Dynamic Root Disk Frequently Asked Questions

Contents

About This Document

This document includes frequently asked questions about Dynamic Root Disk.

Intended Audience

This document is intended for system and network administrators responsible for installing, configuring, and managing HP-UX servers and workstations. Administrators are assumed to have an in-depth knowledge of HP-UX operating system concepts, commands, and configuration. It assumes familiarity with installing HP computer hardware and software, upgrading software, applying patches, and troubleshooting system problems.

Additionally, administrators are expected to have knowledge of Transmission Control Protocol/Internet Protocol (TCP/IP) networking concepts and network configuration. This reference guide is not an administration guide, a TCP/IP guide, or a DRD tutorial.

Related Documents

The most current edition of the following documents are found at the HP Technical Documentation website at http://www.hp.com/go/drd-docs.

- *Dynamic Root Disk Release Notes*
- *Dynamic Root Disk Administrator's Guide*
- *DRD-Safe Concepts for HP-UX 11i v2 and Later* white paper
- *Dynamic Root Disk and MirrorDisk/UX* white paper
- *Dynamic Root Disk: Quick Start and Best Practices* white paper
- *Exploring DRD Rehosting in HP-UX 11i v2 and 11i v3* white paper
- *Using Dynamic Root Disk Activate and Deactivate Commands* white paper

Some of these documents are available on the Instant Information media.

Publishing History

The document printing date and part number indicate the document's current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number will change when extensive changes are made. Document updates may be issued between editions to correct errors or document product changes. To ensure that you receive the updated or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details. You can find the latest version of this document online at:

http://www.hp.com/go/drd-docs.

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This list of frequently asked questions (FAQs) is created by the DRD engineering team. These FAQs are compiled periodically as input dictates. We invite your questions!

If you have questions, contact HP Support at 1 (800) 633-3600.

Dynamic Root Disk FAQ categories are as follows:

−Frequently Asked Questions −

1- General

1-1. Q: What is DRD?

A: Dynamic Root Disk (DRD) is an HP-UX system administration toolset that lets you create and modify an inactive system image without shutting down the system. To do this, you can clone the active system image and modify the cloned (inactive) system image while the system is running. When ready, you can boot the cloned image. Usually, the only downtime required is the rebooting process.

System administrators use DRD to manage system images on HP PA-RISC and Itanium® -based systems.

DRD complements other parts of your total HP solution by reducing system downtime required to install and update patches and other software.

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1-2. Q: What HP-UX releases will DRD run on?

A: This release of DRD runs on both Integrity and PA platforms running either of the following operating systems:

- HP-UX 11i v2 (11.23) September 2004 or more recent
- HP-UX 11i v3 (11.31)

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1-3. Q: How can I modify the inactive system image without affecting the active system image?

A: By only using DRD commands to modify the inactive system image. DRD commands are specially designed to create the inactive system image and modify only that image.

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1-4. Q: How can I be sure that the clone is a consistent system if the original system is still active?

A: Choose a time to create the system clone when the booted system is fairly quiet. Note that only the root volume group is cloned, so application activity on other volume groups will not affect the integrity of the clone. In this release of DRD, the copy operation is done by **fbackup** and **frecover**.

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1-5. Q: What are the DRD commands?

A: The DRD commands are:

drd activate
drd clone

drd deactivate

drd mount

drd rehost

drd runcmd

drd status

drd sync

drd umount

drd unrehost

In addition, the **drd runcmd** command allows you to run specific Software Distributor (SD) commands on the inactive system image only. These SD commands are:

swinstall

swremove

swlist

swmodify

swverify

swjob

Two other commands can be executed by the **drd runcmd** command.

- The **view** command can be used to view logs produced by commands that were executed by **drd runcmd**.
- The **kctune** command can be used to modify kernel parameters.

1-6. Q: Are instance numbers changed when the clone is booted?

