Overview & Architecture

NetAct Administration course (NetAct 8 EP1)
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## Contents

1. What is NetAct 8 .......................................................................................................................... 5
   1.1. NetAct architecture ................................................................................................................. 5
   1.2. NetAct operation system (NetAct OS) ......................................................................................... 6
   1.3. NetAct Advanced Products ...................................................................................................... 6
   1.4. Differences between OSS 5.x and NetAct 8 .............................................................................. 6
       1.4.1. Summary of benefits: ....................................................................................................... 7
   1.5. Differences between NetAct 7 and NetAct 8 ........................................................................... 7
   1.6. NetAct 8 Start Page .................................................................................................................. 8
   1.7. NetAct 8 applications .............................................................................................................. 10
       1.7.1. Administration applications ............................................................................................. 10
       1.7.2. Configuration Management applications ..................................................................... 11
       1.7.3. Deployment tools ........................................................................................................... 11
       1.7.4. Fault Management applications ..................................................................................... 12
       1.7.5. Optimization applications ............................................................................................... 12
       1.7.6. Performance Management applications ........................................................................... 13
       1.7.7. Security Management applications .................................................................................. 13
       1.7.8. User Assistance applications ............................................................................................ 14
   1.8. Desktop .................................................................................................................................. 14

2. Architecture - multiple perspectives ............................................................................................ 16
   2.1. Tier architecture ...................................................................................................................... 16
       2.1.1. Software layers: ............................................................................................................... 17
   2.2. Product Architecture ............................................................................................................. 18
       2.2.1. Computing Platform ........................................................................................................ 18
       2.2.2. OSS Application Platform ............................................................................................... 18
       2.2.3. Common OSS components ............................................................................................... 18
       2.2.4. OSS Applications ............................................................................................................ 20
   2.3. Product Viewpoints ................................................................................................................ 20

3. Virtualization and hardware ........................................................................................................ 22
   3.1. Introduction to NetAct virtualization ....................................................................................... 22
   3.2. Virtualization setup in NetAct 8 ............................................................................................. 22
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>Deployment scenario</td>
<td>23</td>
</tr>
<tr>
<td>3.4</td>
<td>VM node configurations</td>
<td>24</td>
</tr>
<tr>
<td>3.4.1</td>
<td>Small – 23 VMs</td>
<td>25</td>
</tr>
<tr>
<td>3.4.2</td>
<td>Mainstream – 32 VMs</td>
<td>25</td>
</tr>
<tr>
<td>3.4.3</td>
<td>Large – 40 VMs</td>
<td>26</td>
</tr>
<tr>
<td>3.5</td>
<td>Hardware evolution</td>
<td>26</td>
</tr>
<tr>
<td>3.6</td>
<td>NetAct hardware</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>Software</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>High Availability</td>
<td>29</td>
</tr>
<tr>
<td>5.1</td>
<td>VM availability</td>
<td>29</td>
</tr>
<tr>
<td>5.2</td>
<td>Service availability</td>
<td>30</td>
</tr>
<tr>
<td>5.3</td>
<td>WebSphere availability</td>
<td>31</td>
</tr>
<tr>
<td>6</td>
<td>Help and information sources</td>
<td>32</td>
</tr>
<tr>
<td>6.1</td>
<td>NetAct version installed</td>
<td>32</td>
</tr>
<tr>
<td>6.2</td>
<td>NetAct Operating Documentation</td>
<td>32</td>
</tr>
<tr>
<td>6.3</td>
<td>NetAct Object Information Browser (OIB).</td>
<td>32</td>
</tr>
<tr>
<td>6.4</td>
<td>Application help</td>
<td>33</td>
</tr>
<tr>
<td>6.5</td>
<td>Share Inside</td>
<td>34</td>
</tr>
<tr>
<td>6.6</td>
<td>Nokia Siemens Online Services (NOLS)</td>
<td>34</td>
</tr>
<tr>
<td>6.7</td>
<td>Active Software Support</td>
<td>35</td>
</tr>
</tbody>
</table>
1 What is NetAct 8

