

Enabling High Availability for SOA Manager



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Abstract

This whitepaper describes the steps involved in configuring SOA Manager in a cluster mode to support failover using HP MC/ServiceGuard.

Audience

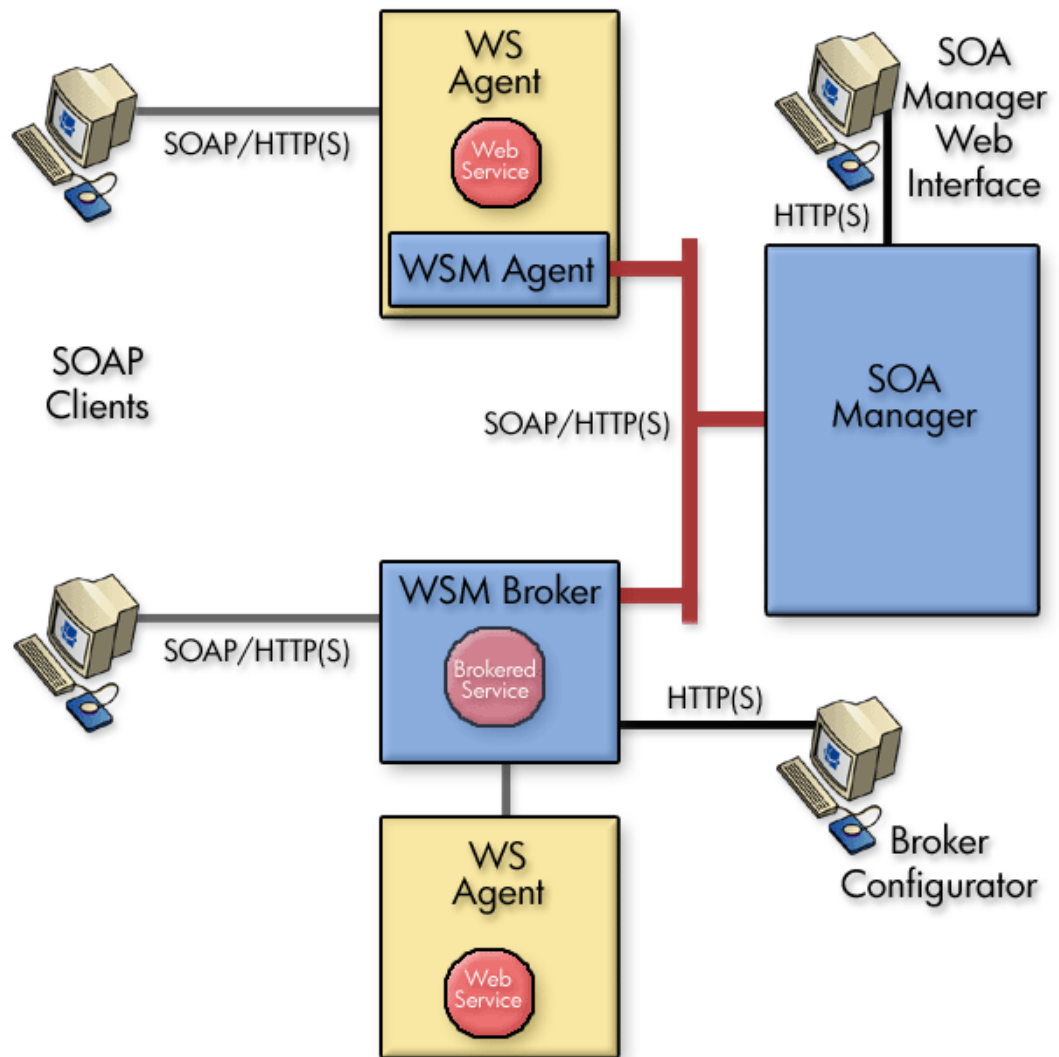
This whitepaper is intended to help administrators who require deployment of SOA Manager in a High Availability (HA) cluster environment.

Introduction

The SOA Manager software allows an organization to dynamically manage the SOA resources that are deployed in an enterprise. The software includes a set of core components that are distributed in an IT environment. The core components are as follows:

- SOA Manager Server– A central management server that collects management data and presents the data in a useful manner. The data is collected from Web Services Management (WSM) Agents and/or WSM Intermediaries. The SOA Manager Server runs on a single Java Virtual Machine (JVM) process.
- WSM Agents– Agents that provide management capabilities for Web services. The agents are integrated with the Web services. The success of the agent is dependent on the configuration of the node on which the agent is hosted.
- WSM Intermediary – A proxy server process that provides management capabilities for Web services. You can configure multiple intermediaries to ensure that no point of failure occurs between clients and an Intermediary. For example, a third party load balancer, such as Cisco's IP Director, can be used to balance requests between two or more intermediaries that are running on different hosts.

