BIM Server 21 Backup Guide

Contents

Choose backup levels

1st level – Project and Library snapshots

Backing up:
- Server data of Projects (BIMProject)
- PLN snapshots on the Server
- Each user's Local Cache (PLA)

Useful:
- when project is damaged (most of the cases)
- optimized for minimal data loss

Pros:	Cons:
Consistent (hourly snapshot)	Recovery time
Automated	Restore one by one
Accessible	Version dependent

2nd level – Full BIM Server Data backup

Backing up:
- BIM Server Manager data
- Server module data / BIMProject and BIMLibrary files

Useful:
- when BIM Server gets damaged (rarely)
- restore BIM Server on the same/on a different machine
- Frequency: daily (overnight – outside of work hours)

Pros	Cons
Full BIM Server recovery	Synced databases required
Scripted	Services have to be stopped
	'Same' BIM Server required

3rd level - Operating System snapshot

Backing up:
- Snapshot of the Virtual Machine

Useful:
- when OS or computer hardware is damaged (little chance)
- quick recovery

Pros	Cons
Full recovery (OS + BS)	Synced databases required
Automated	Services have to be stopped
Replica server	Management of VMs

1ˢᵗ level – Project and Library snapshots

With BIM Server Manager's built in Snapshot solution all Teamwork projects can be automatically backed up hourly, which minimizes data loss in case a project file gets damaged. The team can easily revert back to an earlier version of the project at any time.

Backup on the BIM Server

- **Snapshot options**
  Two options are available out of the box to save project backups onto the BIM Server:
  - Server data of project in .BIMProject format
  - PLN backups uploaded to the BIM Server

- **Scheduling snapshots**
  Snapshot schedule can be set up individually for all Projects in the BIM Server Manager. If a server contains multiple large projects it is advised to define different times for each in order to avoid peaks in the BIM Server hardware usage.

- **Managing snapshots**
  Manage existing snapshots from the BIM Server Manager. Based on these any project can be reverted to an earlier stage or imported on another server. Since the backups are stored within the BIM Server it's worth to keep a copy offsite as well. Location of snapshots on the server:
  Windows: C:\Program Files\GRAPHISOFT\BIM Server 21\BIMcloud Server 21\Projects\Project GUID\Backups
  OS X: System drive/Applications/GRAPHISOFT/BIM Server 21/BIMcloud Server 21/Projects/Project GUID/Backups

Backup on the client machines

Each user who is joined into the Teamwork project has a local copy of it on their client machine. This local cache is being synchronized with the server data at every Send & Receive. Saving the project off in a PLA format functions as a backup of the project that includes server libraries as well.

Restore Snapshots on the Server

[Snapshots can be restored](#) on the BIM Server by importing the BIMProject files in the Manager interface. PLN and PLA backups can be restored with re-sharing these files from ARCHICAD to the BIM Server.

2nd level – Full BIM Server Data backup

Backing up not only projects and libraries, but also all the Manager Data (users, roles, server settings, etc.) is the way to minimize any kind of data loss of BIM Server. Having such backup can also lower the disaster recovery time. Make sure to have an offsite backup as well.

By exporting both Server and Manager Data from your BIM Server you will be able to fully restore it on the same computer.

Outline of the full BIM Server Backup and Restore

1. **Export Manager Data** - copy configuration and user databases
2. **Export Server Data** - there are two options to back up Server Data:

	(A) Backup all Server db files	(B) Backup BIMProjects and BIMLibraries
pros	robust solution, works very stable	saves only the necessary data flexibility in restoring some/all projects
cons	saves more data than necessary service has to be stopped	delicate solution needs more attention

3. **Import** - move the exported backups into a BIM Server installation

Performing any of the above backup options is recommended outside of office hours only. Option (A) requires the services to be stopped while option (B) can cause a significant amount of load on the BIM Server Module in case of many and/or large projects.

Backup BIM Server Manager Data

- **Folders to be backed up**
  There are two folders that need to be copied to the backup AS IS:
    - Config
    - Data
  Default location of these folders:
  OS X: System drive/Applications/GRAPHISOFT/BIM Server 21/BIMcloud Manager
  Windows: C:\Program Files\GRAPHISOFT\BIM Server 21\BIMcloud Manager

Note: It is possible to define an alternate location for the Data folder in the BIM Server Manager. Make sure to include it in the backup.

- **Before performing the backup**
  It is NOT necessary to stop the BIM Server Manager Service when the files are copied. Though they should not be zipped before copying, since the process of zipping could prevent the manager from writing/reading from the files.

