

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT

**LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.**



CLUSTERED APPLICATIONS WITH RED HAT ENTERPRISE LINUX 6

Thomas Cameron, RHCA, RHCSS, RHCDS, RHCVA, RHCX
Chief Architect, Red Hat
Lon Hohberger
Supervisor, Software Engineering
06.27.12

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Thomas's Contact Info

- thomas@redhat.com
- choirboy in #rhel on Freenode
- thomasdcameron on Twitter
- <http://people.redhat.com/tcameron>
- <http://excogitat.us>

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Lon's Contact Info

- lh@redhat.com
- <http://lon.fedorapeople.org/>
- lon on Freenode

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Agenda

- Red Hat and Clustering
- Architecture
- Configure the Shared Storage (iSCSI Target)
- Configure the Shared Storage (iSCSI Initiator)
- Install web server software on all nodes

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Agenda

- Connect to the web management UI
- Define a Cluster
- Create Cluster Filesystem
 - Mount point clustered vs. persistent



Agenda

- Define the fence device
- Assign hosts to fence device ports
- Define Failover Domains
- Define Resources For Clustered Web Service
- Define Clustered Web Service
- Test Clustered Web Service
- Test Failover

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Red Hat and Clustering

- Red Hat leads the way in Open Source clustering
- Acquired Sistina for \$31 million in early 2004, including Global Filesystem and ClusterSuite.
- Made the code Open Source in mid-2004.
- Red Hat now offers Resilient Storage (clustered filesystem - GFS2) and High Availability (high availability application services) as layered products.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Architecture

- We will be demonstrating a three-node cluster

SUMMIT

**JBoss
WORLD**

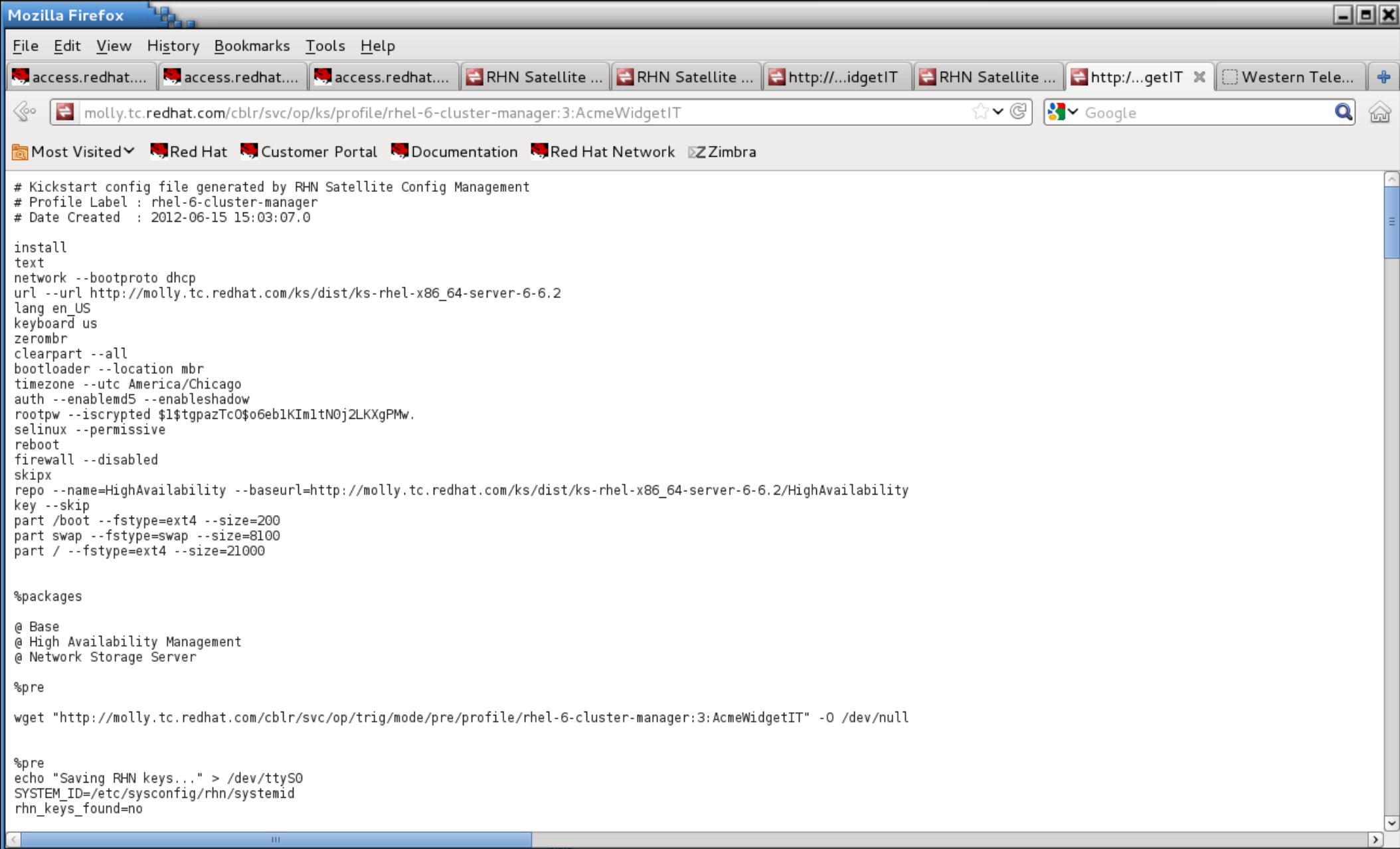
PRESENTED BY RED HAT



Architecture

- The management node is lady3jane.tc.redhat.com. It runs the cluster management web interface and also happens to be an iSCSI target (iSCSI is not necessary on the management node, we're only using it for demonstration purposes). It has two gigabit NICs.
- Installed with:
 - @ High Availability Management
 - @ Network Storage Server





SUMMIT

**JBoss
WORLD**

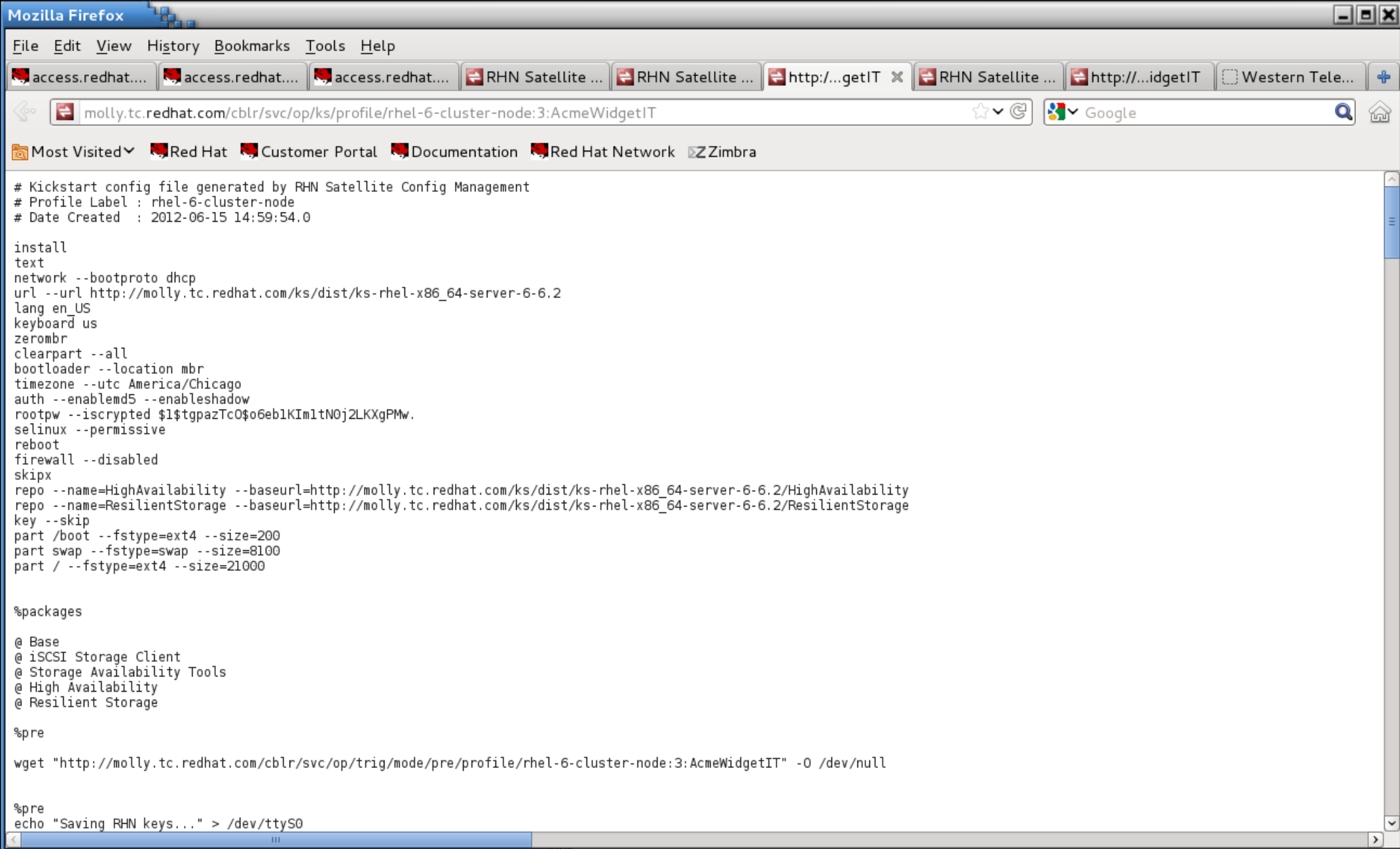
PRESENTED BY RED HAT



Architecture

- The cluster nodes are neuromancer.tc.redhat.com, finn.tc.redhat.com, and armitage.tc.redhat.com. They connect using iSCSI in a multipath configuration over two gigabit NICs.
- Installed with:
 - @ iSCSI Storage Client
 - @ Storage Availability Tools
 - @ High Availability
 - @ Resilient Storage





SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT

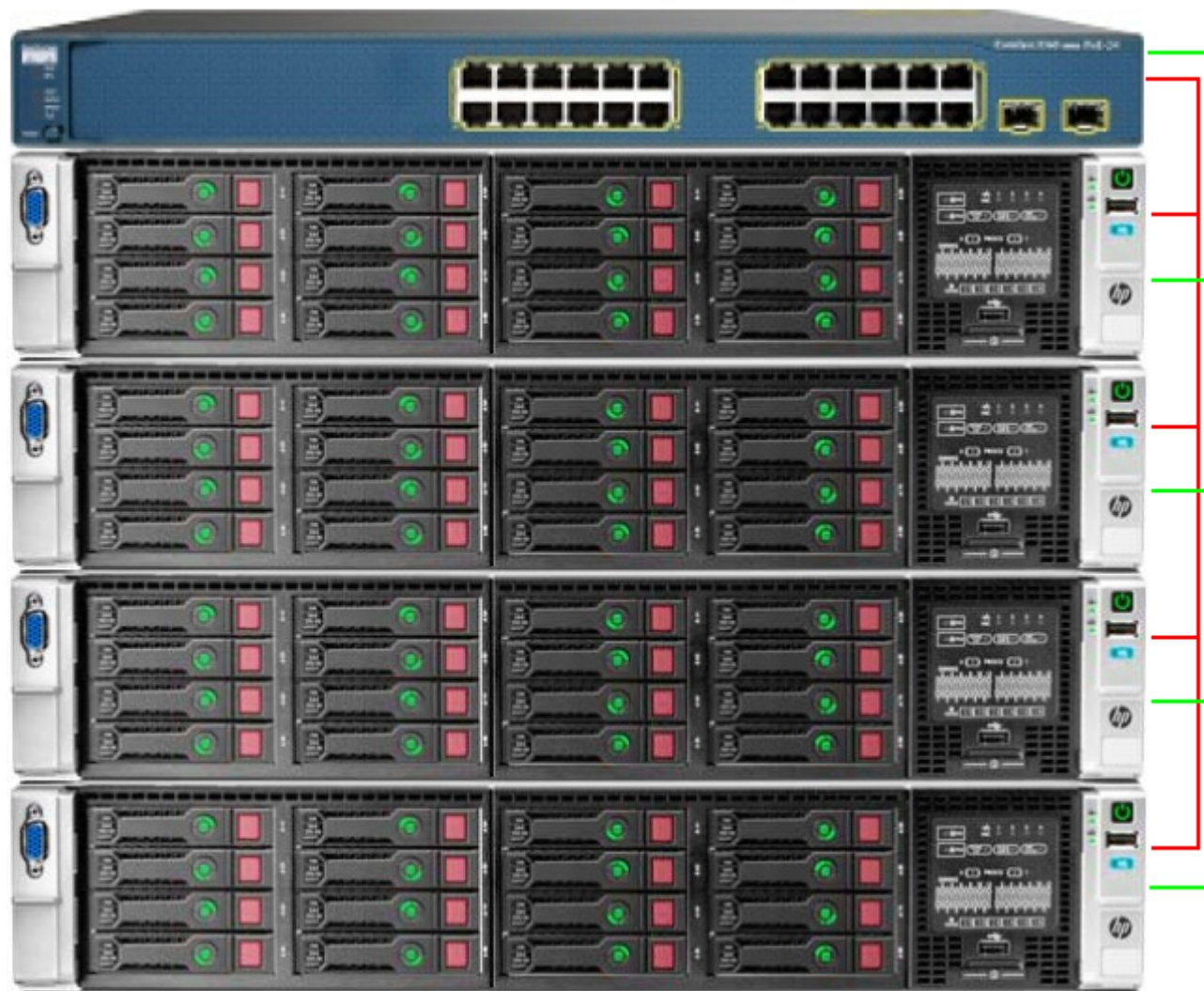


lady3jane

armitage

finn

neuromancer



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Architecture

- The end result will be an Apache web server which uses a “floating” IP address so it can move from one physical machine to another.
- The web site will use a GFS2-formatted filesystem which is concurrently accessible, read-write, by all three nodes of the cluster.



