Cisco Prime Central RHEL Operating System Upgrade Guide

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Preface

Introduction

The Operating System (OS) upgrade procedure supports Prime Central 2.1 customers to perform upgrade of Operating System from RHEL 6.5, 6.7, 6.8 or 6.9. This upgrade procedure is supported in all the three configurations:

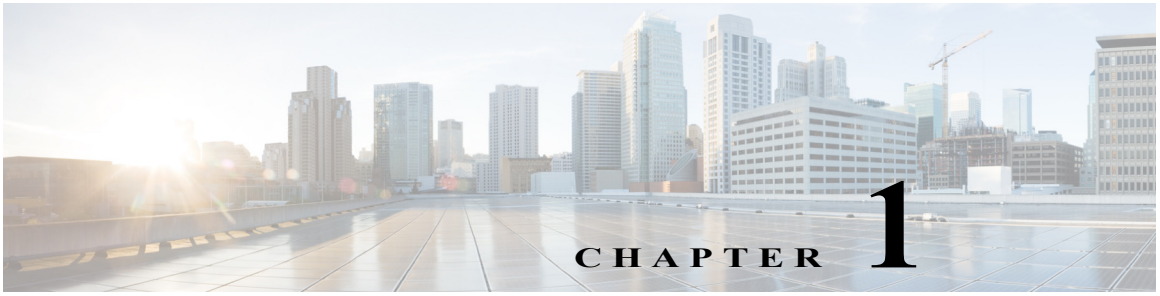
- Local HA
- Geo HA(DR)
- Standalone

Prerequisites

The prerequisites for the OS upgrade procedure are as follows:

- Verify the following check points before starting with the upgrade procedure:
  - Ensure to have all the user passwords used for installation or upgrade of Prime Central version 2.0.
  - Download .iso files for RHEL 6.5 or RHEL 6.7 or RHEL 6.8 or RHEL 6.9 from Red Hat website.
  - Download OSUpgradeScripts.tar from the below link, which will be used in subsequent sections:

    https://software.cisco.com/download/release.html?i=!y&mdfid=286306701&softwareid=284406574&release=1.5.1.2&os=
  - Ensure that an additional secondary storage space is available to backup of Prime Central data before starting with the RHEL 6.5 installation.
- Archive all the backups that are taken as part of OS upgrade procedure on a separate secondary storage out of the server. Archiving of backups is required as the data will be erased after RHEL 6.5 re-installation.
- Take the snapshot of the server as there is no support for rollback to RHEL 5.8 with Prime Central 2.1.



Upgrade RHEL Operating System from 5.8 to 6.5

These topics introduce you to upgrade RHEL Operating System (OS) in Disaster Recovery (DR) configuration.

Prerequisites

The RHEL upgrade procedure is applicable only on Prime Central 2.1. If the Prime Central version is less than 1.5.3, the application must be first upgraded to 2.1 before proceeding. For Prime Central upgrade, refer to the Prime Central 2.1 Quick Start Guide and Prime Central 2.1 HA Guide.

Install RHEL 6.5

Step 1 Install RHEL 6.5 with .iso file on both Prime Central and Fault Management servers, if installed separately. This step needs to be performed on both primary and standby nodes. Refer to Installing RHEL, page 5-1 for instructions.

Step 2 Change SELINUX mode to disabled as below:

```
vi /etc/sysconfig/selinux
# modify as
SELINUX=disabled
```

Step 3 Reboot all the servers.

Upgrading from RHEL 5.8 to 6.5 in Prime Central Disaster Recovery Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 to 6.5 in DR:

Prepare OS Upgrade

Step 1 Stop application monitoring, data replication monitoring and file synchronization.

a. Log in to the active server as a root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl stop
```

c. Log in to the inactive server as a root user. Enter the following command:

```
# dbmonctl stop
```

d. Log in to the active server as a primeusr.

e. Enter the following command:

```
# filesyncctl stop
```

Step 2 Uninstall Prime Central Fault Management 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 3 Uninstall Prime Central 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 4 Log in to Primary server to take a full backup of oracle database:

```
su - primeusr
emdbctl --backup
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services.This script needs to be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to "/root" directory in Fault Management and Prime Central servers:

```
./primeServices.sh stop
```

b. Execute the following command as root user on Fault Management server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 6 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
```

b. Change permissions of database_export_import.sh

```
chown   [oracle user:oracle group]   [path to script]
```

```
chmod  755 [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chmod  755 /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 7.

Step 7 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema)

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 8 Execute the following step on Primary PC server to stop database services. This is to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl -stop
```

Step 9 Execute the following steps in sequence to take the backup of Prime Central and Fault Management application, which is required to restore application after OS upgrade:

a. Copy **backupPrimeCentral.sh** from OSUpgradeScripts.tar to "/root" directory.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

b. Execute the following scripts:

```
./backupPrimeCentral.sh "backup_folder_full_path"
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP20" (On Prime central Server)
./backupPrimeCentral.sh   "/root/FMBACKUP20" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 7 through Step 9 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.5, formatted and all the data will be erased from the server.

Upgrading Prime Central Fault Management from RHEL 5.8 to 6.5 in Disaster Recovery Configuration

Note Follow the procedure mentioned in this section only if you want to continue the upgrade from RHEL5.8 to 6.5. Both active and inactive machines should be upgraded to 6.5 using the RHEL inline upgrade procedure. Always perform inline upgrade procedural steps on the inactive machine (except where mentioned active).

Step 1 Take a backup of Prime Central Oracle database:

```
su - primeusr
emdbctl --backup
```

Step 2 Take a DE Backup from the Fault Management server:

```
su - primeusr
cd  .acsi_primeusr/bin
setenv
./de_backupdb -bfile  [backupfile_full_path]
```

Example:

```
./de_backupdb -bfile  ~/debackup_28Sep2016
```

Step 3 Take a backup of the following Fault Management database folders:

- FM-install-folder/tiov2Components/TCRComponent/cognos/contentstore
- FM-install-folder/omnibus/db/NCOMS

Example:

```
su  - primeusr
cp -rf $NCHOME/omnibus/db/NCOMS  ~/
cp -rf $NCHOME/tipv2Components/TCRComponent/cognos/contentstore  ~/
```

Step 4 Stop application monitoring, data replication monitoring, and file synchronization:

a. Log in to the active server as a root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl stop
```

c. Log in to the inactive server as a root user.

d. Enter the following command:

```
# dbmonctl stop
```

e. Log in to the active server as a primeusr.

f. Enter the following command:

```
# filesyncctl stop
```

Step 5 Execute the following sql query as a sys user to stop database sync between active and inactive machine:

```
su - oracle
sqlplus  /  as  sysdba
ALTER DATABASE STOP LOGICAL STANDBY APPLY;
```

Step 6 Disable automatic restart of services.

On Prime Central Server:

```
rm -f /etc/rc.d/rc2.d/S95restartpc
rm -f /etc/rc.d/rc3.d/S95restartpc
rm -f /etc/rc.d/rc4.d/S95restartpc
rm -f /etc/rc.d/rc5.d/S95restartpc
mv  /etc/rc.d/init.d/restartpc  /etc/rc.d/init.d/disable_restartpc
```

On Fault Management Server:

```
chkconfig   primefm  off
mv /etc/rc.d/init.d/primefm  /etc/rc.d/init.d/disable_primefm
```

On Database Server:

```
setenforce 0 >& /dev/null; cd /etc/init.d ; /sbin/chkconfig --del dbora
unlink "/etc/init.d/dbora";
```

Step 7 Execute the following script to stop the Prime Central and Fault Management services.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory:

```
./primeServices.sh stop
```

Step 8 Stop prime central database services:

```
su - primeusr
emdbctl --stop
```

Step 9 Perform the inline upgrade on the **inactive machine** from RHEL 5.8 to 6.5. See the Red Hat documentation for instructions.

Note Make sure that you perform inline upgrade only. Fresh installation of RHEL 6.5 is not supported and you may loose complete data.

Step 10 Start Prime Central database services:

```
su - primeusr
emdbctl --start
```

Step 11 Execute below sql query as a sys user to start database sync between active and inactive:

```
su - oracle
sqlplus  /  as  sysdba
ALTER DATABASE START LOGICAL STANDBY APPLY  IMMEDIATE;
```

Step 12 Start nco_pad process on Fault Management server as a root user:

```
cd  FM-install-folder/omnibus/bin
./nco_pad
```

Step 13 Start application monitoring, data replication monitoring, and file synchronization:

a. Log in to the active server as the root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl start
```

c. Log in to the inactive server as root user.

d. Enter the following command:

```
# dbmonctl start
```

e. Log in to the active server as the user primeusr.

f. Enter the following command:

```
# filesyncctl start
```

Note Wait for 5 to 10 minutes before proceeding to the next step as file sync takes time to complete.

Step 14 Perform switchover of Prime Central, Fault Management, and all Domain Managers integrated to the setup to make the current inactive machine as active. Refer to the Prime Central HA guide for instructions.