- **Run the backup with scripts**
  Instead of copying the folders manually, you can use a script to make this automated. Scripts can also be scheduled to run regularly, read more about this in the section: *Scheduling Backups*. Example scripts can be downloaded together with the BIM Server Module scripts below.

(A) Backup BIM Server Module Data

- **Folders to be backed up**
  There are five folders in the BIMcloud Server 21 folder that need to be copied to the backup AS IS:
  - Attachments
  - Config
  - Mailboxes
  - Projects
  - Sessions

  Default location of these folders:
  OSX: System drive/Applications/GRAPHISOFT/BIM Server 21/BIMcloud Server 21
  Windows: C:\Program Files\GRAPHISOFT\BIM Server 21\BIMcloud Server 21

  Note: It is possible to define an alternate location for Projects and Attachments folders of the BIM Server Module. Make sure to include these in the backup.

- **Before performing the backup**
  The BIM Server Module's service must be stopped before the files are copied. Services can easily be stopped with the BIM Server Tray icon or manually with these instructions. Copying the above folders may take a significant amount of time therefore it is strongly recommended to perform this backup outside of office hours only.

- **Run the backup with scripts**

  Instead of copying the folders manually, you can use a script to make this automated. Scripts can also be scheduled to run regularly, read more about this in the section: *Scheduling Backups*. Example scripts are available here both for Mac and PC.

  These scripts contain stopping the service, backing up files and restarting the service. Please note that the scripts keep the last backup only. Make sure to keep more backups by continuously saving these to an external site as well. To set up the scripts for your environment follow the points below:

  PC Script

  1. Adjust path for **ManagerDir, ManagerDataDir**, **ServerDir, ProjectDir, LibraryDir** and **localBkUp**
  2. Run the script from an Administrator Command Prompt

  Mac script

  1. Make the script executable on your machine. To do this open Terminal and type **chmod +x "/Path/For/The/Backup/Script.sh"**
  2. Adjust path for **ManagerDir, ManagerDataDir**, **ServerDir** and **localBkUp**
  3. Run the script from Terminal with sudo prefix

(B) Backup BIMProject and BIMLibrary files

- **Use Backup Tools**

  Rather than exporting BIMProjects one by one from the BIM Server Manager interface, you can use GRAPHISOFT Backup Tools to export all projects and libraries at once from the command line. Use the below Backup tools from the installed BIMcloud Server 21 folder (.../GRAPHISOFT/BIM Server 21/BIMcloud Server 21)
  - **TeamworkServerBackupTool** (exports Projects and Libraries)
  - **TeamworkServerProjectStoreBackupTool** (exports Projects)
  - **TeamworkServerAttachmentStoreBackupTool** (exports Libraries)

  For these export tools there is only one required parameter – the folder where the exported items will be put. Elevated permission is required to run these commands. On a PC make sure you are in a Command Prompt window owned by the Administrator (right click on Command Prompt "Run as Administrator"). On a Mac you need to prefix the command with "sudo".

  To use these Tools change the active directory to the BIMcloud Server 21 folder in Terminal/Command Prompt with the **cd** command, enter the name of the Tool you

would like to use and the path where you would like to export the Project and/or Library data. Example:

```
BIMcloud Server 18 — bash — 87×10
kezer-cs-mbp:BIMcloud Server 18 cskezer$ sudo ./TeamworkServerBackupTool "/BC 18 BkUp"
Password:


Server archive created successfully.

Attachment containers archived: 3.
Projects archived: 8.

See ServerBackupTool.log file for further details.
```

```
Administrator: Command Prompt                                          —  □  ×
C:\WINDOWS\system32>cd "C:\Program Files\GRAPHISOFT\BIM Server 18\BIMcloud Server 18"

C:\Program Files\GRAPHISOFT\BIM Server 18\BIMcloud Server 18>TeamworkServerBackupTool "C:\BC 18 BkUp"


Server archive created successfully.

Attachment containers archived: 4.
Projects archived: 6.

See ServerBackupTool.log file for further details.
```

To see other options for each command run the command without any parameters and the help will be printed out to the Command Prompt or Terminal window.

- **Run the backup with Scripts**

  Instead of running the Backup Tools manually, you can use a script to make this automated. Scripts can also be scheduled to run regularly, read more about this in the section: *Scheduling Backups*. Example scripts are available here for both Mac and PC. These scripts contain backing up Manager data, BIMProject and BIMLibrary files without stopping the BIM Server services. Adjust path for the BIM Server components and the Backup folder's location to match your environment. Please note that these scripts keep the last backup only. Make sure to keep more backups by continuously saving these to an external site as well.

