



HIGH - AVAILABILITY

RSF-1 Quick Start and Reference Guide

For RSF-1 Version 2.7.0

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1 RSF-1 Quick Start Guide

1.1 Introduction

This RSF-1 Quick Start Guide is designed to help install and configure RSF-1 on a simple 2-node asymmetric cluster without direct-attached shared-SCSI storage.

In addition, this guide assumes both nodes are connected to the same logical network via a physical network adapter installed on each node, and have a null-modem RS-232 cable connected to a serial port.

Finally, ensure remote shell `rsh` and remote copy `rcp` are configured and enabled to login and copy files between both nodes. For the purposes of this guide, we shall assume the node names `nodea` and `nodeb` and RSF-1 service name `test` with the associated virtual (floating) hostname `test-vip` (IP address 10.0.10.10).

RSF-1 comprises 2 packages:

- ◆ `HACbase` Common High-Availability.Com scripts and functions.
- ◆ `HACrsf` RSF-1 High-Availability Clustering software.

1.2 Installing RSF-1 (to be performed on both nodes)

Install the RSF-1 `HACbase` and `HACrsf` packages as root (answering 'yes' to all prompts) with the following commands:

```

# cd /<install_dir>
SOLARIS # pkgadd -d HACbase-solaris-5.6-sparc.<version>.<date>.pkg
SOLARIS # pkgadd -d HACrsf-1-solaris-5.6-sparc.<version>.<date>.pkg
LINUX # rpm -i HACbase-Linux-2-i386.<version>.<date>.rpm
LINUX # rpm -i HACrsf-1-Linux-2-i386.<version>.<date>.rpm
HP-UX # swinstall -s HACbase-HPUX-11.0-PARisc.<version>.<date>.depot \*
HP-UX # swinstall -s HACrsf-1-HPUX-11.0-PARisc.<version>.<date>.depot \*
```

Note: In addition to installing the RSF-1 packages, start, stop and init scripts are created automatically in `/etc/rc2.d`, `/etc/rc0.d` and `/etc/init.d` and the `/etc/services` file updated with the RSF-1 required ports.

1.3 Update Paths

1.3.1 Bourne shell

Edit root's `${HOME}/.profile` file and add `/opt/HAC/bin:/opt/HAC/RSF-1/bin` to the `PATH` and `/opt/HAC/man` to the `MANPATH` environment variables.

Re-execute root's `${HOME}/.profile` file to inherit the new `PATH` and `MANPATH` environment variables with the following command:

```
# . ${HOME}/.profile
```

1.3.2 C shell

Edit root's `~/.login` file and add `/opt/HAC/bin:/opt/HAC/RSF-1/bin` to the `PATH` and `/opt/HAC/man` to the `MANPATH` environment variables.

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Re-execute root's `~/.login` file to inherit the new `PATH` and `MANPATH` environment variables with the following command:

```
# source ~/.login
```

1.4 Licensing RSF-1 (to be performed on both nodes)

- 1 Record the node's unique `hostid` prior to obtaining RSF-1 licences from your High-Availability.Com authorised reseller with the following command:

```
# hac_hostid
```

- 2 Licence RSF-1 on the node and create the default `'_rsfadmin'` user account (answering **yes** to all prompts) with the following command:

```
# rsf_install
```

- 3 Verify RSF-1 has been licensed correctly with the following command:

```
# rsfmon -v
```

Note, if the RSF-1 licence is invalid, a message similar to the following will be displayed on standard output:

```
This copy of rsfmon is not licensed.
```

If this is the case then please contact High-Availability.com for a valid licence.

1.5 Configuring RSF-1

RSF-1 uses some operating specific device files for network and serial access. For the purpose of this document Solaris devices are used in examples; please substitute device paths specific to the operating system RSF-1 is being installed on as follows:

Network devices

SOLARIS

```
le0
```

LINUX

```
eth0
```

HP-UX

```
lan0
```

Serial devices

SOLARIS

```
/dev/cua/[a|b]
```

LINUX

```
/dev/tty[a|b]
```

HP-UX

```
/dev/tty[0|1]p0
```

Note, perform the following on the first node (nodea) initially.

- 1 Copy the example configuration file with the following commands:

```
# cd /opt/HAC/RSF-1/etc
```

```
# cp config.default config
```

- 2 Edit the configuration file and add to the `global`, `machines` and `services` sections at the bottom so that the configuration file matches the one in Table 1 (remembering to substitute operating specific devices); use the following command to edit:

```
# vi config
```

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Table 1 Example configuration file

```
#####
# Optional global defaults & definitions come first.
#####
REALTIME 10
POLL_TIME 2

#####
# End of global section, start of machines section.
#####
MACHINE nodea
    NET    nodeb
    SERIAL nodeb /dev/cua/b
MACHINE nodeb
    NET    nodea
    SERIAL nodea /dev/cua/b

#####
# End of machines section, start of service section.
#####
SERVICE test test-vip "RSF-1 Test Service"
    INITTIMEOUT 180
    RUNTIMEOUT 10
    IPDEVICE "le0:1"
SERVER nodea
SERVER nodeb
```