Step 15 Restore backup of Fault Management database folder (**taken in Step3**)

- Stop the Fault Management service:

```
su - primeusr
fmctl stop
```

- *FM-install-folder*/tipv2Components/TCRComponent/cognos/contentstore/cm

Example:

```
mv $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/cm
$NCHOME/tipv2Components/TCRComponent/cognos/contentstore/old_cm
mv $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/old_cm ~/
cp -rf ~/contentstore/cm $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/
```

- Change ownership to the directory:

```
Ex: chown primeusr:ncoadmin -R
$NCHOME/tipv2Components/TCRComponent/cognos/contentstore/cm
```

- Start the Fault Management service:

```
su - primeusr
fmctl start
```

Step 16 Enable automatic restart of service:

- Log in to the Active Prime Central server (after switch over in Step 14).
- Execute the following commands:

```
cd  pc-install-folder/local/scripts/embedded_oracle/PostDB
perl auto_start_stop_db.pl $oratab $oracle_sid $oracle_home $oracle_user
mv  /etc/rc.d/init.d/disable_restartpc   /etc/rc.d/init.d/restartpc
cd /etc/rc.d/init.d
chmod 755 restartpc
ln  -s  ../init.d/restartpc   /etc/rc.d/rc2.d/S95restartpc.
```

Upgrading from RHEL 5.8 to 6.5 in a Prime Central Standalone Setup

Complete the following procedures explained in each topics to upgrade RHEL 5.8 to 6.5 in a standalone setup:

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed:

```
su - primeusr
emdbctl --backup
```

Step 2 Execute the following script to stop the Prime Central and Fault Management Services:

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to "/root" directory in Fault Management and Prime Central servers.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh stop
```

b. Execute the below command as root user on Fault Management Server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr –
```

Step 3 Export the database schemas to a dump file:

Note This step needs to be executed on the server where Prime Central Database is installed.

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh   /export/home/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown  [oracle user:oracle group]  [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba  /export/home/oracle/database_export_import.sh
chmod  755  /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
 su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExporSchema"  "oracle"
```

Note At the end of the operation, a folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: “prime_export_schemas.log” for any errors before proceeding to the next step.

Step 4 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 5 Execute the below step on the Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process:

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

This script needs to be executed on Prime Central and Fault Management servers if installed separately

a. Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to “/root” directory.

b. Execute the following script:

```
./backupPrimeCentral.sh <backup_folder_full_path>
```

Example:

```
./backupPrimeCentral.sh "/root/PCBACKUP151" (On Prime Central Server)
./backupPrimeCentral.sh "/root/FMBACKUP151" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 4 through Step 6 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.5, formatted and all the data will be erased from the server.

Upgrading from RHEL 5.8 to 6.5 in Prime Central High Availability Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 to 6.5 in High Availability (HA):

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed.

Execute the following commands:

```
su - primeusr
emdbctl --backup
```

Step 2 Freeze both Prime Central and Fault Management cluster services.

Execute the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService (On Prime Central server)
clusvcadm  -Z  PrimeFMService  (On Fault Management server)
```

Step 3 Execute the following steps in sequence to stop the Prime Central or Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into the active Prime Central and Fault management cluster nodes and execute the commands:

```
chmod  +x  /root/primeServices.sh
./primeServices.sh stop
```

b. Execute the following command on active Fault Management cluster node to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 4 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown   [oracle user:oracle group]  [path to script]
chmod  755   [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chmod  755 /opt/pc/oracle/database_export_import.sh
```

c. Execute the script by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"  "[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 5.

Step 5 Take a backup of the folder given as input for Step 4 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 6 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 7 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

On the Prime Central Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP151"
```

On the Fault Management Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/FMBACKUP151"
```

Note Take a backup of these folders (both Prime Central and Fault Management) that are created in Step 5 through step 7 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, and all the data will be erased from the server.

Step 8 Unfreeze both Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm -U  <Service name>
```

Example:

```
clusvcadm -U PrimePCService  (On Prime Central server)
clusvcadm -U PrimeFMService  (On Fault Management server)
```

Step 9 Disable both the Prime Central and Fault Management cluster services:

```
clusvcadm -d  <Service name>
```

Example:

```
clusvcadm -d PrimePCService  (On Prime Central server)
clusvcadm -d PrimeFMService  (On Fault Management server)
```

Step 10 Remove or detach the shared storage from both Prime Central and Fault Management clusters. See the Red Hat documentation for instructions.

Note Though it is optional to remove or detach the shared storage before installing RHEL 6.5, it is recommended to avoid any issues with the shared storage configurations and to save the data inside shared storage (if exists).

Post-Installation Configurations

Step 1 Install Prime Central and Fault Management applications on **Primary server alone** with version 2.1 and RHEL 6.5 with the same old configuration (that existed before OS upgrade).

Refer to the Prime Central 2.1 documentation for instructions.

Note After executing Step 1, make sure that Prime Central and Fault Management applications with version 2.1 are installed, up and running properly in DR mode before proceeding to step 2.

Step 2 Execute the following script in sequence to stop the Prime Central and Fault Management Services.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory:

```
./primeServices.sh stop
```

Step 3 Copy the backup folders obtained in Step 7 through Step 9 (Prepare OS Upgrade, page 1-2) to the local servers respectively. If Prime Central and Fault Management are installed separately, backup files should be copied onto both the servers respectively.

Example:

```
Copy "PCDBExportSchema"  to  "/root" on the PC server
Copy "PCBACKUP151"  to  "/root" on the PC server
```

Step 4 Import the database schemas from the dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

b. Copy oracle backup folder "PCDBExportSchema" to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
cp  /root/PCDBExportSchema /export/home/oracle/
Change permissions of database_export_import.sh and PCDBExportSchema  folder
chown   [oracle user:oracle group]  [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chown  oracle:dba  -R /export/home/oracle/PCDBExportSchema
chmod  755 /export/home/oracle/database_export_import.sh
chmod  -R 755 /export/home/oracle/PCDBExportSchema
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "import"  "schema"  "[folder-name]"
"[oracle-user]"  "[fullpath-of-export-folder]"
```

Example:

```
su - oracle
./database_export_import.sh  "import"  "schema"  "PCDBImportSchema"  "oracle"
"/export/home/oracle/PCDBExportSchema"
```

Note At the end of operation, folder-name given as input for the above command (like PCDBImportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_import.par
prime_import_schemas.log

d. Check the log: "prime_import_schemas.log" for any errors before proceeding to next step.

Note Ignore warnings with Error code: ORA-39082.

For any other exceptions, please refer to the Troubleshooting OS Upgrade, page 6-1 section in this guide.

Step 5 Execute the following step on Prime Central server to stop database services. This is to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following script to restore Prime Central and Fault Management application.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy restorePrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory.

b. Execute the following script:

```
./restorePrimeCentral.sh    backup_folder_full_path
```

```
Example:
    ./restorePrimeCentral.sh   "/root/PCBACKUP151" (On Prime Central server)
    ./restorePrimeCentral.sh   "/root/FMBACKUP151" (On Fault Management server)
```

Step 7 Start Database services on the Prime Central server.

```
su - primeusr
emdbctl --start
```

Note If there any exception related to known_hosts entries, you need to manually remove corrupted entry from known_hosts file. When you again start the emdbctl, it will prompt for authenticity. Select "Yes" to proceed.

Step 8 Start Portal, integration and fault management services by executing the below script.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Execute the following script:

```
./primeServices.sh start
```

Step 9 Restart Integration Layer services on all integrated domain managers.

Refer to the respective documentation.

Example: itgctl restart on Prime Network IL server

Step 10 Execute the following commands on Fault Management server to re-register all integrated DMs:

```
su - primeusr
cd $NCHOME/prime_integrator/scripts
./DMRegistration.sh  -f
```

Step 11 Restart Portal, integration and fault management services by executing the below script.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Execute the following script:

```
./primeServices.sh restart
```

Step 12 Perform Disaster Recovery setup of Prime Central 2.1 on the Standby server. Refer the Configuring Prime Central for Geographical Disaster Recovery section for setup instructions.

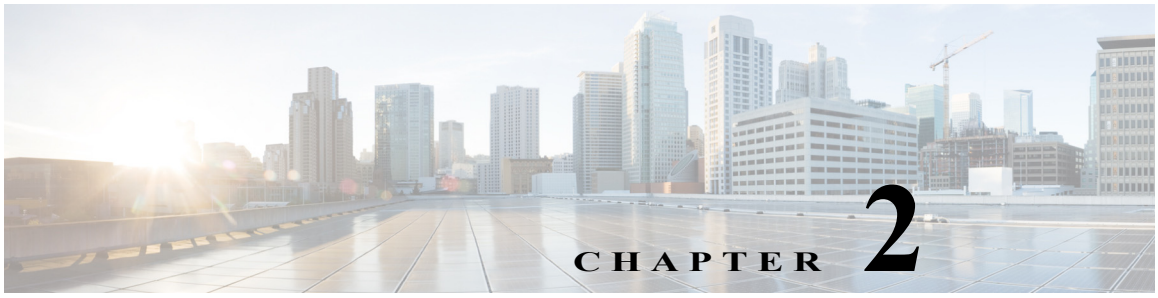
Step 13 Perform Disaster Recovery setup of Prime Central Fault Management 2.1 on the Standby server. Refer the Configuring Prime Central Fault Management for Geographical Disaster Recovery section for setup instructions.

