Sun Cluster 2.2 7/00 Data Services Update: Lotus Domino 4.6.3

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Part No. 806-2687
November 1999, Revision A

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Contents

Preface

Lotus Domino 4.6.3 is now supported by Sun™ Cluster HA for Lotus on Sun Cluster 2.2, in the Solaris™ 2.6 operating environment. This support is provided through the Lotus Domino 4.6.3 patch, available through `http://sunsolve.sun.com`.

The *Sun Cluster 2.2 7/00 Data Services Update: Lotus Domino 4.6.3* AnswerBook™ provides installation and configuration instructions for Lotus Domino 4.6.3 and Sun Cluster HA for Lotus.

Before You Read This Book

Before using the procedures described in this AnswerBook, you should have already installed and configured Sun Cluster 2.2, which includes Sun Cluster HA for Lotus, using the instructions in the *Sun Cluster 2.2 Software Installation Guide*.

These instructions are designed for an experienced system administrator with knowledge of Sun Cluster.

Typographic Conventions

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output.	Edit your `.login` file. Use **`ls -a`** to list all files. `% You have mail`.
`AaBbCc123`	What you type, when contrasted with on-screen computer output.	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type **`rm`** *filename*

Shell Prompts

TABLE P-2 Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

TABLE P-3 Related Documentation

Application	Title	Part Number
Sun Cluster 2.2 software	*Sun Cluster 2.2 Software Installation Guide*	805-4239
	Sun Cluster 2.2 System Administration Guide	805-4238
	Sun Cluster 2.2 API Developer's Guide	805-4241
	Sun Cluster 2.2 Error Messages Manual	805-4242
	Sun Cluster 2.2 Release Notes	805-4243
Sun Cluster 2.2 hardware	*Sun Enterprise Cluster System Site Preparation, Planning, and Installation Guide*	805-6512
	Sun Enterprise Cluster Hardware Service Manual	805-6511

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CHAPTER 1

Sun Cluster 2.2 7/00 Data Services Update: Lotus Domino 4.6.3

Lotus Domino Overview

Sun Cluster HA for Lotus makes the Lotus Domino server and partitioned servers highly available when all are running on a Sun cluster.

To run Lotus Domino 4.6.3 with Sun Cluster HA for Lotus and Sun Cluster, you must:

- Install and configure Sun Cluster (which includes Sun Cluster HA for Lotus) using the instructions in Chapter 3 of the *Sun Cluster 2.2 Software Installation Guide*
- Complete the Lotus Domino pre-installation tasks described in your Lotus Domino documentation
- Install and configure Lotus Domino using the instructions in your Lotus Domino documentation
- (Optional) Install and configure partitioned servers, using the instructions in "Installing and Configuring Lotus Domino Partitioned Servers" on page 7 in this document
- Configure and verify Sun Cluster HA for Lotus, using the `hadsconfig(1M)` command and "Installing and Configuring Sun Cluster HA for Lotus" on page 12 in this document

The procedures described in this document assume that you are familiar with the Sun Cluster concepts of disksets, logical hosts, physical hosts, switchover, takeover, and data services.

Choosing an Install Location for Lotus Binaries

You can install Lotus Domino primary server binaries and partitioned server binaries on either the local disk of each cluster node or on a shared disk. If you choose to install Lotus Domino binaries or partitioned server binaries on the local disk, you must install them on all cluster nodes. Always install data directories on the shared disk.

Installing the binaries on the shared disk eases administration and consumes less disk space, but increases down time during application upgrades, because the application must be brought down for the duration of the binary upgrade.

Installing the binaries locally on each node preserves high availability during failover, and also reduces downtime during future upgrades of the application. You can upgrade the binaries on a node that is not currently hosting the application, switch the application over to that node, then upgrade the binaries on the original node. The application remains available except for during the brief switchover period.

Configuring Lotus and Netscape Applications Together

Lotus Domino servers can be set up as HTTP, POP3, IMAP, NNTP or LDAP servers. However, when you install Lotus Domino servers and Netscape servers in the same cluster, the Lotus application reserves the default Netscape port for Lotus use.

