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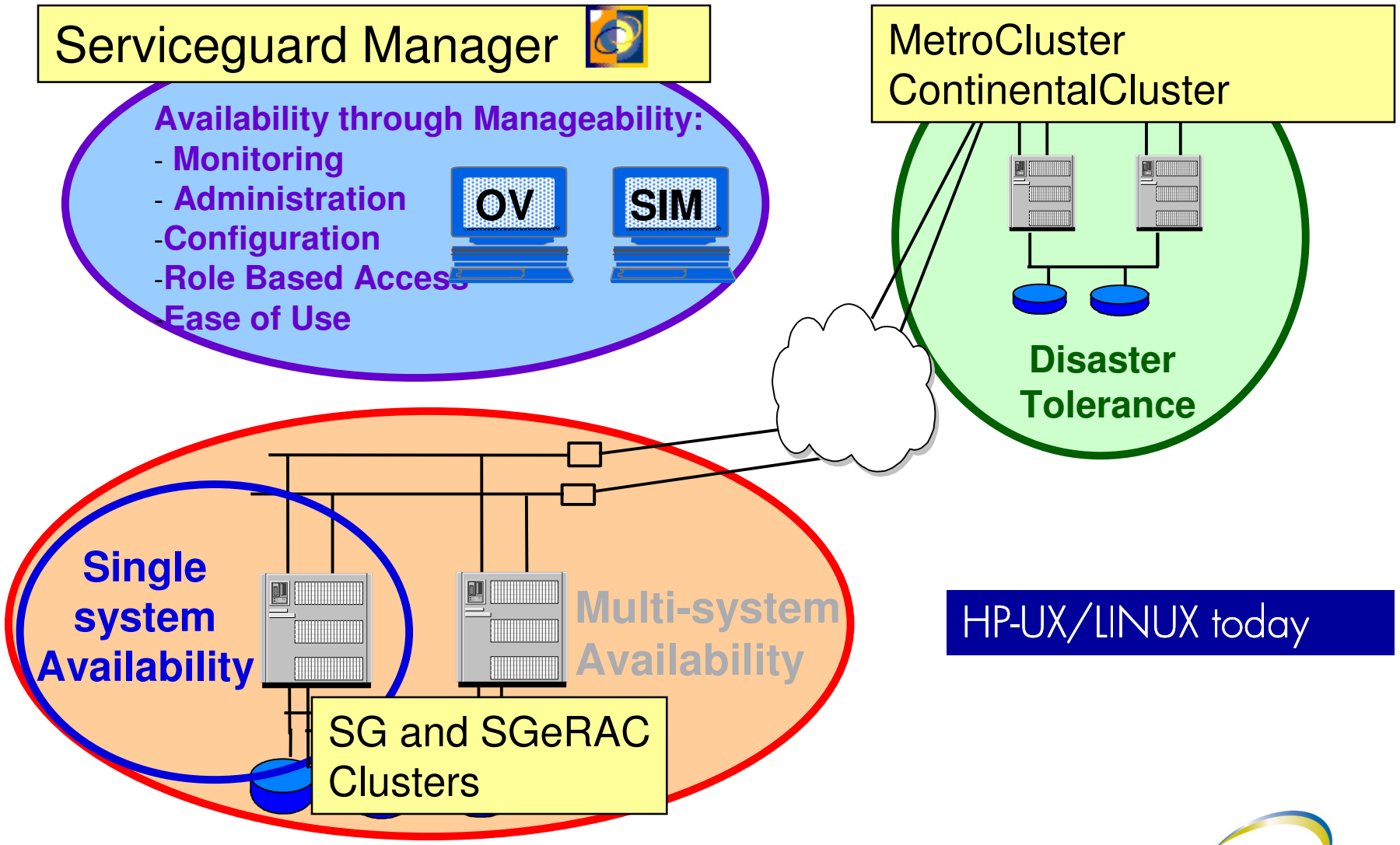
Serviceguard Manager – Administration, Configuration, Monitoring and Role Based Access

Agenda

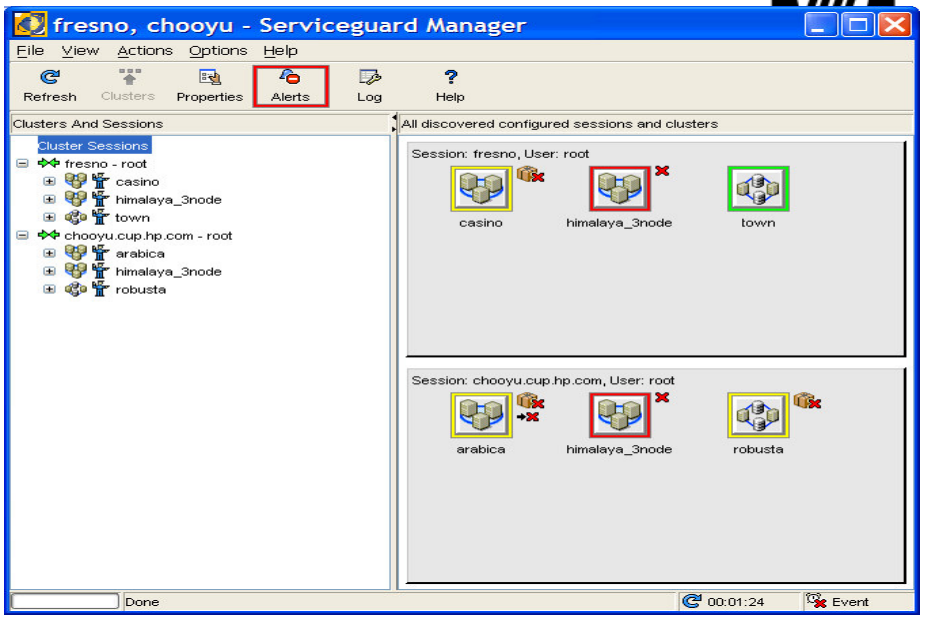
- HA overview
- Serviceguard Manager features
- Monitoring
- Administration
- Role Based Access
- Configuration
- Futures
- Q&A

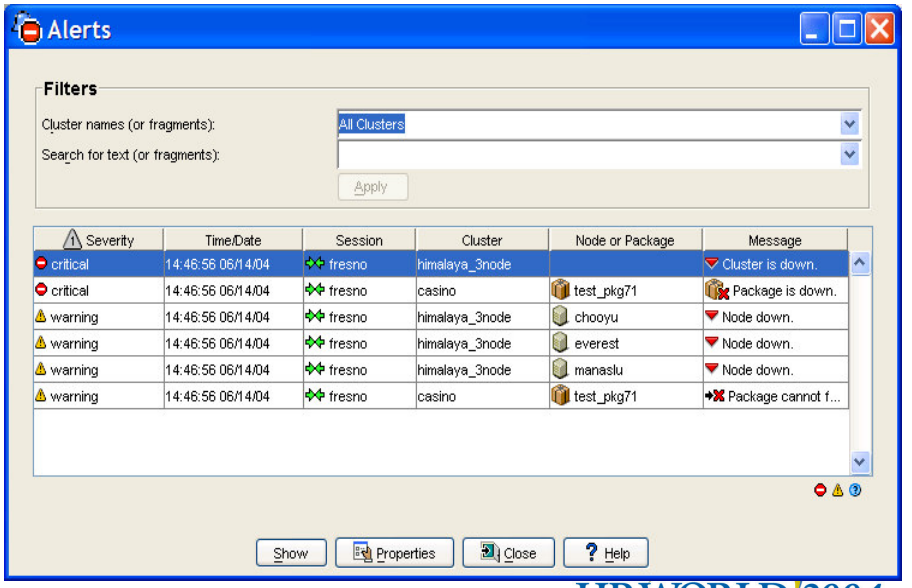
HA technology Components – HPUX/Linux



Serviceguard Manager Features Overview

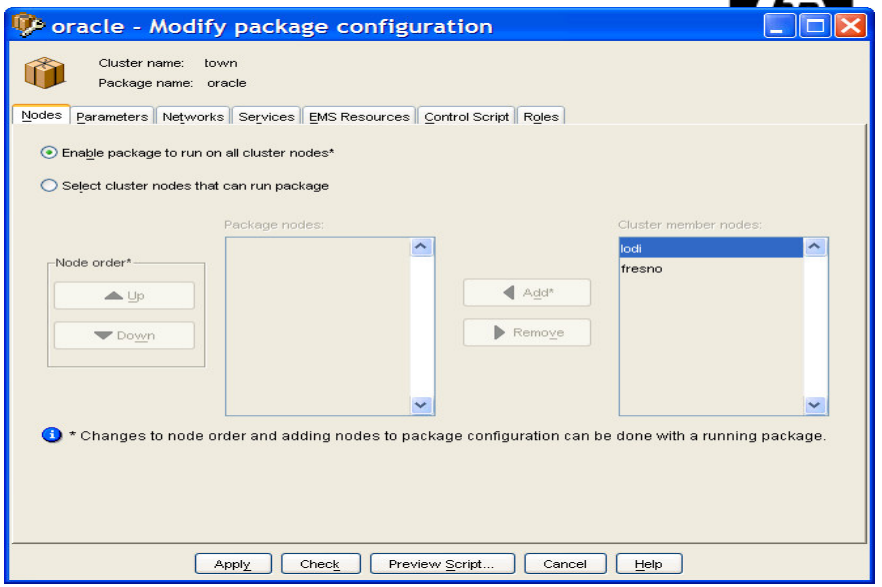
- View and manage HP-UX and Linux Serviceguard clusters
- Graphical user interface
  - Multiple subnet support
  - Status badges and tool tips
  - Property sheets
  - Auto refresh (Polling)
  - Large scale cluster display
- Cluster, node and package administration
  - Run and halt clusters, nodes and packages
  - Change package and node switching parameters
  - Package drag and drop
- Alerts panel and event browser
- Extensive online help

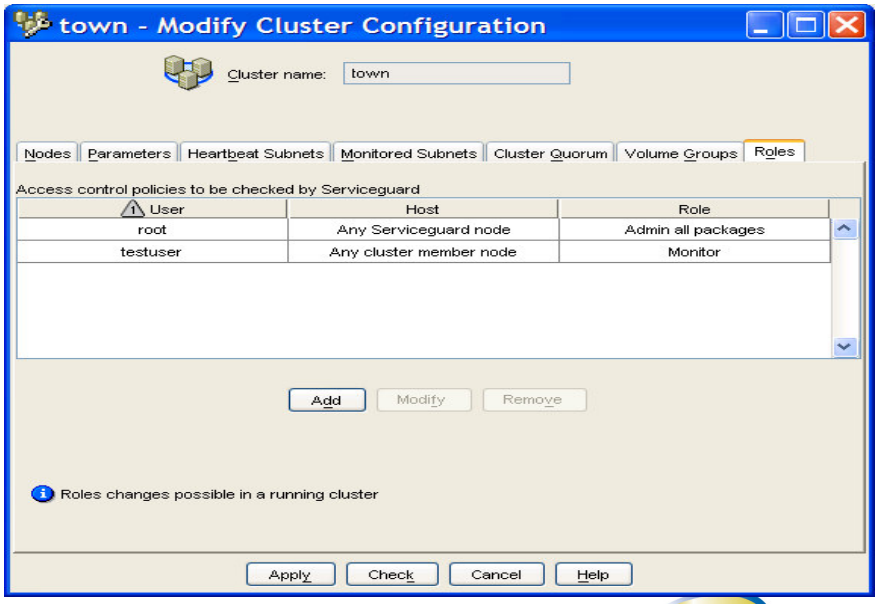




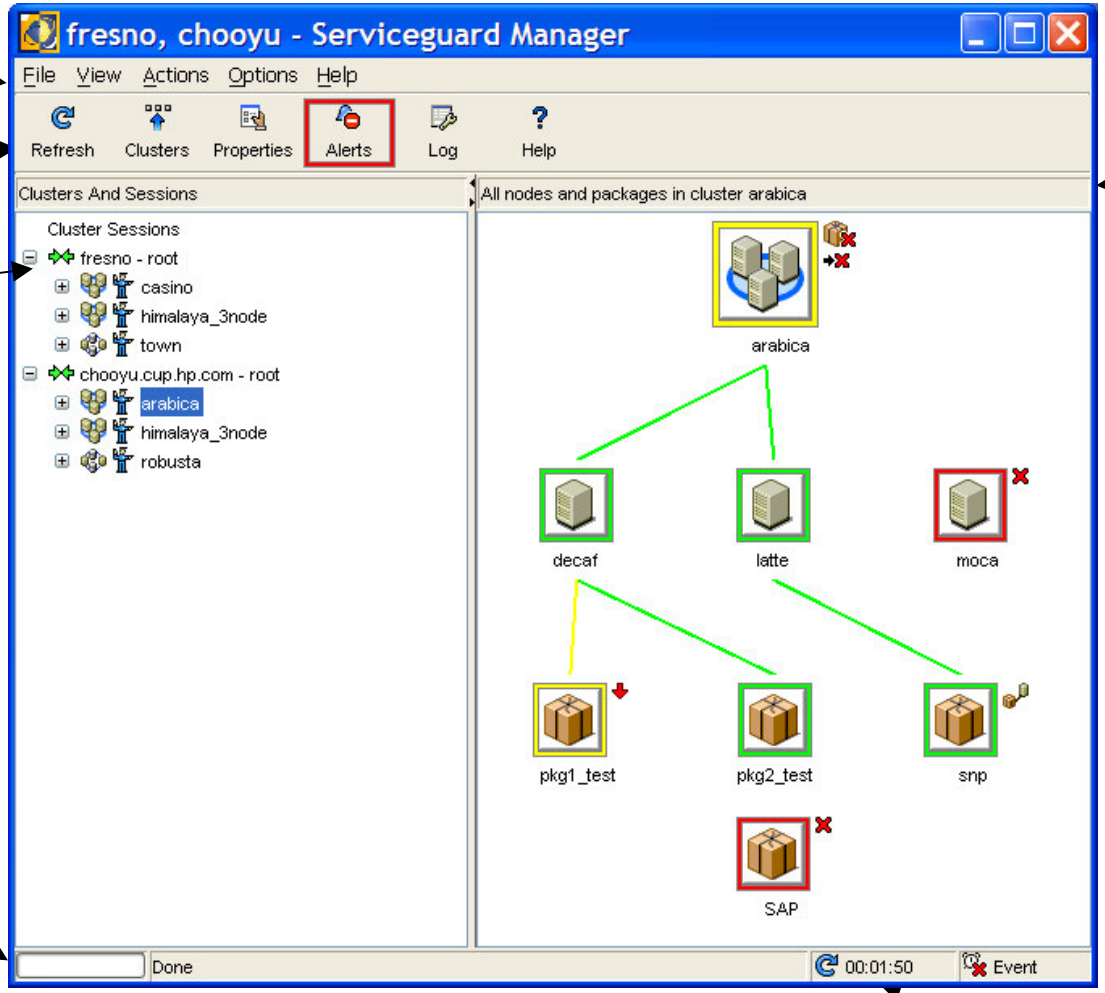
Serviceguard Manager Features Overview cont'd.

- Configuration
  - Cluster create/modify/delete
  - Package create/modify/delete
  - Operation Log (Progress messages) for configuration and administration operations
- Role based access
  - Management of cluster and package access policies
  - Administration for non-root user
- Integrated with Openview Operations 8.0
- Integrated with HP SIM 4.1
- Serviceguard Manager can run as client on HPUX, Linux and Windows platform





Serviceguard Manager User Interface



Menu Bar

Tool Bar

Tree

Map Title/ Description

Map

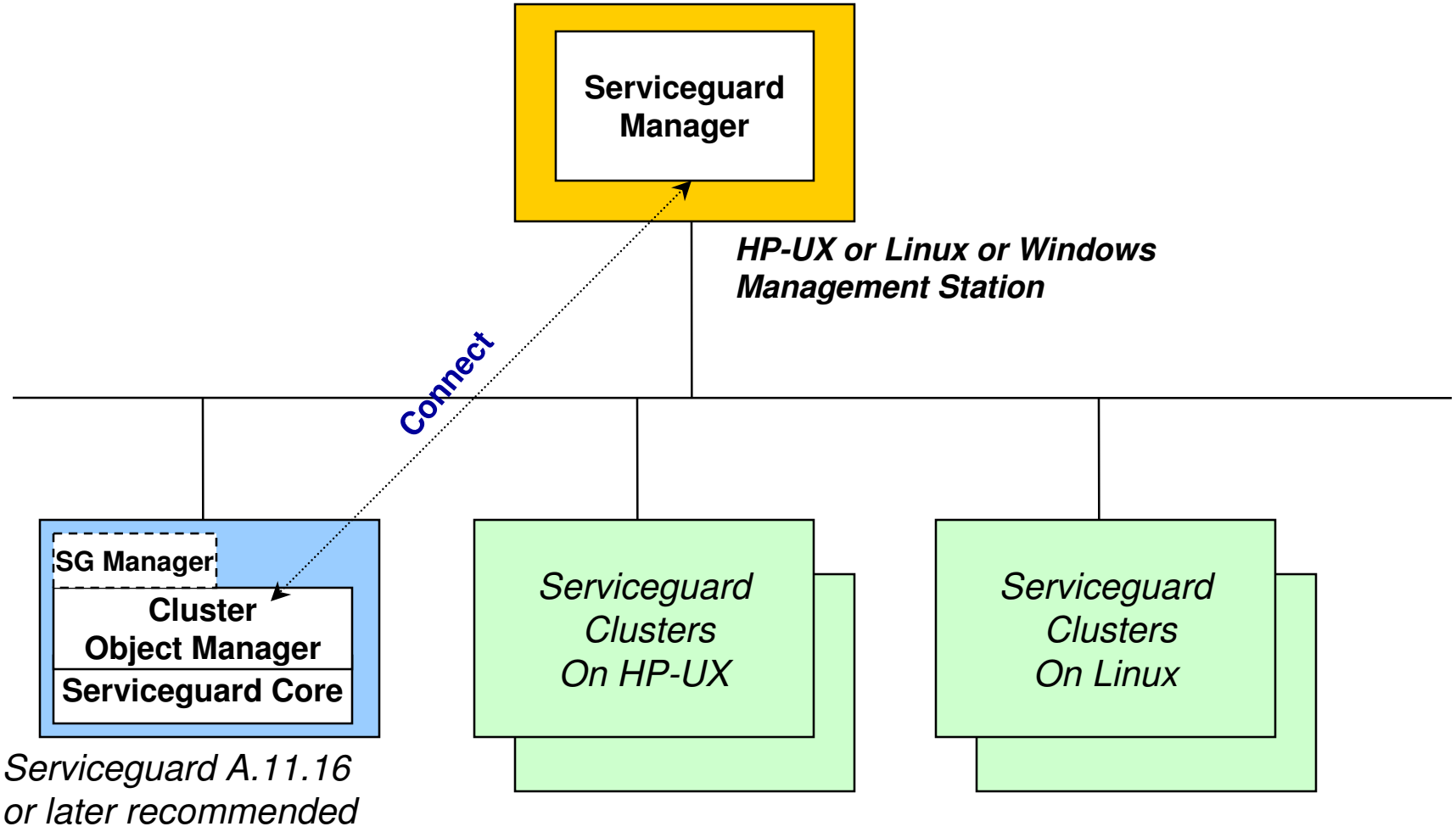
Progress Bar

Event Status

Status Bar

Auto-Refresh Timer

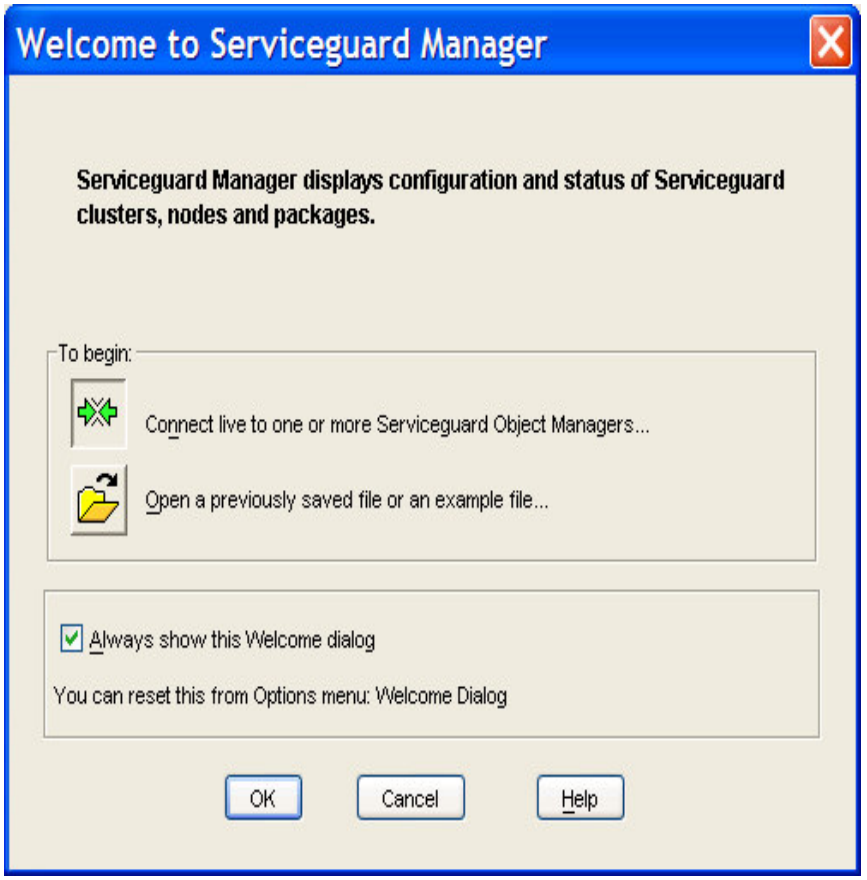
Serviceguard Manager Environment



Serviceguard A.11.16 or later recommended

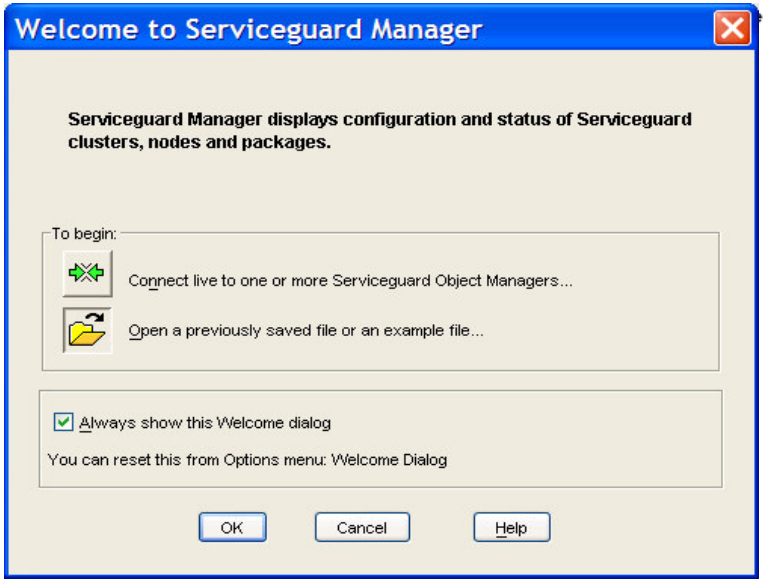
Sessions

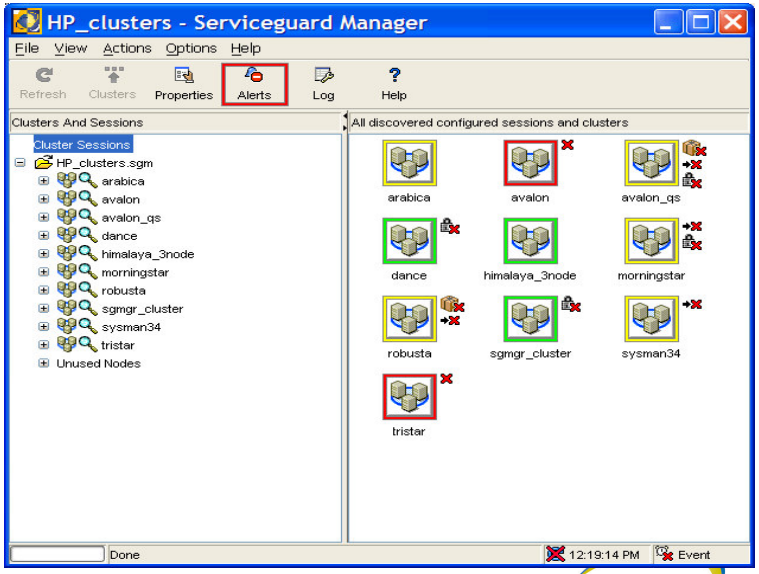
- 2 types of sessions
  - Connect live to Serviceguard node (Cluster Object Manager – COM)
  - Open a previously saved cluster data file (.sgm)
- Saved session and live session cannot be viewed together



