

# *V5R2 OS/400 and other enhancements*

# **Agenda**

**General V5R2 update**

**Virtual Media Installation**

**Disk Migration while Active**

**Time Synchronization**

**Licensed Program considerations**

## General V5R2 update 1 of 2

### V5R2 Requirements

- Load source device requires at least 2 GB for all systems up through 840; 890 requires at least 2.5 GB
- If using new Virtual Media Installation, load source device must be minimum of 4 GB
- Minimum main storage is 128 MB
- For OS/400 options and licensed program disk storage sizes, refer to <http://www.ibm.com/eserver/series/infocenter> -> Select V5R2,
  - Select Installation, upgrades, and migration -> Install the software release and related software -> Software reference -> Licensed program releases and sizes
- No longer supported:
  - Client Access Asynch Console
  - 4xx, 5xx AS/400s
- Programming considerations
  - Several commands supporting OUTPUT Files have changed or added fields
  - New audit records and fields have been added

*Read the memo to users!*

## General V5R2 update 2 of 2

### V5R2 Command changes

- New default for CRTJRN, CRTJRNRCV commands
  - RCVSIZOPT default of \*NONE is now \*MAXOP1 - restoring to pre V4R5 releases requires different RCVSIZPT value
  - Some commands have changed default security values
  - Some commands support the new IASP Group parameters (for example, RSTLIB) or new IASP values for existing ASP parameters (for example, SAVLIB)

### Licensed Program considerations

- Disk storage requirements
- Quality of Service migration to use LDAP
- Others - see memo to users

## **Notes: General V5R2 update 2 of 2**

These two foils list general changes to V5R2 that are not covered in the other presentations. The best place for details on these kinds of topics is the V5R2 Memo to Users, which can be accessed from the initial web pages shown for V5R2 Information Center..

An Information Center example showing V5R2 licensed program sizes is included later in this presentation.

# *Virtual Media Install*

## Virtual Media Install

### Automate OS/400, LPP and PTF install through virtual media

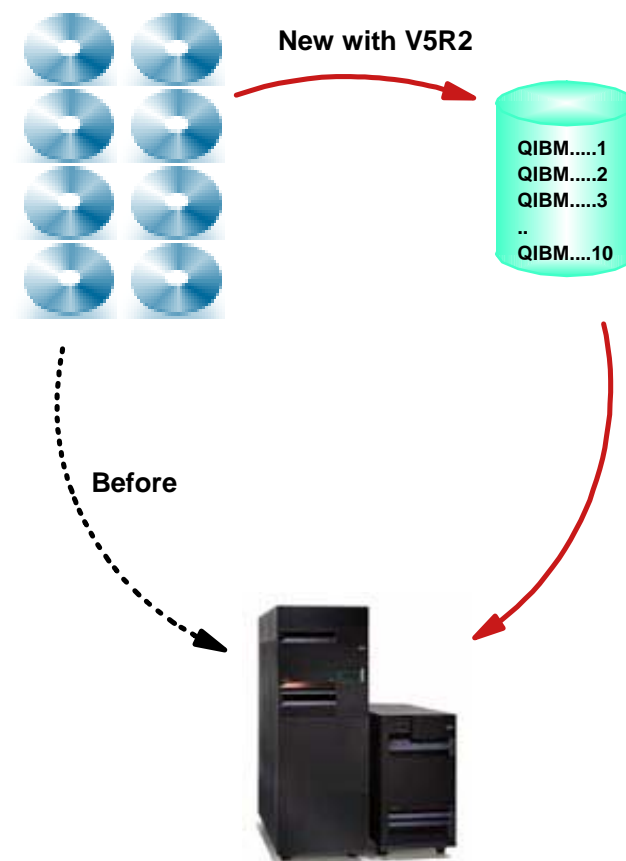
- Eliminate media errors, and user intervention
- Improves system availability

### Enabled with OS/400 V5R2

- Extended to support V5R1 through PTFs
  - PTF SI03120, Optical Support.