A: The `ioconfig` file and the entire `/dev` directory are copied by the DRD clone operation, so instance numbers will not change when the clone is booted. (On a system with an LVM root, the LVM information is modified so that the booted volume group is always vg00. The `/dev/vg00` directory is removed from the clone and the `/dev/drd00` directory is renamed `/dev/vg00`.)

1-7. Q: Can the clone be mirrored?

A: Use the **drd clone -x** *mirror_disk* option to mirror the clone when you create it. Also see the *Dynamic Root Disk and MirrorDisk/UX* white paper at http://www.hp.com/go/drd-docs that explains how you can mirror the clone after the clone has been created.

1-8. Q: I have many disks I would like to clone in one operation. Is the target a single

disk?

A: Yes, for this release of DRD, the target disk must be a single disk.

1-9. Q: What if the DRD contains more than one disk? Does DRD handle this?

A: Currently, the target disk must be a single physical disk, or SAN LUN, large enough to hold all of the root volume file systems.   This allows a customer to clone the root volume group even if it is spread across multiple disks.   Note that this is a one-way, many-to-one operation.

1-10. Q: Can DRD clone all the partitions; s1, s2, & s3?

A: All partitions are created and s1 and s2 are copied. This release of DRD does not copy the HP service partition.

1-11. Q: Does DRD work with both LVM and VxVM root disks?

A: Yes, the root group being cloned can be managed by any release of LVM on an OS release supported by DRD.   In addition, the root group can be managed by VxVM 4.1 or VxVM 5.0.   See the DRD Installation webpage for information about the required patches if you are cloning a VxVM root.

If you are cloning a supported root, you can have non-root groups on the system managed by any release of LVM or VxVM, including VxVM 5.0.   These groups are, of course, not cloned.

1-12. Q: Does DRD support vPars?

A: Follow this procedure for DRD usage with vPars and nPars

1. Clone each vPar on the system with the following command. Note that this does not clone custom EFI contents. You must use EFI commands outside DRD if custom EFI contents are to be copied to the clone. **# drd clone -t /dev/disk/disk5 -x overwrite=true**

2. Activate each clone with the following command. This changes the vPars bootpath that is stored in the vPar database. The bootpath for vpmon on the nPar is not updated when a clone is activated from a running vPar. **# drd activate -x reboot=true**

At this point, the bootpath for vpmon on the nPar points to an inactive (original) image

even though `vpmon` is still up and running. The running `vpmon` maintains the master copy of the vPar database in memory. This data is synchronized with each running vPars local copy of `/stand/vpdb`. When `vpmon` is booted, the local `/stand/vpdb` is loaded into memory and serves as the master copy. If a vPar is down while changes are made that affect the vPar database, subsequent booting of `vpmon` from that vPar results in the loss of those changes because the local copy of the vPars database is stale when loaded by `vpmon`.

NOTE: HP recommendeds that the `vpmon` bootpath is modified to point to the clone once it is activated, though there is no need to actually reboot the nPar unless the `vpmon` executable has been changed.

If running vPars release A.05.06 or later on Integrity, the default bootpath for `vpmon` can be set from the monitor prompt. This first EFI boot manager menu entry can be changed without rebooting the nPar. The following monitor command sets the bootpath for the active clone image corresponding to the vPar previously used to boot `vpmon`:
MON> mon_bootpath -p [*new_bootpath*]

From vPars release A.04.05 up to vPars release A.05.06 on Integrity, the `mon_bootpath` command only allows you to add additional bootpaths to the nPar EFI boot manager menu. For these releases, you need to change the default boot entry from the EFI menu during a reboot in nPar mode. Prior to vPars release A.04.05, you need to change the default boot entry from the EFI menu during a reboot in nPar mode. In all cases, if the alternate or HA bootpaths need to be updated, they need to be updated from the EFI menu during a reboot in nPar mode.