  PC Script

  1. Adjust path for **ManagerDir, ManagerDataDir**, **ServerDir** and **localBkUp**
  2. Run the script from an Administrator Command Prompt

  Mac script

  1. Make the script executable on your machine. To do this open Terminal and type **chmod +x "/Path/For/The/Backup/Script.sh"**
  2. Adjust path for **ManagerDir, ManagerDataDir**, **ServerDir** and **localBkUp**

3. Run the script from Terminal with sudo prefix

Scheduling Backups

Scheduling backup scripts is a nice way to automate backup creation of your BIM Server. Use the techniques explained below according to your operating system. Once a backup is created make sure to create an offsite copy of it as well.

Schedule PC Backup Scripts to Run Unattended

Use Windows Task Scheduler

- Open the Task Scheduler and create a new folder for the tasks, like **BIM Server**
- Within the folder right click and Create Task….
- General Tab:
  - Name it for example **Backup BIM Server Data**
  - Choose an Administrator user account that has a password which won't expire
  - Choose to *Run whether user is logged on or not*
  - Tick the *Run with highest privileges* checkbox
- Triggers Tab:
  - New…
  - Begin the task: *On a schedule*
  - Specify the frequency and time to run (for example run daily at 10:00 pm)
  - Make sure the *Enabled* checkbox is turned on, then OK the dialog
- Actions Tab:
  - New…
  - Action: *Start a program*
  - *Program/Script:* Browse for the .bat file you would like to run.
  - *Start in:* If your .bat file calls other files make sure to add the path here for the folder where the scripts are located. If the folder is not specified here only one bat file will run that is defined in the *Program/Script* field.
- After clicking OK on the Create Task dialog add your password as required for the account that will run the task

A more detailed description on how to schedule scripts is available [here](#).

Schedule Mac Backup Scripts to Run Unattended

Outline of scheduling a script to run on OS X:
1. Creating a plist file that configures the time and environment in which the backup script will run.
2. Giving correct ownership for the plist file

3. Locating that plist file appropriately on the computer.
4. Starting/Stopping the daemon (background process) that runs the script on its schedule.

1. Creating the plist file

The plist file is a daemon configuration file, here is a short description of the tags that can be found in the plist:

- **Label** should be the name of the plist file minus the "plist" extension. It is used for listing.
- **ProgramArguments** determines the location and name of the backup script that will be run at the scheduled time.
- **Nice** determines the priority of scheduling the process. The lower the number the more CPU percentage will be delegated to the process. Values can be set up between -20 and 20. Value 1 used in the example scripts proved to perform the process quickly and reliably.
- **StartCalendarInterval** determines when the backup script will be run:
  o The **com.example.BkUpDaily.plist** file is set to run the backup script at 2:01AM daily. The clock is a 24 hour clock. If The **Hour** key had been left out it would run on the first minute of every hour.
  o The **com.example.BkUpWeekly.plist** file is set to run the backup script at 6:30PM on every Sunday. It uses the **Weekday** key. The days are numbered starting with 0=Sunday, 1=Monday,... 6 =Saturday.
- **WorkingDirectory**, **StandardErrorPath**, and **StandardOutPath** are directories where the script will work in, output its errors, and output its standard output respectively.

The example plist files can be found [here](#).

2. Change ownership for the plist file

Once downloaded the ownership of the plist file will be set for the user account you are currently signed in with. However, the plist file will work correctly only if the owner is set to the root. The owner can be changed by opening Terminal and typing the following:

sudo chown root:wheel "/Path/To/The/example.plist"

Hit Return to execute the command and enter the admin password when requested to make the change.

3. Locating the plist file on the computer

It also matters where the plist file is located on the computer. The launchd daemon looks for plist files in several places. There are two useful places to put plists for backup scheduling: ~/Library/LaunchAgents
        /Library/LaunchDaemons

The user specific LaunchAgents directory is a good place for initial testing. When a user logins into the computer the LaunchAgents directory is automatically searched and the plist files that are there are used to configure the environment. The background processes controlled in this case will only run as long as the user is logged into the machine.

On the other hand the LaunchDaemons directory will be searched when the computer is first started and these plist configurations will remain intact for as long as the computer is running. So, the LaunchDaemons directory should be used in general when you are confident of your backup scripts.

4. Starting/Stopping the daemon controlled processes

The plist file will start working only after its daemon controlled background process is loaded into the OS. To load a plist file use one of the following Terminal commands (depending on where you placed your plist file):

sudo launchctl load /Library/LaunchDaemons/Example.plist
launchctl load ~/Library/LaunchAgents/Example.plist

If there is a need to stop the script that is configured by the plist, it must be unloaded. The control is done with the following Terminal commands:

sudo launchctl unload /Library/LaunchDaemons/Example.plist
launchctl unload ~/Library/LaunchAgents/Example.plist

If you would like to modify the plist file after its loaded you will have to unload it first, make the change and then load it again. The **sudo** command is necessary only if the service is run as a system wide process. Also note the directory where the plist has been placed.