NetAct 8 is the NSN product for management of telecom networks namely radio and core. NetAct 8 is a full pledged product by itself providing the following functionality:

- Fault Management
- Configuration Management
- Performance Management
- Security Management

NetAct 8 consists of:

- common platforms
- common application content
- domain specific applications, adaptations and mediations

1.1 NetAct architecture

NetAct is a Network Management system that is used for the managing Network Elements. It provides the following functionality:

- Administration and configuration of Network Elements.
- Collecting alarms, measurements and radio network parameters from network elements
- Remote management of managed networks (2G, 3G, etc.)
NetAct 8 is a replacement for OSS 5.x RC

Southbound interfaces are used to exchange data between NetAct and network elements or lower-level network management systems.

Northbound interfaces are used to exchange data between NetAct and higher-level network management or other systems.

The role of NetAct in managing a network can be classified into two categories: NetAct operation system itself and NetAct Advanced products.

1.2 NetAct operation system (NetAct OS)

A NetAct system is connected to one or more Network Element(s) and / or Element Management System(s) and used for online monitoring and administration of the NEs.

NetAct is the main connection point of Network elements and takes care of storing collected information from NE’s. (E.g. for alarms the default storing time is 2 weeks.)

1.3 NetAct Advanced Products

There are three NetAct Umbrella Products: NetAct Advanced Monitor, NetAct Advanced Configurator and NetAct Performance Manager.

These umbrella solutions provide an entire view of the network in areas of Fault Management, Configuration Management and Performance Management. They provide a unified view of the network irrespective of underlying technologies.

Multiple NetAct instances and other Network Management Systems of other vendors (MVI) can be connected to a single NetAct Umbrella Product instance.

The Advanced products and NPM can also be integrated with OSS 5.x

1.4 Differences between OSS 5.x and NetAct 8

Reasons for changes between OSS 5.x and NetAct 8:

There is a need to move from a network and resource centric approach towards end customer experience and service-oriented OSS/BSS solutions

- Reduce system administration & maintenance, system integration and training costs
- Modernized OSS architecture by way of consolidation, harmonization and automation
- Safe guard customer’s OSS investments by providing step wise migration of existing installations to newer solutions
### Differences between OSS 5.x and NetAct 8

#### End user changes:
- New NetAct start page to launch all applications from a single point
- TLUI replaced by Java based NetAct Monitor application
- New User Management applications
- Enhanced configuring, monitoring and reporting capabilities
- Enhanced NetAct Adaptation Information Browser
- NetAct License Manager with better UI and ability to administer NetAct licenses along with NE licenses
- No shell access for normal users

#### Architectural changes:
- Increased modularity and flexibility
- WebSphere Message Queue is not used in NetAct 8
- GFS replaced by NFS
- No RHCS in NetAct 8 and HA is provided by Virtual Infrastructure Mgmt software

#### Hardware:
- The GUIS node has been removed in NetAct 8. Hence the X-Motif applications of OSS 5.x have been replaced with Java Client GUI or web interface
- All NetAct servers have been replaced by virtualized nodes

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### Summary of benefits:

NetAct 8 releases provide a common Linux-based platform and common applications for radio and core network enabling e.g. integrated radio and backhaul management

- Simplified architecture with increased modularity improving flexibility, time-to-market and release synchronization.
- Hide the network complexity and manage different technology domains from different vendors with fewer number of technical experts
- All the needed information available for different applications, processes and organizations.
- Same Look & Feel with common applications for the all domains.
- Cost efficient way to speed up and automate processes to decrease costs and to guarantee higher network consistency and quality.

### Differences between NetAct 7 and NetAct 8

NetAct 8 builds on the features of NetAct 7, providing feature enhancements and new functionalities. The major change however is the hardware virtualization.
Differences between NetAct 7 and NetAct 8

**End user changes:**
- OnePM related applications introduced in NetAct 8
- Name Surfer can be used for DNS administration

**Administration / software changes:**
- Single product build – no concept of NetAct Base and product variants
- Virtualization of all NetAct servers
- NetAct services deployed on one or more virtualized nodes
- Better Network Element support to replace OSS 5.x
- No RHCS in NetAct 8 and HA is provided by Virtual Infrastructure Mgmt software

**Hardware:**
- All nodes virtualized
- Only four and six physical blades depending on NetAct configuration

1.6 NetAct 8 Start Page

The start page can be accessed via the URL: https://<FQDN of WAS Load Balancer node>.

