

QGRIP

Restore, Clone & Import Database

GRIP ON SOL

2024-04-16

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1 Restore & Clone Jobs

- **Restore**
- **Clone**
- **Import-Database**

The Restore & Clone (RC) jobs are needed for disaster recovery, moving/copying databases and during migrations.

Recommended documentation

Doc-Tab	Title
Jobs	Jobs & Queues
Application	PostClone Script

Queue – RestoreClone (RC)

The jobs are running from the Restore Clone (RC) queue.

The RC jobs can be requested for in the future and a Clone job can be repeatable.

2 RC Jobs – Priority

When a Job is pushed on the Queue the priority will be determined. When several jobs have the same 'start after', the job with the highest priority will be picked up first. The Priority is the sum of the JobType priority and the Destination Environment priority.

Job Type	Prio- Requested
Restore	30
Clone	20
Import-Database	10

Destination Environment	Prio
Production	6
Integration	5
Acceptance	4
Test	3
UnitTest	2
Develop	1

Examples:

Clone to Production Database: $30 + 6 = 36$

Clone to Acceptance Instance: $30 + 4 = 34$

3 Parallel Jobs

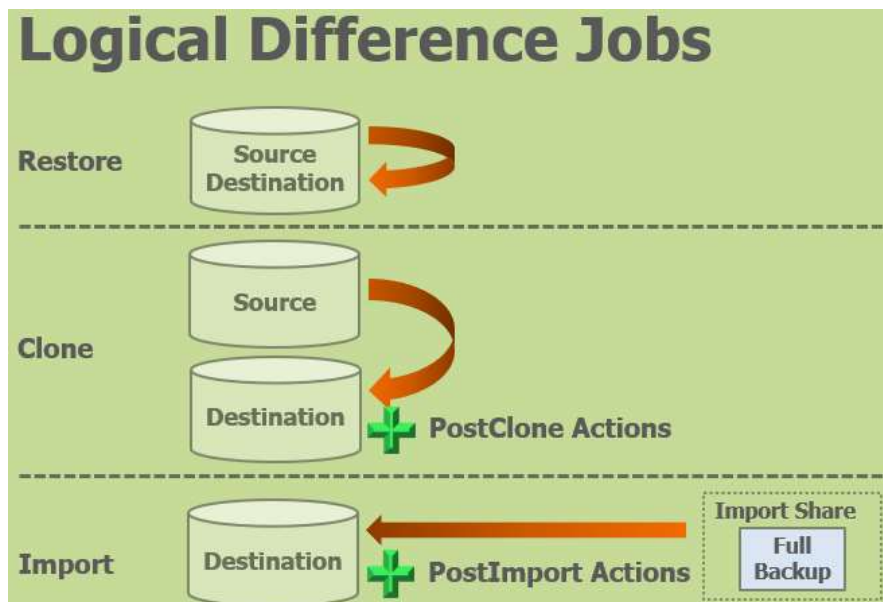


(*) AlwaysOn, all destination replicas.

All jobs will be prevented from starting as long as backup & maintenance jobs are running on the destination Instance (AlwaysOn, all destination replicas). The jobs will also be prevented from starting as long as another Restore / Clone job is running on the destination database.

4 Restore-Clone Jobs

Restore-Clone jobs are started from the Restore-Clone (RC) queue. Technically, the jobs do about the same and they all restore a backup from a backup share but there are some differences.



After all of these jobs, the table “[dbo].[QGripDBHistory]” will be filled in the destination database with a record of the executed job. If the table does not yet exist, it will be created.

Important

- No backup will be made of the Destination database prior to the Restore/Clone action.

- The Destination database is set to SINGLE_USER prior to action and all users will be thrown out (ROLLBACK IMMEDIATE).
- QGrip does not in advance check if there is enough space available.
- Duration of Restore/Clone actions strongly depend on size backup files, speed of your disks and network.
- Clone/Import of databases with FILESTREAM is not supported.
- Restore of databases with FILESTREAM has not yet been tested.
- A full backup is always triggered of the destination database when the job has finished.