The following graphic shows a conceptual view of these components.



Prerequisites

You can use HP MC/ServiceGuard cluster to enable High Availability cluster support for SOA Manager. This cluster support can handle both hardware and software failures.

Note – HP MC/ServiceGuard is used only for configuring SOA Manager Server in a cluster mode to support failover.

You must install and configure HP MC/ServiceGuard for cluster failover using cluster management manager or the appropriate commands.

The following hardware and software configuration is necessary to implement cluster support for SOA Manager.

OS/Platform

- Red Hat Enterprise Linux AS 4.0
- HP-UX 11i V2

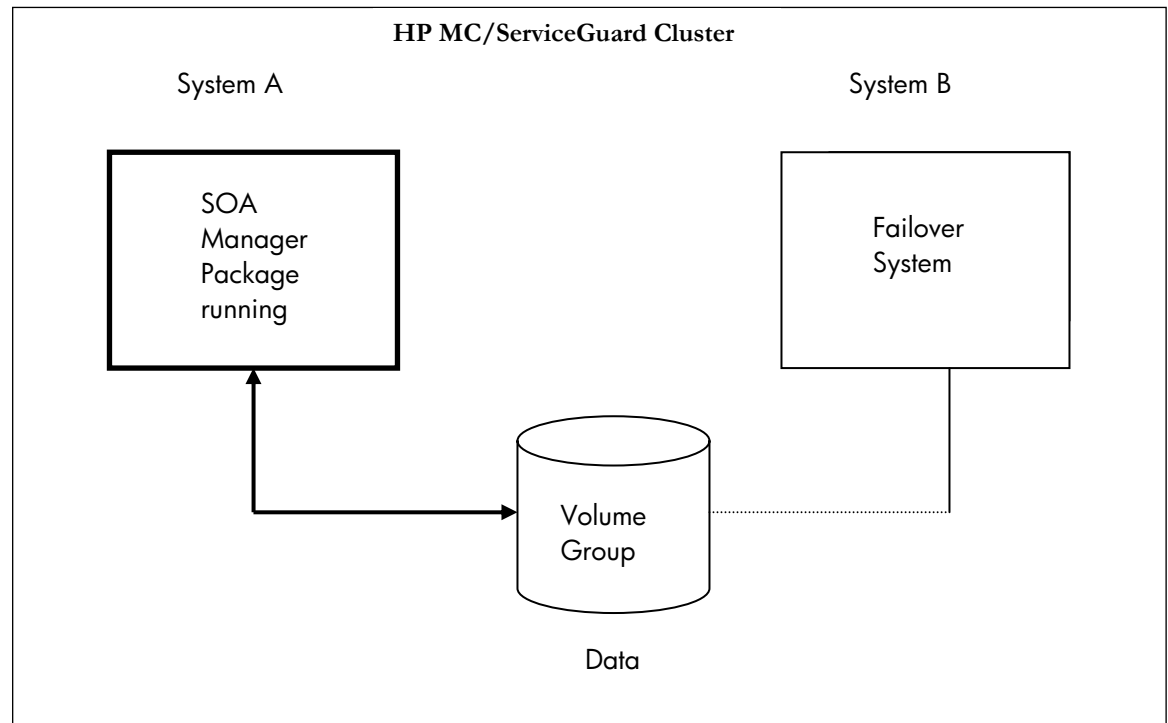
Cluster software

- HP MC/ServiceGuard version 11.17

Single SOA Manager Server Fail Over

This section describes the configuration requirements for a deployment where you have a single SOA Manager Server.

The following figure shows a Single SOA Manager Server before failover within a two-node cluster.