Therefore, you must assign a different port number to any Netscape application running in the same cluster as the Lotus application. Note the general guidelines outlined in the following table.

TABLE 1-1 Configuring Lotus and Netscape Applications Together - General Guidelines

Server Task	Client Types Supported	Limitations	Netscape Default Port Number (Reserved by Lotus)
HTTP	Web browsers (Netscape Navigator, Microsoft Internet Explorer, etc.)	When Netscape Enterprise Server and Lotus HTTP server are both installed in one cluster, assign an unused port number to Netscape Enterprise Server.	80
IMAP	Internet mail clients using Post Office Protocol 3 (POP3) or Internet Message Access Protocol	When Netscape Mail and the Lotus IMAP server are both installed in one cluster, assign an unused port number to Netscape Mail.	110 (POP3) 143 (IMAP)
SMTP/ MIME	Internet mail clients using Simple Mail Transfer Protocol (SMTP)	When Netscape Messaging Server (or Netscape Mail Server) and Lotus SMTP/ MIME are both installed in one cluster, assign an unused port number to the Netscape application.	N/A
LDAP	Internet Directory Clients using Lightweight Directory Access Protocol (LDAP)	When Netscape Directory Server and the Lotus LDAP server are both installed in one cluster, assign an unused port number to Netscape Directory Server.	389
NNTP	Internet news readers using Network News Transfer Protocol (NNTP)	When Netscape Collabra Server and the Lotus NNTP server are both installed in one cluster, assign an unused port number to Netscape Collabra Server.	119

Installing and Configuring Lotus Domino

Use the following procedure to install Lotus Domino. Consult your Lotus Domino documentation before performing this procedure.

Note – Lotus Domino 4.6.3 and Sun Cluster HA for Lotus support multiple instances of Lotus Domino server per cluster. However, if the load is very high on the cluster node on which Lotus is started, some instances of Lotus Domino server might fail to come up. If this occurs, you must reduce the load on the cluster node and restart Lotus Domino, or configure fewer instances of Lotus Domino on the cluster.

▼ How to Install and Configure Lotus Domino

1. **On each node that can master the logical host running Sun Cluster HA for Lotus, modify the `/etc/nsswitch.conf` file.**

   Modify the `/etc/nsswitch.conf` file so that `group` lookups are directed to files first. For example:

   ```
   ...
   group: files nisplus
   ...
   ```

2. **Install the Solaris operating environment and the Sun Cluster software.**

   Refer to Chapter 3 in the *Sun Cluster 2.2 Software Installation Guide* for detailed instructions to install Solaris and Sun Cluster, including the Sun Cluster HA for Lotus package. Complete the post-installation procedures to install any required patches.

   Note – At this time, do not install any patches that are not required by Sun Cluster.

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3. **Start Sun Cluster by using the `scadmin(1M)` command.**

   Start the first node. From the administrative workstation:

```
# scadmin startcluster localhostname clustername
```

   Then add each node to the cluster. From each node:

```
# scadmin startnode
```

4. **Make sure each logical host is mastered by its default master.**

   Sun Cluster HA for Lotus will be installed from the physical host that is the logical host's default master. If necessary, switch over the logical hosts to be served by their respective default masters.

   The logical host names you use in your Sun Cluster configuration should be used as the Lotus Domino server names when you install and configure Sun Cluster HA for Lotus. This eases set up and administration.

5. **On each cluster node that will be running Lotus Domino, specify user and group names for Lotus Domino.**

   Create a Lotus group, normally named `notes`. Create a user account, also normally named `notes`, and make it a member of the `notes` group. The group ID and user ID should be identical on all nodes.

```
# groupadd notes
# useradd -u notes -g notes -d /opt/lotus/bin notes
```

6. **On each cluster node that will be running Sun Cluster HA for Lotus, install the Lotus Domino server.**

   Log in as root to ensure ownership of the entire directory before performing this step. From the installation directory, copy the Lotus Domino install program to your local disk and install the Lotus Domino server.