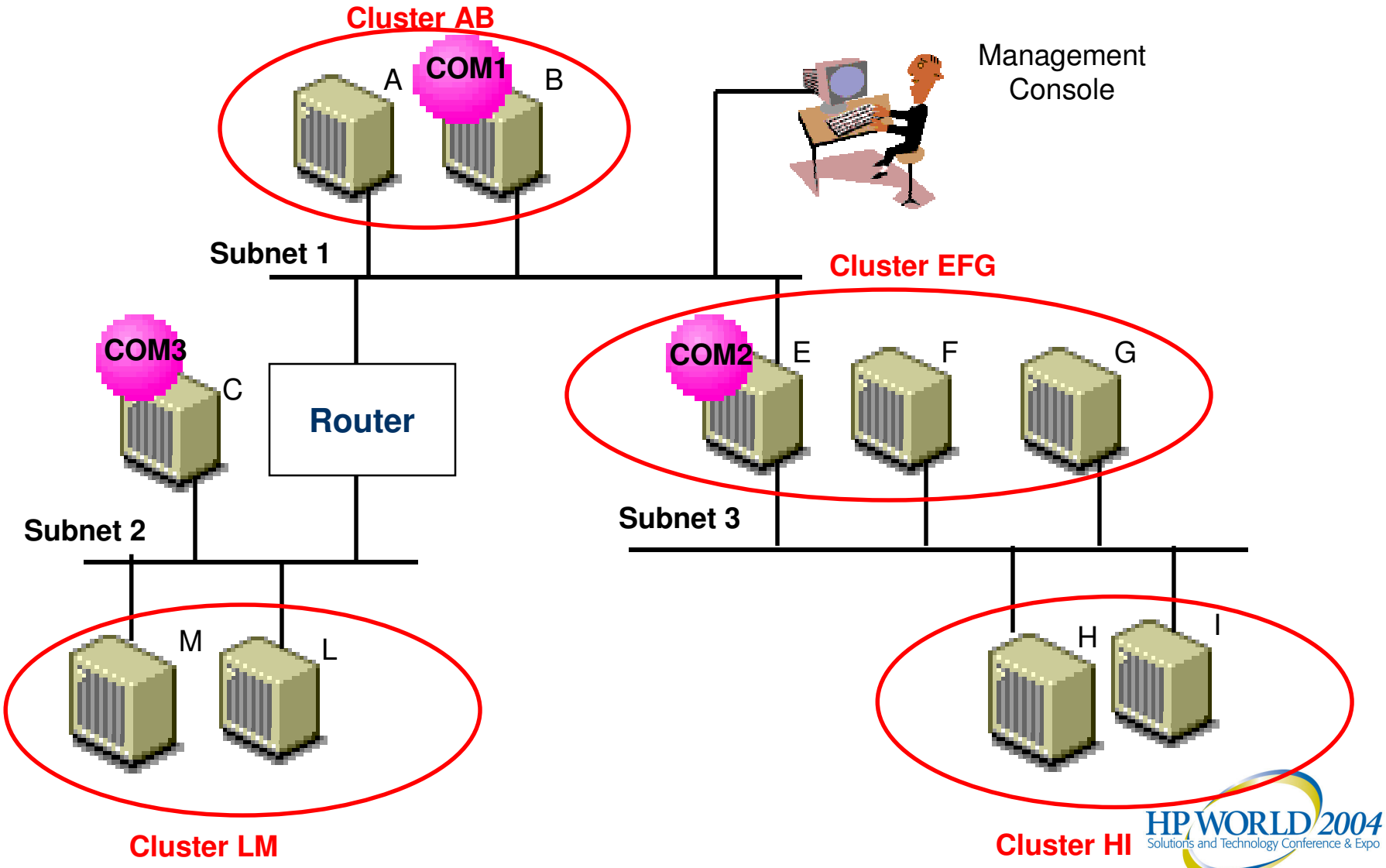
Sessions – Saved session - .sgm file

- Saved .sgm session data cannot be refreshed or updated
- Only one saved data file can be viewed at any time
- File menu provides option to save live session data into .sgm file



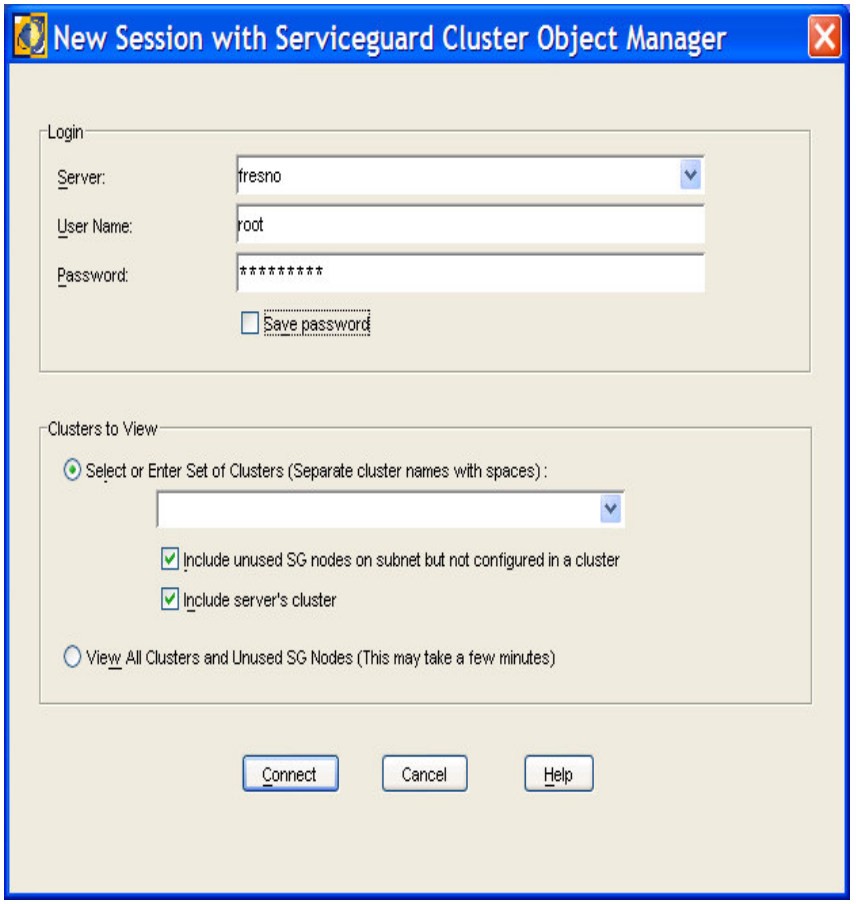


Cluster Discovery



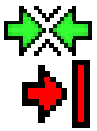
Connect to cluster – Live session

- Connect to the COM on a Serviceguard node with valid user name and password (root or non-root)
- User can enter cluster names to view – Specify clusters to be monitored, or choose local cluster
- Or User can view all the clusters discovered automatically by COM
- Can connect to more than one live session at a time
- Live sessions can have their status refreshed at regular intervals

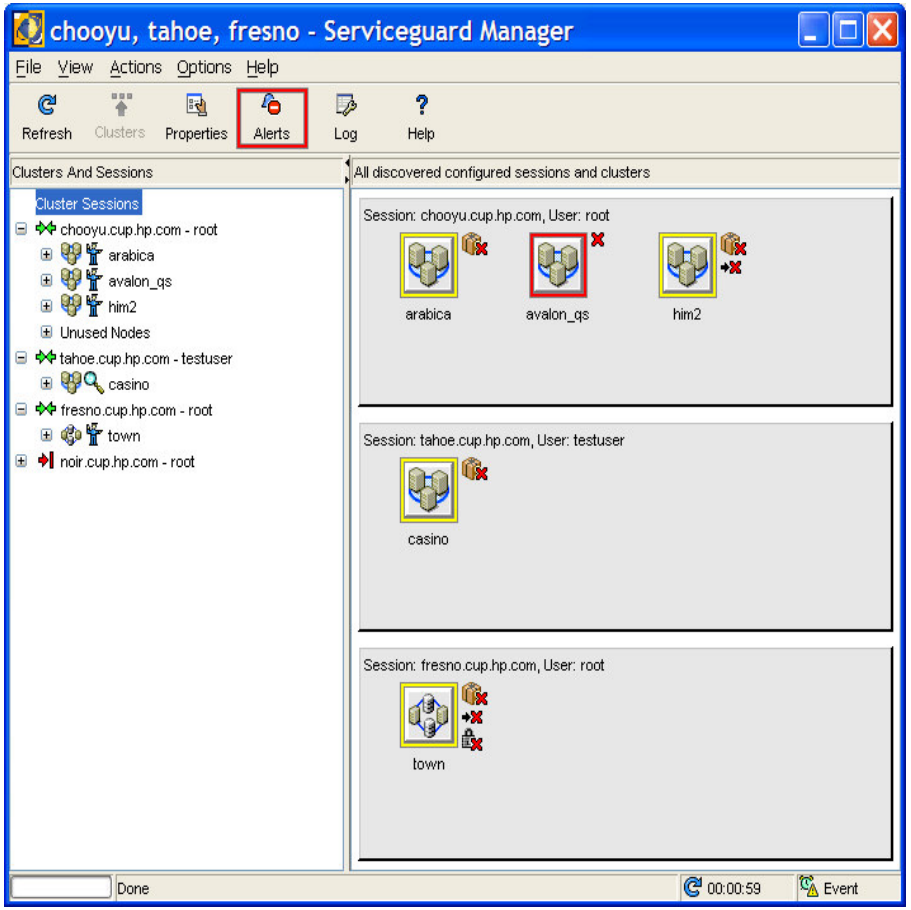


Navigation - Tree

- Tree provides an inventory and is for navigation
- Displays 5 different objects
  - Cluster sessions – multiple subnets
  - Clusters
  - Nodes
  - Packages
  - Unused nodes
- Drill down to view individual cluster/packages/nodes
- Tree displays role icon at cluster level based on user connected and also status information about each session



Session connected
Session disconnected



Serviceguard cluster

SGeRAC cluster

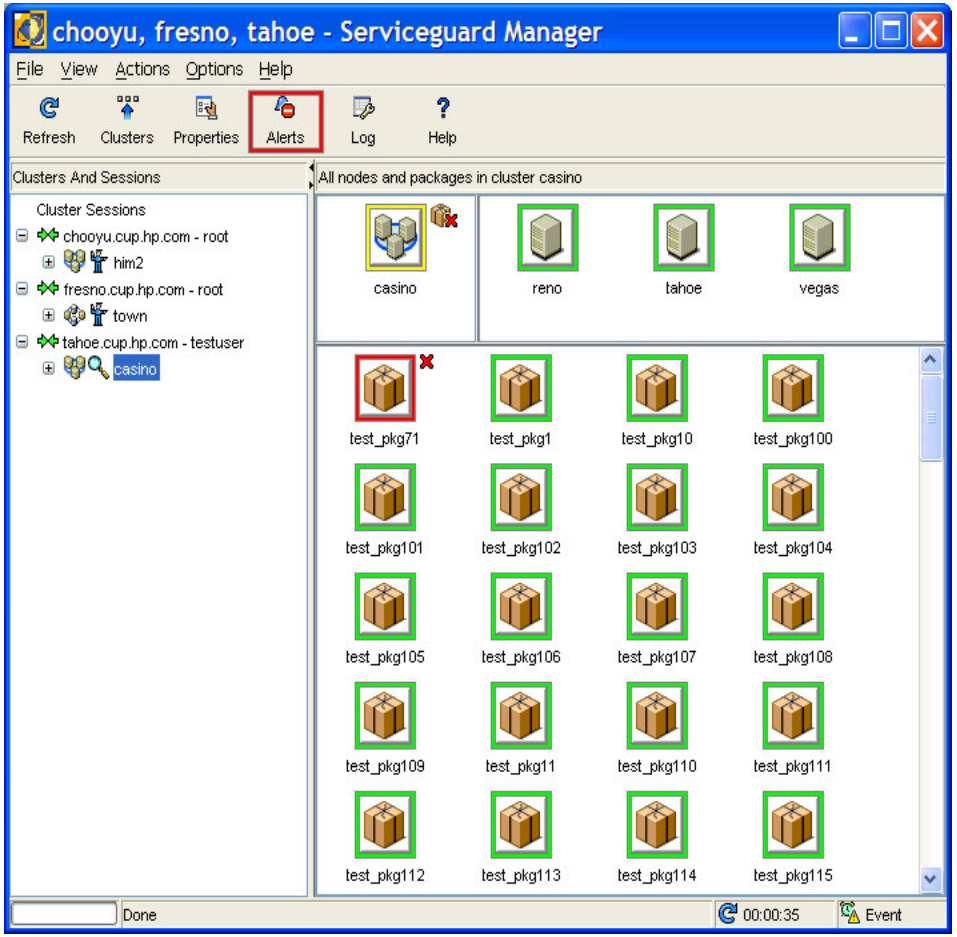
Cluster-wide Admin Role

Package Admin Role

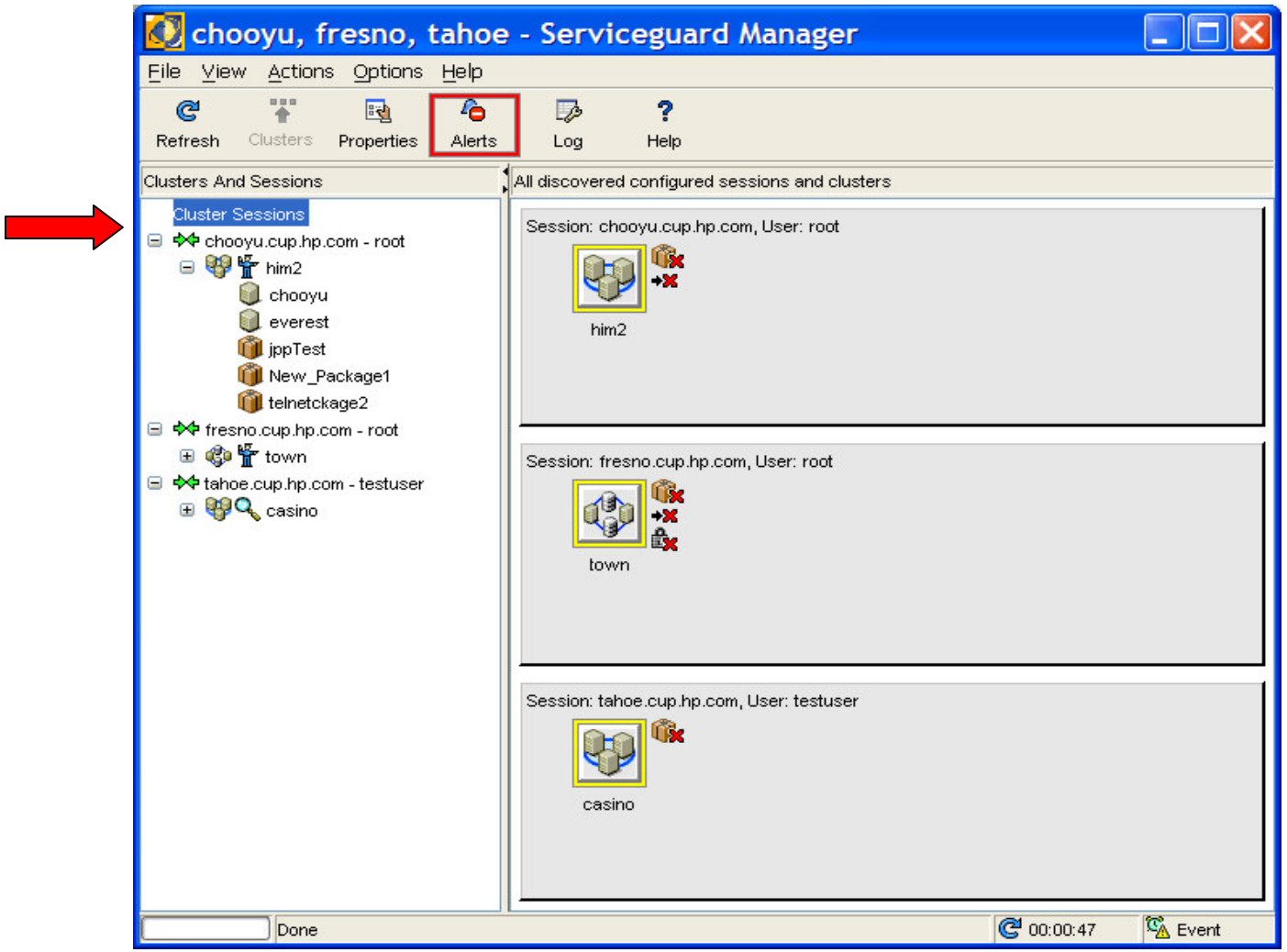
Monitor Role

Topology - Map

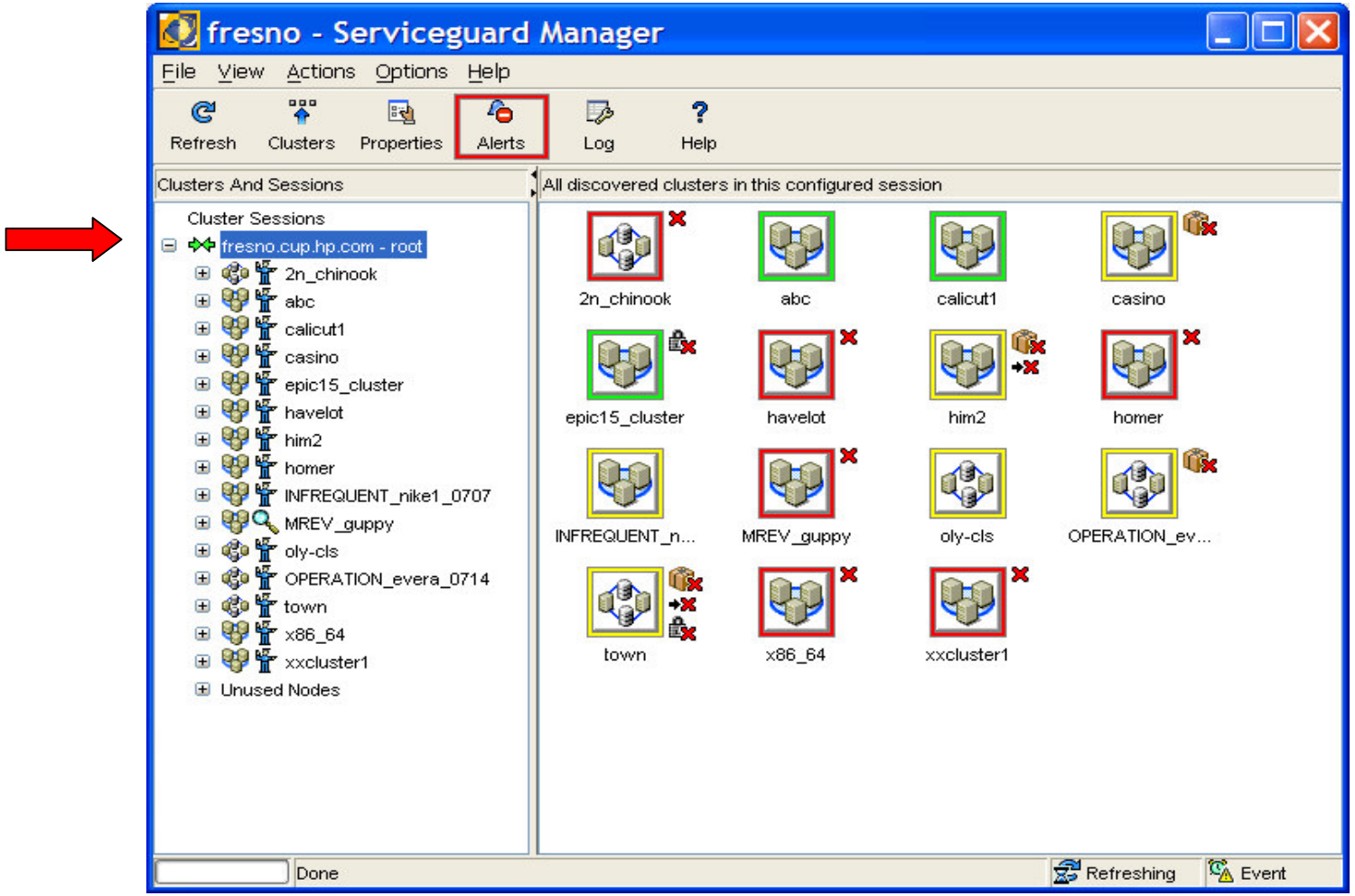
- Map shows the topology, status and relationships
- 5 Different views
  - Cluster sessions view
  - Sessions view
  - Two cluster views – Regular and Large scale map display
  - Node view
  - Package views
- Large scale map view for displaying large number of nodes and packages.
- Display status information for all elements in focus



