Network Management System UNEM
Keeping your complete XMC20 and UMUX network under control

UNEM – the proven and scalable network management solution enabling the cost-efficient operation for XMC20, and UMUX multi-service access network elements for Mission Critical systems.

Overview
High availability and easy maintenance are vital in any telecommunication network. In order to deliver reliable services it is crucial for any operator to create and maintain a high-quality architecture.

Cost efficient and user-friendly network management applications reducing operational failures play a vital role within the organization of a network.

UNEM architecture allows the possibility to extend the network scale using the element agent concept.

UNEM, the network management system for the multi-service access platforms XMC20 and UMUX provides all the means to manage the access network cost-efficiently and in a convenient manner. The integration into the service provider’s existing OSS (Operational Support System) environment is realized through open northbound interfaces.

- Fault, configuration, performance and security management
- Graphical user interface
- Inventory reports
- SNMP, CLI & XML interfaces to higher level network management (OSS)
- Auto discovery of network elements
- End-to-end service supervision and SLA monitoring.
- Automatic routing configuration for TDM networks
- MPLS-TP end to end services provisioning (H-VPLS, VPLS, VPWS, Tunnels and Pseudo-wires as well traffic engineering)
- High scalability and high availability
- Management support of selected 3rd party devices
Network view
UNEM offers a user-friendly and intuitive graphical user interface (GUI) providing immediate access to the variety of applications.

- Graphical network representation is offered through topological maps, allowing the operators to create their own, customized hierarchical network views.
- The automatic discovery of newly deployed network elements combined with the upload of their configuration changes information reduces setup time. UNEM reads the node configuration and synchronizes its databases accordingly.

Service provisioning
The configuration of the various network and service parameters of the individual elements within the network is performed through the intuitive configuration view of the UNEM software.

For the TDM world the end-to-end provisioning of connections is offered by means of them, XMC20 and UMUX networking package (NP), allowing the operator to save time during the setup, operation and maintenance of all network elements.

This application provides automatic routing capability of SDH circuits and trails, including the creation of protected connections, combined with a powerful network reporting functionality.

Moreover, the Ethernet Networking Package (ENP) allows the operator to create MPLS-TP services (VPLS, VPWS) easily. It provides advanced automatic routing capabilities, and creation of protecting path.

Service assurance
The powerful fault management application offers graphical display of alarm states on the network element symbols presented on the map. Alarm lists associated with flexible filtering and sorting capability enable the operator to take immediate actions to re-establish the service. Alarms can be forwarded using e-mail service.

The service availability is permanently monitored in the network elements. In case the quality of a line falls below a defined threshold value, the system creates corresponding alarms.
The performance management application in UNEM offers the capability to collect performance data from selected ports on the UNEM platform. The data is stored in a dedicated database and can be exported to 3rd party OSS. The network element backup and restore function allows returning to a previous configuration in case of a failure.

**Security management**
The powerful security management application offers a flexible user administration based on customizable user profiles allowing the administrator to define individual levels of access privileges to managed objects, network resources and management applications.

**Inventory management**
The maintenance and the resource capacity planning tasks are supported with the inventory management application, providing detailed network inventory data of the XMC20, and UMUX network elements and selected 3rd party devices.

**System management**
System administration tasks – like database backup and restore, the modification of the license key etc. – are supported by an administration tool offering a graphical user interface.

With the implemented features UNEM is a self-monitoring element management system, requiring almost no maintenance effort from the system administrator.

**Scalable & flexible solution**
The different software components can either be installed on a single platform, to manage small to medium size networks or in a distributed client/server environment allowing the management of highly scalable networks.

The flexible concept provides a wide range of deployment scenarios, including redundancy concepts and high availability solutions.

UNEM operates on standard computer hardware running Red Hat Enterprise Linux.

UNEM offers all advantages of a workstation based computing environment, like multi-tasking and multi-user capability.

The UNEM client (user interface) software runs on standard personal computers.