   By default, the Lotus Domino server is installed in the `/opt/lotus` directory, but you can select a different directory on the local or shared disk. The install program will create a symbolic link between the default install directory and the install directory you specify.

   Run the install command as root.

```
# cd /cdrom/notes_r4/unix
# ./install
```

Note – The Lotus Domino installation directory on the Lotus CD-ROM might vary from the directory shown here. Check your Lotus Domino installation documentation for the actual path.

7. **On each cluster node that will be running Sun Cluster HA for Lotus, set up a `$PATH` variable for Lotus Domino.**

```
# set PATH = /opt/lotus/bin $PATH .
```

8. **On each cluster node that will be running Sun Cluster HA for Lotus, set up the Lotus Domino server.**

   Use the Lotus Domino setup program to set up Lotus Domino. Log in as user `notes` to ensure access to the Lotus Domino server data files. You must place the Lotus Domino server data directories on the logical host.

```
# /opt/lotus/bin/notes
```

   This completes installation of the Lotus Domino server and data files.

Where to Go From Here

Proceed to "Installing and Configuring Lotus Domino Partitioned Servers" on page 7 if you want to install partitioned servers. Otherwise, proceed to "Installing and Configuring Sun Cluster HA for Lotus" on page 12.

Installing and Configuring Lotus Domino Partitioned Servers

The partitioned server feature of Lotus Domino 4.6.3 allows multiple Lotus Domino servers to run on a single node. This section describes the steps for installing and setting up partitioned servers on a Sun cluster. See your Lotus Domino documentation for more information about the partitioned server feature itself.

Note – To install partitioned servers, you must have the license for Lotus Domino Advanced Services.

You can configure partitioned servers in two ways to enable network access:

- Install the partitioned server binaries on the local disk of all nodes, and use a unique IP address for each partitioned server.
- Install the partitioned server binaries on either the local disk of all nodes or on the shared disk, and use a unique TCP port number for each partitioned server that shares an IP address with another partitioned server.

These guidelines are summarized in the following table. See also “Choosing an Install Location for Lotus Binaries” on page 2.

TABLE 1-2 Lotus Domino Server Installation Options

Server	Installation Location for Binaries
Single Lotus Domino server	Local disk on all nodes, or shared disk
Partitioned server with unique TCP port number	Local disk on all nodes, or shared disk
Partitioned server with unique IP address	Local disk only, on all nodes
Data directories	Shared disk only

▼ How to Install Lotus Domino Partitioned Servers

Use this procedure to install the Lotus Domino partitioned servers and to configure the data directories. Before beginning the installation, note the configuration options described in TABLE 1-1 and the locations for binaries described in TABLE 1-2. Refer to your Lotus Domino installation documentation for additional details.

1. **Complete Step 1 through Step 7 in the procedure "How to Install and Configure Lotus Domino" on page 4 to install the initial Lotus Domino server.**

   You must be user root to perform the installation.

   Create the data directories from only one node, to ensure that the partition numbers of the servers are unique.

2. **During the installation, answer `yes` when prompted for whether to install Lotus Domino Advanced Services.**

   This installs partitioned servers.

3. **After the installation is complete, log out as root and log back in as user `notes`.**

   This ensures access to the Lotus Domino server data files.

4. **Set up partitioned servers using the Lotus Domino install program.**

   To set up the first partitioned server, invoke the install program with the following command:

   ```
   # /opt/lotus/bin/notes
   ```

   Use the Lotus Domino install program to set up partitioned servers. During the installation, you will specify the location of the partitioned server binaries to be on either the local or shared disk. See TABLE 1-2 for more information about installation locations.

   When prompted to create data directories, create them on the shared disk. Create all data directories from one node, to ensure that the partition numbers of the servers are unique.

   Note – The primary (initial) Lotus Domino server must be running in order for you to install subsequent partitioned servers, and the names of the subsequent partitioned servers should already be registered with the primary partitioned server. See your Lotus Domino documentation for details.

   To set up subsequent partitioned servers, type the following command:

   ```
   # /opt/lotus/bin/notes -u
   ```

Note – Make sure that user `notes` has write permission to all files.

