

KnapSac Usage Notes

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Backup/Restore of a VMS System Disk (ALPHA)

KnapSac provides two ways to backup an Alpha VMS system disk so that the system disk can be fully restored:

1. Network Backup/Restore

In the network approach KnapSac is used to create an image save of the system disk and store it in a pacset on a Windows computer.

In order to restore the system disk from the pacset on Windows, VMS is booted from an alternate disk which has KnapSac and TCP/IP networking. Then KnapSac is used to restore the system disk from the image pacset created on Windows.

2. Local Backup/Restore

In the local approach KnapSac is used to create an image save of the system disk and place it in a self-restoring pacset on a local disk other than the system disk.

In order to restore the system disk from the self-restoring pacset, a minimum VMS system is booted from the VMS distribution CD or from a minimum system that has been created on an alternate disk. After VMS is booted the self-restoring pacset is run to restore the system disk.

Example Network Backup/Restore

1. Use KnapSac to perform an image save of the system disk dka0: to a pacset on Windows.

```
$knapsac dka0: winpc::dka0img.pac /image
```

2. If the system disk fails it can be restore by booting VMS from another disk on the same VMS system or move the target system disk to another VMS system which also has KnapSac. Then use KnapSac to perform an image restore to the target system disk. Assuming dka0: is the target disk the following commands will restore the system disk.

```
$ init dka0: system      ! (if a new disk)
$ mount /foreign dka0:
$ knapsac winpc::dka0img.pac dka0: /image
```

The disk dka0: can be booted or moved back to the original system and booted.

Example Local Backup/Restore

1. Use KnapSac to perform an image save of the system disk dka0: and place it in a self-restoring pacset on a different disk such as dka100:.

```
$ knapsac dka0: dka100:[ksbackup]dka0imgse.pac /system/image
```

The /system qualifier tells KnapSac to create a self-restoring pacset and the /image qualifier tells KnapSac to make an image save of the disk.

2. If the system disk fails it can be restored by booting a minimum VMS system from the VMS distribution CD or an alternate disk. Choose the DCL commands option to get to the \$\$\$ prompt. Mount the disk which contains the pacset and define a foreign command for the pacset.

```
$$$ mount/over=id dka100:  
$$$ kspacset := $dka100:[ksbackup]dka0imgse.pac  
$$$ init dka0: system      ! (if a new disk)  
$$$ mount/foreign dka0:  
$$$ kspacset restore dka0: /image
```

The disk dka0: can now be booted.

Detailed Example of Local Backup/Restore

An Alpha computer has the following disks:

DKA200: User disk
DKA600: System disk

This example shows how to

- A. Create a minimum bootable VMS system on user disk dka200:.
- B. Use KnapSac to perform an image backup of the system disk DKA600: and store it in the pacset DKA600IMG.PAC in the directory DKA200:[KSBACKUP].
- C. Boot the minimum VMS system from the user disk DKA200:.
- D. Use KnapSac to restore the system disk DKA600: from the pacset that was stored on the user disk DKA200:.

Creating a bootable minimum VMS system

A command procedure which creates a bootable minimum VMS system is included with the VMS system. This command procedure installs a minimum VMS system on a disk in the SYSE root [SYSE]. The target disk cannot be a system disk. Following are the commands to build the minimum VMS system on disk DKA200:.

```
$ mou/over=id dka200:  
%MOUNT-I-MOUNTED, USER mounted on _$6$DKA200: (W64AXP)  
$ @sys$system:axpvms$pcsi_install_min dka200:
```

```
Performing product kit validation of signed kits ...  
%PCSI-I-CANNOTVAL, cannot validate $6$DKA600:[VMS$COMMON]DEC-AXPVMS-DWMOTIF_SUPP  
ORT-V0804--1.PCSI;1  
-PCSI-I-NOTSIGNED, product kit is not signed and therefore has no manifest file
```

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for any products that may be installed to satisfy software dependency requirements.

Configuring DEC AXPVMS VMS V8.4: OpenVMS Operating System

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* This product does not have any configuration options.

Execution phase starting ...

The following product will be installed to destination:

DEC AXPVMS VMS V8.4 DISK\$USER:[VMS\$COMMON.]