Step 14 Configure Fault Management to send 3GPP alarm notifications to Northbound Interface:

```
fmctl configimpact <centraladmin pwd>
fmctl restart
```

Example:

```
fmctl configimpact Prime123
fmctl restart
```



Upgrade RHEL Operating System from 5.8 or 6.5 to 6.7

These topics introduce you to upgrade RHEL Operating System (OS) in a standalone setup. You can upgrade the RHEL OS in single server and dual server environments.

Prerequisites

The RHEL upgrade procedure is applicable only on Prime Central 2.1. If the Prime Central version is less than 2.0, the application must be first upgraded to 2.1 before proceeding. For Prime Central upgrade, please refer to the Prime Central 2.1 Quick Start Guide and Prime Central 2.1 HA Guide.

Install RHEL 6.7

Step 1 Install RHEL 6.7 with .iso file on both Prime Central and Fault Management servers if installed separately. For more information, see Installing RHEL, page 5-1 for instructions.

Step 2 Change SELINUX mode to disabled as below:

```
vi /etc/sysconfig/selinux
# modify as
SELINUX=disabled
```

Step 3 Reboot all the servers.

Upgrading from RHEL 5.8 or 6.5 to 6.7 in a Prime Central Standalone Setup

Complete the following procedures explained in each topics to upgrade RHEL 5.8 or 6.5 to 6.7 in a standalone setup:

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed:

```
su - primeusr
emdbctl --backup
```

Step 2 Execute the following script to stop the Prime Central and Fault Management Services:

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to "/root" directory in Fault Management and Prime Central servers.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh stop
```

b. Execute the below command as root user on Fault Management Server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr –
```

Step 3 Export the database schemas to a dump file:

Note This step needs to be executed on the server where Prime Central Database is installed.

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown [oracle user:oracle group] [path to script]
chmod 755 [path to script]
```

Example:

```
chown oracle:dba /export/home/oracle/database_export_import.sh
chmod 755 /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh "export" "schema" "[folder-name]"
"[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExporSchema"  "oracle"
```

Note At the end of the operation, a folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to the next step.

Step 4 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 5 Execute the below step on the Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process:

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

This script needs to be executed on Prime Central and Fault Management servers if installed separately

a. Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory.

b. Execute the following script:

```
./backupPrimeCentral.sh <backup_folder_full_path>
```

Example:

```
./backupPrimeCentral.sh "/root/PCBACKUP151" (On Prime Central Server)
./backupPrimeCentral.sh "/root/FMBACKUP151" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 4 through Step 6 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.5, formatted and all the data will be erased from the server.

Upgrade from RHEL 5.8 or 6.5 to 6.7 in Prime Central Standalone Setup

Note Follow the procedure mentioned in this section only if you want to continue the upgrade from RHEL 5.8 or 6.5 to 6.7. All machines should be upgraded to 6.7 using the RHEL inline upgrade procedure.

Step 1 Take a backup of PC Oracle database:

```
su - primeusr
```

```
emdbctl --backup
```

Step 2 Take a DE Backup from the Fault Management server:

```
su - primeusr
cd  .acsi_primeusr/bin
setenv
./de_backupdb -bfile <backupfile_full_path>
```

Example:

```
./de_backupdb -bfile ~/debackup_28Sep2016
```

Step 3 Take a backup of below Fault Management database folders:

- FM-install-folder/tipv2Components/TCRComponent/cognos/contenstore
- FM-install-folder/omnibus/db/NCOMS

Example:

```
cp -rf $NCHOME/omnibus/db/NCOMS  /opt/
cp -rf $NCHOME/tipv2Components/TCRComponent/cognos/contentstore  /opt/
```

Step 4 Disable automatic restart of services.

On Prime Central Server:

```
rm -f /etc/rc.d/rc2.d/S95restartpc
rm -f /etc/rc.d/rc3.d/S95restartpc
rm -f /etc/rc.d/rc4.d/S95restartpc
rm -f /etc/rc.d/rc5.d/S95restartpc
mv /etc/rc.d/init.d/restartpc   /etc/rc.d/init.d/disable_restartpc
```

On Fault Management Server:

```
chkconfig primefm off
mv /etc/rc.d/init.d/primefm  /etc/rc.d/init.d/disable_primefm
```

On Database Server:

```
setenforce 0 >& /dev/null; cd /etc/init.d ; /sbin/chkconfig --del dbora
unlink "/etc/init.d/dbora";
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services:

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

- Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory:

```
./primeServices.sh stop
```

Step 6 Stop the Prime Central database service:

```
su - primeusr
emdbctl --stop
```

Step 7 Perform the inline upgrade of Prime Central and Fault Management servers (if installed separately) from RHEL 5.8 or 6.5 to 6.7. For more instructions, see the Red Hat documentation.

Note Make sure that you perform inline upgrade only. Fresh installation of RHEL 6.7 is not supported and you may lose complete data.

Step 8 Start the Prime Central database service:

```
su - primeusr
emdbctl --start
```

Step 9 Start nco_pad process on Fault Management Server as a root user.

```
cd FM-install-folder/omnibus/bin
./nco_pad
```

Step 10 Execute the following script to start the Prime Central and Fault Management Services:

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh "start"
```

Step 11 Enable automatic restart of services:

a. Log in to the Prime Central server.

b. Execute the following commands:

```
cd pc-install-folder/local/scripts/embedded_oracle/PostDB
perl auto_start_stop_db.pl $oratab $oracle_sid $oracle_home $oracle_user
```

Example:

```
perl auto_start_stop_db.pl "/etc/oratab" "primedb"
"/export/home/oracle/product/12.1.0/db_1" "oracle"
mv /etc/rc.d/init.d/disable_restartpc /etc/rc.d/init.d/restartpc
cd /etc/rc.d/init.d
chmod 755 restartpc
ln -s ../init.d/restartpc /etc/rc.d/rc2.d/S95restartpc
ln -s ../init.d/restartpc /etc/rc.d/rc3.d/S95restartpc
ln -s ../init.d/restartpc /etc/rc.d/rc4.d/S95restartpc
ln -s ../init.d/restartpc /etc/rc.d/rc5.d/S95restartpc
```

c. Log in to the Fault Management server.

d. Execute the following commands:

```
mv /etc/rc.d/init.d/disable_primefm /etc/rc.d/init.d/primefm
chkconfig --add primefm
chkconfig --level 2345 primefm on
```

Upgrading from RHEL 5.8 or 6.5 to 6.7 to in Prime Central Disaster Recovery Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 to 6.7 in DR:

Prepare OS Upgrade

Step 1 Stop application monitoring, data replication monitoring and file synchronization.

a. Log in to the active server as a root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl stop
```

c. Log in to the inactive server as a root user. Enter the following command:

```
# dbmonctl stop
```

d. Log in to the active server as a primeusr.

e. Enter the following command:

```
# filesyncctl stop
```

Step 2 Uninstall Prime Central Fault Management 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 3 Uninstall Prime Central 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 4 Log in to Primary server to take a full backup of oracle database:

```
su - primeusr
emdbctl --backup
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services.This script needs to be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to “/root” directory in Fault Management and Prime Central servers:

```
./primeServices.sh stop
```

b. Execute the following command as root user on Fault Management server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 6 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
```

b. Change permissions of database_export_import.sh

```
chown   [oracle user:oracle group]   [path to script]
chmod  755 [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chmod  755 /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 7.

Step 7 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema)

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 8 Execute the following step on Primary PC server to stop database services. This is to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl –stop
```

Step 9 Execute the following steps in sequence to take the backup of Prime Central and Fault Management application, which is required to restore application after OS upgrade:

a. Copy **backupPrimeCentral.sh** from OSUpgradeScripts.tar to "/root" directory.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

b. Execute the following scripts:

```
./backupPrimeCentral.sh "backup_folder_full_path"
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP20" (On Prime central Server)
./backupPrimeCentral.sh   "/root/FMBACKUP20" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 7 through Step 9 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, formatted and all the data will be erased from the server.

Upgrading Prime Central Fault Management from RHEL 5.8 or 6.5 to 6.7 in Prime Central Standalone Setup

Note Follow the procedure mentioned in this section only if you want to continue the upgrade from RHEL 5.8 or 6.5 to 6.7. All machines should be upgraded to RHEL 6.7 using the RHEL inline upgrade procedure.

Step 1 Take a backup of PC Oracle database:

```
su - primeusr
emdbctl --backup
```

Step 2 Take a DE Backup from the Fault Management server:

```
su - primeusr
cd  .acsi_primeusr/bin
setenv
./de_backupdb -bfile <backupfile_full_path>

    Example:

     ./de_backupdb -bfile ~/debackup_28Sep2016
```

Step 3 Take a backup of below Fault Management database folders:

- FM-install-folder/tipv2Components/TCRComponent/cognos/contenstore
- FM-install-folder/omnibus/db/NCOMS

Example:

```
cp -rf $NCHOME/omnibus/db/NCOMS  /opt/
cp -rf $NCHOME/tipv2Components/TCRComponent/cognos/contentstore  /opt/
```

Step 4 Disable automatic restart of services.