Pre-requests

Destination Database

- Existing database
- Linked to an application
- Application not marked as IsService



Clone

- Source & Destination linked to same Application

Restore & Clone

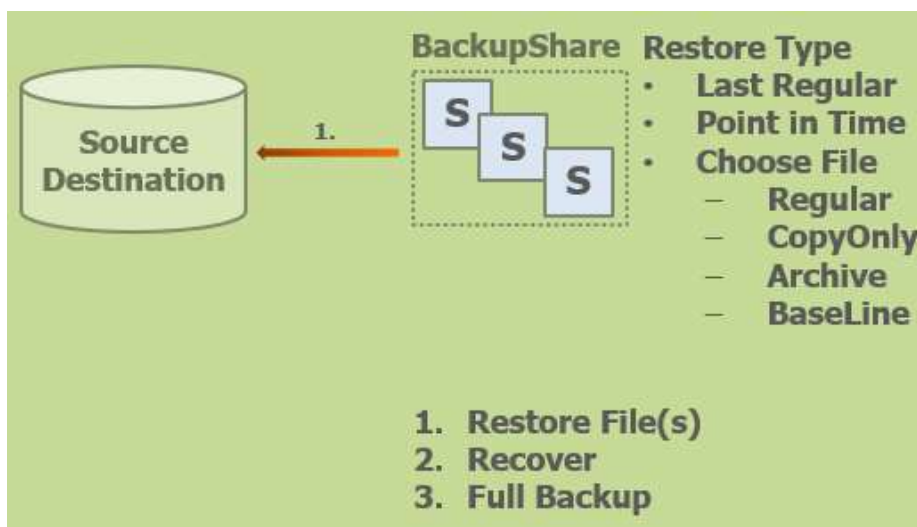
- Backup made by QGrip

Import Database

- Full backup file on Import Share



5 Restore Database



Restore Types

Restore Type	Description
Last Regular	Restore the last available regular (FULL, DIFF, TRAN) backup file. AlwaysOn: FULL_COPYONLY, TRAN.
Point in Time	Restore database to certain Date/Time. Only possible if Database recovery model is Full or Bulk-Logged and TRAN backups are available.
Choose File	Choose the backup file you want to restore.



Restore Specification

StartAfter: 2021-01-16 14:40

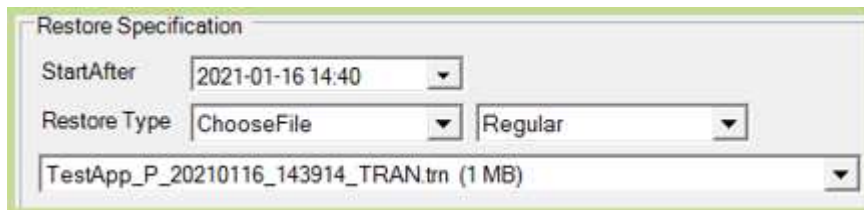
Restore Type: Last Regular

Restore Specification

StartAfter: 2021-01-16 14:40

Restore Type: PointInTime

RestoreUntil: 2021-01-16 14:40



Restore Specification

StartAfter: 2021-01-16 14:40

Restore Type: ChooseFile Regular

TestApp_P_20210116_143914_TRAN.trn (1 MB)

6 Clone Database

When a Clone job starts, Destination database needs to be online as information is collected from the databases during the preparation.

Rename Data/Log files

The physical/logical data and log files are always moved/modified to the data/log directory of the Destination Database and the names will be changed using <DestDB> as base.

File Type	File Number	New Physical Name	New Logical Name	Example
Data	First File (N=1)	<DataDir>\<DestDB>.mdf	<DestDB>	DestDB
Data	File N (N > 1)	<DataDir>\<DestDB>_N.ndf	<DestDB>_N	DestDB_2
Log	First File (N=1)	<LogDir>\<DestDB>_log.ldf	<DestDB>_log	DestDB_log
Log	File N (N > 1)	<LogDir>\<DestDB>_N_log.ldf	<DestDB>_N_log	DestDB_2_log

