

# Monitoring and Administration of Clusters With ServiceGuard Manager

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# Agenda

- HA overview
- Serviceguard manager features
- Cluster monitoring with SNMP event notification
- Cluster administration
- Integration with Openview and Gryphon
- Admin/event notification demo
- Roadmap
- Q&A

# HA Overview

# HA Technology Components

ServiceGuard Manager

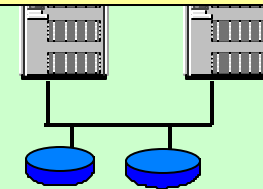


**Availability through Manageability:**

- Mainframe capabilities
- Monitoring & Mgmt
- Ease of Use

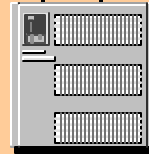
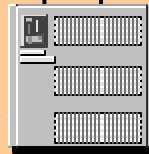


Campus Cluster  
MetroCluster  
ContinentalCluster



**Disaster  
Tolerance**

**Single  
system  
Availability**



**Multi-system  
Availability**

ServiceGuard  
Oracle Parallel Server

**HP-UX today**

# HA Technology Components

ServiceGuard Manager

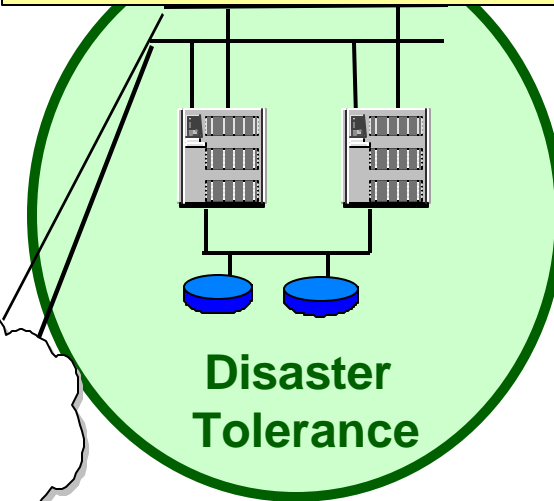


Availability through Manageability:

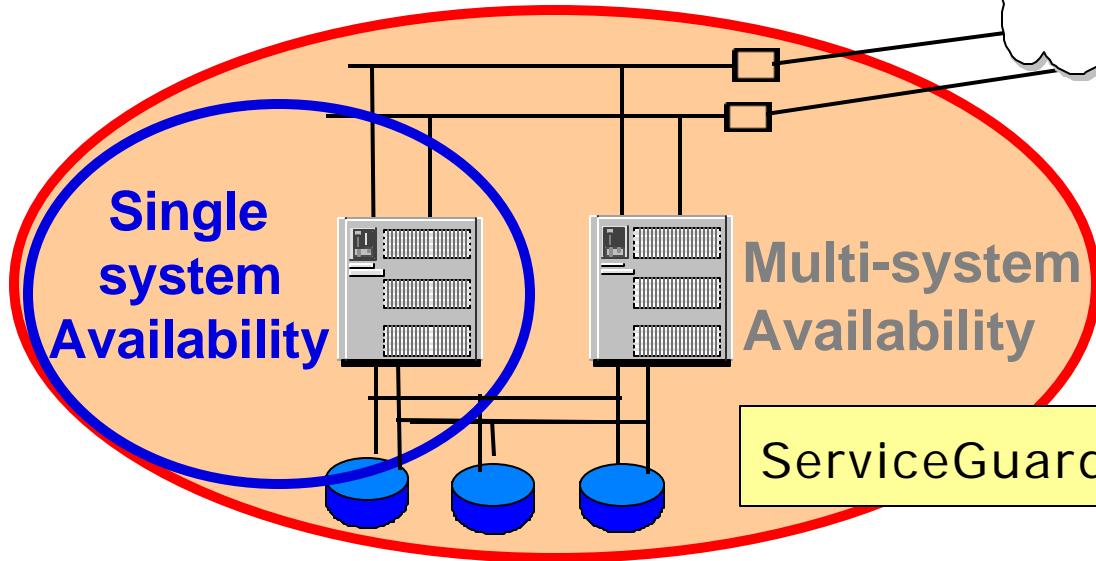
- Mainframe capabilities
- Monitoring & Mgmt
- Ease of Use



