

Update - FDR/UPSTREAM v3.1.6

FDR/UPSTREAM Workstation/Server v3.1.6 is a significant release containing a number of new features and problem resolutions.

New features include:

- Windows XP Automated System Recovery
- Novell GroupWise database backup agent
- Oracle support for the v2.0 of their MMAPL.
- Lotus Notes for Intel Linux
- The “build backup file” step in an UPSTREAM backup can now be performed during the backup.
- A number of new UPSTREAM Director features including support for the Microsoft SQL Server PlugIn and Host Reporting.
- Full system backup for NetWare servers

To reduce the size of UPSTREAM documentation, the following has been moved to separate manuals, stored in the /DOC directory on the UPSTREAM CD:

- OS/2 documentation into the *FDR/UPSTREAM Client OS/2 Supplement*. The file is OS2.PDF.
- SNA documentation (excluding OS/2 SNA) into the *FDR/UPSTREAM Client SNA Supplement*. The file is SNA.PDF.

WARNING: If you are using UPSTREAM in Windows 2000 on a domain controller you should do a first-time full backup to assure that the SysVol will be properly backed up.

NOTE: If you are using UPSTREAM in Windows XP, you should obtain the hot fix described in Microsoft KnowledgeBase article Q317949 to fix a bug in TCP/IP which affects the UPSTREAM Director. This fix is also available from Innovation tech support.

Windows XP Automated System Recovery (ASR)

Introduction

One of the new great features in the Windows XP operating system is a feature called Automated System Recovery (ASR). With ASR Microsoft has finally provided true disaster recovery support built into the operating system. In prior operating systems (Windows 2000 and earlier), disaster recovery could only be performed by first reinstalling the OS before attempting to recover the system state of the OS from a backup. Now when you boot Windows XP from the Windows XP installation CD, you are given the opportunity to boot Windows XP into ASR mode.

When Windows XP is booted into ASR mode and the necessary disaster recovery planning steps have been followed, Windows XP will perform only as much of its installation as necessary to support the execution of a backup application to perform a system state restore. Starting with version 3.1.6 of FDR/UPSTREAM/PC, UPSTREAM now has the capability of helping you prepare to recover your Windows XP system from within this new ASR mode.

The following sections describe the functionality and requirements of running UPSTREAM in ASR mode.

How ASR Works

Before you boot your system into ASR mode you need to have the following items available:

- The Windows XP Installation CD
- The FDR/UPSTREAM 3.1.6 (or above) Installation CD
- The ASR diskette

The machine to be recovered can be a totally new machine with a disk that has not even been formatted. The only requirement is that it has the same number of physical disk drives as the original system and at least one network adapter. Also, the physical disk drives must be as large or larger than those in the original system.

To start the ASR process you need to boot the machine from the Windows XP installation CD. When the boot process starts, Windows Setup first issues the following message:

```
Setup is inspecting your computer's hardware configuration...
```

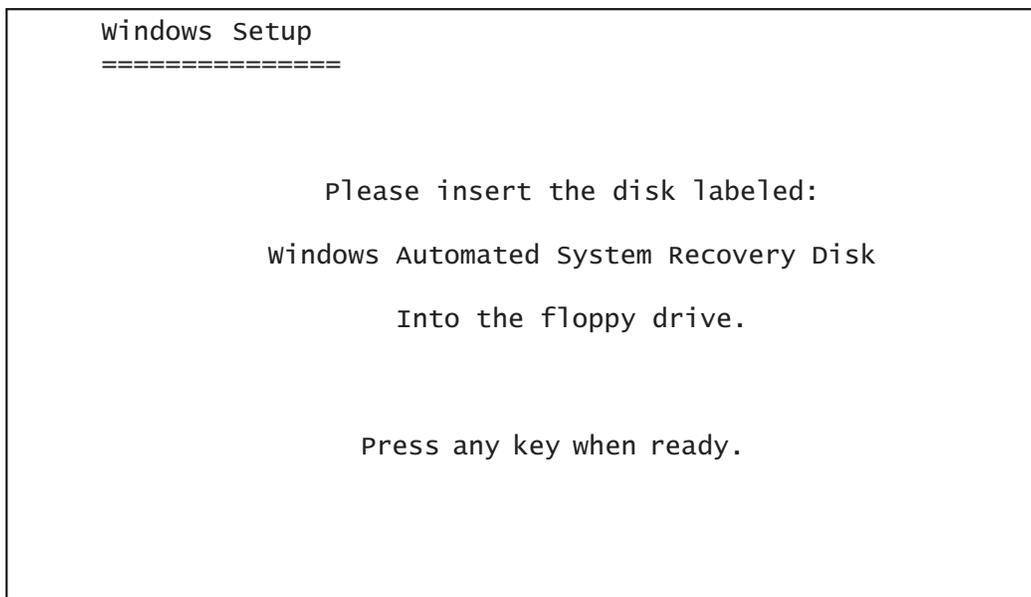
Windows Setup then gives you a short amount of time to press the F6 key to provide it with any third party SCSI or RAID drivers by displaying the following message at the bottom of the screen:

```
Press F6 if you need to install a third party SCSI or RAID driver...
```

After you take advantage of this opportunity or let it pass, Windows Setup then gives you another brief time period to press the F2 key to perform an Automated System Recovery by displaying this message at the bottom of the screen:

Press F2 to run Automated System Recovery (ASR)...

To enter ASR mode, you must be ready to press the F2 key when prompted. After you press the F2 key, Windows Setup displays the following screen:



At this point you must insert the ASR diskette previously created by UPSTREAM into the A: drive. This diskette is crucial since the entire ASR process is dependent upon it. The **Creating the ASR Diskette** section below describes how to create this diskette. For now we will assume that the ASR diskette is available so that you can answer the Windows Setup prompt.

Once you insert the ASR diskette in the A: drive and press a key, Windows Setup reads the following files from the ASR diskette to start a minimal installation of Windows:

- ASR.sif
- ASRPNP.sif
- Setup.log

The ASR.sif file provides Windows Setup with information about the disk partitions from the original system, their sizes, disk position and drive letters. ASRPNP.sif provides information about the Plug and Play devices in the original system. And Setup.log provides a list of OS files that need to be installed to create the minimal OS environment adequate for running UPSTREAM.

Using these three files, Windows Setup performs the following steps:

- Loads the drivers and other utilities needed to prepare the physical disks for the new system.
- Ensures that the physical disks are properly partitioned.
- Formats the critical disk partitions.
- Installs the OS files detailed in Setup.log onto the appropriate partition(s).
- Invokes the A:\USASR.exe program.

Windows setup knows that it should execute A:\USASR.exe because of an entry in the ASR.sif file (more about this later).

USASR.exe

USASR.exe is a front-end program to US.exe (the main UPSTREAM program) that performs the following steps:

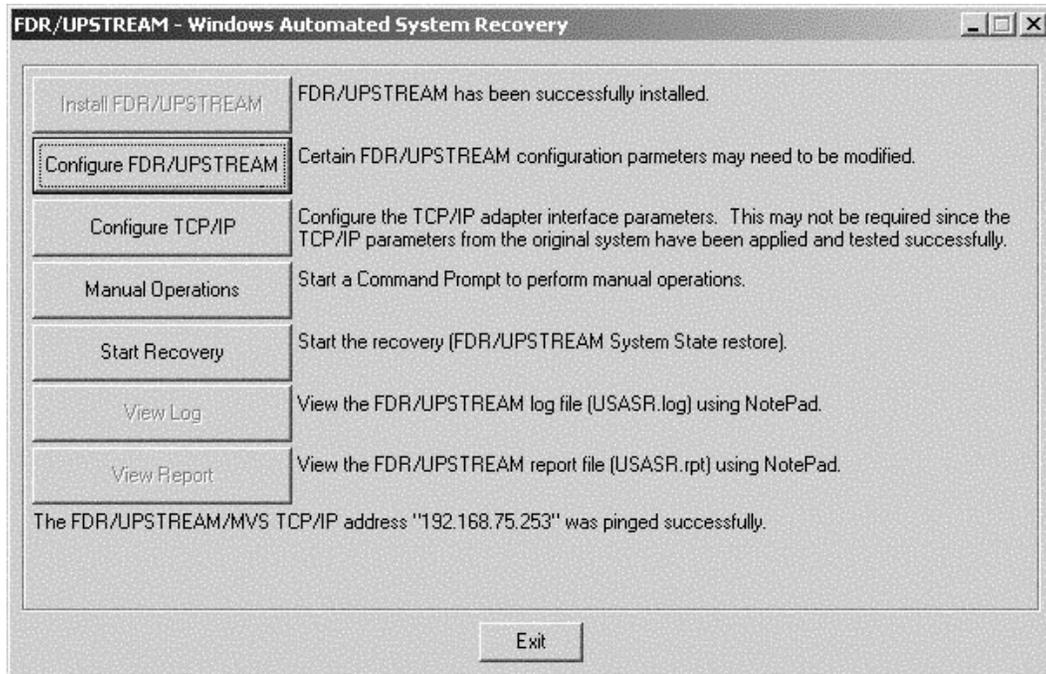
- Prompts you to insert the FDR/UPSTREAM Installation CD.
- Copies the UPSTREAM files from the CD back to their original disk location.
- Reestablishes the TCP/IP settings from the original system (if possible).
- Tests the TCP/IP connectivity to your UPSTREAM/MVS system (if possible).
- Prompts you to start the UPSTREAM recovery process.

To perform these tasks, USASR.exe reads the following files from the ASR diskette:

- US.ser
- USASR.cfg
- USASR.dat
- USASR.key

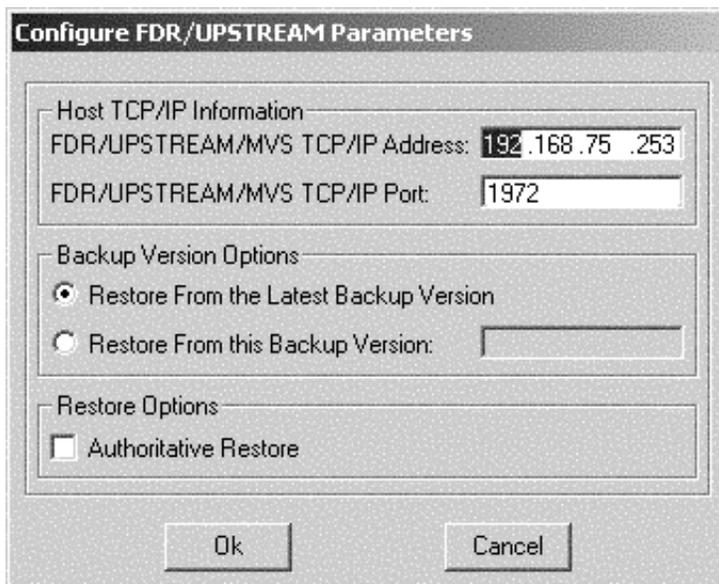
The first three files, US.ser, USASR.cfg and USASR.dat, are used by US.exe to perform the recovery. The USASR.key file contains the TCP/IP settings from the original system.

The first thing you will see from USASR.exe is a dialog prompting you to “Please insert the FDR/UPSTREAM Installation CD in the CDRom drive.” When you see this dialog, remove the Windows XP Installation CD from the CDRom drive and insert the FDR/UPSTREAM Installation CD. You do not have to click anything or press any key on the keyboard. USASR.exe will automatically detect when the CD is available and will then copy the FDR/UPSTREAM/PC product files back to their original location on the appropriate disk. When this process is finished, USASR.exe will display the following dialog:



If the installation of the FDR/UPSTREAM/PC product files was successful, the **Install FDR/UPSTREAM** button will be disabled.

In most cases, the UPSTREAM parameters contained in the USASR.cfg and USASR.dat files are appropriate for the recovery. However, one or more of these parameters may need to be modified. In this case, you can click the **Configure FDR/UPSTREAM** button to display the following dialog:



If you need to modify any UPSTREAM parameters that the *Configure FDR/UPSTREAM Parameters* dialog does not address, these parameters can be modified by clicking the **Manual Operations** button on the main

USASR.exe dialog to start a Command Prompt window from which you can invoke Notepad.exe to modify the USASR.cfg and USASR.dat files manually. The USASR.cfg and USASR.dat files will have been copied to the UPSTREAM directory (C:\UPSTREAM by default) on the disk.

WARNING: Do not modify the files on the ASR diskette.

The Command Prompt window started by clicking the **Manual Operations** button can also be used to run any other program as long as the program does not require the Windows COM subsystem. The Windows COM subsystem is not available in ASR mode. This may come in handy in the event there are some additional setup steps that need to be performed before starting the UPSTREAM recovery. However, in the large majority of cases this will not be necessary.

If USASR.exe is unable to reconfigure your network adapter(s) to establish TCP/IP connectivity with UPSTREAM/MVS, you may need to click the **Configure TCP/IP** button to manually configure the network adapter(s) yourself. This is described in the **Configuring Network Adapters(s)** section.

Once you have made any necessary modifications to the UPSTREAM parameters (in USASR.cfg and USASR.dat), performed any necessary manual operations and successfully configured the network adapter(s), you are ready to perform the UPSTREAM recovery. Since these manual steps will not be necessary in most cases, you can simply click on the **Start Recovery** button to invoke US.exe to perform the UPSTREAM recovery. During the recovery process UPSTREAM may perform multiple restores (usually three, one for the regular file system restores of all the disks, one for the quota information for all of the NTFS formatted disks and one for the system state). After the UPSTREAM recovery is finished, the **View Log** and **View Report** buttons will be enabled to allow you to view the results of the UPSTREAM recovery process.

When the recovery is complete, click the **Exit** button. You will be prompted to "Please insert the Windows Installation CD in the CDRom drive." After USASR.exe detects that the Windows Installation CD has been inserted in the CDRom drive, it will terminate. At this point Windows Setup will complete the ASR process by rebooting the system. If the UPSTREAM recovery is successful, the new system will boot successfully with the system state from the original system.

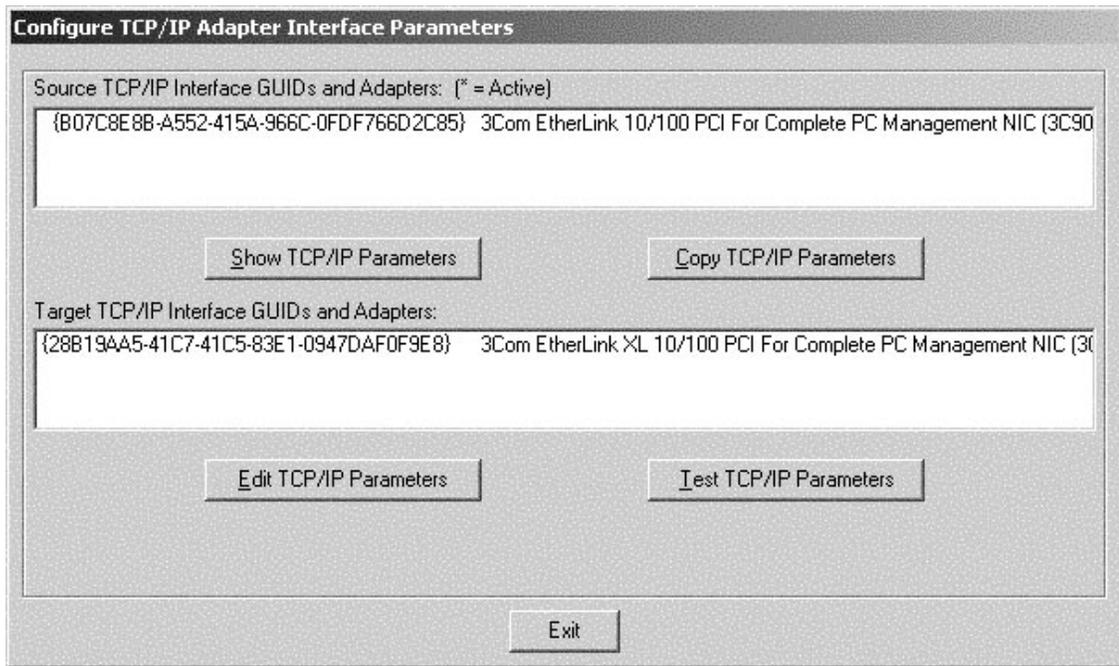
There is one minor problem that may occur that can be easily fixed. The computer account for this new system may have to be recreated in the Active Directory database. To do this, log onto the system using the Administrator account for the local system, change the system to be a member of a Workgroup and then change it back to being a member of the domain. After another reboot, the system will be back to its original state.