Configure the Shared Storage (iSCSI Target)

- Verify the Network Storage Server group is installed (should have been done by kickstart).



```
root@lady3jane:~  
File Edit View Search Terminal Help  
Loaded plugins: product-id, rhnplugin, security, subscription-manager  
Updating certificate-based repositories.  
Setting up Group Process  
Installed Groups:  
  Base  
  E-mail server  
  Graphical Administration Tools  
  Hardware monitoring utilities  
  High Availability Management  
  Large Systems Performance  
  Legacy UNIX compatibility  
  Network Infrastructure Server  
  Network Storage Server  
  Network file system client  
  Networking Tools  
  Performance Tools  
  Perl Support  
  TurboGears application framework  
  iSCSI Storage Client  
Available Groups:  
  Additional Development  
  Backup Client  
  Backup Server  
:
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Target)

- On the target (in this case lady3jane, but can be any RHEL box):
 - Create a partition. In this case, use fdisk to create /dev/sda4 (might require reboot)



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# fdisk -c /dev/sda  
  
WARNING: cylinders as display units are deprecated. Use command 'u' to  
change units to sectors.  
  
Command (m for help): p  
  
Disk /dev/sda: 2000.4 GB, 2000398934016 bytes  
255 heads, 63 sectors/track, 243201 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
Disk identifier: 0x000a5031  
  
   Device Boot      Start         End      Blocks   Id  System  
/dev/sda1    *           1           26       204800   83   Linux  
/dev/sda2             26        2703     21504000   83   Linux  
/dev/sda3          2703        3736       8294400   82   Linux swap / Solaris  
  
Command (m for help): █
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# fdisk -c /dev/sda  
  
WARNING: cylinders as display units are deprecated. Use command 'u' to  
change units to sectors.  
  
Command (m for help): n  
Command action  
   e   extended  
   p   primary partition (1-4)  
p  
Selected partition 4  
First cylinder (3736-243201, default 3736):  
Using default value 3736  
Last cylinder, +cylinders or +size{K,M,G} (3736-243201, default 243201):  
Using default value 243201  
  
Command (m for help): w  
The partition table has been altered!  
  
Calling ioctl() to re-read partition table.  
  
WARNING: Re-reading the partition table failed with error 16: Device or resource  
busy.  
The kernel still uses the old table. The new table will be used at  
the next reboot or after you run partprobe(8) or kpartx(8)  
Syncing disks.  
[root@lady3jane ~]#
```



Configure the Shared Storage (iSCSI Target)

- On the target (in this case lady3jane, but can be any RHEL box):
 - Edit `/etc/tgtd/targets.conf`



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# grep -v \# /etc/tgt/targets.conf | uniq  
  
default-driver iscsi  
  
<target iqn.2012-06-16.com.redhat:lady3jane:storage>  
  backing-store /dev/sda4  
</target>  
  
[root@lady3jane ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# chkconfig tgtd on  
[root@lady3jane ~]# service tgtd restart  
Stopping SCSI target daemon: not running [FAILED]  
Starting SCSI target daemon: [ OK ]  
[root@lady3jane ~]# tgtadm --lld iscsi --mode target --op show
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# tgtadm --lld iscsi --mode target --op show  
Target 1: iqn.2012-06-16.com.redhat:lady3jane:storage  
  System information:  
    Driver: iscsi  
    State: ready  
  I_T nexus information:  
  LUN information:  
    LUN: 0  
      Type: controller  
      SCSI ID: IET      00010000  
      SCSI SN: beaf10  
      Size: 0 MB, Block size: 1  
      Online: Yes  
      Removable media: No  
      Readonly: No  
      Backing store type: null  
      Backing store path: None  
      Backing store flags:  
    LUN: 1  
      Type: disk  
      SCSI ID: IET      00010001  
      SCSI SN: beaf11  
      Size: 1969672 MB, Block size: 512  
      Online: Yes  
      Removable media: No  
      Readonly: No  
      Backing store type: rdwr  
      Backing store path: /dev/sda4  
      Backing store flags:  
  Account information:  
  ACL information:  
    ALL  
[root@lady3jane ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- On each cluster node, ensure that the following groups are installed:
 - iSCSI Storage Client
 - Storage Availability Tools
 - High Availability
 - Resilient Storage

(This should have been done by kickstart.)



```
root@neuromancer:~  
File Edit View Search Terminal Help  
Loaded plugins: product-id, rhnplugin, security, subscription-manager  
Updating certificate-based repositories.  
Setting up Group Process  
Installed Groups:  
  Base  
  E-mail server  
  Graphical Administration Tools  
  Hardware monitoring utilities  
  High Availability  
  Large Systems Performance  
  Legacy UNIX compatibility  
  Network Infrastructure Server  
  Network file system client  
  Networking Tools  
  Performance Tools  
  Perl Support  
  Resilient Storage  
  Storage Availability Tools  
  System Management  
  System administration tools  
  iSCSI Storage Client  
Available Groups:  
  Additional Development  
:
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- Make sure iscsid and iscsi are chkconfig'd on.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# chkconfig --list | grep iscsi  
iscsi          0:off  1:off  2:off  3:on   4:on   5:on   6:off  
iscsid         0:off  1:off  2:off  3:on   4:on   5:on   6:off  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- Discover the target using both “paths” (in this case, subnets).



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# iscsiadm -m discovery -t sendtargets -p 172.31.100.10  
Starting iscsid: [ OK ]  
172.31.100.10:3260,1 iqn.2012-06-16.com.redhat:lady3jane:storage  
[root@neuromancer ~]# iscsiadm -m discovery -t sendtargets -p 172.31.101.10  
172.31.101.10:3260,1 iqn.2012-06-16.com.redhat:lady3jane:storage  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- Log into the portal via both paths.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.100.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:stora  
ge, portal: 172.31.100.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, p  
ortal: 172.31.100.10,3260] successful.  
[root@neuromancer ~]#  
[root@neuromancer ~]#  
[root@neuromancer ~]#  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.101.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:stora  
ge, portal: 172.31.101.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, p  
ortal: 172.31.101.10,3260] successful.  
[root@neuromancer ~]# █
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- From each initiator, define the multipath connection to the target.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# grep -v \# /etc/multipath.conf  
grep: /etc/multipath.conf: No such file or directory  
[root@neuromancer ~]# mpathconf --enable --user_friendly_names y --find_multipat  
hs y --with_module y --with_multipathd y --with_chkconfig y  
Starting multipathd daemon: [ OK ]  
[root@neuromancer ~]# grep -v \# /etc/multipath.conf | uniq  
  
defaults {  
    find_multipaths yes  
    user_friendly_names yes  
}  
  
blacklist {  
}  
[root@neuromancer ~]#
```



Configure the Shared Storage (iSCSI Initiator)

- I like to set both paths enabled, so I set `path_grouping_policy` `multibus`
- I prefer to send the next I/O based on how free a path is, so I set `path-selector` to “service-time 0”
- See http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/single/DM_Multipath/index.html#config_file_defaults for details.



access.redhat.com | 4.3. Configuration File Defaults - Mozilla Firefox

File Edit View History Bookmarks Tools Help

access.redhat.com | Red Hat... x access.redhat.com | 4.3. Co... x access.redhat.com | Appendi... x access.redhat.com | Appendi... x +

https://access.redhat.com/knowledge/docs/en-US/Red_Hat_Enterprise_Linux/6-Beta/html/DM_Multipath/config_file_default ☆ Google

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

find_multipaths	Defines the mode for setting up multipath devices. If this parameter is set to yes, then multipath will not try to create a device for every non-blacklisted path. Instead multipath will create a device only if one of three conditions are met: - There are at least two non-blacklisted paths with the same WWID. - The user manually forces the creation of the device by specifying a device with the multipath command. - A path has the same WWID as a multipath device that was previously created. Whenever a multipath device is created with find_multipaths set, multipath remembers the WWID of the device so that it will automatically create the device again as soon as it sees a path with that WWID. This allows you to have multipath automatically choose the correct paths to make into multipath devices, without having to edit the multipath blacklist. For instructions on the procedure to follow if you have previously created multipath devices when the find_multipaths parameter was not set, see Section 4.2, "Configuration File Blacklist". The default value is no.
verbosity	The default verbosity. Higher values increase the verbosity level. Valid levels are between 0 and 6. The default value is 2 .
path_selector	Specifies the default algorithm to use in determining what path to use for the next I/O operation. Possible values include: round-robin 0: Loop through every path in the path group, sending the same amount of I/O to each. queue-length 0: Send the next bunch of I/O down the path with the least number of outstanding I/O requests. service-time 0: Send the next bunch of I/O down the path with the shortest estimated service time, which is determined by dividing the total size of the outstanding I/O to each path by its relative throughput. The default value is round-robin 0.
path_grouping_policy	Specifies the default path grouping policy to apply to unspecified multipaths. Possible values include: failover: 1 path per priority group. multibus: all valid paths in 1 priority group. group-by-serial: 1 priority group per detected serial number.

x Find: mul Previous Next Highlight all Match case

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- Once you've modified your `/etc/multipath.conf` file, restart `multipathd` service and check with `multipath -ll`.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# grep -v \# /etc/multipath.conf | uniq  
  
defaults {  
    find_multipaths yes  
    user_friendly_names yes  
    path_selector "service-time 0"  
    path_grouping_policy multibus  
}  
  
blacklist {  
}  
[root@neuromancer ~]# service multipathd restart  
Stopping multipathd daemon: [ OK ]  
Starting multipathd daemon: [ OK ]  
[root@neuromancer ~]# multipath -ll  
mpatha (1IET 00010001) dm-0 IET,VIRTUAL-DISK  
size=1.8T features='0' hwhandler='0' wp=rw  
`-+- policy='service-time 0' prio=1 status=active  
   |- 9:0:0:1 sdb 8:16 active ready running  
   `-- 10:0:0:1 sdc 8:32 active ready running  
[root@neuromancer ~]#
```



Configure the Shared Storage (iSCSI Initiator)

- I recommend you copy your `/etc/multipath.conf` and `/etc/multipath/bindings` files to the other nodes to make sure you have persistent naming.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# scp /etc/multipath.conf finn:/etc/  
multipath.conf 100% 2696 2.6KB/s 00:00  
[root@neuromancer ~]# scp /etc/multipath.conf armitage:/etc/  
multipath.conf 100% 2696 2.6KB/s 00:00  
[root@neuromancer ~]# scp /etc/multipath/bindings finn:/etc/multipath  
bindings 100% 225 0.2KB/s 00:00  
[root@neuromancer ~]# scp /etc/multipath/bindings armitage:/etc/multipath  
bindings 100% 225 0.2KB/s 00:00  
[root@neuromancer ~]# █
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Configure the Shared Storage (iSCSI Initiator)

- Verify all nodes are connected.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~  
File Edit View Search Terminal Help  
[root@finn ~]# iscsiadm -m discovery -t sendtargets -p 172.31.101.10  
172.31.101.10:3260,1 iqn.2012-06-16.com.redhat:lady3jane:storage  
[root@finn ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redhat:lady3jane:storage -p 172.31.100.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal: 172.31.100.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal: 172.31.100.10,3260] successful.  
[root@finn ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redhat:lady3jane:storage -p 172.31.101.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal: 172.31.101.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal: 172.31.101.10,3260] successful.  
[root@finn ~]# ls /dev/mapper/  
control  
[root@finn ~]# service multipathd restart  
Stopping multipathd daemon: [FAILED]  
Starting multipathd daemon: [ OK ]  
[root@finn ~]# ls /dev/mapper/  
control mpatha  
[root@finn ~]# multipath -ll  
mpatha (1IET 00010001) dm-0 IET,VIRTUAL-DISK  
size=1.8T features='0' hwhandler='0' wp=rw  
`-+- policy='service-time 0' prio=1 status=active  
|- 8:0:0:1 sdb 8:16 active ready running  
|- 9:0:0:1 sdc 8:32 active ready running  
[root@finn ~]#
```



Configure the Shared Storage (iSCSI Initiator)

- Use your favorite partitioning tool to create a partition on the mpath device.
- You may need to run partprobe or log out and log back into the target to re-read the partition table.
- Once you've partitioned, leave it. We will create a clustered filesystem later on.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# fdisk /dev/mapper/mpatha  
Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel  
Building a new DOS disklabel with disk identifier 0x2315e9a0.  
Changes will remain in memory only, until you decide to write them.  
After that, of course, the previous content won't be recoverable.  
  
Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)  
  
WARNING: DOS-compatible mode is deprecated. It's strongly recommended to  
switch off the mode (command 'c') and change display units to  
sectors (command 'u').  
  
Command (m for help): n  
Command action  
   e   extended  
   p   primary partition (1-4)  
p  
Partition number (1-4): 1  
First cylinder (1-239465, default 1):  
Using default value 1  
Last cylinder, +cylinders or +size{K,M,G} (1-239465, default 239465):  
Using default value 239465  
  
Command (m for help): w  
The partition table has been altered!  
  
Calling ioctl() to re-read partition table.  
  
WARNING: Re-reading the partition table failed with error 22: Invalid argument.  
The kernel still uses the old table. The new table will be used at  
the next reboot or after you run partprobe(8) or kpartx(8)  
Syncing disks.  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT




```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.101.10 -u  
Logging out of session [sid: 4, target: iqn.2012-06-16.com.redhat:lady3jane:stor  
age, portal: 172.31.101.10,3260]  
Logout of [sid: 4, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal:  
172.31.101.10,3260] successful.  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.100.10 -u  
Logging out of session [sid: 5, target: iqn.2012-06-16.com.redhat:lady3jane:stor  
age, portal: 172.31.100.10,3260]  
Logout of [sid: 5, target: iqn.2012-06-16.com.redhat:lady3jane:storage, portal:  
172.31.100.10,3260] successful.  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.101.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:stora  
ge, portal: 172.31.101.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, p  
ortal: 172.31.101.10,3260] successful.  
[root@neuromancer ~]# iscsiadm --mode node --targetname iqn.2012-06-16.com.redha  
t:lady3jane:storage -p 172.31.100.10 -l  
Logging in to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:stora  
ge, portal: 172.31.100.10,3260] (multiple)  
Login to [iface: default, target: iqn.2012-06-16.com.redhat:lady3jane:storage, p  
ortal: 172.31.100.10,3260] successful.  
[root@neuromancer ~]#
```



Install web server software on all nodes

- Run `yum -y groupinstall web-server`

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# yum -y groupinstall web-server  
Loaded plugins: product-id, rhnplugin, security, subscription-manager  
Updating certificate-based repositories.
```

```
root@finn:~  
File Edit View Search Terminal Help  
--> Processing Dependency: libXpm.so.4()(64bit) for package: gd-2.0.35-10.el6.x86_64  
--> Package httpd-tools.x86_64 0:2.2.15-15.el6_2.1 will be installed  
--> Package mailcap.noarch 0:2.1.31-2.el6 will be installed  
--> Package perl-BSD-Resource.x86_64 0:1.29.03-3.el6 will be installed  
--> Package perl-ExtUtils-MakeMaker.x86_64 0:6.55-119.el6_1.1 will be installed  
--> Processing Dependency: perl(Test::Harness) for package: perl-ExtUtils-MakeMaker-6.55-119.el6_1.1.x86_64  
--> Processing Dependency: perl-devel for package: perl-ExtUtils-MakeMaker-6.55-119.el6_1.1.x86_64  
--> Package perl-Newt.x86_64 0:1.08-26.el6 will be installed  
--> Running transaction check  
--> Package libXpm.x86_64 0:3.5.8-2.el6 will be installed  
--> Package perl-Test-Harness.x86_64 3:3.21-1.el6 will be installed  
--> Package perl-devel.x86_64 5:5.10.1-119.el6_1.1 will be installed  
--> Processing Dependency: perl(Perl) for package: perl-devel-5.10.1-119.el6_1.1.x86_64  
--> Running transaction check  
--> Package perl-ExtUtils-ParseXS.x86_64 2:2.2003.0-119.el6_1.1 will be installed  
--> Finished Dependency Resolution  
Dependencies Resolved
```

```
root@neuromancer:~  
File Edit View Search Terminal Help  
(1/20): apr-1.3.9-5.el6_2.x86_64.rpm | 123 kB | 00:00  
(2/20): apr-util-1.3.9-3.el6_0.1.x86_64.rpm | 87 kB | 00:00  
(3/20): apr-util-ldap-1.3.9-3.el6_0.1.x86_64.rpm | 15 kB | 00:00  
(4/20): crypto-utils-2.4.1-24.2.el6.x86_64.rpm | 76 kB | 00:00  
(5/20): gd-2.0.35-10.el6.x86_64.rpm | 142 kB | 00:00  
(6/20): httpd-2.2.15-15.el6_2.1.x86_64.rpm | 812 kB | 00:00  
(7/20): httpd-manual-2.2.15-15.el6_2.1.noarch.rpm | 781 kB | 00:00  
(8/20): httpd-tools-2.2.15-15.el6_2.1.x86_64.rpm | 70 kB | 00:00  
(9/20): libXpm-3.5.8-2.el6.x86_64.rpm | 59 kB | 00:00  
(10/20): mailcap-2.1.31-2.el6.noarch.rpm | 27 kB | 00:00  
(11/20): mod_perl-2.0.4-10.el6.x86_64.rpm | 3.2 MB | 00:00  
(12/20): mod_ssl-2.2.15-15.el6_2.1.x86_64.rpm | 87 kB | 00:00  
(13/20): mod_wsgi-3.2-1.el6.x86_64.rpm | 65 kB | 00:00  
(14/20): perl-BSD-Resource-1.29.03-3.el6.x86_64.rpm | 35 kB | 00:00  
(15/20): perl-ExtUtils-MakeMaker-6.55-119.el6_1.1.x86_64 | 290 kB | 00:00  
(16/20): perl-ExtUtils-ParseXS-2.2003.0-119.el6_1.1.x86_64 | 42 kB | 00:00  
(17/20): perl-Newt-1.08-26.el6.x86_64.rpm | 72 kB | 00:00  
(18/20): perl-Test-Harness-3.17-119.el6_1.1.x86_64.rpm | 229 kB | 00:00  
(19/20): perl-devel-5.10.1-119.el6_1.1.x86_64.rpm | 420 kB | 00:00  
(20/20): webalizer-2.21_02-3.3.el6.x86_64.rpm | 128 kB | 00:00  
-----  
Total | 3.4 MB/s | 6.6 MB | 00:01  
Running rpm_check_debug
```

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Install web server software on all nodes

- Make sure that httpd is chkconfig'd off – we want the clustering software to start it, not the OS boot process.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# chkconfig httpd off  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Install web server software on all nodes

- Set the web server to listen on the “floating” IP address you'll be assigning to the web site.
- Change the “Listen” directive in `/etc/httpd/conf/httpd.conf` on all nodes in the cluster.



```
root@neuromancer:~  
File Edit View Search Terminal Help  
MinSpareThreads      25  
MaxSpareThreads      75  
ThreadsPerChild      25  
MaxRequestsPerChild  0  
</IfModule>  
  
#  
# Listen: Allows you to bind Apache to specific IP addresses and/or  
# ports, in addition to the default. See also the <VirtualHost>  
# directive.  
#  
# Change this to Listen on specific IP addresses as shown below to  
# prevent Apache from glomming onto all bound IP addresses (0.0.0.0)  
#  
#Listen 12.34.56.78:80  
Listen 172.31.100.50:80  
#  
#  
# Dynamic Shared Object (DSO) Support  
#  
# To be able to use the functionality of a module which was built as a DSO you  
# have to place corresponding 'LoadModule' lines at this location so the  
# directives contained in it are actually available _before_ they are used.  
"/etc/httpd/conf/httpd.conf" 1009L, 34432C written
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# vi /etc/httpd/conf/httpd.conf  
[root@neuromancer ~]# scp /etc/httpd/conf/httpd.conf finn:/etc/httpd/conf/  
httpd.conf 100% 34KB 33.6KB/s 00:00  
[root@neuromancer ~]# scp /etc/httpd/conf/httpd.conf armitage:/etc/httpd/conf/  
httpd.conf 100% 34KB 33.6KB/s 00:00  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Make Node Manageable

- Make sure that ricci is chkconfig'd on and you've set the password for the ricci user.
- We'll manage these nodes from the management console or the command line from here on out.



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# chkconfig httpd off  
[root@armitage ~]# passwd ricci  
Changing password for user ricci.  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@armitage ~]# chkconfig ricci on  
[root@armitage ~]# service ricci restart  
Shutting down ricci:  
Starting oddjobd:  
generating SSL certificates... done  
Generating NSS database... done  
Starting ricci:  
[root@armitage ~]#
```

```
root@finn:~  
File Edit View Search Terminal Help  
[root@finn ~]# chkconfig httpd off  
[root@finn ~]# passwd ricci  
Changing password for user ricci.  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@finn ~]# chkconfig ricci on  
[root@finn ~]# service ricci restart  
Shutting down ricci:  
Starting oddjobd: [ OK ]  
generating SSL certificates... done  
Generating NSS database... done  
Starting ricci: [ OK ]  
[root@finn ~]#
```

```
root@neuromancer:~  
File Edit View Search Terminal Help  
[root@neuromancer ~]# passwd ricci  
Changing password for user ricci.  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@neuromancer ~]# chkconfig ricci on  
[root@neuromancer ~]# service ricci restart  
Shutting down ricci:  
Starting oddjobd: [ OK ]  
generating SSL certificates... done  
Generating NSS database... done  
Starting ricci: [ OK ]  
[root@neuromancer ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Connect to the web management UI

- On the management server (lady3jane) make sure that luci is chkconfig'd on, and running.



```
root@lady3jane:~  
File Edit View Search Terminal Help  
[root@lady3jane ~]# chkconfig --list luci  
luci          0:off  1:off  2:off  3:off  4:off  5:off  6:off  
[root@lady3jane ~]# chkconfig luci on  
[root@lady3jane ~]# service luci start  
Adding following auto-detected host IDs (IP addresses/domain names), correspondi  
ng to 'lady3jane.tc.redhat.com' address, to the configuration of self-managed ce  
rtificate '/var/lib/luci/etc/cacert.config' (you can change them by editing '/va  
r/lib/luci/etc/cacert.config', removing the generated certificate '/var/lib/luci  
/certs/host.pem' and restarting luci):  
    (none suitable found, you can still do it manually as mentioned above)  
  
Generating a 2048 bit RSA private key  
writing new private key to '/var/lib/luci/certs/host.pem'  
Starting saslauthd:                [ OK ]  
Start luci...                      [ OK ]  
Point your web browser to https://lady3jane.tc.redhat.com:8084 (or equivalent) t  
o access luci  
[root@lady3jane ~]# █
```



Connect to the web management UI

- Go to the URL listed when it starts (https://host.domain.tld:8084)
- It's a self-signed certificate, so you'll have to add a security exception.





This Connection is Not Secure

You have detected that your connection is not secure.

Normally, you are going to see a warning when you visit a site that is not secure.

What's Going On?

If you use a site that impersonates a trusted site, you may see this warning.

Get me out of here!

Technical Details

I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't use trusted identification.

Add Exception...



You are about to override how Firefox identifies this site.

Legitimate banks, stores, and other public sites will not ask you to do this.

Server

Location: https://lady3jane.tc.redhat.com:8084/

Get Certificate

Certificate Status

This site attempts to identify itself with invalid information.

View...

Wrong Site

Certificate belongs to a different site, which could indicate an identity theft.

Unknown Identity

Certificate is not trusted, because it hasn't been verified by a recognized authority.

☒ Permanently store this exception

Confirm Security Exception

Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Login Form - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Login Form

redhat.com https://lady3jane.tc.redhat.com:8084/login?came_from=https%3A%2F%2Flady3jane.tc.redhat.com%3A8084%2Fhomebase%2F

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Login

Homebase

Login

Username root

Password

Login

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Luci Homebase - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Luci Homebase

redhat.com https://lady3jane.tc.redhat.com:8084/homebase/

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase

Homebase

Manage Clusters

CLUSTER SUMMARY

Name	Status	Nodes Joined
------	--------	--------------

Warning

Luci is a graphical user interface that you can use to administer the Red Hat High Availability Add-On. Note, however, that in order to use this interface effectively you need to have a good and clear understanding of the underlying concepts. Learning about cluster configuration by exploring the available features in the user interface is not recommended, as it may result in a system that is not robust enough to keep all services running when components fail.

Ok

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define a Cluster

- Manage Clusters/Create
 - Name the cluster
 - List the members and their ricci passwords
 - Download new or use local packages
 - Reboot?
 - Enable shared storage?