CLX for XP



Disaster Tolerance



Single system Availability

Multi-system Availability

ServiceGuard

LINUX today

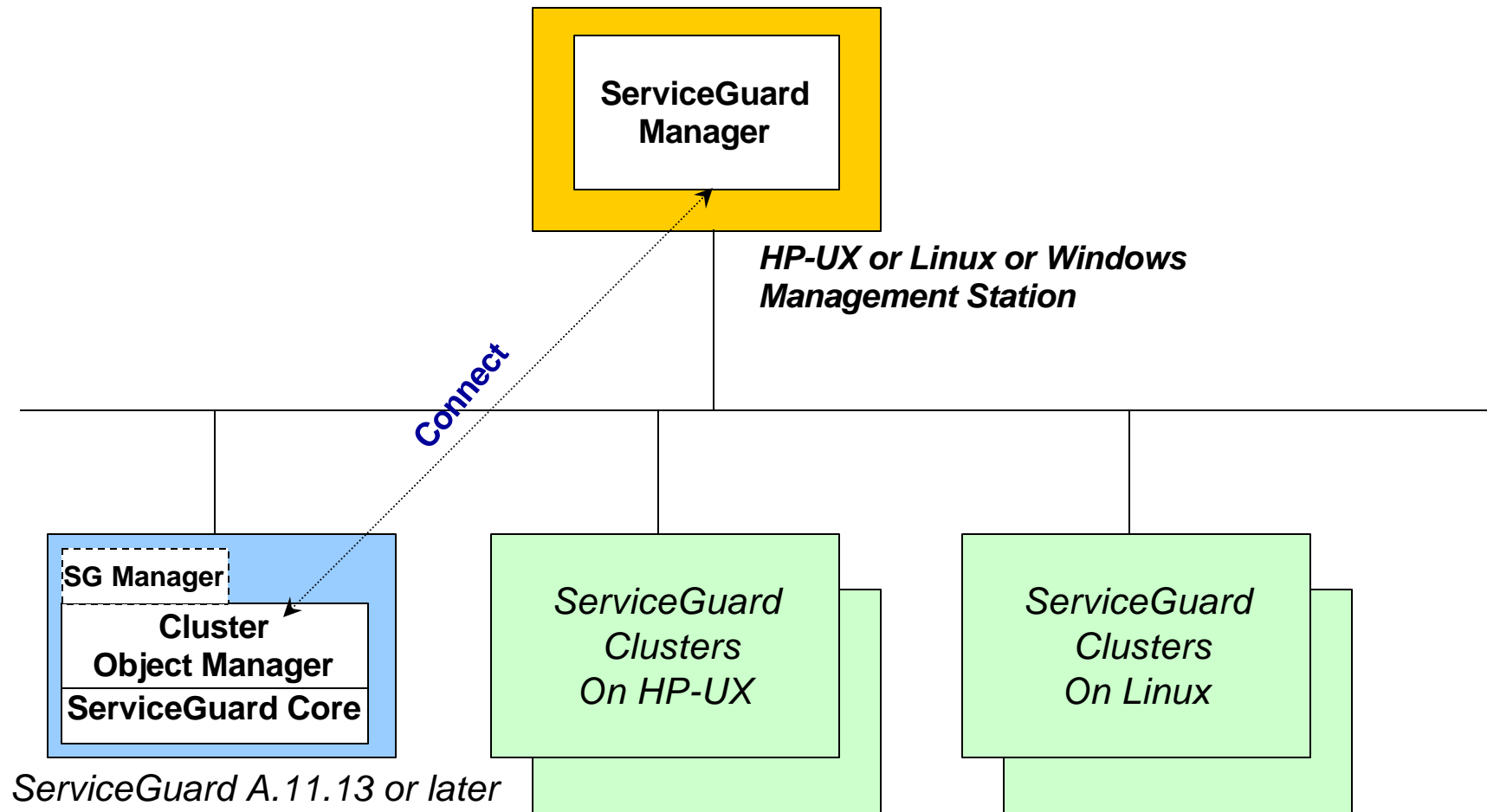
# ServiceGuard Manager Features

# ServiceGuard Manager A.02.01

## Features

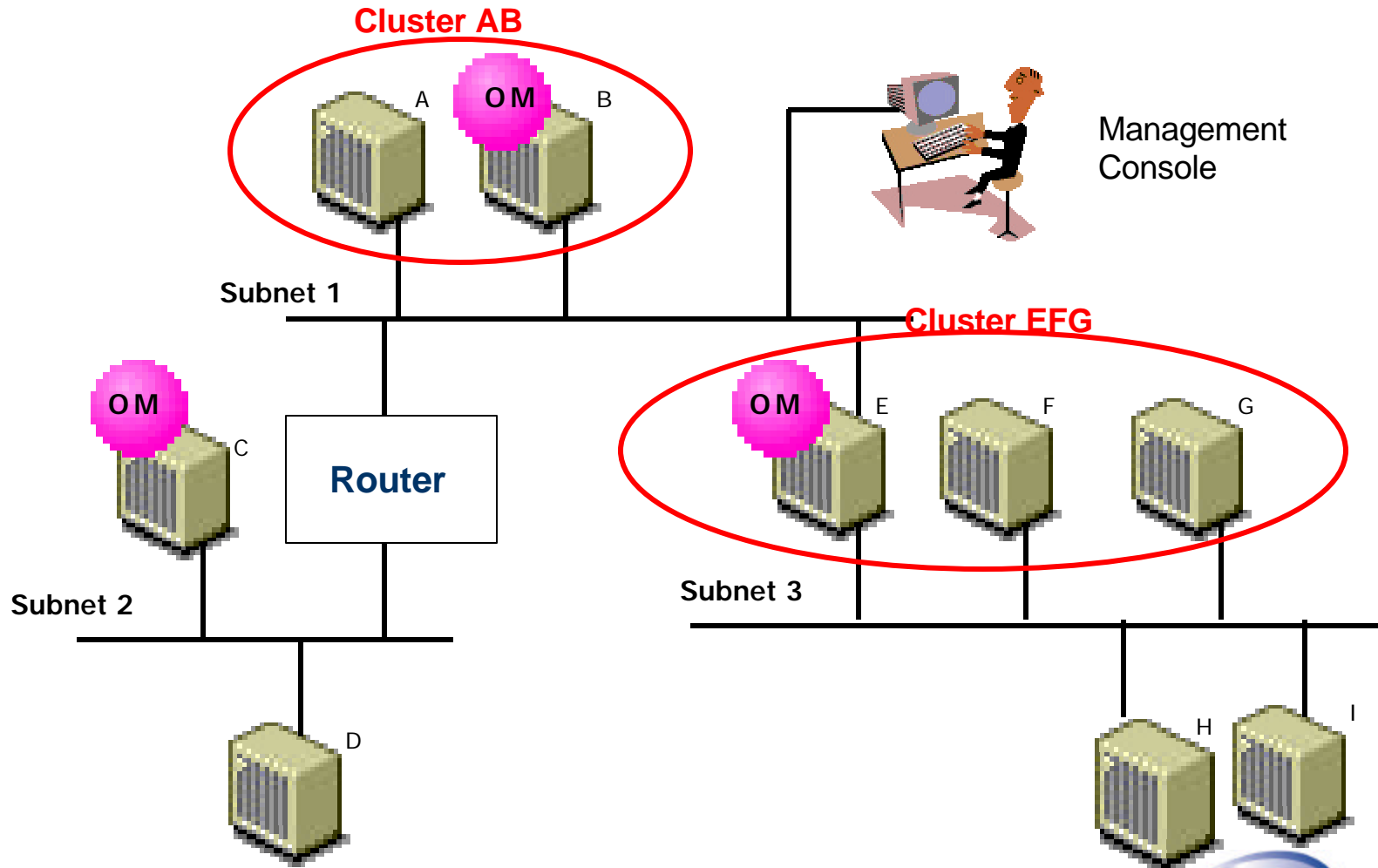
- ✓ A pure-Java application runs on HP-UX, Windows and Linux
- ✓ Graphical representation of ServiceGuard clusters, nodes, and packages
- ✓ Status display
- ✓ Cluster, node, and package property sheets
- ✓ **NEW!** Event notification via SNMP
- ✓ Cluster administration
- ✓ Save cluster environment to a file for future reference
- ✓ Standalone or integrated with HP OpenView products (NNM and VPO) and launchable from Gryphon
- ✓ Internationalization; localization in Japanese completed