Configuring Network Adapter(s)

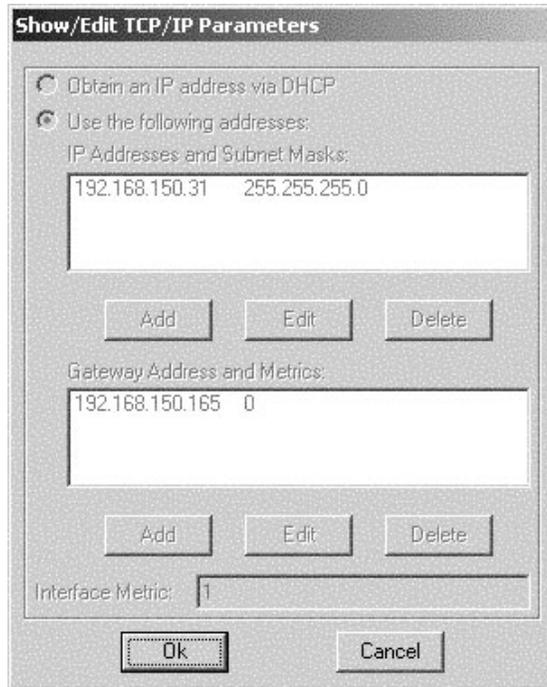
During Windows Setup's ASR OS installation, the networking subsystem is configured and started. The only problem here is that Microsoft neglected to include the original TCP/IP settings in the ASR.sif file. As a result, the network adapter(s) is/are configured with TCP/IP settings that are only appropriate for DHCP operations. In most cases, this is not how the original system was configured. It is therefore left to USASR.exe to reconfigure the adapter(s). The simple case, which is fortunately the most common, is that the original system had one network adapter, the new system has one network adapter and the local subnet LAN topology is the same. In this case, USASR.exe can simply reconfigure the one adapter, successfully test the TCP/IP connectivity to UPSTREAM/MVS and not require you to manually reconfigure the network adapter. There may be other cases that will require you to reconfigure the network adapter(s) manually, as follows:

- The original system had more than one network adapter.
- The new system has more than one network adapter.
- The nature of the disaster that you are recovering from is such that the local subnet LAN topology is different than the original.

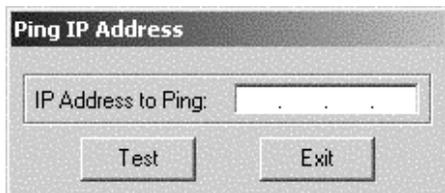
If you find yourself in any of these cases, click the **Configure TCP/IP** button on the main USASR.exe dialog to display the following dialog:



The top list on this dialog contains the GUID(s) of the adapter(s) in the original (source) system. The bottom list contains the GUID(s) of the adapter(s) in the new (target) system. In the case where the new system has more than one adapter you need to identify which adapter will be used to route the TCP/IP conversation to UPSTREAM/MVS and make sure that the adapter is reconfigured properly. You probably will not have to worry about any of the adapters that are not used for the TCP/IP conversation to UPSTREAM/MVS. To determine which source adapter contains the TCP/IP parameters needed to reconfigure the target adapter, select the source adapter from the list and click the **Show TCP/IP Parameters** button to display the following dialog:



This dialog shows the TCP/IP parameters for the chosen source adapter. To copy a set of TCP/IP parameters from one of the source adapters to one of the target adapters, select the source and target adapters and click the **Copy TCP/IP Parameters** button. If you are not sure which source adapter needs to be reconfigured, copy the identified target adapter TCP/IP parameters to all of the source adapters. To test the TCP/IP parameters for a source adapter select the source adapter and click the **Test TCP/IP Parameters** button to display the following dialog:



This dialog is used for supplying the UPSTREAM/MVS TCP/IP address. When the Test button is clicked, USASR.exe will ping the supplied address. The results of the ping are then displayed.

In the case where the local subnet LAN topology of the new system has changed from that of the original system, it may be necessary to configure the target adapter with a completely new set of TCP/IP parameters. In this case, select the target adapter and click the **Edit TCP/IP Parameters** button to display the *Show/Edit TCP/IP Parameters* dialog as shown above. This time, all of the fields will be enabled allowing you to add, edit and delete, the IP Addresses, Subnet Masks, Gateway Addresses, and Metrics.

Creating the ASR Diskette

As mentioned above, the ASR diskette is crucial to the ASR process. US.exe has the capability of creating this diskette during a full-system backup of the original system. A new UPSTREAM parameter named ASRBACKUP controls the creation of the files that are placed on the ASR diskette. The ASRBACKUP parameter has the following values.

- 0: Don't create the ASR files.
- 1: Create the ASR files but not the ASR diskette.
- 2: Create the ASR files and the ASR diskette.

The ASRBACKUP parameter can be set from the following US.exe dialog:



US.exe will only create the ASR files if one or more full-system file specs are specified. A full-system file spec is either “\.” or “\machinename”. It is possible to have US.exe create the ASR files for multiple Windows XP machines within a single backup. Each set of ASR files is unique to the machine for which it is created. When the ASR files are created, they are written to a directory named as follows:

- *workpath\ASR\machinename*

Where: “workpath” is the directory specified by the WORKPATH parameter in the UPSTREAM configuration file (UPSTREAM.CFG by default) and “machinename” is the name of the machine to which the ASR files belong.

So, if the WORKPATH configuration parameter is set to “C:\UPSTREAM”, the backup specifies file specs of “\.” and “\RONXP2”, and the name of the machine on which the backup is run is named “RONXP1”, then the following directories will be created:

- C:\UPSTREAM\ASR\RONXP1
- C:\UPSTREAM\ASR\RONXP2

These directories will have the following files created in them:

- ASR.sif
- ASRPNP.sif
- Setup.log
- US.ser
- USASR.cfg
- USASR.dat
- USASR.exe
- USASR.key

These are the files that get written to the ASR diskette. These files are created before the actual backup starts so they can be included in the backup. To have US.exe create an ASR diskette containing these files, the following criteria must be met:

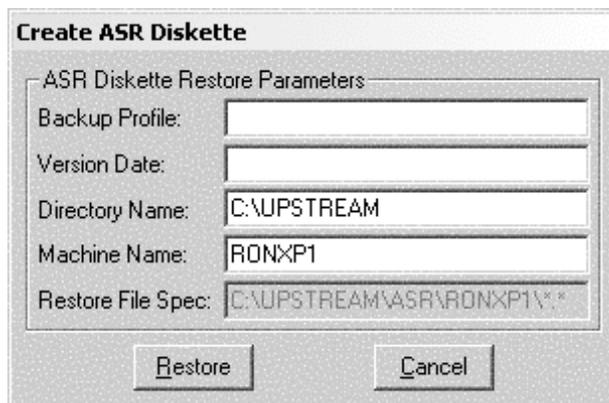
- The ASRBACKUP parameter must be set to a value of 2.
- One, and only one, full-system file spec must be specified in the backup.
- A blank formatted diskette must be present in the A: drive.

If all of these criteria are met at the time of the backup, US.exe will automatically copy the ASR Files to the ASR diskette.