On Prime Central Server:

```
rm -f /etc/rc.d/rc2.d/S95restartpc
rm -f /etc/rc.d/rc3.d/S95restartpc
rm -f /etc/rc.d/rc4.d/S95restartpc
rm -f /etc/rc.d/rc5.d/S95restartpc
mv /etc/rc.d/init.d/restartpc   /etc/rc.d/init.d/disable_restartpc
```

On Fault Management Server:

```
chkconfig primefm off
mv /etc/rc.d/init.d/primefm  /etc/rc.d/init.d/disable_primefm
```

On Database Server:

```
setenforce 0 >& /dev/null; cd /etc/init.d ; /sbin/chkconfig --del dbora
unlink "/etc/init.d/dbora";
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services:

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

- Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory:

```
./primeServices.sh stop
```

Step 6 Stop the Prime Central database service:

```
su - primeusr
emdbctl --stop
```

Step 7 Perform the inline upgrade of Prime Central and Fault Management servers (if installed separately) from RHEL 6.5 or 6.7 or 6.8 to 6.9. For more instructions, see the Red Hat documentation.

Note Make sure that you perform inline upgrade only.

Step 8 Start the Prime Central database service:

```
su - primeusr
emdbctl --start
```

Step 9 Start nco_pad process on Fault Management Server as a root user.

```
cd  FM-install-folder/omnibus/bin
./nco_pad
```

Step 10 Execute the following script to start the Prime Central and Fault Management Services:

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh  "start"
```

Step 11 Enable automatic restart of services:

a. Log in to the Prime Central server.

b. Execute the following commands:

```
cd  pc-install-folder/local/scripts/embedded_oracle/PostDB
perl auto_start_stop_db.pl $oratab $oracle_sid $oracle_home $oracle_user
```

Example:

```
perl  auto_start_stop_db.pl  "/etc/oratab"  "primedb"
"/export/home/oracle/product/12.1.0/db_1"  "oracle"
mv  /etc/rc.d/init.d/disable_restartpc   /etc/rc.d/init.d/restartpc
cd /etc/rc.d/init.d
```

```
chmod 755 restartpc
ln  -s  ../init.d/restartpc   /etc/rc.d/rc2.d/S95restartpc
ln  -s  ../init.d/restartpc   /etc/rc.d/rc3.d/S95restartpc
ln  -s  ../init.d/restartpc   /etc/rc.d/rc4.d/S95restartpc
ln  -s  ../init.d/restartpc   /etc/rc.d/rc5.d/S95restartpc
```

c. Log in to the Fault Management server.

d. Execute the following commands:

```
mv /etc/rc.d/init.d/disable_primefm  /etc/rc.d/init.d/primefm
chkconfig  --add  primefm
chkconfig  --level 2345  primefm  on
```

Upgrading from RHEL 5.8 or 6.5 to 6.7 in Prime Central High Availability Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 to 6.7 in High Availability (HA):

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed.

Execute the following commands:

```
su - primeusr
emdbctl --backup
```

Step 2 Freeze both Prime Central and Fault Management cluster services.

Execute the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService (On Prime Central server)
clusvcadm  -Z  PrimeFMService  (On Fault Management server)
```

Step 3 Execute the following steps in sequence to stop the Prime Central or Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into the active Prime Central and Fault management cluster nodes and execute the commands:

```
chmod  +x  /root/primeServices.sh
./primeServices.sh stop
```

b. Execute the following command on active Fault Management cluster node to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 4 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown   [oracle user:oracle group]  [path to script]
chmod  755   [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chmod  755 /opt/pc/oracle/database_export_import.sh
```

c. Execute the script by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"  "[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: “prime_export_schemas.log” for any errors before proceeding to Step 5.

Step 5 Take a backup of the folder given as input for Step 4 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 6 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 7 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

On the Prime Central Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP151"
```

On the Fault Management Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/FMBACKUP151"
```

Note Take a backup of these folders (both Prime Central and Fault Management) that are created in Step 5 through step 7 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.7, and all the data will be erased from the server.

Step 8 Unfreeze both Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm -U  <Service name>
```

Example:

```
clusvcadm -U PrimePCService  (On Prime Central server)
clusvcadm -U PrimeFMService  (On Fault Management server)
```

Step 9 Disable both the Prime Central and Fault Management cluster services:

```
clusvcadm -d  <Service name>
```

Example:

```
clusvcadm -d PrimePCService  (On Prime Central server)
clusvcadm -d PrimeFMService  (On Fault Management server)
```

Step 10 Remove or detach the shared storage from both Prime Central and Fault Management clusters. See the Red Hat documentation for instructions.

Note Though it is optional to remove or detach the shared storage before installing RHEL 6.7.

Upgrade from RHEL 5.8 or 6.5 to 6.7 in Prime Central High Availability Configuration:

Step 1 Take a full backup of oracle database on the server where Prime Central is installed.

Execute the following commands:

```
su - primeusr
```

```
emdbctl --backup
```

Step 2 Freeze both Prime Central and Fault Management cluster services.

Execute the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService (On Prime Central server)
clusvcadm  -Z  PrimeFMService  (On Fault Management server)
```

Step 3 Execute the following steps in sequence to stop the Prime Central or Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into the active Prime Central and Fault management cluster nodes and execute the commands:

```
chmod  +x  /root/primeServices.sh
./primeServices.sh stop
```

b. Execute the following command on active Fault Management cluster node to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 4 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown   [oracle user:oracle group]  [path to script]
chmod  755   [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chmod  755 /opt/pc/oracle/database_export_import.sh
```

c. Execute the script by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"  "[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 5.

Step 5 Take a backup of the folder given as input for Step 4 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 6 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 7 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

On the Prime Central Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP151"
```

On the Fault Management Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/FMBACKUP151"
```

Note Take a backup of these folders (both Prime Central and Fault Management) that are created in Step 5 through step 7 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.9, and all the data will be erased from the server.

Step 8 Unfreeze both Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm -U  <Service name>
```

Example:

```
clusvcadm -U PrimePCService  (On Prime Central server)
clusvcadm -U PrimeFMService  (On Fault Management server)
```

Step 9 Disable both the Prime Central and Fault Management cluster services:

```
clusvcadm -d  <Service name>
```

Example:

```
clusvcadm -d PrimePCService  (On Prime Central server)
clusvcadm -d PrimeFMService  (On Fault Management server)
```

Step 10 Remove or detach the shared storage from both Prime Central and Fault Management clusters. See the Red Hat documentation for instructions.

Note Though it is optional to remove or detach the shared storage before installing RHEL 6.7, it is recommended to avoid any issues with the shared storage configurations and to save the data inside shared storage (if exists).

Follow the procedure mentioned in this section only if you want to continue the upgrade from RHEL 5.8 or 6.5 to 6.7:

Step 1 Take a backup of Prime Central Oracle database:**su - primeusr**

```
emdbctl --backup
```

Step 2 Take a DE Backup from Fault Management server:

```
su - primeusr
cd  .acsi_primeusr/bin
setenv
./de_backupdb -bfile  [backupfile_full_path]
```

Example:

```
./de_backupdb -bfile  ~/debackup_28Sep2016
```

Step 3 Take a backup of the following Fault Management database folders:

- *FM-install-folder*/tipv2Components/TCRComponent/cognos/contentstore
- *FM-install-folder*/omnibus/db/NCOMS

Example:

```
su  - primeusr
cp -rf $NCHOME/omnibus/db/NCOMS ~/
cp -rf $NCHOME/tipv2Components/TCRComponent/cognos/contentstore ~/
```

Step 4 Disable Prime Central and Fault Management cluster:

```
clusvcadm  -d  [cluster-service-name]
```

Example:

```
clusvcadm  -d  PrimePCService
clusvcadm  -d  PrimeFMservice
```

Step 5 Perform inline upgrade of all the cluster nodes from RHEL 5.8 or 6.5 to 6.7. See the Red Hat documentation for instructions.

Note Make sure that you perform only inline upgrade.

Step 6 Enable Prime Central and Fault Management cluster:

```
clusvcadm  -e  [cluster-service-name]
```

Example:

```
clusvcadm  -e  PrimePCService
clusvcadm -e PrimeFMservice
```

Post-Installation Configurations

Step 1 Install Prime Central and Fault Management applications with version 2.1 on the RHEL 5.8 or 6.5 to 6.7 machines with the same old configuration (that existed before OS upgrade). Refer to the Prime Central 2.1 documentation for instructions.

Note After executing Step 1, make sure that Prime Central and Fault Management applications with version 2.1 are installed, up and running properly before proceeding to Step 2.

