

Quantum.



Backup Reports Guide

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# Quantum esXpress 3.6

## VMware Based Backup and Recovery



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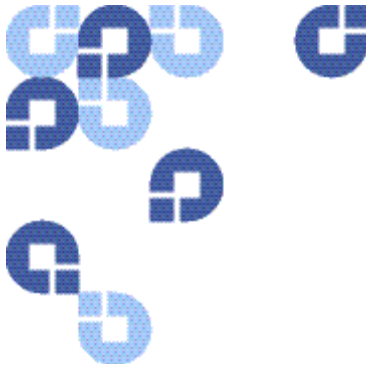


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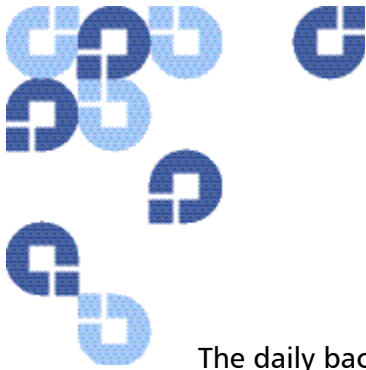
# 1 Introduction

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esXpress generates daily backup status reports and emails them automatically to email addresses defined using the GUI Appliance or PHD text menu on your host. Additionally, the Email tab in the Global Settings area of the GUI Appliance or the text menu on the host can be used to configure some of the backup report options. Refer to the GUI Appliance Guide or the Reference manual for details.

The remaining sections in this guide describe the esXpress backup reports in detail.





## 2 Backup Status Reports

The daily backup status report contains information about all of the VMs backed up in the last backup window. The report would have been emailed with the subject line containing “All Good” because all backups completed without error. Other email subject lines could consist of “Warnings today” or “Errors Today.”

“Warnings Today” indicates that during the backup job, something occurred, but all VMs were backed up. This may happen if the target was rebooted during backups or some backups timed out and had to be retried. The reason for the warning can be found in the logs.

“Errors Today” indicates that at least one VM did not backup properly. There are many reasons for this, and a review of the logs is required in order to find the cause.

### Sorted Backup Status

The status report shows an alphabetical list of all VMs backed up along with the information from the first report. This makes it easier to see the events surrounding the VMDK backups of a single VM. The following example shows the first two VMs from a sample backup report.

```
#####
# SORTED BACKUP STATUS REPORT, 'cat /etc/phd/espress.log' #
#####
=====
== VM: 2003
=====
2009-10-02 22:12:35o '2003' - '00-PHDTerm.vmdk' - 1/1 disks, (2.0%) 241m/12g (98% Data), 05:21s, 38mb/s (133gb/hr)
NET1 -a
2009-10-02 22:15:38o OK '2003' - 1/1/1 disks, (2.0%) 241m/12g/12g (98% Data), 05:21s, 38mb/s (133gb/hr), sent 89m VM
1/5 ON -a
=====
== VM: Demo4-FreeNAS
=====
2009-10-02 22:03:19o skipped 'Demo4-FreeNAS' - '01-Demo4-FreeNAS_1.vmdk' - Skipped -
2009-10-02 22:09:04o 'Demo4-FreeNAS' - '00-Demo4-FreeNAS_2.vmdk' - 1/1 disks, (0.0%) 0m/1g (4.3% Data), 32s, 32mb/s
(112gb/hr) NET1 -b
2009-10-02 22:12:47o OK 'Demo4-FreeNAS' - 1/1/1 disks, (0.0%) 0m/1g/1g (4.3% Data), 32s, 32mb/s (112gb/hr), sent 0m VM
2/5 ON -b
```