3 Create service script directory as follows:

3.1 Create a *pseudo* runtime configuration subdirectory for the RSF-1 test service with the following commands:

```
# mkdir /opt/HAC/RSF-1/etc/rc.test.d
```

3.2 Copy the RSF-1 example announce scripts into the test service's `rc.test.d` subdirectory with the following commands:

```
# cd /opt/HAC/RSF-1/etc/examples/misc
# cp *announce /opt/HAC/RSF-1/etc/rc.test.d
```

3.3 Automatically generate the RSF-1 test service's symbolic 'K' kill scripts with the following command:

```
# rsfklink test
```

4 Create a tar file of the RSF-1 config file and test service's `rc.test.d` subdirectory with the following commands:

```
# cd /opt/HAC/RSF-1/etc
# tar -cvf test.tar config rc.test.d
```

5 Remote copy the `test.tar` file to the second node (nodeb) with the following command:

```
# rcp test.tar nodeb: /opt/HAC/RSF-1/etc
```

6 On the second node extract the RSF-1 config file and test service's `rc.test.d` subdirectory from the `test.tar` file from nodea with the following commands:

```
# cd /opt/HAC/RSF-1/etc
# tar -xvfp test.tar
```

1.6 Post Installation (to be performed on both nodes)

Edit the `/etc/hosts` file and add an entry for the test service's virtual (floating) hostname `test-vip` with the following command:

```
# vi /etc/hosts
```

and add the following two lines:

```
# RSF-1 controlled virtual hostnames
10.0.10.10 test-vip
```

SOLARIS

Disable any login service configured on serial port `b` (so as not to affect the RSF-1 serial heartbeat) with the following command:

```
# pmadm -p zsmmon -s ttyb -d
```

1.7 Starting RSF-1 (to be performed on both nodes)

- 1 Start RSF-1 monitoring with the following command:

```
# rsfctl start
```

If the RSF-1 configuration is valid, a message similar to the following will be displayed on standard output:

```
RSF-W0006: warning, can't open /opt/HAC/RSF-1/etc/nodea.test:
No such file or directory
```

This is normal operation as it is the first time RSF-1 has been started and so no lock state file exists for the test service.

If this warning message is not displayed, check the RSF-1 log file `rsfmon.log` for configuration errors (and correct as appropriate) with the following command:

```
# more /opt/HAC/RSF-1/log/rsfmon.log
```

- 2 Verify RSF-1 is running correctly and network and serial heartbeats are being received with the following command:

```
# rsfstat
```

Any mis-configuration of the network or serial heartbeats will be displayed in output similar to the following:

```
Heartbeats:
0 net nodea -> nodeb (nodeb): Up
1 serial nodea -> nodeb (/dev/cua/b): Unavailable
2 net nodeb -> nodea (nodea): Up
3 serial nodeb -> nodea (/dev/cua/b): Unavailable
```

1.8 Testing RSF-1 (to be performed on both nodes)

1.8.1 Start services on nodea

- 1 Tail the RSF-1 log file `rsfmon.log` in the background with the following command:

```
# tail -40f /opt/HAC/RSF-1/log/rsfmon.log &
```

- 2 Start services on nodea initially. Using the RSF-1 command-line interface (`rsfcli`), start the test service running with the following command:

```
# rsfcli -i=0 start test
```

If the test service starts correctly, messages from the RSF-1 log file `rsfmon.log` similar to the following will be displayed on standard output:

```
[...17:43:10] User _rsfadmin setting service test on nodea to automatic
```

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```
[...17:43:12] Instance priority change nodea.test: 0 -> 1
[...17:46:05] NOTICE: Service test not running, start in 10 seconds
[...17:46:15] Time to start test
[...17:46:15] Running start scripts for nodea.test, pid = 1122
[...17:46:15] NOTICE: Service test is now starting on nodea (was stopped)
[...17:46:15] Setting netmask of le0:1 to 255.255.255.0
[...17:46:16] [test rsfexec] Running S01announce start 1
[...17:46:17] Service test is now starting on nodea
[...17:46:18] [test S01announce] Starting service - attempt 1
[...17:46:18] [test rsfexec] Running S99announce start 1
[...17:46:19] [test S99announce] Service start-up completed
[...17:46:19] Script child 1122 exited with code 0
[...17:46:19] Service test start scripts succeeded (pid 1122 exit 0)
[...17:46:19] NOTICE: Service test is now running on nodea (was starting)
```

- 3 Perform a network interface listing and verify the test-vip virtual (floating) hostname has been configured correctly on physical network adapter le0 with the following command:

```
# ifconfig -a
```

this should produce output similar to:

```
le0:1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500
inet 10.0.10.101 netmask ffffffff0 broadcast 10.0.10.255
```

1.8.2 Fail over services to nodeb

- 1 On nodeb using the RSF-1 command-line interface `rsfcli`, move the test service from nodea to nodeb with the following command:

```
# rsfcli -i=0 -h nodea -t nodeb move test
```

Note: The test service will shutdown on nodea, once shutdown is complete RSF-1 will start the test service running on nodeb. If the test service starts correctly on nodeb, messages from the RSF-1 log file `rsfmon.log` similar to those in step 1.8.1 will be displayed on standard output.

- 2 Finally, perform a network interface listing and verify the test-vip virtual (floating) hostname has been configured correctly on physical network adapter 'le0' with the following command:

```
# ifconfig -a
```

this should produce output similar to:

```
le0:1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500
inet 10.0.10.101 netmask ffffffff0 broadcast 10.0.10.255
```

1.9 Conclusion

RSF-1 has now been successfully installed and configured on both nodes and an asymmetric 'test' service created and manually failed over between nodea and nodeb.

You should now refer to the RSF-1 administrators' guide for further information on configuring and using RSF-1

2 RSF-1 Quick Reference

2.1 Introduction

This chapter summarises the most important RSF-1 commands and highlights the location of relevant files.

2.2 Useful commands

Some useful RSF-1 commands are:

<code>rsfstat</code>	displays the status of the cluster, including running services, etc.
<code>rsfcli</code>	RSF-1's command-line interface.

Some sample 'rsfcli' commands are (the `-i=0` switch turns off authentication):

Command	Description
<code>rsfcli -v list</code>	Shows the status of the cluster.
<code>rsfcli -i=0 stop <servicename></code>	Stops the specified service on the current node.
<code>rsfcli -i=0 -h <node> start <servicename></code>	Starts the specified service on the node specified with the host switch (if not running elsewhere.)
<code>rsfcli -i=0 manual <servicename></code>	Sets the specified service to manual on the current node.
<code>rsfcli -i=0 -h <node> auto <servicename></code>	Sets the specified service to automatic on the node specified with the host switch (will start if not running elsewhere.)
<code>rsfcli -i=0 -h <node> -t <target_node> move <servicename></code>	Moves the specified service to the target node specified with the target switch from the node specified with the host switch.
<code>rsfcli vname <node> -f</code>	Shows the virtual hostnames configured on the current node (useful for determining which services are running on the current node.)
<code>rsfcli</code>	With no arguments prints out the syntax of all the arguments available.

The main `rsfctl` command is designed to be used with its 4 possible arguments in the following pairs only:

```
rsfctl start / rsfctl stop
```

Starts RSF-1 and all services set to automatic which are currently not running on the other node; Stops RSF-1 and all services currently running on the node.

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```
rsfctl restart / rsfctl kill
```

Restarts RSF-1 and assumes last known state of the services by parsing their lock state files (`/opt/HAC/RSF-1/etc/<nodename>.<servicename>`); Kills RSF-1 monitoring while leaving services currently running on the node.

NB. It's important to run these commands in a timely fashion on both nodes in the cluster – otherwise failover may occur. To safeguard against this, it's normally a good idea to change all switchover modes to manual before running the `rsfctl stop/kill` commands.

2.3 The RSF-1 log file

The RSF-1 log file `/opt/HAC/RSF-1/log/rsfmon.log` provides a record of all service start-up and shutdown events on the current node. On reboot (or restart of RSF-1) the current log file is rotated (default 9 times). To change the number of log files saved, edit the `rsflogrotate` script located in the `/opt/HAC/RSF-1/bin` directory and amend as appropriate.

2.4 Starting the RSF-1 GUI

When using the RSF-1 GUI (`rsfgui`) to administer the cluster, specify the node to contact for the initial cluster connect in the [Connect To:] field of the [Connect to Cluster] dialog box. When asked for authentication, you can use either the default `_rsfadmin` username / password combination.

2.5 Setting RSF-1 passwords

Additional RSF-1 users can be created using the `rsfpasswd` command, for example `rsfpasswd -a <username>` - you'll then be prompted to enter and verify a password for the new user. The old RSF-1 password file `/opt/HAC/RSF-1/etc/passwd` will be renamed to `passwd.old`. Remember to repeat the procedure on the other node when adding new users.

2.6 The RSF-1 processes

The main RSF-1 monitoring daemon is called `rsfmon`. If you do a process listing, you'll see the main daemon (spawned by 'init') creates one child process per every configured heartbeat type – as opposed to heartbeat instance. Under normal operation, you should see 3 `rsfmon` process running - the main monitor process, the network monitor process and the disk monitor process.

2.7 Reporting problems

If a problem is ever experienced with the cluster, run the `hacdiag` command on both nodes and email the file created to support@high-availability.com (located as `/var/tmp/HACdiag-<nodename>-<hostid><date>.tar.Z`).

The support numbers are as follows:

9:00 am to 5:00 pm GMT	+44 1565 754 459
5:00 pm to 9:00 am GMT	+44 1565 754 453