# ServiceGuard Manager Configuration

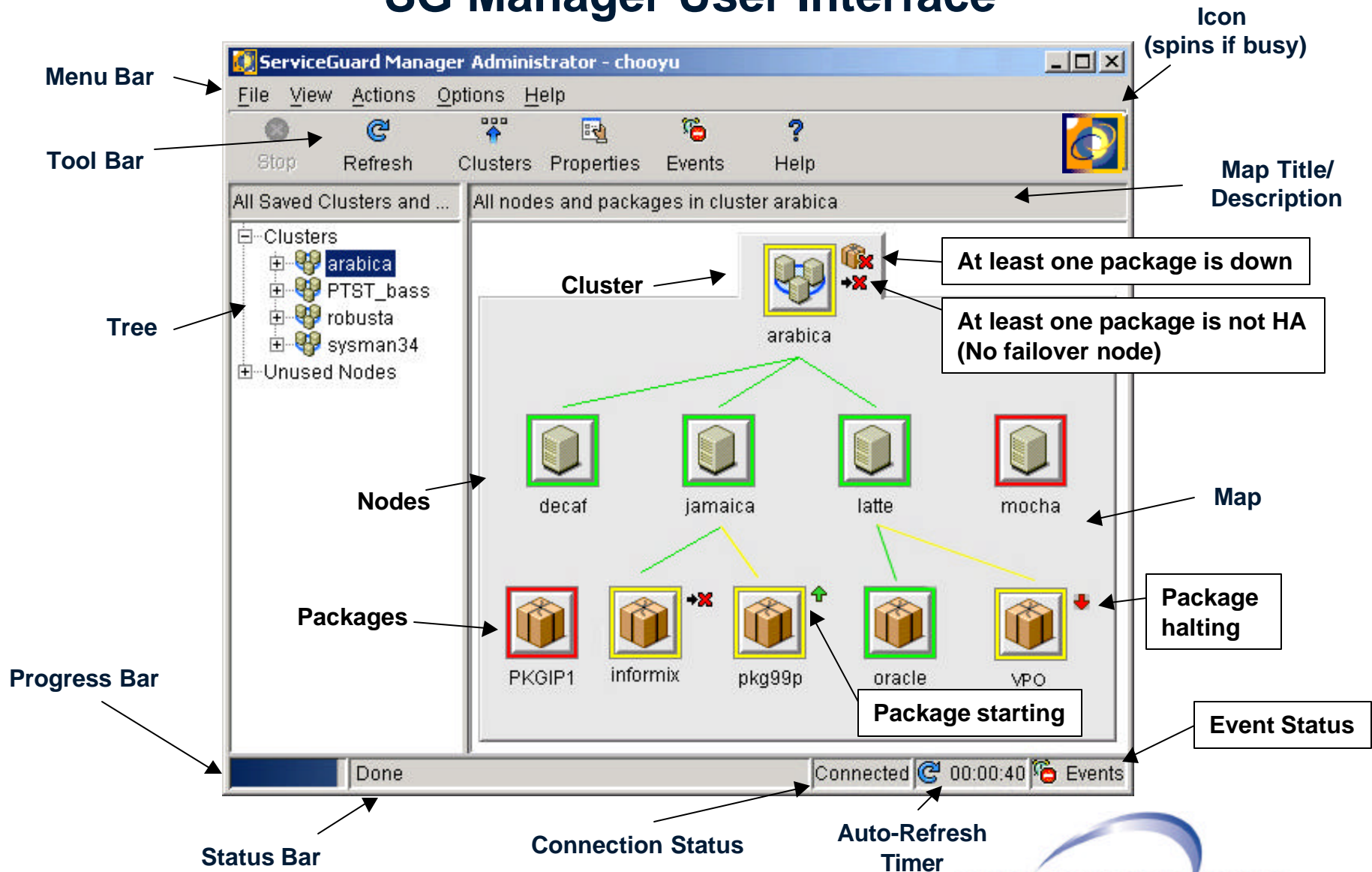




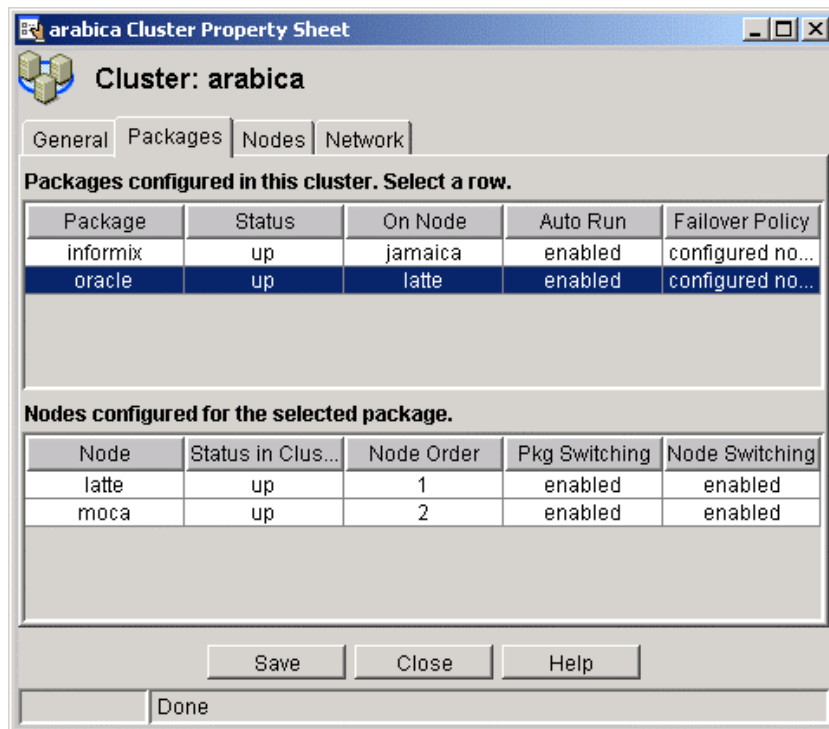
# Cluster Discovery



# SG Manager User Interface

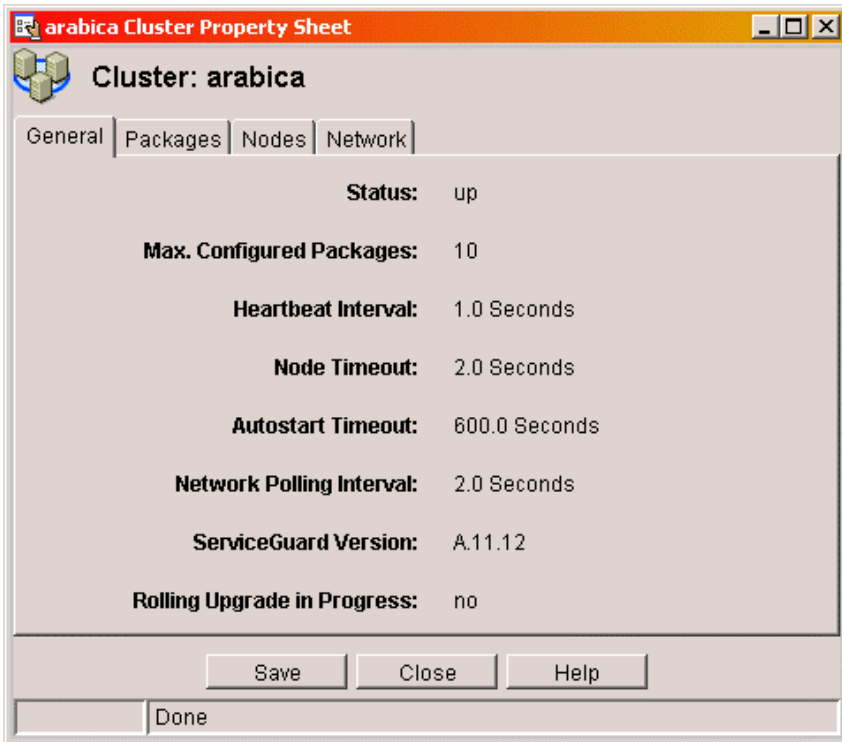


# Property Sheet



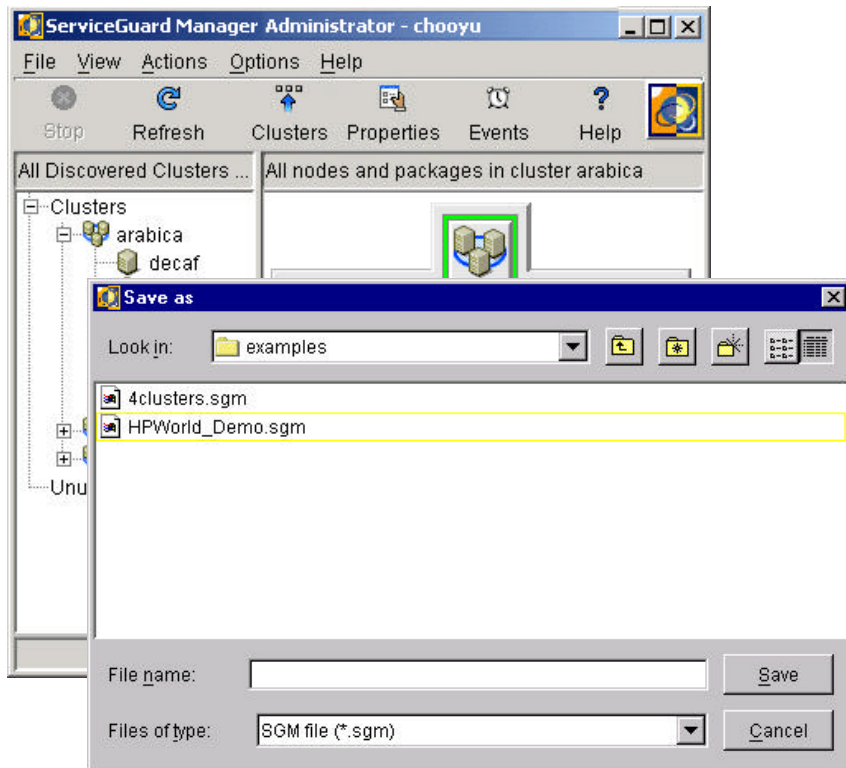
- Every map object has its own property sheet
- A property sheet is a collection of property tabs
- Two types of tabbed pane:
  - List tab
  - Table tab
- There is a status bar at the bottom.
  - Progress bar
  - Text panel to display status messages
- *Save* shows the ASCII summary information of the property sheet

# Property Sheet



List tab displays general information about the map object

# Save Environment



- Save map view in a static sgm file
- For future references: see what changed
- For demonstration purposes

# Monitoring Clusters

# Monitoring Clusters

- ✓ Scope – Select clusters to be monitored
- ✓ Security for cluster discovery
- ✓ Using map and tree for navigation
- ✓ Tooltips – Map objects and badges
- ✓ Auto-refresh – Enable/Disable, polling interval

# Connect and Select Cluster to be Monitored

**Connect to ServiceGuard (Object Manager)**

**Login**

Server: sysman2

User Name: root

Password: \*\*\*\*\*

Save password?

**Clusters to View**

Select or Enter Set of Clusters (Separate cluster names with spaces):  
arabica robusta morningstar

Include unused SG nodes?