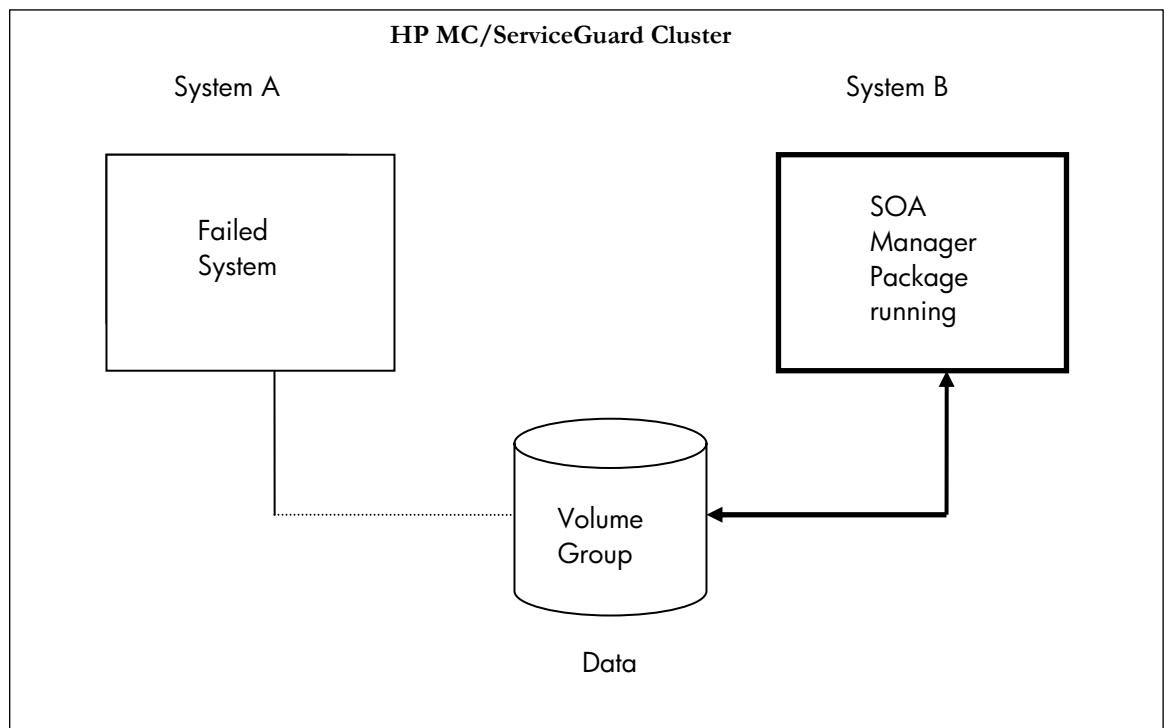


In this configuration:

- SOA Manager Server software is installed on both the nodes and the data is located on the shared disk under the volume group /dev/mcvg.
- SOA Manager data is located on the volume group and is physically accessible to both systems. Only one of the systems can use the data at any point of time.

If System A fails, the HP MC/ServiceGuard software shuts down SOA Manager Server on System A and starts SOA Manager Server on System B. System B then starts using the same data that System A used before it failed. The clients use the same IP/Host Name to reconnect to the SOA Manager Server.

The following figure shows a Single SOA Manager Server after failover within a two-node cluster.



Setting up SOA Manager with HP MC/ServiceGuard

The following sections describe the key steps and information required using a sample configuration when installing and setting up SOA Manager within an HP MC/ServiceGuard cluster.

Assumptions for Sample Configuration

- Cluster hardware configured.
- HP-UX 11.23 0505 Enterprise Operating Environment.
- HP MC/ServiceGuard installed.

Creating Volume Group and Logical Volumes

After you install HP MC/ServiceGuard, you must create the appropriate logical volume infrastructure to provide access to data from different nodes. You can create storage groups using the HP-UX Logical Volume Manager (LVM), or using VERITAS VxVM and CVM software.

Configuring the Cluster

This section describes how to define the basic cluster configuration. To configure cluster using HP MC/ServiceGuard commands, use the `cmquerycl` command to specify a set of nodes to be included in the cluster and to generate a template for the cluster configuration file. Here is an example of the command:

```
# cmquerycl -v -C /etc/cmcluster/soamCuster.config -n systemA -n systemB
```

The example creates an ASCII template file in the default cluster configuration directory, `/etc/cmcluster`. The ASCII file is partially filled with the names and attributes of cluster components on the two nodes System A and System B specified in the *Single SOA Manager Failover* section.

Modify the cluster characteristics as required to define the specific cluster. A two node configuration requires either a ServiceGuard quorum server or cluster lock device. In this example, the shared disk from the SLVM volume group is used as a cluster lock device.

After specifying all cluster parameters, use HP-UX commands to apply the configuration. This action distributes the binary configuration file to all the nodes in the cluster.

Installing and Configuring SOA Manager on the first node

To install SOA Manager on a UNIX platform:

1. Log in to the system as a root/admin user.
2. Place the SOA Manager CD in the CD-ROM.
3. Open a command prompt and mount the CD if your system is not set to automatically mount.
4. From the mount directory, change the current directory to
/Installation/Disk1/InstData/<UNIX_Platform>/VM.
5. Declare the HPSOAManagerInstaller2_1.bin an executable with global permissions as follows:
`chmod +x HPSOAManagerInstaller2_5.bin`
6. Run the installer as follows:

```
sh HPSOAManagerInstaller2_5.bin
```

Follow the instructions for installing the SOA Manager and Intermediary Agent.