The start page is the single point of entry for all NetAct applications. The applications are implemented as either a web interface or a Java client. As a result, clicking on an application link with display the web interface for application (e.g. User Management) or invoke a Java client as a new window (e.g. NetAct 8 Monitor). Please note that Java applications will work only with JRE 1.6 in ‘NetAct for LTE’ version.
NetAct 8 login

Step 1

NetAct 8 Start page

Step 2

The grouping of applications based on functional area can be controlled using the ‘Application Grouping’ drop down control.

‘Show applications by folder’ will group the applications and display only the group folder on the desktop. Clicking on the folder will display the individual applications.

‘Show all applications’ will display all the applications on the start page.
If you cannot find the application you want on this page, you may not have the necessary access rights. Contact your system administrator or other provider of user rights in the organization.

1.7 NetAct 8 applications

NetAct 8 applications are accessible for the Start page and are grouped based on functional area. The functional areas and their corresponding applications are illustrated below. It is possible to remove the grouping and display all applications on the Start page. Please refer to 6.4 for a complete description of all applications use cases and workflows.

1.7.1 Administration applications

- **Adaptation Manager**: Web application; allows a user to deploy, undeploy, view and re-deploy adaptations
- **Map Administrator**: Java client; part of Optimizer and used to import and administer maps used in the Optimizer application
- **NE Integration Wizard**: Web application; used to integrate NEs
- **SNMP FM Mediator**: Web application; used to set parameters for SNMP FM agents
- **SNMP PM Mediator**: Web application; used to set parameters for SNMP PM agents
1.7.2 Configuration Management applications

NetAct 8 applications – ‘Configuration’ folder

- CM Analyser: Java client; used to analyse the consistency of network parameters in the plan
- CM Editor: Java client; used to edit parameters in a plan
- CM Operations Manager: Java client; used to upload, download, export and import plans
- CM Reference: Java client; builds and manages the reference network configuration
- License Manager: Web application; used to manage NetAct and NE licenses
- SON Scheduler: Web application; scheduler for 3G and LTE auto-configuration
- Site Configuration Tool: Web application; repository for site configuration data
- Software Manager: Web application; manages the NE software via NetAct

1.7.3 Deployment tools

NetAct 8 applications – ‘Deployment’ folder

- AddOn Manager: Web application; used to deploy, un-deploy, start and stop Enterprise Archive (EAR) add-ons in NetAct
1.7.4 Fault Management applications

**NetAct 8 applications – ‘Monitoring’ folder**

- **Alarm Reports Dashboard**: Web application; used to collect and store real time information from the network to detect and analyze faults.
- **Monitor**: Java client; The main Fault Management application of NetAct, used to monitor alarms in the network. This application is also the NetAct desktop which shows the Network Elements Managed & Network Views
- **TraceViewer**: Java client; used to trace subscriber and cell information

1.7.5 Optimization applications

**NetAct 8 applications – ‘Optimization’ folder**

- **Optimizer**: Java client; Main Optimizer application to optimize radio networks
1.7.6 Performance Management applications

NetAct 8 applications – ‘Reporting’ folder

- **Administration of Measurements**: Web application; used to administer and manage measurement generation in NEs and upload to NetAct
- **Performance Manager**: Web application; Provides multiple tools for measurement data reports. Used to create and manage, schedule and export reports and edit KPIs
- **Software Asset Monitoring**: Web application; used to monitor software assets based on a particular technology

1.7.7 Security Management applications

NetAct 8 applications – ‘Security’ folder

- **Certification Authority**: Web application; Administration page for NetAct Certification Authority. Used to administer, request and download security certificates
- **Network Element Access Control**: Web application; used to administer NE users. Replaces Service User Management of OSS 5.x
- **User Management**: Web application; used to create and manage NetAct users and primary user groups
1.7.8 User Assistance applications

**NetAct 8 applications – ‘User Assistance’ folder**

- **Object Information Browser**: Web application; used to browse and retrieve adaptation meta-data for a managed object class. Covers FM, PM and CM meta-data.
- **Operating Documentation**: Web application; NetAct documentation for the entire NetAct system. Formerly called NetAct Electronic Documentation (NED).