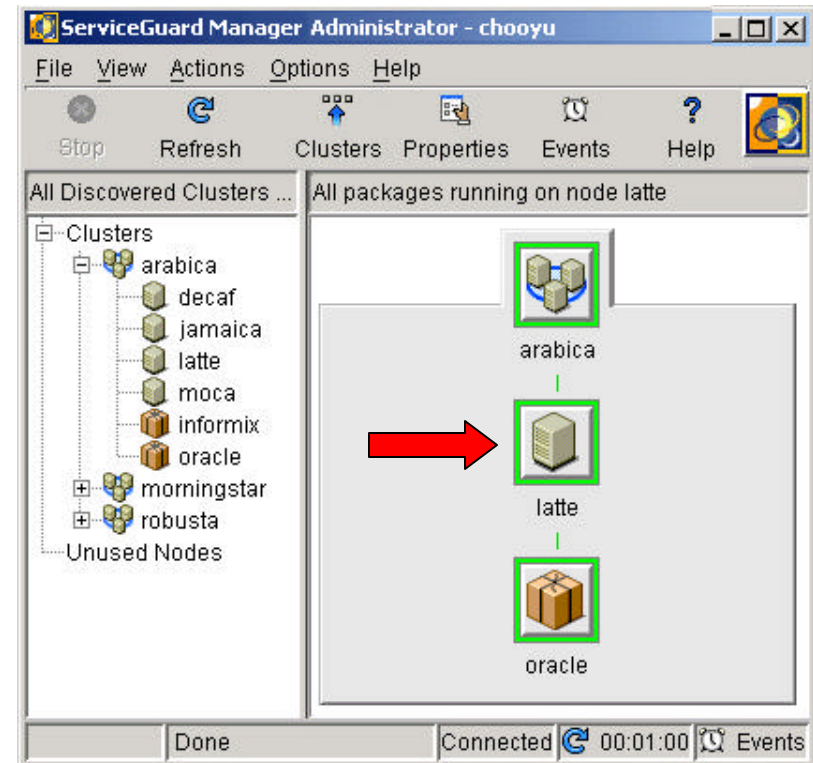
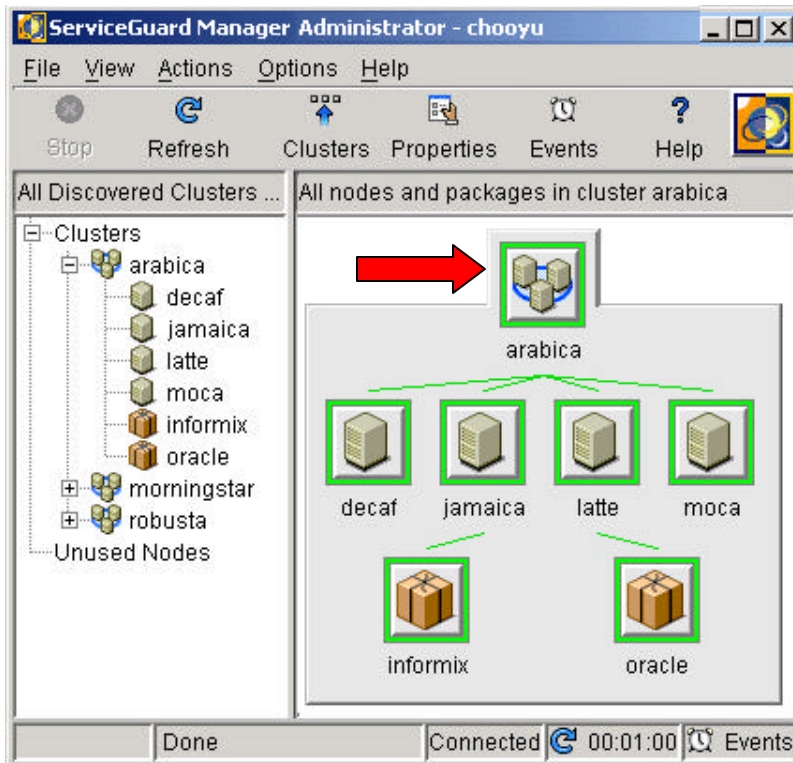
View All Clusters and Unused SG Nodes (This may take a few minutes)

Connect Cancel Help

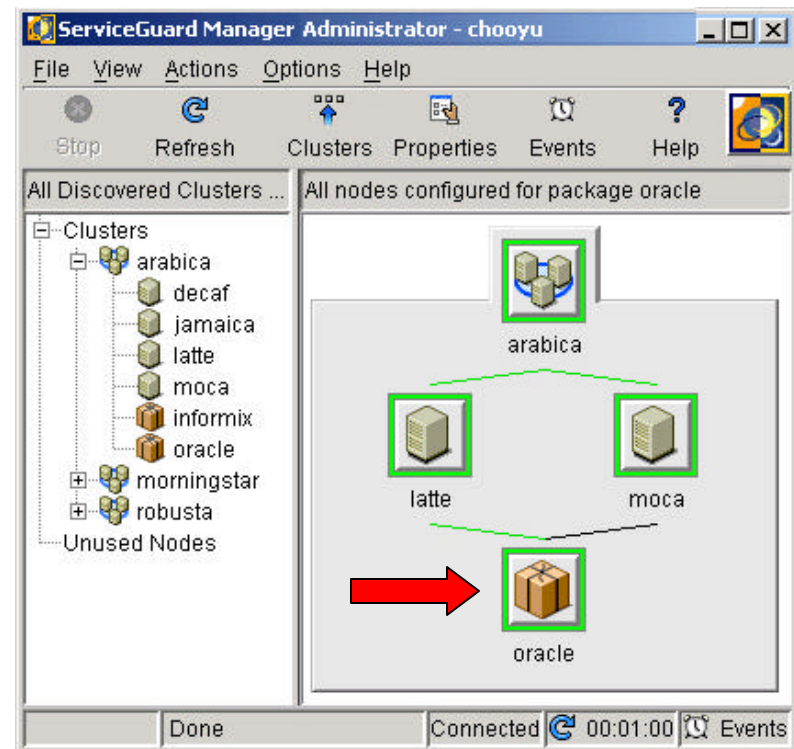
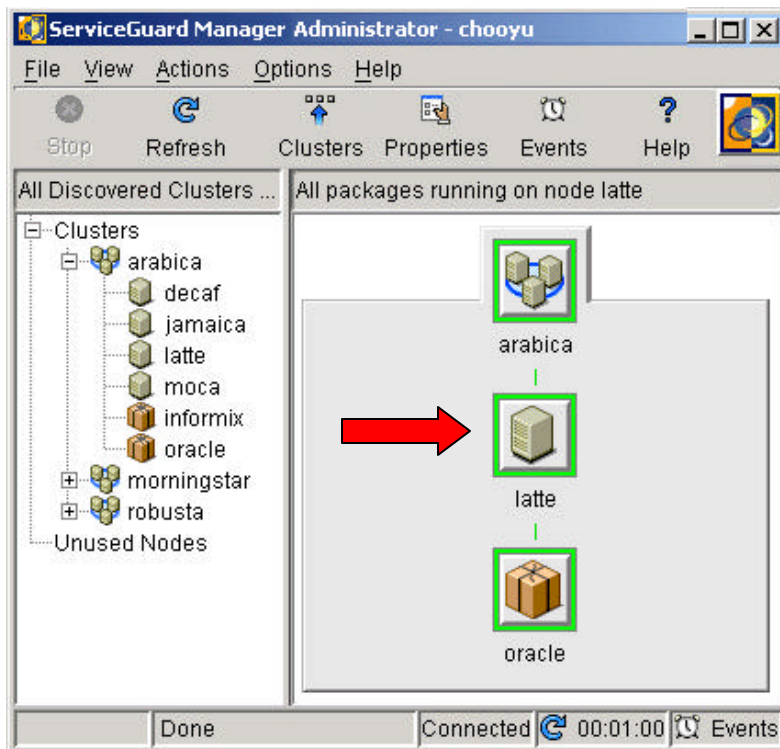
- Connect to the OM on a ServiceGuard node with valid user name and password (root or non-root)
- User can specify which clusters to monitor, choosing from all the clusters that can be discovered by the OM.