But wait a minute, how does the ASR diskette get created if my backup specifies multiple full-system file specs or I do not have a blank formatted diskette in the A: drive at the time of the backup? The answer to this question is that US.exe will not create the ASR diskette. So, to provide a way to create an ASR diskette when it cannot be created during the backup, an additional utility program named ASRDisk.exe has been provided to create an ASR diskette from a backup that contains the ASR files.

ASRDisk.exe is a front-end program to US.exe that will invoke US.exe to perform a restore of the ASR files to a diskette in the A: drive. ASRDisk.exe must be invoked manually .

When ASRDisk.exe is run with no parameters from a machine named "RONXP1", it will display the following dialog:



The fields on this dialog are:

- Backup Profile:** The backup profile used in the original backup.
- Version Date:** The UPSTREAM version date of the backup. The format of this field must be 12 characters: YYMMDDHHMMSS. If this field is left blank, the latest version is used.
- Directory Name:** The WORKPATH used in the original backup
- Machine Name:** The Windows machine name of this machine.

When all of the required parameters are specified and the **Restore** button is clicked, you will be prompted to insert a blank diskette in the A: drive. Once the diskette is inserted, ASRDisk.exe will invoke US.exe to perform a restore of the ASR files from the directory specified by the *Restore File Spec* field to the root directory of the diskette in the A: drive (A:*.*).

ASRDisk can accept command line parameters to pre-enter any of the fields above:

- BACKUPPROFILE=backupprofilename : The BACKUPPROFILE of the backup
- VERSIONDATE=[yymmddhhmmss] : The VERSIONDATE of the backup
- DIRECTORYNAME=directoryname: The WORKPATH for the backup
- MACHINENAME=machinename : The name of the machine

You may be wondering how often you need to (re)create the ASR files. The answer to this question is, not that often. Once created the ASR files will not change unless one of the following changes:

- The partitioning of one of the physical disks for a machine changes.
- The drive letter assignments for the physical disk partition for a machine changes.
- Something about the PNP subsystem of a machine changes.
- You add or remove network adapters to/from a machine.
- You change the TCP/IP configuration for any of the network adapters of a machine.
- You modify your UPSTREAM configuration parameters (UPSTREAM.CFG).
- You modify your UPSTREAM personalization settings (US.ser).

If none of these changes occur, the contents of the ASR files will not change. Since the ASR files remain on the disk in a subdirectory of the directory that is used as the UPSTREAM WORKPATH, these files will continue to be backed up. On the other hand, the amount of time it takes UPSTREAM to create the ASR files adds only a few seconds to the backup, so you may want to set the ASRBACKUP parameter to a value of 1 for all of your backups so you will never have to worry about it again. A happy medium here is to have the ASR backups created only on your full backups and not on your incrementals.

The ASR Diskette Files

Some of the ASR files created during an UPSTREAM backup are created by a Windows XP API function call. These are:

- Setup.log
- ASR.sif
- ASRPNP.sif

The rest of the ASR files are created by UPSTREAM itself. When UPSTREAM directs Windows XP to create its set of ASR files it supplies to the API a number of parameters as follows:

- The name of the program (USASR.exe) to be invoked by Windows Setup when booted into ASR mode.
- The list of critical disk partitions in the system.
- A set of additional parameters to be read by USASR.exe.

The list of critical disk partitions is:

- The partition that the boot files are on (Microsoft calls this the system partition)
- The partition that the system files are on (Microsoft calls this the boot partition)
- The partitions that contain the Active Directory database files.

During the Windows Setup initialization steps, all of the critical partitions are formatted, whether they need to be or not. All of the other partitions are not formatted if Windows Setup finds that their file systems are healthy.

These parameters are included in the ASR.sif file. A sample ASR.sif file for a machine named RONXP1 follows:

```
;
; Microsoft Windows Automated System Recovery State Information
; File
;
[VERSION]
Signature="$Windows NT$"
ASR-Version="1.0"
Provider="FDR/UPSTREAM"

[SYSTEMS]

1="RONXP1","x86","5.1","C:\WINDOWS",0,0x00010100,"300 0 -60 0-10-0-5 2:00:00.0 0-4-0-1
2:00:00.0","Eastern Standard Time","Eastern Daylight Time"

[BUSES]
1=1,3

[DISKS.MBR]
1=1,1,1,0xaae9aae9,512,63,255,80043264

[DISKS.GPT]

[PARTITIONS.MBR]
1=1,0,3,"\\?\Volume{54aadf2e-d37c-11d5-968c-806d6172696f}",0x80,0x07,0x07,63,20964762,0x1000
2=1,1,0,"\\?\Volume{54aadf2f-d37c-11d5-968c-806d6172696f}",0x00,0x07,0x07,20964825,12578895,0x0
3=1,2,0,"\\?\Volume{0ede127c-d94d-11d5-823a-0050da74e57c}",0x00,0x07,0x07,33543720,464
92110,0x0

[PARTITIONS.GPT]

[COMMANDS]
1=1,3000,0,"%SystemRoot%\system32\asr_fmt.exe","/restore"
2=1,2000,1,"%SystemRoot%\system32\asr_ldm.exe","/restore"
3=1,4000,1,"A:\USASR.exe","-r"
```

```
[ASRFMT.FIXEDVOLUMES]
1=1,"\\??\Volume{54aadf2f-d37c-11d5-968c-806d6172696f}", "\DosDevices\D:", NTFS, "Page
File", 0x1000
2=1,"\\??\Vol-
ume{0ede127c-d94d-11d5-823a-0050da74e57c}", "\DosDevices\F:", NTFS, "Backup", 0x1000
3=1,"\\??\Volume{54aadf2e-d37c-11d5-968c-806d6172696f}", "\DosDevices\C:", NTFS, "", 0x1000

[ASRFMT.REMOVABLEMEDIA]
1=1, "\Device\CdRom0", "\\??\Vol-
ume{54aadf2d-d37c-11d5-968c-806d6172696f}", "\DosDevices\E:"
2=1, "\Device\Floppy0", "\\??\Volume{54aadf2c-d37c-11d5-968c-806d6172696f}", "\DosDevices\
A:"

[ASRLDM.VOLUMESTATE]
0,      34,      1, 125, "LDM Configuration", "Microsoft0"

[USASR.PARAMETERS]
"RONXP1", "C:\UPSTREAM"
```

The contents of the ASR.sif file must not be modified with the possible exception of the last line:

```
"RONXP1", "C:\UPSTREAM"
```

This line contains two parameters. The first is the name of the original system and the second is the name of the UPSTREAM directory. The name of the machine must not be changed, but the UPSTREAM directory may be changed if you want to have UPSTREAM installed to a different directory during ASR mode.

The contents of Setup.log and ASRPNP.sif must not be modified.

The ASR files that UPSTREAM creates are:

- US.ser
- USASR.cfg
- USASR.dat
- USASR.exe
- USASR.key

The US.ser is copied as-is from the UPSTREAM directory. The USASR.cfg contains a copy of the configuration parameters active at the time of the backup. The USASR.dat file contains a specific set of parameters needed to perform the ASR recovery. USASR.exe is the program that drives the UPSTREAM recovery. USASR.key is a set of saved registry information for the TCP/IP parameters for the network adapters in the original system.

The USASR.cfg and USASR.dat files may be modified before starting the UPSTREAM recovery, but this should not be done without first checking with UPSTREAM tech support. The other three files must not be modified.

Novell GroupWise

FDR/UPSTREAM now provides an agent which operates with GW TSA - the backup agent supplied with GroupWise 6.

The GroupWise Target Service Agent (GW TSA) provides reliable backups of a running GroupWise system by successfully backing up open files and locked files, rather than skipping them as a file-level backup facility would do.

The GroupWise Target Service Agent (GW TSA) is a GroupWise-specific API that works with other backup software. The GW TSA has no user interface of its own, but its presence running along with supporting backup software such as FDR/UPSTREAM provides GroupWise options in the backup software that would not otherwise be available.