Cluster Sessions View

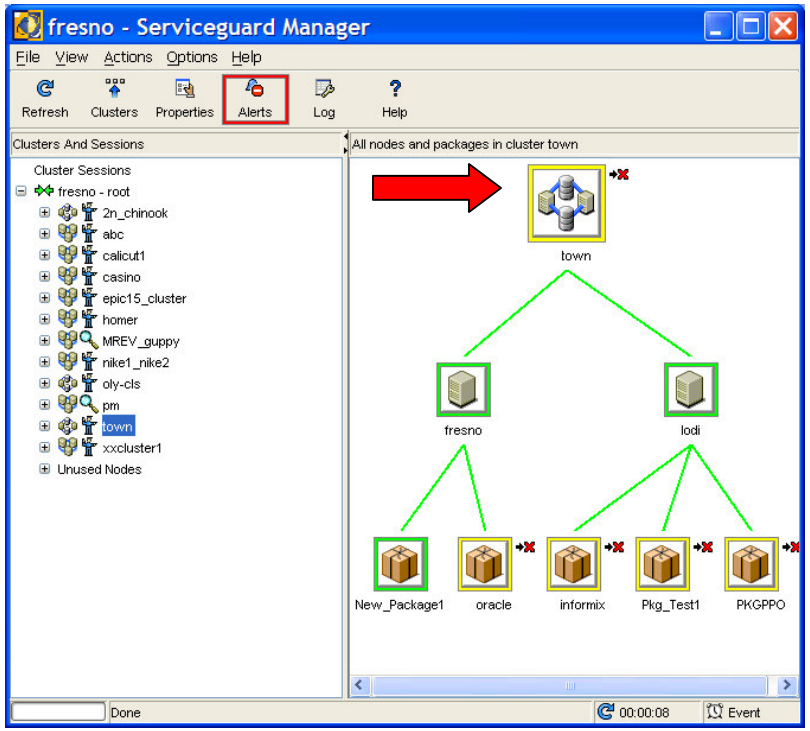


Sessions View

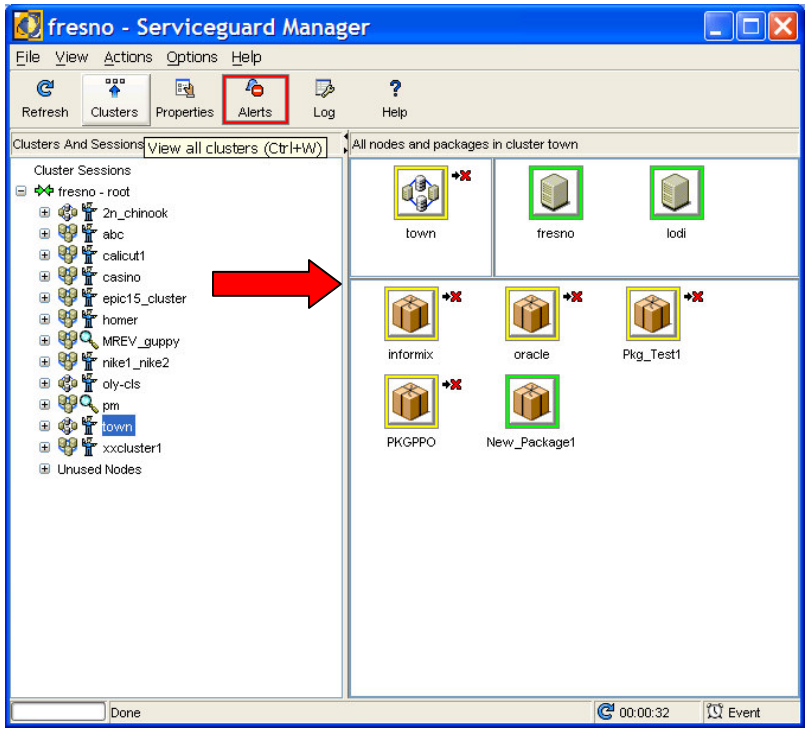


Cluster View

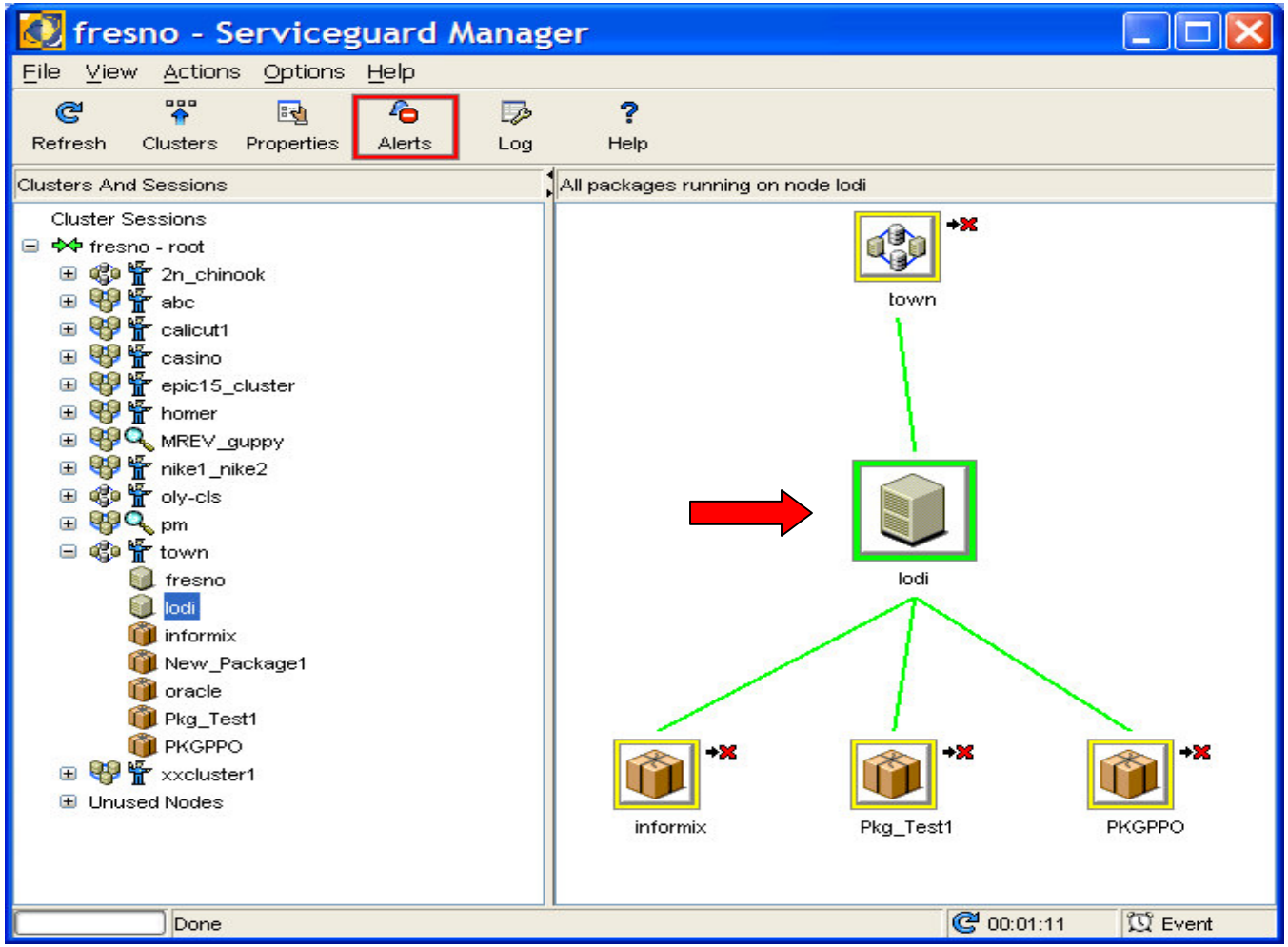
Regular cluster view



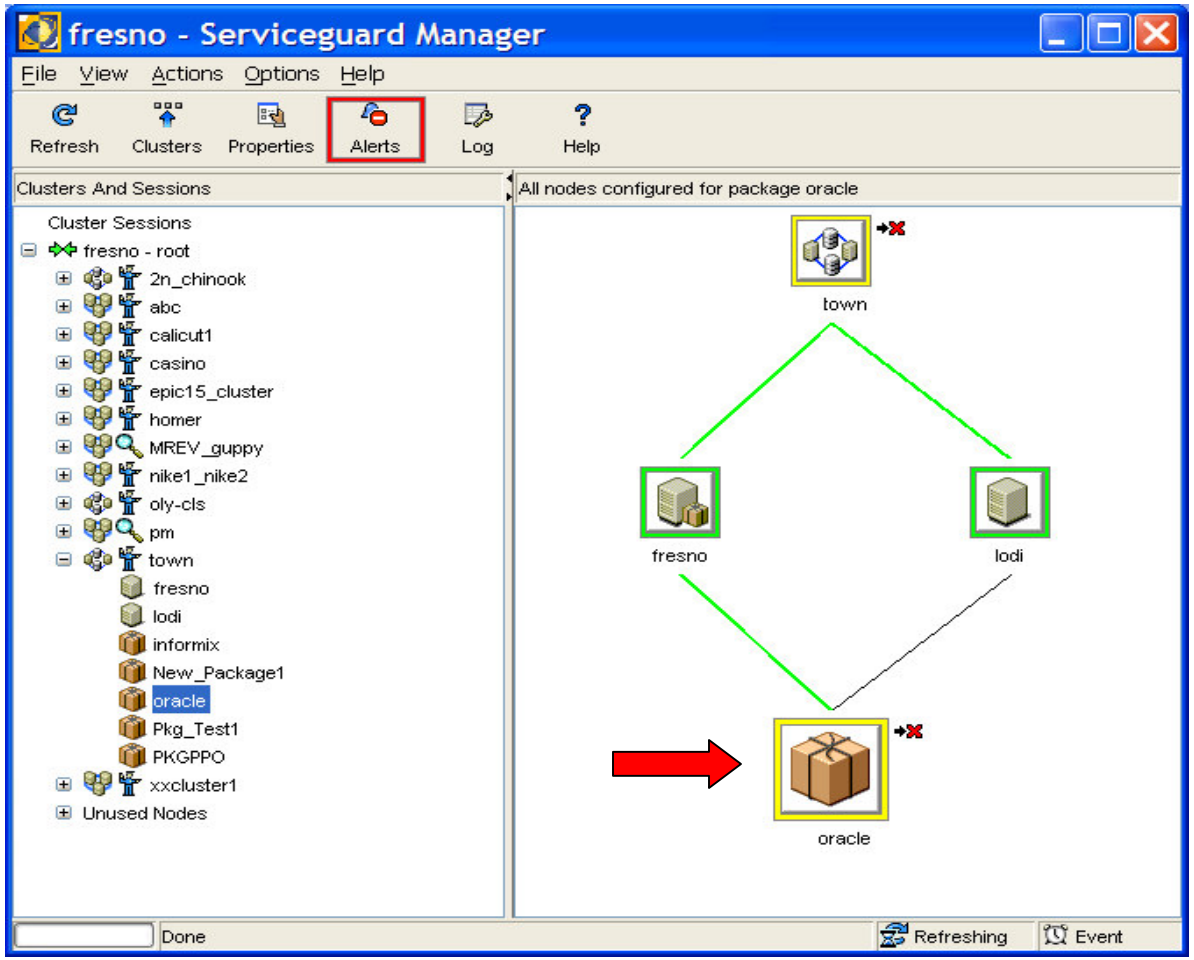
Large scale map view



Node View

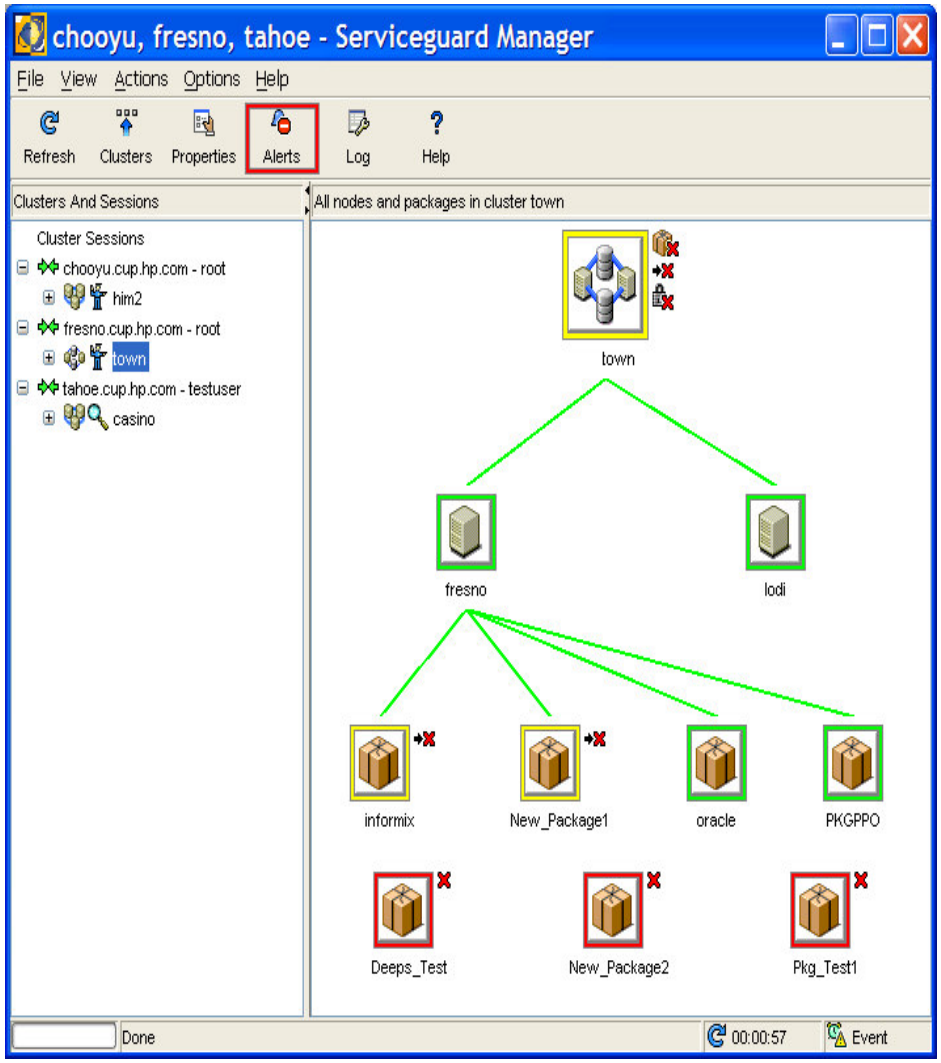

fresno - Serviceguard Manager
File View Actions Options Help
Refresh
Clusters
Properties
Alerts
Log
Help
Clusters And Sessions
All packages running on node lodi
Cluster Sessions
fresno - root
2n_chinook
abc
calicut1
casino
epic15_cluster
homer
MREV_guppy
nike1_nike2
oly-cls
pm
town
fresno
lodi
informix
New_Package1
oracle
Pkg_Test1
PKGPPO
xxcluster1
Unused Nodes
town
lodi
informix
Pkg_Test1
PKGPPO
Done
00:01:11
Event

Package view

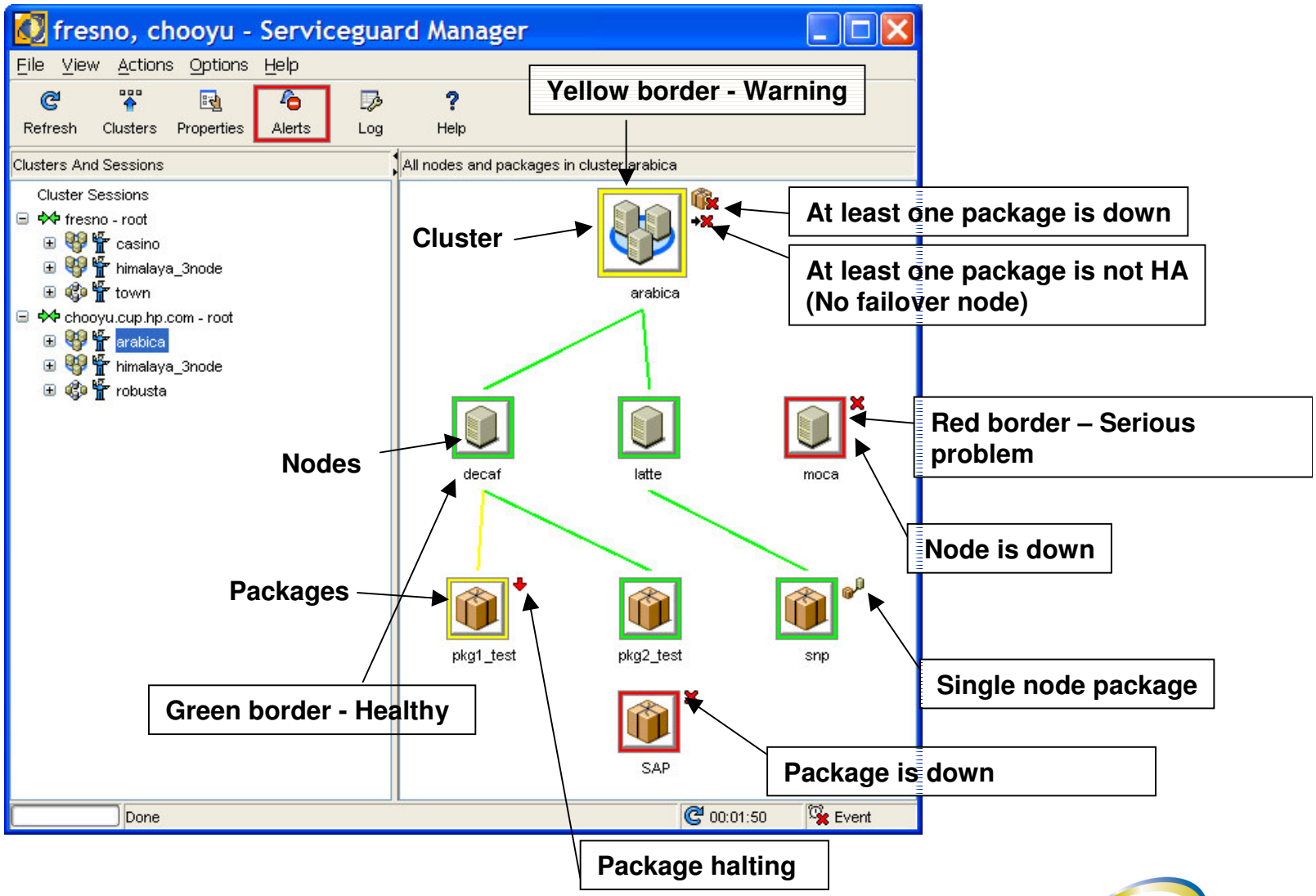


Status

- 4 different ways to find status
  - Map Icons –Border colors/Badges/Lines
  - Property Sheets
  - Alerts Panel
  - Tool tips
- Auto refresh (polling) – regular status updates
- Event Browser for SNMP event notification

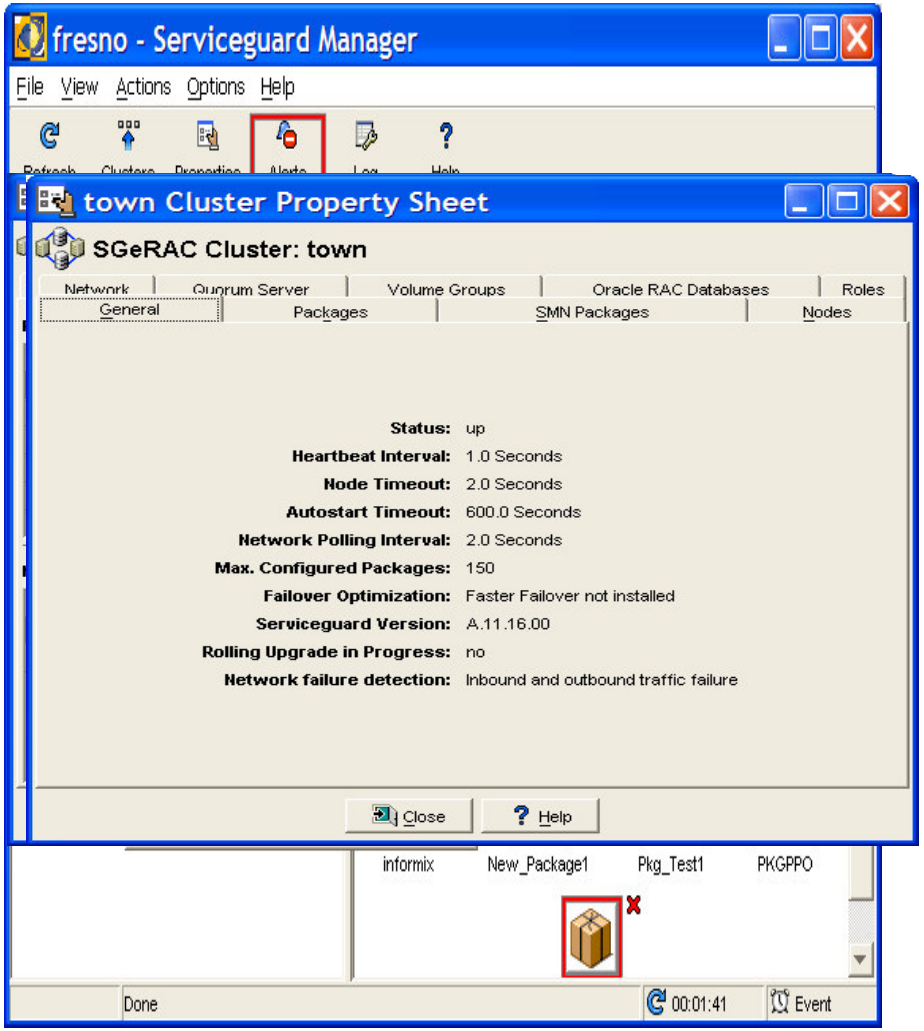


SG Manager Status Display



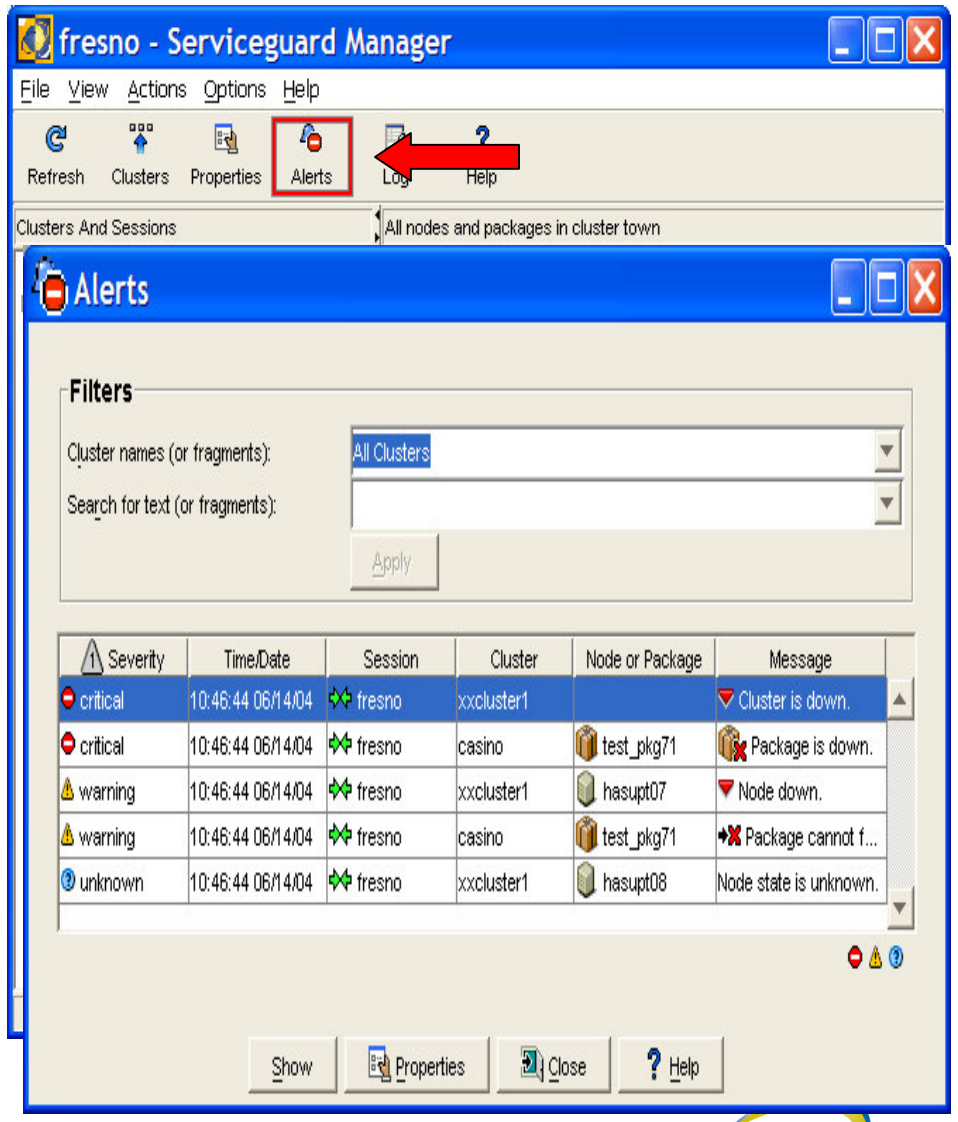
Property Sheet

- Every map/tree object has its own property sheet
- A property sheet is a collection of property tabs
- Tab can show a pair of tables, where selection on a top row triggers information displayed in a lower table.
- If Auto refresh is enabled, information on the property sheet is automatically updated at regular intervals



Alerts Panel

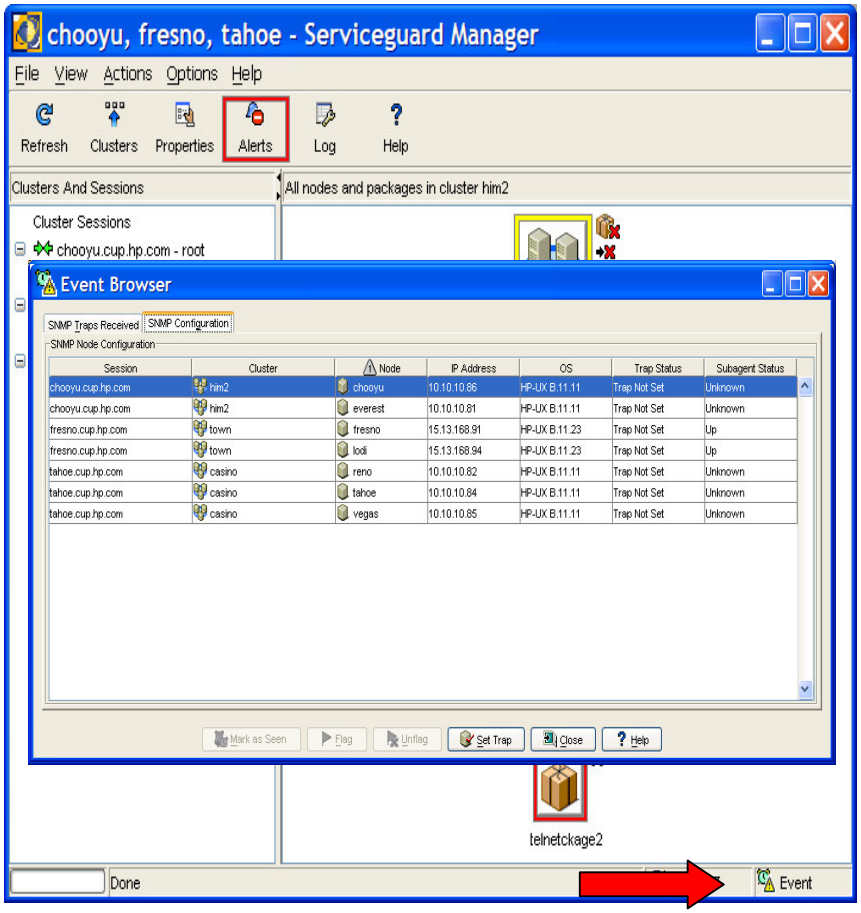
- Reports problems on every cluster monitored
- Offers "at glance" summary of all current problems with all clusters monitored
- Filter the "alerts" by cluster or package or by alert type
- Invocation of property sheets from Alerts panel
- All table columns allow sorting
- Allows user to search on text data
- Allows switching to main GUI



Event Browser – SNMP event notification

- Receives SNMP traps from the nodes monitored
- Notifies the user of the status change
- Triggers refresh when a SG-related trap received
- Use Event Browser to see traps received (500 entries)
- All traps are logged in log files
- Support HP-UX clusters only

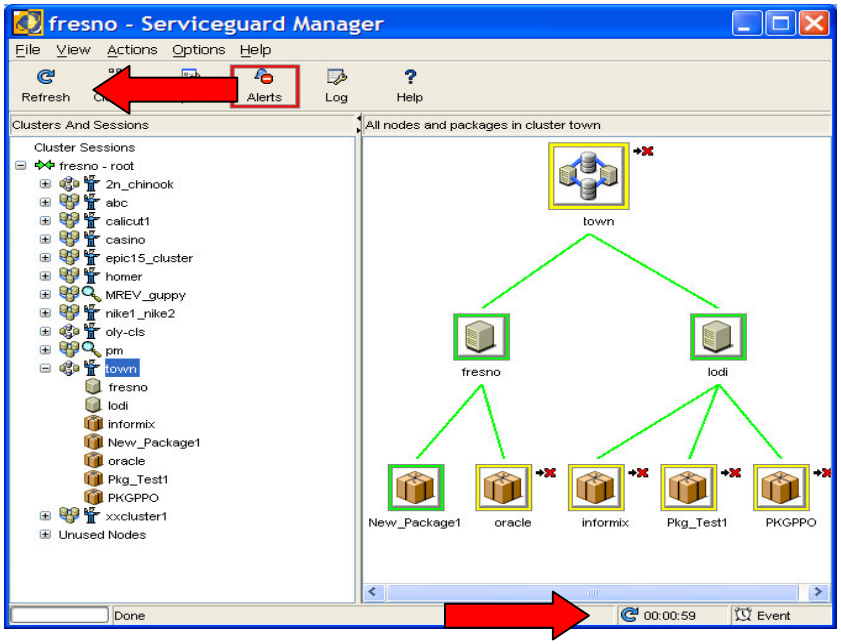
Events received

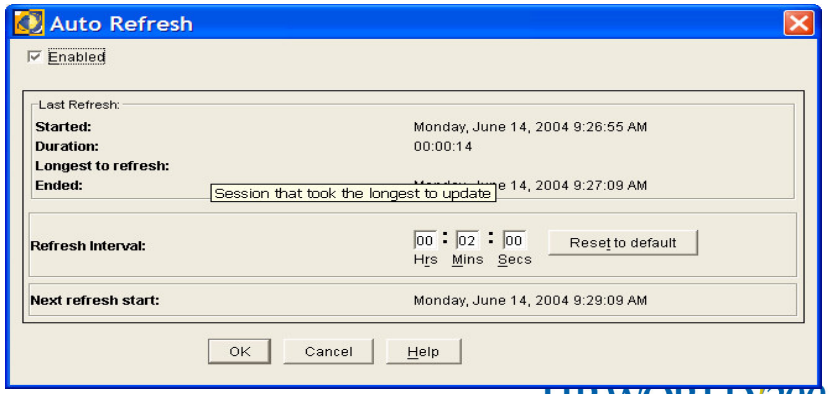


Auto Refresh - Polling

- Keeps status updated by refreshing map, tree, alerts panel, property sheets at regular configured time intervals
- Countdown timer displays time before the next refresh
- Polling interval can be set by user
- Partial refresh after every administration, configuration operations and when SNMP event is received.