(A) Restore BIM Server Data

- **Before performing the restore**
  BIM Server Data files can only be restored into the same installation where the backup was made from.

- **Restore process**
  Both the BIM Server Manager and Server Module services need to be stopped for the time of the restore. Stop services from the BIM Server Tray icon.

  Overwrite the following BIMcloud Manager folders from Backup:
    .../BIMcloud Manager/Config
    .../BIMcloud Manager/Data
  Overwrite the following BIMcloud Server 21 folders from Backup:
    .../BIMcloud Server 21/Attachments
    .../BIMcloud Server 21/Config
    .../BIMcloud Server 21/Mailboxes

Restart the BIM Server Manager and Server Module services.

(B) Restore BIM Server Manager, BIMProject and BIMLibrary files

- **Restore a few Projects**
  In case only some project files got damaged you can restore these by <u>manually importing them</u> in the BIM Server Manager interface.

- **Restore many/all Projects & Libraries**
  To avoid importing projects one by one you can use GRAPHISOFT Restore Tools as a batch import. In the installed BIMcloud Server 21 Folder there are three tools we can use for the import process:
  - **TeamworkServerRestoreTool** (imports both Projects and Libraries)
  - **TeamworkServerProjectStoreRestoreTool** (imports Projects only)
  - **TeamworkServerAttachmentStoreRestoreTool** (imports Libraries only)

  With both of the above import tools there is only one required parameter – the folder where the data for the import is located. Run the above restore tools the same way you ran the backup tools in section: *(B) Backup BIMProject and BIMLibrary files.*

  Once the project and library data is imported to the BIM Server Module we have to <u>synchronize these changes</u> with the BIM Server Manager as well. To do so:

  - open the Manager Web interface
  - go to the Modules panel and select the v21 – Module
  - in the Projects and Libraries tabs the newly imported Projects and Libraries appear with an **Unused** status
  - select the projects you would like to synchronize, choose the Load as New option to restore them to a chosen folder
  - after this the projects will appear in the Projects' list

- **Restore full BIM Server Data**
  Restoring the BIM Server Manager Data plus all BIMProject and BIMLibrary files is only necessary when a BIM Server database got corrupt and the software is unusable.

  <u>1. Re-install BIM Server on the machine</u>

  Before proceeding with the restore uninstall the corrupt BIM Server and install a new empty BIM Server with exactly the same parameters:
  - Operating System

- Folder structure for the BIM Server (Manager Data folder can have a special location!)
- Computer name
- Fully Qualified Domain Name/fixed IP address

2. Restore Manager Data and Configuration files:

- stop the BIM Server Manager service
- overwrite the following folders from your Backup:
    - …/BIMcloud Manager/Config
    - …/BIMcloud Manager/Data
    - …/BIMcloud Server 21/Config
- restart the BIM Server Manager Service

3. Restore Projects and Libraries

Import BIMproject and BIMLibrary files with the GRAPHISOFT Restore Tools. In the installed BIMcloud Server 21 Folder there are three tools we can use for the import process:
- **TeamworkServerRestoreTool** (imports both Projects and Libraries)
- **TeamworkServerProjectStoreRestoreTool** (imports Projects only)
- **TeamworkServerAttachmentStoreRestoreTool** (imports Libraries only)

With both of the above import tools there is only one required parameter – the folder where the data for the import is located. Run the above restore tools the same way you ran the backup tools in section: *(B) Backup BIMProject and BIMLibrary files.*

Once both the Manager information and the Projects & Libraries are restored, the BIM Server is fully restored.

3rd level – Operating System snapshot

Backing up the whole server application – the program itself with all hosted content (users, projects, libraries) is highly recommended when it comes to data safety. Having such backup can significantly lower the disaster recovery time. Make sure to have an offsite backup as well.

With backing up the entire computer - be it a Virtual Machine image file or mirroring it directly onto a replica server - this is the solution that provides the lowest downtime in case of a BIM Server or Operating System malfunction. That being said this backup solution does require the BIM Server services to be stopped and its databases to be synced when the backup is performed, therefore it cannot be run during office hours.

As a result a **full backup sequence** looks like:
- stop BIM Server services/daemons
- perform the backup
- start BIM Server services/daemons

Upon restoring the Virtual Machine image or replicating the server onto another machine the original Fully Qualified Domain Name has to be assigned to the new server.