• Versions prior to 9.4 provided Metadata Server Backup Facility
  • Custom scripts for dumping FrameworkServer database to file
  • File level backup
  • PROC METAOPERATE
• SAS 9.4 contains two utilities for backup and restore
  • Metadata Server Backup Facility
  • Deployment Backup and Recovery Tool (BRT) (new in 9.4)
• The Deployment Backup and Recovery Tool is a centralized utility to manage backups and restore for all machines that are part of a SAS deployment.
• The tool will do online backup and restore as well as offline recovery.
• Metadata Server Backup Facility backs up all registered metadata repositories, the repository manager, and the metadata server’s configuration directory.
• There are several methods to perform a metadata backup, but the built-in utility has the advantage that:
  • backups can be performed online
  • repositories can be set to be reorganized (it does require an exception to the above statement)
  • restore up to a point in time is possible
• Integrated method for backing up and recovering SAS content across multiple tiers and machines.
• System-wide tool – it is intended to back up an entire environment, as opposed to a single machine in a multi-machine deployment.
• The tool is installed on the middle tier as part of the SAS Web Infrastructure Platform.
DEPLOYMENT BACKUP AND RECOVERY TOOL (2)

- Connects with the SAS Deployment Agent on each middle-tier and server-tier
  - Metadata server, all registered metadata repositories, repository manager
  - Contents of the Data directories, SASEnvironment directories and server configuration directories for each server on the SAS server tier.
- SAS Content Server repository.
- Databases that are managed by the SAS Web Infrastructure Platform Data Server.
  - By default, all of the databases are backed up. Exclusions can be configured.
  - Additional directories under SAS-configuration-directory/LevN as specified by the administrator.
    (locations referenced by symbolic links are not backed up.)
The components that are required to be running for offline recovery are
- Metadata server (offline mode ok)
- Web Infrastructure Platform Data Server
- Deployment Agent (all machines)

Online operations can be performed with all services running/online, except
- SAS Content Server require manual steps and needs a restart
• BRT is scheduled and executed from the SAS Web Application server running on the mid-tier server.

• REST based web application. (REpresentational State Transfer)
1. User interacts with the Web application using command line utilities installed with SASPlatformObjectFramework
2. Web application / Backup Service contacts the metadata server to define the backup configuration
3. Web application / Backup Service contacts the Deployment Agent / Backup Server on all machines that are part of the backup configuration.
4. Backup Server on each machine performs a local backup and the result/status is returned to Web application / Backup service
The default content, depending on the function of a machine:

- Metadata server
- LevN config directory
  - Content Migration Utility (CMU) is used to backup LevN
    - Data folder
    - <Server Context>/Data folder
    - <Server Context>/SASEnvironment folder
  - Foundation Server Directories under <Server Context> (SASApp, VAApp)
    - <Server Context>/BatchServer, <Server Context>/ConnectServer, <Server Context>/OLAPServer, <Server Context>/PooledWorkspaceServer,
    - <Server Context>/StoredProcessServer, <Server Context>/WorkspaceServer, ObjectSpawner, SchedulingServer, ShareServer, ConnectSpawner
- SAS Infrastructure Data Server (PostgreSQL)
  - All databases that are present in the PostgreSQL server.
  - All PostgresSql server instances in the SAS Web Infrastructure Data Server created by WIP
- SAS Content Server
The configuration file covering the entire deployment is /
/local/sas94/config/LevN/Backup/BackupServer.ini. There is no need to change
this file unless:

- A central vault location has to be added later
  backupserver.shared.vault.dir=<absolute path>
- Content Server location – if reverse proxy is enabled on the mid-tier
  backupserver.scs.host=<mid-tier fqdn>
  backupserver.scs.port=<webserver port>
- The remaining config for the deployment is derived from metadata.
CLI utilities located at
<SASHOME>/SASPlatformObjectFramework/9.4/tools/admin

• Add the location of the backuptool scripts to the path.
  • UNIX
    export PATH=$PATH:/local/sas94/sashome/SASPlatformObjectFramework/9.4/tools/admin
  • WIN
Usage:

Options include
- -help: Print the help information
- -host: Web Server Host if its present otherwise Application Server Host. Required if -profile not set.
- -port: Web Server Port if its present otherwise Application Server Port. Required if -profile not set.
- -user: Specify the user ID of an unrestricted metadata user. Required if -profile not set.
- -password: Specify the password of an unrestricted metadata user. Required if -profile not set.
- -protocol: value for this parameter is either http or https. The default value is http. Provide the value as https if target environment is configured as https type using SDW.
- -profile: Web Server connection profile if its present otherwise Application Server connection profile. Can be used in place of -host,-port,-user, -password,-protocol options. environment.properties file present in the same directory where batch utilities are present.
- -inputdata: User has to provide absolute path of the json file containing optional parameter name and comment. If not provided default value will be used.
- -maxattempts: Number of attempts to execute the request. If not provided then default value is 2. The value provided should be integer.
- -async: Its a optional parameter to start backup asynchronously
-profile <file name> can be used in place of -host,-port,-user, -password,-protocol options. environment.properties file present in the same directory where batch utilities are present.