The GW TSA backs up standard GroupWise directories and files. The GW TSA automatically time stamps all backed-up user databases (USERxxx.DB), so that the *Allow Purge of Items Not Backed Up* option described in *Modifying Environment Options* in the *GroupWise Administration User's Guide* can function to safeguard users' deleted items against being purged from your GroupWise system before they have been backed up. If you decide not to use the GW TSA, user databases must be manually time stamped in order for the feature to work properly.

UPSTREAM supports the full-system backup method so only a single file spec is necessary to specify a backup of an entire GroupWise database system.

UPSTREAM makes the GroupWise system appear as separate volumes for the domain database, the post office and the Document Management Services library. Within each "volume" are the files which comprise each of the facilities. This allows you to restore the entire GroupWise system, or any component down to just a single user's mailbox.

By using FDR/UPSTREAM's GroupWise agent, you get all of this support automatically.

Installation and Configuration

The UPSTREAM GroupWise agent is built-in to UPSTREAM; there are no selections to be made when installing the product.

You need to have the GroupWise TSA (GW TSA) loaded before you can perform an UPSTREAM backup or restore with the agent. Novell creates a sample GW TSA.NCF file when it installs GroupWise on the server. Simply run the script from the console, by entering **GW TSA** to load the facility. You may need to remove the comment from the line added to AUTOEXEC.NCF so that this script is run automatically when the server starts.

UPSTREAM requires a Novell Profile for GroupWise which is different from the Novell Profile of your regular backups. When you run the Novell and ULTra program (**SETNOV.EXE**), press the **Novell** button, and then press the **Add a Server** or **Modify a Server** button:

Define NetWare Unattended Login

Profile name GW Login Retry Count . . 0

Server name JIM51 Login Retry Interval . 0

Login nameCN=ADMIN.O=2ND Logout name

Login password ***** Logout password

Detach from server when done

Don't logout

UNC Drives only (no drives mapped)

Novell SMS Profile

No standard login (Non-NLM only)

GroupWise plugin (NLM only)

TSA name (optional) . .

(NLM) NDS Backups Performed Internally (Required for NLM)

Mappings

[Add a mapping] [Modify a mapping] [Delete a mapping]

[Save] [Cancel]

The fields required for GroupWise are:

- Profile name:** The name of this Novell Profile. Note that this name must be different than the name than you use for your regular file backups.
- Server name:** Enter the name of the GroupWise file server.
- Login name:** Your fully qualified NDS login name for this server (i.e. .CN=...)
- Login password:** The password which matches the Login name.
- Novell SMS Profile:** GroupWise agent backups must have this box checked.
- GroupWise PlugIn (NLM only):** You must check this box.
- TSA name (optional):** This field can be left blank. The default Target Service Agent (TSA) name for GroupWise generated by UPSTREAM is **server_name.GroupWise System**
- (NLM) NDS Backups Performed Internally:** We recommend that you check this box as a matter of course.

Press the **Save** button to save your Novell Profile definition.

Backups and Restores

GroupWise presents what appears as a file system to UPSTREAM and UPSTREAM presents it as a UNC name. You can use the full system backup method (\\) to backup all objects within it. \\ is taken to indicate the server specified in the Novell Profile and does not have to be the server that UPSTREAM is running on. This is the recommended method.

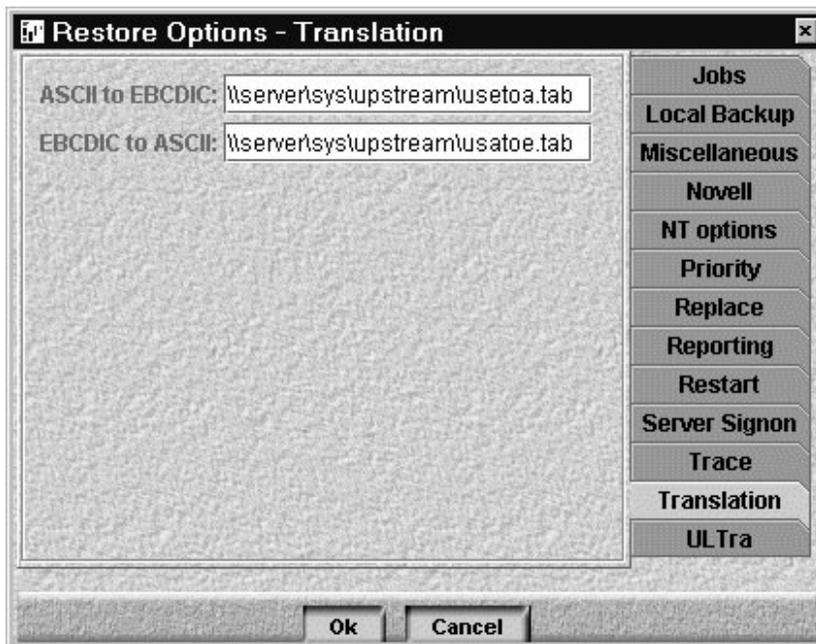
You can not mix regular backups with GroupWise backups because the Novell Profile refers to the GroupWise TSA which can't be used for regular files.

As with all backup agents, you should exclude the files you back up with the GroupWise agent from your regular file-level backups.

For PC initiated backups, inquires and restores it is recommended that you use the UPSTREAM Director. The UPSTREAM Local interface (US.EXE) can be used to request backups, however it is not designed to allow file inquiries or restore specifications.

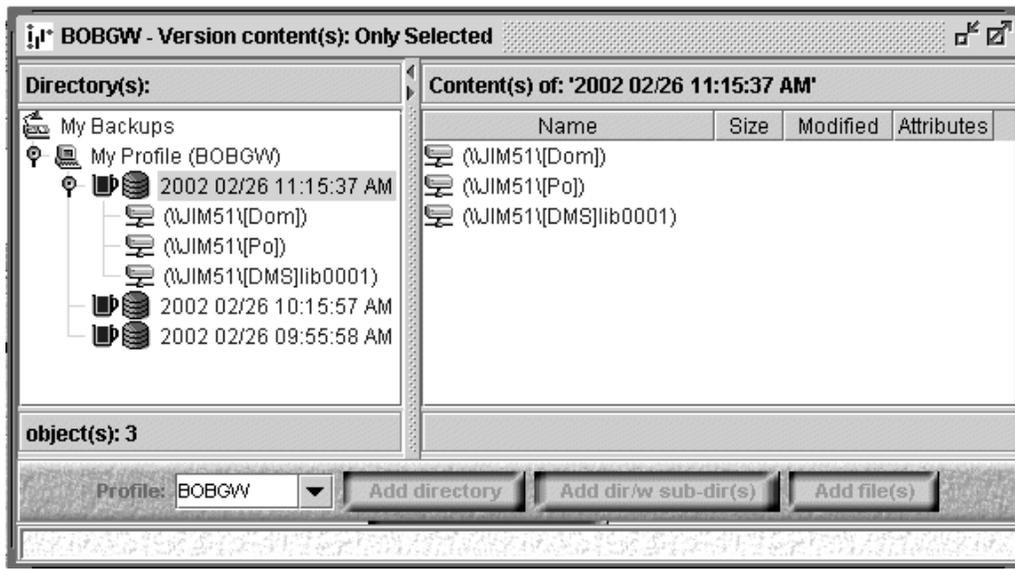
The GroupWise TSA uses volume and file names with brackets ([]) in them. For the Director to render them correctly, you need to set translation tables which match those used by the NLM version of UPSTREAM.

In the Director, you must be connected to the server. Press the **Restore** tab, select the **Restore Objects** window and press the **Options** button to display the Restore Options dialog. Press the **Translation** tab:



Enter the fully qualified UNC name to the translation table files on your server. For ASCII-to-EBCDIC it is \\server\sys\upstream\usatoe.tab and for EBCDIC-to-ASCII it's \\server\sys\upstream\usetoa.tab.

GroupWise defines resources which appear as separate volumes to UPSTREAM. Below is an example UPSTREAM Director inquiry screen which displays what was backed up from a full system backup (\\) of a simple GroupWise server.