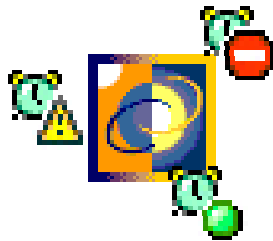
# Cluster Focus vs. Node Focus



# Node Focus vs. Package Focus



# 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

# Working with Event Browser

- Event received
- Map refreshed

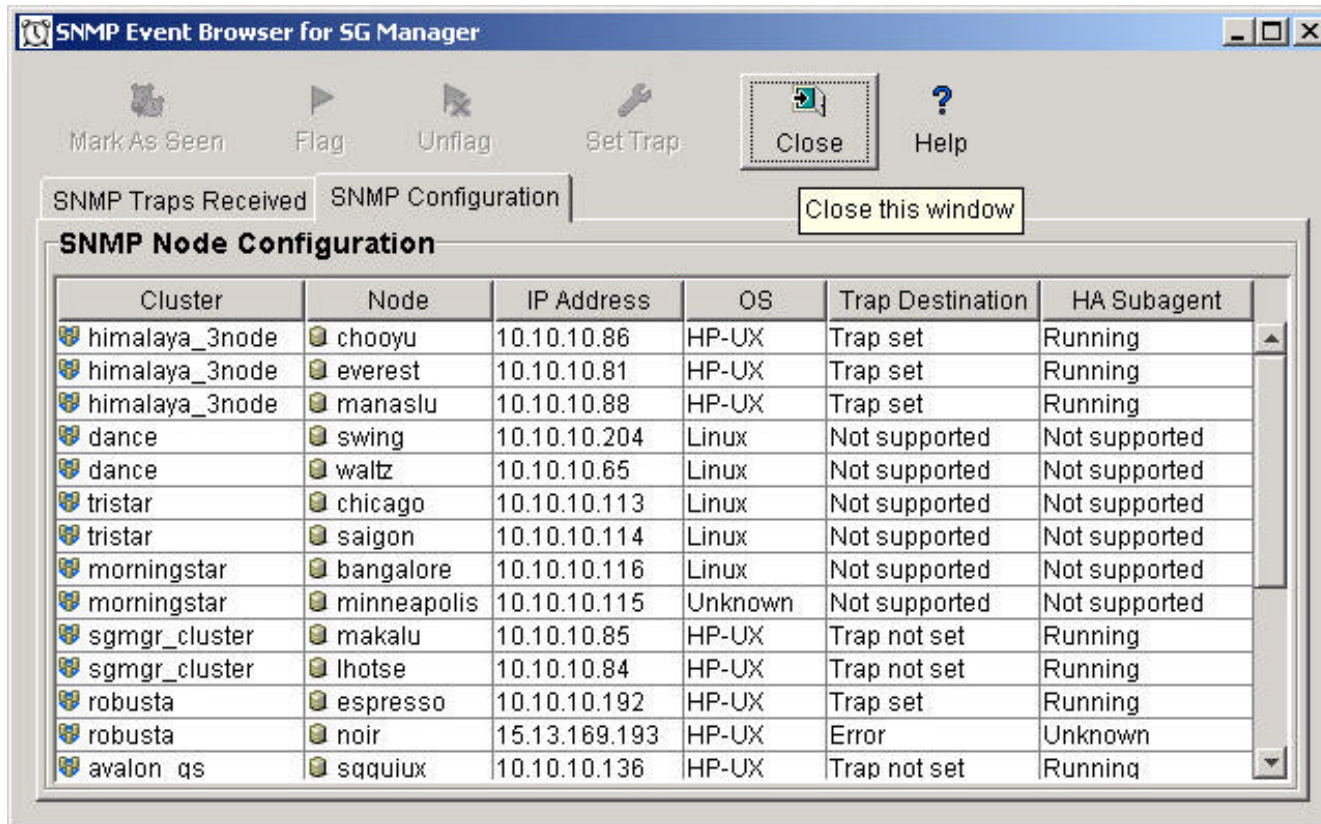
The image shows two overlapping windows from the ServiceGuard Manager Administrator. The top window, titled "ServiceGuard Manager Administrator - chooyu", displays a tree view of clusters and nodes. A red arrow points to the "Events" button in the top toolbar. The bottom window, titled "SNMP Event Browser for SG Manager", shows a table of received SNMP traps. A red arrow points to the "Events" button in the bottom toolbar of this window.