**Management of third party devices via SNMP**
UNEM offers an SNMP southbound interface to manage selected third party devices (e.g. CPEs/modems, manageable power supply units, hardware firewall and others). Management includes basic discovery, inventory and alarm handling. Alarms based on SNMP-alarm traps are displayed in the UNEM alarm list and forwarded through the UNEM northbound interface to upper OSS layer.

Cross-launch of selected third party applications allows accessing devices for further management tasks (e.g. WEB-GUI or local craft tools).

**OSS integration**
The integration of UNEM into Operations Support Systems (OSS) is possible via SNMP and CLI interface.

The SNMP based northbound interface, offers a trap-based fault management and the export of inventory information together with notifications on modifications in the network elements (e.g. the provisioning of a new unit). This allows the integration of UNEM in virtually any high level management system offering an SNMP interface.

CLI-based APIs support inventory data retrieval.

The built-in CLI-multiplexer (CLI-Proxy) allows implementing service provisioning concepts in connection with high level OSS.

Inventory reports can be retrieved in XML or CSV format.

UNEM has been successfully integrated into the IBM Tivoli Net-cool® suite, enabling umbrella alarm monitoring of the UNEM integrated Network Elements.

Contact us to find out more about UNEM.
## Technical Specifications (valid for UNEM release R10C SP1)

### General Recommendations Server Platform

<table>
<thead>
<tr>
<th>Operation system</th>
<th>Red Hat Enterprise Linux (&gt;=6.6 or 7.x)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Red Hat certified computer hardware can be found under <a href="https://access.redhat.com/search/browse/certified-hardware">https://access.redhat.com/search/browse/certified-hardware</a></td>
</tr>
</tbody>
</table>

### Hardware Recommendations for small to medium network install base (NMS Server Platform)

<table>
<thead>
<tr>
<th>CPU</th>
<th>Intel® Xeon® (8 Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM</td>
<td>32 GB (minimum)</td>
</tr>
<tr>
<td>HDD</td>
<td>A minimum of 250 GB and “RAID 1” or higher are recommended.</td>
</tr>
<tr>
<td>LAN</td>
<td>At least 1 x 100Base-TX interface for network, additional interface for office LAN</td>
</tr>
<tr>
<td>Monitor</td>
<td>21 inch or larger, resolution 1280 x 1024</td>
</tr>
<tr>
<td>Peripheries (optional)</td>
<td>DVD-ROM drive, backup facility</td>
</tr>
</tbody>
</table>

### Hardware Recommendations for large network install base (NMS Server Platform)

<table>
<thead>
<tr>
<th>CPU</th>
<th>Intel® Xeon® (16 Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM</td>
<td>64 GB (minimum)</td>
</tr>
<tr>
<td>HDD</td>
<td>A minimum of 500 GB and “RAID 1” or higher are recommended</td>
</tr>
<tr>
<td>LAN</td>
<td>x 1000Base-T interface for network, additional interface for office LAN</td>
</tr>
<tr>
<td>Monitor</td>
<td>21 inch or larger, resolution 1280 x 1024</td>
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<td>Peripheries (optional)</td>
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</table>

### Recommendations Client Platform

<table>
<thead>
<tr>
<th>System</th>
<th>Dedicated UNEM client software running on standard PC with any of the following operating systems is recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• RHEL &gt;= 6.6 or 7.x</td>
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<tr>
<td></td>
<td>• Windows 7 Professional (32+64 bit)</td>
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<td></td>
<td>• Windows 8.1 Professional (32+64 bit)</td>
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<td></td>
<td>• Windows Server 2012 R2</td>
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<td>• Windows 10</td>
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<tr>
<td></td>
<td>Windows Server 2008 R2, 8 GB RAM recommended, HDD of 500 GB and available hard disk space of at least 4 GB for the Client Software, 1000Base-T network interface card to access the UNEM core host using TCP/IP, color monitor with a resolution of 1280</td>
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