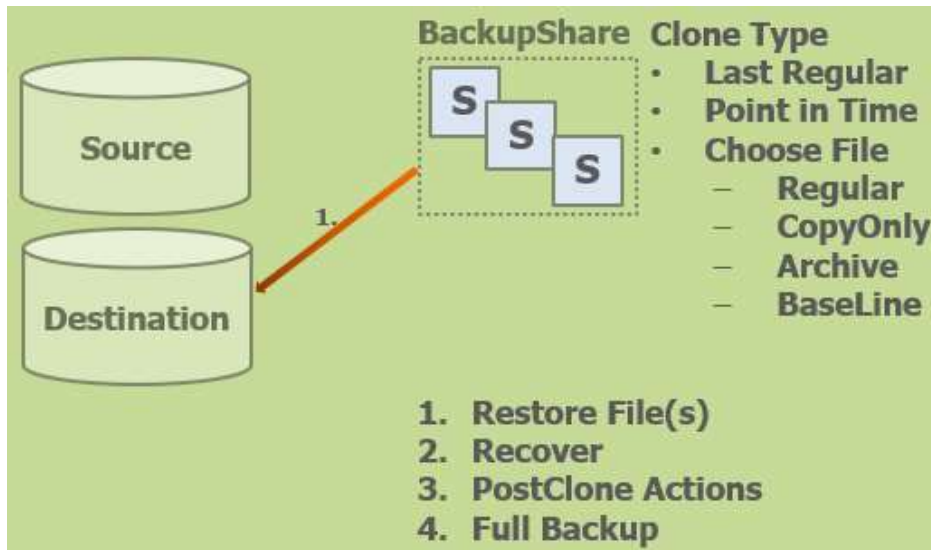
Recovery Model

After the Clone action database recovery model of Destination database will be restored.

PostClone Actions

Are described in separate section in this document.

6.1 Clone Database (Simple)



Clone Types

Clone Type	Description
Last Regular	Restore the last available regular (FULL, DIFF, TRAN) backup file from Source. AlwaysOn: FULL_COPYONLY, TRAN.
Point in Time	Restore database to certain Date/Time. Only possible if Source Database recovery model is Full or Bulk-Logged and TRAN backups are available.
Choose File	Choose the backup file you want to restore from Source.

Clone Specification

StartAfter: 2021-01-16 15:19

Clone Type: Last Regular

RestoreUntil: 2021-01-16 15:19

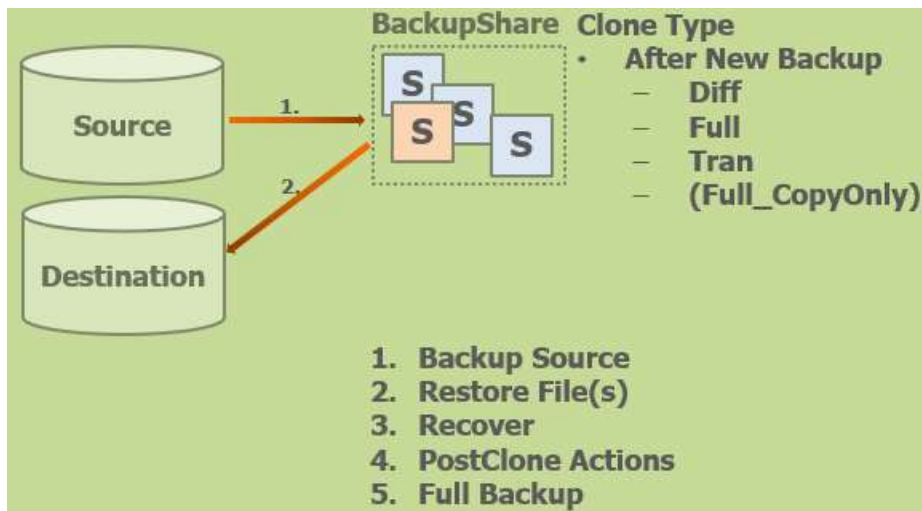
Clone Specification

StartAfter: 2021-01-16 15:19

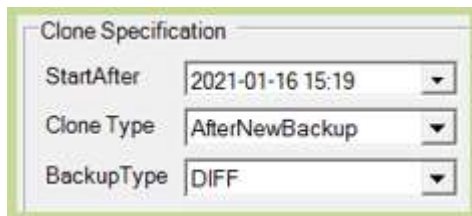
Clone Type: ChooseFile, Regular

TestApp_P_20210116_150000_TRAN.trn (1 MB)