- **Manual Auto refresh**
- **Count down timer triggers full refresh**

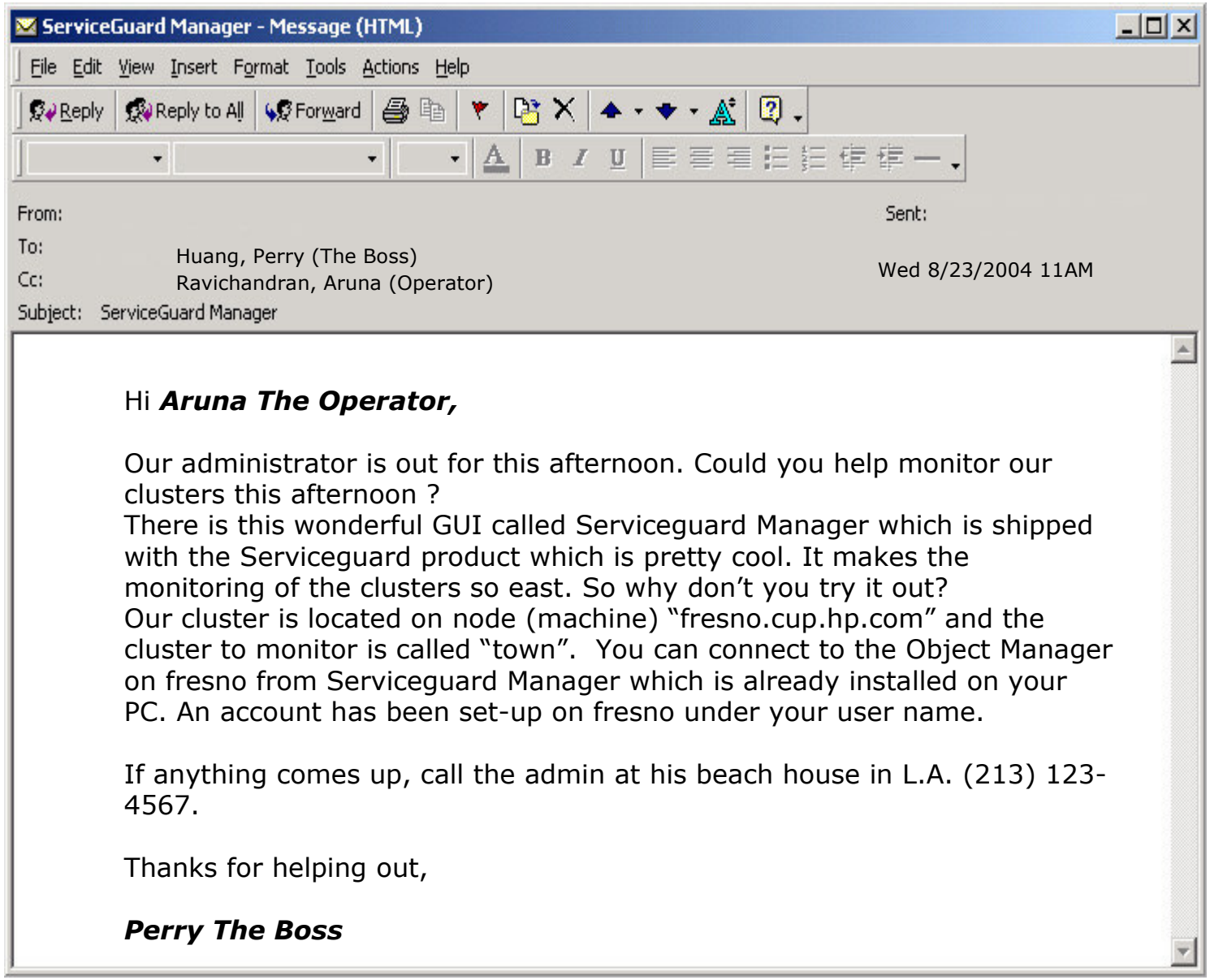




Task #1

Monitoring Clusters on Your Network

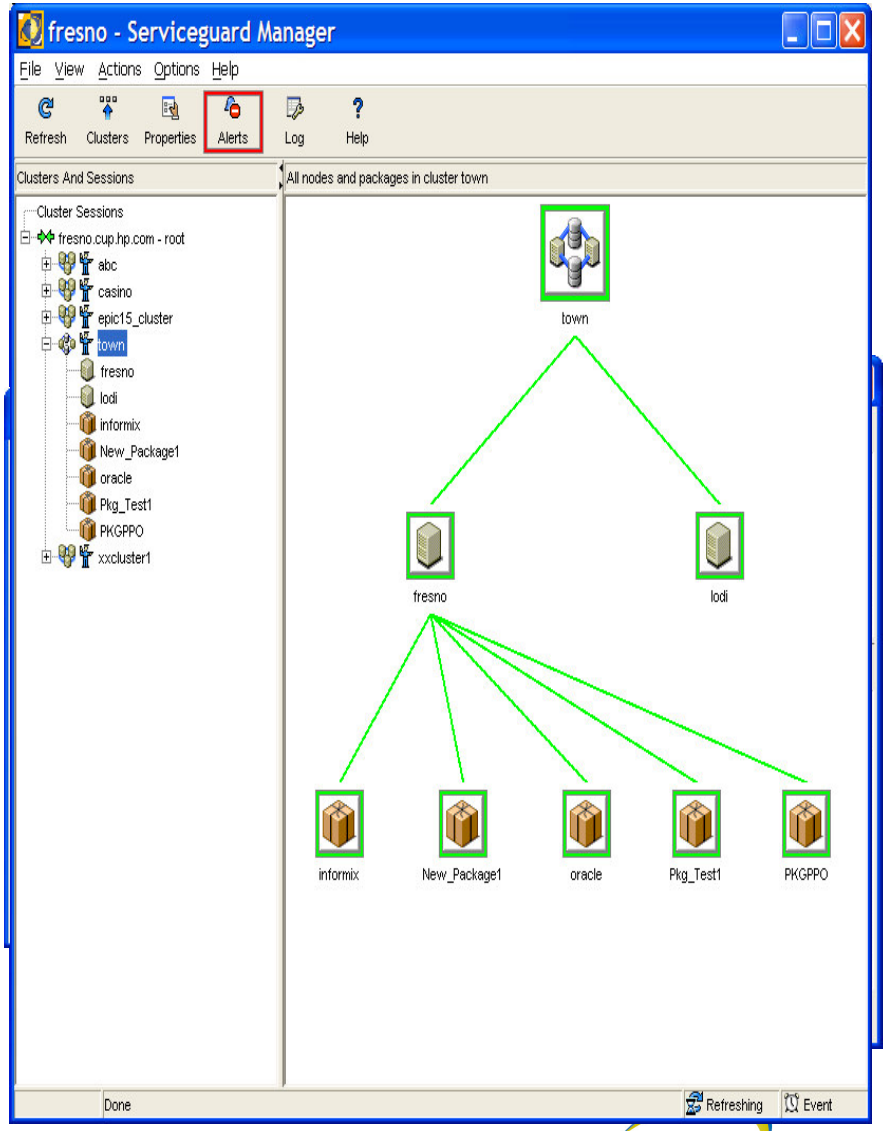
Task 1 - Request



Live Demo – Monitoring – Tree/Map/Property sheets/Event Browser/Auto Refresh/Alerts/

Administration

- Available only with SG 11.13 or later
- Admin Operations
  - Run/Halt cluster
  - Run/Halt node
  - Run/Halt package - Drag and drop package also available
  - Enable/disable package and node switching
- Results can be viewed in operation log
- Role based access – (only 11.16 or later)
  - Full admin access (All admin operations listed above)
  - Package admin – all packages and specific packages (run & halt, change switching parameters)
  - Monitor access – No administration
- To administer an 11.16 cluster, connect to an 11.16 or later COM



Serviceguard Administration Commands – Serviceguard Manager vs Command-line

- ✓ Run cluster – *cmruncl*
- ✓ Halt cluster – *cmhaltcl -f*
- ✓ Run node – *cmrunnode*
- ✓ Halt node – *cmhaltnode -f*
- ✓ Run package – *cmrunpkg*
- ✓ Halt package – *cmhaltpkg -f*
- ✓ Enable/disable package switching – *cmmodpkg -v -e pkg or cmmodpkg -v -d pkg*
- ✓ Moving a package: *cmhaltpkg -n node1 pkg and cmrunpkg -n node2 pkg*

Note: You cannot interrupt or undo an admin operation.

Task #2

Run Package on alternate node

Task #2 - Request

Hey Admin! Package oracle on fresno is down! What should I do????

Hey, calm down a bit…
I'll call our IT to see if there's anything wrong with that node…
In the mean time, why don't you go ahead and run oracle on the lodi?

Task #2 - Request

How do I do that? I don't know those Serviceguard commands!

```
Not a problem. Just use
ServiceGuard Manager and
drag-n-drop oracle to
lodi. That will do it…
and you'll need the root
password to fresno…
*******
```

Task #2 - Request

That's it? It sounds so easy!

That's right! Don't worry, Serviceguard Manager is very easy to use.

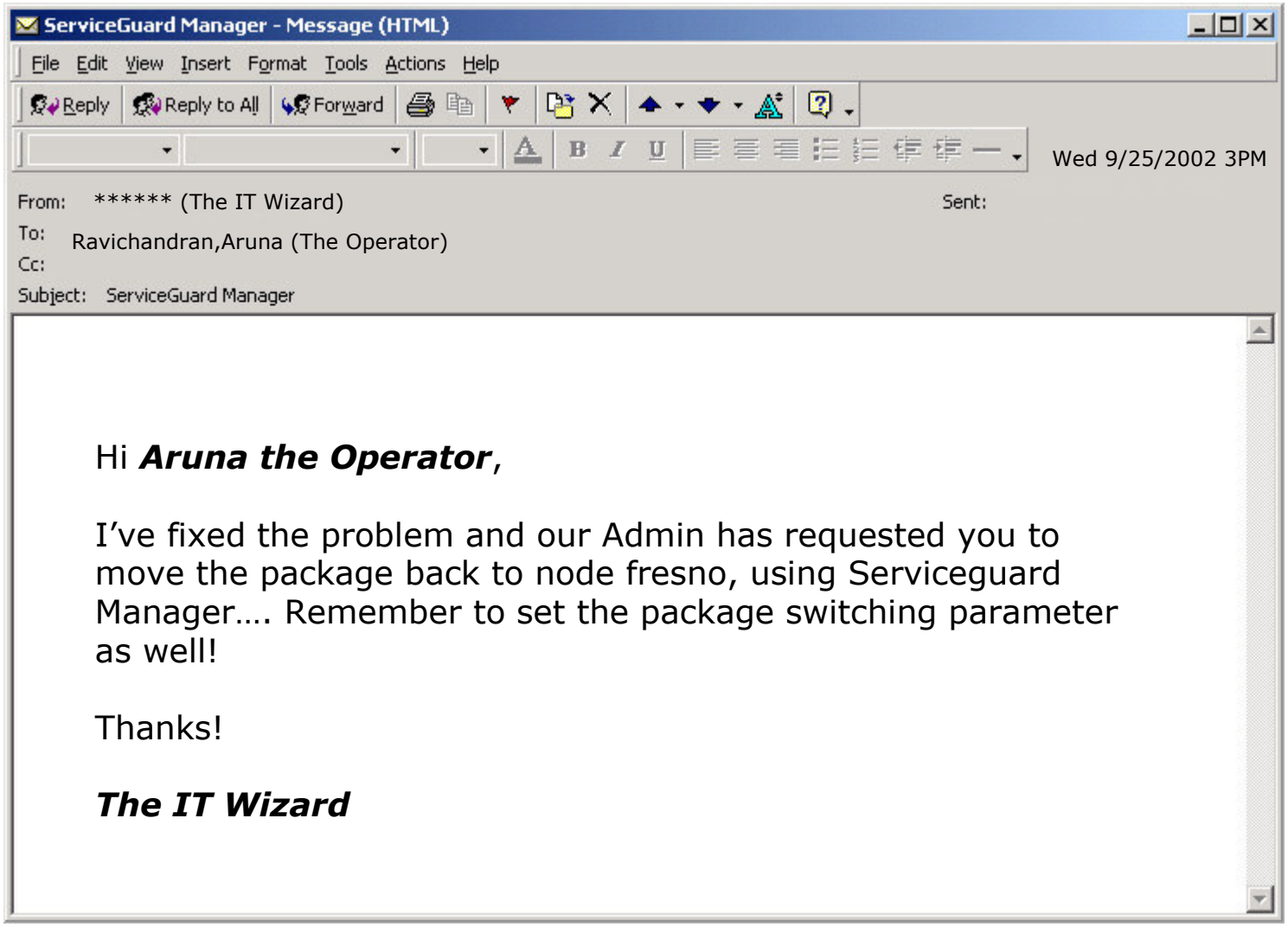
I'll call the IT right now and see what we can do… See yah!

Live Demo – Administration – Run/Drag Package, Enable package switching

Task #3

Move a running package

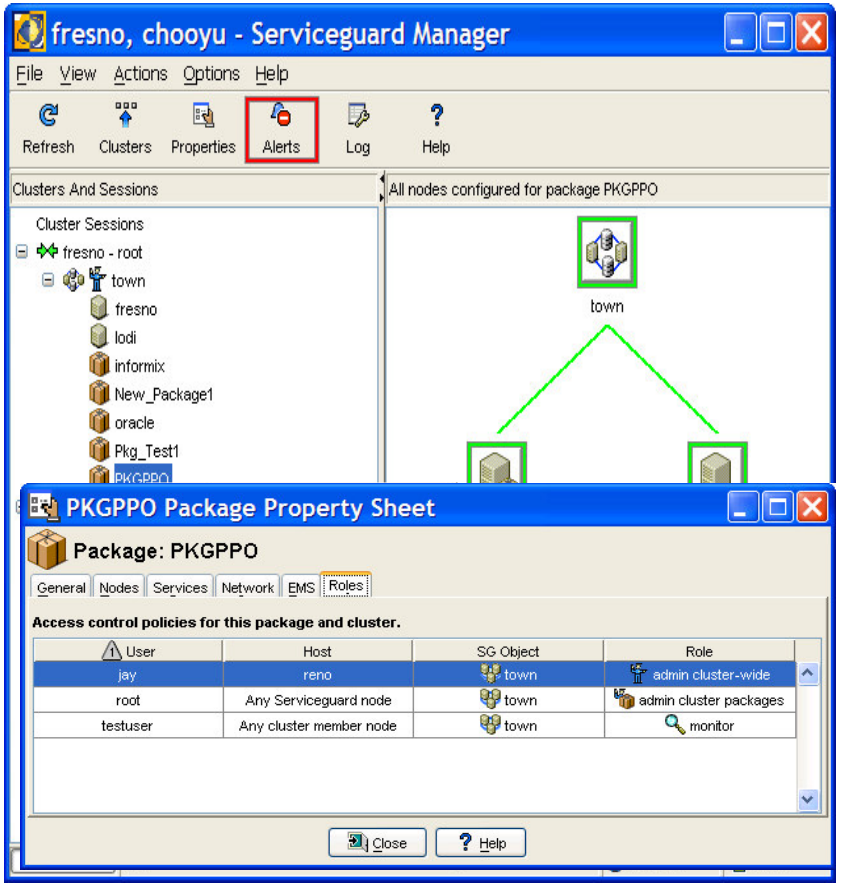
Task #3 - Request



Live Demo – Administration – Move Package

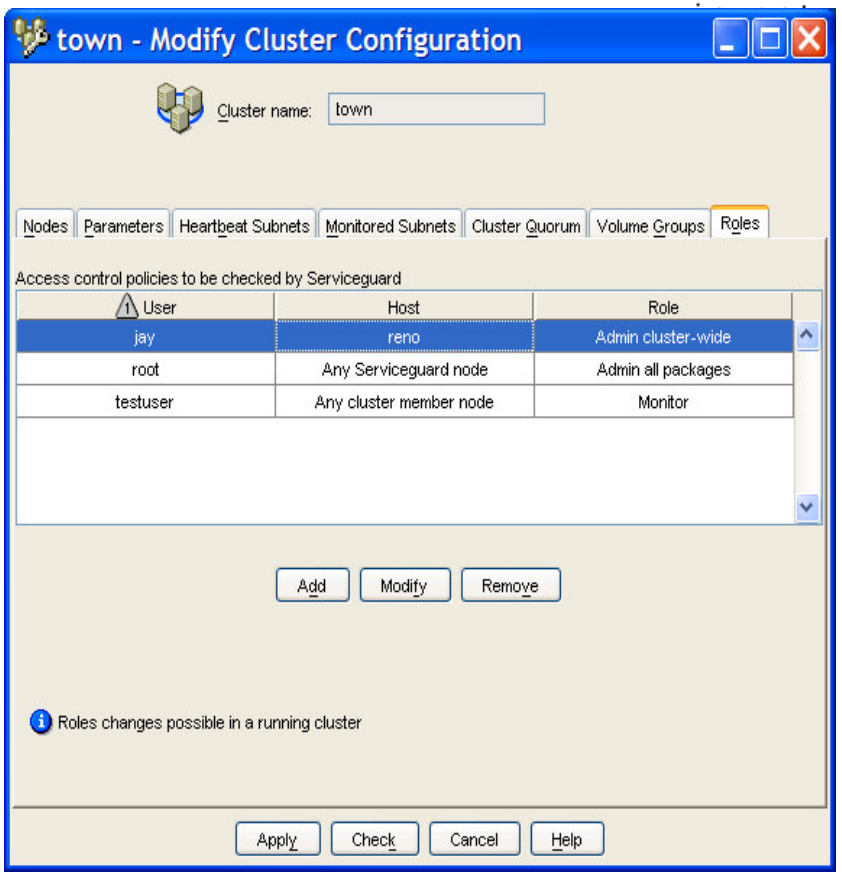
Role Based Access (RBA)

- Three roles defined - *Full admin, Package admin* and *Monitor roles*
- Configured in cluster and package configuration files by root authorized user
- RBA requires use of SG 11.16 or later
- Root user has full configuration and admin capability (no separate config role)
- Monitoring roles created for non-root entries and "remote roots" in */etc/cmclnodelist* after complete rolling upgrade



Role Based Access : Roles

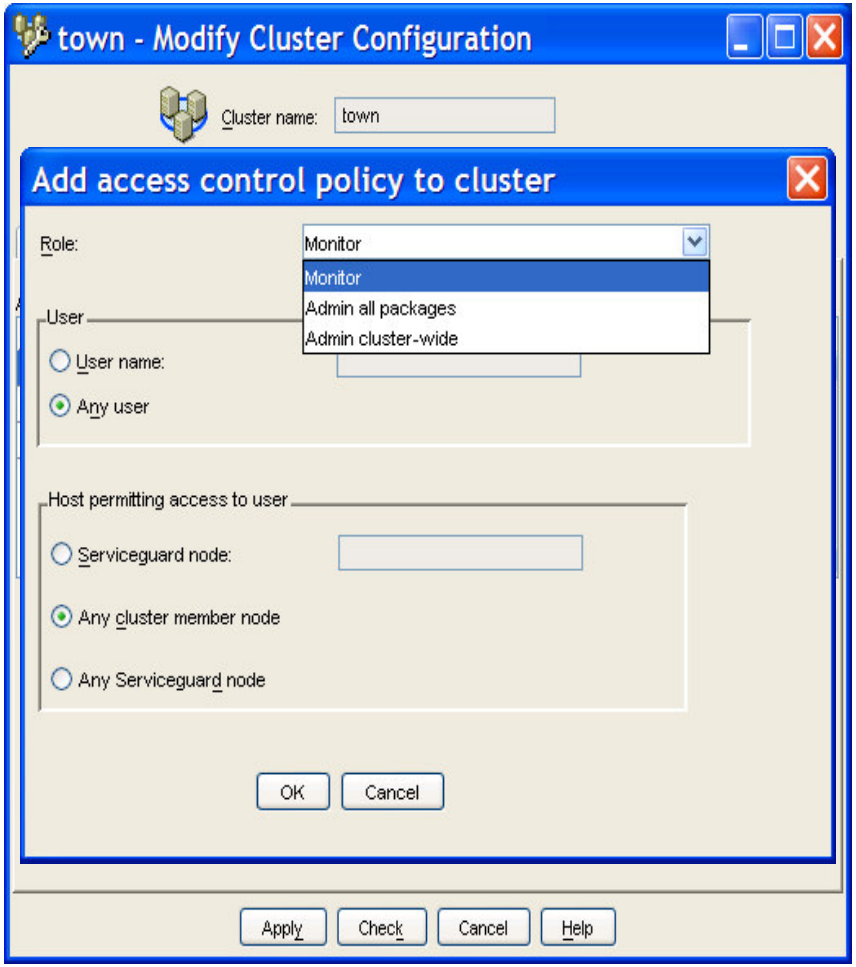
- **Full cluster admin**
  - Configured for the specific cluster
  - Root still provides admin access to clusters with SG releases before 11.16
- **Package admin** (all packages or specific package)
  - Configured for specific cluster and/or packages
  - Specific role capabilities detailed in cluster and/or package property sheets
- **Monitoring**
  - Monitoring is configured for specific cluster



Role Based Access: Access control policies

Defined in cluster and package configuration files:

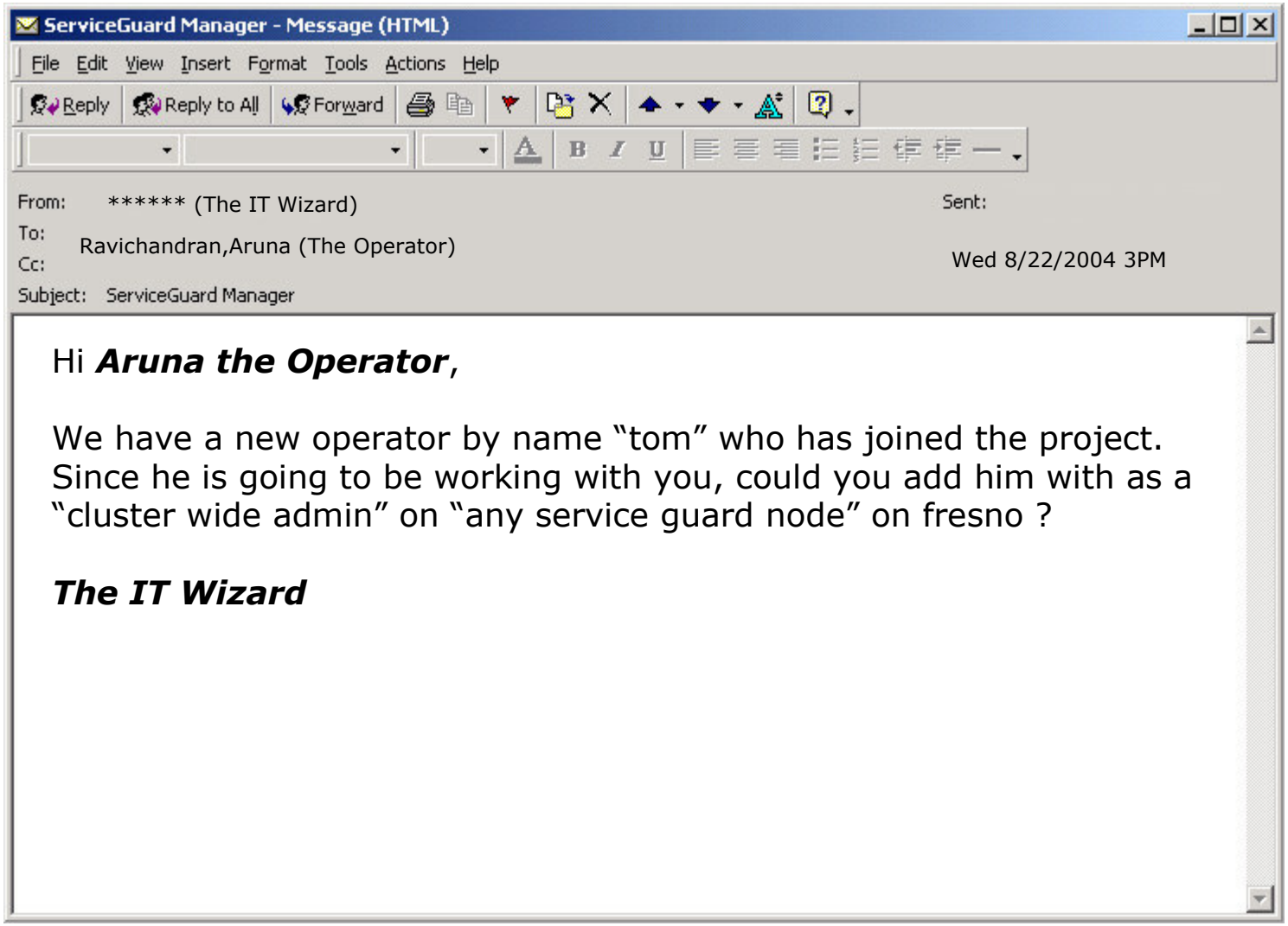
- **USER_NAME**
  - user login name for role
  - can be ANY_USER
- **USER_HOST**
  - host name of SG node where user is granted access
  - can be CLUSTER_MEMBER_NODE
  - can be ANY_SERVICEGUARD_NODE
- **USER_ROLE**
  - In cluster configuration file:
    - full_cluster_admin
    - package_admin (all packages)
    - monitor
  - In package configuration file
    - package_admin (specific package)



Task #4

Configuring a new role

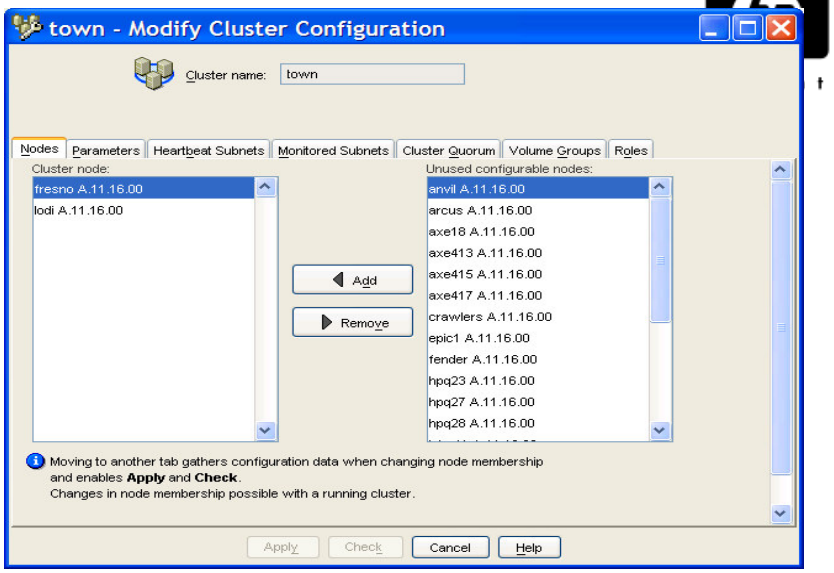
Task #4 - Request

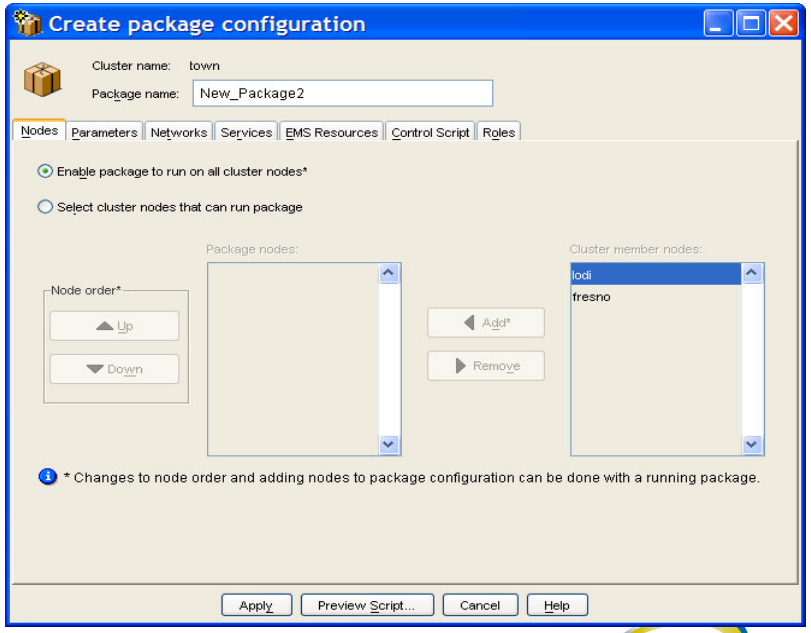


Live Demo – Role Based Access – Configure/Add a new Role

Configuration Overview

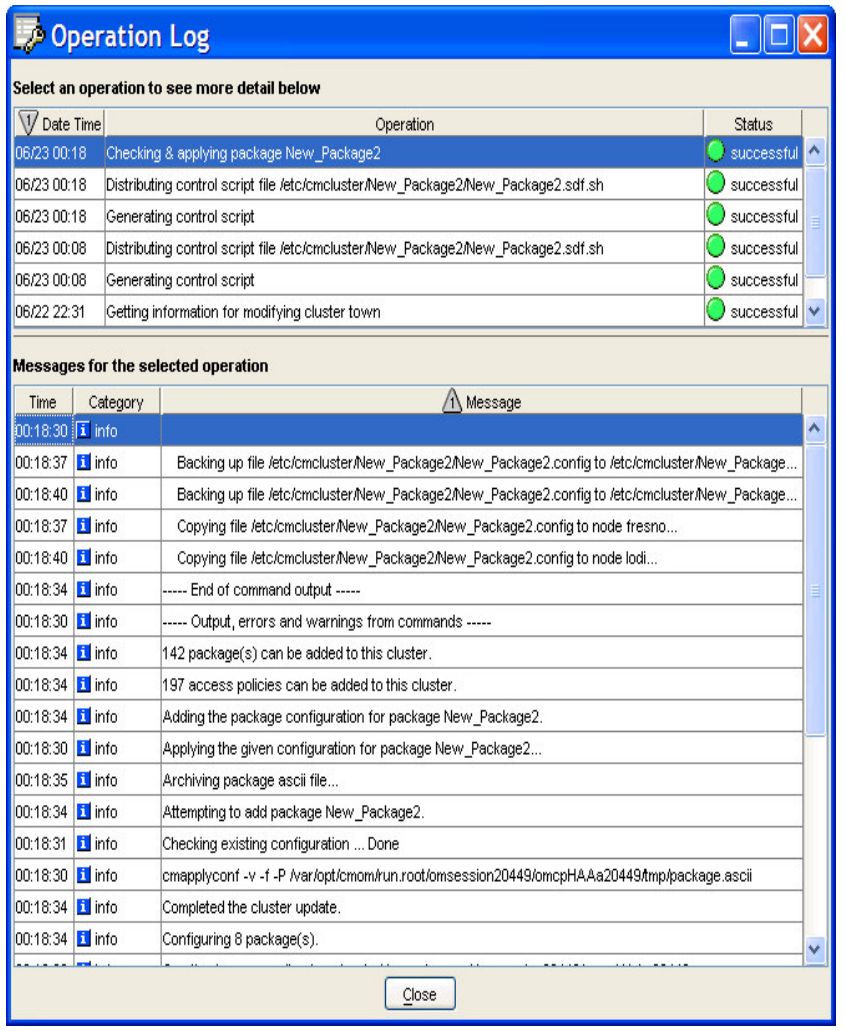
- **Cluster configuration**
  - Cluster creation
  - Cluster modification
  - Cluster deletion
- **Package configuration**
  - Package creation
  - Package modification
  - Package deletion
- **Support for creating and modifying package control scripts**
  - Guided style of package control script data
  - Editing existing ASCII package control scripts
  - Consistency checking and automatic distribution of package control scripts to cluster nodes – both styles





Configuration Overview cont'd.

- Role based access configuration for cluster and package
- Backup of cluster and package configuration files and control scripts on successful apply
- *Check* option to verify input values available during cluster and package modification
- Operations log presented for all configuration operations which is the output of *cmapplyconf* and *cmcheckconf*
- Operation log is a master-detail table, with a summary of the operation at the top.
- The lower table shows detailed information about the operation executed. This is very useful for debugging failures.

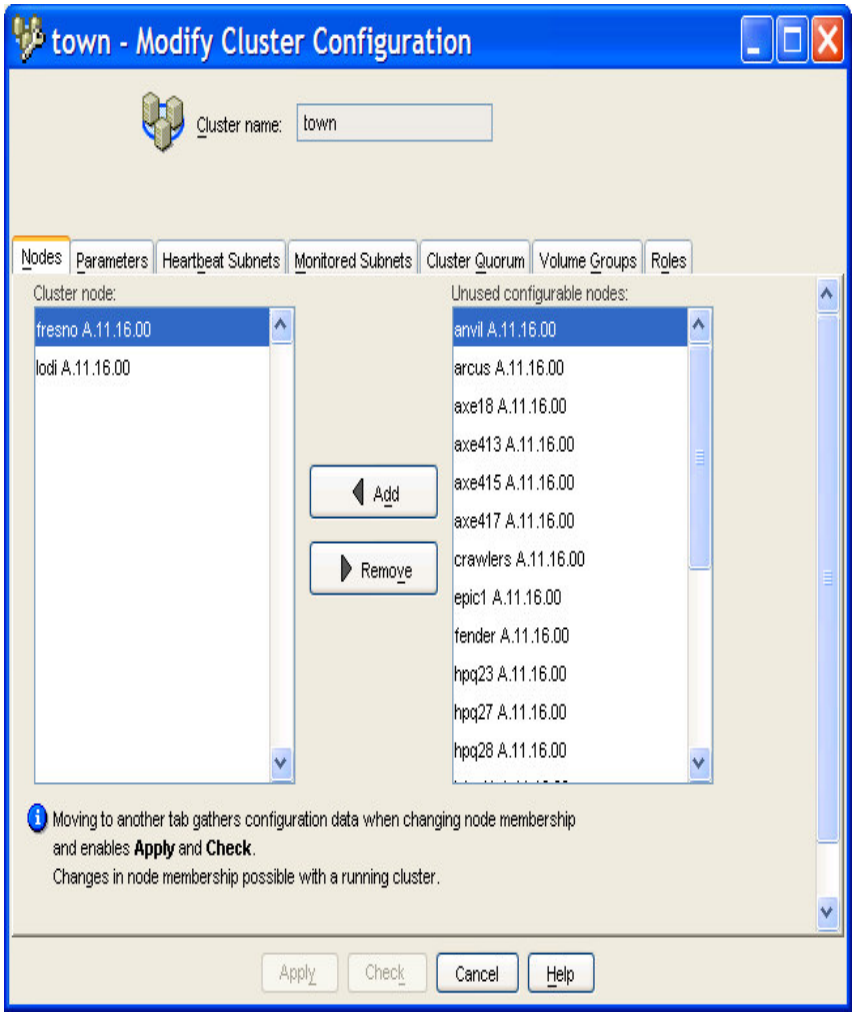


Serviceguard Configuration Commands – Serviceguard Manager vs Command-line

- Create cluster – *cmapplyconf –C <cluster_ascii_file>*
- Modify cluster – *cmapplyconf –C <cluster_ascii_file>*
- Check cluster configuration – *cmcheckconf –C <cluster_ascii_file>*
- Delete cluster – *cmdeleteconf -f*
- Create package – cmmakepkg, *cmapplyconf –P <pkg_ascii_file>*
- Modify package – *cmapplyconf –P <pkg_ascii_file>*
- Check package configuration – *cmcheckconf –P <pkg_name>*
- Delete package – *cmdeleteconf –P <pkg_name>*
- Distribute package control script – Manual on command line.

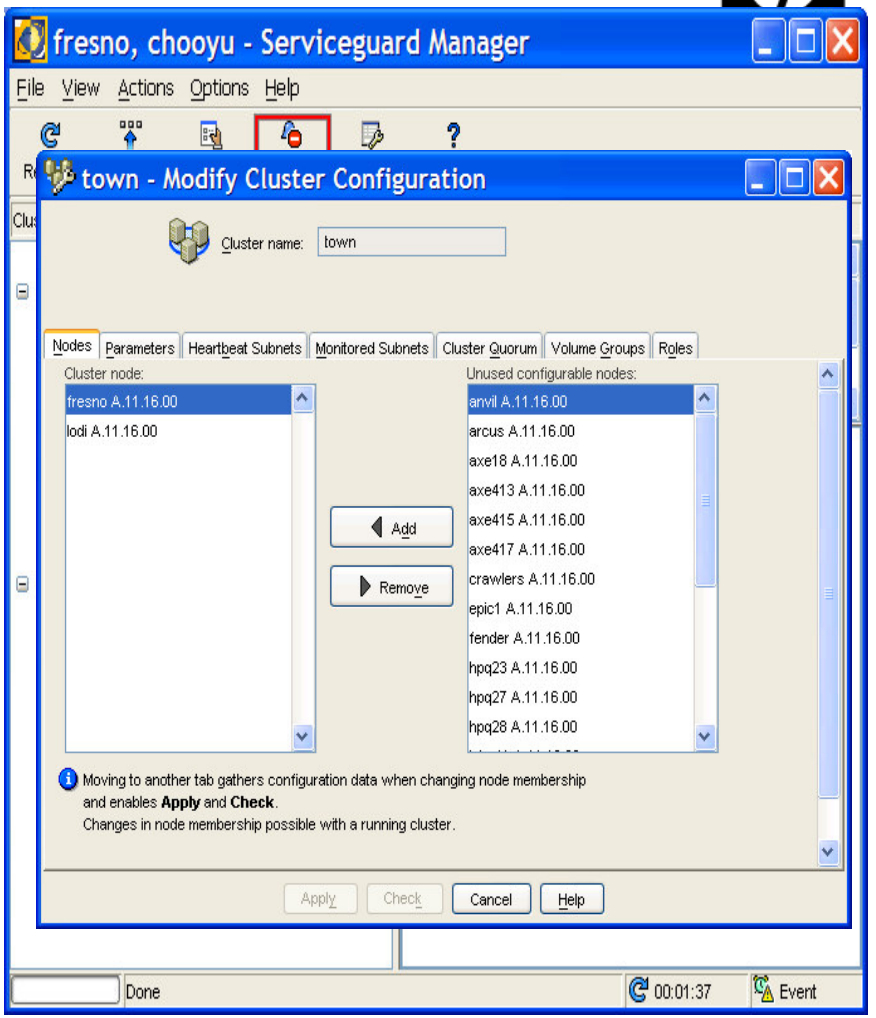
Cluster Configuration

- Requires root access to a SG 11.16 or later cluster member node
- Configuration is a local operation and connection is established to one of the cluster member nodes
- Configuration menus accessible to all users
- Non-root users challenged for root password on configuration menu selection
- Network and storage discovery are performed similar to *cmquerycl*
- Apply creates/updates cluster configuration file and distributes it to all cluster nodes.



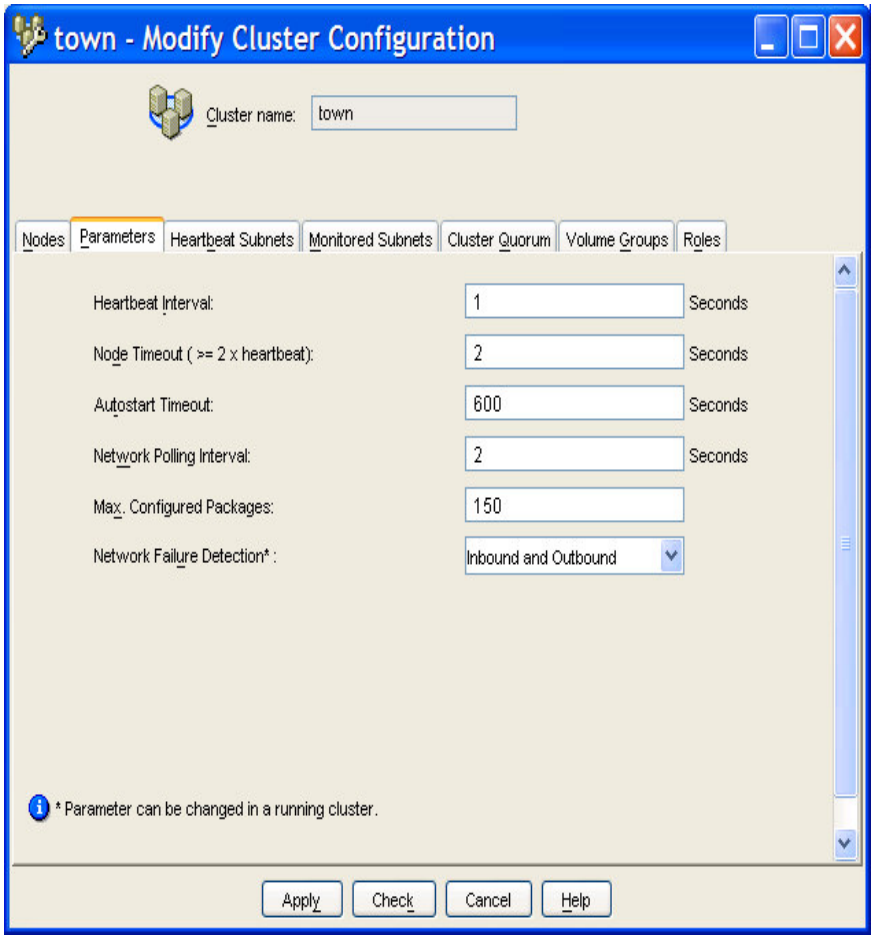
Cluster Configuration – Nodes Tab

- Only 11.16 or later nodes are available for configuration
- Once user selects a cluster node, the available nodes list will be filtered to contain only nodes of the same version and operating system
- Mixed operating system nodes are not supported (i.e. hp-ox, Linux)
- Once cluster membership is established and user switches to next tab, Serviceguard manager obtains cluster topology and default parameters
- Nodes selected will be entered in cluster configuration file on successful Apply



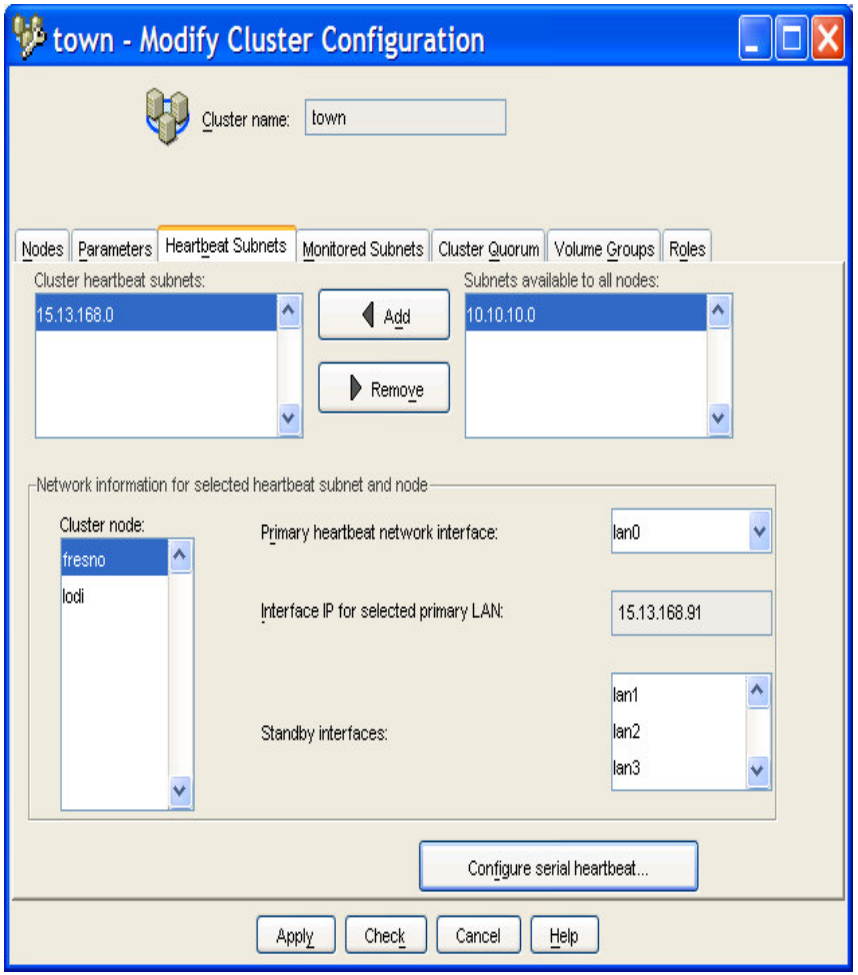
Cluster Configuration – Parameters Tab

- All the parameters are entered in cluster configuration file
- Allows user to specify cluster parameters
- The new parameter, Network Failure Detection allows a user to change the mode that triggers local LAN failover.
- A new product, SG extension for Faster Failover for 2-node clusters, can be installed to improve failover time. If this product were installed, the parameter Failover Optimization can be set to TWO_NODE, to enable it.