5. **Configure the partitioned servers using the Lotus Domino setup program.**

   The setup program comes up automatically after you install each partitioned server.

   Use your Lotus Domino documentation to complete the setup. No special Sun Cluster considerations exist for this portion.

Where to Go From Here

Proceed either to "How to Configure Lotus Domino Partitioned Servers Using Unique IP Addresses" on page 9 or "How to Configure Lotus Domino Partitioned Servers Using Unique TCP Port Numbers" on page 10.

▼ How to Configure Lotus Domino Partitioned Servers Using Unique IP Addresses

After installing partitioned server binaries on the local disks and configuring data directories on the shared disk, use the following procedure to configure unique IP addresses for the partitioned servers.

1. **Edit the `notes.ini` file on each partitioned server to include the appropriate IP address and port number.**

   This enables communication between Lotus Notes and the partitioned servers.

   In this sample, *IPaddress* is the IP address of the host on which the current partitioned server is installed, and *port_number* is the standard Lotus port number – normally 1352. The port number should be identical in the `notes.ini` files on all partitioned servers, while the IP address should be different for each file.

```
...
TCPIP_TCPIPAddress=0,IPaddress:port_number
...
```

   See your Lotus documentation for more information about the `notes.ini` file.

Where to Go From Here

Proceed to "Installing and Configuring Sun Cluster HA for Lotus" on page 12.

▼ How to Configure Lotus Domino Partitioned Servers Using Unique TCP Port Numbers

After installing partitioned server binaries on either the local disk of each node or on the shared disk, and the data directories on the shared disks, use the following procedure to configure unique TCP port numbers for the partitioned servers.

1. **Select one of the partitioned servers to be the port mapper server.**

Note – Clients can access the partitioned servers only at a standard port (1352), which is assigned to the port mapper server. The port mapper server processes requests to the other partitioned servers. The port mapper server must be running in order to route requests to the other partitioned servers. Therefore, if the port mapper server is down, new sessions cannot connect. Existing sessions, however, remain connected.

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2. **For all partitioned servers other than the port mapper server, assign a unique TCP port number by editing the `notes.ini` files on those partitioned servers.**

   In the `notes.ini` file on each partitioned server that is not a port mapper server, include one line to define the IP address and port number for that partitioned server. In this example, *IPaddress* is the shared IP address and *port_number* is the unique port number of the partitioned server.

```
...
TCPIP_TcpIpAddress=0,IPaddress:port_number
...
```

3. **Edit the `notes.ini` file of the port mapper server to include the appropriate TCP settings.**

   The `notes.ini` file on the port mapper server must include an entry for itself, in which the *port_number* is defined as the standard server port, 1352. Additionally, the file must include entries for all other partitioned servers, in which the *port_number* fields are defined as unique port numbers.

   In this example, 1352 is the port number of the current port mapper server, *servername* is the name of each subsequent partitioned server, *org* is the organization name, *IPaddress* is the shared IP address, and *port_number* is the unique port number assigned to each partitioned server.

The *IPaddress* should be identical for all entries, but the *port_number* must be unique for each entry.

```
...
TCPIP_TcpIpAddress=0,IPaddress:1352
TCPIP_PortMapping00=CN=servername0/O=org.IPaddress:portnumber1
TCPIP_PortMapping01=CN=servername1/O=org.IPaddress:portnumber2
TCPIP_PortMapping02=CN=servername2/O=org.IPaddress:portnumber3
TCPIP_PortMapping03=CN=servername3/O=org.IPaddress:portnumber4
...
```

Where to Go From Here

Proceed to "Installing and Configuring Sun Cluster HA for Lotus" on page 12.

Installing and Configuring Sun Cluster HA for Lotus

This section describes the steps used to install, configure, register and start Sun Cluster HA for Lotus.

▼ How to Install and Configure Sun Cluster HA for Lotus

1. **On each cluster node that will be running Sun Cluster HA for Lotus, run the `hadsconfig(1M)` command to configure the data service.**

   Use the `hadsconfig(1M)` command to create, edit, and delete instances of Lotus Domino and partitioned servers. Multiple instances of Lotus Domino or partitioned servers can be configured to run under Sun Cluster HA for Lotus. See "Configuration Parameters for Sun Cluster HA for Lotus" on page 14 for information on input you will need to supply to the `hadsconfig(1M)` command.