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters

Homebase

Manage Clusters

+ Add + Create x Delete

Name	Status	Possible Votes	Current Votes	Quorum	Nodes joined
------	--------	----------------	---------------	--------	--------------

https://lady3jane.tc.redhat.com:8084/cluster#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters

Homebase

Manage Clusters

+ Add * Create x Delete

Create New Cluster

Cluster Name

☒ Use the Same Password for All Nodes

Node Name	Password	Ricci Hostname	Ricci Port
armitage.tc.redhat.com		armitage.tc.redhat.com	11111 x
finn.tc.redhat.com		finn.tc.redhat.com	11111 x
neuromancer.tc.redhat.com		neuromancer.tc.redhat.com	11111 x

☒ Download Packages
☐ Use Locally Installed Packages

☒ Reboot Nodes Before Joining Cluster

☒ Enable Shared Storage Support

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define a Cluster

- From the command line:
 - `ccs -h armitage --createcluster summit`
 - `ccs -h armitage --addnode armitage.tc.redhat.com`
 - `ccs -h armitage --addnode finn.tc.redhat.com`
 - `ccs -h armitage --addnode neuromancer.tc.redhat.com`
 - `ccs -h armitage --sync --activate`
 - `ccs -h armitage --startall`



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# cat /etc/cluster/cluster.conf  
cat: /etc/cluster/cluster.conf: No such file or directory  
[root@armitage ~]# ccs -h armitage --createcluster summit  
[root@armitage ~]# cat /etc/cluster/cluster.conf  
<?xml version="1.0"?>  
<cluster config_version="1" name="summit">  
    <fence_daemon/>  
    <clusternodes/>  
    <cman/>  
    <fencedevices/>  
    <rm>  
        <failoverdomains/>  
        <resources/>  
    </rm>  
</cluster>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# cat /etc/cluster/cluster.conf  
<?xml version="1.0"?>  
<cluster config_version="1" name="summit">  
  <fence_daemon/>  
  <clusternodes/>  
  <cman/>  
  <fencedevices/>  
  <rm>  
    <failoverdomains/>  
    <resources/>  
  </rm>  
</cluster>  
[root@armitage ~]# ccs -h armitage --addnode armitage.tc.redhat.com  
Node armitage.tc.redhat.com added.  
[root@armitage ~]# ccs -h armitage --addnode finn.tc.redhat.com  
Node finn.tc.redhat.com added.  
[root@armitage ~]# ccs -h armitage --addnode neuromancer.tc.redhat.com  
Node neuromancer.tc.redhat.com added.  
[root@armitage ~]# ccs -h armitage --sync --activate  
[root@armitage ~]# ccs -h armitage --startall  
Started armitage.tc.redhat.com  
Started neuromancer.tc.redhat.com  
Started finn.tc.redhat.com  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# cat /etc/cluster/cluster.conf  
<?xml version="1.0"?>  
<cluster config_version="5" name="summit">  
  <fence_daemon/>  
  <clusternodes>  
    <clusternode name="armitage.tc.redhat.com" nodeid="1"/>  
    <clusternode name="finn.tc.redhat.com" nodeid="2"/>  
    <clusternode name="neuromancer.tc.redhat.com" nodeid="3"/>  
  </clusternodes>  
  <cman/>  
  <fencedevices/>  
  <rm>  
    <failoverdomains/>  
    <resources/>  
  </rm>  
</cluster>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# clustat  
Cluster Status for summit @ Mon Jun 18 20:20:30 2012  
Member Status: Quorate  
  
Member Name                ID    Status  
-----  
armitage.tc.redhat.com      1    Online, Local  
finn.tc.redhat.com          2    Online  
neuromancer.tc.redhat.com   3    Online  
  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Define a Cluster

- To connect to the running cluster via the web UI, choose to “add” instead of “create” a cluster.



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters

Homebase

Manage Clusters

+ Add + Create x Delete

Name	Status	Possible Votes	Current Votes	Quorum	Nodes joined
------	--------	----------------	---------------	--------	--------------

Add Existing Cluster

Enter credentials for a node in the cluster you would like to add.

Node Hostname	Password	Ricci Port
armitage.tc.redhat.com		11111

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters

Homebase

Manage Clusters

+ Add + Create x Delete

Name	Status	Possible Votes	Current Votes	Quorum	Nodes joined
------	--------	----------------	---------------	--------	--------------

Add Existing Cluster

Cluster Name: **summit**

☒ Use the Same Password for All Nodes

Node Name	Password	Ricci Hostname	Ricci Port
armitage.tc.redhat.com		armitage.tc.redhat.com	11111
finn.tc.redhat.com		finn.tc.redhat.com	11111
neuromancer.tc.redhat.com		neuromancer.tc.redhat.com	11111

Add Cluster Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/ Google

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add ↺ Reboot 🔗 Join Cluster 🔗 Leave Cluster ✕ Delete

!	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member	00:02:13:16	armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:02:13:31	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member	00:02:13:23	neuromancer.tc.redhat.com

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Create Cluster Filesystem

- We created a multipath block device earlier, now we're going to carve it up. We'll use LVM to create a slice for the web service.
- Make sure you enable clustered LVM on each node. If you don't do this, your volume groups will be inaccessible!



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# grep locking_type /etc/lvm/lvm.conf  
    locking_type = 1  
    # NB. This option only affects locking_type = 1 viz. local file-based  
    # The external locking library to load if locking_type is set to 2.  
[root@armitage ~]# lvmconf --enable-cluster  
[root@armitage ~]# grep locking_type /etc/lvm/lvm.conf  
    locking_type = 3  
    # NB. This option only affects locking_type = 1 viz. local file-based  
    # The external locking library to load if locking_type is set to 2.  
[root@armitage ~]# █
```



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# pvcreate /dev/mapper/mpathap1  
Writing physical volume data to disk "/dev/mapper/mpathap1"  
Physical volume "/dev/mapper/mpathap1" successfully created  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# vgcreate -c y vg_cluster /dev/mapper/mpathap1  
  Clustered volume group "vg_cluster" successfully created  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT




```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# lvcreate -L 10G -n lv_apache vg_cluster  
Logical volume "lv_apache" created  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# mkfs.gfs2 -j 4 -p lock_dlm -t summit:web /dev/mapper/vg_cluster-lv_apache  
This will destroy any data on /dev/mapper/vg_cluster-lv_apache.  
It appears to contain: symbolic link to `../dm-2'  
  
Are you sure you want to proceed? [y/n] y  
  
Device: /dev/mapper/vg_cluster-lv_apache  
Blocksize: 4096  
Device Size 10.00 GB (2621440 blocks)  
Filesystem Size: 10.00 GB (2621438 blocks)  
Journals: 4  
Resource Groups: 40  
Locking Protocol: "lock_dlm"  
Lock Table: "summit:web"  
UUID: 75b49e2b-b70e-4a96-c689-f23d41ed8144  
  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Create Cluster Filesystem

- You can add the clustered filesystem resource to your cluster (mounted on one node at a time), or mount it via `/etc/fstab` (all nodes concurrently).



Create Cluster Filesystem

- Via /etc/fstab looks something like this.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# cat /etc/fstab  
  
#  
# /etc/fstab  
# Created by anaconda on Mon Jun 18 17:01:27 2012  
#  
# Accessible filesystems, by reference, are maintained under '/dev/disk'  
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info  
#  
UUID=535f7ab4-6e3e-4efc-bed5-bd499315e763 / ext4 default  
ts 1 1  
UUID=01ae69f6-2156-492b-abaf-8ada8721c28a /boot ext4 default  
ts 1 2  
UUID=dda28a74-8074-492f-b355-81cc22957b4f swap swap default  
ts 0 0  
tmpfs /dev/shm tmpfs defaults 0 0  
devpts /dev/pts devpts gid=5,mode=620 0 0  
sysfs /sys sysfs defaults 0 0  
proc /proc proc defaults 0 0  
/dev/mapper/vg_cluster-lv_apache /var/www/html gfs2 rw,noatime,_netdev 0 0  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# df -h  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/sda2        21G   1.1G   19G   6% /  
tmpfs            7.7G   26M   7.7G   1% /dev/shm  
/dev/sda1        194M   32M   152M  18% /boot  
[root@armitage ~]# mount -a  
[root@armitage ~]# df -h  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/sda2        21G   1.1G   19G   6% /  
tmpfs            7.7G   32M   7.7G   1% /dev/shm  
/dev/sda1        194M   32M   152M  18% /boot  
/dev/mapper/vg_cluster-lv_apache  
                10G   518M   9.5G   6% /var/www/html  
[root@armitage ~]# █
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Create Cluster Filesystem

- We'll show you how to make a filesystem resource available in a clustered service shortly.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Define the fence device

- A fence device is designed to STONITH to protect your data.
 - You don't want two nodes to think they both own a filesystem but not tell each other about writes to that filesystem.
 - It's better to take a node offline or otherwise isolate it from data.
- Can be managed power ports, fiber switch ports, SCSI reservations, iLO, DRAC, RSA, etc. This presentation will show setting up a WTI power switch.



Define the fence device

- From the web UI.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/fences

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name	Fence Type	Nodes Using	Hostname
No item to display			

https://lady3jane.tc.redhat.com:8084/cluster/summit/fences#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/fences#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Homebase Clusters summit

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name	Fence Type	Nodes Using	Hostname
No item to display			

Add Fence Device (Instance)

WTI Power Switch

Fence Type WTI Power Switch

Name wti.tc.redhat.com

IP Address or Hostname wti.tc.redhat.com

IP Port (optional)

Login root

Password

Password Script (optional)

Force Command Prompt

Power Wait (seconds) 5

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/fences

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name	Fence Type	Nodes Using	Hostname
☐ wti.tc.redhat.com	WTI Power Device	0	wti.tc.redhat.com

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/armitage.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add Reboot Join Cluster Leave Cluster Delete

	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member	00:04:30:04	armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:04:30:20	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member	00:04:30:08	neuromancer.tc.redhat.com

armitage.tc.redhat.com
Status Cluster Member

Properties

Number of votes Update Properties

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method

Add Fence Method

Cluster Daemons

	Status
cman	Running
rgmanager	Running

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/armitage.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add Reboot Join Cluster Leave Cluster Delete

	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member	00:04:30:04	armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:04:30:20	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member	00:04:30:08	neuromancer.tc.redhat.com

armitage.tc.redhat.com
Status Cluster Member

Properties

Number of votes

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method

Add Fence Method

Cluster Daemons

cman Running

rgmanager Running

Add Fence Method to Node

Method Name: power

Submit Cancel

Update Properties

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/armitage.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

neuromancer.tc.redhat.com 3 1 Cluster Member 00:04:30:28 neuromancer.tc.redhat.com

[armitage.tc.redhat.com](#)
Status Cluster Member

Properties

Number of votes [Update Properties](#)

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method	Name	Type/Values
power		

[Remove](#)

[Add Fence Instance](#)

[Add Fence Method](#)

Cluster Daemons

	Status
cman	Running
rgmanager	Running
ricci	Running
modclusterd	Running
clvmd	Running

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/armitage.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

neuromancer.tc.redhat.com 3 1 Cluster Member 00:04:30:28 neuromancer.tc.redhat.com

armitage.tc.redhat.com
Status Cluster Member

Properties

Number of votes 1 Update Properties

ricci host armitage.tc.redhat.com

ricci port 11111

Services

Failover Domains

Fence Devices

Method

power

Name

Add Fence Instance

Add Fence Method

Cluster Daemons

cman

rgmanager

ricci

modclusterd Running

clvmd Running

Add Fence Device (Instance)

wti.tc.redhat.com (WTI Power Device)

Port 4

SSH

Use SSH ☐

Path to SSH Identity File

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/finn.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

summit

+ Add Reboot Join Cluster Leave Cluster Delete

	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member	00:04:31:09	armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:04:31:25	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member	00:04:31:13	neuromancer.tc.redhat.com

finn.tc.redhat.com
Status Cluster Member

Properties

Number of votes 1 Update Properties

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method

Add Fence Method

Cluster Daemons

	Status
cman	Running
rgmanager	Running
ricci	Running
modclusterd	Running

Add Fence Method to Node

Method Name: power

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/finn.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

neuromancer.tc.redhat.com 3 1 Cluster Member 00:04:31:28 neuromancer.tc.redhat.com

finn.tc.redhat.com
Status Cluster Member

Properties

Number of votes 1 Update Properties

ricci host finn.tc.redhat.com

ricci port 11111

Services

Failover Domains -- Select a Fence Device --

Fence Devices

Method

power Remove

Add Fence Instance

Add Fence Method

Cluster Daemons

Name	Type/Values	Status
cman		Running
rgmanager		Running
ricci		Running
modclusterd		Running
clvmd		Running

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/finn.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

neuromancer.tc.redhat.com 3 1 Cluster Member 00:04:31:28 neuromancer.tc.redhat.com

finn.tc.redhat.com
Status Cluster Member

Properties

Number of votes 1 Update Properties

ricci host finn.tc.redhat.com

ricci port 11111

Services

Failover Domains

Fence Devices

Method power

Name Add Fence Instance Add Fence Method

Cluster Daemons

cman rgmanager ricci modclusterd clvmd

Running Running

Add Fence Device (Instance)

wti.tc.redhat.com (WTI Power Device)

Port 2

SSH

Use SSH ☐

Path to SSH Identity File

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/neuromancer.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add Reboot Join Cluster Leave Cluster Delete