Example

```
user=sasadm@saspw
host=vasrv.demo.sas.com
port=7980
password={SAS002}BA7B9D061CB4066E47F2455F373B030E
protocol=http
```

Important – host=<FQDN> to middle-tier server
• The most commonly used utilities are shown in bold:

<table>
<thead>
<tr>
<th>SAS DEPLOYMENT BACKUP UTILITY</th>
<th>OPERATION</th>
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<td><strong>sas-list-backup-schedule</strong></td>
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<td><strong>sas-analyze-metadata</strong></td>
<td><strong>sas-port-metadata</strong></td>
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</tr>
<tr>
<td><strong>sas-list-backups</strong></td>
<td></td>
</tr>
</tbody>
</table>
• By default BRT is scheduled to run every Sunday at 01:00.
• To add or remove scheduled runs, run the relevant script with an input file:
  • sas-remove-backup-schedule –profile <...> -inputfile <...>
  • sas-set-backup-schedule –profile <...> -inputfile <...>

Example:

{
    "dayOfWeek": "sunday",
    "time": "01:00"
}

JSON is used to specify attributes and values in the inputfile. See `<SASHOME>\SASPlatformObjectFramework\9.4\tools\admin\conf\sample` for more.
• Backups expire after 30 days and send alerts to the address defined during installation.

• To modify this, run the relevant script with an input file:

  sas-update-backup-config –profile <...> -inputfile <...

Where inputfile contains, for example:

```json
{
    "vaultLocation":"/local/depot/SAS_Deploymentbackup/Utvikling",
    "daysToRetainBackup": 30,
    "scheduledBackupsAllowed": "true",
    "emailToList":["abc@xyz.com", "def@uvw.com"]
}
```
To disable BRT, run the update config script with an input file:
sas-update-backup-config -profile <...> -inputfile <...>

Where inputfile contains:
{
    "scheduledBackupsAllowed": "false"
}
All components are backed up to the following path on their respective host machines: SAS-configuration-directory/LevN/Backup/Vault.
• An alert e-mail is generated if a backup or recovery is unsuccessful. By default, the e-mail is sent to the system administrator e-mail address that was specified in the SAS Deployment Wizard or in the backup config if modified.

• BRT status and history can be displayed and verified with the commandline utility `sas-list-backups`.
  • For the backup sources the `status` property will either be completed or failed
LOG LOCATIONS

- Main logfile
  <CONFIGDIR>/Lev1/Backup/backupserver.log

- Logs specific to backup source
  <CONFIGDIR>/Lev1/Backup/Logs/2014-11-14T19_19_57/backup/ContentServer/ContentServer.log
  <CONFIGDIR>/Lev1/Web/Logs/SASServer1_1/SASDeploymentBackup9.4.log

- Example backup id: 2014-11-14T19_19_57
RUN AN UNSCHEDULED BACKUP

• Create a backup by running the utility sas-backup.

• Update PATH settings
  sas-backup –profile <...>

• Verify the output and check that all components have 'status: completed'.
• Restore can be done either online or offline.
• The backupid has to be known and the Backupvault needs to be accessible in the configured location.
• To find the backupid
  • sas-list-backups –profile <...>
• To run the restore (recover)
  • sas-recover –profile <...> -backupid <...> [-inputdata <...>]
• -inputdata <...> used to provide comments and source selection.
```
{
    "name": "Restore",
    "comment": "Restore of content server and recovery of selected instances of the Web Infrastructure Platform Database",
    "pauseComment": "pausecomment",
    "instanceName": "Web Infrastructure Platform DataServer 94, Fin Mgmt Data Svr 5.4"
    "exclude": ["metadataserver","contentserver","configdir","customdir"]
}
```
• Offline restore requires Metadata Server and Postgres database to be running as well as Deployment Agent running on all machines.

• `sas-recover-offline -profile <...> -backupid <...> [-inputdata <...>]`
• Manual steps are required for SAS Content Server.
1. Stop the TC Server.
2. In `<configlev>\AppData\SASContentServer\SASServer1_1`, copy the contents of the "Copy_of_Repository" folder to the original folder i.e. “Repository" or rename the Copy_of_Repository folder to Repository
3. Run the Data-scs.sql script which is present at the following location (`<webinf\pltminstall\config>\Deployment\Data`)
4. Restart the TC server.
5. It should come up successfully.