Portion done: 0%...10%...20%...30%...40%...50%...60%...70%...80%...90%

This procedure marks certain critical system files with the NOMOVE attribute. This "anchors" these files to the disk; any attempt to relocate them using the XQP MOVEFILE function will fail.
...100%

The following product has been installed:

DEC AXPVMS VMS V8.4 Operating System
%SYSGEN-I-CREATED, DKA200:[SYSE.][SYSEXE]PAGEFILE.SYS;1 created

The installation of minimum OpenVMS ALPHA is now complete.

Use the following command to boot minimum OpenVMS.

BOOT -FLAGS E,0 DKA200

(Your system may require additional parameters to boot)

Creating the KnapSac self-restoring pacset of the system disk

KnapSac version 2.3-0 provides the /system qualifier to create a self-restoring pacset on a local VMS disk instead of creating a pacset on a Windows disk. An image save of the system disk can be accomplished by using the /system qualifier combined with the /image qualifier.

```
$ create/dir dka200:[ksbackup]
$ knapsac dka600: dka200:[ksbackup]dka600img.pac /system/image
%KNAPSAC-I-VERSION, KnapSac AXP Version 2.3-0 Level D starting on 24-OCT-2011 15
:48:49.06
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSCOMMON.SYSEXE]VMS$OBJECTS.DAT;
1 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSCOMMON.SYSMGR]SECURITY.AUDIT$J
OURNAL;1 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSCOMMON.SYSMGR]VMS$AUDIT_SERVER
.DAT;1 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSEXE]NET$PROXY.DAT;1 is open by
another user
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]PAGEFILE.SYS;1 marked NOBACKUP, data not saved
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]SWAPFILE.SYS;2 marked NOBACKUP, data not saved
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]SWAPFILE.SYS;1 marked NOBACKUP, data not saved
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]SYS$ERRLOG.DMP;2 marked NOBACKUP, data not sav
ed
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]SYS$ERRLOG.DMP;1 marked NOBACKUP, data not sav
ed
%KNAPSAC-I-NOBACKUP, [SYS0.SYSEXE]SYSDUMP.DMP;1 marked NOBACKUP, data not saved
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]ACCOUNTNG.DAT;2 is open by
another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]ACME$SERVER.LOG;74 is open
```

by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]DNS\$ADVER_ERROR.LOG;74 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]DTSS\$ERROR.LOG;74 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]LAN\$ACP.LOG;74 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [SYS0.SYSMGR]OPERATOR.LOG;75 is open by another user
%KNAPSAC-I-ACCONFLICT, Access conflict - [TCP\$FTP]TCP\$FTP_RUN.LOG;114 is open by another user
%KNAPSAC-I-LOST_FILES, Processing lost files at 16:05:20.42
%KNAPSAC-I-FILE, Created DKA200:[K\$BACKUP]DKA600IMG.PAC;1 at 16:05:23.78 from DKA600:

KnapSac Statistics

Elapsed Time: 00:16:35.65 CPU Time: 0:14:47.40
Buffered I/O: 22438 Direct I/O: 60195
Virtual Memory Used: 6000 Page Faults: 128

1599410 blocks (7446 input files) compressed to 958721 blocks

640689 blocks saved (40.1 percent reduction)

\$

Booting the minimum VMS system

The minimum VMS system is booted by specifying the SYSE root on the boot command.

From the >>> prompt issue the following command:

```
>>>b -flags e,0 dka200
(boot dka200.2.0.6.0 -flags e,0)
block 0 of dka200.2.0.6.0 is a valid boot block
reading 1230 blocks from dka200.2.0.6.0
bootstrap code read in
base = 1f2000, image_start = 0, image_bytes = 99c00
initializing HWRPB at 2000
initializing page table at 1e4000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code
```

OpenVMS (TM) Alpha Operating System, Version V8.4
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%SYSINIT-E- error reading TDF file, status = 00000910
%SYSINIT-I- run SYS\$MANAGER:UTC\$TIME_SETUP.COM to set time differential factor

Installing required known files...

Configuring devices...

%EWA0, Twisted-Pair mode set by console
%EWA0, Link state: UP

WARNING --

The normal OpenVMS startup procedure has not executed.
Some commands and utilities will not work as documented.
HP does not support PRODUCT INSTALL and other
PRODUCT operations in this environment.

Enter DCL commands for backup or other tasks.
When you are finished, shut down the system by entering

@SYS\$SYSTEM:SHUTDOWN.COM

Restoring the system disk from the KnapSac pacset

After the minimum VMS system is booted, the KnapSac pacset which contains the system disk image is used to restore the system disk. The steps to restore the system disk from the pacset consist of a) defining the pacset as a foreign command, b) initializing the target system disk, c) mounting the target disk /foreign, and d) executing the pacset using the /image qualifier to restore the disk.