1.8 Desktop

The NetAct 8 Desktop can be accessed via the URL: https://<FQDN of WAS Load Balancer node>/desktop.

The Desktop can also be accessed from Start Page using the link ‘Monitoring -> Monitor’.
In NetAct 8, the desktop link is configured to invoke the NetAct Monitor application. The
NetAct Monitor client is implemented as a Java application and it is invoked in a separate
window.
2 Architecture - multiple perspectives

2.1 Tier architecture

NetAct 8 is based on three-tier architecture. NetAct consists of presentation tier, business logic tier and data tier. Definitions of the multi-tier architecture also refer to data access tier, but in case of NetAct it is included into the business logic tier.

NetAct uses three-tier architecture for the following reasons:

1. Client applications can be implemented more lightweight and platform independent.
2. Each tier can be upgraded independently.
3. Each tier can be scaled independently.
4. Each tier can have independent fault tolerance strategies.

Unlike NetAct 7 there is no dedicated hardware for each tier. Since all the nodes are virtualized Tier 2 and Tier 3 nodes / services can be hosted on any of the blades.

Presentation tier hosts client applications with graphical user interfaces; web applications and rich Java clients. Client applications on the presentation tier are communicating with business logic tier, but not allowed to communicate with the data tier. Physically the presentation tier is a user workstation that is usually a laptop or small desktop computer that is used also for other purposes.
Business logic tier hosts the NetAct specific business logic and data access, which can be implemented with different technologies. Therefore business logic tier must be able to provide multiple execution environments; e.g. Java SE, Java EE, C++ and Perl. Business logic tier is not allowed to have persistent data storages for any business sensitive data. This layer is implemented by having VM nodes for hosting the components of the Business logic layer.

Data tier hosts the data storages of the NetAct; database and directory server. The data tier is free of NetAct specific business logic and other in-house software. This is implemented by having a single VM node for DB and another VM node for LDAP.

2.1.1 Software layers:

NetAct software is divided into three layers that represent a particular type of functionality: OSS applications, OSS application platform and computing platform.

NetAct uses layered architecture for two major reasons:

1. Software components in different layers have different lifecycles, and it is must be possible to upgrade them independently.
2. Software components within different layers have different sources; in-house and third-party; which affects their lifecycles and upgrade frequencies.

OSS applications contain all the network management domain specific functionalities like applications, mediations and adaptations.

OSS application platform provides generic (network management domain agnostic) services for the use of OSS applications.

Computing platform contains most of third-party software components; like operating system, persistent data storages and J2EE application server; NetAct specific hardware. Computing platform does not contain any NetAct specific business logic.
2.2 Product Architecture

2.2.1 Computing Platform

NetAct hardware platform, that is, the hardware of the business logic tier and the data tier, consists of three main items: Servers, network equipment and storage devices.

IT Software comprises all operating system level services with J2EE Server, J2SE/JRE, JBI Server, Perl, Authentication, Database, Directory Server, File System Access, IP Connectivity, Start-up, Scheduling, Backup and Restore, Process Supervision, OSI Connectivity, CORBA Connectivity, Messaging Backbone and System Deployment.

2.2.2 OSS Application Platform

OSS application platform also called as OSS middleware and services comprises many important NetAct system services like Authorization, Credential Access, Certificate Access, Data Access, Data Logging, License Access, Scheduling, Documentation Access, Preferences, Java UI Framework, Web UI Framework and Common Message Bus.