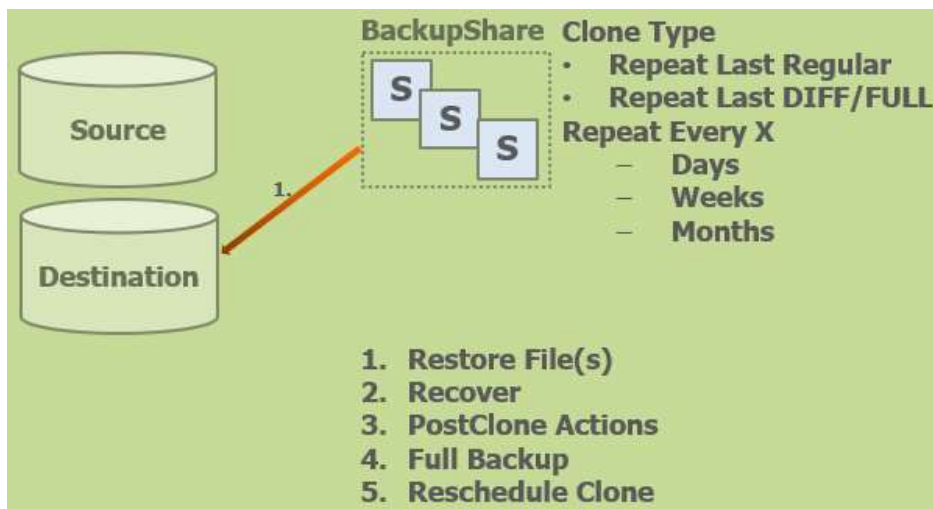
6.2 Clone Database (After New Backup)



Clone Type	Description
After New Backup	Make a new backup of source database and use that backup for the Clone.



6.3 Clone Database (Repeat)



Clone Types

Clone Type	Description
Repeat Last Regular	Schedule the Clone Action Daily/Weekly/Monthly using the last available regular (FULL, DIFF, TRAN) backup file from Source. AlwaysOn: FULL_COPYONLY, TRAN.
Repeat Last DIFF/FULL	Schedule the Clone Action Daily/Weekly/Monthly using the last available DIFF or FULL backup file from Source.

AlwaysOn: FULL_COPYONLY.



Repeatable clones can only be requested by QGrip-Admin.