GroupWise has presented the resources of: \\JIM51\[Dom] for the domain database, \\JIM51\[Po] for the post office, and \\JIM51\[DMS]lib0001 for the Document Management Services library. Within each are directories and files. You can backup individual files or directories with UPSTREAM, however the full system backup method is recommended as the resource names may change.

We strongly recommend that you consult the GroupWise Administration User's Guide before performing any restores. It provides specific examples of the procedures which are required for performing restores.

Since this is a standard UPSTREAM backup, there are no specific issues regarding UPSTREAM/SOS for GroupWise.

For host initiated backups, you can use the ISPF interface. The only consideration is that you must specify a Novell Profile which has been defined for GroupWise.

For the above example, the simplest host job would consist of the following JCL for a full backup:

```
ACTION 1
BACKUPPROFILE <backup profile>
STORAGETYPE 3      * TAPE
MERGE 1           * FULL MERGE
LOGNONFATAL Y
NOVELLPROFILE <novell profile>
*
SPECNUMBER 1
FILES \\. .
```

For incremental backups, we recommend that you use the same parameters, except replace the MERGE parameter with:

```
MERGE 2
```

Oracle MMAPAPI 2.0.6.2 Support.

The new version of FDR/UPSTREAM Media Manager Support adds implementation of version 2.0 of Oracle RMAN MMAPAPI (without proxy copy) which gives more control over the backup process. 2.0 MMAPAPI is supported in Oracle 8i and higher and will be used automatically, while earlier releases of Oracle still remain supported through 1.1 version MMAPAPI.

Version 2.0.6.2 works with Oracle9 and adds support for Intel Linux and Linux/390 (follow UNIX path).

This new version of FDR/UPSTREAM Media Manager Support works in multi-user mode and requires FDR/UPSTREAM version 3.1.5 or higher installed to utilize the new features of FDR/UPSTREAM attach manager mode.

There were 2 reasons for implementing new MMAPAPI interface:

- Tighter control over tape creation and allocation.
- Higher level of integration with FDR/UPSTREAM which results in improved reliability.

One RMAN logical backup sometimes results in more than one FDR/UPSTREAM backup (when FILESPERSET is specified, for example), and can get spread over a number of underutilized tapes. You also may want to accumulate a number of REDO log backups on the same set of tapes. The problem with the previous version of Media Manager Support software was that you were not able to specify reliably and directly whether to place the current RMAN backup on a new tape or to piggy back to the previous one.

Starting with MMAPAPI version 2.0.6.2 a new UPSTREAM MMAPAPI environment variable is introduced: **NEWTAPE** with values YES and NO. As always, this environment variable is supposed to be specified in the RMAN “allocate channel” command, and it applies to that particular channel (if you are running RMAN in multi-channel mode specify NEWTAPE for each channel you want it to take effect).

To use this facility you must configure your backup profile in UPSTREAM/MVS:

- The backup profile must be no more than 7 characters. We recommend to explicitly specify it in the **usorasbt.cfg** file using the PROFILE parameter.
- **PREFIX=YES** If using the UPSTREAM Client Profile Configuration, check **Profile a Generic Prefix**.
- **NEWTAPEI = NO** If using the UPSTREAM Client Profile Configuration, do **not** check **New tape for Incr. Merge**.
- **NEWTAPEF = YES** If using the UPSTREAM Client Profile Configuration check **New tape for Full Merge**.
- **MERGE=YES**. If using the UPSTREAM Client Profile Configuration, check **Merge backups allowed**.
- **DASD=YES**. If using the UPSTREAM Client Profile Configuration check **Seq. DASD Backups Allowed**. This is required even if you don't use disk backups.
- **TAPE=YES**. If using the UPSTREAM Client Profile Configuration check **Seq. Tape Backups Allowed**. This is required even if you don't use tape backups.

- We strongly recommend that you specify the last file name qualifier in the DSN prefix (for both tape and DASD) to match the name of the backup prefix (this will ensure that all the backup file names created are unique).

For example:

- Backup profile prefix: ORCLBKP
- DSN prefix: MY.BACKUP.ORCLBKP

This would result in actual backups of:

- Channel 1: actual backup profile is ORCLBKP0, DSN is MY.BACKUP.ORCLBKP0...
- Channel 2: actual profile is ORCLBKP1, DSN is MY.BACKUP.ORCLBKP1...
- and so on ...

When your FDR/UPSTREAM backup profile is properly configured, you can easily control the creation of new tapes for your backups:

- Specify NEWTAPE=YES for the channel (in the RMAN script) if you want this backup to start on a new tape; all the backup files created during this backup (more than one if you have FILESPERSET, or more backup commands before you release the channel) will go to the same newly created tape.
- Specify NEWTAPE=NO (or omit NEWTAPE) if you want all the backup files in the set to append to the previous tape.

It is recommended that you specify HOLDTAPE Y in the template parameter file (file specified in PARAMETER in usorasbt.cfg) if you expect to have more than one backup file created during RMAN backup – it will prevent tapes from being unloaded between backups.

Usorasbt now caches backup information for the currently allocated RMAN channel to improve performance of maintenance procedures (like cross checks and massive removals of old backups). We recommend that you run all your maintenance jobs (especially cross-checks and backups removals) through one channel, and don't run other backup/recovery operations in parallel if you want to get consistent and fast results all the time.

The maximum (and the default) number of RMAN channels supported is 36 now: this is the maximum number of all RMAN backups from all Oracle instances running to the same UPSTREAM backup profile at the same time. Make sure that your UPSTREAM backup profile name for Oracle RMAN backups is no more than 7 characters long, and that it is configured as a “generic prefix”.

Lotus Notes for Linux

FDR/UPSTREAM now supports its full database agent for Lotus Notes/Domino on Intel Linux platforms. The agent provides all of the features included in the agent available on Windows, AIX, Solaris and OS/390 Unix which include on-line database backup, transaction log backups, point-in-time restores and more.

There are no unique installation requirements for the Notes agent. On other platforms there is a discrete PlugIn file. For Linux, while it operates as a PlugIn, the Notes support is integrated.

Notes configuration is similar to other UNIX platforms (see the UPSTREAM Client User's Guide, Lotus Notes chapter for details). The required environment variables which must be set before UPSTREAM is started for Linux are:

- **LOTUS.** The location of the Domino main directory. For Linux the default is **/opt/lotus**
- **LD_LIBRARY_PATH.** The location of the Domino libraries. For Linux the default is **/opt/lotus/notes/latest/linux**
- **NOTES_DATA_DIRECTORY.** The location of the Domino data files and notes.ini. For Linux the default is **/local/notesdata**
- **Notes_ExecDirectory.** Use the same path as for **LD_LIBRARY_PATH**
- **PATH.** Used to find executables, we recommend that you add all of the values above, plus the C resource directory which defaults to **/opt/lotus/notes/latest/linux/res/C**

There are no other configuration and operational differences between Linux and other UNIX systems. See the UPSTREAM Client User's Guide, Lotus Notes chapter for details.

Skip Backup Scan

When UPSTREAM begins a backup, it usually pre-scans the data to be backed up before it actually begins the backup. This provides an estimate on the amount of data that will be backed up and minimizes the amount of time that the tape is mounted.

You can now disable the pre-backup scan of the data so that UPSTREAM will begin sending data almost immediately.

The advantages are:

- In some cases, particularly when you are performing a merge full backup of a large number of small files, this can result in some performance advantage. This is because the host will be tabling received file placeholders at the same time the client is sending them. This results in increased parallelism and some performance gain.
- Novell SMS backups which contain a large number of small files may show a particular benefit as UPSTREAM will use the file scan information during the search for the file open, which can't be done when the backup scan is a separate operation.

However, there are a number of disadvantages as well. Because of these, the option is off by default.

- Without an estimate of the backup size, host disk backups and UPSTREAM/SOS backups can't be properly preestimated. If you check this option, you must also specify a DASDOVERRIDE to manually estimate the size and your estimate must not be substantially smaller than the actual backup size or the backup may fail.
- Displayed backup statistics will be incomplete and/or incorrect.
- You may not actually gain any performance benefit. UPSTREAM is no longer able to buffer backup file writes and thus some performance is lost there.