2.2.3 Common OSS Components

2.2.3.1 Fault Management

The fault management monitoring tools in NetAct Monitor can be used to manage alarms from various network elements and types, to perform root cause analysis, to troubleshoot faults that cause disruptions in network services, and to improve the quality of the network services for subscribers. The NetAct Monitor fault management system consists of an FM event collection engine, FM event correlation engine, FM adaptation fragments, mediation interfaces, and fault management monitoring tools. These modular FM tools can be found in the Tools menu in the Desktop.
2.2.3.2 Configuration Management
Purpose of the configuration management is to model the telecom network structure (a.k.a. network topology) and manage domain-independent network parameters. Configuration management consists of the following applications: Common CM services, NE hardware management, NE software management, NE license management, NE remote backup.

2.2.3.3 Performance Management
Purpose of the performance management is to collect & store measurements from telecom network and pre & post-process measurements. Measurement collecting and storing applications are used to collect measurements from telecom network and store them in the measurement repository (a.k.a. PM database). Measurement collecting and storing is responsible to identify the origin of the measurement, and attach it into network element instance and other adaptation release specific information. Performance management consists of the following features: Measurement collecting and storing, Measurement processing, post-processing, visualization and administration.

2.2.3.4 Security Management
Purpose of the security management is to manage security related information and help to enforce the security related policies. Security management consists of the following features: User account management, User group management, permission management, NE permission management, NE account management, NE access control, user activity monitoring, and license management.

2.2.3.5 System Management
System management applications are not included into any FCAPS fragment, but are essential for administrating a NetAct system. System management consists of the following features: System monitoring, On-line documentation and Time management.

2.2.3.6 Mediation Tools
Mediations provide external communication with network elements, and lower-level & higher level systems as south-bound and north-bound interfaces. Mediations implement the network technology specific communication protocol, and data transformation.

Mediation framework is required as a development tool for new mediation components. Mediation framework also provides services that are needed at run-time by mediation components implemented using the mediation framework.

2.2.3.7 Adaptation Management
Adaptations provide network element release specific meta-data, which is used to parameterize applications, mediations and platform services.

Purpose of the adaptations is to make the NetAct system aware about the network element release specific data without any changes in existing software components.
Same network element releases can be managed by network management systems that can have different network management features and releases. Therefore adaptations shall be network management system release independent.

### 2.2.4 OSS Applications

OSS Applications layer consists of Domain-specific and Domain-agnostic applications. Domain-specific applications gather applications like NAR, and NAC while Domain-agnostic applications consist of Service Management applications.

### 2.3 Product Viewpoints

There are multiple product viewpoints for NetAct. Mainly it could be looked from an architecture view point. Another important viewpoint is Product structure. NetAct can be viewed as stack of multiple products, one built on top of the other. Each of the products provides a specific functionality and a combination of products fulfils and operators end to end use case.

#### Product Viewpoints

NetAct 8 Release unlike NetAct 7 is an end product by itself

NetAct for Radio, NetAct for Core are part of the NetAct 8 release and provides NM functionality to Radio and Core domains and network types. A bulk of the functionality is provided by underlying NetAct system but network and technology specific adaptations are contained in this product.

NetAct Advanced Products like ‘NetAct Monitor’ and ‘NetAct Advanced Monitor’ are domain specific applications and end products that provide specialized features for operator use cases.

Serve atOnce Products like ‘Serve atOnce Activation Manager’, ‘Serve atOnce Intelligence’ etc represent applications in the Service Management Layer.

We could also look at NetAct from ‘Product Portfolio’ point of view. NetAct can be seen as one or more products that serve a certain aspect of a Network Management in a mobile network. When all the products in the OSS portfolio are put together it provides a complete end to end solution for a heterogeneous mobile network.
3 Virtualization and hardware

3.1 Introduction to NetAct virtualization

Virtual machines (VMs) containing NetAct services and applications. Customer deliveries: small 23 VMs, mainstream 32 VMs and large 40 VMs.

VMware vSphere 5.1 virtual infrastructure abstracts the physical hardware from the NetAct services and applications. Virtual infrastructure shares physical resources of multiple servers across entire infrastructure. Bare-metal ESXi hypervisors enables full virtualization of each x86 server.

HP x86 G8 blade servers with 10G interfaces and Virtual Connect Flex 10 Ethernet Modules in blade chassis.