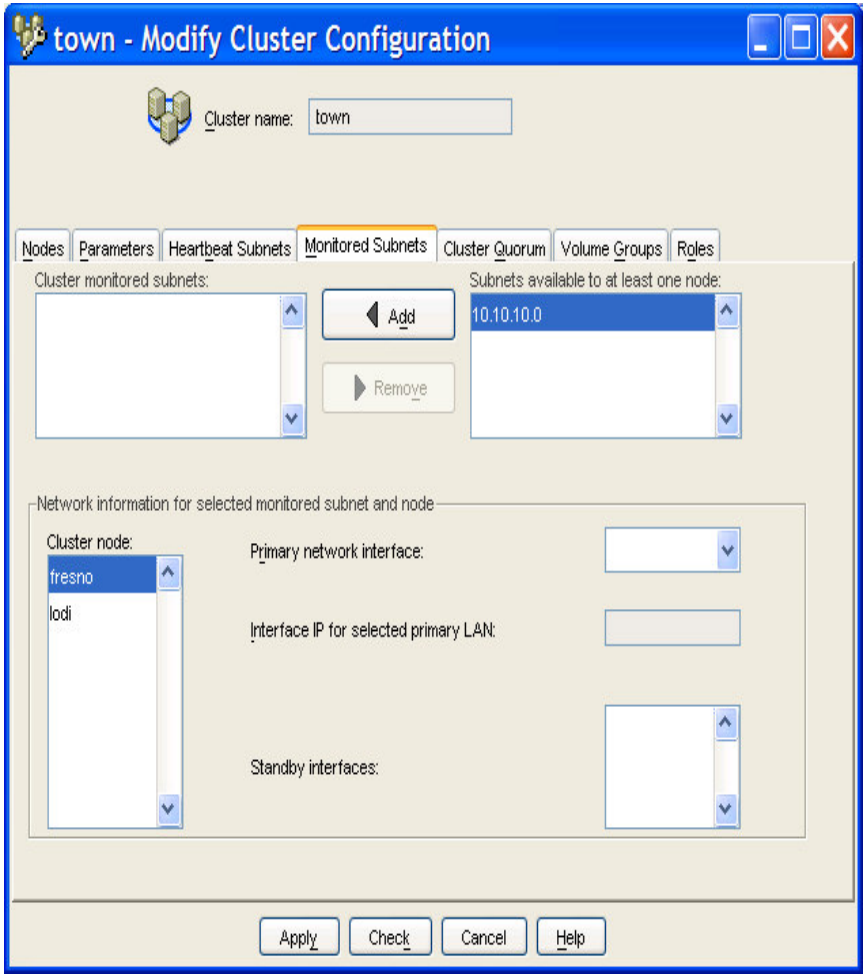
Cluster Configuration – Heartbeat Subnets Tab

- Automatic discovery of all subnets shared between all cluster member nodes
- Once user selects heartbeat subnets, the corresponding default network interface and IP address are set
- User can change the above default setting by selecting heartbeat and cluster member node
- For 2 node-clusters, allows the configuration of serial heart-beat
- All the parameters are entered in cluster configuration file



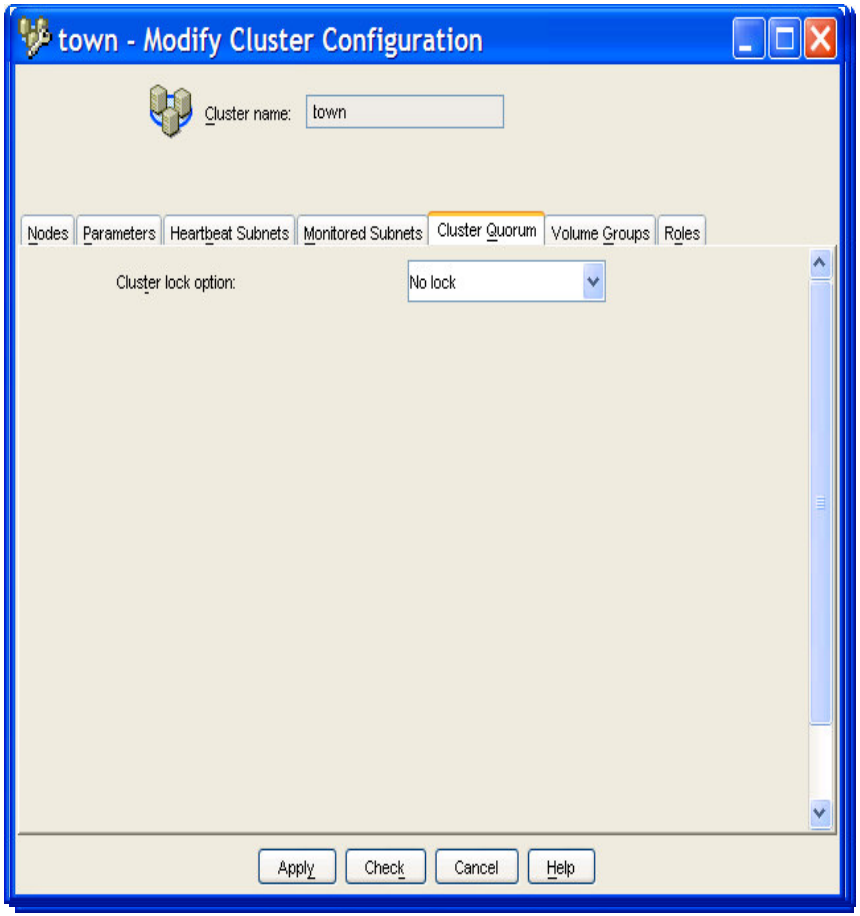
Cluster Configuration – Monitored Subnets Tab

- Automatic discovery of all subnets that are connected to at least one of the cluster member nodes
- Setting parameters for monitored subnets is similar to that of heartbeat subnets



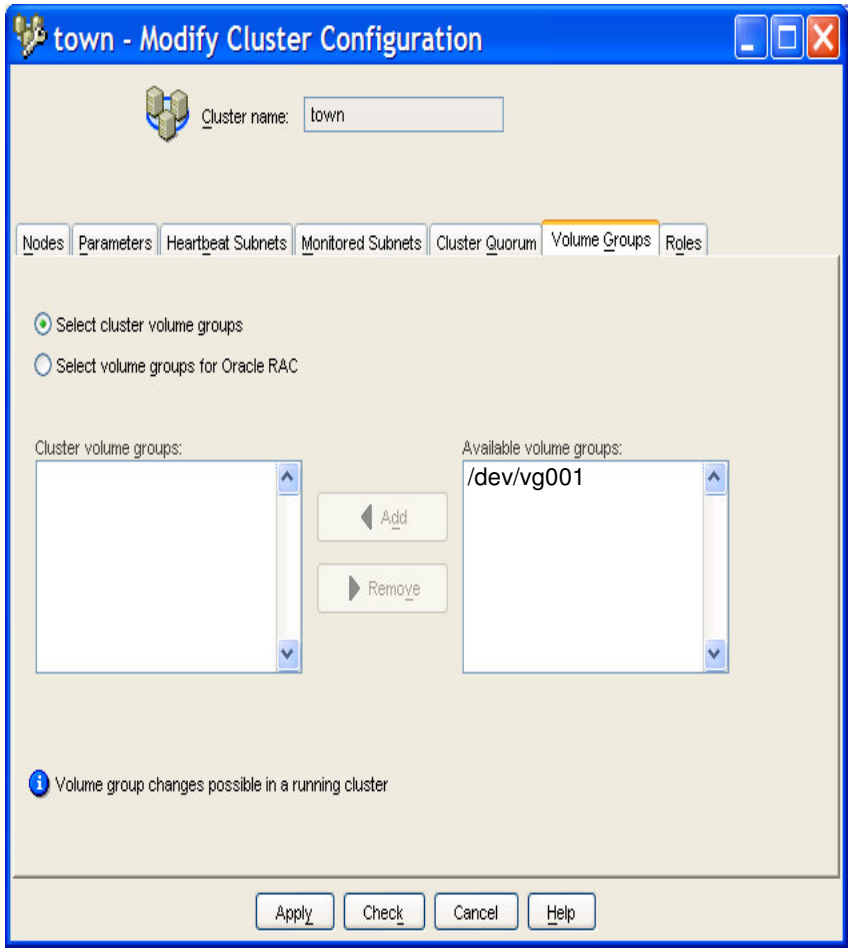
Cluster Configuration – Cluster Quorum Tab

- Provides mechanism to select and configure cluster lock
- Provides 4 cluster lock options :
  - Single lock disk (HP-UX only)
  - Dual lock disk (HP-UX only)
  - Quorum server (HP-UX or Linux)
  - No lock
- Single and Dual lock disks have automatic discovery of volume groups and physical volume
- Quorum server hostname, polling interval and timeout extension parameters need to be specified by user



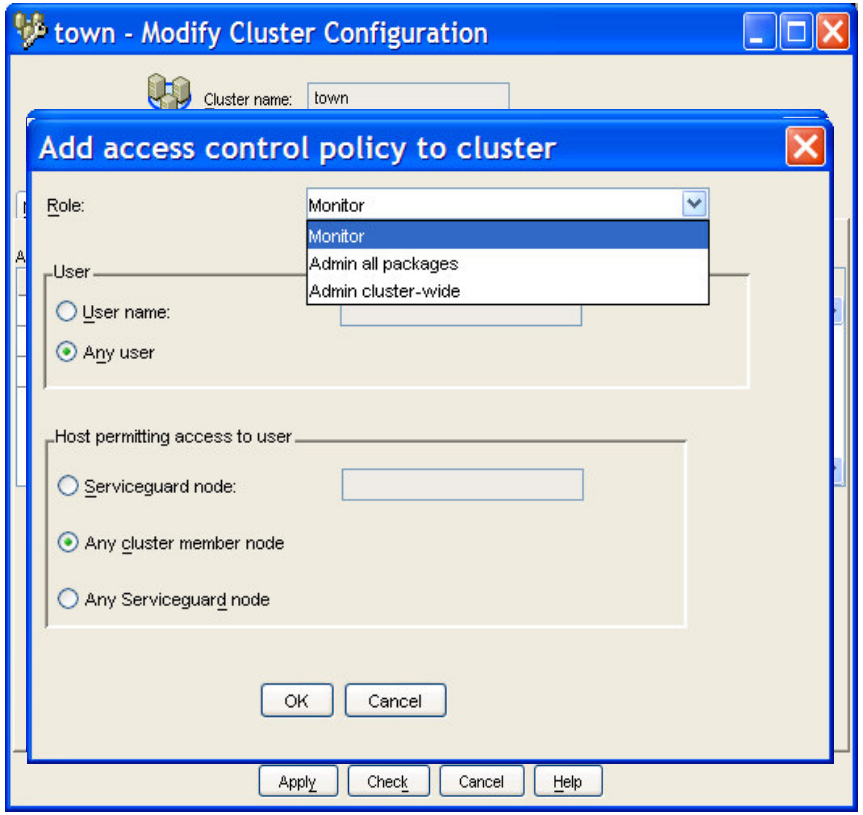
Cluster Configuration – Volume Groups Tab

- Automatic discovery of volume groups shared by one or more cluster member nodes.
- Volume groups selected by user will be marked as “cluster-aware”
- For SGeRAC cluster, the selected volume groups will be activated as “shared” when used by package
- For Serviceguard cluster, the selected volume groups will be activated as “exclusive” when used by package
- Cluster volume groups chosen are entered in cluster configuration file



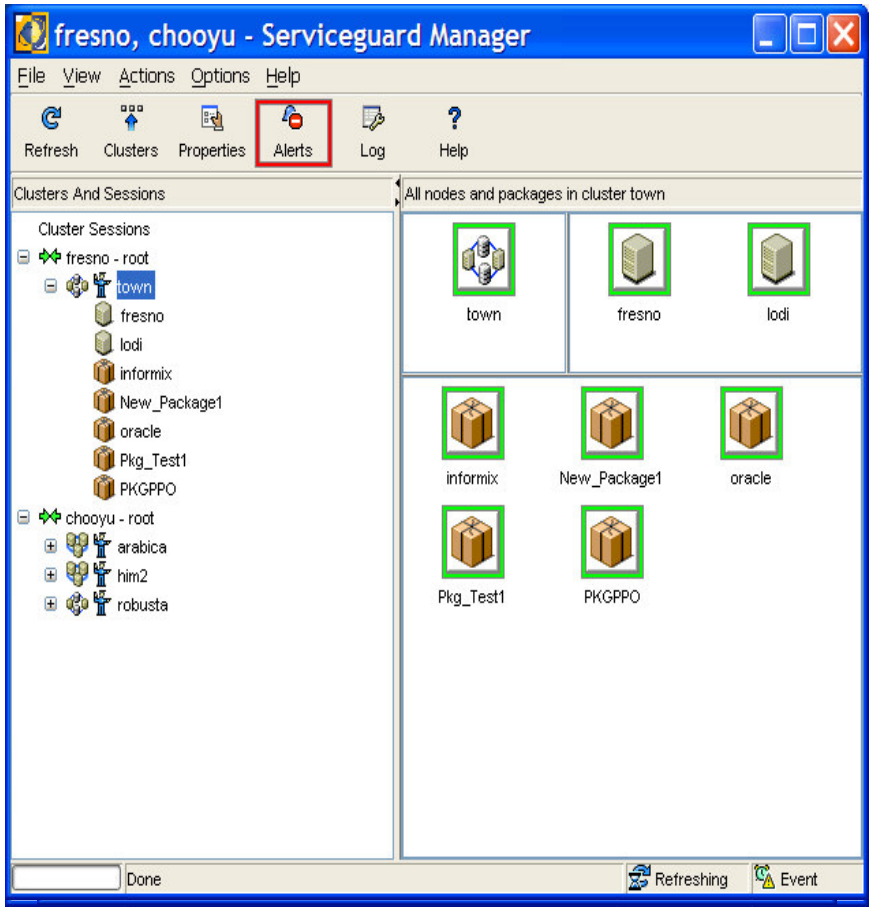
Cluster Configuration – Roles Tab

- Cluster-wide roles are defined in cluster configuration file
- Allows user to add/modify and delete roles without halting cluster/package.
- Access policy has 3 parts
  - User name – Can be any name defined in */etc/passwd* or any user (*)
  - Hostname – Can me name of session server (COM), or any cluster member node or any Serviceguard node
  - Role – Can me Full Admin/Package Admin/Monitor



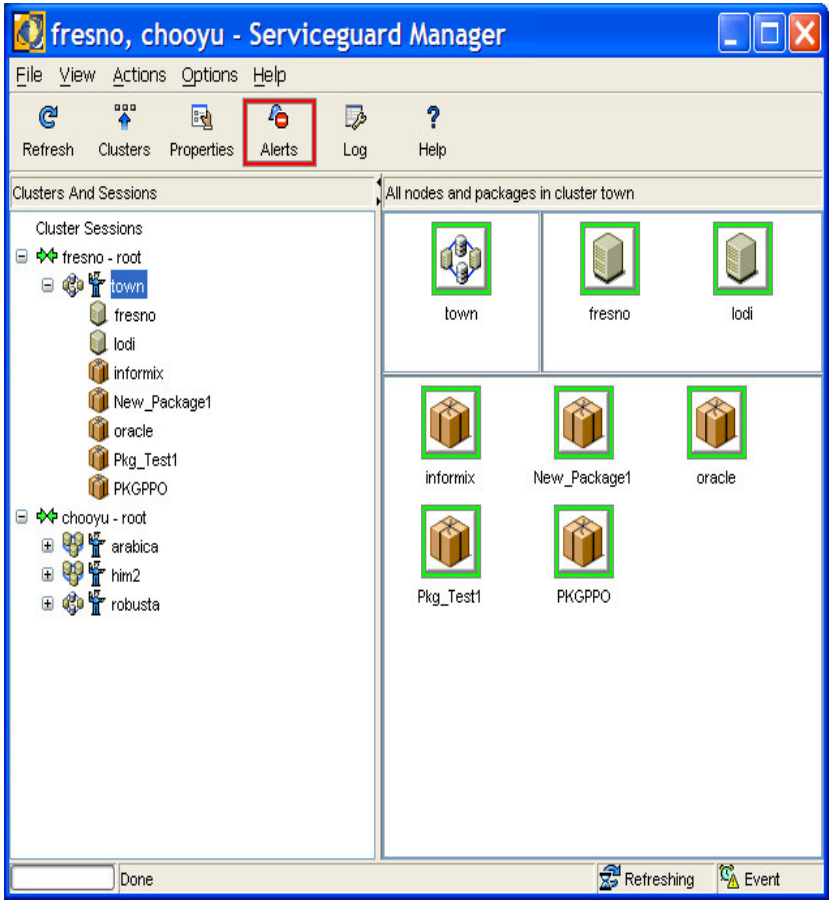
Cluster Configuration – Apply and Progress

- Apply will create/modify cluster configuration file after validating for errors and if no errors will distribute file to all nodes in cluster
- All validation operations being done will be displayed in the Operation log asynchronously
- After every successful Apply, automatic refresh of that cluster is performed and map and tree will be updated
- If Apply fails, operation log will indicate why and the user can correct the problem and apply again.
- Check will validate the data entered by user. Check only available during cluster modification



Cluster Configuration – Conditions

- To make any configuration changes, all cluster nodes must be up
- A new node can only be added if the OS is running on all cluster nodes.
- Node can only be deleted even if it is not unavailable or unreachable
- Cluster needs to be halted in order to change the following parameters
  - Maximum configured packages
  - Any timing parameters
  - Cluster lock configuration
  - Serial heartbeat
  - Change IP addresses for heartbeats or monitored subnets
  - Quorum server
  - Failover optimization
  - Delete cluster



Task #5

Modify cluster configuration

Task #5 - Request

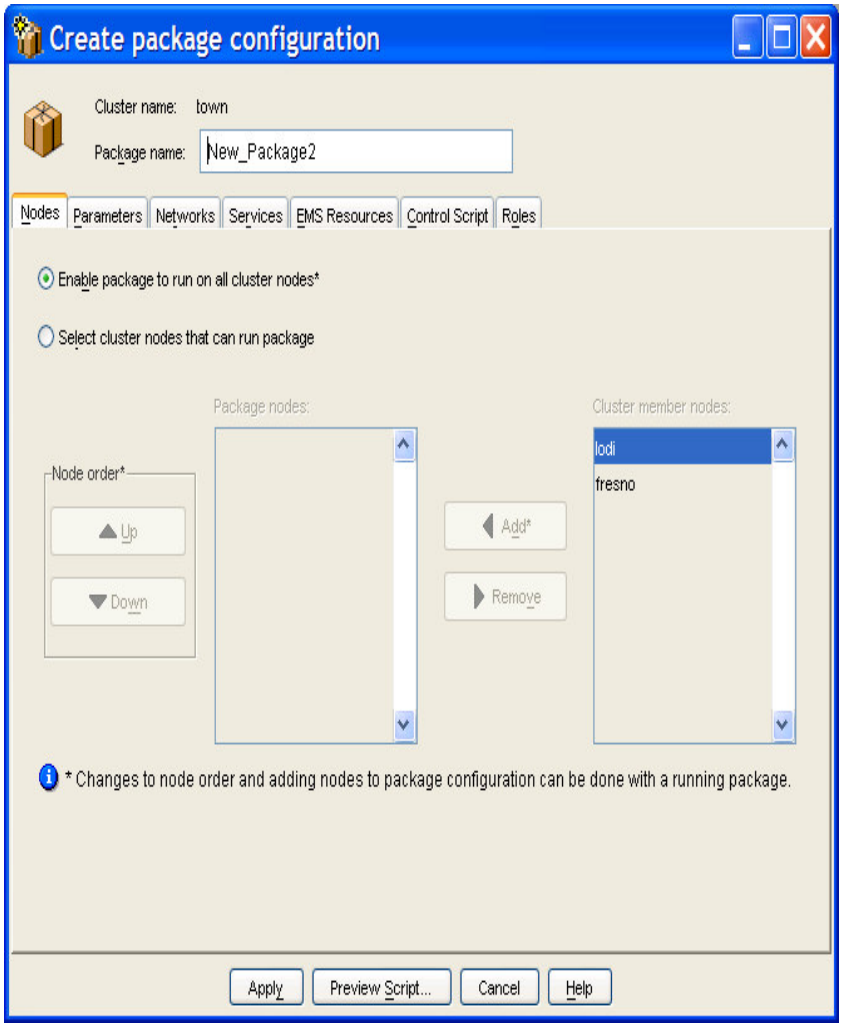
Hey Admin! We just got another system – manaslu. Can you add another node to the cluster "him2" ?

Hey, calm down a bit… That is a breeze to do with Serviceguard Manager. I will get it done in a jiffy !

Live Demo – Modify Cluster Configuration

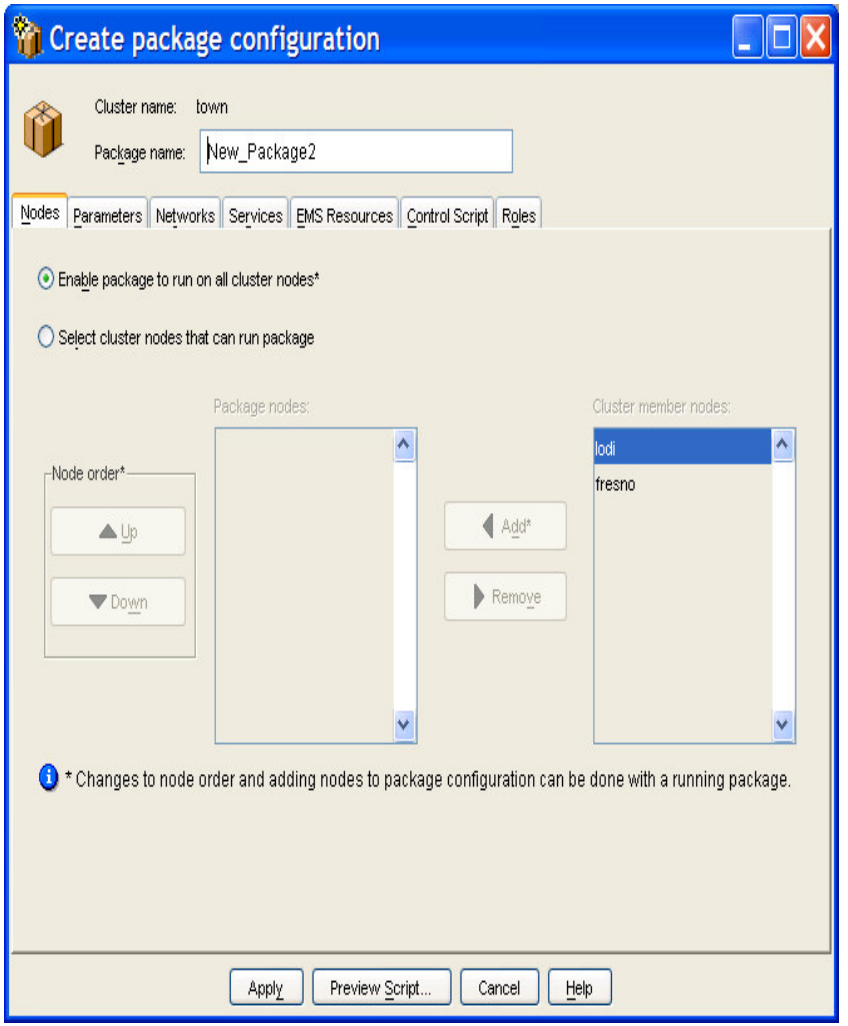
Package Configuration

- Two package styles supported
- Guided style packages
  - New interface for entering and modifying basic control script data and creating/modifying new packages
- ASCII style packages
  - For existing old package configurations
  - View/edit existing control script file with an editor
- Co-located package configuration file and control script file parameters (e.g., networks tab and services tab)
- Both package modes provide automatic distribution of package control scripts to cluster nodes, with a backup (.bak) file being saved on all cluster member nodes



Package Configuration cont'd.