## Errors and Warnings

The next section of the report contains any errors or warnings. Had there been warnings or errors in by nightly backup as indicated by a status of 'Errors Today' or 'Warnings Today,' a summary of all errors or warnings would appear next in the logs. The following is an example.

```
#####
# ERRORS IN THE ESXPRESS BACKUP LOG - '/var/log/esxpress.log' #
#####
2009-09-27 20:06:53.194a ERROR: 'Test server 08' - '00-Test server 08.vmdk' - Failed to Create Helper VBA
2009-09-27 20:08:06.500b ERROR: 'esXpress_dedup' - '00-esXpress_dedup.vmdk' - Failed to Create Helper VBA
2009-09-27 20:14:23.997a ERROR: 'esXpress' - '00-esXpress.vmdk' - Failed to Create Helper VBA
2009-09-27 20:16:11.475b ERROR: 'sdc-dc1' - '01-sdc-dc1_1.vmdk' - Failed to Create Helper VBA
2009-09-27 20:20:57.656a ERROR: 'sdc-dc1' - '00-sdc-dc1.vmdk' - Failed to Create Helper VBA
#####
# WARNINGS IN THE ESXPRESS BACKUP LOG - '/var/log/esxpress.log' #
#####
2009-09-27 20:06:53.194a ERROR: 'Test server 08' - '00-Test server 08.vmdk' - Failed to Create Helper VBA
2009-09-27 20:08:06.500b ERROR: 'esXpress_dedup' - '00-esXpress_dedup.vmdk' - Failed to Create Helper VBA
2009-09-27 20:14:23.997a ERROR: 'esXpress' - '00-esXpress.vmdk' - Failed to Create Helper VBA
2009-09-27 20:16:11.475b ERROR: 'sdc-dc1' - '01-sdc-dc1_1.vmdk' - Failed to Create Helper VBA
2009-09-27 20:20:57.656a ERROR: 'sdc-dc1' - '00-sdc-dc1.vmdk' - Failed to Create Helper VBA
```

## Backup Log

The third part of the backup report contains the entire backup log (esxpress.log). The following example shows the first part of the log. You will see that this backup window began just after 7pm.

```
#####
# COMPLETE ESXPRESS BACKUP LOG FOR DAY - '/var/log/esxpress.log' #
#####
2009-10-09 19:01:02.190C -----
2009-10-09 19:01:02.192C Started ONCE A DAY BACKUP
2009-10-09 19:01:02.193C -----
2009-10-09 19:01:02.198C Backup Freq/Mode = DAILY/DELTA, Full=MONTHLY, running Index backup all
2009-10-09 19:01:08.4630
2009-10-09 19:01:08.4650 #####
2009-10-09 19:01:08.4660 PHD esXpress Backup ALL MACHINES Starting
```

The backup log is useful when troubleshooting issues with your backup process as it contains detailed information about each step esXpress takes to complete the backups of your virtual environment.

Let's explore the backup of a single VM that has one VMDK to see what occurs during a successful backup.

```
#####
# BACKUP LOG FOR VM: 'PHDTerm' #
#####
2009-10-02 11:32:50.880
2009-10-02 11:32:50.884 *****
2009-10-02 11:32:50.887 *****
2009-10-02 11:32:50.890 * Starting VBA Backup for: 2003 - The Name of the VM to be backed up
2009-10-02 11:32:50.893 *****
2009-10-02 11:32:50.896 *****
2009-10-02 11:32:50.902 Backup VM called for: '/Storage1/2003/PHDTerm.vmx' - The location of the VMX file
2009-10-02 11:32:50.911 esXpress Version: 3.6-7-internal-1 root@emo4.esxpress.local - Intel(R) Core(TM)2 Quad CPU
Q9300 @ 2.50GHz 7
2009-10-02 11:33:09.671 Testing snapshots on VM '2003'
```

Now we'll take a closer look at each log line.

```
2009-10-02 11:32:50.911 esXpress Version: 3.6-7-internal-1 root@emo4.esxpress.local - Intel(R) Core(TM)2 Quad CPU Q9300 @ 2.50GHz 7
```

The line above contains the current version of esXpress (3.6-7), the ESX hostname (emo4) and the processor the ESX host runs on.

```
2009-10-02 11:33:09.671 Testing snapshots on VM '2003'
```