Cisco/Juniper Data Communication Network (DCN).

Fiber channel Storage Area Network (SAN) connecting the blade chassis to the storage.

EMC/HP physical storage containing the ESXi hosts root disks, VM root disks, DB disks and global shares.

3.2 Virtualization setup in NetAct 8

Virtualization steps in NetAct 8

1. HW turned on, ESXi’s are PXE booted

2. First VM created using VCSA, OS installed from the image

3. ViiS is moved from the laptop

4. VI and rest of the VMs are created through CPf
NetAct 8 virtualization and installation consists of the following high level steps:

1. Installation engineer has a laptop with VMware Player installed. The laptop contains VCSA (vCenter Server Appliance) which can be imported as a readymade VM into the virtual infrastructure
2. Installation engineer starts VMware Player. Configuration information is fetched to the virtual machine.
3. Server blades are turned on and ESXi 5.0’s are PXE booted
4. One virtual machine is created from laptop using VMware Player and Suse Linux OS for vCenter is installed automatically from the image.
5. Suse Linux OS is configured with correct configuration information and SSH Server is installed
6. VMware vCenter is installed on top of Suse Linux OS
7. ViiS is moved from laptop to VI
8. Virtual infrastructure is deployed using script interface; the script interface is called from the ViiS (input is received from the configuration file(s) and given as attributes)
9. Virtual machines are PXE booted from the ViiS
10. Once all virtual machines are up and running (PXE booted from ViiS), Java DCA is started to start the NetAct installation

3.3 Deployment scenario

NetAct 8 release runs on a new computing platform, using the same hardware types as NetAct OSS5.x. NetAct 8 provides the platform and applications for management systems of different technologies (for example NetAct for Core) and can act as a stand-alone management system. The Network Elements can be directly connected to the NetAct system.

Please note that co-existence with OSS 5.x is not supported in NetAct 8. Also upgrade from NetAct 6/7 is not supported. NetAct 6/7 users can upgrade only to NetAct 8 EP1.
### 3.4 VM node configurations

#### VM node configuration – notations used

- **A**: Amount of vCPU on VM
- **B**: Amount of VRAM on VM
- **C**: Amount of virtual disk space on VM
- **D**: Total amount of vCPU on VM
- **E**: Total amount of VRAM allocated
- **F**: Total amount of VMs virtual disk spaces
- **G**: Total amount of virtual disk space on redo
- **H**: Total amount of virtual disk space on db
- **I**: Total amount of virtual disk space on arc
- **J**: Total amount of virtual disk space on nfs
global
- **K**: Total amount of virtual disk space for VM image backup data
- **L**: Total amount of virtual disk space for DB and NFS backup data
- **M**: Amount of physical CPU threads with Inter HyperThreading enabled
- **N**: Amount of physical RAM
- **O**: Amount of physical CPU Threads
- **P**: Total amount of RAM allocated

Please use the above picture as a reference while interpreting the content of next three sections.
3.4.1 Small – 23 VMs

This configuration consists of four G8 HP servers each providing 16 vCPUs (1p8c and hyperthreading in use) and 48 GB vRAM to HW resource pool.

3.4.2 Mainstream – 32 VMs

This configuration consists of six G8 HP servers each providing 24 vCPUs (2p6c and hyperthreading in use) and 64 GB vRAM to HW resource pool.
3.4.3 Large – 40 VMs

This configuration consists of six G8 HP servers each providing 32 vCPUs (2p8c and hyperthreading in use) and 128 GB vRAM to HW resource pool.

3.5 Hardware evolution

The above figure shows the progressive HW evolution from OSS 5.x to NetAct 8. OSS 5.x required minimum of four servers (DS, CS, LinAS and GUIS). NetAct 6/7 required minimum of...
two servers (AS and DS). OSS 5.x and NetAct 6/7 had dedicated HW for the server types. In comparison all nodes in NetAct 8 are virtualized and there is no dedicated HW for any of the server types since services are installed on VMs. Any of the underlying blades can host a VM for any of the services.