Step 2 Execute the following script to stop Prime Central and Fault Management Services. This script needs to be executed on Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh stop
```

Step 3 Copy the backup folders obtained in Step 4 and Step 6 (Prepare OS Upgrade, page 2-2) to the local servers respectively. If Prime Central and Fault Management is installed separately, backup files should be copied on both the servers.

Example:

```
Copy "PCDBExportSchema" to "/root" on the PC server
Copy "PCBACKUP151" to "/root" on the PC server
```

Step 4 Import the database schemas from the dump file. This step needs to be executed on the server where Prime Central Database is installed.

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

b. Copy oracle backup folder "PCDBExportSchema" to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
cp  /root/PCDBExportSchema /export/home/oracle/
Change permissions of database_export_import.sh and PCDBExportSchema  folder
chown  [oracle user:oracle group]  [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chown   oracle:dba  -R /export/home/oracle/PCDBExportSchema
chmod  755 /export/home/oracle/database_export_import.sh
chmod  -R 755 /export/home/oracle/PCDBExportSchema
```

c. Execute the scripts by following steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "import"  "schema" "[folder-name]" "[oracle-user]
```

Example:

```
su - oracle
./database_export_import.sh "import" "schema" "PCDBImportSchema" "oracle"
"/export/home/oracle/PCDBExportSchema"
```

Note At the end of operation, a folder-name given as input for the above command (like PCDBImportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_import.par
prime_import_schemas.log

d. Check the log: “prime_import_schemas.log” for any errors before proceeding to Step 5.

Note Ignore warnings with Error code: ORA-39082.

Step 5 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process:

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following script to restore Prime Central and Fault Management applications.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy restorePrimeCentral.sh from OSUpgradeScripts.tar to “/root” directory.

b. Execute the following script:

```
./restorePrimeCentral.sh  <backup_folder_full_path>
```

Example:

```
./restorePrimeCentral.sh   “/root/PCBACKUP151” (On Prime Central Server)
./restorePrimeCentral.sh   “/root/FMBACKUP151” (On Fault management Server)
```

Step 7 Start Database services on the Prime Central server.

```
su – primeusr
emdbctl --start
```

Note If there are any exception related to known_hosts entries, you need to manually remove corrupted entry from known_hosts file. When you again start the emdbctl, it will prompt for authenticity. Select “Yes” to proceed.

Step 8 Start Portal, integration, and fault management services by executing the below script:

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Execute the following script:

```
./primeServices.sh start
```

Step 9 Restart Integration Layer services on all integrated domain managers. Refer to the respective documentation.

Example: itgctl restart on Prime Network IL server

Step 10 Execute the following command on Fault Management server to re-register all integrated DMs:

```
su - primeusr
cd $NCHOME/prime_integrator/scripts
./DMRegistration.sh  -f
```

Step 11 Restart Portal, integration and fault management services by executing below script:

This script should be executed on both Prime Central and Fault Management servers if installed separately.

a. Execute the following script:

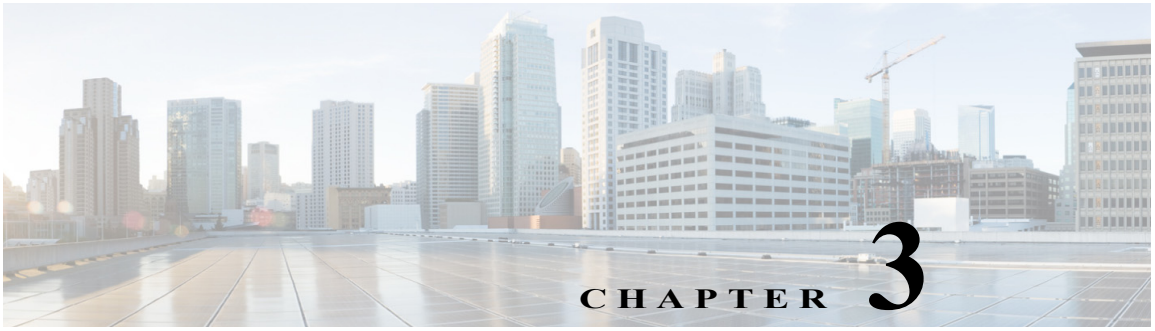
```
./primeServices.sh restart
```

Step 12 Configure Fault Management to send 3GPP alarm notifications to Northbound Interface:

```
fmctl configimpact <centraladmin pwd>
fmctl restart
```

Example:

```
fmctl configimpact Prime123
fmctl restart
```



Upgrade RHEL Operating System from 5.8 or 6.5 or 6.7 to 6.8

These topics introduce you to upgrade RHEL Operating System (OS) in Prime Central High Availability (HA) Configuration:

- Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in Prime Central Disaster Recovery Configuration, page 3-2
- Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in a Prime Central Standalone Setup, page 3-4
- Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in Prime Central High Availability Configuration, page 3-6

Prerequisites

The RHEL upgrade procedure is applicable only on Prime Central 2.1. If the Prime Central version is less than 2.1, the application must be first upgraded to 2.1 before proceeding. For Prime Central upgrade, refer to the Prime Central 2.1 Quick Start Guide and Prime Central 2.1 HA Guide.

Install RHEL 6.8

Step 1 Install RHEL 6.8 with .iso file on both Prime Central and Fault Management cluster nodes.

For more information, refer to Installing RHEL, page 5-1.

Step 2 Change the SELINUX mode to disabled as shown below:

```
vi /etc/sysconfig/selinux
# modify as
SELINUX=disabled
```

Step 3 Reboot all the servers.

Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in Prime Central Disaster Recovery Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 or 6.7 to 6.8 in DR:

Prepare OS Upgrade

Step 1 Stop application monitoring, data replication monitoring and file synchronization.

a. Log in to the active server as a root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl stop
```

c. Log in to the inactive server as a root user. Enter the following command:

```
# dbmonctl stop
```

d. Log in to the active server as a primeusr.

e. Enter the following command:

```
# filesyncctl stop
```

Step 2 Uninstall Prime Central Fault Management 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 3 Uninstall Prime Central 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 4 Log in to Primary server to take a full backup of oracle database:

```
su - primeusr
emdbctl --backup
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services.This script needs to be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to “/root” directory in Fault Management and Prime Central servers:

```
./primeServices.sh stop
```

b. Execute the following command as root user on Fault Management server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 6 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
```

b. Change permissions of database_export_import.sh

```
chown   [oracle user:oracle group]   [path to script]
chmod  755 [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chmod  755 /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 7.

Step 7 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema)

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 8 Execute the following step on Primary PC server to stop database services. This is to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl –stop
```

Step 9 Execute the following steps in sequence to take the backup of Prime Central and Fault Management application, which is required to restore application after OS upgrade:

a. Copy **backupPrimeCentral.sh** from OSUpgradeScripts.tar to "/root" directory.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

b. Execute the following scripts:

```
./backupPrimeCentral.sh "backup_folder_full_path"
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP20" (On Prime central Server)
./backupPrimeCentral.sh   "/root/FMBACKUP20" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 7 through Step 9 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, formatted and all the data will be erased from the server.

Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in a Prime Central Standalone Setup

Complete the following procedures explained in each topics to upgrade RHEL 5.8 or 6.5 or 6.7 to 6.8 in a standalone setup:

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed:

```
su - primeusr
emdbctl --backup
```

Step 2 Execute the following script to stop the Prime Central and Fault Management Services:

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to "/root" directory in Fault Management and Prime Central servers.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh stop
```

b. Execute the below command as root user on Fault Management Server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr –
```

Step 3 Export the database schemas to a dump file:

Note This step needs to be executed on the server where Prime Central Database is installed.

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh   /export/home/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown  [oracle user:oracle group]  [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba  /export/home/oracle/database_export_import.sh
chmod  755  /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
 su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExporSchema"  "oracle"
```

Note At the end of the operation, a folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to the next step.

Step 4 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 5 Execute the below step on the Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process:

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

This script needs to be executed on Prime Central and Fault Management servers if installed separately

a. Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory.

b. Execute the following script:

```
./backupPrimeCentral.sh <backup_folder_full_path>
```

Example:

```
./backupPrimeCentral.sh "/root/PCBACKUP151" (On Prime Central Server)
./backupPrimeCentral.sh "/root/FMBACKUP151" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 4 through Step 6 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, formatted and all the data will be erased from the server.

Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in Prime Central High Availability Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 or 6.7 to 6.8 in High Availability (HA):

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed.

Execute the following commands:

```
su - primeusr
emdbctl --backup
```

Step 2 Freeze both Prime Central and Fault Management cluster services.

Execute the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService (On Prime Central server)
clusvcadm  -Z  PrimeFMService  (On Fault Management server)
```

Step 3 Execute the following steps in sequence to stop the Prime Central or Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into the active Prime Central and Fault management cluster nodes and execute the commands:

```
chmod  +x  /root/primeServices.sh
./primeServices.sh stop
```

b. Execute the following command on active Fault Management cluster node to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 4 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown   [oracle user:oracle group]  [path to script]
chmod  755   [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chmod  755 /opt/pc/oracle/database_export_import.sh
```

c. Execute the script by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"  "[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 5.

Step 5 Take a backup of the folder given as input for Step 4 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 6 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 7 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

On the Prime Central Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP151"
```

On the Fault Management Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/FMBACKUP151"
```

Note Take a backup of these folders (both Prime Central and Fault Management) that are created in Step 5 through step 7 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, and all the data will be erased from the server.

Step 8 Unfreeze both Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm -U  <Service name>

Example:

   clusvcadm -U PrimePCService  (On Prime Central server)
   clusvcadm -U PrimeFMService  (On Fault Management server)
```

Step 9 Disable both the Prime Central and Fault Management cluster services:

```
clusvcadm -d  <Service name>

Example:

   clusvcadm -d PrimePCService  (On Prime Central server)
   clusvcadm -d PrimeFMService  (On Fault Management server)
```

Step 10 Remove or detach the shared storage from both Prime Central and Fault Management clusters. See the Red Hat documentation for instructions.

