Preparing to Upgrade Tasks Summary—IMPAX 6.2 or later to IMPAX 6.5.1

Prerequisite software installations

Before proceeding with the migration to IMPAX 6.5.1, migrate or install the following software.

- If the site currently uses Connectivity Manager 2.1, you must upgrade to Connectivity Manager 2.2.1 or 2.3. For instructions, refer to the appropriate version of the *Connectivity Manager Upgrade Guide*.
- If using TalkStation, it must be upgraded to TalkStation 3.2 or 4.0. For instructions, refer to the *TalkStation Client Upgrade Guide* and the appropriate version of the *TalkStation Server Upgrade Guide*.
- For site using IMPAX Reporting (IMPAX RIS and the integrated speech application in the IMPAX Client), you must migrate the reports from DOC to RTF format.
- If currently running PACS Broker 1.5.3, 1.5.4 or 1.5.5, you must migrate to Connectivity Manager 2.2.1 or 2.3 under the following circumstances:
  - Multi-site installations (for report queries from multiple sources)
  - VPN sites
  - EPR integrations with HL7 backend messaging
  - IMPAX RIS integrations
  - IMPAX RIS CD burning
  - Cardiology integrations
- And if you require the following new IMPAX and Connectivity Manager functionality, you must migrate to Connectivity Manager 2.2.1 or 2.3:
  - Report viewing in the IMPAX Text area
  - IHE workflows
  - MPPS communication from modalities
  - Audit messaging
  - Language support for Latin 4 character sets

To continue to use PACS Broker 1.5.3, 1.5.4 or 1.5.5—and if the preceding circumstances do not apply—install the PACS Broker DICOM Interface SU2.

Evaluating system requirements

We recommend specific hardware and software for the various IMPAX 6.5.1 cluster components. Use these requirements to assess which existing servers to keep and upgrade, and which to replace with new servers. Also consider site performance—measure the time to acquire the first image. If current performance is inadequate or borderline, this may be another reason to replace some of the equipment.

Installing IMPAX 6.5.1 on new servers

If, through your analysis, you determine that you will be replacing the existing IMPAX stations with new server stations or adding additional stations to the cluster as part of the upgrade, install the appropriate external and IMPAX 6.5.1 software on any new single-host, Database Server, Archive Server, Network Gateway, Application Server, and Curator stations during the preparing to upgrade period.

Installing SQL Server 2008

1. Log into Windows as an administrator-level user.
2. Launch the installer and select **Installation** from the left-hand menu of the SQL Server Installation Center.
3. To perform a new installation of SQL Server 2008, select the first option, **New SQL Server stand-alone installation or add features to an existing installation**.
4. If asked whether or not you want to run this application, click **Run**.
5. To install a permanent version of SQL Server 2008, confirm that the product key exists and click **Next**.
6. To accept the license terms and conditions, on the License Terms screen, read the license agreement and select the relevant checkbox.
7. To allow the Installation Wizard to install or update SQL Server 2008, on the Setup Support files screen, click **Install**.
8. Wait until all components are installed and configured, then click **Next** on the Setup Support Rules screen. Ensure that no significant errors exist.
9. On the Feature Selection Page screen, select the required components (as in the image that follows). Click **Next**.
10. On the Instance Configuration screen, select **Default instance**. Click **Next**.

11. The Disk Space Requirements screen verifies that sufficient disk space exists for the features you have selected. Click **Next**.
12. On the Server Configuration screen, on the Service Accounts tab, select **NT AUTHORITY\SYSTEM** as the Account Name for the login accounts for SQL Server services (as in the image that follows). Click **Next**.
13. On the Database Engine Configuration screen, on the Account Provisioning tab, select **Mixed Mode (SQL Server authentication and Windows authentication)** and type the sa (system administrator) password.
14. To add the administrative user, click **Add**.
15.
16. On the Ready to Install screen, click **Install**.
17. On the Installation Progress screen, click **Next**.
18. On the Complete screen, click **Close**.
19. Close the SQL Server Installation Center.
20. Restart the computer and log into Windows as an administrator-level user.

