

Implementing Highly Available OpenView

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Outline

Overview of High Availability (HA)

Highly Available NNM

Highly Available ITO

Management of HA clusters

Integrated products

Performance products



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Demand for HA solutions

Shift in focus on NSM solutions in the marketplace

- *NSM core IT department function*
- *IT departments accountable to business units*
- *Driven by Service Level Agreements (SLAs)*
- *Impact of reporting*



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Highly Available NNM

Collection station failover

- *Implemented in Distributed Internet Discovery & Monitoring (DIM)*
- *Allows a Management Station (MS) to pick up status polling responsibility for a failed Collection Station (CS)*

Highly Available cluster

- *Allows NNM to run on a cluster of 2 or more servers that provide continuous availability*



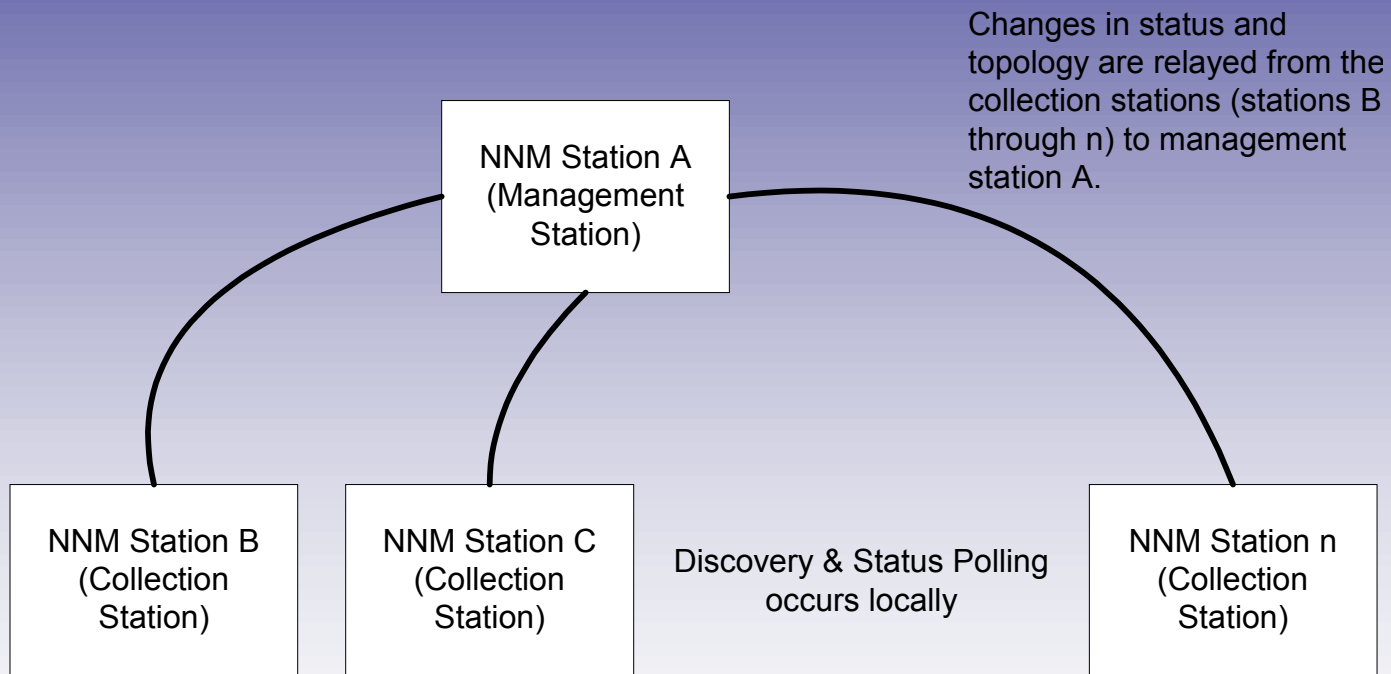
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Distributed Architecture Overview



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Failover Configuration

Failover filter

- *Allows specified objects to be polled by MS during CS failure*

Enabling CS failover

- *xnmtopoconf -failover {stationlist}*

Applying failover filter

- *xnmtopoconf -failoverFilter {filter} {stationlist}*



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Limitations of DIM for HA

Scaling

- **Limited by number of devices polled and the polling interval**
- **Practical size of object database (primary & secondary objects)**
- **Capacity of network connection between MS & CS**
- **Event data may be lost since SNMP traps are not forwarded when CS fails**
- **Multiple CS failures may create problems for MS**



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Highly Available ITO

Multiple Managers

- *Manager of Managers*
- *Peer Managers*
- *Follow-the-Sun*

Hardware Backup

- *Cold Standby*
- *Highly Available Cluster*



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Multiple Managers

Manager of Managers (MoM)

- *Single ITO server manages multiple ITO servers*

Peer Managers

- *Multiple managers with a designated responsibility providing redundancy to one another*