### Easy configuration steps

- Create a virtual image catalog and point installation or PWRDWNSYS command to IFS path



## Notes: Virtual Media Install

In addition to using optical media, tape, or an alternate installation device to install a new release, you now have the option of using image catalogs. Image catalog installation is particularly useful for optical media verification, for unattended installations and for upgrading software within a network. You can use an image catalog to perform a software upgrade, install PTFs (fixes), or install single licensed programs that you receive on media.

Information about upgrading from V5R1 to V5R2 will be made available through V5R1 PTF SI03120, Optical Support.

An image catalog is an object on the server that can contain up to 64 optical images. Each catalog is associated with one user-specified integrated file system directory. The system-recognized identifier for the object type is \*IMGCLG.

When you use an image catalog, you preload all your media so that you do not need to handle the physical media when you perform the installation. You do this by copying the images from the physical media to a file in the integrated file system and then use these preloaded images to install.

Image catalog requirements:

- An image catalog upgrade works like a D-mode IPL without a console during the installation of Licensed Internal Code.
  - System reference codes (SRCs) are used to display the status.
- Installations done by using image catalogs require a command line to initiate the installation.
- An installation cannot be performed if an independent auxiliary storage pool (ASP) is accessible. Image files cannot reside in an independent ASP.
- Virtual optical devices do not support the following:
  - The LODRUN command using multiple media.
  - Changing a primary language from secondary language media.
- The load-source disk unit must be at a minimum 4-gigabyte.
- To perform an installation using image catalogs, you must have at least 1 GB of free storage on the load-source disk unit.
  - Use the Start ASP Balance (STRASPBAL) command, if needed, to free up space on the load-source disk unit
    - Details ahead in the presentation

# Steps to create an Image Catalog ...Step 1

## Create a virtual optical device - CRTDEVOPT

- Used for installing from the virtual media

```

AS25 - [24 x 80]
File Edit View Communication Actions Window Help
[Icons]
Create Device Desc (Optical) (CRTDEVOPT)

Type choices, press Enter.

Device description . . . . . _____ Name
Resource name . . . . . _____ Name, *NONE, *VRT.
Device type . . . . . *R SRCNAME *R SRCNAME, 4531, 632A, 632B...
Online at IPL . . . . . *YES *YES, *NO
Message queue . . . . . *SYSOPR Name, *SYSOPR
Library . . . . . _____ Name, *LIBL, *CURLIB
Text 'description' . . . . . *BLANK

-----

Additional Parameters

Authority . . . . . *LIBCRTAUT Name, *LIBCRTAUT, *CHANGE...

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

M a MW 06/037
Connected to remote server/host AS25 using port 23
    
```

## Notes: Steps to create an Image Catalog ...Step 1

**Create a virtual optical device:** To create a device description, enter the following

- CRTDEVOPT DEVD(virtual-device-name) RSRCTYPE(\*VRT) ONLINE(\*YES) TEXT(text-description)
  - Virtual-device-name is any name say VRTDEV99

The resource name will be generated by the operating system at the time the device description is created. The resource name will represent virtual (not physical) hardware.

**Vary on the virtual optical device:** To make the device active enter

- VRYCFG CFGOBJ(virtual-device-name) CFGTYPE(\*DEV) STATUS(\*ON)

**Note:** There can be at most one active virtual optical device on the system.

# Steps to create an Image Catalog ...Step 2

## Create an image catalog - CRTIMGCLG

- A catalog to the image files that are loaded

```

AS25 - [24 x 80]
File Edit View Communication Actions Window Help
[Icons]
Create Image Catalog (CRTIMGCLG)

Type choices, press Enter.

Image catalog . . . . . _____ Name
Directory . . . . . _____

Additional Parameters

Create directory . . . . . *NO *NO, *YES
Text 'description' . . . . . *BLANK
Authority . . . . . *EXCLUDE Name, *EXCLUDE, *LIBCRTAUT...

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

Mâ a MW 05/037
Connected to remote server/host AS25 using port 23
    
```

## Notes: Steps to create an Image Catalog ...Step 2

**Create an image catalog:** Create an image catalog for the PTFs that you want to install. The Create Image Catalog (CRTIMGCLG) command associates an image catalog with a target directory where the optical image files are loaded/stored.