	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member		armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:04:32:55	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member		neuromancer.tc.redhat.com

neuromancer.tc.redhat.com
Status Cluster Member

Properties

Number of votes

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method

Add Fence Method

Cluster Daemons

Status

cman Running

rgmanager Running

ricci Running

Add Fence Method to Node

Method Name: power

Submit Cancel

Update Properties

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/neuromancer.tc.redhat.com

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

summit

+ Add Reboot Join Cluster Leave Cluster Delete

	Node Name	Node ID	Votes	Status	Uptime	Hostname
☐	armitage.tc.redhat.com	1	1	Cluster Member	00:04:32:59	armitage.tc.redhat.com
☐	finn.tc.redhat.com	2	1	Cluster Member	00:04:33:15	finn.tc.redhat.com
☐	neuromancer.tc.redhat.com	3	1	Cluster Member	00:04:33:03	neuromancer.tc.redhat.com

neuromancer.tc.redhat.com
Status Cluster Member

Properties

Number of votes

ricci host

ricci port

Services

Failover Domains

Fence Devices

Method

power

Name

Add Fence Instance

Add Fence Method

Cluster Daemons

Status

Running

Update Properties

Add Fence Device (Instance)

wti.tc.redhat.com (WTI Power Device)

Port 1

SSH

Use SSH ☐

Path to SSH Identity File

Submit Cancel

Remove

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/fences

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name	Fence Type	Nodes Using	Hostname
☐ wti.tc.redhat.com	WTI Power Device	3	wti.tc.redhat.com

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management x access.redhat.com x +

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/configure ☆ Google

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups **Configure**

General Fence Daemon Network QDisk Logging

Fence Daemon Properties

Post Fail Delay (seconds) 5

Post Join Delay (seconds) 3

Apply

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define the fence device

- From the command line.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT




```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addmethod power armitage.tc.redhat.com  
Method power added to armitage.tc.redhat.com.  
[root@armitage ~]# ccs -h armitage --addmethod power finn.tc.redhat.com  
Method power added to finn.tc.redhat.com.  
[root@armitage ~]# ccs -h armitage --addmethod power neuromancer.tc.redhat.com  
Method power added to neuromancer.tc.redhat.com.  
[root@armitage ~]# ccs -h armitage --addfencedev wti agent=fence_wti ipaddr=wti.  
tc.redhat.com login=root passwd=red22hat power_wait=5  
[root@armitage ~]# ccs -h armitage --addfenceinst wti armitage.tc.redhat.com pow  
er port=4  
[root@armitage ~]# ccs -h armitage --addfenceinst wti finn.tc.redhat.com power p  
ort=2  
[root@armitage ~]# ccs -h armitage --addfenceinst wti neuromancer.tc.redhat.com  
power port=1  
[root@armitage ~]# █
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --getconf  
<cluster config_version="24" name="summit">  
<clusternodes>  
  <clusternode name="armitage.tc.redhat.com" nodeid="1">  
    <fence>  
      <method name="power">  
        <device name="wti" port="4"/>  
      </method>  
    </fence>  
  </clusternode>  
  <clusternode name="finn.tc.redhat.com" nodeid="2">  
    <fence>  
      <method name="power">  
        <device name="wti" port="2"/>  
      </method>  
    </fence>  
  </clusternode>  
  <clusternode name="neuromancer.tc.redhat.com" nodeid="3">  
    <fence>  
      <method name="power">  
        <device name="wti" port="1"/>  
      </method>  
    </fence>  
  </clusternode>  
</clusternodes>  
<rm>  
  <resources>  
    <clusterfs device="/dev/mapper/vg_cluster-lv_apache" fstype="gfs2" mountpoint="/var/www/html" name="web-gfs" options="noatime"/>  
  </resources>  
</rm>  
<fencedevices>  
  <fencedevice agent="fence_wti" ipaddr="wti.tc.redhat.com" login="root" name="wti" passwd="red22hat" power_wait="5"/>  
</fencedevices>  
</cluster>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --setfencedaemon post_fail_delay=5  
[root@armitage ~]# ccs -h armitage --getconf| grep post_fail  
    <fence_daemon post_fail_delay="5"/>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



•Define Failover Domains

- Failover domains are used to assign host priorities for a running service.
 - The lower the priority, the higher the likelihood of a service running on a host (like nice).
- You can create failover domain(s) for each service you define.



- **Define Failover Domains**

- From the web UI.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

✓ Deleting failover domains prefer_armitage

Homebase
Manage Clusters
summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name	Prioritized	Restricted
No item to display		

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management About Admin Preferences Logout

Homebase Clusters summit

Deleting failover domains prefer_armitage

Homebase Manage Clusters

summit

Nodes Fence Devices

+ Add x Delete

Name

Add Failover Domain to Cluster

Name

☒ Prioritized Order the nodes to which services failover.

☒ Restricted Service can run only on nodes specified.

☐ No Failback Do not send service back to 1st priority node when it becomes available again.

	Member	Priority
	armitage.tc.redhat.com	☒ 1
	finn.tc.redhat.com	☒ 10
	neuromancer.tc.redhat.com	☒ 20

Create Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

✓ Creating failover domain "prefer_armitage"

Homebase
Manage Clusters

summit

Nodes Fence Devices **Failover Domains** Resources Service Groups Configure

+ Add x Delete

	Name	Prioritized	Restricted
☐	prefer_armitage	✓	✓

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management About Admin Preferences Logout

Homebase Clusters summit

Creating failover domain "prefer_armitage"

Homebase Manage Clusters

summit

Nodes Fence Devices

+ Add x Delete

Name

☐ prefer_armitage

Add Failover Domain to Cluster

Name

☒ Prioritized Order the nodes to which services failover.

☒ Restricted Service can run only on nodes specified.

☐ No Failback Do not send service back to 1st priority node when it becomes available again.

	Member	Priority
	armitage.tc.redhat.com	☒ 20
	finn.tc.redhat.com	☒ 1
	neuromancer.tc.redhat.com	☒ 10

Create Cancel

Restricted

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Creating failover domain "prefer_finn"

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

	Name	Prioritized	Restricted
☐	prefer_armitage	✓	✓
☐	prefer_finn	✓	✓

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Creating failover domain "prefer_finn"

Homebase Manage Clusters

summit

Nodes Fence Devices

+ Add x Delete

Name

☐ prefer_armitage

☐ prefer_finn

Add Failover Domain to Cluster

Name

☒ Prioritized Order the nodes to which services failover.

☒ Restricted Service can run only on nodes specified.

☐ No Failback Do not send service back to 1st priority node when it becomes available again.

	Member	Priority
☒	armitage.tc.redhat.com	10
☒	finn.tc.redhat.com	20
☒	neuromancer.tc.redhat.com	1

Create Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/failovers

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices **Failover Domains** Resources Service Groups Configure

+ Add - Delete

	Name	Prioritized	Restricted
☐	prefer_armitage	✓	✓
☐	prefer_finn	✓	✓
☐	prefer_neuromancer	✓	✓

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



- **Define Failover Domains**

- From the command line.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addfailoverdomain prefer_armitage restricted ordered  
[root@armitage ~]# ccs -h armitage --addfailoverdomain prefer_finn restricted ordered  
[root@armitage ~]# ccs -h armitage --addfailoverdomain prefer_neuromancer restricted ordered  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_armitage armitage.tc.redhat.com 1  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_armitage finn.tc.redhat.com 10  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_armitage neuromancer.tc.redhat.com 20  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_finn finn.tc.redhat.com 1  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_finn neuromancer.tc.redhat.com 10  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_finn armitage.tc.redhat.com 20  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_neuromancer neuromancer.tc.redhat.com 1  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_neuromancer armitage.tc.redhat.com 10  
[root@armitage ~]# ccs -h armitage --addfailoverdomainnode prefer_neuromancer finn.tc.redhat.com 20  
[root@armitage ~]#
```



```
root@armitage:~
File Edit View Search Terminal Help
<clusterfs device="/dev/mapper/vg_cluster-lv_apache" fstype="gfs2" mountpo
</resources>
<failoverdomains>
  <failoverdomain name="prefer_armitage" nofailback="0" ordered="1" restrict
    <failoverdomainnode name="armitage.tc.redhat.com" priority="1"/>
    <failoverdomainnode name="finn.tc.redhat.com" priority="10"/>
    <failoverdomainnode name="neuromancer.tc.redhat.com" priority="20"/>
  </failoverdomain>
  <failoverdomain name="prefer_finn" nofailback="0" ordered="1" restricted="
    <failoverdomainnode name="finn.tc.redhat.com" priority="1"/>
    <failoverdomainnode name="neuromancer.tc.redhat.com" priority="10"/>
    <failoverdomainnode name="armitage.tc.redhat.com" priority="20"/>
  </failoverdomain>
  <failoverdomain name="prefer_neuromancer" nofailback="0" ordered="1" restr
    <failoverdomainnode name="neuromancer.tc.redhat.com" priority="1"/>
    <failoverdomainnode name="armitage.tc.redhat.com" priority="10"/>
    <failoverdomainnode name="finn.tc.redhat.com" priority="20"/>
  </failoverdomain>
</failoverdomains>
</rm>
<fencedevices>
  <fencedevice agent="fence_wti" ipaddr="wti.tc.redhat.com" login="root" name=
</fencedevices>
</cluster>
[root@armitage ~]#
```



Define Resources For Clustered Web Service

- We'll start with the GFS2 filesystem we created earlier.
- If you want it to be available to one host at a time, you can define it as a resource to be used by a service.



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources# Google

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name/IP	Type	In Use
No item to display		

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name/IP	Type	In Use
---------	------	--------

Add Resource to Cluster

-- Select a Resource Type --

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name/IP	Type	In Use
---------	------	--------

Add Resource to Cluster

GFS2

GFS2

Name: web-gfs

Mount Point: /var/www/html

Device, FS Label, or UUID: napper/vg_cluster-lv_apache

Filesystem Type: GFS2

Mount Options: noatime

Filesystem ID (optional):

Force Unmount: ☒

Reboot Host Node if Unmount Fails: ☒

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources/apache-resource

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Homebase Clusters summit

Created global resource "apache-resource"

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name/IP	Type	In Use
☐ web-gfs	GFS2	No

apache-resource

GFS2

Name: web-gfs

Mount Point: /var/www/html

Device, FS Label, or UUID: /dev/mapper/vg_cluster-lv_af

Filesystem Type: GFS2

Mount Options: noatime

Filesystem ID (optional): 25928

Force Unmount: ☒

Reboot Host Node if Unmount Fails: ☒

Apply

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name/IP	Type	In Use
☐ web-gfs	GFS2	No

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define Resources For Clustered Web Service

- Next we'll add an IP address to use a resource.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name/IP	Type	In Use
☐ web-gfs	GFS2	No

Add Resource to Cluster

IP Address

IP Address

IP Address

Netmask Bits (optional)

Monitor Link ☒

Disable Updates to Static Routes ☐

Number of Seconds to Sleep After Removing an IP Address

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources/172.31.100.50.html

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Created global resource "172.31.100.50"

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains **Resources** Service Groups Configure

+ Add - Delete

	Name/IP	Type	In Use
☐	web-gfs	GFS2	No
☐	172.31.100.50	IP Address	No

172.31.100.50

IP Address

IP Address 172.31.100.50

Netmask Bits (optional)

Monitor Link ☒

Disable Updates to Static Routes ☐

Number of Seconds to Sleep After Removing an IP Address 1

Apply

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define Resources For Clustered Web Service

- Now the start/stop script for Apache.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources/172.31.100.50.html#

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Created global resource "172.31.100.50"

Homebase Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add - Delete

Name/IP	In Use
☐ web-gfs	No
☐ 172.31.100.50	No

172.31.100.50

IP Address

IP Address

Netmask Bits (optional)

Monitor Link

Disable Updates to Static Routes

Number of Seconds to Sleep After Removing an IP Address

Apply

Add Resource to Cluster

Script

Script

Name

Full Path to Script File

Submit Cancel

172.31.100.50

☒

☐

1

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/resources

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add x Delete

Name/IP	Type	In Use
☐ web-gfs	GFS2	No
☐ 172.31.100.50	IP Address	No
☐ apache-script	Script	No

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define Resources For Clustered Web Service

- Or from the command line:

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addresource clusterfs device=/dev/mapper/vg  
_cluster-lv apache force unmount=on fstype=gfs2 mountpoint=/var/www/html name=we  
b-gfs options=noatime self_fence=on
```



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addresource clusterfs device=/dev/mapper/vg  
_cluster-lv apache force unmount=on fstype=gfs2 mountpoint=/var/www/html name=we  
b-gfs options=noatime self_fence=on  
[root@armitage ~]# ccs -h armitage --getconf  
<cluster config_version="52" name="summit">  
  <clusternodes>  
    <clusternode name="armitage.tc.redhat.com" nodeid="1"/>  
    <clusternode name="finn.tc.redhat.com" nodeid="2"/>  
    <clusternode name="neuromancer.tc.redhat.com" nodeid="3"/>  
  </clusternodes>  
  <rm>  
    <resources>  
      <clusterfs device="/dev/mapper/vg_cluster-lv_apache" force_unmount="on" fs  
type="gfs2" mountpoint="/var/www/html" name="web-gfs" options="noatime"  
self_fence="on"/>  
    </resources>  
  </rm>  
</cluster>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addresource ip address=172.31.100.50 monitor_link=on sleeptime=1  
[root@armitage ~]# ccs -h armitage --addresource script name=web-script file=/etc/rc.d/init.d/httpd  
[root@armitage ~]# ccs -h armitage --getconf  
<cluster config_version="54" name="summit">  
  <clusternodes>  
    <clusternode name="armitage.tc.redhat.com" nodeid="1"/>  
    <clusternode name="finn.tc.redhat.com" nodeid="2"/>  
    <clusternode name="neuromancer.tc.redhat.com" nodeid="3"/>  
  </clusternodes>  
  <rm>  
    <resources>  
      <clusterfs device="/dev/mapper/vg_cluster-lv_apache" force_unmount="on" fstype="gfs2" mountpoint="/var/www/html" name="web-gfs" options="noatime" self_fence="on"/>  
      <ip address="172.31.100.50" monitor_link="on" sleeptime="1"/>  
      <script file="/etc/rc.d/init.d/httpd" name="web-script"/>  
    </resources>  
  </rm>  
</cluster>  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Define Clustered Service

- In this case, a clustered web service.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Define Clustered Service

- From the web UI.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add ▶ Start ↺ Restart ■ Disable ✕ Delete

Name	Status	Autostart	Failover Domain
No item to display			

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes

+ Add

! Name

Add Service Group to Cluster

Service Name web-service

Automatically Start This Service ☒

Run Exclusive ☐

Failover Domain prefer_armitage

Recovery Policy Restart

Restart Options

Maximum Number of Restart Failures Before Relocating 3

Length of Time in Seconds After Which to Forget a Restart 600

Add Resource

Submit Cancel

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes

+ Add

! Name

Add Service Group to Cluster

Service Name web-service

Automatically Start This Service ☒

Run Exclusive ☐

Failover Domain prefer_armitage

Recovery Policy Restart

Restart Options

Maximum Number of Restart Failures Before Relocating 3

Length of Time in Seconds After Which to Forget a Restart 600

Remove

GFS2

Name web-gfs

Mount Point /var/www/html

Device, FS Label, or UUID /dev/mapper/vg_cluster-lv_ap

Filesystem Type GFS2

Mount Options noatime

https://lady3jane.tc.redhat.com:8084/cluster/summit/services#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Remove

GFS2

Name web-gfs

Mount Point /var/www/html

Device, FS Label, or UUID /dev/mapper/vg_cluster-lv_ap

Filesystem Type GFS2

Mount Options noatime

Filesystem ID (optional)

Force Unmount ☐

Reboot Host Node if Unmount Fails ☐

Independent Subtree ☐

Non-Critical Resource ☐

Independent Subtree/Non-Critical Options

Maximum Number of Failures

Failure Expire Time (seconds)

Maximum Number of Restarts

Restart Expire Time (seconds)

Add a child resource

Add Resource

Submit Cancel

https://lady3jane.tc.redhat.com:8084/cluster/summit/services#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Restart Expire Time (seconds)

Add a child resource

Remove

IP Address

IP Address 172.31.100.50

Netmask Bits (optional)

Monitor Link ☒

Disable Updates to Static Routes ☐

Number of Seconds to Sleep After Removing an IP Address 1

Independent Subtree ☐

Non-Critical Resource ☐

Independent Subtree/Non-Critical Options

Maximum Number of Failures

Failure Expire Time (seconds)

Maximum Number of Restarts

Restart Expire Time (seconds)

Add a child resource

Add Resource

Submit Cancel

https://lady3jane.tc.redhat.com:8084/cluster/summit/services#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

Failure Expire Time (seconds)

Maximum Number of Restarts

Restart Expire Time (seconds)

Add a child resource

Remove

Script

Name web-script

Full Path to Script File /etc/rc.d/init.d/httpd

Independent Subtree ☐

Non-Critical Resource ☐

Independent Subtree/Non-Critical Options

Maximum Number of Failures

Failure Expire Time (seconds)

Maximum Number of Restarts

Restart Expire Time (seconds)

Add a child resource

Add Resource

Submit Cancel

https://lady3jane.tc.redhat.com:8084/cluster/summit/services#

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase

Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add ▶ Start ↺ Restart ■ Disable ✕ Delete

!	Name	Status	Autostart	Failover Domain
☐	web-service	Running on armitage.tc.redhat.com	☒	prefer_armitage

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Define Clustered Service

- There is built in logic that gives filesystems priority over IP addresses, which have priority over network services. You **can** set parent/child relationships, but for simple services like this, you don't strictly need to.



Define Clustered Service

- From the command line

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# ccs -h armitage --addservice web-service domain=prefer_armitage max_restarts=3 name=web-service recovery=restart restart_expire_time=600  
[root@armitage ~]# ccs -h armitage --addsubservice web-service ip ref=172.31.100.50  
[root@armitage ~]# ccs -h armitage --addsubservice web-service script ref=web-script  
[root@armitage ~]# ccs -h armitage --addsubservice web-service clusterfs ref=web-gfs  
[root@armitage ~]# ccs -h armitage --sync --activate  
[root@armitage ~]# ccs -h armitage --startall  
Started armitage.tc.redhat.com  
Started neuromancer.tc.redhat.com  
Started finn.tc.redhat.com  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~
File Edit View Search Terminal Help
Jun 18 23:25:14 armitage rgmanager[17029]: Reconfiguring
Jun 18 23:25:14 armitage rgmanager[17029]: Loading Service Data
[root@armitage ~]# tail -f /var/log/messages
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=0: Done
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=1: Trying to acquire journal lock...
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=1: Looking at journal...
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=1: Done
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=2: Trying to acquire journal lock...
Jun 18 23:25:19 armitage kernel: GFS2: fsid=summit:web.0: jid=2: Looking at journal...
Jun 18 23:25:20 armitage kernel: GFS2: fsid=summit:web.0: jid=2: Done
Jun 18 23:25:20 armitage kernel: GFS2: fsid=summit:web.0: jid=3: Trying to acquire journal lock...
Jun 18 23:25:20 armitage kernel: GFS2: fsid=summit:web.0: jid=3: Looking at journal...
Jun 18 23:25:20 armitage kernel: GFS2: fsid=summit:web.0: jid=3: Done
Jun 18 23:25:20 armitage rgmanager[19400]: [ip] Adding IPv4 address 172.31.100.50/24 to eth0
Jun 18 23:25:24 armitage rgmanager[19488]: [script] Executing /etc/rc.d/init.d/httpd start
Jun 18 23:25:24 armitage rgmanager[17029]: Service service:web-service started
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
22608 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
22609 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
22610 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
22612 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
22629 ? S<s 0:06 ricci -u ricci  
22765 ? S<sl 0:13 modclusterd  
25373 ? SLl 0:01 /sbin/multipathd  
16775 ? SLsl 0:07 corosync -f  
16832 ? Ssl 0:00 fenced  
16846 ? Ssl 0:00 dlm_control  
16907 ? Ssl 0:00 gfs_control  
16981 ? SLsl 0:00 clvmd -T30  
17027 ? S<Ls 0:00 rgmanager  
17029 ? S<l 0:03 \_ rgmanager  
19476 ? S<s 0:00 rdisc -fs  
19514 ? S<s 0:00 /usr/sbin/httpd  
19516 ? S< 0:00 \_ /usr/sbin/httpd  
19517 ? S< 0:00 \_ /usr/sbin/httpd  
19518 ? S< 0:00 \_ /usr/sbin/httpd  
19519 ? S< 0:00 \_ /usr/sbin/httpd  
19520 ? S< 0:00 \_ /usr/sbin/httpd  
19521 ? S< 0:00 \_ /usr/sbin/httpd  
19522 ? S< 0:00 \_ /usr/sbin/httpd  
19523 ? S< 0:00 \_ /usr/sbin/httpd  
[root@armitage ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:27:19 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Online, Local, rgmanager  
finn.tc.redhat.com                         2 Online, rgmanager  
neuromancer.tc.redhat.com                  3 Online, rgmanager  
  
Service Name                               Owner (Last)                               State  
-----  
service:web-service                       armitage.tc.redhat.com                     started  
[root@armitage ~]#
```



Test Clustered Web Service

- Manual migration from the web UI

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



High Availability Management – Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

About Admin Preferences Logout

Homebase Clusters summit

Homebase
Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add ▶ Start ↺ Restart ■ Disable ✕ Delete

!	Name	Status	Autostart	Failover Domain
☐	web-service	Running on armitage.tc.redhat.com	☒	prefer_armitage

Select an item to view details

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services/web-service

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management About Admin Preferences Logout

Homebase Clusters summit

Homebase Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add ▶ Start ↺ Restart ■ Disable ✕ Delete

! Name	Status	Autostart	Failover Domain
web-service	Running on armitage.tc.redhat.com	☒	prefer_armitage

web-service

Status Running on armitage.tc.redhat.com finn.tc.redhat.com

Edit service

Service Name web-service

Automatically Start This Service ☒

Run Exclusive ☐

Failover Domain prefer_armitage

Recovery Policy Restart

Restart Options

Maximum Number of Restart Failures Before Relocating 3

Length of Time in Seconds After Which to Forget a Restart 600

[Remove](#)

IP Address

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



High Availability Management - Mozilla Firefox

File Edit View History Bookmarks Tools Help

High Availability Management

redhat.com https://lady3jane.tc.redhat.com:8084/cluster/summit/services/web-service

Most Visited Red Hat Customer Portal Documentation Red Hat Network Zimbra

High Availability management

Homebase Clusters summit

Starting services web-service on node finn.tc.redhat.com

Starting cluster "summit" service "web-service" from node "armitage.tc.redhat.com" completed successfully

Homebase Manage Clusters

summit

Nodes Fence Devices Failover Domains Resources Service Groups Configure

+ Add Start Restart Disable Delete

Name	Status	Autostart	Failover Domain
web-service	Running on armitage.tc.redhat.com	☒	prefer_armitage

web-service

Status Running on armitage.tc.redhat.com Start on node...

Edit service

Service Name web-service

Automatically Start This Service ☒

Run Exclusive ☐

Failover Domain prefer_armitage

Recovery Policy Restart

Restart Options

Maximum Number of Restart Failures Before Relocating 3

Length of Time in Seconds After Which to Forget a Restart 600

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Test Clustered Web Service

- Manual migration from the command line

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:35:44 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Online, Local, rgmanager  
finn.tc.redhat.com                         2 Online, rgmanager  
neuromancer.tc.redhat.com                  3 Online, rgmanager  
  
Service Name                               Owner (Last)                               State  
-----  
service:web-service                       armitage.tc.redhat.com                    started  
[root@armitage ~]# clusvcadm -r service:web-service -m finn.tc.redhat.com  
Trying to relocate service:web-service to finn.tc.redhat.com...  
  
I
```



```
root@finn:~  
File Edit View Search Terminal Help  
Jun 18 23:35:42 finn rgmanager[32557]: State change: armitage.tc.redhat.com UP  
Jun 18 23:35:42 finn rgmanager[32557]: State change: neuromancer.tc.redhat.com UP  
Jun 18 23:36:08 finn rgmanager[32557]: Starting stopped service service:web-service  
Jun 18 23:36:09 finn rgmanager[1132]: [clusterfs] mounting /dev/dm-2 on /var/www/html  
Jun 18 23:36:09 finn rgmanager[1154]: [clusterfs] mount -t gfs2 -o noatime /dev/dm-2 /var/www/html  
Jun 18 23:36:09 finn kernel: GFS2: fsid=: Trying to join cluster "lock_dlm", "summit:web"  
Jun 18 23:36:09 finn kernel: GFS2: fsid=summit:web.1: Joined cluster. Now mounting FS...  
Jun 18 23:36:09 finn kernel: GFS2: fsid=summit:web.1: jid=1, already locked for use  
Jun 18 23:36:09 finn kernel: GFS2: fsid=summit:web.1: jid=1: Looking at journal..  
Jun 18 23:36:09 finn kernel: GFS2: fsid=summit:web.1: jid=1: Done  
Jun 18 23:36:09 finn rgmanager[1244]: [ip] Adding IPv4 address 172.31.100.50/24 to eth0  
Jun 18 23:36:13 finn rgmanager[1334]: [script] Executing /etc/rc.d/init.d/httpd start  
Jun 18 23:36:13 finn rgmanager[32557]: Service service:web-service started
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Test Clustered Web Service

