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Honeywell Process Solutions

**Experion LX
Backup and Restore
Guide**

EXDOC-X111-en-110A

R110

February 2014

Release 110

Honeywell

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Honeywell Process Solutions
1860 W. Rose Garden Lane
Phoenix, AZ 85027 USA
1-800 822-7673

About This Guide

This guide contains backup and restore information for Experion LX systems. It documents best practices and other recommendations to assist you in planning, setting up, and maintaining a backup and restore strategy for your system.

You can perform the backup and restore using the Microsoft backup utility.

Release Information

Document Name	Release Number	Publication Date
Backup and Restore Guide	R110	February 2014

Assumptions and Prerequisites

This guide is primarily intended for engineers, system administrators, and other technical staff who are responsible for the backup and restore of Experion LX system. It therefore assumes a high degree of technical knowledge and familiarity with:

- Microsoft Windows Operating System
- Backup and restore issues and concepts

Related documents

The following list identifies all documents that may be sources of reference for material discussed in this publication.

Document	Description
<i>Overview</i>	Provides a comprehensive overview of Experion LX, including basic concepts and terminology.
Station Planning Guide	Contains high-level planning and design topics for Experion LX Servers and Clients, as well as for controllers other than Process Controllers.
<i>Control Building User's Guide</i>	Contains control strategy checkpoints.
<i>Station Configuration Guide</i>	Additional information on filtering system events.






Support and Other Contacts

People's Republic of China

Contact: Honeywell Global TAC – China
Phone: +86- 21-2219-6888
800-820-0237
400-820-0386
Mail: Honeywell (China) Co., Ltd
33/F, Tower A, City Center, 100 Zunyi Rd.
Shanghai 200051, People's Republic of China
Email: Global-TAC-China@honeywell.com

Symbol Definitions

The following table lists those symbols used in this document to denote certain conditions.

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user, often in terms of performing a task.
	REFERENCE - INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. CAUTION symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death. WARNING symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.

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1. Introduction to Experion LX backup and restore

1.1 Backing up/restoring Experion LX Windows 7 and Windows Server 2008 nodes

Recommended backup strategy

Use the Microsoft backup utility to create a complete backup every week.

Recommended restore strategy

Use the Microsoft restore utility to perform a complete PC restore.

Files to backup

File	Location
Experion LX Server database	C:\ProgramData\Honeywell\Experion PKS\Server\data
Engineering Repository Database (ERDB)	C:\Program Files\Honeywell\Experion PKS\Engineering Tools\system\ER\ps_erdb.mdf
Quick Builder database	C:\ProgramData\Honeywell\Experion PKS\Server\data\qdb
Events database	C:\ProgramData\Honeywell\Experion PKS\Server\data\evtarch\emsevents.mdf
History archive files (default folder)	C:\ProgramData\Honeywell\Experion PKS\Server\data\Archive
Custom files	C:\ProgramData\Honeywell\Experion PKS\Server\user
Report output files	C:\ProgramData\Honeywell\Experion PKS\Server\data\Report
Custom displays	C:\ProgramData\Honeywell\Experion PKS\Client\Abstract Note: If the custom displays are not stored in the Abstract folder, ensure you take a backup of the custom displays manually.
bootpdata.txt	C:\Program Files\Honeywell\Experion PKS\Engineering Tools\system\bin

1. Introduction to Experion LX backup and restore

1.1. Backing up/restoring Experion LX Windows 7 and Windows Server 2008 nodes

Tasks for Windows 7 node

Task	Section
Use Microsoft backup utility to create a complete PC backup.	Create a complete backup on a Windows 7 node
Restore the complete backup using Microsoft restore utility.	Restoring a Windows 7 node

Tasks for Windows Server 2008 node

Task	Section
Use Microsoft backup utility to create a complete PC backup.	Create a complete backup on a Windows Server 2008 node
Restore the complete backup using Microsoft restore utility.	Restoring a Windows Server 2008 node

2. Backup of Experion LX nodes and data

2.1 Creating a complete backup

To backup the Experion LX Server and the Engineering Repository Database (ERDB), use the Microsoft backup utility.

If you want to use any other third-party backup software, contact your local Honeywell Technical Assistance Center for the latest information about qualified backup software.