Before esXpress begins backups, a test is run to make sure snapshots of the VM can be taken properly. This is a common point of failure—if the VMDK is a raw RDM or a VMDK in independent mode, snapshots cannot be taken and the backup will fail. If esXpress detects another snapshot and Snapshot on Snapshot is not enabled, backup of the VM will also fail. If esXpress detects its own snapshot was left hanging from a previous backup, esXpress will clean up old esXpress snapshots before starting the backup. Note that esXpress will also detect hanging snapshots from other backup products, but will not commit them nor will it continue with a backup if the snapshots were not left in a clean state.

```

2009-10-02 11:33:37.952
2009-10-02 11:33:37.955 Folder Name: /vmfs/volumes/Storage1/2003/PHDTerm.vmx - ON
2009-10-02 11:33:37.958 DisplayName: PHDTerm
2009-10-02 11:33:37.961 VMX UUID : 564d832e-8822-f12e-1b0c-39913c94db7f
2009-10-02 11:33:37.964 VMX GuestOS: winnetstandard
2009-10-02 11:33:37.966 VMX Version: 4
2009-10-02 11:33:37.969 ESX Version: VMware ESX 4.0.0 build-164009
2009-10-02 11:33:37.972 Annotation : _esXpress: 2009-10-01 22:14 - OK - 1/1/1 disks, (2.4%) 290m/12g/12g (98% Data),
04:24s ON,:
2009-10-02 11:33:38.080 DISK 1 = scsi0:0.fileName = /Storage1/2003/PHDTerm.vmdk
2009-10-02 11:33:38.611 Helper License OK, Starting Helper for VM '2003'

```

Next, esXpress reads the VMX file for the VM. The state of the VM in this example is 'ON.' esXpress by default will not backup VMs that are powered off. Some key fields from the VMX file are recorded and then the esXpress license is checked. If the license is invalid or has expired, backups will not continue. However restores will work and do not require esXpress to recover backups.

```

2009-10-02 11:34:21.830f Checking Free space for VBA on 'Storage1', 209.35 gb OK
2009-10-02 11:34:21.877f Checking Free space for VM '2003' on '/Storage1/2003', 209.35 gb OK
2009-10-02 11:34:26.206f Got VM lock, my PID 22932 for VM '2003'

```

Before creating a VBA, two important factors are checked. First the VMFS volume that esXpress will build a VBA on must have at least 3GB of free disk space. esXpress must have a VMFS volume for its VBAs—networked attached NFS will not work.

Second, free space is checked on the VMFS volume that the backup target is on. This is required for snapshots to grow during the backup process as users alter data on the VM that is backing up. If a snapshot should hit the end of the disk/LUN the volume will crash and all VMs on that volume will crash. By default, esXpress requires 3GB of free space on a volume to begin backups, it is recommended to change this to 10GB to start backups and 5GB to abort backups to avoid cleaning up snapshots that have reached the end of the disk.

```

2009-10-02 11:34:26.286f Checking for esXpress snapshots in Baja Mode
2009-10-02 11:34:41.767f Creating snapshot for: '2003'
2009-10-02 11:34:50.522f Create snapshot for: '2003' returned createsnapshot(esXpress v3 Backups, Backing up VMDK,
started at: 2009-10-02 11:34:41 on emc4.espress.local, 0, 0) = 1: 0
2009-10-02 11:34:50.548f VBA 6, Snapshot added for: '2003'
2009-10-02 11:34:59.965f VBA 6, Backing up #1: /Storage1/2003/PHDTerm.vmdk
2009-10-02 11:34:59.969f VBA 6, Snapshot #1: /Storage1/2003/PHDTerm-000001.vmdk
2009-10-02 11:34:59.977f VBA 6, Backing up: 1 disks, for VM '2003'
2009-10-02 11:35:02.151f *****
2009-10-02 11:35:02.154f VBA 6, Starting backup of disk # 1/1: '/Storage1/2003/PHDTerm.vmdk'
2009-10-02 11:35:02.158f *****