- Crash one of the resources

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~  
File Edit View Search Terminal Help  
2346 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
2347 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
2365 ? S<s 0:02 ricci -u ricci  
2433 ? S<sl 0:14 modclusterd  
4863 ? SLl 0:01 /sbin/multipathd  
31325 ? S<s 0:00 rdisc -fs  
32286 ? SLsl 0:06 corosync -f  
32345 ? Ssl 0:00 fenced  
32357 ? Ssl 0:00 dlm_control  
32422 ? Ssl 0:00 gfs_control  
32501 ? SLsl 0:00 clvmd -T30  
32555 ? S<Ls 0:00 rgmanager  
32557 ? S<l 0:02 \_ rgmanager  
1365 ? S<s 0:00 /usr/sbin/httpd  
1368 ? S< 0:00 \_ /usr/sbin/httpd  
1369 ? S< 0:00 \_ /usr/sbin/httpd  
1370 ? S< 0:00 \_ /usr/sbin/httpd  
1371 ? S< 0:00 \_ /usr/sbin/httpd  
1372 ? S< 0:00 \_ /usr/sbin/httpd  
1373 ? S< 0:00 \_ /usr/sbin/httpd  
1374 ? S< 0:00 \_ /usr/sbin/httpd  
1375 ? S< 0:00 \_ /usr/sbin/httpd  
[root@finn ~]# pkill -9 httpd  
[root@finn ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT




```
root@finn:~  
File Edit View Search Terminal Help  
Jun 18 23:38:13 finn rgmanager[2351]: [script] Executing /etc/rc.d/init.d/httpd  
status  
Jun 18 23:38:43 finn rgmanager[2670]: [script] Executing /etc/rc.d/init.d/httpd  
status  
Jun 18 23:39:13 finn rgmanager[2901]: [script] Executing /etc/rc.d/init.d/httpd  
status  
Jun 18 23:39:13 finn rgmanager[2926]: [script] script:web-script: status of /etc  
/rc.d/init.d/httpd failed (returned 1)  
Jun 18 23:39:13 finn rgmanager[32557]: status on script "web-script" returned 1  
(generic error)  
Jun 18 23:39:13 finn rgmanager[32557]: Stopping service service:web-service  
Jun 18 23:39:14 finn rgmanager[2957]: [script] Executing /etc/rc.d/init.d/httpd  
stop  
Jun 18 23:39:14 finn rgmanager[3016]: [ip] Removing IPv4 address 172.31.100.50/2  
4 from eth0  
Jun 18 23:39:15 finn rgmanager[32557]: Service service:web-service is recovering  
Jun 18 23:39:15 finn rgmanager[32557]: Recovering failed service service:web-ser  
vice  
Jun 18 23:39:16 finn rgmanager[3243]: [ip] Adding IPv4 address 172.31.100.50/24  
to eth0  
Jun 18 23:39:20 finn rgmanager[3328]: [script] Executing /etc/rc.d/init.d/httpd  
start  
Jun 18 23:39:20 finn rgmanager[32557]: Service service:web-service started
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~  
File Edit View Search Terminal Help  
2347 ? S 0:00 \_ /usr/sbin/saslauthd -m /var/run/saslauthd -a pam  
2365 ? S<s 0:02 ricci -u ricci  
2433 ? S<sl 0:14 modclusterd  
4863 ? SLl 0:01 /sbin/multipathd  
31325 ? S<s 0:00 rdisc -fs  
32286 ? SLsl 0:08 corosync -f  
32345 ? Ssl 0:00 fenced  
32357 ? Ssl 0:00 dlm_control  
32422 ? Ssl 0:00 gfs_control  
32501 ? SLsl 0:00 clvmd -T30  
32555 ? S<Ls 0:00 rgmanager  
32557 ? S<l 0:02 \_ rgmanager  
3353 ? S<s 0:00 /usr/sbin/httpd  
3355 ? S< 0:00 \_ /usr/sbin/httpd  
3356 ? S< 0:00 \_ /usr/sbin/httpd  
3357 ? S< 0:00 \_ /usr/sbin/httpd  
3358 ? S< 0:00 \_ /usr/sbin/httpd  
3359 ? S< 0:00 \_ /usr/sbin/httpd  
3360 ? S< 0:00 \_ /usr/sbin/httpd  
3361 ? S< 0:00 \_ /usr/sbin/httpd  
3362 ? S< 0:00 \_ /usr/sbin/httpd  
[root@finn ~]# pkill -9 httpd  
[root@finn ~]# pkill -9 httpd  
[root@finn ~]# pkill -9 httpd  
[root@finn ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~
File Edit View Search Terminal Help
Jun 18 23:40:39 finn rgmanager[4518]: [script] Executing /etc/rc.d/init.d/httpd
start
Jun 18 23:40:39 finn rgmanager[32557]: Service service:web-service started

Jun 18 23:41:12 finn rgmanager[4698]: [script] Executing /etc/rc.d/init.d/httpd
status
Jun 18 23:41:12 finn rgmanager[4723]: [script] script:web-script: status of /etc
/rc.d/init.d/httpd failed (returned 1)
Jun 18 23:41:12 finn rgmanager[32557]: status on script "web-script" returned 1
(generic error)
Jun 18 23:41:12 finn rgmanager[32557]: Stopping service service:web-service
Jun 18 23:41:13 finn rgmanager[4754]: [script] Executing /etc/rc.d/init.d/httpd
stop
Jun 18 23:41:13 finn rgmanager[4823]: [ip] Removing IPv4 address 172.31.100.50/2
4 from eth0
Jun 18 23:41:14 finn rgmanager[32557]: Service service:web-service is recovering
Jun 18 23:41:14 finn rgmanager[32557]: Restart threshold for service:web-service
exceeded; attempting to relocate
Jun 18 23:41:19 finn rgmanager[32557]: Service service:web-service is now runnin
g on member 1
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~  
File Edit View Search Terminal Help  
Jun 18 23:41:13 finn rgmanager[4754]: [script] Executing /etc/rc.d/init.d/httpd  
stop  
Jun 18 23:41:13 finn rgmanager[4823]: [ip] Removing IPv4 address 172.31.100.50/2  
4 from eth0  
Jun 18 23:41:14 finn rgmanager[32557]: Service service:web-service is recovering  
Jun 18 23:41:14 finn rgmanager[32557]: Restart threshold for service:web-service  
exceeded; attempting to relocate  
Jun 18 23:41:19 finn rgmanager[32557]: Service service:web-service is now runnin  
g on member 1  
^C  
[root@finn ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:41:29 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Online, rgmanager  
finn.tc.redhat.com                         2 Online, Local, rgmanager  
neuromancer.tc.redhat.com                  3 Online, rgmanager  
  
Service Name                               Owner (Last)                               State  
-----  
service:web-service                        armitage.tc.redhat.com                     started  
[root@finn ~]#
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Test Clustered Web Service

- Crash one of the hosts

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



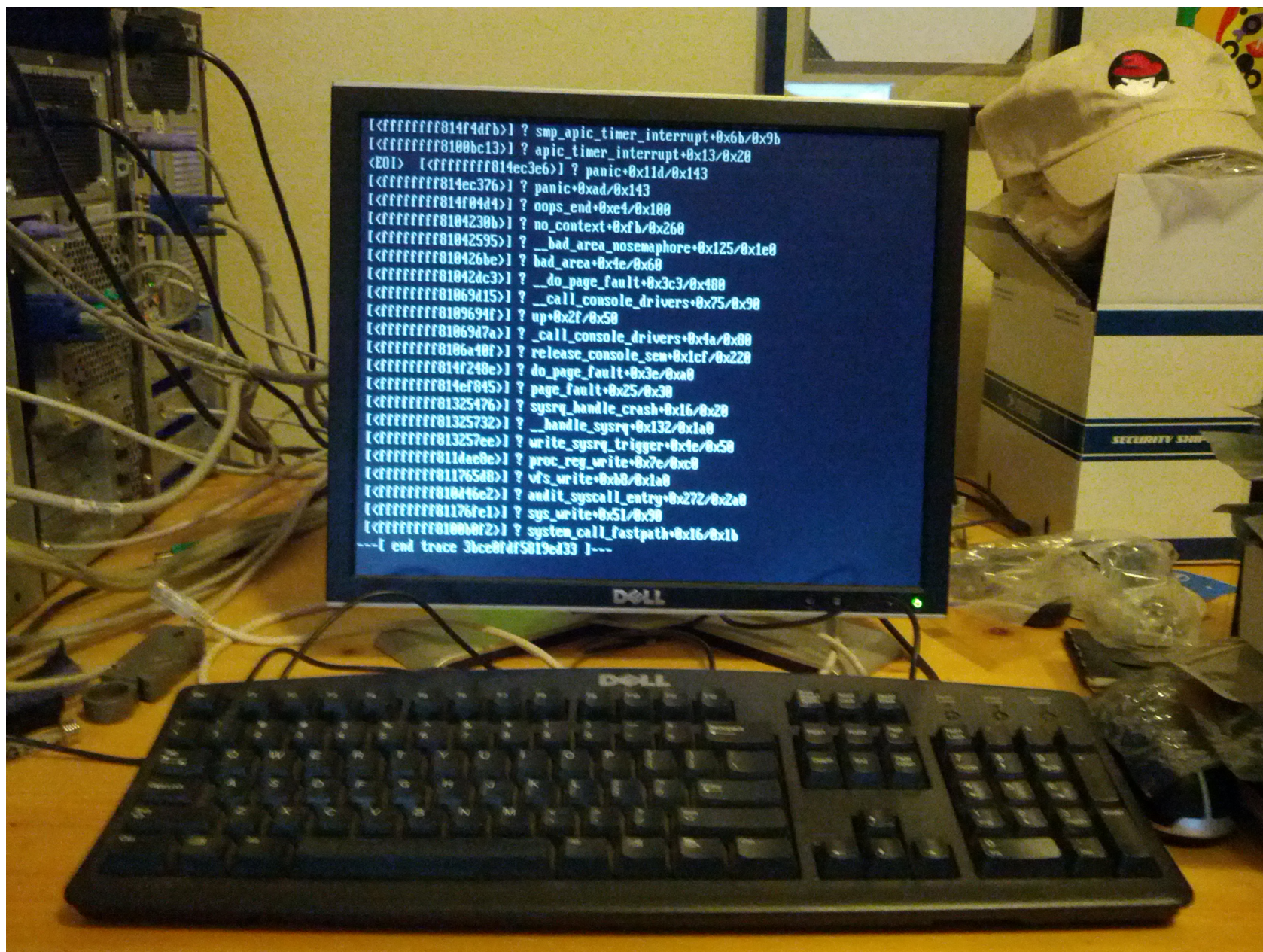
```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:44:34 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Online, Local, rgmanager  
finn.tc.redhat.com                         2 Online, rgmanager  
neuromancer.tc.redhat.com                  3 Online, rgmanager  
  
Service Name                               Owner (Last)                               State  
-----  
service:web-service                       armitage.tc.redhat.com                     started  
[root@armitage ~]# sync; echo c > /proc/sysrq-trigger  
█  
  