Install SOA Manager on Additional Node(s)

To install SOA Manager on additional nodes you can perform the steps listed to install SOA Manager on a single node.

Configuring SOA Manager Data on a Shared Disk

To configure SOA Manager data on a shared disk, you must move the <install_dir>/conf directory to the shared storage location and create a soft link from both the nodes to point to the new location. When using HSQLDB as the database, move the <install_dir>/data directory onto the shared storage location and create a soft link from both the nodes to point to the new location.

While using Oracle as the database, edit the <install_dir>/conf/networkservices/mipServer.xml to make both the nodes point to the same Oracle database.

Configuring Package

The package configuration process defines a set of application services that are run by the package manager when a package starts up on a node in the cluster. The configuration also includes a prioritized list of cluster nodes on which the package can run together with definitions of the acceptable types of failover allowed for the package.

Using MC/ServiceGuard Commands to Create a Package

1. Create a subdirectory for each package you are configuring in the /etc/cmcluster directory:

```
# mkdir /etc/cmcluster/soam_pkg
```

You can use any directory names you want.

2. Generate a package configuration template for the package:

```
# cmmakepkg -p /etc/cmcluster/soam_pkg/ns_pkg.config
```

You can use any file names you wish for the ASCII templates.

3. Edit the template files to specify package name, prioritized list of nodes, the location of the control script, and failover parameters for each package.

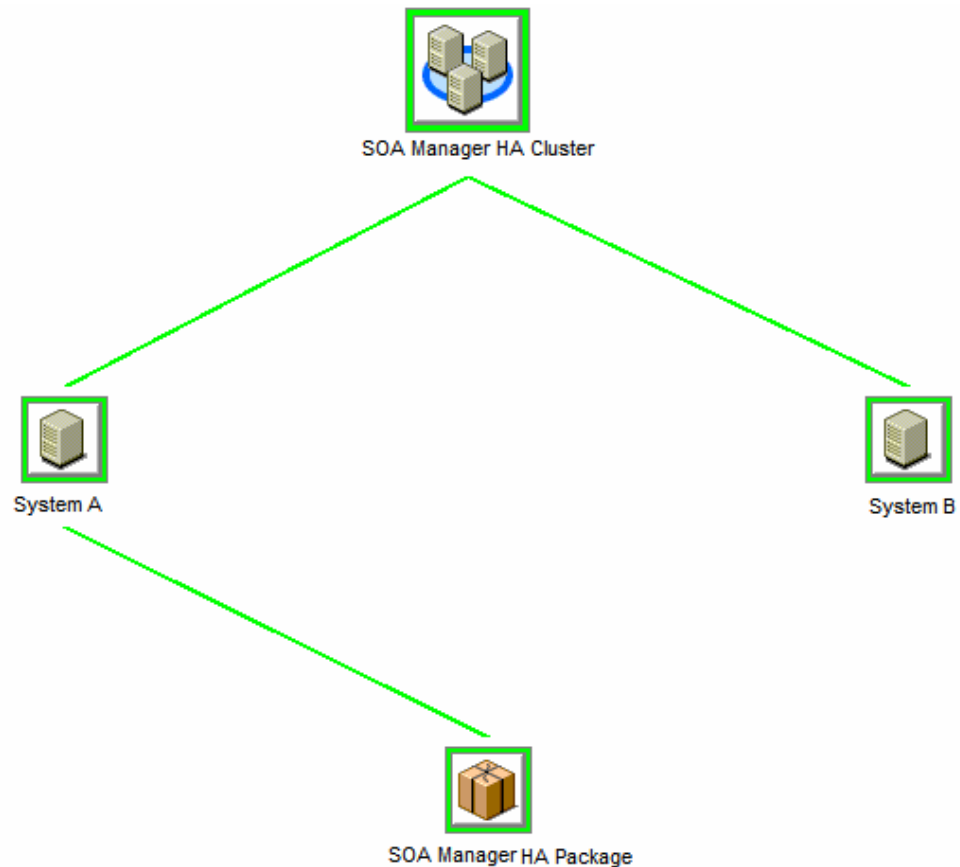
It is recommended to configure packages on the cluster in specific stages, as follows:

1. Configure volume groups and mount points only.

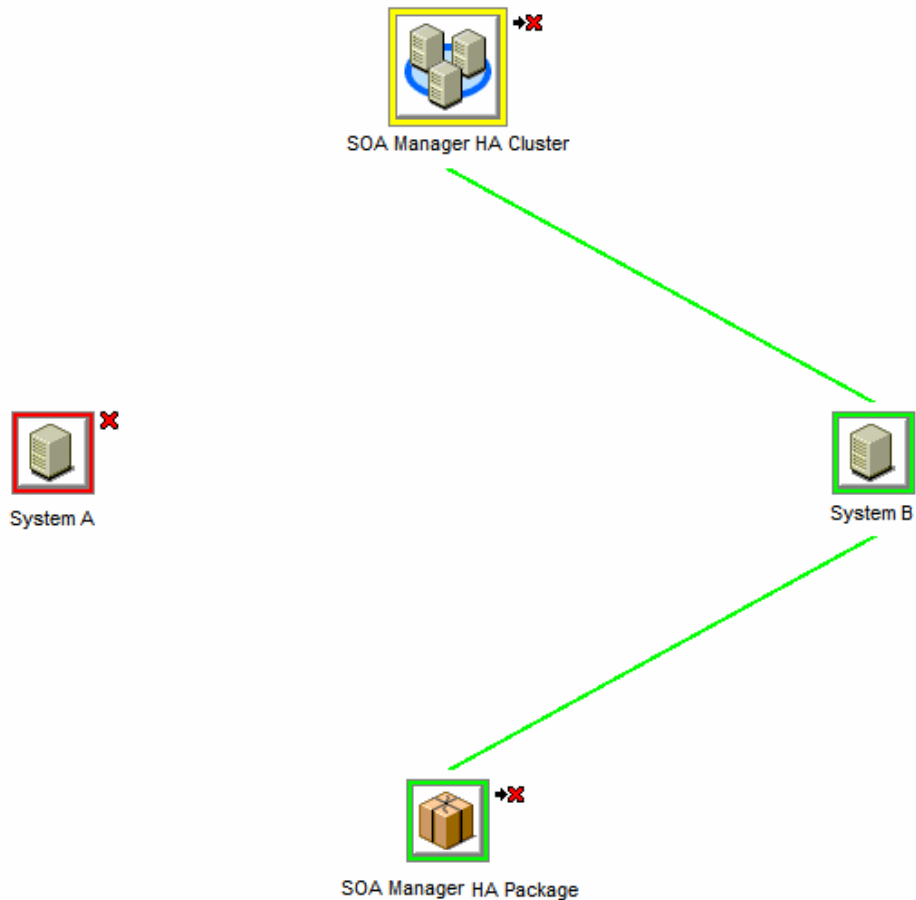
2. Apply the configuration.
3. Distribute the control script to all nodes.
4. Run the package and ensure that it can be moved from one node to another node.
5. Stop the package.
6. Configure the package IP addresses and application services in the control script.
7. Distribute the control script to all nodes.
8. Run the package and ensure that applications run as expected and that the package fails over correctly when services are disrupted.

Switchover Procedure

The cluster is configured with two nodes System A and System B with the package running on System A by default as shown in the following figure.



When a system failure occurs on System A, the cluster initiates switchover of the Resource Group from System A. The Resource Group is stopped on System A and started on System B as shown in the following figure.



The procedure is performed as follows by the failover mechanism:

On System A:

1. Cluster Manager stops the SOA Manager Server.
2. Cluster Manager unassigns the virtual IP and unmounts shared file systems.

On System B:

1. Cluster Manager assigns the virtual IP and mounts shared file systems.
2. Cluster Manager starts SOA Manager Server.

Limitations

- The document does not provide details about installing HP MC/ServiceGuard and configuring shared storage system.
- By default, failover occurs only when SOA Manager exits or the system fails. This document does not contain instructions for enhancing HA for other failures such as disk failures and so on.
- SOA Manager might be unavailable for sometime during the failover process. This includes the time taken to identify the service that has failed and the time taken for SOA Manager to startup on the failover node. You will not be able to access the HP SOA Manager web interface during this time. Alerts/Audits that are sent from Intermediary are lost during this period.
- All data present in the memory is lost during failover. Performance metrics present in the memory is lost during failover. SOA Manager allows you to recover data from the last 30 minutes from the

Intermediaries. The remaining data is lost. The metrics that are shown using audit messages are available.

Conclusion

Business continuity is essential to profitability and competitiveness. High availability and disaster tolerance are the IT elements that contribute to business continuity. This white paper covered disaster tolerant reference architecture for SOA Manager Server. HP will continue to provide customers with an environment in which their required applications and associated data are available all the time within specified performance guidelines, regardless of hardware and software, and planned or unplanned occurrences.

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