Note Though it is optional to remove or detach the shared storage before installing RHEL 6.8

Post-Installation Configurations

Step 1 Attach the same shared storage to the Prime Central and Fault Management clusters respectively, which was detached in Step 10 (refer to the, Prepare OS Upgrade, page 3-6 procedure). See the Red Hat documentation for instructions.

Step 2 Install Prime Central and Fault Management applications with the version 2.1 on RHEL 6.8 machines with the configuration that existed before the OS upgrade. Provide the same passwords that were used during previous installation.

For more information, refer to the Prime Central 2.1 HA documentation for instructions.

Note After executing Step 2, make sure that Prime Central and Fault Management applications with version 2.1 are installed, up and running with the cluster before proceeding to Step 3.

Step 3 Freeze both the Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm  -Z  [cluster-service-name]

Example:
```

```
clusvcadm  -Z  PrimePCService  (On Prime Central cluster)
clusvcadm  -Z  PrimeFMService  (On Fault Management cluster)
```

Step 4 Execute the following steps in sequence to stop the Prime Central and Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into active Fault Management cluster node.

```
./primeServices.sh stop
```

b. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into active Prime Central cluster node.

```
./primeServices.sh stop
```

Step 5 Copy the backup folders obtained in Step 5 through Step 7 (Prepare OS Upgrade, page 3-6) to the local servers respectively.

Example:

```
Copy "PCDBExportSchema" to /root on the Active PC server
Copy "PCBACKUP151" to /root on the Active PC server
Copy "FMBACKUP151" to /root on the Active FM server
```

Step 6 Import the database schemas from the dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

```
Copy oracle backup folder "PCDBExportSchema" to ORACLE USER HOME
```

Example:

```
cp /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
cp /root/PCDBExportSchema /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh and PCDBExportSchema folder:

```
chown   [oracle user:<oracle group]   [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chown  oracle:dba -R /opt/pc/oracle/PCDBExportSchema
chmod  755 /opt/pc/oracle/database_export_import.sh
chmod  -R 755 /opt/pc/oracle/PCDBExportSchema
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "import"  "schema"
"[folder-name]""[oracle-user]"  "[fullpath-of-export-folder]"
```

Example:

```
su - oracle
```

```
./database_export_import.sh "import" "schema" "PCDBImportSchema" "oracle"
"/opt/pc/oracle/PCDBExportSchema"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBImportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dump
prime_import.par
prime_import_schemas.log

d. Check the log: "prime_import_schemas.log" for any errors before proceeding to Step 7.

Note Ignore warnings with Error code: ORA-39082.

e. For any other exceptions, refer to the Troubleshooting OS Upgrade section in this guide.

Step 7 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 8 Execute the restore script to restore Prime Central and Fault Management application.

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Copy restorePrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory.

b. Execute the following script:

```
./restorePrimeCentral.sh   backup_folder_full_path
```

```
Example:
        ./restorePrimeCentral.sh   "/root/PCBACKUP151" (On Prime Central server)
        ./restorePrimeCentral.sh   "/root/FMBACKUP151" (On Fault Management server)
```

Step 9 Start Database services on the Prime Central node.

```
su - primeusr
emdbctl --start
```

Note If there are any exception related to known_host entries, you need to manually remove corrupted entry from known_hosts file. When you again start the emdbctl, it will prompt for authenticity. Select "Yes" to proceed.

Step 10 Start Portal, integration and fault management services by executing the below script.

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Execute the following script:

```
./primeServices.sh start
```

Step 11 Restart Integration Layer services on all integrated domain managers. Refer to the respective documentation.

Example: itgctl restart on Prime Network IL server

Step 12 Execute the following commands on Fault Management node to re-register all integrated DMs:

```
su - primeusr
cd $NCHOME/prime_integrator/scripts
./DMRegistration.sh -f
```

Step 13 Restart Portal, integration and fault management services by executing the below script:

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Execute the following script:

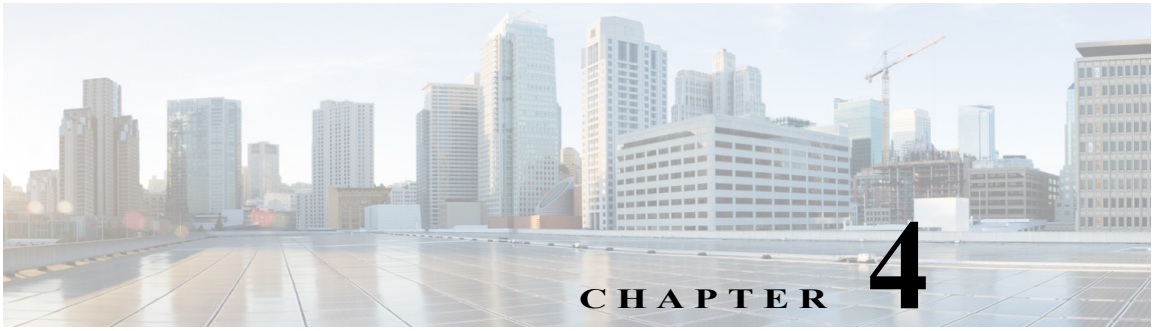
```
./primeServices.sh restart
```

Step 14 Configure Fault Management to send 3GPP alarm notifications to Northbound Interface:

```
fmctl configimpact <centraladmin pwd>
fmctl restart
```

Example:

```
fmctl configimpact Prime123
fmctl restart
```



Upgrade RHEL Operating System from 5.8 or 6.5 or 6.7 or 6.8 to 6.9

These topics introduce you to upgrade RHEL Operating System (OS) in Prime Central High Availability (HA) Configuration:

Prerequisites

The RHEL upgrade procedure is applicable only on Prime Central 2.1. If the Prime Central version is less than 2.1, the application must be first upgraded to 2.1 before proceeding. For Prime Central upgrade, refer to the Prime Central 2.1 Quick Start Guide and Prime Central 2.1 HA Guide.

Install RHEL 6.9

Step 1 Install RHEL 6.9 with .iso file on both Prime Central and Fault Management cluster nodes.

For more information, refer to Installing RHEL, page 5-1.

Step 2 Change the SELINUX mode to disabled as shown below:

```
vi /etc/sysconfig/selinux
# modify as
SELINUX=disabled
```

Step 3 Reboot all the servers.

Upgrading from RHEL 5.8 or 6.5 or 6.7 to 6.8 in Prime Central Disaster Recovery Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 or 6.7 to 6.8 in DR:

Prepare OS Upgrade

Step 1 Stop application monitoring, data replication monitoring and file synchronization.

a. Log in to the active server as a root user.

b. Enter the following commands:

```
# cd primeusr-home-directory/local/scripts/
# appmonctl stop
```

c. Log in to the inactive server as a root user. Enter the following command:

```
# dbmonctl stop
```

d. Log in to the active server as a primeusr.

e. Enter the following command:

```
# filesyncctl stop
```

Step 2 Uninstall Prime Central Fault Management 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 3 Uninstall Prime Central 2.1 from the Standby server. For more information about uninstalling process, refer to Cisco Prime Central 2.1 Quick Start Guide.

Step 4 Log in to Primary server to take a full backup of oracle database:

```
su - primeusr
emdbctl --backup
```

Step 5 Execute the following script to stop the Prime Central and Fault Management Services.This script needs to be executed on both Prime Central and Fault Management servers if installed separately.

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to “/root” directory in Fault Management and Prime Central servers:

```
./primeServices.sh stop
```

b. Execute the following command as root user on Fault Management server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 6 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /export/home/oracle/
```

b. Change permissions of database_export_import.sh

```
chown   [oracle user:oracle group]   [path to script]
chmod  755 [path to script]
```

Example:

```
chown  oracle:dba /export/home/oracle/database_export_import.sh
chmod  755 /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 7.

Step 7 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema)

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 8 Execute the following step on Primary PC server to stop database services. This is to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl –stop
```

Step 9 Execute the following steps in sequence to take the backup of Prime Central and Fault Management application, which is required to restore application after OS upgrade:

a. Copy **backupPrimeCentral.sh** from OSUpgradeScripts.tar to "/root" directory.

This script needs to be executed on Prime Central and Fault Management servers if installed separately.

b. Execute the following scripts:

```
./backupPrimeCentral.sh "backup_folder_full_path"
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP20" (On Prime central Server)
./backupPrimeCentral.sh   "/root/FMBACKUP20" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 7 through Step 9 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.9, formatted and all the data will be erased from the server.

Upgrading from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9 in a Prime Central Standalone Setup

Complete the following procedures explained in each topics to upgrade RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9 in a standalone setup:

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed:

```
su - primeusr
emdbctl --backup
```

Step 2 Execute the following script to stop the Prime Central and Fault Management Services:

a. Copy and execute primeServices.sh from OSUpgradeScripts.tar to "/root" directory in Fault Management and Prime Central servers.

This script should be executed on both Prime Central and Fault Management servers if installed separately.