Even if you specify the skip backup scan option, UPSTREAM still creates a backup file as it needs it for restart, merge backups and file deletions. So you will still need to reserve adequate space for it in the work path.

To activate the skip backup scan option:

- For host initiated backups, specify **SKIPBACKUPSCAN Y** in your host job with the overall parameters (such as ACTION)
- In FDR/UPSTREAM local, enter the backup dialog and press the *More...* Button. Check the **Skip Backup Scan** checkbox.
- In the UPSTREAM Director, Backup tab, Options button, Miscellaneous tab, check the **Skip build backup file** checkbox.

Recovering a Windows 2000/XP System

You can now restore a full system with the file spec `\\.` or `\\machine_name` - the same method that's available for backups. Note that if your system is a Domain Controller you must be booted in Directory Services Repair Mode.

There are two new parameters relating to full system restore:

- **AUTHORITATIVE.** An overall parameter, controls how a replicated resource such as a domain controller's Active Directory and SYSVOL or a cluster's database should be handled. Specify Y or N; the default is N.
- **DISASTERRECOVERY.** An overall parameter, used for specifying a restore of a completely dead system (possibly to different hardware). Specify Y or N; the default is N.

When recovering a full system, you will want to use the full system restore file spec (`\\.` or `\\machine_name`) in one of these scenarios:

- Recovering the first Domain Controller of a completely dead domain (i.e. All Domain Controllers need to be recovered) or the first node of a cluster (i.e. All cluster nodes need to be recovered). Specify the parameters `AUTHORITATIVE=Y DISASTERRECOVERY=Y`.
- Recovering a secondary (2nd, 3rd, etc.) Domain Controller of a domain or a secondary cluster node. In this case specify `AUTHORITATIVE=N DISASTERRECOVERY=Y`.
- Restoring part of a Domain Controller or cluster node for roll-back purposes. Specify: `AUTHORITATIVE=Y DISASTERRECOVERY=N`.
- A normal restore that does not involve rolling-back a Domain Controller or cluster resource. Specify: `AUTHORITATIVE=N DISASTERRECOVERY=N`.

Minor Changes

Some of the minor changes in this release include:

- (Novell SMS) You can now use the `\\.` file specification to indicate a full system backup. UPSTREAM automatically generates UNC file specs for all resources (volumes), and for the Server Specific Info. This is a recommended method as it is simpler to specify and is self-maintaining - new volumes are recognized automatically.
- (Novell SMS) Server Specific Info can be backed up or restored. The Server Specific Info is represented in UPSTREAM as a volume with no files and a <Volume Information> entry. To specify it in a backup, perform either a full system backup or specify `\\server_name\Server Specific Info*.*`. To specify it in a restore, restore the <Volume Information> file. When you perform a restore, Novell SMS will create a directory `SYS:SYSTEM\8.3_server_name` where the 8.3_server_name is a shortened name of your server. It will place in it the 5 files which are the Server Specific Info: `SERVDATA.NDS`, `DSMISC.LOG`, `VOLSINFO.TXT`, `STARTUP.NCF`, and `AUTOEXEC.NCF`. See the Novell documentation for the use of these files in server recovery.
- (Novell) Support for NetWare 6. Prior versions will work with NetWare 6, but NetWare release specific issues were fixed in the installation program.
- A new parameter, **TCPTIMEOUT** allows you to specify the number of seconds of inactivity before a send or receive times out. 0, which is the default, disables the timeout. A non-zero TCPTIMEOUT may cause performance degradation unless you have specified a TCP/IP Send and Receive buffer size (in the UPSTREAM Advanced Configurator) of at least 65535. Certain UPSTREAM functions, such as registration will timeout automatically regardless of the TCPTIMEOUT value.
- (Novell) In the Novell Profile, you can now specify the name of the TSA that UPSTREAM will use. If you leave it blank, it will continue to use **server_name.NetWare File System**. For NetWare 6 Clusters, you will need to specify **server_name.NetWare Cluster File System**.
- (File Transfer) You can now specify the record separator for text files - previously UPSTREAM only accepted line feed (decimal 10 in ASCII) and carriage return/line feed (decimal 13 and decimal 10). The keyword to specify the record separator is **XFERRECSEP** which defaults to the proper value for the system (10 on ASCII systems). If you set **XFERRECUSECR=Y**, UPSTREAM will add or strip a preceding carriage return - this defaults to 'Y' on PC systems and 'N' on UNIX systems.
- (Notes) You can force the Notes agent to not free the Notes API libraries by setting the environment variable **USNOFFREENOTES** to any value. For Linux, the library is automatically left in the program's address space - if you wish to free it between executions, set the environment variable **USFFREENOTES** to any value.
- (Director) The file filter applies to the restore as well as the inquiry.
- (Windows and UNIX) A run job with a JOBOPTIONS of 8 now causes the parent process to terminate as well as the child.
- (UNIX) The backups will now include the file or directory's UID and GID number as well as the UID and GID name. You can force the restore to use the number rather than the name with the restore parameters **USEUID** and **USEGID** (defaults to N). To use this new feature, you must perform first-time full backups.
- (UNIX) UPSTREAM can now hold open user's home directories so that they'll be available for full system backup; specify **HOLDUSERDIRS Y**. This is particularly useful when performing /* backups for OS/390 Unix where

user's file systems are managed in separate HFS file systems and are mounted by the system auto-mounter. This parameter is available on the UNIX Backup/More... dialogs and in the UPSTREAM Director.

- ❑ (Windows) You can disable backup of file compression information by setting a new environment variable **USNONTCOMPRESS=Y**. This was added to get around bugs in the early release of the Cellerra which enabled the compression bit, but didn't actually support compression.
- ❑ (Windows) You can force the ANSI character set with the environment variable **USSETFILEAPISTOANSI=Y**. We only recommend this for Windows 9.x systems when files with extended characters are being skipped with file not found errors.
- ❑ The parameter **LATESTDATE** can now be specified as an offset to the current date; specify +<days> or -<days>. For example, if you wanted to include only those files which had a modification date earlier than 90 days earlier than the current date, specify a DATELIMIT of 2 and a LATESTDATE of -90. You can still use a fixed date with LATESTDATE.
- ❑ You can automatically clear the active report file after a backup completes with the new parameter (on the reporting dialog) *Max. Report Days*. Specify this from the host or a parameter file with the keyword **MAXRPTDAYS**. As for MAXLOGDAYS, specify the number of days worth of entries to retain in the current report file. You do not need to have reporting enabled to use this option. A value of 0 (the default) prevents clearing.
- ❑ UPSTREAM supports Windows XP (all types).
- ❑ (NLM) NetWare for SAA is no longer supported for the NLM version of UPSTREAM.
- ❑ UPSTREAM no longer supports Banyan file server backups. Banyan fields have been removed from all client displays.
- ❑ A new file spec parameter **NODIRFORINCREMENTAL**, if set to 'Y' will cause UPSTREAM to not send directory entries to the host for incremental backups. This may cause important security information not to be backed up until the full, but will result in significantly smaller incremental backups. This parameter has been added to the *Spec Detail, More...* dialogs as *Don't backup dirs for incrs*.
- ❑ (Novell SMS) A new environment variable: **USSMSRESTOREMODEBITMAP** allows you to restrict the data restored. This value is logically OR'd into the SMS restore open call and is specified as a decimal quantity. SMS defined values include:

```
NWSM_NO_DATA_STREAMS: 256
NWSM_NO_EXTENDED_ATTRIBUTES: 512
NWSM_NO_PARENT_TRUSTEES: 1024
NWSM_NO_CHILD_TRUSTEES: 2048
NWSM_NO_VOLUME_RESTRICTIONS: 4096
NWSM_NO_DISK_SPACE_RESTRICTIONS: 8192
```

- ❑ (Novell NLM) Auto-updates now operate using the NLM version. There are however a few considerations due to limitations in the NetWare operating environment:
 - The AUTOINST.DAT restore file must restore directly to the UPSTREAM directory. Restores can not be staged to another directory and then copied as NCF files can't perform copies. Thus you must set the source (FILES) to be the master source directory, and the destination (DESTINATION) to be the UPSTREAM directory itself.
 - AUTOINST.NCF is the batch file that will be run by UPSTREAM. It must be stored in the UPSTREAM directory and it must specifically unload and reload UPSTREAM. For example:

```
unload us
load sys:upstream/us
```

- The Personalization option *Restrict only for PC initiated* now applies to Director and End-User Restore requests as well as us and uscmd requests.