- CRTIMGCLG IMGCLG(catalog-name) DIR(catalog-path) CRTDIR(\*YES) TEXT(image-catalog-name)
  - IMGCLG - the name of the image catalog to be created.
  - DIR - the name of the directory to be associated with this image catalog
  - CRTDIR - Specifies whether the directory (DIR parameter) should be created if it doesn't exist.
- **Restriction:**
  - You must have \*SECADM and \*ALLOBJ special authorities to use this command.
  - A directory can only be associated with a single image catalog.

The Create Image Catalog (CRTIMGCLG) command is used to create an image catalog object (\*IMGCLG) in library QUSRSYS and associate the image catalog with a target directory. An image catalog contains information about images that have been added to the image catalog using the Add Image Catalog Entry (ADDIMGCLGE) command. **It does not contain the actual images.**

## Steps to create an Image Catalog ...Step 3

### Add the image catalog entries - ADDIMGCLGE

- One catalog entry for each of physical media converted to images

```

AS25 - [24 x 80]
File Edit View Communication Actions Window Help
Add Image Catalog Entry (ADDIMGCLGE)

Type choices, press Enter.

Image catalog . . . . . _____ Name
From optical device, or . . . . _____ Name
From image file . . . . . _____
To image file . . . . . *GEN

Image catalog index . . . . . *AVAIL 1-64, *AVAIL

F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel
F13=How to use this display F24=More keys

Bottom
MA a MW 05/037
Connected to remote server/host AS25 using port 23
    
```

## Notes: Steps to create an Image Catalog ...Step 3

**Add an image catalog entry:** Add an image catalog entry for each physical media that you have. You need to repeat this step for each volume of media. You should add the images in the same order as if you were going to install from them. Start with the first media in the list and continue until all the media is loaded.