**SNMP traps received from monitored nodes**

New	Flag	Severity	Time/Date	Cluster	Node	Message
		critical	16:56:58 0...	himalay...	chooyu	HA Cluster Package "XClock" down on no...
		normal	16:56:51 0...	himalay...	chooyu	HA Cluster Package Switching Flags Chan...
		warning	16:56:51 0...	himalay...	chooyu	HA Cluster Package "XClock" halting. Halt...
		normal	16:56:51 0...	himalay...	chooyu	HA Cluster Package Switching Flags Chan...
		normal	16:56:06 0...	himalay...	manaslu	HA Cluster Subagent Startup
		normal	16:56:00 0...	himalay...	manaslu	SNMP Master Agent restarts and resets trap...
		normal	16:55:20 0...	himalay...	chooyu	HA Cluster Subagent Startup
		normal	16:55:12 0...	himalay...	chooyu	SNMP Master Agent restarts and resets trap...
		normal	16:54:28 0...	himalay...	everest	HA Cluster Subagent Startup

1/1 1/1 2/8 0/0 New/Total: 4/10

# SNMP Configuration



The screenshot shows the 'SNMP Event Browser for SG Manager' application window. The title bar includes standard window controls. The main toolbar contains icons for 'Mark As Seen', 'Flag', 'Unflag', 'Set Trap', 'Close', and 'Help'. Below the toolbar, there are two tabs: 'SNMP Traps Received' and 'SNMP Configuration', with the latter being active. A 'Close this window' button is also present. The main content area displays the 'SNMP Node Configuration' table.

Cluster	Node	IP Address	OS	Trap Destination	HA Subagent
himalaya_3node	chooyu	10.10.10.86	HP-UX	Trap set	Running
himalaya_3node	everest	10.10.10.81	HP-UX	Trap set	Running
himalaya_3node	manaslu	10.10.10.88	HP-UX	Trap set	Running
dance	swing	10.10.10.204	Linux	Not supported	Not supported
dance	waltz	10.10.10.65	Linux	Not supported	Not supported
tristar	chicago	10.10.10.113	Linux	Not supported	Not supported
tristar	saigon	10.10.10.114	Linux	Not supported	Not supported
morningstar	bangalore	10.10.10.116	Linux	Not supported	Not supported
morningstar	minneapolis	10.10.10.115	Unknown	Not supported	Not supported
sgmgr_cluster	makalu	10.10.10.85	HP-UX	Trap not set	Running
sgmgr_cluster	lhotse	10.10.10.84	HP-UX	Trap not set	Running
robusta	espresso	10.10.10.192	HP-UX	Trap set	Running
robusta	noir	15.13.169.193	HP-UX	Error	Unknown
avalon_qs	squixux	10.10.10.136	HP-UX	Trap not set	Running



# ServiceGuard Manager Security

- SG Manager allows you to limit the clusters to be managed based on customer security requirements.
- The OM cannot return information about a node without the node's permission. The OM node must be listed in `.rhosts` or in `/etc/cmcluster/cmclnodelist` of each node to be discovered.
- Passwords are encrypted before they are sent over the network, and if they are saved for the next session.
- SNMP event notification: set-community name required to receive traps
- Only the root user has administration capabilities.

# Cluster Administration

# As An Administrator, You Can...



- Run/halt cluster
- Run/halt node
- Run/halt package
- Move a package by drag&drop or through menu bar
- Enable/disable package and node switching



# ServiceGuard Admin Commands

- ✓ 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.***

# Integration with HP OpenView & ServiceControl Manager

# HP OpenView Integration

- ✓ ServiceGuard Manager Launcher
- ✓ ServiceGuard Event Templates
- ✓ Application Tools for Cluster Administration and Configuration in VPO toolbank
- ✓ MIB Browser

# HP SCM Integration

- ✓ ServiceGuard Manager launchable from within ServiceControl Manager (SCM)
- ✓ Friendly installation process

# NNM Integration (NT & HP-UX)

The screenshot displays the 'Root' console interface. The 'All Alarms Browser' window is open, showing a table of system alerts. The table has columns for Ack, Cor, Severity, Date/Time, Source, and Message. The alerts are sorted by time, showing a sequence of events related to HA Cluster Package switching and node status changes on 'sysman3.cup.hp.com'.

Ack	Cor	Severity	Date/Time	Source	Message
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p" (f
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1" (f
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p" (f
<input type="checkbox"/>		Major	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package "pkg99p" halting. Halt script invoked on node
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:19	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p" (f
<input type="checkbox"/>		CRITICAL	Thu Mar 23 15:28:28	sysman3.cup.hp.com	HA Cluster Package "pkg99p" down on node "sysman3.cup.hp.com"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:28	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1"
<input type="checkbox"/>		Major	Thu Mar 23 15:28:28	sysman3.cup.hp.com	HA Cluster Package "PKGIP1" halting. Halt script invoked on node
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:28	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1" (f
<input type="checkbox"/>		CRITICAL	Thu Mar 23 15:28:38	sysman3.cup.hp.com	HA Cluster Package "PKGIP1" down on node "sysman3.cup.hp.com"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:38	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:38	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1"
<input type="checkbox"/>		Warning	Thu Mar 23 15:28:40	sysman3.cup.hp.com	HA Cluster "sysman34" Reforming
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:43	sysman3.cup.hp.com	HA Cluster Node Joined Cluster
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:43	sysman3.cup.hp.com	HA Cluster "sysman34" Up
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:43	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "pkg99p"
<input type="checkbox"/>		Normal	Thu Mar 23 15:28:43	sysman3.cup.hp.com	HA Cluster Package Switching Flags Changed for package "PKGIP1"
<input type="checkbox"/>		Warning	Thu Mar 23 15:28:44	sysman3.cup.hp.com	HA Cluster Node Halted

20 Alarms - Critical:2 Major:2 Minor:0 Warning:2 Normal:14

default [Read-Write] [Auto-Layout]