```
./primeServices.sh stop
```

b. Execute the below command as root user on Fault Management Server to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr –
```

Step 3 Export the database schemas to a dump file:

Note This step needs to be executed on the server where Prime Central Database is installed.

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh   /export/home/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown  [oracle user:oracle group]  [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba  /export/home/oracle/database_export_import.sh
chmod  755  /export/home/oracle/database_export_import.sh
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"
"[oracle-user]"
```

Example:

```
 su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExporSchema"  "oracle"
```

Note At the end of the operation, a folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to the next step.

Step 4 Take a backup of the folder given as input for Step 6 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 5 Execute the below step on the Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process:

```
su - primeusr
emdbctl --stop
```

Step 6 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

This script needs to be executed on Prime Central and Fault Management servers if installed separately

a. Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory.

b. Execute the following script:

```
./backupPrimeCentral.sh <backup_folder_full_path>
```

Example:

```
./backupPrimeCentral.sh "/root/PCBACKUP151" (On Prime Central Server)
./backupPrimeCentral.sh "/root/FMBACKUP151" (On Fault Management Server)
```

Note Take a backup of these folders (both Prime Central and Fault Management) created in Step 4 through Step 6 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.8, formatted and all the data will be erased from the server.

Upgrading from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9 in Prime Central High Availability Configuration

Complete the following procedures explained in each topics to upgrade from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9 in HA:

Prepare OS Upgrade

Step 1 Take a full backup of oracle database on the server where Prime Central is installed.

Execute the following commands:

```
su - primeusr
emdbctl --backup
```

Step 2 Freeze both Prime Central and Fault Management cluster services.

Execute the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService (On Prime Central server)
clusvcadm  -Z  PrimeFMService  (On Fault Management server)
```

Step 3 Execute the following steps in sequence to stop the Prime Central or Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into the active Prime Central and Fault management cluster nodes and execute the commands:

```
chmod  +x  /root/primeServices.sh
./primeServices.sh stop
```

b. Execute the following command on active Fault Management cluster node to remove Fault Management Status cron entry:

```
crontab -u primeusr -l | grep -v 'FMStatusCron.csh' | crontab -u primeusr -
```

Step 4 Export the database schemas to a dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME.

Example:

```
cp   /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh:

```
chown   [oracle user:oracle group]  [path to script]
chmod  755   [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chmod  755 /opt/pc/oracle/database_export_import.sh
```

c. Execute the script by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "export"  "schema"  "[folder-name]"  "[oracle-user]"
```

Example:

```
su - oracle
./database_export_import.sh  "export"  "schema"  "PCDBExportSchema"  "oracle"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBExportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dmp
prime_export.par
prime_export_schemas.log

d. Check the log: "prime_export_schemas.log" for any errors before proceeding to Step 5.

Step 5 Take a backup of the folder given as input for Step 4 (like PCDBExportSchema).

Note Make sure that the above backup folder is copied outside the server onto the separate disk storage.

Step 6 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 7 Execute the following steps in sequence to take the backup of Prime Central application, which is required to restore application after OS upgrade:

On the Prime Central Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/PCBACKUP151"
```

On the Fault Management Cluster:

- Copy backupPrimeCentral.sh from OSUpgradeScripts.tar to "/root" directory. Execute it as below:

```
./backupPrimeCentral.sh   backup_folder_full_path
```

Example:

```
./backupPrimeCentral.sh   "/root/FMBACKUP151"
```

Note Take a backup of these folders (both Prime Central and Fault Management) that are created in Step 5 through step 7 onto the separate disk storage. This is mandatory as the server will be re-installed with RHEL 6.9, and all the data will be erased from the server.

Step 8 Unfreeze both Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm -U  <Service name>
```

Example:

```
clusvcadm -U PrimePCService  (On Prime Central server)
clusvcadm -U PrimeFMService  (On Fault Management server)
```

Step 9 Disable both the Prime Central and Fault Management cluster services:

```
clusvcadm -d  <Service name>
```

Example:

```
clusvcadm -d PrimePCService  (On Prime Central server)
clusvcadm -d PrimeFMService  (On Fault Management server)
```

Step 10 Remove or detach the shared storage from both Prime Central and Fault Management clusters. See the Red Hat documentation for instructions.

Note Though it is optional to remove or detach the shared storage before installing RHEL 6.9, it is recommended to avoid any issues with the shared storage configurations and to save the data inside shared storage (if exists).

Upgrade from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9 in Prime Central High Availability Configuration

Note Follow the procedure mentioned in this section only if you want to continue the upgrade from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9.

Step 1 Take a backup of Prime Central Oracle database:

```
su - primeusr
emdbctl --backup
```

Step 2 Take a DE Backup from Fault Management server:

```
su - primeusr
cd  .acsi_primeusr/bin
setenv
```

```
./de_backupdb -bfile  [backupfile_full_path]
```

Example:

```
./de_backupdb -bfile  ~/debackup_28Sep2016
```

Step 3 Take a backup of the following Fault Management database folders:

- *FM-install-folder*/tipv2Components/TCRComponent/cognos/contentstore
- *FM-install-folder*/omnibus/db/NCOMS

Example:

```
su  - primeusr
cp -rf $NCHOME/omnibus/db/NCOMS ~/
cp -rf $NCHOME/tipv2Components/TCRComponent/cognos/contentstore ~/
```

Step 4 Disable Prime Central and Fault Management cluster:

```
clusvcadm  -d  [cluster-service-name]
```

Example:

```
clusvcadm  -d  PrimePCService
clusvcadm  -d  PrimeFMservice
```

Step 5 Perform inline upgrade of all the cluster nodes from RHEL 5.8 or 6.5 or 6.7 or 6.8 to 6.9. See the Red Hat documentation for instructions.

Note Make sure that you perform only inline upgrade. Fresh installation of RHEL 6.9 is not supported and you may loose complete data.

Step 6 Enable Prime Central and Fault Management cluster:

```
clusvcadm  -e  [cluster-service-name]
```

Example:

```
clusvcadm  -e  PrimePCService
clusvcadm -e PrimeFMservice
```

Post-Installation Configurations

Step 1 Attach the same shared storage to the Prime Central and Fault Management clusters respectively, which was detached in Step 10 (refer to the, Prepare OS Upgrade, page 4-6 procedure). See the Red Hat documentation for instructions.

Step 2 Install Prime Central and Fault Management applications with the version 2.1 on RHEL 6.8 machines with the configuration that existed before the OS upgrade. Provide the same passwords that were used during previous installation.

For more information, refer to the Prime Central 2.1 HA documentation for instructions.

Note After executing Step 2, make sure that Prime Central and Fault Management applications with version 2.1 are installed, up and running with the cluster before proceeding to Step 3.

Step 3 Freeze both the Prime Central and Fault Management cluster services by executing the following command:

```
clusvcadm  -Z  [cluster-service-name]
```

Example:

```
clusvcadm  -Z  PrimePCService  (On Prime Central cluster)
clusvcadm  -Z  PrimeFMService  (On Fault Management cluster)
```

Step 4 Execute the following steps in sequence to stop the Prime Central and Fault Management Services:

a. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into active Fault Management cluster node.

```
./primeServices.sh stop
```

b. Copy primeServices.sh from OSUpgradeScripts.tar to "/root" directory into active Prime Central cluster node.

```
./primeServices.sh stop
```

Step 5 Copy the backup folders obtained in Step 5 through Step 7 (Prepare OS Upgrade, page 4-6) to the local servers respectively.

Example:

```
Copy "PCDBExportSchema" to /root on the Active PC server
Copy "PCBACKUP151" to /root on the Active PC server
Copy "FMBACKUP151" to /root on the Active FM server
```

Step 6 Import the database schemas from the dump file:

a. Copy database_export_import.sh from OSUpgradeScripts.tar to ORACLE USER HOME

```
Copy oracle backup folder "PCDBExportSchema" to ORACLE USER HOME
```

Example:

```
cp /root/OSUpgradeScripts/database_export_import.sh /opt/pc/oracle/
cp /root/PCDBExportSchema /opt/pc/oracle/
```

b. Change permissions of database_export_import.sh and PCDBExportSchema folder:

```
chown   [oracle user:<oracle group]   [path to script]
chmod  755  [path to script]
```

Example:

```
chown  oracle:dba /opt/pc/oracle/database_export_import.sh
chown  oracle:dba -R /opt/pc/oracle/PCDBExportSchema
chmod  755 /opt/pc/oracle/database_export_import.sh
chmod  -R 755 /opt/pc/oracle/PCDBExportSchema
```

c. Execute the scripts by following the steps in sequence:

```
su - [oracle-user]
./database_export_import.sh  "import"  "schema"
"[folder-name]""[oracle-user]"  "[fullpath-of-export-folder]"

Example:
    su - oracle
    ./database_export_import.sh  "import"  "schema"  "PCDBImportSchema"  "oracle"
 "/opt/pc/oracle/PCDBExportSchema"
```

Note At the end of the operation, folder-name given as input for the above command (like PCDBImportSchema in the above example) should be created in the **oracle user home** directory. The folder should contain below files:
prime_dump_schemas.dump
prime_import.par
prime_import_schemas.log

d. Check the log: “prime_import_schemas.log” for any errors before proceeding to Step 7.

Note Ignore warnings with Error code: ORA-39082.

e. For any other exceptions, refer to the Troubleshooting OS Upgrade section in this guide.

Step 7 Execute the following step on Prime Central server to stop database services to ensure that no operations are permitted during OS upgrade process.