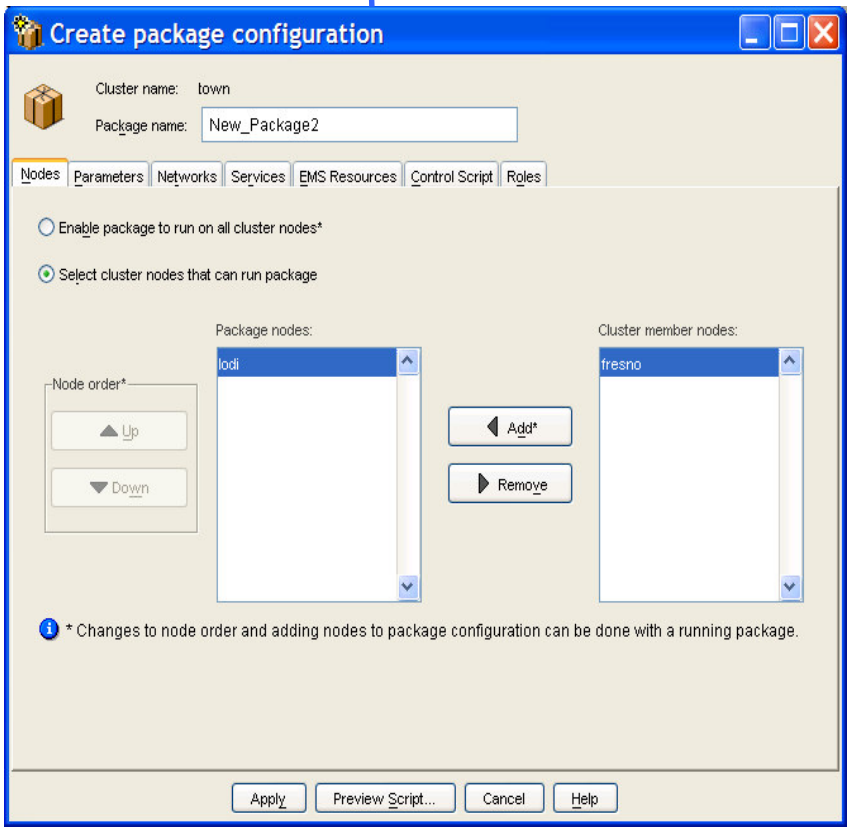
- Allows converting from Guided style to ASCII but reverse mode not allowed
- *Check* (*cmcheckconf*) option to check for errors with the input values
- *Preview Script* to view control script content at any time in Guided style.
- Control script steps are only available for creation and modification of guided style packages. Not available for ASCII style package
- Package using guided style are less error prone and do not require manual edition of control script



Package Configuration – Nodes Tab

- User can select cluster nodes that can run package
- Or select the option to choose all cluster nodes (equivalent to * in package configuration file), and Serviceguard will determine the node order
- Allows the ordering of package nodes to define primary node, secondary node etc., only when user selects cluster nodes.
- All the components in this tab are specific to package configuration file

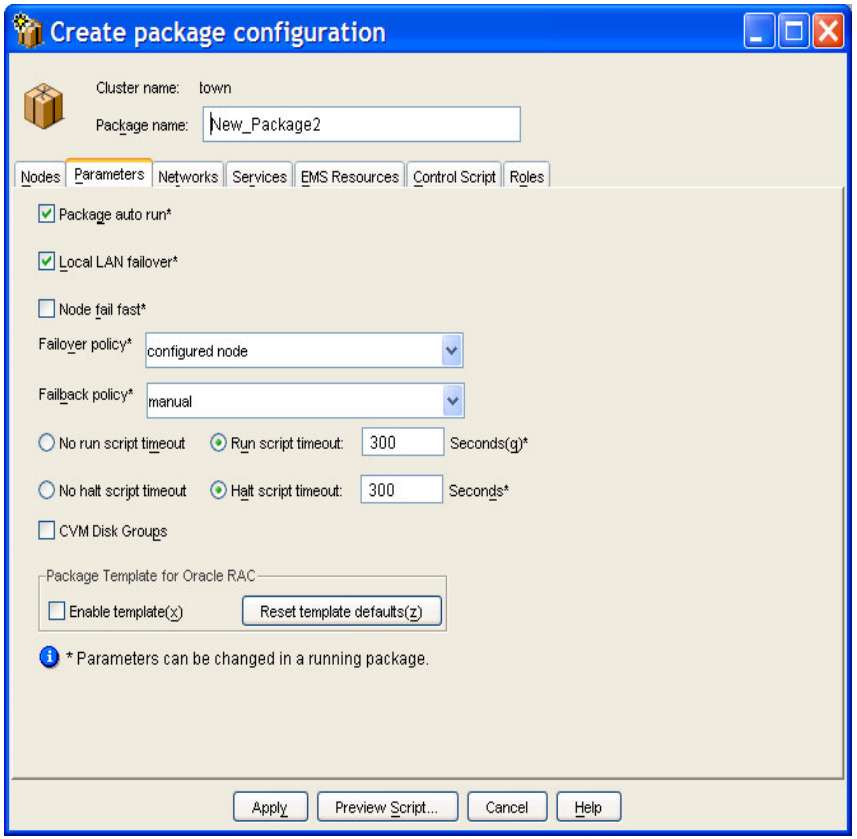
Package Configuration file parameters



Package Configuration – Parameters Tab

- All the components in this tab are specific to package configuration file
- Cluster Volume Manager (CVM) disk group parameter available only if CVM is configured on all the cluster nodes
- Package template for Oracle RAC parameter available only if it is an SGeRAC cluster

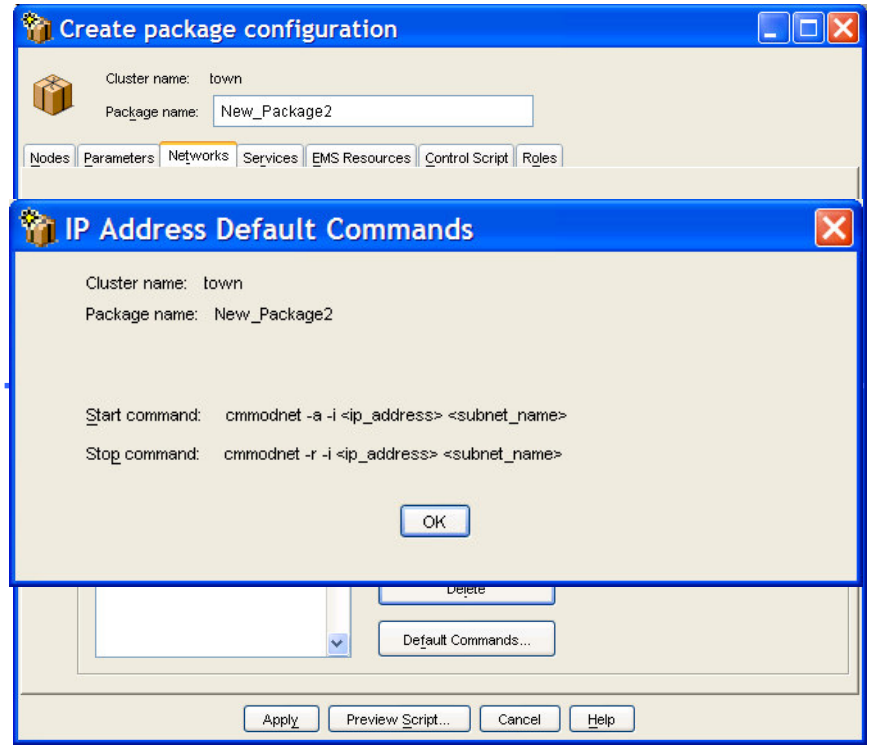
Package Configuration file parameters



Package Configuration – Networks Tab

- Updates both package configuration file as well as control script file
- Automatic subnets discovery (from the ones configured in the cluster)
- Allows user to specify relocatable IP (IPv4/IPv6 IP) address and subnet pairs which are entered into control script
- View the default command associated with the IP address – *cmmodnet* command and parameters which are entered into control script
- Guided entry elements are grayed out for ASCII style packages

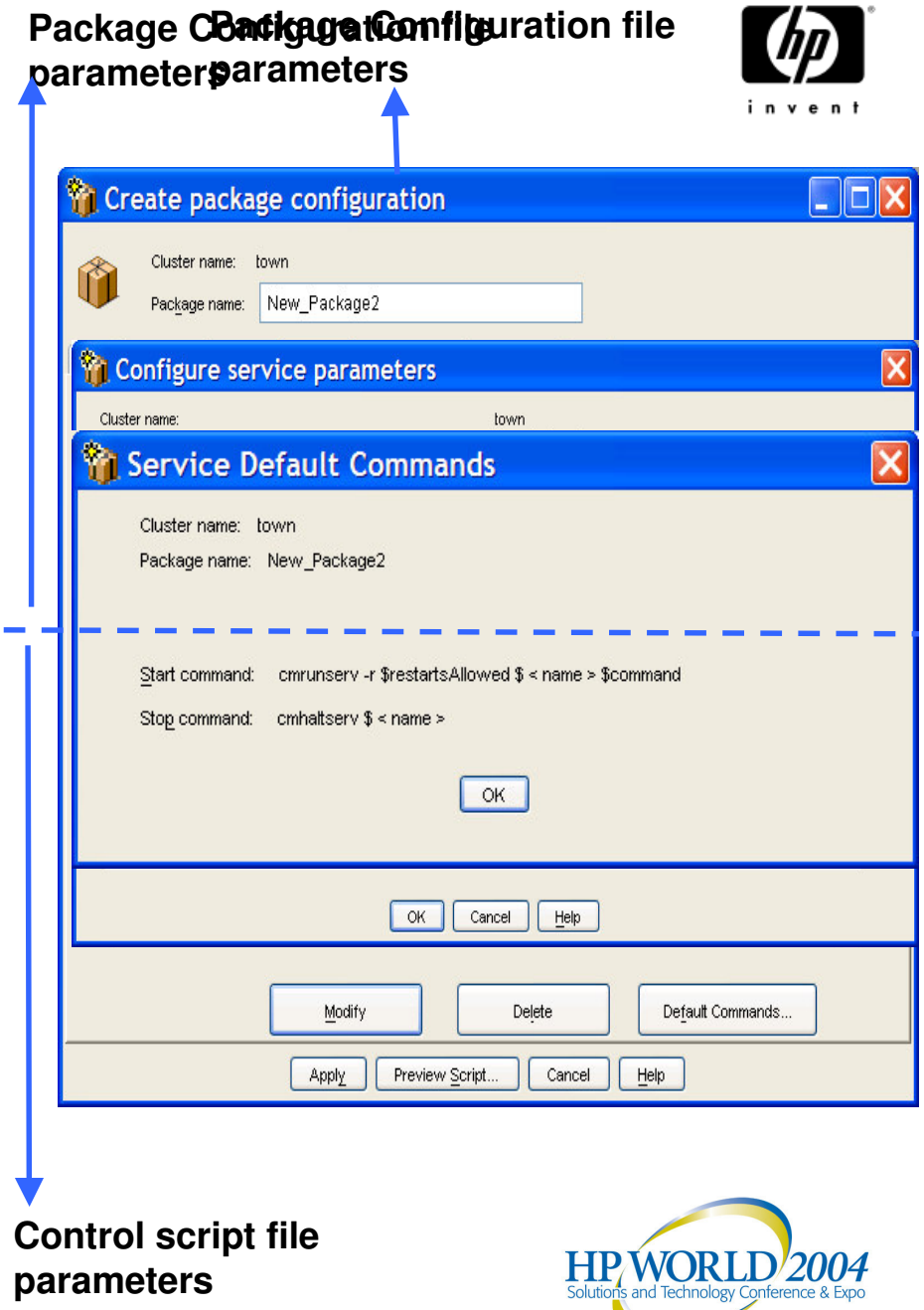
Package Configuration file parameters



Control script file parameters

Package Configuration – Services Tab

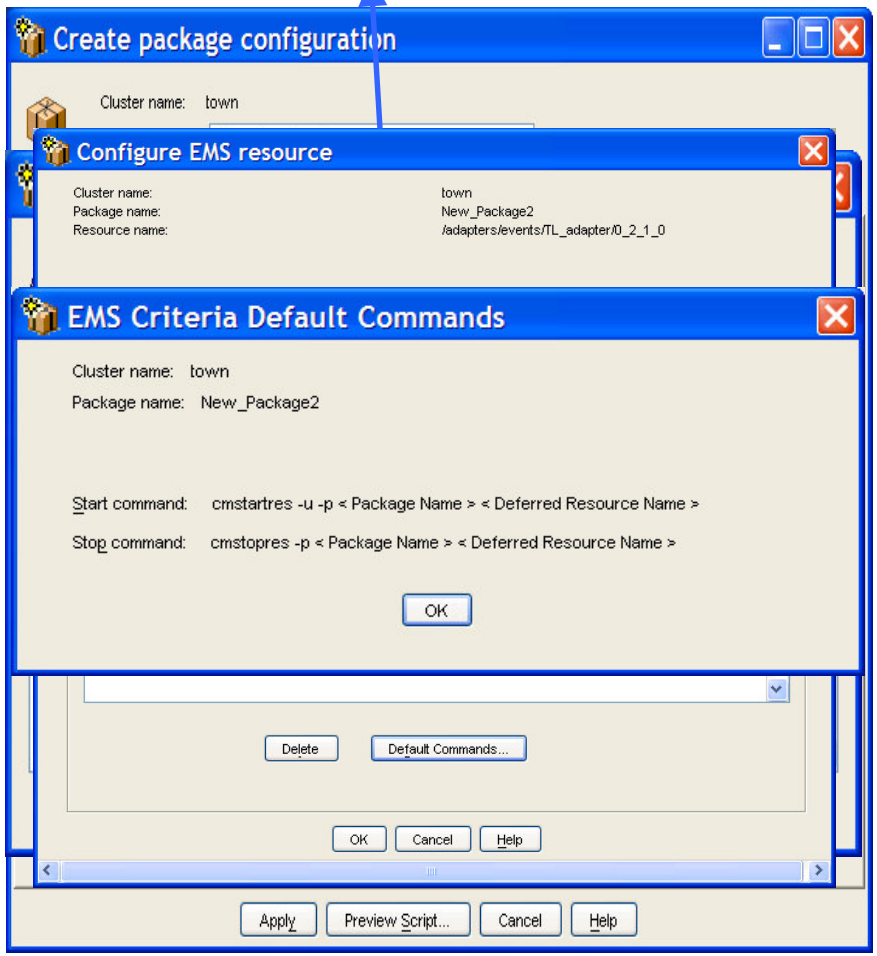
- Updates both package configuration file as well as control script file
- Allows user to add/modify/delete services with its parameters
- View the default command associated with the Service configured – *cmhaltserv* command and parameters which are entered into control script
- Guided entry elements are grayed out for ASCII style packages



Package Configuration – EMS Resources Tab

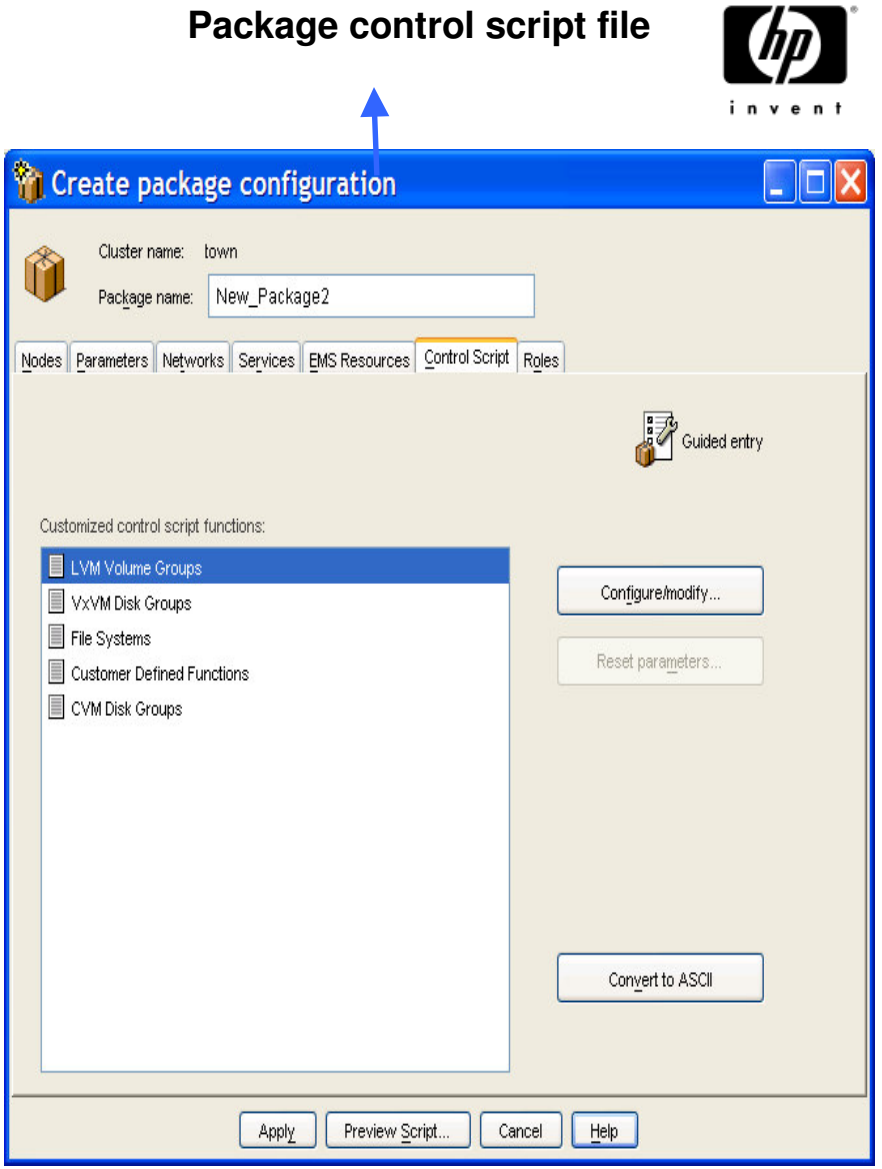
- All the components in this tab are specific to package configuration file
- Browse feature provides automatic discovery of all the EMS Resources that are installed on all package nodes, with user choosing from the discovered tree
- Or user can manually specify the complete path to EMS resource
- View the default command associated with the resource – *cmstartres* command and parameters which are entered into control script
- If deferred resource, components will go to control script file also

Package Configuration file and Control script file (if deferred only)



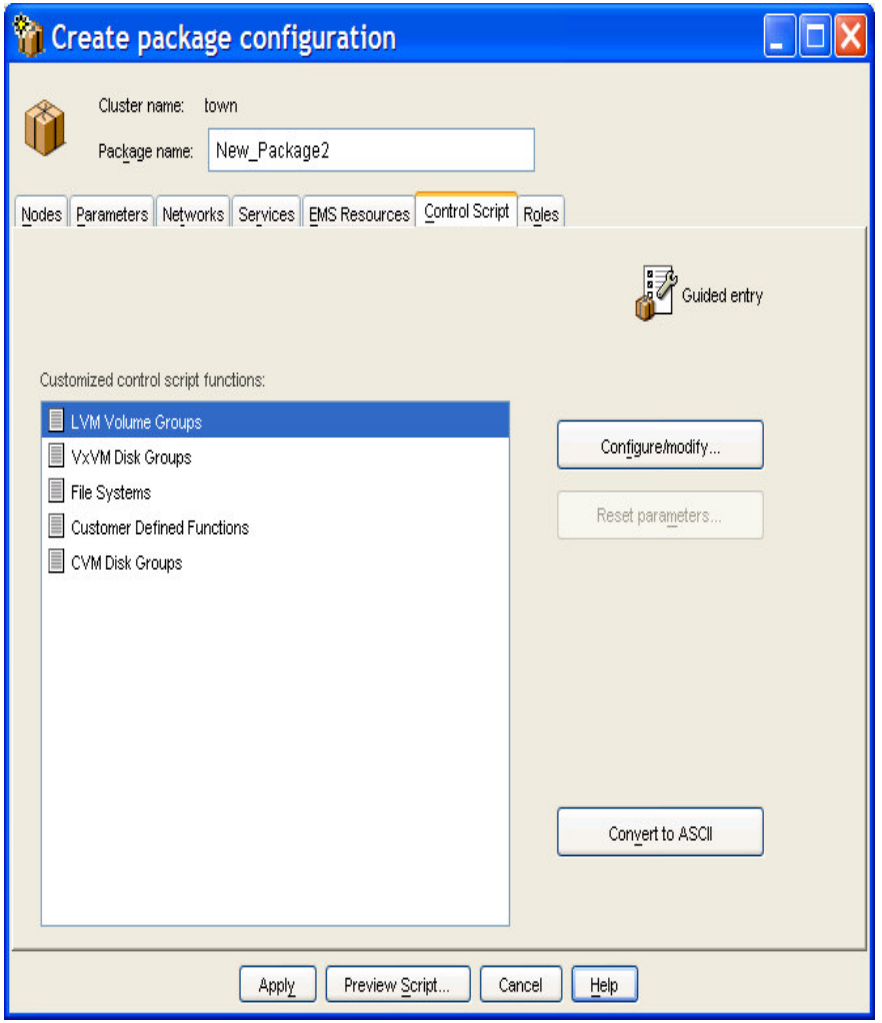
Package Configuration – Control Script Tab

- All components in this tab are entered into package control script file
- Provides 2 styles for control script data
  - Guided style approach - New step-by-step interface, which is completely GUI driven for entering and modifying control script data
  - ASCII style approach - Mainly for supporting existing control scripts
- Provides automatic distribution of control script on all cluster member nodes



Package Configuration – Control Script Tab - Guided Style

- New step-by-step user interface for entering and modifying all control script data and viewable actions
- Completely GUI driven, no editing large control scripts
- Any configured control script step can be un-configured with a single reset button on apply
- Automatic creation and distribution of control scripts to all the configured cluster nodes on apply
- Allows conversion from Guided Style to ASCII
- Limitations
  - Does not support attributes specific to Metrocluster or Continentalcluster
  - For SGeRAC packages, need to create package on each node in cluster

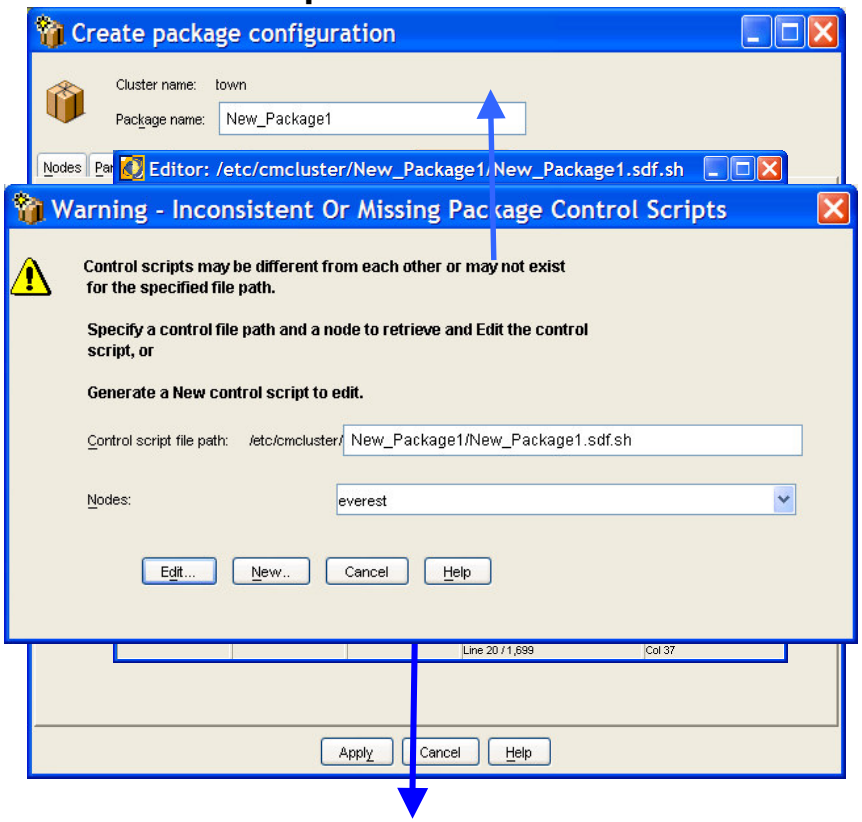


Package Configuration – Control Script Tab - ASCII Style

- Mainly available to support existing old ASCII package (previous command line created control scripts) configuration
- Provides consistency check for the control file on all cluster member nodes
- If inconsistent, then user has option to select the control script by specifying the cluster node
- Provides automatic distribution of control scripts to all the configured cluster nodes on apply.
- Creates backup file of the old control script on all cluster member nodes
- Limitations
  - ASCII to Guided style not supported