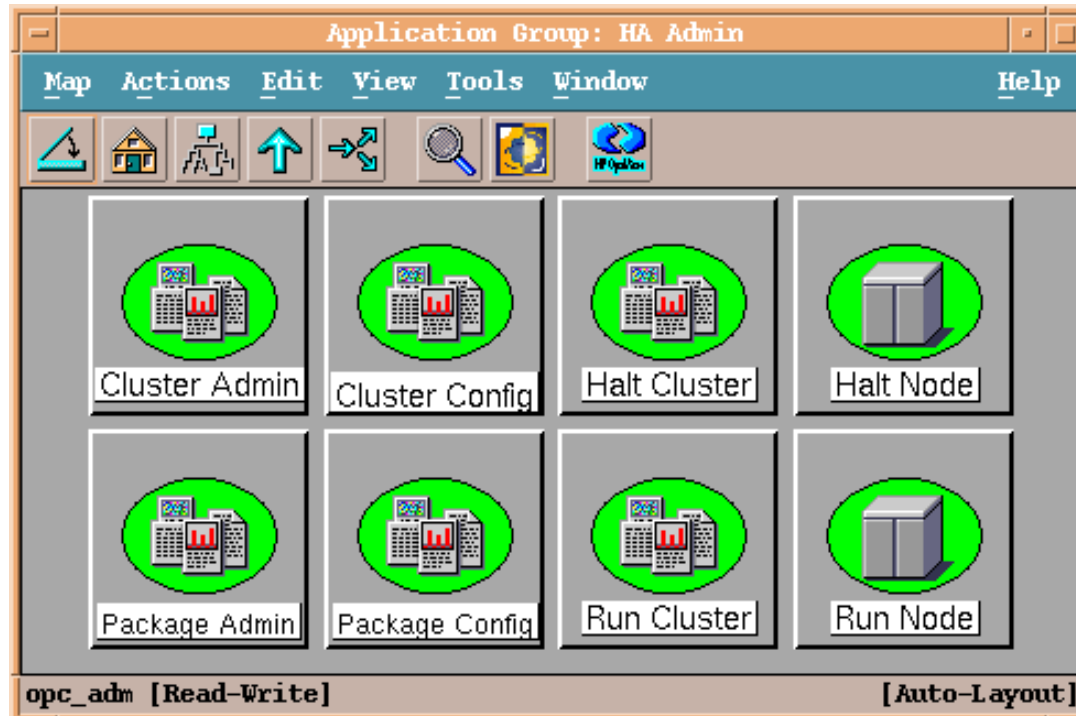
# VPO Integration (HP-UX)

The screenshot displays the HP-UX ITO Node Bank interface. The top window, titled "ITO Node Bank", shows a map of the network with nodes labeled "Internet", "ITO Node Bank", "sgguiux", "sysman3", "sysman4", and "HoldingArea". Below this, the "Message Browser" window is open, showing a list of system messages. The messages are organized into columns: Severity (Sev.), SUIAONE, Date, Time, Node, Application, MsgGroup, Object, and Message Text. The messages include various system events such as IP address changes, package status updates, and node halts/restarts. At the bottom of the message browser, there is a status bar with colored indicators for different message types: 5 (red), 4 (orange), 0 (yellow), 7 (cyan), 88 (green), and 0 (blue). Below the status bar are buttons for "Own", "Highlight", "Details...", "Perform Action", and "Annotations...".

Sev.	SUIAONE	Date	Time	Node	Application	MsgGroup	Object	Message Text
Norm	-X-----	03/23/00	15:22:04	sysman3.cu	HA Cluster	HA		IPAddrDown 192.1.168.30
Crit	--X----	03/23/00	15:22:10	sysman3.cu	HA Cluster	HA	PKGIP1	Package "PKGIP1" down on node "sysma
Norm	-X-----	03/23/00	15:22:11	sysman3.cu	HA Cluster	HA		PkgDown PKGIP1 37634 sysman3.cup.hp.
Norm	-X-----	03/23/00	15:22:11	sysman3.cu	HA Cluster	HA		PkgFlags pkg99p 37633 28 sysman34
Norm	-X-----	03/23/00	15:22:11	sysman3.cu	HA Cluster	HA		PkgFlags PKGIP1 37634 28 sysman34
Warn	--X-X--	03/23/00	15:22:12	sysman4.cu	HA Cluster	HA	sysman4.c	Node "sysman4.cup.hp.com" halted
Warn	--X-X--	03/23/00	15:22:12	sysman3.cu	HA Cluster	HA	sysman34	Cluster "sysman34" reforming
Norm	-X-----	03/23/00	15:22:12	sysman4.cu	HA Cluster	HA		NodeHalted sysman34
Norm	-X-----	03/23/00	15:22:12	sysman3.cu	HA Cluster	HA		Reconfig sysman34
Norm	--X----	03/23/00	15:22:15	sysman3.cu	HA Cluster	HA	sysman3.c	Node "sysman3.cup.hp.com" joined clu
Norm	-X-----	03/23/00	15:22:15	sysman3.cu	HA Cluster	HA		NodeUp sysman34
Norm	-X-----	03/23/00	15:22:15	sysman3.cu	HA Cluster	HA		ClusterUp sysman34
Norm	-X-----	03/23/00	15:22:15	sysman3.cu	HA Cluster	HA		PkgFlags pkg99p 37633 28 sysman34
Norm	-X-----	03/23/00	15:22:16	sysman3.cu	HA Cluster	HA		PkgFlags PKGIP1 37634 28 sysman34
Warn	--X-X--	03/23/00	15:22:17	sysman3.cu	HA Cluster	HA	sysman3.c	Node "sysman3.cup.hp.com" halted
Norm	-X-----	03/23/00	15:22:17	sysman3.cu	HA Cluster	HA		NodeHalted sysman34
Warn	--X-X--	03/23/00	22:10:08	sysman3.cu	SNMPTraps	SNMP	sysman3.c	Node down
Crit	--X----	03/27/00	08:56:32	sgguiux.cu	HP IT/Opera	OpC	opcdispm	Display receiver of user opc_admin is

# HA Tools for VPO

Application tools that comes with ServiceGuard Manager OV integration can be accessed from VPO's Application Bank.



# More HA Tools