Stopping SQL Server 2008 services

1. Open the Windows Administrative Tools.
2. Select **Services**.
3. Select each of the following services in turn and click **Stop Service**, if needed:
    a. **SQL Server Full Text Search**
    b. **SQL Server Full Text Filter Daemon Launcher**
    c. **SQL Server Browser**
    d. **SQL Server Integration Services 10.0**
4. Close the Services window.

Upgrading SQL Server 2008 to SQL Server 2008 SP1

1. Launch the SP1 installer.
2. If you see a security warning, click **Run**.
3. On the Welcome screen, click **Next**.
4. On the License Terms screen, select **I accept the agreement**. Click **Next**.
5. On the Feature Selection screen, accept the default selections. Click **Next**.
6. On the Check Files in Use screen, wait while the processes are identified. Then, click **Next**, even if some locked files are found.
7. On the Ready to Update screen, click **Update**.
8. On the Update Progress screen, wait until the components are upgraded or installed, then click **Next**.
9. If the Computer Reboot Required prompt appears, click **OK**.
10. On the Installation Complete screen, click **Close**.
11. Restart the computer.

Installing the Migration Toolbox on a Windows station

1. Insert the IMPAX Migration CD.
2. Navigate to the **win32** directory and double-click **impax_65_migration-winpkg-6.5.1.*xxx*.exe**
3. In the InstallShield Self-extracting EXE dialog, click **Yes**.
4. On the Welcome screen, click **Next**.
5. When upgrading from IMPAX 6.4 or later, in the Setup Type dialog, select the type of database server. Click **Next**. When upgrading from IMPAX 6.2 or IMPAX 6.3, skip this step.
6. On the Select Features screen, select the checkboxes of the features that you want to install, and clear the rest.
7. Click **Next**.
8. To continue, click **Install**.
9. If you selected the Worklist and Report Migration Tools on the Select Features screen, when prompted, press any key to continue.
10. On the Setup Complete screen, click **Finish**.

Installing the Migration Toolbox on a Solaris station

1. Log in as the **root** user and open a terminal window.
2. Insert the Migration Tools CD.
3. Navigate to the SunOS5 directory.
4. To install the migration tools, type

    pkgadd -d IMPAXmigration.pkg

5. When asked which packages to process, type the package name or **all** to process them all.
6. When asked if you want to continue with the installation, type **y**.
7. Because environment variables are updated during the Migration Toolbox installation, if you have any terminal windows open with the mvf user login, you must log out and log back in again.

Running the Microsoft .NET Framework 3.5 SP1 installer package

1. From the IMPAX Client CD or a network location, run **IMPAXInstallationServer_DotNet35Updater.exe**.
2. On the Welcome to the InstallShield Wizard for Agfa IMPAX Installation Server - .NET 3.5 SP1 Updater screen, click **Next**.

3. To install the application into C:\Inetpub\wwwroot\ClientInstaller, on the Destination Folder screen, click **Next**.

   or

   To install the application to another location, click **Change**. In the Change Current Destination Folder dialog, browse for the directory location to install into and click **OK**. On the Destination Folder screen, click **Next**.

4. On the Ready to Install the Program screen, click **Install**.
5. On the Installation Wizard Completed screen, click **Finish**.

Installing and running the Cross-Cluster Dictation Interlock tool

The Cross-Cluster Dictation Interlock tool synchronizes the dictation status of studies between old and new IMPAX systems when these are running in parallel—such as may happen when using a training server, when using a traveling server (AS3000 sites), or if planning to run the upgraded IMPAX cluster alongside the previous-version IMPAX cluster for a transition period.

A dictation interlock already exists within a single IMPAX cluster, preventing two users from dictating the same study. This tool extends that interlock to two IMPAX clusters: the previous version and the new. It uses native components within IMPAX to send signals between the two systems that a study's dictation status has changed. During the installation and configuration, a new role and a service called Study Status Relay are created to convey and receive the messages.