6.4 Clone Database (Multi-Phase)

QGrip Logshipping

First Phase

- At Start After

2 – N Phase

- Every x Minutes

Last Phase

- At Finish After
- Can be manually triggered

Clone Type

- Multi-Phase

Finish After

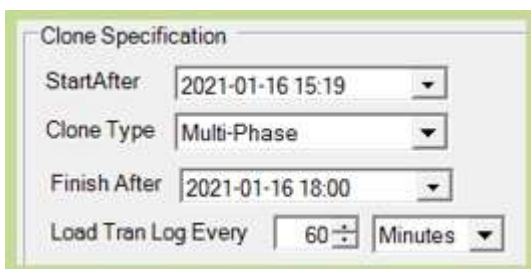
- yyyy-mm-dd HH:mm

Load Tran Log

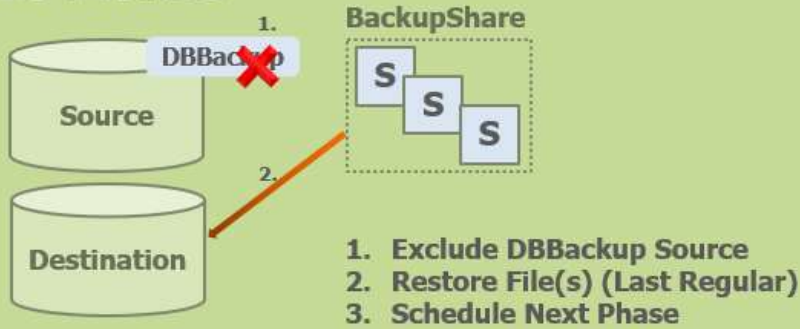
- Every x Minutes

Clone Types

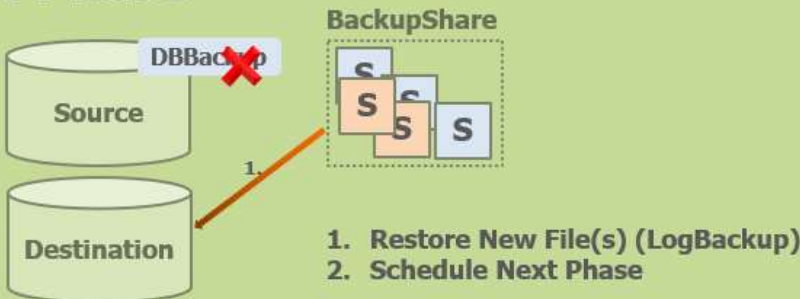
Clone Type	Description
Multi-Phase	Restore all available regular (FULL, DIFF, TRAN) backup file from Source. AlwaysOn: FULL_COPYONLY, TRAN. Every x minutes, restore all new TRAN backups. Last phase, take new TRAN backup of Source and restore all new TRAN backups.



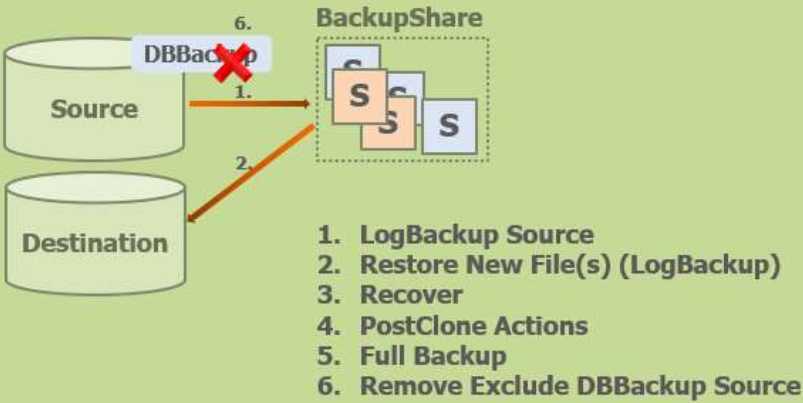
First Phase



2-N Phase

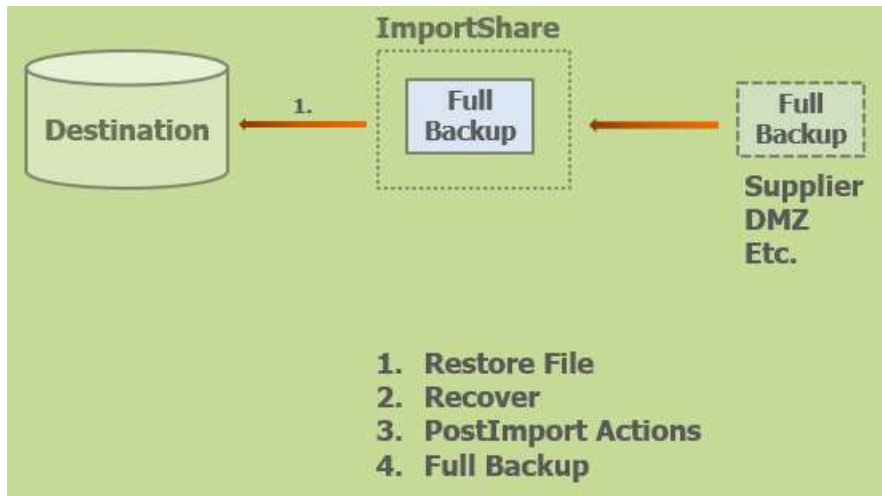


Last Phase



Multi-Phase Clone can only be requested by QGrip-Admin.
Minimal downtime when moving/migrating databases.
Applications only need to be brought offline during the last phase.
Last phase can be triggered manually.

7 Import Database



The screenshot shows the 'Import-Database Specification' dialog box with the following fields and values:

- StartAfter: 2021-01-16 16:24
- Domain: AD
- Share: Import
- LastScan: 2021-01-16 16:28:35
- BackupFile: VMSQL2016\$TST_PushyT_20210116_162402_FULL bak

Buttons for 'Re-Scan' and 'Details' are also visible.

Import-Database can only be requested by QGrip-Admin.