After the restore completes, shutdown the minimum VMS system to the >>> prompt. Then the restored system disk can be booted.

```
$$$ kspacset := $dka200:[ksbackup]dka600img.pac      ; define the foreign command
$$$ initialize dka600: system                        ; initialize the disk, especially if a new disk
$$$ mou/for dka600:                                 ; mount the disk /foreign
%MOUNT-I-MOUNTED, SYSTEM mounted on _SABKUP$DKA600:
$$$ kspacset restore dka600: /image                 ; restore the system disk
%KNAPSAC-I-VERSION, KnapSac AXP Version 2.3-0 Level D starting on 24-OCT-2011 16
:41:22.45
```

KnapSac Statistics

```
Elapsed Time:   00:13:27.27   CPU Time:   0:07:39.81
Buffered I/O:      10       Direct I/O:   60118
Virtual Memory Used:  640     Page Faults:   73
$$$
```

\$\$\$ @sys\$system:shutdown

SHUTDOWN -- Perform an Orderly System Shutdown
on node SABKUP

How many minutes until final shutdown [0]:

Reason for shutdown [Standalone]:

Do you want to spin down the disk volumes [NO]?

Do you want to invoke the site-specific shutdown procedure [YES]?

Should an automatic system reboot be performed [NO]?

When will the system be rebooted [later]:

Shutdown options (enter as a comma-separated list):

REBOOT_CHECK Check existence of basic system files

SAVE_FEEDBACK Save AUTOGEN feedback information from this boot

DISABLE_AUTOSTART Disable autostart queues

POWER_OFF Request console to power-off the system

Shutdown options [NONE]:

%SHUTDOWN-I-OPERATOR, this terminal is now an operator's console

%OPCOM-W-NOOPCOM, the request was not sent, the OPCOM process is not running

%SHUTDOWN-I-DISLOGINS, interactive logins will now be disabled

%SET-I-INTSET, login interactive limit = 0, current interactive value = 0

%SHUTDOWN-I-STOPQUEUES, the queues on this node will now be stopped

SHUTDOWN message on SABKUP from user SYSTEM at _SABKUP\$OPA0: 16:55:42

SABKUP will shut down in 0 minutes; back up later. Please log off node SABKUP.

Standalone

1 terminal has been notified on SABKUP.

%SHUTDOWN-I-SITESHUT, the site-specific shutdown procedure will now be invoked

%SHUTDOWN-I-STOPUSER, all user processes will now be stopped

%SHUTDOWN-I-REMOVE, all installed images will now be removed

%SHUTDOWN-I-DISMOUNT, all volumes will now be dismounted

%OPCOM-W-NOOPCOM, the request was not sent, the OPCOM process is not running

%OPCOM-W-NOOPCOM, the request was not sent, the OPCOM process is not running

SYSTEM SHUTDOWN COMPLETE

halted CPU 0

halt code = 5

HALT instruction executed

PC = ffffffff80089a84

>>>

>>>b dka600

(boot dka600.6.0.6.0 -flags 0)

block 0 of dka600.6.0.6.0 is a valid boot block

reading 1230 blocks from dka600.6.0.6.0

bootstrap code read in

base = 1f2000, image_start = 0, image_bytes = 99c00

initializing HWRPB at 2000
initializing page table at 1e4000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

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The OpenVMS system is now executing the site-specific startup commands.

.
.
.

%SET-I-INTSET, login interactive limit = 64, current interactive value = 0
SYSTEM job terminated at 24-OCT-2011 17:01:16.86

Accounting information:

Buffered I/O count:	8017	Peak working set size:	7872
Direct I/O count:	3624	Peak virtual size:	201264
Page faults:	16608	Mounted volumes:	0
Charged CPU time:	0 00:00:57.44	Elapsed time:	0 00:01:46.54

Welcome to OpenVMS (TM) Alpha Operating System, Version V8.4

Username: system

Password:

Welcome to OpenVMS (TM) Alpha Operating System, Version V8.4 on node W64AXP

Last interactive login on Monday, 24-OCT-2011 15:25:46.68

Last non-interactive login on Wednesday, 22-JUN-2011 15:34:22.70

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