- If consistency check is a success
- If consistency check is a failure

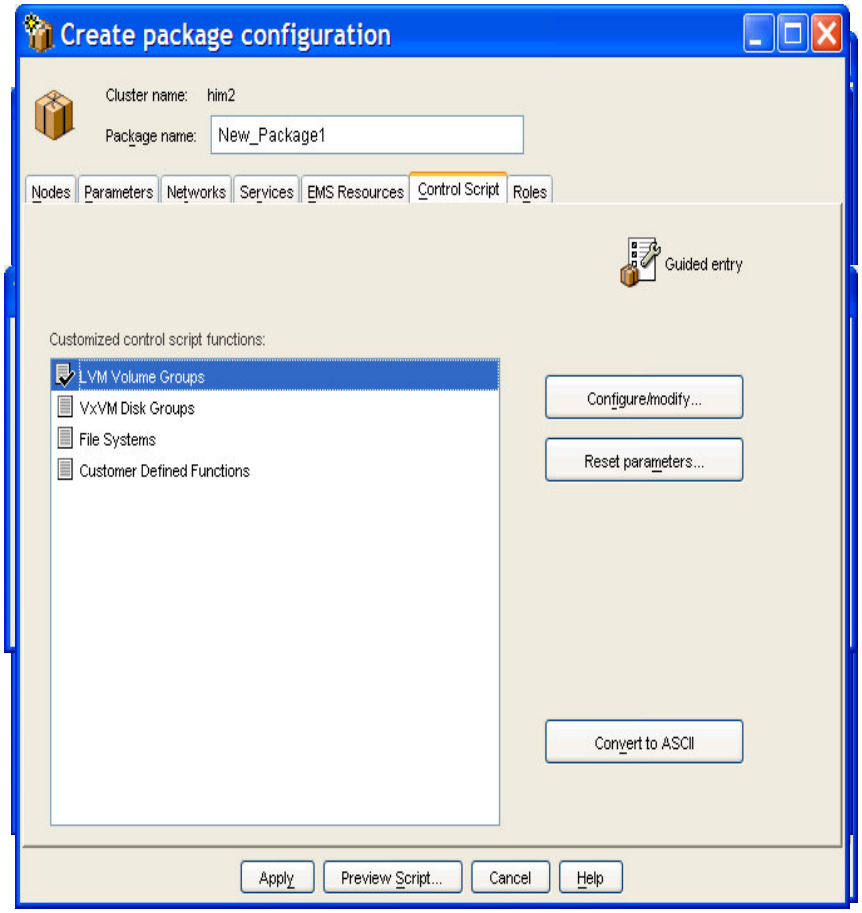
Package Configuration file parameters



Distributes control script to all cluster nodes when pressed

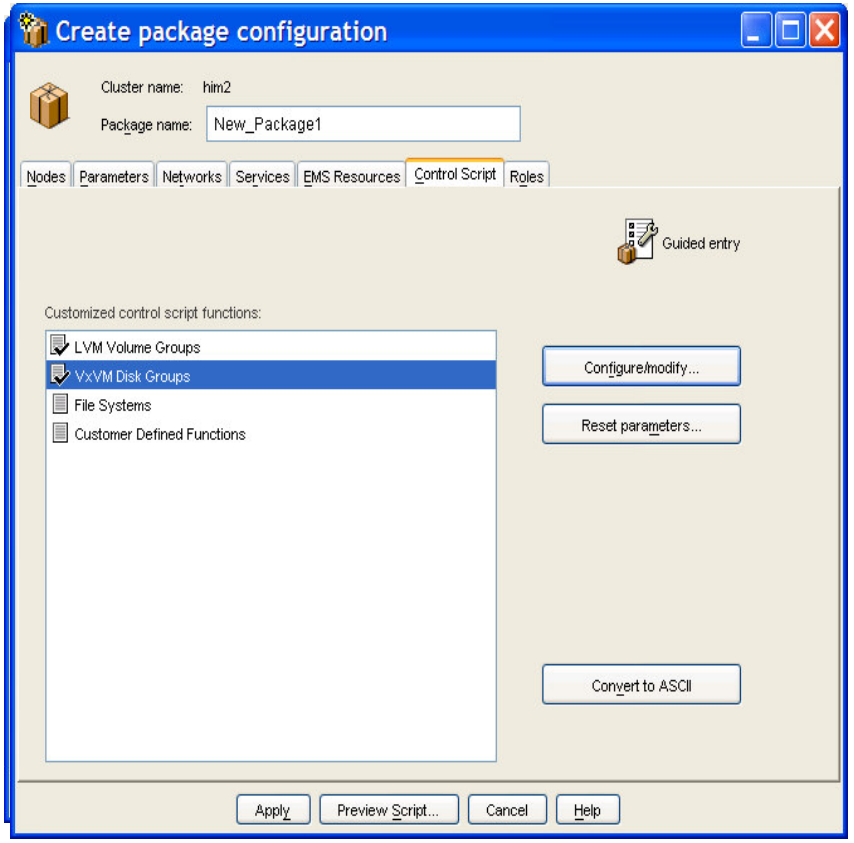
Package Configuration – Control Script Tab – LVM Volume Groups

- Automatic volume groups discovery (need to have volume groups configured in the cluster)
- View the default start and stop command associated with the LVM volume groups – *vgchange* command and parameters which are entered into control script
- Activation method once chosen applies to all the configured volume groups for package



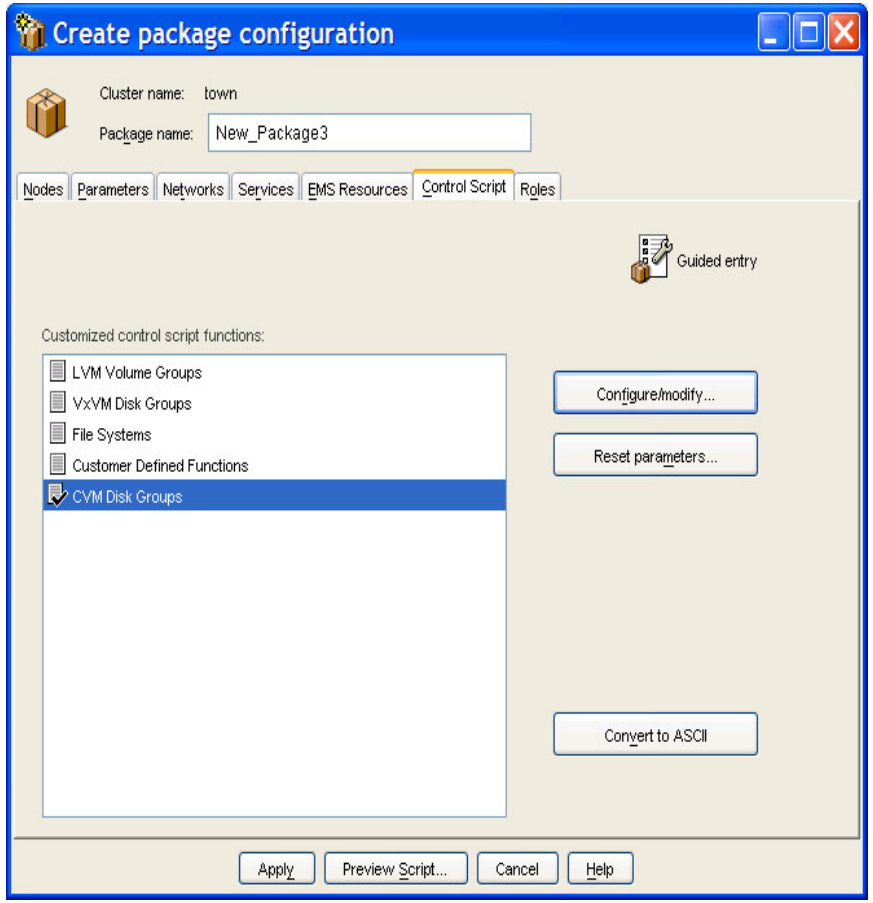
Package Configuration – Control Script Tab – VxVM Disk Groups

- VxVM volume groups are not automatically discovered. User needs to enter VxVM volume groups name
- View the default start and stop command associated with the VxVM volume groups – *vxdg* command and parameters which are entered into control script



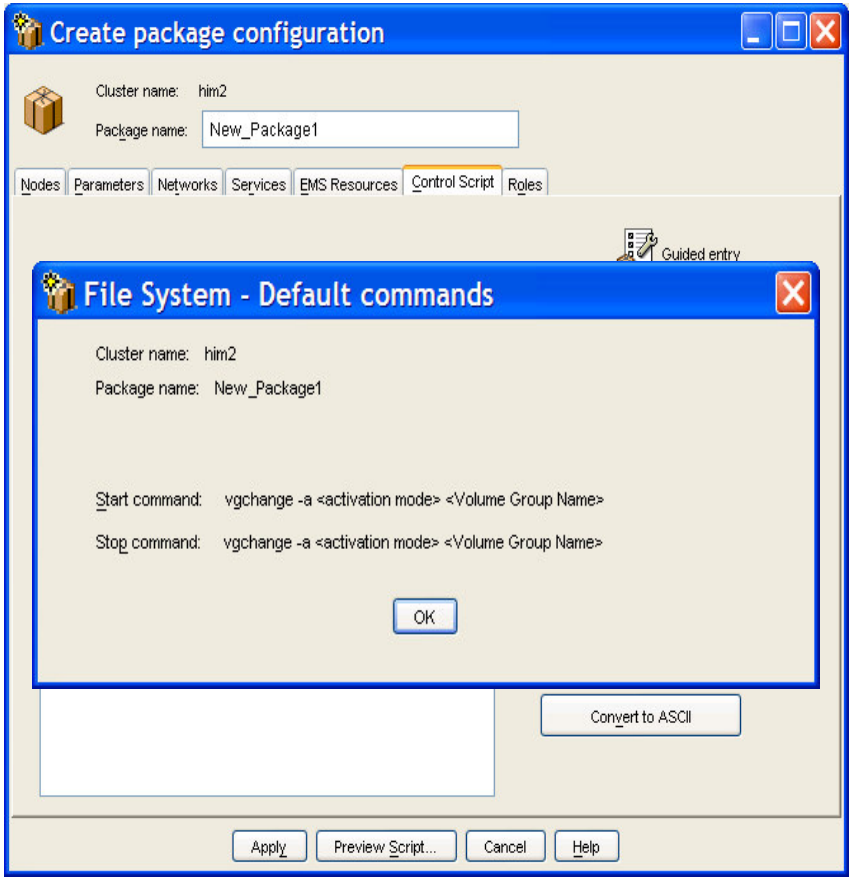
Package Configuration – Control Script Tab – CVM Disk Groups

- Cluster Volume Manager (CVM) disk group step available only if CVM is configured on all the cluster nodes.
- The CVM dependency parameter in the parameters tab should be selected if the user wishes to configure CVM step. (If not selected, configuring CVM step will automatically enable CVM dependency parameter.)
- CVM volume groups are not automatically discovered. User needs to enter CVM volume groups name
- View the default start and stop command associated with the CVM volume groups – *vxdg* command and parameters which are entered into control script



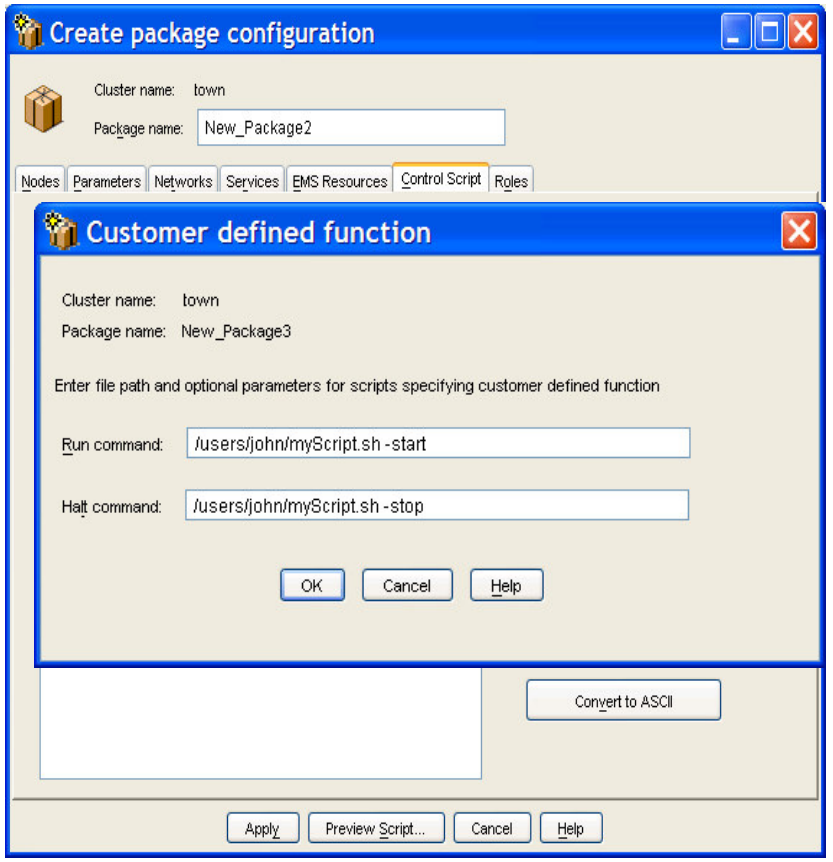
Package Configuration – Control Script Tab – File Systems

- File system configuration only available if at least one of the volume group steps (LVM/CVM/VxVM) have been configured. Otherwise, all options will be grayed out
- View the default start and stop command associated with the FileSystems – *vgchange* command and parameters which are entered into control script



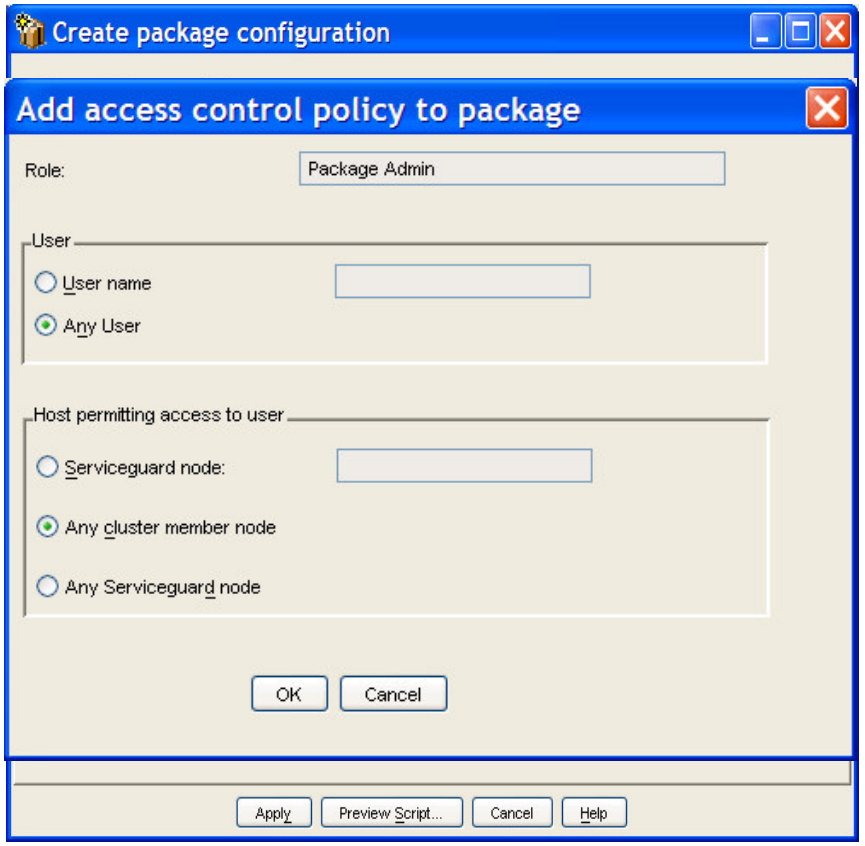
Package Configuration – Control Script Tab – Customer Defined Functions

- User can enter start and stop command which point to a file path with optional parameters
- User needs to create a script with run/halt commands and needs to distribute it to cluster member nodes



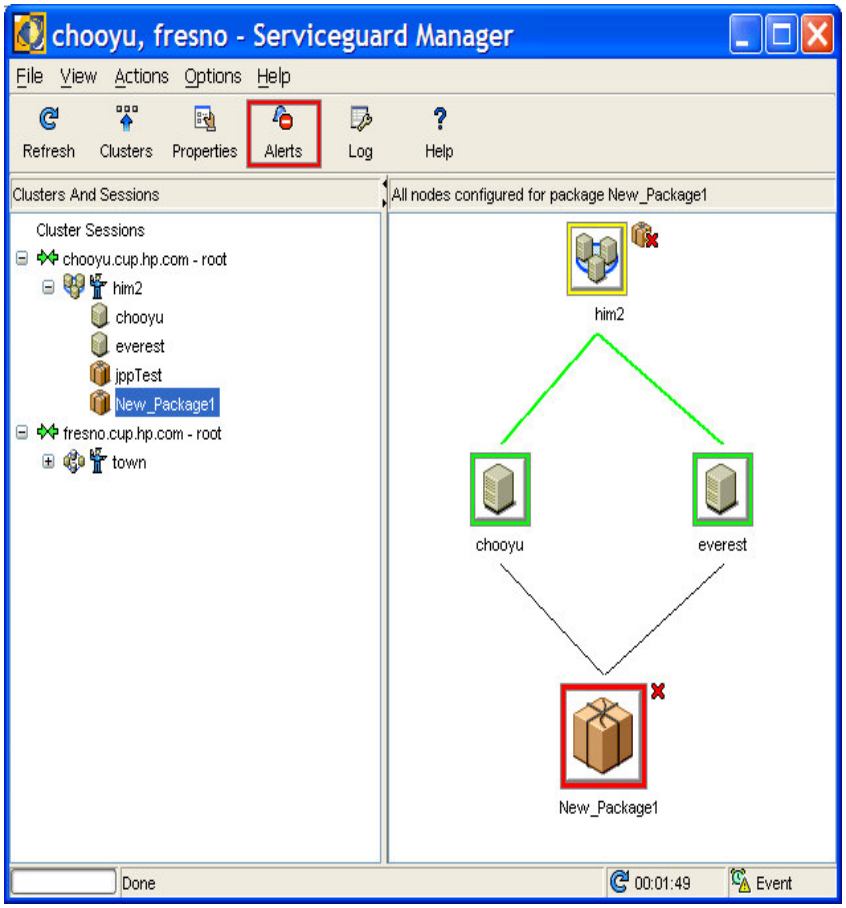
Package Configuration – Roles Tab

- Can specify only one role in package configuration file – Package Admin – Specific to the package
- Access policy has 3 parts
  - User name – Can be any name defined in */etc/passwd* or any user (*)
  - Hostname – Can me name of session server (COM), or any cluster member node or any Serviceguard node
  - Role – Package Admin only



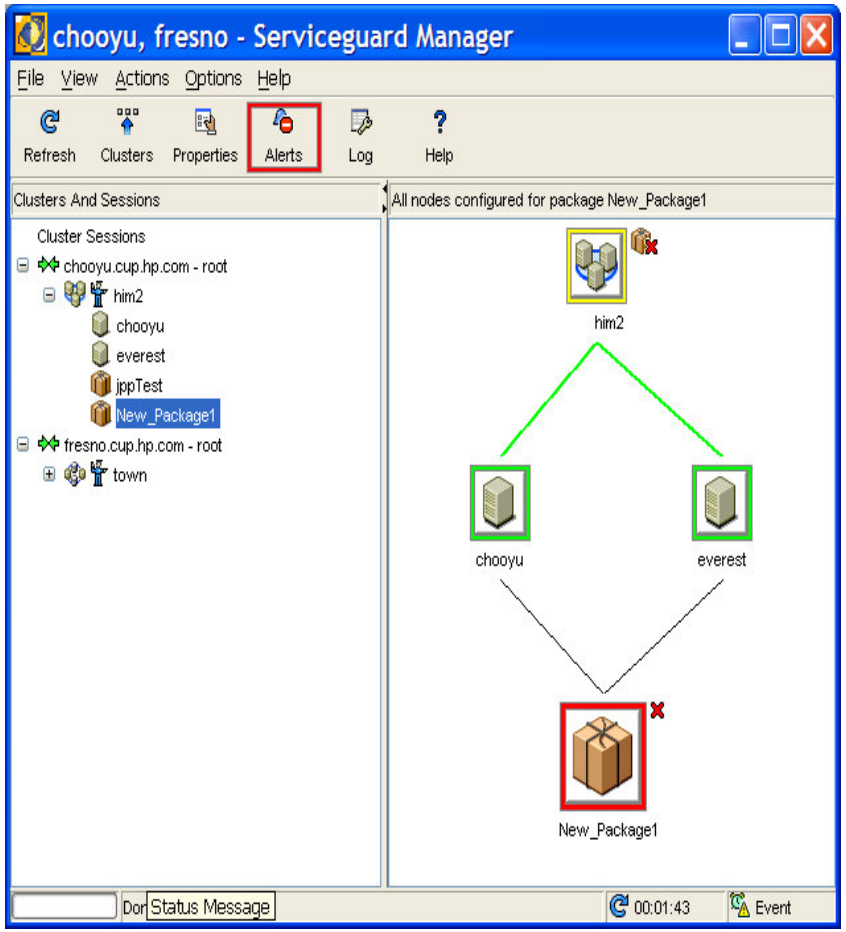
Package Configuration – Apply and Progress

- Apply will create/modify package configuration file and control script file and if no errors will distribute files to all nodes in cluster
- All validation operations being done will be displayed in the Operation log asynchronously
- After every successful Apply, automatic refresh of that package is performed and map and tree will be updated
- Check will validate the data entered by user. Check only available during package modification



Package Configuration – Conditions

- To change any package parameter, need to have root permission
- Package needs to be halted in order to change the following parameters
  - Delete package
  - Add service
  - Remove service
  - Add/Remove subnet
  - Add/Remove resource
  - Add/remove volume group
  - Service timeouts
  - Service failfast
  - Run/Halt script timeout



Task #6

Create package configuration

Task #6 - Request

Hey Admin! Sorry to bother you again ! Can you create a new package and configure a new service ?

Hope this is the last task for the day ! I will get it done, don't worry ! As long as I have Serviceguard Manager, nothing is too hard to do !

Live Demo – Create Package Configuration

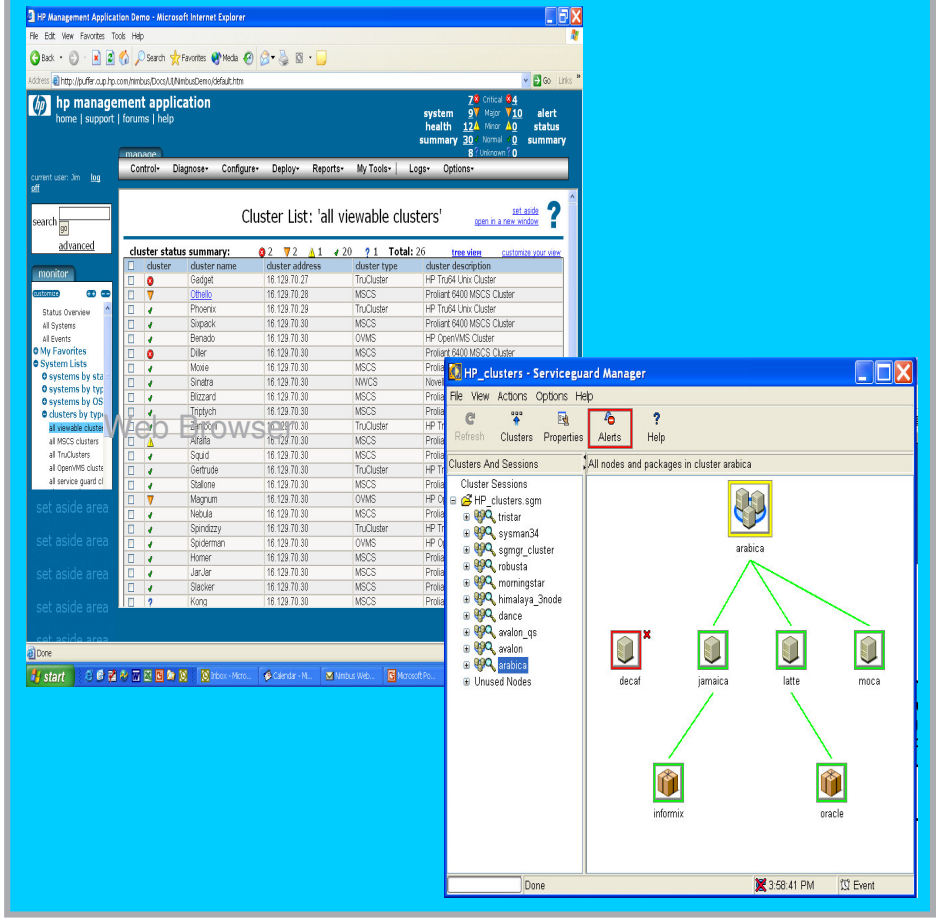
Serviceguard Manager 4.0 Benefits

- Enable IT staff to quickly identify problems and dependencies with drill down screens for multiple HA clusters across the enterprise
- Administration and monitoring tasks can be assigned to operators for specific clusters and packages through RBA
- Less experienced system administrators can perform cluster/package configuration and modification tasks easily
- System administrators can easily view detailed logs of all administration and configuration operations
- Minimizes operator training requirements
- Configuration automates distribution of files ensuring consistency across cluster.

HP SIM Integration

- Serviceguard Manager launch able from within HP Systems Insight Manager 4.1 (SIM)

HP SIMClient



HP OpenView Integration

- Integrated with OpenView 8.0
- Serviceguard Manager Launcher
- Serviceguard Event Templates

Futures

Serviceguard Manager

- Enhance property sheets for cluster locks
- Configuration and RBA for SG on Linux
- Support HP-UX 11iv3 enhancements (e.g. AdvFS support)
- Support new enhancements for SG 11.17

Cluster Mgr 1.0 (Cleansweep plug-in)

- TruCluster management (e.g. creation and modification)
- CFS Management
- System Insight Manager integration

Q&A !

- Any additional comments on what you've seen?
- Your input helps us decide
  - ✓ Where we have usability problems
  - ✓ What future features might be most useful
- We thank you for your time and your thoughtful feedback!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