CAUTION

- Synchronization of a redundant server pair during backup may corrupt the backup. Check the synchronization status on the **Server Redundancy Status** display in the Station, to ensure that the Servers do not synchronize during the backup.
 - If backups are created around the timing of internal checks and procedures performed by the Experion LX system, the backup may get corrupted. To ensure your backup does not clash with these times, it is best to avoid scheduling backups between midnight and 3am. These times should be reviewed against the plant operating and administration policies as they could change based on the operating environment and operations specific to your plant.
-

Considerations

- Honeywell recommends that backups for systems with redundant Servers be performed on the backup Servers, to minimize any additional load on the primary Server.
- Make sure that no PHD administrative tasks are running.
- Make sure event archiving is not occurring by verifying the **Event Archiving** page in the Station.
- Make sure that Checkpoint Save operations are not performed in the background or are scheduled to run during the backup. To check if Checkpoint Save is scheduled, in **Control Builder**, choose **Controller > Checkpoint > Schedule Checkpoint Tasks**. Stop all the running and scheduled tasks using the **Stop** button. The Checkpoint Save operation stores the operation and configuration data associated with a controller. The Checkpoint Save and Restore functions provide you with the capability of bringing a failed controller back to an operational condition as soon as possible.
- Make sure that you have backed up the Switch configuration details, which are added in Configuration Studio.
- Ensure that you have sufficient disk space for taking the backup.

Note: The estimated disk space required is based on the current disk space available.

2. Backup of Experion LX nodes and data

2.1. Creating a complete backup

Create a complete backup on a Windows 7 node

To create a complete backup of the Experion LX nodes on Windows 7, perform the following steps.

Step	Action
1	Choose Start > Control Panel .
2	In the View by list, click Large icons .
3	Click Backup and Restore .
4	On the left pane, click Create a system image .
5	Select the location for saving the backup and click Next . The backup settings confirmation screen appears.
6	Review the settings on the screen.
7	Click Start backup .
8	When a dialog box with the message "Do you want to create a system repair disk?" appears, click No .
9	Click Close , when the backup is complete. The WindowsImageBackup folder is created.

Create a complete backup on a Windows Server 2008 node

To create a complete backup of the Experion LX nodes on Windows Server 2008, perform the following steps.

Step	Action
1	Choose Start > Control Panel > Administrator Tools > Windows Server Backup .
2	If the User Account Control dialog box appears, click Continue . The Windows Server Backup window appears.
3	On the right pane, click Backup Once Wizard .
4	On the Backup options page of the Backup Once Wizard , click Different options and then click Next .
5	On the Select backup configuration page, select one of the following and then click Next . <ul style="list-style-type: none">• Full Server (recommended): Select this option to back up all the sever data, applications, and system state.• Custom: Select this option to choose volumes and files for backup.
6	On the Specify destination type page, specify the destination type and then click Next . <ul style="list-style-type: none">• Local drives• Remote shared folder
7	On the Select backup destination page, select the volume from the drop-down list. For example, New Volume (D:) and then click Next . You should confirm that there is enough free space on the volume. Note: This option is only applicable if Local drives option is selected.
8	On the Specify remote folder page, perform the following: <ol style="list-style-type: none">a) Enter the path of the remote shared folder in the text box. For example, \\MyFileServer\SharedFolderName\b) Under the Access Control section, select one of the following:<ul style="list-style-type: none">– Do not inherit: This option provides access only for the user whose credentials are provided in the next step.– Inherit: This option provides access to everybody who have access to the specified remote shared folder. Note: This option is only applicable if Remote shared folder option is selected.

2. Backup of Experion LX nodes and data

2.1. Creating a complete backup

Step	Action
9	On the Specify advanced option page, select one of the following: <ul style="list-style-type: none">• VSS copy backup (recommended): Select this option if you are using another product to back up applications that are on Volumes included in the current backup. This option retains the application log files.• VSS full backup: Select this option if you are not using another product to back up applications. This option updates each file's backup history and clears the application log files.
10	When a dialog box with the message "The selected volume is also included in the list of items to back up. Do you want to exclude this volume from the backup items?" appears, click OK .
11	On the Confirmation page, review the settings on the screen.
12	Click Backup .
13	Click Close , when the backup is complete. The WindowsImageBackup folder is created.

3. Restoration of Experion LX nodes and data

3.1 Restoring a Windows 7 node

To restore the complete backup of a computer, perform the following steps.

Step	Action
1	Restart the computer using Windows 7 Professional 32-Bit Operating System Reinstallation DVD .
2	When you are prompted to press a key in order to start the computer from CD, press the appropriate key. The Windows installation page appears.
3	Select My language is English .
4	On the Install Windows page, click Next .
5	Select Repair your computer .
6	Click Use the latest available system image (recommended) . To select another system image, click Select a system image .
7	Review the system image location details, and click Next .
8	Click Next .
9	Click Finish to start the restore operation. A confirmation dialog box appears.
10	Click Yes on the confirmation dialog box. If you want to cancel the restore operation, click Stop restore .
11	Restart the computer when the restore is completed.

3.2 Restoring a Windows Server 2008 node

To restore the complete backup of a computer, perform the following steps.