Study statuses that are synchronized are the following:

- DICTATION_STARTED
- TRAINEE_DICTATION_STARTED
- INTERPRETATION_TRANSCRIBED
- INTERPRETATION_APPROVED
- DICTATION_COMPLETED
- TRAINEE_DICTATION_COMPLETED

Copying the 6.2 or later Cross-Cluster Dictation Interlock components

1. On the IMPAX 6.5.1 Application Server, copy the study-status-signal-relay folder from the Cross-Cluster Dictation Interlock zip in the Tools subdirectory to an appropriate folder, such as to C:\Program Files\Agfa\Impax Business Services.
2. Open a command prompt.
3. Change to the directory containing the copied files.
4. Type **import-study-status-relay.bat**.
5. In the Apply Study Status Relay ADAM Schema dialog, click **OK**.
6. On the 6.2 or later Application Server, install the 6.2 or later version of the Cross-Cluster Dictation Interlock components.

Configuring a firewall exception for the Cross-Cluster Dictation Interlock tool

1. On the IMPAX 6.5.1 Application Server, open Control Panel.
2. Select **Windows Firewall**.
3. Switch to the **Exceptions** tab.
4. Click **Add Port**.
5. In the Name field, type a name for the exception; for example, **Study Status Relay** or something similar.
6. In the Port field, type the number of the TCP port to listen for signals from the remote cluster.
7. Click **OK**.
8. To close the Windows Firewall dialog, click **OK**.
9. Configure a firewall exception on the Windows machine in the remote cluster as well.

Configuring the Study Status Relay role for upgrades from 6.2 or later

1. Launch an IMPAX Client connected to the 6.2 or later Application Server.
2. Log into the Client as an Administrator user.
3. From the **Configure** drawer menu  , select **Users and Roles**.
4. In the navigation pane, right-click the **Study Status Relay** role and select **Add User**.
5. In the details pane, under the User bar, switch to the **Information** tab.
6. Type a Name for the user, such as **Remote Dictation Automated User**.
7. In the Login field, type **remote-dictation**.
8. Type a Password and note what this password is.
9. In the navigation pane, select the **Study Status Relay** role again.
10. In the details pane, expand the **Licensing** bar.
11. In the navigation pane, right-click the **Study-Status Relay** role and select **Add License** > **Add *license_type***
12. Launch an IMPAX Client connected to the 6.5.1 Application Server.
13. Repeat steps 2 to 11 on that Client.

Configuring the Study Status Relay service

1. On the 6.5.1 Application Server, open a command prompt.
2. Change to the **C:\Program Files\Agfa\Impax Business**

Services\study-status-signal-relay directory.

3. Type **Study.Status.Relay.EncryptionTool.exe *password_for_remote-dictation_user***
4. Copy the long string that is returned from this command.
5. Open the Study.Status.Relay.exe.config file in a text editor.
6. Under StudyStatusRelayConfiguration, between the `<UserPassword>` and `</UserPassword>` tags, paste the long string.
7. Update the values of **LoginServiceUrl**, **StudyInfoServiceUrl**, and **MessagingServiceUrl** with the local Application Server's fully qualified domain name.
8. Update the value of **RemoteSignalHost** with the host name or IP address of the computer in the previous-release version of IMPAX that is running the study-status-relay service.
9. Save and close the file.
10. In the command prompt, type **install_study_status_relay_service.bat**.

Running the Cross-Cluster Dictation Interlock tool

1. On the 6.5.1 Application Server where the Relay service is running, open a command prompt.
2. Type the following command:

   net start StudyStatusRelayService
3. Exit the command prompt.