8 PostClone Actions

- Database Owner
- General Settings
- Other Updates
- Drop/Create Users

For both Clones and Import Database you can define “PostClone Actions” after the recovery of the database by running scripts. If you Clone a database from Acceptance to Develop, the database users (Acceptance) need to be replaced with the corresponding Develop users. If you Clone a database from production to another environment you should also consider Scrambling/Anonymising data that should not be visible in the destination environment. Check with your security officer what your policy is concerning this topic.

Post Clone Actions

Default DBOwner

General Settings

Other Updates

Drop/Create Users

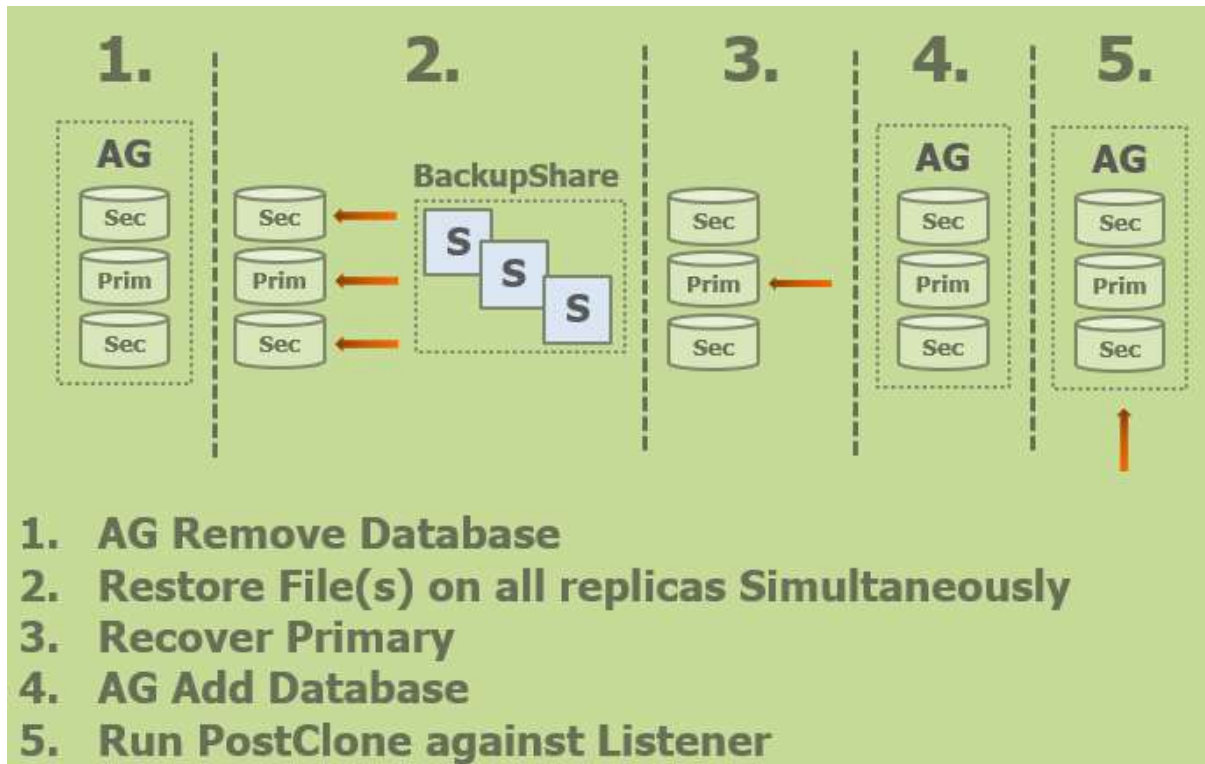
For more information on the Post Clone Script see Application: PostClone Scripts.
Here is a summary.

PostClone Actions	Description
1. General Setting	This should be a global script for your whole organisation with rules that should apply to all databases and environments. For instance, always migrate the database to the current version of the SQL Server instance.
2. Other Updates	Anonymising data, update config/parameter tables, change environment dependant synonyms, etc.
3. Drop/Create Users	A Post Clone script to drop and/or create users.

2, 3 are per application.