Step	Action
1	Restart the computer using Windows Server 2008 32-Bit Operating System Reinstallation DVD .
2	When you are prompted to press a key in order to start the computer from CD, press the appropriate key. The Windows installation page appears.
3	Enter your language and other preferences, and click Next .
4	On the Install Windows page, select Repair your computer . The System Recovery Options page appears.
5	Click Next . The Choose a recovery tool page appears.
6	Under Choose a recovery tool page, select Windows Complete PC Restore option.
7	Click Use the latest available backup (recommended) . To select another backup, click Restore a different backup .
8	Review the backup location details and click Next .
9	Click Next .
10	Click Finish to start the restore operation. A confirmation dialog box appears.
11	Click Yes on the confirmation dialog box. If you want to cancel the restore operation, click Stop restore .
12	Restart the computer when the restore is completed.

4. Troubleshooting

4.1 Restoring archived backups

To restore the archived backups, perform the following steps.

Step	Action
1	Insert the media on which the backup is stored into the appropriate drive.
2	Browse the media to find the backup image to be restored. You may have to mount the next volume when prompted.
3	The local file option restores a backup image on the connected node. Specify a drive and folder where the backup images are stored.
4	The network file option restores a backup image located on the network. Specify the path on the network where the backup image is stored or click Browse to navigate the network and locate the image. The archived files are now on the hard disk, and you can initiate the restore operation.

4. Troubleshooting

4.2. Recovering from a virus infection

4.2 Recovering from a virus infection

Considerations

- Depending on your local Operations Policy about viruses, you may want to disconnect the infected nodes from all networks and restore them from removable media to avoid infecting the rest of the network.
- Recovery from a virus infection may require restoring an entire drive or set of drives, or it may simply require recovery of a few quarantined files.
- This procedure can confirm whether the backup image includes the virus, but it cannot remove the infected file from the backup image. If a backup image is infected, selected uninfected files may still be safely recovered, but the image should not be used for a full disk recovery.

Restore non-redundant nodes from a virus infection

Task	Link or Reference	Done?
Remove the computer from the network.		
Reformat the hard drive.	Microsoft documentation	
Restore the hard disk.	Restoration of Experion LX nodes and data	
Use your virus scan software and start a manual virus scan of the selected drive.	Virus scanning software documentation	
If the virus scan detected a virus in your backup image, you should use a previously archived image to restore the drive.		

Restore Servers of a redundant configuration from a virus infection

Task	Link or Reference	Done?
Remove the computer from the network.		
Reformat the hard drive.	Microsoft documentation	

Task	Link or Reference	Done?
Restore the hard disk.	Restoration of Experion LX nodes and data	
Use your virus scan software and start a manual virus scan of the selected drive.	Virus scanning software documentation	
If the virus scan detected a virus in your backup image, you should use a previously archived image to restore the drive.		

4.3 Restoring from a corrupted database

If the Engineering Repository on a redundant Server becomes corrupt, you should first try to restore it from the uncorrupted Server of the pair. If both databases are corrupt, you will need to restore from a backup.

4. Troubleshooting

4.4. Resolving controller database issues

4.4 Resolving controller database issues

CAUTION Be sure your process is “Off Control” as these procedures require that the controller be idled and/or a new database loaded.

After a restore of the Experion LX database, the database and controllers may be out of sync if there were changes made to the control strategy or controller parameter values since the backup was made.

If there were no changes to control strategy since the backup, the current parameter values can be updated by uploading the controller to the ERDB, and then updating the project from loaded controller. In addition, the checkpoint files should be re-saved from the controller.

If there were control strategy changes, the changes would need to be re-entered to the ERDB project database after it has been restored. Once this is done, the controller can be updated by loading the missing blocks as follows:

1. Add the new blocks to the project side of the ERDB. Do not load the new blocks yet.
2. For each controller that has changed since the backup, load the controller checkpoint that was restored with the database to delete the controller copies of the new blocks. This must be done as these new blocks are now “ghost” points and cannot be deleted directly.
3. Note that if the added blocks were IOM’s, the checkpoint load may fail. In this case, you need to change the controller status to NODB state by pulling the batteries and power cycling the controller, and then loading the checkpoint.
4. Load the newly added blocks.
5. If there were external connections to the added blocks, any blocks referencing them in other Control Modules or controllers (if peer-to-peer) will also have to be reloaded to update the references to these blocks.
6. When complete, re-save the controller checkpoint and create a new backup of the updated database.

After ServerB has been restored on a system containing redundant Server, you need to be careful concerning the checkpoint files. If the folder checkpoint files are restored to ServerB, the synchronization will attempt to update them from ServerA, causing them to be not in synchronization with the database. The solution is to delete the checkpoint files from ServerA after the database has been replicated and before ER synchronization has been enabled.

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Honeywell Process Solutions
1860 W. Rose Garden Lane
Phoenix, AZ 85027 USA