- If you restore a file using the “Restore and Inquiry (old)” panel in UPSTREAM, a PlugIn controlled file can be restored to a regular file, without PlugIn control. This is most useful for the MS SQL PlugIn, so that you can restore a database to a new name. To specify this option from the host, there is a new non-repeating parameter named **IGNOREPLUGINSFORRESTORE** which defaults to N.

Technical Specifications

Previous version:

FDR/UPSTREAM PC version 3.1.6 is a production release updating version 3.1.5.

Operating systems affected by this upgrade:

All

FDR/UPSTREAM MVS release prerequisites:

3.1.5 is recommended but all prior releases of FDR/UPSTREAM MVS will operate. You must have v3.1.4 for 255 byte file name support.

Problem resolutions:

- (v3.1.6) (Windows 2000) Disaster recovery issues involving replicated directories and the SysVol have been fixed. If your system is a domain controller or has reparse points, you will need to perform a first-time full.
- (v3.1.5a) (UNIX) MAXLOGDAYS no longer reports bad file number errors.
- (v3.1.5a) (Linux) Attach manager no longer attempts to reuse local status ports when receiving a number of requests quickly.
- (v3.1.5a) (USS) Encrypted LOCALPASSWORD now operates correctly when sent from USTBATCH.
- (v3.1.5a) (NLM) UPSTREAM will now use the v5 Media Manager APIs for physical disk access, including UPSTREAM/SOS. This will allow UPSTREAM to operate with NSS loaded. You can force the use of v4 MMAPIs by setting the environment variable **USUSEV4MMAPIS** to any value.
- (v3.1.5a) (Windows) The registry can now be backed up when it's stored on drives without drive letters.
- (v3.1.5a) (Unix or Windows) Completion of Director started requests will no longer be affected by other copies of UPSTREAM running in parallel (messages 3127 and 3113).
- (v3.1.5a) (Win32) HOSTDISK.EXE correctly sees disks in complex SCSI or Fiber environments and no longer has a limit of 255 devices..
- (v3.1.5a) List and Restore no longer displays multiple levels for named pipes and extraneous directories for PlugIns which don't use them (such as WinQuota).
- (v3.1.5a) UPSTREAM will tolerate bad last access dates during migrations.

Who should upgrade:

Users who need one of the problem resolutions or enhancements.

New configuration parameters:

None.

New overall parameters:

<u>Name</u>	<u>Default</u>	<u>Required</u>	<u>Description</u>
ASRBACKUP (Windows XP)	0	No	Describes whether ASR recovery files are generated: 0 = Don't generate ASR recovery files 1 = Generate the ASR files to disk. 2 = Generate the ASR files and create the diskette while performing the backup.
AUTHORITATIVE (Windows 2000/XP)	N	No	Controls how a replicated resource such as a domain controller's Active Directory and SYSVOL or a cluster's database should be handled.
DISASTERRECOVERY	N	No	Should be 'N', unless you are restoring a completely dead system (possibly with different hardware).
HOLDUSERDIRS	N	No	If specified as 'Y', all user home directories are accessed and held throughout the duration of the backup. Particularly useful for OS/390 Unix full system backups where the auto-mounter is used to mount user's file systems.
IGNOREPLUGINSFORRESTORE	N	No	If specified as 'Y', a file (or logical file) backed up with a PlugIn can be restored to a regular file. This method is turned on only when you do a restore of a PlugIn controlled file from the "Restore and Inquiry (old)" panel.
MAXRPTDAYS	0	No	The number of days to keep in the current report file. 0 prevents clearing.
SKIPBACKUPSCAN	N	No	If enabled, UPSTREAM will not prescan the disk for files to backup. Only recommended in certain cases due to it's impact on DASD backups.
TCPTIMEOUT	0	No	The number of seconds of inactivity before a TCP/IP send or receive times out. 0 disables the timeout. If you specify a non-zero timeout, you should also specify a large (65535) configuration TCPSENDBUFFER and TCPRECVBUFFER.
XFERRECSEP (File transfer)	10	No	Specifies the record separator if you have specified LINEBLOCK=Y. Most of the time you want to use the line feed (decimal 10).
XFERRECUSECR (File transfer)	Y (PC) N (UNIX)	No	Indicates whether a preceding carriage return should be stripped or added to a file being file transferred.

New file spec parameters:

<u>Name</u>	<u>Default</u>	<u>Required</u>	<u>Description</u>
NODIRFORINCREMENTAL	N	No	If specified as 'Y', UPSTREAM will not send directory entries to the host for incremental backups. This may cause important security information not to be backed up until the full, but will result in significantly smaller incremental backups.
USEGID (UNIX)	N	No	If specified as 'Y', UPSTREAM will restore files and directories by GID number rather than name.
USEUID (UNIX)	N	No	If specified as 'Y', UPSTREAM will restore files and directories by UID number rather than name.

New environment variables:

Name	Default	Description
USADOBJUSNINCREASE (Windows 2000/XP)	100000	Used for controlling the Active Directory object USN increase for authoritative restores that are performed by using the new full-system file spec (\\).
USFREENOTES (Notes - Linux only)	None	If set to any value, UPSTREAM will free the Notes library when it has completed running with the PlugIn.
USNOFREENOTES (Notes - non-Linux)	None	If set to any value, UPSTREAM will not free the Notes library when it has completed running with the PlugIn.
USNONTCOMPRESS (Windows)	None	If set to 'Y', UPSTREAM will not backup NTFS file compression information.
USNOSIGNAL (UNIX)	None	If set to any value, UPSTREAM will not install its signal handler.
USNOTESALLOWLOGRESTORE (Notes)	None	If set, UPSTREAM will allow an archived transaction log to be restored manually. You may want to set this if there are errors doing the restore during the automatic recall.
USSETFILEAPISTOANSI (Windows)	None.	Setting this to any value causes UPSTREAM to use the ANSI character set for all operations. You may need to enable it if you are getting Windows return code 2 (no file found) for files which have extended character codes in Windows 9.x.
USSMSRESTOREMODEBITMAP	0	(Novell SMS) This value is logically OR'd into the restore open call. Specified as a decimal quantity. Allows you, to restrict the data restored. SMS defined values include: NWSM_NO_DATA_STREAMS: 256 NWSM_NO_EXTENDED_ATTRIBUTES: 512 NWSM_NO_PARENT_TRUSTEES: 1024 NWSM_NO_CHILD_TRUSTEES: 2048 NWSM_NO_VOLUME_RESTRICTIONS: 4096 NWSM_NO_DISK_SPACE_RESTRICTIONS: 8192

<u>Name</u>	<u>Default</u>	<u>Description</u>
USSTATUSRECVBUFFERSIZE	System default	The size of the TCP/IP buffer for receives on the status port. Cannot be set from the host.
USSTATUSSEENDBUFFERSIZE	System default	The size of the TCP/IP buffer for sends on the status port. Cannot be set from the host.
USTRACKSENDTIME	60	If you specified SKIPBACKUPSCAN Y, this is the number of seconds between sends. If there is no send pending after this number of seconds, a NULL record is sent.
USUSEV4MMAPIS (NLM)	Not defined	If set to any value, UPSTREAM will use the version 4 Media Manager APIs for physical disk access, including UPSTREAM/SOS; otherwise it will detect and use v5 APIs.

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