On PA systems, changes to `vpmon` bootpaths can be made from a running vPar: **# parmodify -p [*partition_number*] -b [*bootpath*] -P [*partition_name*]**

Note that individual bootpath settings for `setboot` are lost if the disk at the specific path is re-created with any of the following:

- The `drd clone` command
- Ignite cold install
- Ignite recovery

1-13. Q: If swconfig is not supported by DRD, and swinstall runs swconfig, will it work properly?
   A: DRD defers the configuration part of an install operation, which remains inactive until the system image is booted. (This behavior is similar to what happens when kernel software is installed.)

1-14. Q: Does the cloned root disk (VG) contain same VGID as the original root VG?

A: The volume group will be vg00 when the clone is booted. It will have a different minor number than the original vg00.

1-15. Q: How is `lvmtab` adjusted to reflect the new device name for the disk in vg00?

A: The copy of `lvmtab` on the cloned image is modified by the clone operation to contain information that will reflect the desired volume groups when the clone is booted.

1-16. Q: Do the DRD administration tools keep track of the active boot disk's host attachment, in particular SAN boot disks?

A: The system administrator is responsible for choosing a disk that DRD can use. This would include any communication with the SAN to assign the disk to a particular system.

1-17. Q: What is the difference between DRD Hot Recovery and Mirror Disk/UX?

A: Mirror Disk/UX keeps an "always up to date" image of the booted system. Conversely, DRD provides a "point in time" image. The booted system and the clone may then diverge due to changes to either one. Keeping the clone unchanged is the Hot Recovery scenario. Note that DRD is not available for HP-UX 11.11, which limits your options on those systems.

1-18. Q: Since I take a regular root disk and use it to boot another system, can I use the cloned disk I created with DRD to boot another system?

A: It is possible to do this, however, factors such as machine personality (e.g., hostname, IP address, etc.) make this very difficult. HP does not recommend using the cloned disk to boot another system.

1-19. Q: What happens during a clone copy if, for example, `/opt/xxxxx` is mounted from `/dev/vg01/lvolxxxx`? Is the content of `/opt/xxxxx` copied to the clone or does it only create its directory?

A: Only the contents of vg00 are copied. In the above example, the content of `/opt/xxxxx` will not be copied to the clone. A system that has the `/opt` file systems (or any file system that is patched) not in vg00 is not suitable for use with DRD.

1-20. Q: What are the effects of the clone copy on system operation (for example, performance)?

A: The I/O of the clone operation will have some impact, particularly if the disk is close to the booted system. For example, if the two disks are on the same SCSI chain, then I/O

to the clone will affect performance of I/O on the booted system. DRD's performance is similar to system performance when using Ignite to create recovery images, which many system administrators find acceptable.

1-21. Q: IgniteUX offers net and tape images. What is the advantage of DRD?

    A: DRD provides a "make-disk-recovery" solution and has several advantages over IgniteUX net and tape images:

- No tape drive is needed
- No impact on network performance will occur
- No security issues of transferring data across the network will occur

1-22. Q: How can I be sure the patches I install are safe in a DRD environment?

    A: You can install patches packaged in standard Software Distributor (SD) format. Most patches for HP–UX 11.23 September, 2004 and above are DRD safe. However, the DRD product maintains a list of those patches known to be unsafe. When the revision of SD required by DRD is run by **drd runcmd**, it makes sure that a patch does not appear in the list before installing or removing it.

For more information about DRD-unsafe patches, see the *Dynamic Root Disk: Quick Start and Best Practices* white paper at http://www.hp.com/go/drd-docs.

1-23. Q: What are the DRD considerations for legacy Device Special Files (DSFs)?

    A: Due to system calls DRD depends on, DRD expects legacy Device Special Files (DSFs) to be present and the legacy naming model to be enabled on HP-UX 11i v3 (11.31) servers. HP recommends only partial migration to persistent DSFs be performed. For details of migration to persistent DSFs, see the http://www.hp.com/go/hpux-core

1-24. Q: Does DRD Support SoftReboot feature?