```

If Snapshot on Snapshot is enabled, esXpress checks for existing snapshots . The VM in this example does not have snapshots, so esXpress creates a snapshot called esXpress in vCenter. This can be seen above as QTMTem-000001.vmdk. Now that the snapshot is taken, the backups begin. If you are using VSS, the VM is quiesce during the snapshot process.

```

2009-10-02 11:35:19.290f Building VBA Helper with buslogic --VBA is deployed from template
2009-10-02 11:36:26.523f Register VBA Helper 6: OK, '/vmfs/volumes/4a93b7f0-20637030-9b53-001e3752f454/esXpress_VBAs/esXpress_Helper.emo4.esxpress.local.6/esXpress.vmx' --VBA is registered with vCenter
2009-10-02 11:36:31.662f Creating package for VBA 6
2009-10-02 11:36:31.995f Taring up VBA 6: '/Storage1/2003'
2009-10-02 11:36:33.024f Issuing Power Up command for VBA 6 --VBA is instructed to power on
2009-10-02 11:36:55.772f Successful Start of VBA Helper 6 --Startup is confirmed
2009-10-02 11:36:58.887f Watching VBA Action Log --VBA is checked for successful booting an operation
2009-10-02 11:37:23.219f VBA Date: Fri Oct 2 11:37:20 EDT 2009
2009-10-02 11:37:23.227f VBA Date: Fri Oct 2 11:36:00 EDT 2009 (set)
2009-10-02 11:37:23.235f Helper MAC address : 00:0C:29:32:EE:C5 --VBA MAC address is recorded
2009-10-02 11:37:23.243f Using DHCP esXpress Helper (waiting for IP) --VBA looks for DHCP (or is given pre-assigned static IP)
2009-10-02 11:37:39.329f Helper IP: 10.1.4.144 --IP address is recorded
2009-10-02 11:37:41.303f After IP Check --Network connection is tested
    
```

In this section of the log, esXpress creates a VBA, registers it (with resource pool if a pool named esXpress exists), and then powers up and confirms it has an IP address and working network. If the VBA is set to DHCP and receives no IP address, backups will fail.

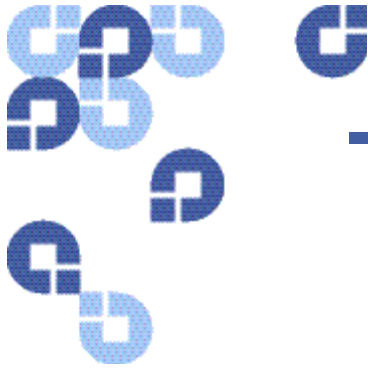
```

2009-10-02 11:37:45.329f Read Test 1 meg, OK
2009-10-02 11:37:45.337f Read Test 100 meg, OK, 50.0 mb/s at 2 seconds
2009-10-02 11:37:45.345f Creating backup for VMDK file, Size= 12288 MB.
    
```

Before backups begin, the VMDK that is to be backed up is tested. First, esXpress confirms that the VMDK can be read successfully. Next, 100MB of the VMDK are read and timed. This gives a preview as to how quickly the LUN/Disk being backed up can deliver data. In this example the disk can deliver data at 50MB/sec. Remember to note that backups cannot process faster than esXpress can read the data to be backed up. Disk read speed is a common bottleneck.

```

2009-10-02 11:37:45.353f Using Backup Target # 1 -----
2009-10-02 11:37:45.353f Mounting : 10.1.4.5 --esXpress is trying to connect to the Dedup Appliance
2009-10-02 11:37:45.353f Mounted : 10.1.4.5 --esXpress has connected successfully
2009-10-02 11:37:45.361f Mounting By-Pass NFS: 10.1.4.2:/mnt/backups --VBA is now trying to connect directly to NFS share
2009-10-02 11:37:47.333f Mounted and using By-Pass NFS: 10.1.4.2:/mnt/backups --NFS share direct (by-pass) connection successful
2009-10-02 11:37:51.360f Target #1, 10.1.4.5
2009-10-02 11:37:51.360f STARTING BACKUP
    
```



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