Creating the pre-migration schema on an AS300 server

1. On the AS300 Database Server, open a command prompt.
2. If you are running an Oracle database, skip this step. If you are running a SQL Server database, retrieve the sa password as follows:
   a. Change to the **C:\mvf\bin** directory.
   b. Type

      passkey -M QUERY -u sa
3. Change to the **C: \mvf-mig6\bin** directory.
4. If running a SQL Server Database Server, use the sa password retrieved in step 2 in the following command:

   build-impax-mig-schema.bat sa *sa_password* mvf

   or

   If running an Oracle Database Server, type the following command:

   build-impax-mig-schema.bat

Creating the pre-migration schema on an AS3000 server

1. Log into the AS3000 Database Server as the **oracle** user.
2. Change to the **/usr/mvf-mig6/bin** directory.
3. Run the script called **./build-impax-mig-schema**.

Increasing the tablespace size on Oracle for Windows

1. Log into the Database Server as the AgfaService user.
2. Start the database by starting the OracleServerMVF Windows Service.
3. Change to the c:\mvf-mig6\bin directory.
4. To see whether 2-3 GB of space is available for the MVFL tablespaces, type

   c:\mvf\bin\monitor_update

   c:\mvf\bin\monitor_stats
5. If additional space is needed, to run the monitor_add script, type

   c:\mvf\bin\monitor_add
6. To continue, type **C**.
7. Type the tablespace name, **MVFL**.
8. Type the path name for the data file.
9. Type the size of the file in megabytes, **2000**.
10. Repeat steps 4 to 9 for the MVFLINDX, MVF, MVFINDX, and UNDO tablespaces, substituting the appropriate name in step 7.

Increasing the tablespace size on Solaris

1. Log into the Database Server as the **mvf** user.
2. Start the database by typing

   dbstartmvf
3. Start the listener. Type

   lsnrctl start
4. Change to the **/usr/mvf-mig6/bin** directory.
5. To see whether 2–3 GB of space is available for the MVFL tablespaces, type

   /usr/mvf/bin/monitor_update

   /usr/mvf/bin/monitor_stats
6. If additional space is needed, to run the monitor_add script, type

   /usr/mvf/bin/monitor_add
7. To continue, type **C**.
8. Type the tablespace name, **MVFL**.
9. Type the path name for the data file.
10. Type the size of the file in megabytes, **2000**.
11. Repeat these steps for the MVFLINDX, MVF, MVFINDX, and UNDO tablespaces,

substituting the appropriate tablespace name each time.

Running a report on study archiving status on a Windows station

1. At a command prompt, type

   mig-study-archive-report.exe -d mvf -U *IMPAX_database_user* -P *IMPAX_database_password*

2. To create a report file with this information, type

   mig_reporter.exe -d mvf -t mig-study-archive-report

Running a report on study archiving status on a Solaris station

1. At a terminal window, type

   mig-study-archive-report -o

2. To create a report file with this information, type

   mig-reporter -t mig-study-archive-report

Checking the operating system

On each server you plan to upgrade (rather than replace), check the Windows or Solaris operating system to ensure that it is healthy. This helps to prevent issues such as bad disk systems or server hardware faults from affecting the upgrade.

Checking the integrity of database data

1. To check for uniqueness of OBJECT_REF in DOSR_OBJECT_DOCUMENT, in ISQL, type

   select count(object_ref) from dosr_object_document where object_ref in (select object_ref from dosr_object_document group by object_ref having count(object_ref)>1).