Follow-the-Sun

- *Management responsibility moves based on time of day*



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Limitations of Multiple Managers

Scalability

- *Number of managed nodes per ITO server*
- *Number of messages received in the ITO browser*
- *Number of operator logons*
- *Speed of network connections to remote sites*
- *NNM configuration issues*
- *Agents must be told to report to new ITO server (time issue)*



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Hardware Redundancy

Cold Backup

- **Cost effective**
 - **1 server backs up multiple ITO servers**
 - **Shared storage device not required**
- **Downtime may be unacceptable**
 - **Configuration of failed server loaded after failover**
- **Message issues**
 - **No synchronization of current message data**
 - **Latency detecting events while message buffers are cleared**
- **Need to implement configuration synchronization**



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Hardware Redundancy

Hot Standby

- *ITO servers implemented in HA cluster*
- *Rapid, automated failover of a failed ITO server*
- *Configuration and messages data shared between nodes*
- *Upgrades & patches require more effort to install*
- *Costly solution*
 - *Requires shared disk array*
 - *MC / ServiceGuard software required*
- *Can provide LAN failover*



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Basic HA Definitions

Package - application and associated processes can only run on 1 node in the cluster

Service - a process monitored by MC/SG

Original Node - node where package existed before failover

Adoptive Node - node that takes control of a package



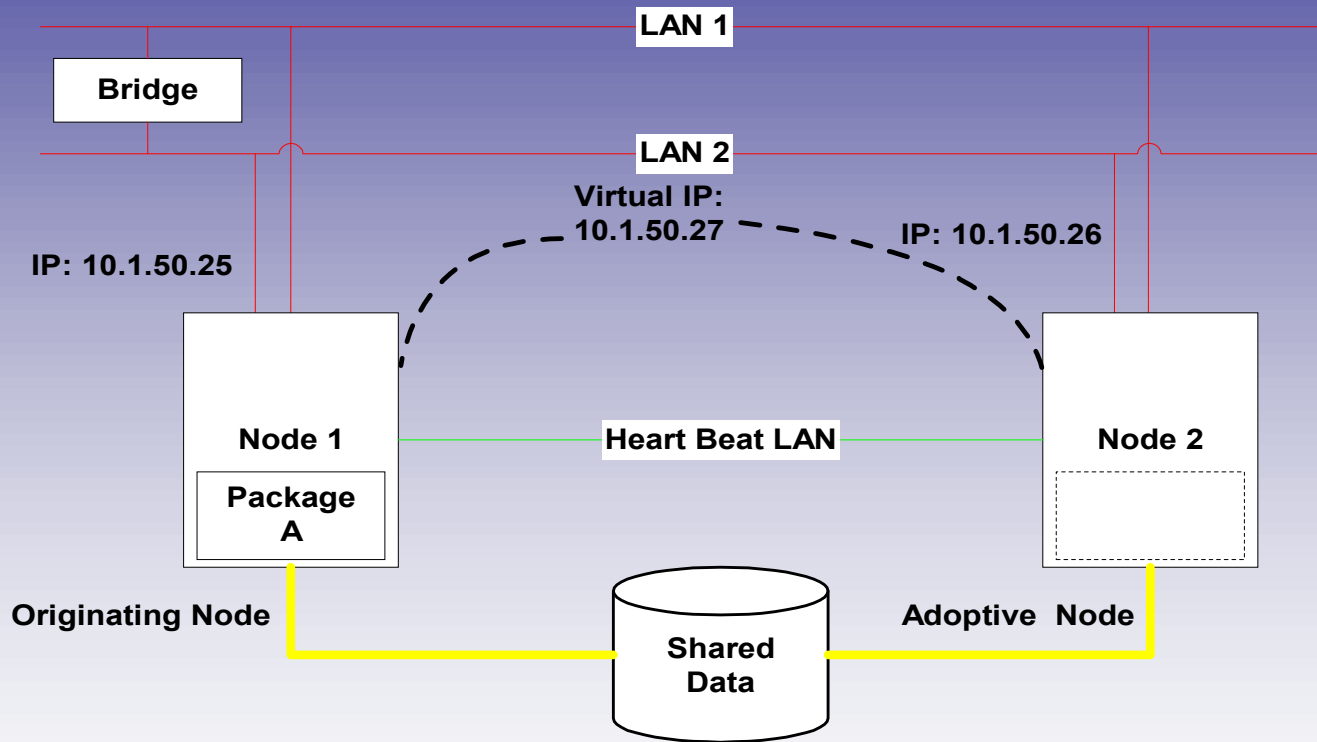
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Overview of a Cluster



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Steps to Implement HA

Create a volume group on shared device

Create logical volumes in that group

- */etc/opt/OV/share*
- */var/opt/OV/share*
- */opt/OV/OpC_SG*
- */u01/oradata/OpenView (DB files)*
- */u01/app/oracle/product (DB binaries)*