### 3.6 NetAct hardware

<table>
<thead>
<tr>
<th>NetAct configuration</th>
<th>Server model</th>
<th>No. of blades</th>
<th>Storage system</th>
</tr>
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<tbody>
<tr>
<td>Small – 23 VMs</td>
<td>HP BL460c G8</td>
<td>4</td>
<td>VNX Small.</td>
</tr>
<tr>
<td></td>
<td>1x Intel E5-2658 eight core processor 4GB memory, 2x300GB 15K SAS internal disks 2x10GbE LAN; fc controller (8G)</td>
<td></td>
<td>VNX5300: 13x300GB SAS + 7x2TB NL-SAS</td>
</tr>
<tr>
<td>Mainstream – 32 VMs</td>
<td>HP BL460c G8</td>
<td>6</td>
<td>VNX Medium</td>
</tr>
<tr>
<td></td>
<td>2x Intel E5-2620 six core processor 64GB memory, 2x300GB 15K SAS internal disks, 2x10GbE LAN; fc controller (8G)</td>
<td></td>
<td>VNX5300: 17x300GB SAS + 9x2TB NL-SAS + 2x100GB SSD</td>
</tr>
<tr>
<td>Large – 40 VMs</td>
<td>HP BL460c G8</td>
<td>6</td>
<td>VNX Large</td>
</tr>
<tr>
<td></td>
<td>2x Intel E5-2658 eight core processor 128GB memory, 2x300GB 15K SAS internal disks, 2x10GbE LAN; fc controller (8G)</td>
<td></td>
<td>VNX5300: 25x300GB SAS + 13x2TB NL-SAS + 5x100GB SSD</td>
</tr>
</tbody>
</table>

**Note 1:** NetAct 8 does not ship with Tier 1 (Presentation layer) hardware

**Note 2:** NetAct 8 also supports HP BL460c G6 servers, EMC CX4-120 and EMC CX4-240 storage equipment.

Please note that NetAct 8 does not ship with Tier 1 (Presentation layer) hardware and also supports HP BL460c G6 servers, EMC CX4-120 and EMC CX4-240 storage equipment. Hardware from OSS 5.x can be re-used as long as it conforms to the above specification.
# Software

The software environment is provided by the computing platform. The below illustration is just a software grouping to depict the OEMs and their version. It should not necessarily be viewed from a layered perspective.

## NetAct 8 software environment

### Application Server: IBM WebSphere version 8.0 (Unify) & version 6.1 (NetAct PM)
- Web Server: IBM HTTP Server
- JBI Server: Apache Service Mix 3.4
- ESPER: Version 3.5.0
- Cache: JBoss Cache
- Java: JRE 6 for applications & JRE 1.5 for WebSphere

### Database: Oracle Enterprise Edition 11G R 11.2.0.3.0

### NetAct PM OS: RHEL 5.8
- Load Balancer: IBM EDGE LB
- File Share: NFS version 3

### Windows Server: 2008R2

### Virtualization components
- vCenter: vCenter Server for vSphere Plus 5.1
- VDP: vSphere Data Protection Server
- Hypervisor: EXSi
- Linux: SuSe for VMware Server Appliances
- vSphere: VMware vSphere Enterprise Plus 5.1

### Unify OS: RHEL 6.4
- File Share: NFS version 3
- Load Balancer: LINUX Virtual Server (LVS)
- Directory Server: RHDS 9.0
5 High Availability

In this chapter, we describe the various high availability and redundancy mechanisms implemented in NetAct.

5.1 VM availability

High Availability of VMs – HW failure

- VMware HA monitors VMs to detect OS and HW failures
- Restarts VMs on other physical server in the HW resource pool automatically when server failure is detected
- It also protects from VM OS failures

1. One physical server (ESXi host) fails
2. VMware high availability notices that one ESXi host has gone down
3. VMware restarts the virtual machines on top of another ESXi host based on available resource information in the virtual infrastructure
Each of the NetAct services is running on one or more virtualized nodes.