2. To check for null values in the DOSR_HIS_STUDY.STUDY_UID column, type

   Select count(*) from dosr_his_study where study_uid is NULL

3. To check for null values in the DOSR_STUDY.STUDY_UID column, type

   Select count(*) from dosr_study where study_uid is NULL

4. To check for null values in the DOSR_OBJECT.SOP_INSTANCE_UID column, type

   Select count(*) from dosr_object where sop_instance_uid is NULL

5. To check for null values in the DOSR_OBJECT.SERIES_REF column, type

   Select count(*) from dosr_object where series_ref is NULL

6. To check for null values in the MAP_JOB.ORIGINATING_USER_ID column, type

   Select count(*) from map_job where originating_user_id is NULL

7. To check for null values in the MAP_EVENT.USER_ID column, type

   Select count(*) from map_event where user_id is NULL

8. To check for null values in the MAP_EVENT_AUDIT.USER_ID column, type

   Select count(*) from map_event_audit where user_id is NULL

9. To check for null values in the MITRA_FOLDER.FOLDER_NAME column, type

   Select count(*) from mitra_folder where folder_name is NULL

10. To check for null values in the MITRA_FOLDER_ITEM.ITEM_NAME column, type

    Select count(*) from mitra_folder_item where item_name is NULL

11. To check for null values in the MITRA_PRINT_PARAMS.USER_ID column, type

    Select count(*) from mitra_print_params where user_id is NULL

12. To check for null values in the AGFAHC_REPORT_ACCESS_CONFIG.AE_TITLE; column, type

    Select count(*) from agfahc_report_access_config where ae_title is NULL

13. If the return value is > 0 for any of these, a NULL value exists in that column. If duplicates or nulls are found, contact Agfa support for assistance in dealing with them.

Bringing in a 6.2 or later traveling server

After completing PAP configuration on the traveling server and on the Network Gateway server, transmit a set of studies from the production server to the traveling server. (For details on PAP configuration and study transmission, refer to the *IMPAX 6.5.1 Server Knowledge Base*.)

For two weeks (or so) prior to the upgrade, route new studies from the production server to the traveling server, creating a temporary patient study data repository. During the upgrade weekend, synchronize study status between the traveling server and the production server. This allows the traveling server to be used as the temporary production server during that weekend, greatly reducing site downtime.

Identifying the report source

1. On the Connectivity Manager, open osql and type

   use mcf;

   select distinct(requesting_service) from mcf_service_request;

2. To prepare for upgrading the database, note the value stored in the requesting_service field.
3. If multiple values are returned in the *requesting_service* field, consult a Connectivity Manager integrator, as data and mappings may need to be updated.

Creating the AS3000 software repository

1. On the AS3000 Database Server, create a directory for the repository by typing **mkdir /agfa/*repository***
2. Copy the IMPAX 6.5.1 AS3000 Server ISO file to this repository.
3. As the **root** user, type:

   # lofiadm –a /agfa/*repository*/IMPAX 6.5 AS3000 Server.iso

   /dev/lofi/1

   # mount –F hsfs /dev/lofi/1 /mnt

   # cd /mnt

   # cp -r . /agfa/*repository*
4. Unmount /mnt and optionally remove the IMPAX 6.5.1 AS3000 Server ISO file.
5. Copy the Oracle for Solaris ISO file to the repository.
6. Repeat the process to extract and copy the Oracle software to the repository.

To create the AS3000 software repository using DVDs

1. On the AS3000 Database Server, log in as the root user and create a directory for the repository by typing **mkdir /agfa/*repository***
2. Insert the IMPAX 6.5.1 AS3000 Server DVD.
3. Change to the **/cdrom/cdrom0** directory.
4. Copy and unpack the files from the DVD by typing

   tar cvf - . | (cd /agfa/*repository* ; tar xf -)
5. Remove the IMPAX AS3000 DVD and insert the Oracle for Solaris DVD.
6. Still in the /cdrom/cdrom0 directory, copy and unpack the files from this DVD as well.

   tar cvf - . | (cd /agfa/*repository* ; tar xf -)

Backing up Application Server configuration files

1. On the Application Server, insert the IMPAX 6.5.1 Business Services CD.
2. Open a command prompt.
3. Change to the **appserver** folder on the CD.
4. Type the **backupconfiguration** command.
5. Verify that the files have been copied to **C:\Impax\ConfigurationBackups\ *DateTimeStamp*** .

Cleaning up RMAN backup files

1. Log in as the **oracle** (Solaris) or **AgfaService** (Windows) user.
2. In a command prompt, type

   rman target /
3. To determine the backups that are currently stored in the Flashback area, type

   list backupset;
4. Note the BS Key number of the backup set to delete.
5. From RMAN, run

   delete backupset *backupset_number*;
6. At the confirmation prompt, to delete the backup set, type **YES**.