    A: Yes. It can be used with the following command only.
drd activate -x softreboot=true

If SoftReboot is not installed on the system, this option is invalid. SoftReboot feature is supported from HP-UX B.11.31.1109 fusion release onwards i.e. HP-UX 11iv3 operating system environment.

2- Using Dynamic Root Disk Commands

2-1. Q: How do I use DRD commands?

A: In some cases, you simply enter the command. For example, if you enter **drd mount**, the command mounts the inactive system image file set. In other cases, you need to use one or more command options. For example, **drd clone** always needs the `-t` option with the target disk identity.

You can also enter the **drd runcmd** followed by an SD command. For example,

drd runcmd swlist.

drd runcmd limits the action of **swlist** to just the inactive system image.

For more information about these commands, see the *Dynamic Root Disk Administration Guide for HP-UX 11i (B11.23)* on the Information Library page.

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2-2. Q: Will I need to reboot while installing DRD?

A: On HP-UX 11i v3 (11.31) systems, there are no required patches for DRD so installing DRD will not cause a reboot.

Neither DRD nor its corequisites require a reboot. However, one of DRD's corequisites, patch PHCO_34195, does have a further corequisite on two other patches, PHKL_33024 and PHKL_33025, that do require a reboot. Most systems will already have these two patches installed and will have no need for a reboot.

To determine definitely whether your installation of DRD will require a reboot, preview the installation and check whether any kernel patches (PHKL_*) are included in the selection at the end of the analysis phase of the install.

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2-3. Q: How can I tell if I have chosen a sufficiently large target disk for a DRD clone?

A: A simple mechanism for determining if you have chosen a sufficiently large disk is to run a preview of the **drd clone** command:

drd clone -p -v -t `path_to_block_DSF`

Where *path_to_block_DSF* is of the form:

- HP-UX 11i v2: /dev/disk/*cXtXdX*
- HP-UX 11i v3: /dev/disk/*diskX*

The preview operation includes the disk space analysis needed to see if the target disk is sufficiently large.

2-4. Q: If I am running multiple drd runcmd operations, can I avoid mounting and unmounting the inactive system image for each runcmd execution?

A: You can avoid multiple mounts and unmounts by using **drd mount** to mount the inactive system image before the first **runcmd** operation and **drd umount** to unmount the inactive system image after the last **runcmd** operation. When **drd runcmd** finds the file systems in the clone already mounted, it does not unmount them (nor will it export the volume group) at the completion of the **runcmd** operation.

2-5. Q: Does the DRD clone operation verify that the target is not in use or part of another VG? Once the root disk is cloned, is there anything in the operating system that prevents the non-active target from being reused? How can inactive targets be identified?

A: If the disk is currently in use by another volume group that is visible on the system, the disk will not be used. If, on the other hand, the disk contains LVM, VxVM, or boot records but is *not* in use on the system, you must use the **-x overwrite** option to tell DRD to overwrite the disk. Already-created clones will contain boot records; a preview using the **drd mount** or **drd activate** commands will show the disk that is currently in use as an inactive system image.

2-6. Q: Can I vgimport the target disk as /dev/vgtmp?

A: The **drd mount** command will **vgimport** the target disk, **vgchange** it to make it active, and mount all the file systems in the cloned volume group. However, these operations do not use the lvmtab on the clone itself. After booting the clone, you can also mount the original system image. (You can also **vgimport** the clone manually, but it is much easier to use the **drd mount** command.).

2-7. Q: Can DRD show whether DRD is configured or not configured?

A: You can run the **drd status** command to determine whether a clone has been created. The **drd status** command output shows, among other data, the disk that was cloned and the target disk of the **drd clone** operation. For further information on the **drd status** command, see the drd_status(*1M*) manpage. To determine the validity of all software installed on the inactive system image, execute:

drd runcmd *

2-8. Q: Some processes in DRD, particularly drd clone and drd runcmd, take a significant amount of time. Can these processes be interrupted?