9 AlwaysOn

QGrip simplifies Restores, Clones and Import databases in an AlwaysOn cluster. The following actions are automated:

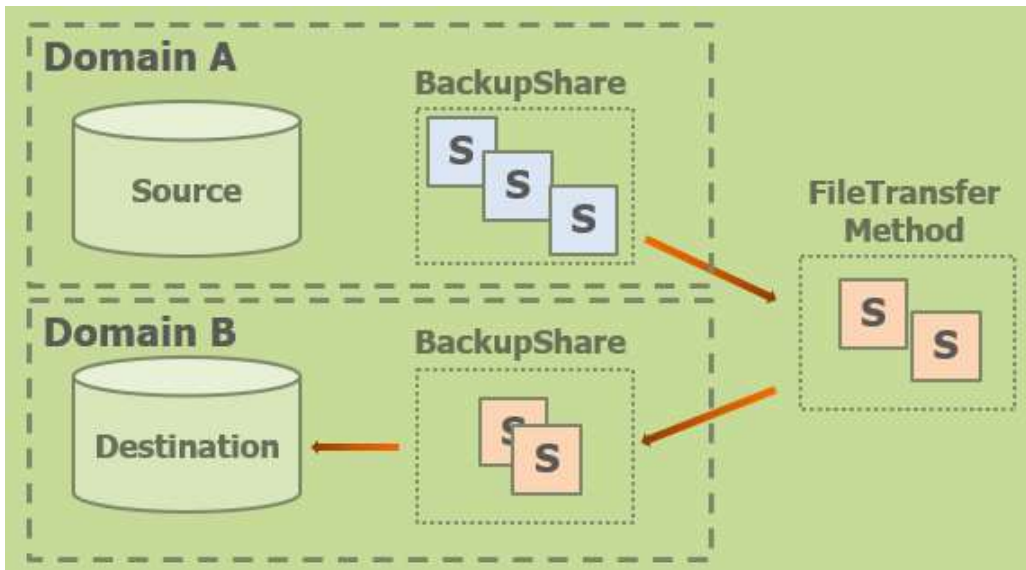


If new logins are created in PostClone scripts, QGrip will automatically create them (with the same SID and password) on all Replicas. If applicable, passwords will be added to the Password Safe for all Replicas.

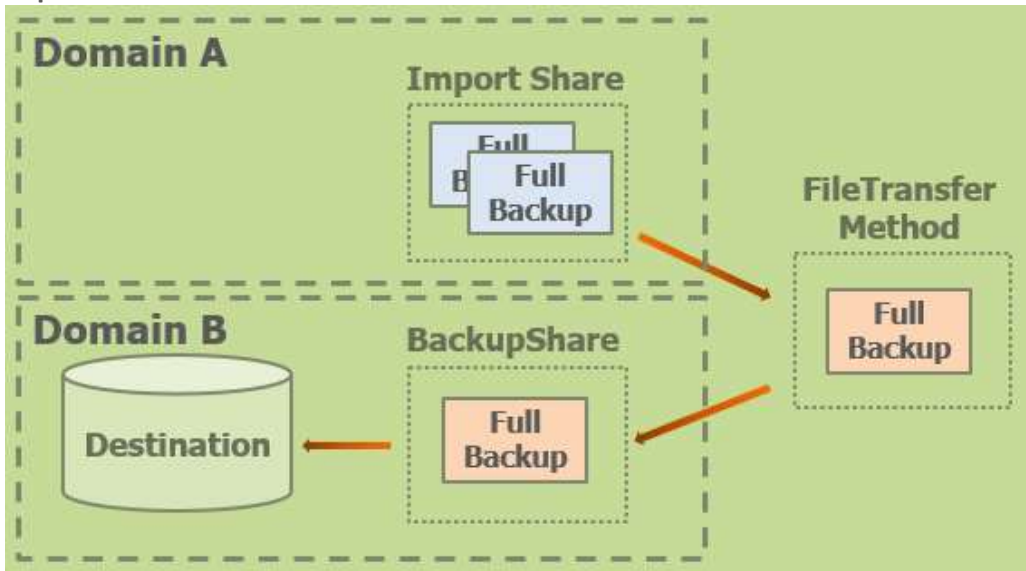
10 Multiple Domains

Clones (all clone types) and Import Databases across different AD-Domains is supported and fully automated as long as the FileTransfer-Method is defined.