Create fully qualified hostname & IP address for ITO package

Activate & mount volume group on primary node

- *vgchange -a y /dev/{volume_group}*



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Steps to Implement HA

Install Oracle binaries on primary node

Install ITO binaries on primary node

Install latest ITO/NNM patches on primary node

Configure the ITO database (opcconfig)

- ***Select MC/SG installation***
- ***Use fully qualified name for package***
- ***Shared lvol is /opt/OV/OpC_SG***
- ***Configure DB automatically***
- ***Do not enable startup at boot time***

Configure startup of ITO processes manually in \$OV_LRF directory:

- **ovaddobj ovoacomm.lrf**
- **ovaddobj opc.lrf**



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Steps to Implement HA

Modify /etc/oratab to enable autostart

Verify ITO/NNM starts

Modify ov.conf file

- *Clean copy - /opt/OV/newconfig/OVNNM-RUN/conf/ov.conf*
- *Create ov.conf.host1 & ov.conf.host2*
 - *Modify HOSTNAME= field in each to match the local hostname*
 - *Modify NNM_INTERFACE= to match floating IP*
 - *Modify USE_LOOPBACK= to ON*

Modify NNM auth files

- *ovw.auth*
- *ovwdb.auth*
- *ovspmd.auth*



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Steps to Implement HA

Verify ITO/NNM starts

- *First copy ov.conf.host1 to ov.conf*

Install bits on 2nd node

- *Do not run opcconfig*
- *Verify operation of NNM*

Modify opcsvinfo file on both to include lines:

- *OPC_SG TRUE*
- *OPC_SG_NNM TRUE*

Switch shared volume to 2nd node

- *Shutdown OpenView & Oracle*
- *Unmount all 5 volumes*
- *Deactivate the shared volume group*
- *Activate VG & mount lvols on 2nd node*



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Steps to Implement HA

Copy the following to the 2nd node:

- */etc/oratab*
- */etc/opt/OV/share/conf/ovdbconf*

Create new server registration file:

- *cd /etc/opt/OV/share/conf/OpC/mgmt_sv*
- *mv svreg svreg.OLD*
- *touch svreg*
- *opt/OV/bin/OpC/install/opcsvreg -add itosvr.reg*
- *rm svreg.OLD*

Remove ovserver file:

- *rm /var/opt/OV/share/databases/openview/ovwdb/ovserver*



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Steps to Implement HA

Run opcconfig

- *Do not configure the DB automatically*

Create ITO package

Modify monitor scripts to watch necessary OpenView processes

Configure package control scripts

Verify operation of ITO on both cluster nodes independently

Test failover by killing monitored process



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Configuration Files

ito.ctl

- ***Package control file, contains steps necessary to activate/deactivate ITO in failover***

ito.mon

- ***Describes processes that the package monitors***

ito_create_new_svreg

- ***Creates new server reg file on failover, invoked by ito.ctl***

ito_start_sgtrapi & ito_stop_sgtrapi

- ***Starts & stops trap interceptor on ITO server***



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Common Problems

Failure to modify opcsvinfo file

- ***OPC_SG_NNM_STARTUP TRUE***
- ***OPC_SG TRUE***

Failure to remove ovserver file

- ***If in doubt remove & let it get re-created***

Failure to modify NNM auth files

Failure to modify the ov.conf file

- ***HOSTNAME, NNM_INTERFACE fields***



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Keep in Mind

Patches must be applied to each node

Key commands

- ***cmhaltpkg ITO***
- ***cmrunpkg -n {node} -v ITO***
- ***cmviewcl***
- ***cmmodpkg -e ITO***
- ***cmrunnode {node}***

An ovstop will cause switchover

Processes to monitor for failover



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Managing HA Clusters

Managing the Management Cluster

- *Trap Template*
- *Log files*
- *Process monitors*

Managing HA packages

- *Process monitors*
- *Log file issues*



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Managing HA Clusters

Shared log files

- *Monitored from active node*
- *Copy contents to log.node on failover, start with clean slate*
- *Use “close after read” to avoid corruption*
- *Use “read from last file position”*
- *Do not use “message on no logfile”*

Monitors

- *Intelligent monitors that read output of cmviewcl to determine state*



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Managing HA Clusters

Trap interceptor

- *Assign to virtual node*
- *Started up on active node with `ito_start_sgtrapi`*
- *Stopped on inactive node with `ito_stop_sgtrapi`*



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Notification & Trouble Ticketing in HA clusters

Connect to TT using virtual hostname

- *Databases will be synched*
- *Intelligence needed to move SPI monitoring*
- *Include startup/shutdown of SPI in package control scripts*

HW Notification requires connection to each server

SW based use virtual hostname to connect



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PerfView & MeasureWare in HA Environments

Management Server

- *PerfView binaries loaded on every cluster node*
- *Use shared data repository as MW data collection*
- *Each node connects to MW agent as necessary*

Managed Node

- *MW agent runs on each cluster node to collect performance data*
- *Application data collected on cluster node that currently runs the package*



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Thank You for Attending

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