

Documentation for Backup and Recovery Version 1.0

October 24, 2002, revised January 14, 2004

1.0 General Information

There are several types of problems that can happen to a system. These are:

- ▶ user error
- ▶ system-staff error
- ▶ disk drive failure
- ▶ system-wide failure
- ▶ software failure
- ▶ electronic break-ins, vandalism, etc.
- ▶ natural and man-made disasters

These backup scripts will take into account disk drive failure, system-wide failure, software failure and to a limited extent user error and system-staff error. It is assumed that due to the system configuration and the fact that the system will sit behind a firewall that the problem of electronic break-ins, vandalism, etc will be adequately taken care of through that avenue and, therefore, is not specifically addressed here. Natural and man-made disasters such as tornados, hurricanes, flooding, earthquakes, or plane crashes are not addressed by these scripts. It is assumed that whatever plan each facility has in general for all its computer systems will cover these types of problems. These scripts were based on the guidelines and recommendations made in the "RFC Archive Database/Files System Design" document dated November 30, 2001.

The backup and recovery suite consists of the following scripts:

bkup_lev0 (bash script)
bkup_onunld (bash script)
recvr_lev0 (bash script)
recvr_onld (bash script)

dump_script (bash script)
restore_script (bash script)

The first four scripts (Informix related scripts) are located in `/rfc_arc/scripts/bkups-informix` directory. The last two scripts (Linux file system related scripts) are located in the `/rfc_arc/scripts/archive_dump/scripts` directory.

This suite is to be used by an office to generate backups of both the Informix RDBMS and Linux file system on a routine basis. Since the goal is to lose no data, the data/file population strategy will need to be taken into account when determining the frequency for the various backups. At a minimum, it is recommended that backups be performed on a weekly basis.

2.0 Configuration Information

Informix Scripts

Two apps_defaults tokens are used by the various scripts, these are:

adb_name	name of the archive database on the archive system
adb_server	Informix server name on the archive system

Insure that the following parameters in the Informix ONCONFIG file are properly defined: TAPEDEV, TAPEBLK and TAPESIZE. The ONCONFIG file is located in the directory /opt/informix/etc.

Linux Scripts

The dump_script script uses an exclusion file that the user must set-up. Suggested directories are:

```
/INFORMIXTMP  
/opt/informix  
/data/rrootchk  
/data/dbspacea  
/data/dbspaceb  
/data/dbspacef  
/data/dbspacec  
/data/dbspaced  
/data/dbspacee  
/data/dbspacef  
/data/dbspaceg  
/data/dbspaceh  
/data/dbspacei  
/data/dbspacej  
/data/dbspacek  
/data/dbspacel
```

An example exclusion file called inodes_not_to_dump is provided. This file consists of inode values, one value per line. The inode value is determined by using the Linux stat command.

Also make sure the PATH environment variable includes /sbin.

3.0 The Scripts

3.1 Informix Backup and Recovery Scripts

The Informix scripts are located in the directory /rfc_arc/bin/bkup-recov. There are two types of Informix backup scripts provided and each backup script has a companion recovery script. These are very simple scripts and the scripts may require editing by the user prior to using them.

bkup lev0

The first backup script, bkup_lev0, enables the RFC to do a level-0 archive of the Informix RDBMS to tape. This script backs up the entire RDBMS. The script should not require any editing; it uses the settings, of TAPEDEV, TAPEBLK and TAPESIZE in the ONCONFIG file. Although initially the Informix IDS may only need one tape to do this level-0 archive, eventually it will require multiple tapes.

Insert a tape in the tape drive. As user Informix or root, execute this script and follow any instructions ontape may provide. When completed label and date the tape. If multiple tapes are involved, make sure the tapes are numbered to indicate the order.

It is recommended that a level-0 archive be performed at a minimum of once per week. An office may choose to perform backups at a more frequent interval. This should adequately protect for RDBMS failures, single disk drive failure and most other hardware failures. It will not always provide protection from user errors and system-staff errors.

recvr lev0

This script is the companion recover script to bkup_lev0. The type of backup provided by using the ontape command allows for the restoration of the entire RDBMS or individual dbspaces. Remember the ontape command does not allow for the restore of individual tables. It is recommended before doing a level 0 restore, that the user review Chapter 12 of "Archive and Backup Guide for Informix Server" provides detailed information. Assuming the user is restoring the RDBMS, this script should not require any editing, it uses the settings, of TAPEDEV, TAPEBLK and TAPESIZE in the ONCONFIG file.

Insert the appropriate backup tape in the tape drive. As user Informix or root, execute this script and follow any instructions ontape may provide.

bkup onunld

Since the ontape command does not allow for the restoration of individual tables, the bkup_onunld and its companion recvr_onld scripts are an attempt to allow an office to

provide some protection against limited extent user error and system-staff error. Examples of this might be the accidental dropping of a table or deletion of hundreds of rows from a table. The bkup_onunld script is provided as one way to provide some level of protection in this arena. The script utilizes the Informix onunload command. This script should NOT be used in place of a level-0 archive script. The reason this script uses onunload instead of dbexport is that it has some advantages. Dbexport requires an exclusive lock on the database, converts the data to ASCII text file format and can be very slow. Onunload requires only a shared lock, similar to other backup commands and writes the data out in binary format. Because of how onunload performs this write it is much faster. However, onunload does have some disadvantages as well, one of the key ones is that when backing up a single table, onunload does not retain access privilege, synonyms, views, constraints, and triggers. One must also use the dbschema command on the selected table to obtain a listing of this information. Other disadvantages are listed in Chapter 11 of the "Informix Migration Guide".

The bkup_onunld script must be edited. Three example uses of the onunload command are provided. The user must choose and edit the command it wishes to use prior to executing the script. The user does not have to be user Informix or root to use this script. Use of this script is optional. If an office chooses to use this script, the frequency of use should be based upon the individual office's needs and requirements.

recvr_onld

This script is the companion to the bkup_onunld script. This script must be edited. Three examples of the onload command are provided. The bkup_onunld script to be used determines which command the user will use and will need to edit.

3.2 Linux File System Backup and Recovery Scripts

The following scripts assume that the version of the dump and restore commands on the Linux system are dump-0.4b27-3 or later.

Both these scripts must be run by user root.

dump_script

This script uses the Linux dump command to provide the file systems backups. Prior to using this script the user must configure the exclusion file as described in section 2.0 of this document. Once the exclusion file is created, run the script and follow the instructions as prompted. When completed label and date the tape. If multiple tapes are involved, make sure the tapes are numbered to indicate the order. The script is designed to allow the office to do backups as frequently as once per day.

restore_script

This script uses the Linux restore command to provide the file systems restore capability. This script is quite flexible and utilizes the table of contents file(s) created by the dump_script. This script has a built-in help feature. Simply run the script and follow the instructions as prompted. The user can restore a single file, multiple files, an entire directory or several directories.

4.0 Troubleshooting Information

Refer to the Informix manuals for information if there are problems with the scripts provided to backup and recover Informix. Chapter 12 of “Archive and Backup Guide for Informix Server” provides detailed information on the ontape command and Chapter 11 of “Informix Migration Guide” provides detailed information on the onunload/onload commands. Other suggested books are listed in the References section.

For detailed information on the dump and restore commands used in the scripts, dump_script and restore_script, refer to almost any Red Hat Linux book. For specifics on dump and restore command options, the user can also refer to the man pages for these command. In addition, both scripts have fairly extensive comments embedded in them.

5.0 Installation Instructions

“under construction”

6.0 Maintenance Information

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7.0 References

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