**HA Components:**

- Component HA is provided by `/etc/init.d/<service>`
- RHCS has been replaced by Service Monitor and vManager
- Service monitoring is divided into two levels:
  - Each VM has a Service Monitor that manages service(s) inside the VM
  - vManager manages the Service Monitor in VMs

**Monitoring Workflow:**

1. Services are started/stopped/monitored by service’s own 
   `/etc/init.d/<service> -scripts`
2. Monitoring definitions are present in 
   `/var/opt/cpf/ha/smanagerConf.xml`
3. When there is a problem with the service, it will be restarted by local Service Monitor
4. If the local Service Monitor cannot restart the service and the service is critical, vManager restarts the VM in the same host or relocates the VM to another host
5.3 WebSphere availability

HTTP(S) load is distributed with all Application Servers with Load Balancer.

1. Load balancer tracks the status of all Application Servers and when its notices that Application Server has failed, Load Balancer removes it from the internal configuration and sends the load to another Application Server
2. IBM WebSphere Application Server High Availability Manager (HA Manager), which is a process that is running in all Application Servers, notices that one of the cluster member has failed, then it removes the Application Server dynamically from the configuration
3. When Application Server is up and running once again, then it is added to the configuration
6 Help and information sources

6.1 NetAct version installed

Refer to the file `/etc/netact-release` on all NetAct VM nodes.

6.2 NetAct Operating Documentation

Formerly called NetAct Electronic Documentation (NED), the NetAct Operating Documentation provides extensive and in-depth information about NetAct. It is accessible from the Start page via the ‘Help’ link or ‘User Assistance -> Operating Documentation’

6.3 NetAct Object Information Browser (OIB)

The NetAct OIB provides information on Managed Objects, alarms, measurements and counters in NetAct. It is accessible from the Start page via the link ‘User Assistance -> Object Information Browser’.
6.4 Application help

There are no separate pages for application help as in OSS 5.x or NetAct 6. The application help is bundled into the Operating Documentation and can be accessed from the ‘Help’ link in the applications. The correct section for the application within Operating Documentation is automatically displayed.

Application context sensitive help

Application level help in Operating Documentation. Covers important use cases and workflows.
6.5 Share Inside

NetAct 8 content on Share Inside is hosted as part of ‘NetAct 8’ community at [https://share.inside.nokiasiemensnetworks.com/community/technology_clusters/management_products_transport_management/netact8](https://share.inside.nokiasiemensnetworks.com/community/technology_clusters/management_products_transport_management/netact8)

6.6 Nokia Siemens Online Services (NOLS)

NOLS is a repository of information related to NSN products. All deliverables to the customer are made available through NOLS.

NOLS is hosted on the NSN Intranet and can also be accessed from the link <https://online.portal.nokiasiemensnetworks.com>. You need to apply for a NOLS account to be able access the contents hosted on the site. The NOLS home page contains instructions on how to apply for an account.
6.7 Active Software Support

The online community for NSN products called Share has now been replaced by Active Software Support (ASWS). Direct login to Share has been disabled and ASWS can be accessed only from NOLS.

1. To access ASWS, click on Care -> ‘My Active SW Support’.
2. You are re-directed to the ‘My Active SW Support’ page. Click on ‘Experience My Active SW Support’
3. The ‘My Active SW Support Portal’ page is displayed which contains links to the ‘Discussion Forums’ and ‘Troubleshooting sources’
Active Software Support (1/2)

Welcome to... Nokia Solutions and Networks Online Services

My Top Applications
- Reference Information
- Network
- My Active SW Support
- Software Supply Test
- Plan Paths
- Change Your Preference

Tools
- Browse Areas
- My Account
- Login History
- Order Notifications
- Update Documents

Support
- Change Password
- Contact Us
- FAQ
- Give Feedback
- My Profile
- Service Information
- View Feedback

Active Software Support (2/2)

Active Software Support
Share Excellence

Collaboration
- Online Collaboration
  - Support Forums
  - Instant Chat
  - My Chat
  - Share My OAS Sessions

Troubleshooting
- Troubleshooting
  - Information Search
  - Search Knowledge Base

Admin
- Admin

Discussion Forum / Chat

Search in Knowledge Base