A: All DRD processes, including **drd clone** and **drd runcmd**, can be safely interrupted issuing Control/C (SIGINT) from the controlling terminal or by issuing **kill -HUP`<pid>`** (SIGHUP). This action causes DRD to abort processing and perform any necessary clean up. Do not interrupt DRD using the **kill -9 `<pid>`** command (SIGKILL), which fails to abort safely and does not perform cleanup.

3- Troubleshooting Dynamic Root Disk

3-1. Q: Why can't I see the inactive system image file systems when I run the bdf command?

A: You have to mount the inactive system image before you can see the file systems using **bdf**. Use the **drd mount** command to mount the inactive system image.

3-2. Q: When I run DRD, what information should I collect before calling HP about a problem?

A: Before you contact HP, be sure to gather the following useful information:

- Find the HP-UX revision of your system by entering:

    uname -a

- Look at the contents of the log files under `/var/opt/drd`. It may be helpful to have the data for the entire session. In DRD log files, sessions are delineated with ========. If there is too much data in the log, locate the first sign of trouble and the next several error messages.)

- Make available information from the `swagent.log` files stored in depots (for example, `/var/spool/sw/swagent.log`). The `swagent` daemon creates these when it reads or writes from a depot containing information written by `swagent`. Depots at other locations have a similar `swagent.log`.
- If you are troubleshooting a problem with **drd runcmd**, you may also want to consult the contents of the logfiles on the inactive system image located at:

  `/var/opt/drd/mnts/sysimage_001/var/adm/sw/sw*.log`

  or

  `/var/opt/drd/mnts/sysimage_000/var/adm/sw/sw*.log`

3-3. Q: I can't remember which disk was used as the target of my clone operation.   How can I identify it?

A: The disk that was used for the clone is displayed by the **drd status** command.

drd status

The `Clone Disk` field specifies the target disk used to clone the original image.

3-4. Q: I issued a drd activate command but changed my mind and do not want to boot the clone. How can I undo the drd activate command?

A: If you run **drd activate** and then decide not to boot the inactive image on the next reboot, use the **drd deactivate** command to set the primary boot disk to the currently booted disk.

For further information on the **drd deactivate** command, see the *drd-deactivate*(1M) manpage.

3-5. Q: Can I change file system sizes when I create a clone?

A: This release of DRD does not provide a mechanism for resizing file systems during a **drd clone** operation. However, after the clone is created, you can manually change file system sizes on the inactive system without needing an immediate reboot. The white paper, *Dynamic Root Disk: Quick Start and Best Practices* white paper at http://www.hp.com/go/drd-docs, describes resizing file systems other than `/stand` and resizing the boot (`/stand`) file system on an inactive system image.

3-6. Q: How will fbackup|frecover handle "busy" files?

A: DRD does utilize **fbackup** and **frecover**, however, we have not encountered a problem with busy files. While **frecover** can fail to overwrite busy files, this is not a problem in

DRD because it is cloning a fresh volume group. **fbackup** can fail if files are changing during the **fbackup** operation, but this is more common with spool files and log files. If you are concerned, use the **drd runcmd swverify *** command to check the integrity of the clone after it is created.

3-7. Q: What happens with the configuration scripts if I install patch A and later install patch B, which then supersedes patch A?

A: If you install both Patch A and Patch B before booting, only Patch B is configured. This should not present a problem unless you later remove patch B with **swremove**, thereby exposing Patch A in an unconfigured state. You would then need to **swconfig** or reinstall Patch A.

3-8. Q: If I use the IgniteUX server; is it aware of the DRD clone?

A: The Ignite server will only be aware of the clone if it is mounted during a **make_*_recovery** operation. Most customers will probably prefer to keep the clone unmounted so that only the active system image is archived by Ignite. In addition, the customer will probably want to keep a record of the clone hardware path to enable Hot Recovery using DRD.