█
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



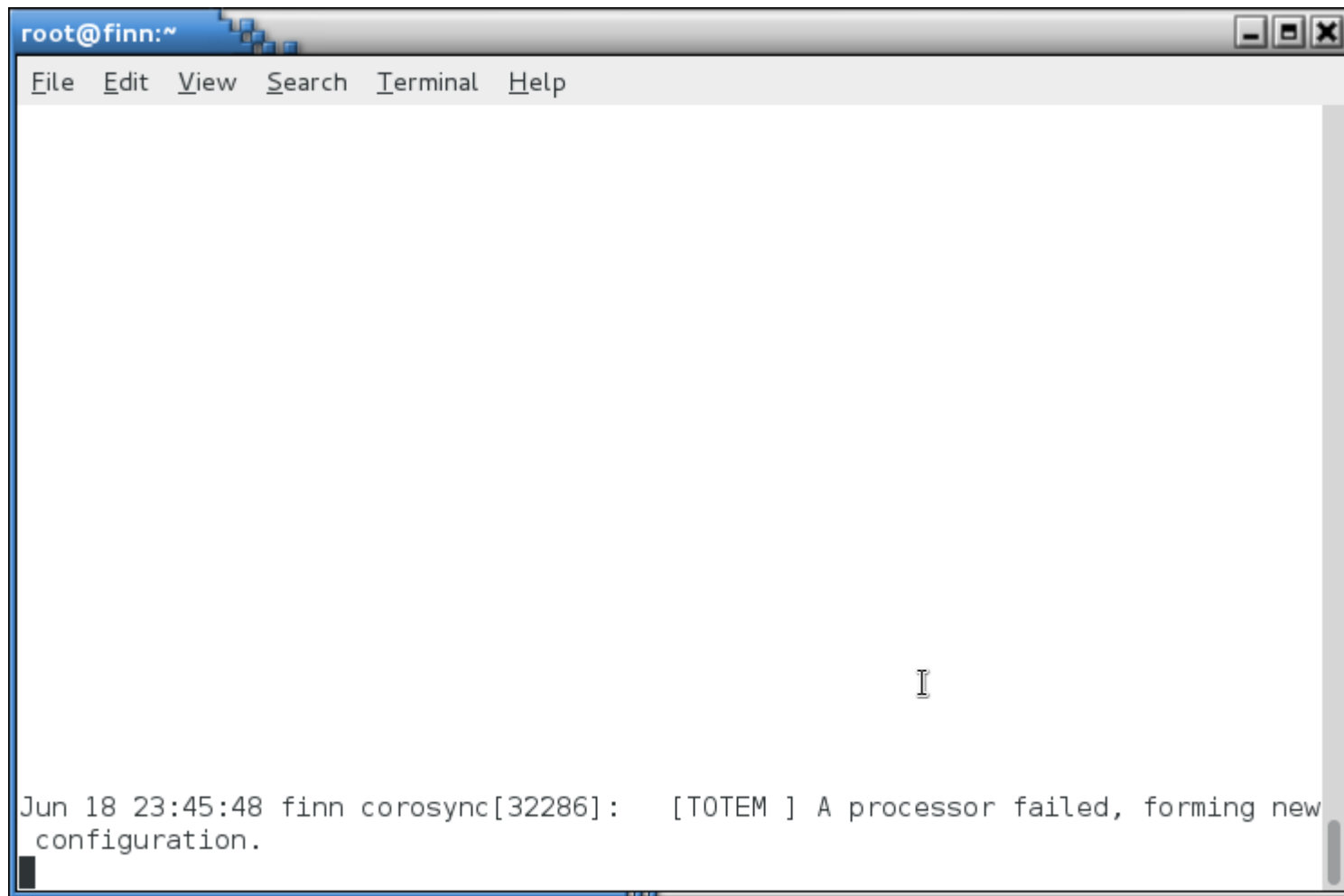


SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT





A terminal window titled "root@finn:~" with a menu bar containing "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal area is mostly empty, with a cursor "I" in the center. At the bottom, a log message is displayed: "Jun 18 23:45:48 finn corosync[32286]: [TOTEM] A processor failed, forming new configuration." followed by a cursor.

```
root@finn:~
File Edit View Search Terminal Help

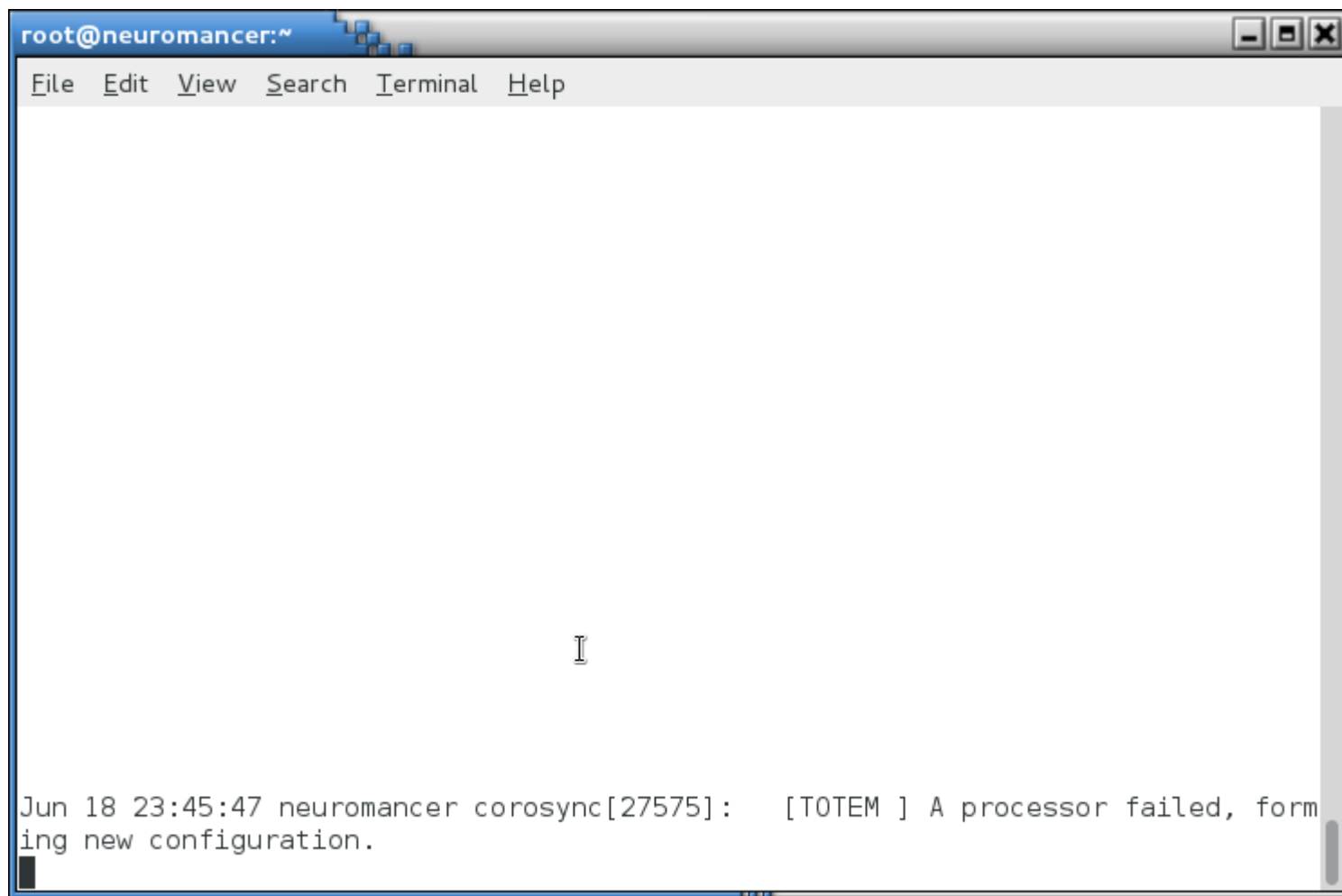
Jun 18 23:45:48 finn corosync[32286]: [TOTEM ] A processor failed, forming new
configuration.
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT





A terminal window titled "root@neuromancer:~" with a menu bar containing "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal area is mostly empty, with a cursor (a vertical bar) in the center. At the bottom, there is a log message: "Jun 18 23:45:47 neuromancer corosync[27575]: [T0TEM] A processor failed, forming new configuration."

```
root@neuromancer:~  
File Edit View Search Terminal Help  
  
Jun 18 23:45:47 neuromancer corosync[27575]: [T0TEM ] A processor failed, forming new configuration.
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@neuromancer:~  
File Edit View Search Terminal Help  
  
Jun 18 23:45:47 neuromancer corosync[27575]: [TOTEM ] A processor failed, forming new configuration.  
Jun 18 23:45:57 neuromancer corosync[27575]: [QUORUM] Members[2]: 2 3  
Jun 18 23:45:57 neuromancer corosync[27575]: [TOTEM ] A processor joined or left the membership and a new membership was formed.  
Jun 18 23:45:57 neuromancer rgmanager[27826]: State change: armitage.tc.redhat.com DOWN  
Jun 18 23:45:57 neuromancer kernel: dlm: closing connection to node 1  
Jun 18 23:45:57 neuromancer corosync[27575]: [CPG ] chosen downlist: sender r(0) ip(172.31.100.13) ; members(old:3 left:1)  
Jun 18 23:45:57 neuromancer corosync[27575]: [MAIN ] Completed service synchronization, ready to provide service.  
Jun 18 23:45:57 neuromancer fenced[27633]: fencing deferred to finn.tc.redhat.com  
m
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~  
File Edit View Search Terminal Help  
  
Jun 18 23:45:48 finn corosync[32286]: [TOTEM ] A processor failed, forming new  
configuration.  
Jun 18 23:46:00 finn corosync[32286]: [QUORUM] Members[2]: 2 3  
Jun 18 23:46:00 finn corosync[32286]: [TOTEM ] A processor joined or left the  
membership and a new membership was formed.  
Jun 18 23:46:00 finn kernel: dlm: closing connection to node 1  
Jun 18 23:46:00 finn rgmanager[32557]: State change: armitage.tc.redhat.com DOWN  
Jun 18 23:46:00 finn corosync[32286]: [CPG ] chosen downlist: sender r(0) ip  
(172.31.100.13) ; members(old:3 left:1)  
Jun 18 23:46:00 finn corosync[32286]: [MAIN ] Completed service synchronizati  
on, ready to provide service.  
Jun 18 23:46:00 finn kernel: GFS2: fsid=summit:web.1: jid=0: Trying to acquire j  
ournal lock...  
Jun 18 23:46:00 finn fenced[32345]: fencing node armitage.tc.redhat.com
```

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



```
root@finn:~
File Edit View Search Terminal Help
Jun 18 23:46:00 finn corosync[32286]: [QUORUM] Members[2]: 2 3
Jun 18 23:46:00 finn corosync[32286]: [TOTEM] A processor joined or left the
membership and a new membership was formed.
Jun 18 23:46:00 finn kernel: dlm: closing connection to node 1
Jun 18 23:46:00 finn rgmanager[32557]: State change: armitage.tc.redhat.com DOWN
Jun 18 23:46:00 finn corosync[32286]: [CPG] chosen downlist: sender r(0) ip
(172.31.100.13) ; members(old:3 left:1)
Jun 18 23:46:00 finn corosync[32286]: [MAIN] Completed service synchronizati
on, ready to provide service.
Jun 18 23:46:00 finn kernel: GFS2: fsid=summit:web.1: jid=0: Trying to acquire j
ournal lock...
Jun 18 23:46:00 finn fenced[32345]: fencing node armitage.tc.redhat.com
Jun 18 23:46:13 finn fenced[32345]: fence armitage.tc.redhat.com success
Jun 18 23:46:13 finn kernel: GFS2: fsid=summit:web.1: jid=0: Looking at journal.
..
Jun 18 23:46:13 finn kernel: GFS2: fsid=summit:web.1: jid=0: Done
Jun 18 23:46:13 finn rgmanager[32557]: Taking over service service:web-service f
rom down member armitage.tc.redhat.com
Jun 18 23:46:14 finn rgmanager[5255]: [ip] Adding IPv4 address 172.31.100.50/24
to eth0
Jun 18 23:46:18 finn rgmanager[5338]: [script] Executing /etc/rc.d/init.d/httpd
start
Jun 18 23:46:18 finn rgmanager[32557]: Service service:web-service started
```



```
root@neuromancer:~  
File Edit View Search Terminal Help  
Jun 18 23:45:57 neuromancer rgmanager[27826]: State change: armitage.tc.redhat.com DOWN  
Jun 18 23:45:57 neuromancer kernel: dlm: closing connection to node 1  
Jun 18 23:45:57 neuromancer corosync[27575]: [CPG ] chosen downlist: sender r(0) ip(172.31.100.13) ; members(old:3 left:1)  
Jun 18 23:45:57 neuromancer corosync[27575]: [MAIN ] Completed service synchronization, ready to provide service.  
Jun 18 23:45:57 neuromancer fenced[27633]: fencing deferred to finn.tc.redhat.com  
^C  
[root@neuromancer ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:46:51 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Offline  
finn.tc.redhat.com                         2 Online, rgmanager  
neuromancer.tc.redhat.com                  3 Online, Local, rgmanager  
  
Service Name                                Owner (Last)                                State  
-----  
service:web-service                        finn.tc.redhat.com                          started  
[root@neuromancer ~]#
```



```
root@finn:~  
File Edit View Search Terminal Help  
Jun 18 23:46:18 finn rgmanager[32557]: Service service:web-service started  
Jun 18 23:46:52 finn rgmanager[5519]: [script] Executing /etc/rc.d/init.d/httpd  
status  
Jun 18 23:47:01 finn corosync[32286]: [TOTEM ] A processor joined or left the  
membership and a new membership was formed.  
Jun 18 23:47:01 finn corosync[32286]: [QUORUM] Members[3]: 1 2 3  
Jun 18 23:47:01 finn corosync[32286]: [QUORUM] Members[3]: 1 2 3  
Jun 18 23:47:01 finn corosync[32286]: [CPG ] chosen downlist: sender r(0) ip  
(172.31.100.13) ; members(old:2 left:0)  
Jun 18 23:47:01 finn corosync[32286]: [MAIN ] Completed service synchronizati  
on, ready to provide service.  
Jun 18 23:47:10 finn kernel: dlm: got connection from 1  
Jun 18 23:47:22 finn rgmanager[32557]: State change: armitage.tc.redhat.com UP  
Jun 18 23:47:23 finn rgmanager[32557]: Relocating service:web-service to better  
node armitage.tc.redhat.com  
Jun 18 23:47:24 finn rgmanager[5891]: [script] Executing /etc/rc.d/init.d/httpd  
status  
Jun 18 23:47:24 finn rgmanager[32557]: Stopping service service:web-service  
Jun 18 23:47:24 finn rgmanager[5925]: [script] Executing /etc/rc.d/init.d/httpd  
stop  
Jun 18 23:47:25 finn rgmanager[5987]: [ip] Removing IPv4 address 172.31.100.50/2  
4 from eth0  
Jun 18 23:47:26 finn rgmanager[32557]: Service service:web-service is stopped
```



```
root@armitage:~  
File Edit View Search Terminal Help  
[root@armitage ~]# clustat  
Cluster Status for summit @ Mon Jun 18 23:47:37 2012  
Member Status: Quorate  
  
Member Name                                ID    Status  
-----  
armitage.tc.redhat.com                     1 Online, Local, rgmanager  
finn.tc.redhat.com                         2 Online, rgmanager  
neuromancer.tc.redhat.com                  3 Online, rgmanager  
  
Service Name                               Owner (Last)                               State  
-----  
service:web-service                       armitage.tc.redhat.com                     started  
[root@armitage ~]#
```



And that's it! You're all clustered up!

- We've shown you how to do this from the web UI and the command line!
- As an appendix to this deck, there are two shell scripts I use to build and destroy my cluster at <http://people.redhat.com/tcameron/>



Thank You!

- If you liked today's presentation, please fill out the evaluation form!

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Questions?



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



LIKE US ON FACEBOOK

www.facebook.com/redhatinc

FOLLOW US ON TWITTER

www.twitter.com/redhatsummit

TWEET ABOUT IT

#redhat

READ THE BLOG

summitblog.redhat.com

GIVE US FEEDBACK

www.redhat.com/summit/survey

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT

