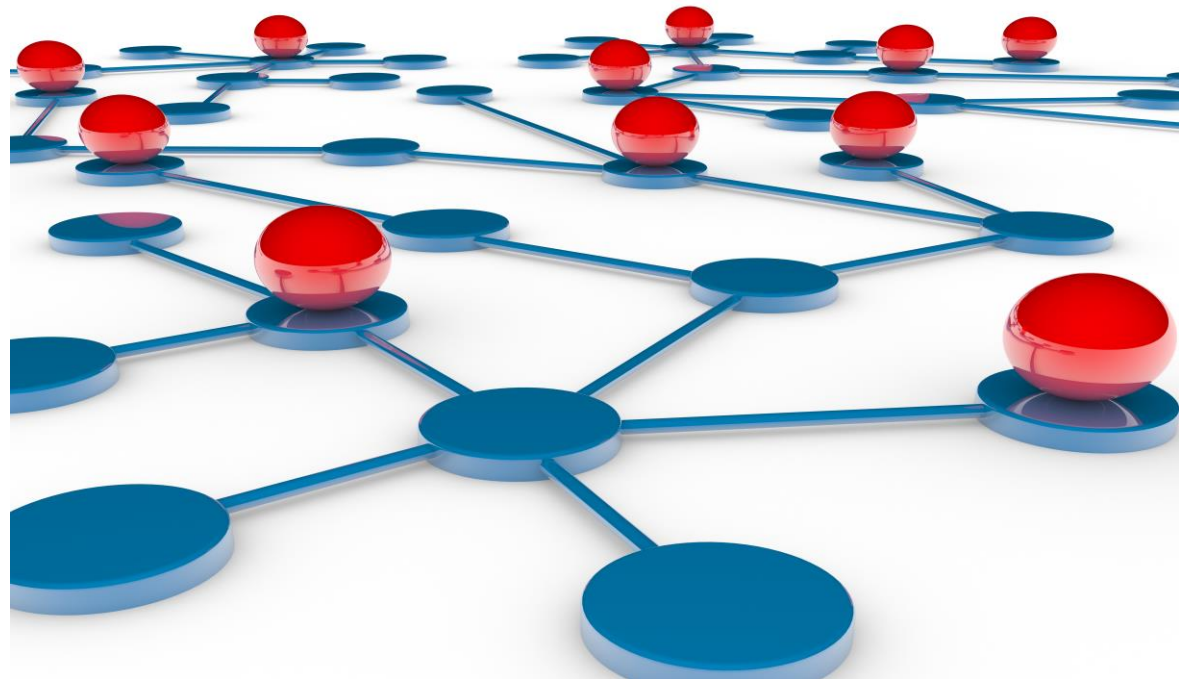




Network Management Systems

ABOUT US

OSSera, Inc. is a global provider of Operational Support System (OSS) solutions for IT organizations, service planning, service operations, and network operations. OSSera's multi-threaded symmetrically distributed platform fully leverages modern multi-core server hardware to provide higher flexibility, reliability, and scalability for service and resource management solutions. OSSera's products support the TM Forum's suite of standards especially in the area of Service Management, Fault Management, Performance Management, Inventory Management, Data Mediation, and Configuration Management.



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Member of the
TeleManagement Forum

Is developing a NMS important to your core business?



Problems and Challenges

A Network Management System (NMS) consists of systems and applications for managing network elements (NE) and Element Management Systems (EMS) within the network management layer or Resource Management layer of the enhanced Telecom Operations Map (eTOM).

The NMS key functionality is divided into five key areas:

- fault,
- configuration,
- accounting,
- performance and
- security (FCAPS).

The NMS has northbound interfaces to Operations Support

Systems (OSS) and southbound interfaces to NE and EMS. OSS includes Fault Management, Performance Management, Service Activation, Resource Management, and Service Management.

NMS Management tasks include discovering network inventory, monitoring device health and status, providing alerts to conditions that impact system performance, and identification of problems, their source(s) and possible solutions.

The NMS provides the foundation to implement TMN-layered OSS architectures that enable service providers to meet customer needs for rapid deployment of new services, as well as meeting

stringent quality of service (QoS) requirements. The primary challenge for any Communication Service Provider (CSP) in developing a NMS is:

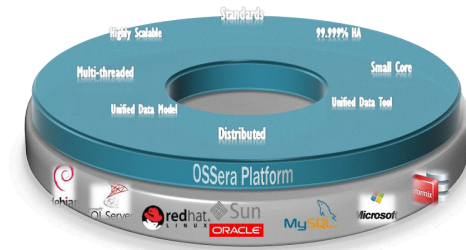
- Core expertise - Is software development the core expertise of a CSP? Can the NMS be easily upgraded? Can it be backed up? Can it be configured easily? Can it be extended?
- Scalability and Reliability - To develop a NMS for today's Next Generation networks requires tremendous scale and reliability. The NMS must be fault tolerant and cannot be the single point of failure.
- Performance - The NMS must

handle tremendous loads when managing hundreds, thousands or millions of NEs and multiple EMS.

- Ongoing Support Costs - The NMS must be supported and have its own product lifecycle and roadmap to cover all the FCAPS required.
- Point-solution obsolescence -NMS systems come and go quickly if developed only for a certain NE type or certain EMS and not for across different types of NEs or multiple EMS. It is important to leverage a common platform which can be carried forward across many generations of NE's and EMS'.



OSSera's NMS is built upon OSSera's OSS Explorer Platform



Our Solution

A NMS must be fault tolerant meaning it should stay operational 99.999% of the time. Too often in operations the NMS can be the single point of failure and OSS systems will bypass the NMS and manage network elements directly. This will increase the operational complexity and may impose risk upon the operations of Network Elements.

Sometimes the NMS is even removed from the purchase order and not installed for this very reason. Network and Service

Operation Centers must rely upon these NMS systems but learn to bypass them due to cost and distrust.

OSSera's NMS Application is built upon OSSera's OSS Explorer Platform. Therefore OSSera NMS is unique because of its multi-threaded symmetrically distributed architecture which can support a 99.999% highly available fault-tolerant solution. The platform has been designed from the ground up to be fault-tolerant due to its

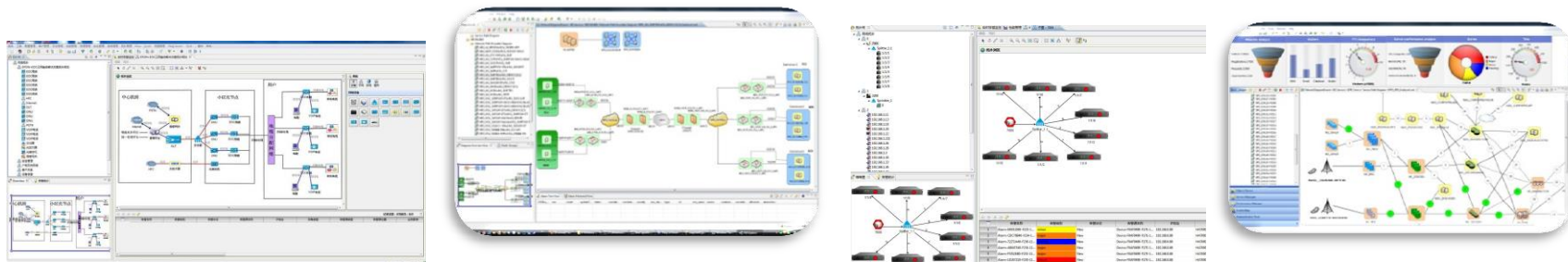
unique ability to distribute processing across a multi-server/multi-core virtualized environment and shift the load transparently based upon available processors and servers.

When two or more servers are used, the OSSera platform will distribute and load balance all processing of data, commands, and responses.

NMS is able to handle disaster recovery, event storms, and

maintenance upgrades without skipping a beat. Never lose sight to critical logs that are critical for monitoring security, and network infrastructure.

NMS is able to handle SNMP from south bound feeds and forward northbound to other OSS systems using CORBA. The adapters provide flexibility in handling different messaging formats and protocol requirements.



NMS Functional Overview

OSSera's NMS Functional architecture includes the following functional areas:

- **Fault Management** - The NMS collects and manages alarms from network devices and EMS systems. Users can query, manage, filter, search, forward, display on topology, and query alarm statistics.
- **Configuration & Topology** - Users can manage network topology layouts within a Unified Data Model (UDM).

Within the UDM the NMS models network resources including devices, chassis, cards, and ports. The NMS provides device topology views, topology icon library, link styling, cut-through, topology auto-discovery, device topology auto creation, device off-line detection, extension tool kits, and SNMP Based (get/set) configuration management. Metrics can

be polled using SNMP and KPI threshold crossing alarms are generated.

- **Security** - User Roles and Groups can be defined for security management of NMS functions.
- **Logging** - Ability to manage syslog and system operation log device operation logs, and system event logs for added security management and root cause analysis.

- **Tasks** - Provides functions for database backup, data recovery, historical alarms, device syslog, syslog clear, and resource synchronization. Batch tasks can also be implemented for backup and upgrade tasks.

- **Instant Messaging** – Supports multiple operators communicating through instant messenger for secure communication.