   See the `hadsconfig(1M)` man page for details.

   ```
   # hadsconfig
   ```

2. **Register and activate Sun Cluster HA for Lotus using the `hareg(1M)` command.**

   The `hareg(1M)` command adds the Sun Cluster HA for Lotus data service to the Cluster Configuration Database, performs a cluster reconfiguration, and starts all of your Lotus Domino servers. Run this command on only one node:

   ```
   # hareg -s -r lotus
   ...
   # hareg -y lotus
   ```

3. **Verify the Sun Cluster HA for Lotus configuration.**

   Log in as notes and verify the configuration by starting and stopping the Lotus Domino server on one of the cluster nodes:

```
phys-hahost1# /opt/lotus/bin/server
...
phys-hahost1# /opt/lotus/bin/server -q
```

   You can test more of the configuration by starting the cluster, mastering the logical hosts from various physical hosts, and then starting and stopping the Lotus Domino server from those physical hosts. For example:

```
phys-hahost1# scadmin startcluster phys-hahost1 clustername
phys-hahost2# scadmin startnode clustername
phys-hahost1# haswitch phys-hahost2 hahost1 hahost2
```

   Log in as user notes, and stop and start the Lotus Domino server from the Lotus Domino data directory. For example:

```
phys-hahost2# cd /hahost1/data_directory
phys-hahost2# /opt/lotus/bin/server
...
phys-hahost2# /opt/lotus/bin/server -q
```

Note – If any of the Lotus Domino instances fail to start, make sure that user `notes` has permission to access the data directories and data files, then start the instances.

This completes the configuration and activation of Sun Cluster HA for Lotus.

Configuration Parameters for Sun Cluster HA for Lotus

Configure the Sun Cluster HA for Lotus parameters listed in the `hadsconfig(1M)` input form by supplying options described in the following table.

TABLE 1-3 Configuration Parameters for Sun Cluster HA for Lotus

Parameter	Description
Name of the instance	Logical host name used as an identifier for the instance. The log messages generated by Sun Cluster HA for Lotus refer to this identifier. The `hadsconfig(1M)` command prefixes the package name to the logical host name you supply. For example, if you specify `hahost1`, `hadsconfig(1M)` produces `SUNWsclts_hahost1`.
Logical host	Name of the logical host that provides service for this instance of Sun Cluster HA for Lotus.
Base directory of product installation	Rooted path name specifying the location on the multihost disk of the Sun Cluster HA for Lotus installation. This is the instance path, for example, `/hahost1/lotus-home/lotus_1`.
Configuration directory	The directory of the database, for example, `/hahost1/d1/Lotus/`*database*`.db`.
Remote probe	Specifies whether the Lotus fault probe will probe the remote host. Default value is `n`.
Local probe	Specifies whether the Lotus fault probe will probe the local host. Default value is `y`.
Probe interval	The time, in seconds, between fault probes. The default interval is 60 seconds.
Probe timeout	The time, in seconds, after which a fault probe will time out. The default timeout value is 60 seconds.
Server port number	Unique port for this instance of Sun Cluster HA for Lotus. The default port number is 1352.
Takeover flag	Specifies whether a failure of this instance will cause a takeover or failover of the logical host associated with the data service instance. Possible values are `y` (yes) or `n` (no). Default value is `y`.
Lotus server type	The default value is `single`. When configuring a Lotus Domino server or a primary partitioned server, always use the default value. When configuring additional partitioned servers, use any value besides `single`.
Lotus password file	The default value is `default_file`. When configuring a Lotus Domino server or a primary partitioned server, use the default value, because no password is required for start up. When configuring an additional partitioned server, enter the name of the file in which the password for the additional partitioned server startup resides. If the Lotus Domino server is installed on a shared disk, make sure the password file is available on all cluster nodes, or install the password file on the shared disk.