

# System Restore

KEEPIT A/S

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# 1 Introduction

When properly configured, Keepit can back up a full Windows Server including all installed applications, their data and all user settings and data. This backup can be used for disaster recovery; the entire backup can be restored “in-place” over a bare Windows installation on another server.

In order for a full system restore to be successful it is important that both the backup and the restore are carried out correctly. This document describes the necessary steps.

No amount of documentation takes away the need for field testing; it is imperative that disaster recovery is tested in the environment it will be used; the people who will carry out these operations must be familiar with the procedures.

# 2 Backup

## 2.1 Keepit revision

Not all Keepit versions support backing up a system in a manner that will allow a system recovery.

You must use Keepit version 3.0, build number 2201 or later.

## 2.2 Backup set selection

You must use the “Advanced” backup selection page and you must select the entire drive that Windows is installed on, as well as the entire drives that applications and data reside on. On many typical systems, everything is on **C:** and in this situation **C:** must be selected for backup in the advanced backup set selection page.

## 2.3 Backup execution

It is perfectly fine to let Keepit automatically run backups every day. However, you cannot perform a system restore if you do not have a complete backup.

It is imperative that you monitor your backup operations and make sure that backups are successful.

# 3 Restore

## 3.1 Preparing for restore

You must install a Windows system that is *similar* to the system that was backed up. It is impossible to describe precisely how close the systems must match, but here are some guidelines:

- The same drive letters must be configured
- Windows must be installed on the same drive letter
- The drives must be sufficiently large to hold the restored data
- The Windows versions must match
- Both the backed up and the restore system must be fully updated using Windows Update

Keepit must be installed on the restore system and one must sign in using the correct account and selecting the correct machine. Be sure to disable all backup days, to prevent Keepit from accidentally starting a backup in case the restore operation is interrupted and delayed.

Go to the “Restore” page and select “Show all backups”. Here you must verify with recent backup is a “complete” backup. If the most backup used is “incomplete”, the system restore may not result in a functional system.

## 3.2 Keepit revision

The same restrictions apply to restore operations as backup operations; see Section 2.1 for details.

## 3.3 Starting the restore

Make sure the Keepit graphical user interface is started and that you can see the status page.

Start a Command Prompt. Go to the Keepit installation directory. Find the most recent \*.ver sub directory and cd into that. Here you must type the command:

```
kcli.exe restore all system
```

This will start a full system restore using the most recent backup. You can follow the progress from the graphical user interface.

If it is not possible to use newest backup, it is possible to use a previous backup. This is possible from Keepit version 3.0 and onwards.

First, find the backup that you want to use, by typing the command:

```
kcli.exe show history
```

This will give you a list of all the backups taken. From this list, pick a backup that is not incomplete, and make a note of the PIT (Point in Time) used, formatted with Year, Month, Day Hours and Minutes: `yyyymmddThhmmZ`

Make a note of the fact, that it is IMPORTANT that the backup is complete, if it is not, the system restore will absolutely fail.

Next comes the command for doing a system restore using this PIT, write the following command:

```
kcli.exe restore time PIT all system
```

This should start a system restore using the selected PIT.

IMPORTANT: If your restore is in any way interrupted, you have to start over. If you do not, the system restore will fail.

## 3.4 Example

First thing to do is to find the PIT of the backup we want to make a system restore of.

```
kcli.exe show history
```

This will show us a list of all the backups that have been taken, e take note that the backup that is 'Incomplete' cannot be used for the system restore.

```
20110913T0203Z Covered 52,9 GB in 73255 files
20110912T0441Z Covered 52,6 GB in 73199 files
20110911T1019Z Covered 52,4 GB in 73192 files
20110910T1130Z Covered 52,4 GB in 73190 files
20110909T1556Z Covered 52,4 GB in 73191 files
20110902T0238Z Covered 52,2 GB in 73007 files
20110901T1502Z Incomplete
```

We choose to use the PIT from September 11: 20110911T1019Z We use this PIT in the next action, starting the restore.

```
kcli.exe restore time 20110911T1019Z all system
```

This will start the restore and once this is completed, go on to the next Section.

## 3.5 Booting to the new system

Once the restore is complete, you should copy the Keepit log files (named `keepit.log` from the Keepit installation directory to some other location (another server or a USB stick). These log files will be invaluable if it becomes necessary to troubleshoot the restore operation.

You now need to reboot the system to complete the restore.

Please be aware that the boot sequence will be *unusually* long, as Windows will be finalizing the restore operation during the boot sequence. Some Windows versions show a black (empty) screen during this operation with no indication or sign of progress. It is perfectly normal for this operation to take several minutes.

Once successfully booted, the system restore is complete aside from the following version specific notes.

### 3.5.1 2008 restore notes

On 2008 (but not 2008R2) it is necessary to delete event log files under: `C:\Windows\System32\WinEvt\`. This can be done after the reboot, but a second reboot is necessary for the changes to take effect.

Until the files are deleted and the system rebooted, the Windows Event Viewer will refuse to start, the Event Log service will not start, and all services that depend upon logging via the Event Log service (such as MS SQL agent and many other services) will fail to start.

### 3.5.2 Restoring on 2008 Core

It is possible to restore a 2008R2 server on 2008R2 Core. However, you must start up a Command Prompt after having rebooted. Here you must run the command `bootrec /osscan`. This will cause the system to scan for installations and suggest that the current installation is added to the boot manager. Select “All” when prompted.

Failure to execute the above procedure will cause the restored system to fail *subsequent* reboots with an error screen complaining about `winload.exe`.

## 3.6 Troubleshooting

If Windows fails to boot, it is likely that either the backed up system or the system you are restoring to are not fully updated (using Windows update).

Boot failure could also be caused by operating system version mismatches; for example trying to restore a Windows Server 2003 SP2 on a Windows Server 2003 R2.

In order to troubleshoot a restore operation further, it is necessary to have the log files from the restore operation.