```
su - primeusr
emdbctl --stop
```

Step 8 Execute the restore script to restore Prime Central and Fault Management application.

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Copy restorePrimeCentral.sh from OSUpgradeScripts.tar to “/root” directory.

b. Execute the following script:

```
./restorePrimeCentral.sh   backup_folder_full_path

Example:
        ./restorePrimeCentral.sh   “/root/PCBACKUP151” (On Prime Central server)
        ./restorePrimeCentral.sh   “/root/FMBACKUP151” (On Fault Management server)
```

Step 9 Start Database services on the Prime Central node.

```
su - primeusr
emdbctl --start
```

Note If there are any exception related to known_host entries, you need to manually remove corrupted entry from known_hosts file. When you again start the emdbctl, it will prompt for authenticity. Select “Yes” to proceed.

Step 10 Start Portal, integration and fault management services by executing the below script.

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Execute the following script:

```
./primeServices.sh start
```

Step 11 Restart Integration Layer services on all integrated domain managers. Refer to the respective documentation.

Example: itgctl restart on Prime Network IL server

Step 12 Execute the following commands on Fault Management node to re-register all integrated DMs:

```
su - primeusr
cd $NCHOME/prime_integrator/scripts
./DMRegistration.sh -f
```

Step 13 Restart Portal, integration and fault management services by executing the below script:

This script should be executed on both Prime Central and Fault Management cluster nodes.

a. Execute the following script:

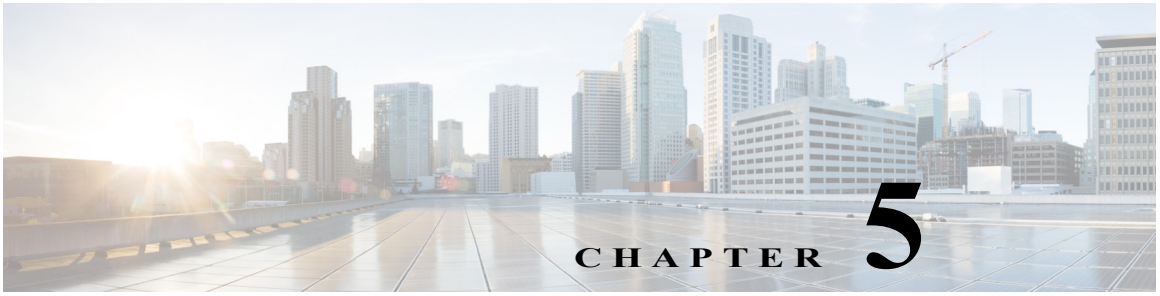
```
./primeServices.sh restart
```

Step 14 Configure Fault Management to send 3GPP alarm notifications to Northbound Interface:

```
fmctl configimpact <centraladmin pwd>
fmctl restart
```

Example:

```
fmctl configimpact Prime123
fmctl restart
```



Install RHEL

To install RHEL 6.5, 6.7, 6.8 and 6.9 see the Red Hat documentation for instructions. Complete the following steps in parallel on all the nodes.

Installing RHEL

Step 1 Verify that the following options are checked:

- Virtualization – Virtualization Tools
- High Availability – High Availability (Applicable only for HA configuration**]**
- Desktops – General Purpose Desktop
- Desktops – X Window System

Step 2 Create local directories named /rhel and /cdrom-<RHEL version>.

Step 3 Copy the .iso file that was used for the node installation to the /rhel directory.

Step 4 Mount the /rhel .iso file to /cdrom-<RHEL version>. For example,

```
# cd /rhel
# mount -t iso9660 -o loop /rhel/rhel-server-6.5-x86_64-dvd.iso /cdrom-6.5
```

Note To permanently mount the drive, update the /etc/fstab file. For more information, see Mounting File Systems Automatically with etc/fstab.

Step 5 Create a file named /etc/yum.repos.d/local.repo. Use UNIX format and be sure there are no spaces before lines.

Step 6 Save the newly created file in local.repo, as follows:

```
[local]
name=Red Hat Enterprise Linux $releasever - $basearch - Local
baseurl=file:///cdrom-<RHEL version>/Server
enabled=1
gpgcheck=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
[HighAvailability]
name=Red Hat Enterprise Linux $releasever - $basearch - HighAvailability
```

```
baseurl=file:///cdrom-<RHEL version>/HighAvailability
enabled=1
gpgcheck=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
[ResilientStorage]
name=Red Hat Enterprise Linux $releasever - $basearch - ResilientStorage
baseurl=file:///cdrom-<RHEL version>/ResilientStorage
enabled=1
gpgcheck=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
```

Step 7 (Applicable only for HA) If you forget the HA package and want to install it later, enter:

```
# yum groupinstall "High Availability"
```

Step 8 (Applicable only for HA) If you forget the desktop and want to install it later, enter:

```
# yum groupinstall "X Window System" Desktop
# vi /etc/inittab
```

Then, change id:3:initdefault: to id:5:initdefault: and reboot the server.

Step 9 (Applicable only for HA) Temporarily disable the firewall and SELinux to enable initial testing of the cluster:

To disable the firewall, enter:

```
# service iptables save
# service iptables stop
# chkconfig iptables off
# service ip6tables save
# service ip6tables stop
# chkconfig ip6tables off
```

Step 10 Keep all the nodes synchronized:

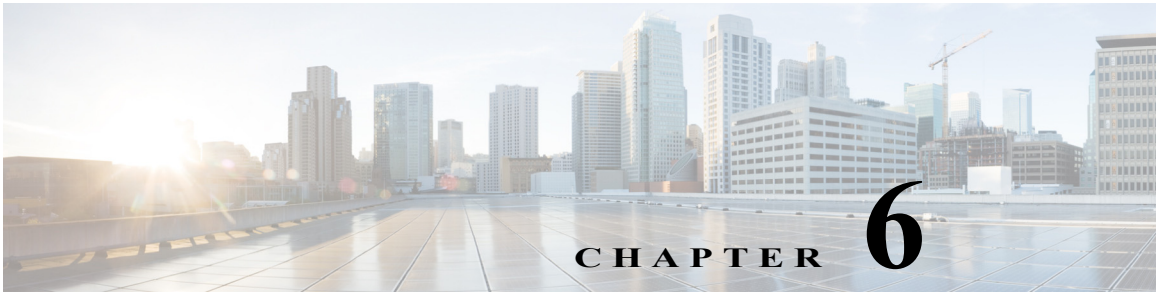
```
# echo server tick.redhat.com$'\n'restrict tick.redhat.com mask 255.255.255.255
nomodify notrap noquery >> /etc/ntp.conf
# chkconfig ntpd on
# service ntpd start
```

Step 11 Switch network daemons:

```
# service NetworkManager stop
# chkconfig NetworkManager off
# yum remove NetworkManager
# chkconfig network on
```

Step 12 Edit the /etc/hosts file to add the node information; for example:

```
192.168.1.150  node1.cisco.com   node1
192.168.1.160  node2.cisco.com   node2
```



Troubleshooting

Troubleshooting OS Upgrade

Problem fmctl status not coming up after inline upgrade.

Solution Object server might have corrupted during inline upgrade procedure. Restore the Object Server Database from the backup taken before inline upgrade by following the steps:

```
su - primeusr
fmctl stop
cp -rf ~/NCOMS/ $NCHOME/omnibus/db/NCOMS
chown primeusr:ncoadmin -R $NCHOME/omnibus/db/NCOMS
fmctl start
```

Problem Could not launch **Alarm** reports after inline upgrade.

Solution TCR Database might have corrupted during inline upgrade procedure. Restore the TCR Database from the backup, which is taken before inline upgrade, by performing the below steps:

```
su - primeusr
fmctl stop
mv $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/cm
$NCHOME/tipv2Components/TCRComponent/cognos/contentstore/old_cm
mv $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/old_cm ~/
cp -rf ~/contentstore/cm $NCHOME/tipv2Components/TCRComponent/cognos/contentstore/
Change  ownership to the directory
Ex: chown primeusr:ncoadmin  -R
$NCHOME/tipv2Components/TCRComponent/cognos/contentstore/cm
fmctl start
```

Problem database_export_import.sh execution failed during export or import operations.

Solution Check the logs in below locations:

```
/tmp/upgrade_logs/*.log
ORACLE_BASE_directory/IMPORT_directory/*.log
```

To re-run the script again, you must use different name for the import or export folder name parameter (or) you have to delete the already existing logical and physical directories with the old name.

Problem Oracle Database sync is not happening in DR Standby due to switchover status: “UNRESOLVABLE GAP” on primary machine.

Solution Run the below script on the standby machine as a root user:

```
(root)cd primeusr-home-directory/local/disaster_recovery/scripts/main/
./recreatestandbyADG.sh
```