Backing up the AS300 SQL 2000 database

1. On the server running the AS300 database, select **Start** > **All Programs** > **Microsoft SQL Server** > **Enterprise Manager**.
2. In the Explorer window of the Enterprise Manager, expand **Console Root** > **Microsoft SQL Servers** > **SQL Server Group** > ***server*** > **Databases** > **MVF**
3. Select **Action** > **All Tasks** > **Backup database**.
4. In the SQL Server Backup screen, in the Backup section, select **Database–complete**.
5. Click **Add** and specify the directory to back up to.
6. To start the backup, click **OK**.
7. Exit the SQL Server Enterprise Manager.

Backing up the AS300 SQL 2005 database

1. Select **Start** > **All Programs** > **Microsoft SQL Server**.
2. Right-click **SQL Server Management Studio** and select **Run as**.
3. Select **The following user**. Type **AgfaService** as the user name, and the AgfaService password.
4. In the Object Explorer window, expand ***server*** > **Databases** > ***database_name***
5. Right-click ***database_name*** and select **Tasks** > **Backup**.
6. Configure the General and Options tabs according to your preferences for items such as the type of backup, the destination, and whether to overwrite or append to the media.
7. To start the backup, click **OK**.
8. Exit the SQL Server Management Studio.

Backing up the AS300 Oracle for Windows database

1. Log into the AS300 Database Server as the **AgfaService** user.
2. Open a command prompt, and change to the **C:\mvf\bin** directory.

3. Type

   bash runbackup

Backing up the AS3000 Oracle database

1. If backing up to tape, insert the tape into the tape drive.
2. Log into the AS3000 Database Server as the **oracle** or service user.
3. Type the following command:

   /usr/mvf/bin/runbackup.
4. If backing up to tape, when the database is backed up and the tape is rewound, remove the tape from the tape drive.

Saving the map_event_audit tables from an AS3000 Oracle database

1. Log into the Database Server as the **service** user.
2. Launch SQLPlus and log in as **dbadmin**.
3. Enter the following command into SQLPlus:

   Select CEIL(SUM(bytes)/1024) from user_segments where SEGMENT_NAME='MAP_EVENT_AUDIT' AND SEGMENT_TYPE= 'TABLE';
4. To close SQLPlus, type **exit**.
5. To save the map_event_audit tables, open a command prompt and type the following commands:

   exp userid=dbadmin/dbadmin file=*location_you_selected*/MAP_EVENT_AUDIT.dmp tables=MAP_EVENT_AUDIT
6. Launch SQLPlus and log in as **dbadmin**.
7. Truncate the table with the following command:

   truncate table map_event_audit;

Saving the map_event_audit tables from an AS300 Oracle database

1. Log into the database server as the **AgfaService** user.
2. Launch SQLPlus and log in as **dbadmin**.
3. In SQLPlus, type

   Select CEIL(SUM(bytes)/1024) from user_segments where SEGMENT_NAME='MAP_EVENT_AUDIT' AND SEGMENT_TYPE= 'TABLE';
4. Close SQL Plus by typing **exit**.
5. To save the map_event_audit tables, open a command prompt and type

   exp userid=dbadmin/dbadmin file=location_you_selected/MAP_EVENT_AUDIT.dmp tables=MAP_EVENT_AUDIT
6. Launch SQLPlus and log in as **dbadmin**.
7. Truncate the map_event_audit table by typing **truncate table map_event_audit;**

Saving the map_event_audit tables from an AS300 SQL Server database

1. Start the SQL Server Query Analyzer and log in as the **sa** user.
2. In Query Analyzer, type

   sp_spaceused MAP_EVENT_AUDIT
3. Note the *reserved size* value returned by the previous command.
4. Open a command prompt.
5. To save the map_event_audit tables, type

   bcp mvf..map_event_audit out location_you_selected\MAP_EVENT_AUDIT.txt -Usa-Psa_password -c
6. Close the command prompt.
7. In the Query Analyzer, truncate the map_event_audit table by typing

   truncate table map_event_audit