Clones



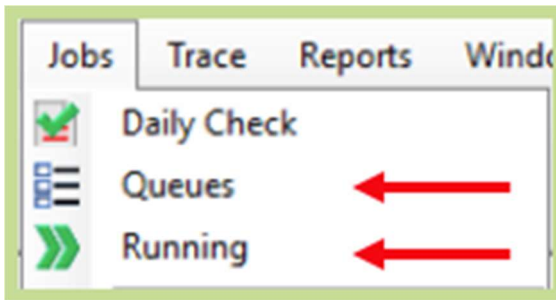
Import Database



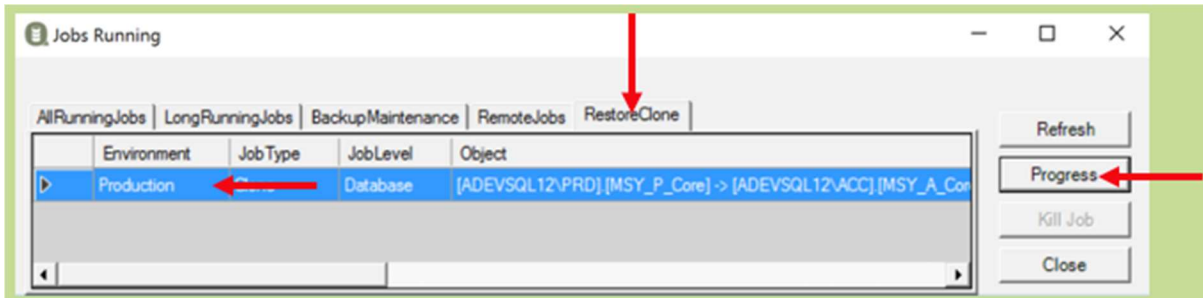
Only one Import Share in one domain is needed!

11 RestoreClone - Progress

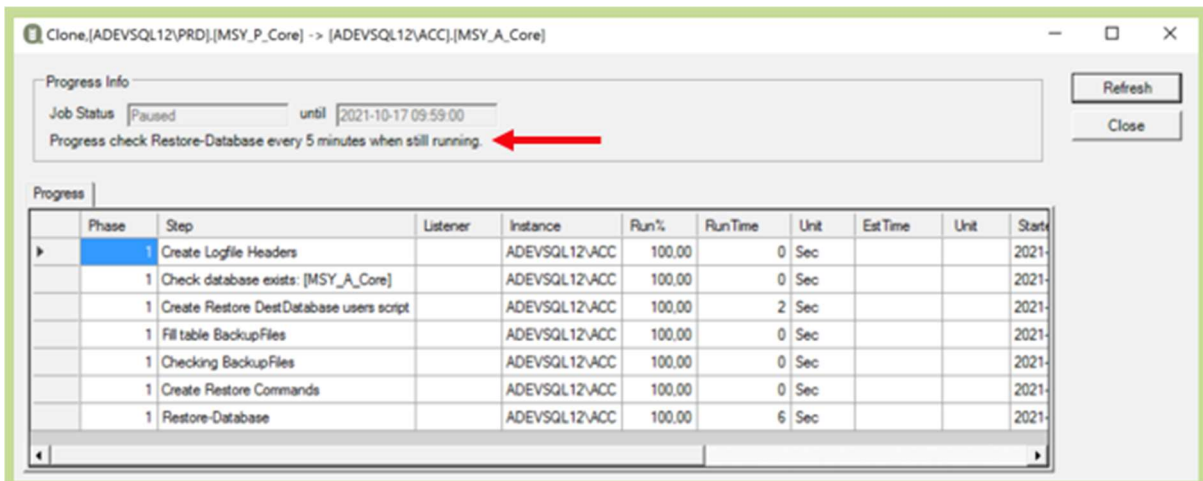
When a Restore, Clone or Import-Database job is running, you will be able to see the Progress of the job. A separate job will be triggered run every 5 minutes to see how far the Restore of the database has come, and an estimate of time remaining will be shown. The progress can be found in the QGrip-UI.



In the Jobs menu, open Queues or Running.



Select the RestoreClone tab page, this will enable the Progress button. Select the row of the required job and hit Progress.



In the Progress window you will be able to see what the job is currently doing and if you are Restoring a large database an estimate will be given of how long it will take.