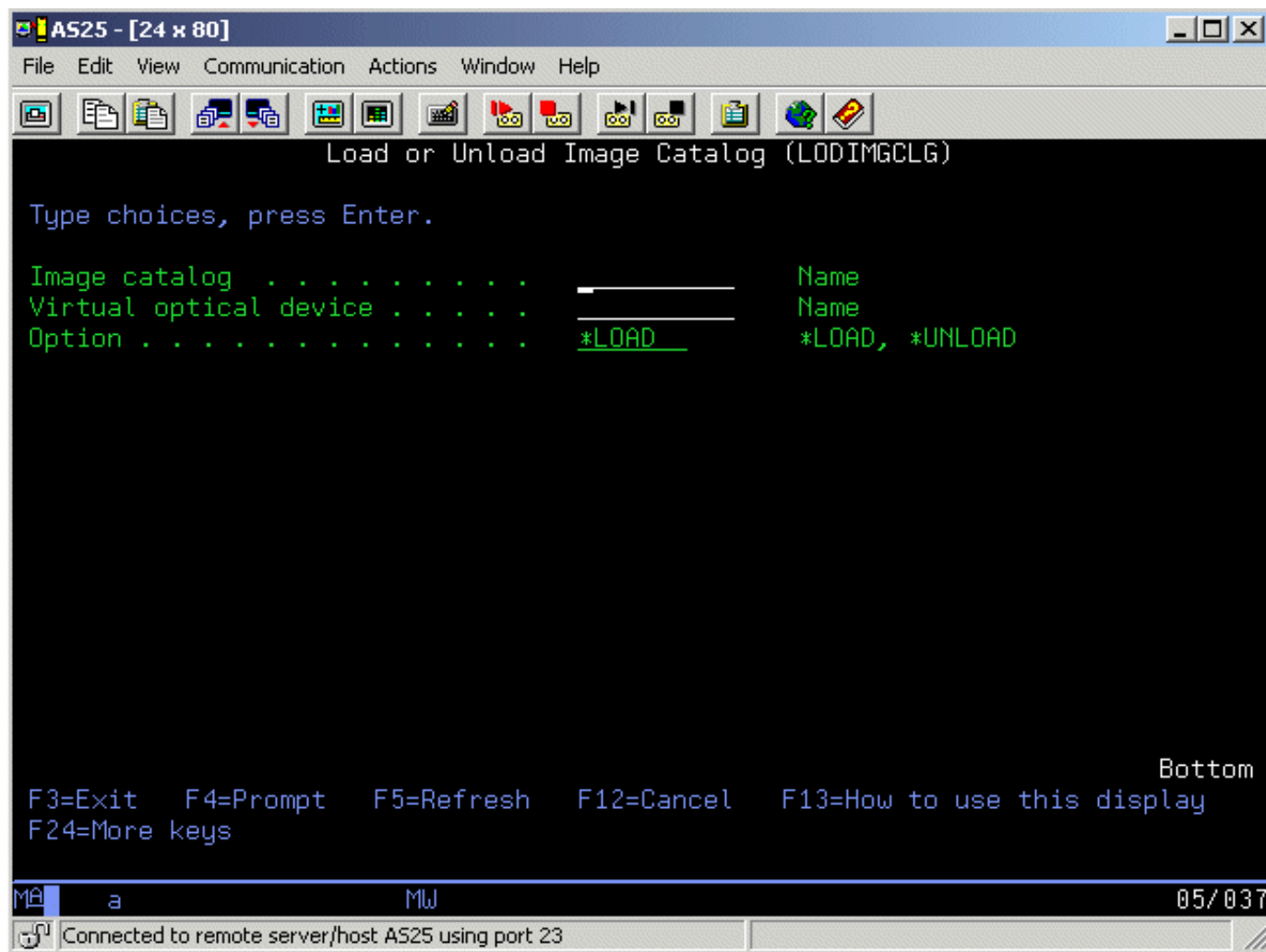
- `ADDIMGCLGE IMGCLG(catalog-name)FROMDEV(device-name) OR FROMFILE(file-name) TOFILE(file-name) TEXT(text-description)`
  - `IMGCLG` - the name of the image catalog the entry is to be added to
  - `FROMDEV` - the name of the CD/DVD device from which the optical image is to be copied **OR**
  - `FROMFILE` - the path name of the image file to be copied if it already exists
  - `TOFILE` - the name given to the file that will be copied to the target directory.
    - ▶ The default values is `*GEN` by which the file name will be generated from the source image.

The Add Image Catalog Entry (`ADDIMGCLGE`) command is used to create a virtual optical image in the target directory (as specified by the directory (`DIR`) parameter on the `CRTIMGCLG` command). If the optical image is added successfully, the image will be loaded and the image catalog (`*IMGCLG`) in library `QUSRSYS` will be updated.

# Steps to create an Image Catalog ...Step 4

## Load the image catalog - LODIMGCLG

- Associates the image files with the installation device



## Notes: Steps to create an Image Catalog ...Step 4

**Load the image catalog:** This step associates the virtual optical device to the image catalog.

- `LOADIMGCLG IMGCLG(catalog-name) DEV(virtual-device-name) OPTION(*LOAD)`
  - `IMGCLG` -the name of the image catalog to be loaded
  - `DEV` - the name of the virtual optical device that the image catalog is to be loaded into

Only one image catalog can be associated with a virtual optical device. If the virtual optical device already has an image catalog associated with it, you can use `OPTION(*UNLOAD)` to unload the current image catalog.

After completing these steps, your image catalog is ready for use.

## ***Additional Virtual Install Image commands***

### Work with Image Catalog Entries (WRKIMGCLGE)

- Work with the images in the specified image catalog

### Verify Image Catalog (VFYIMGCLG)

- Used to verify the images in an image catalog based on the value specified in the TYPE parameter:
  - \*UPGRADE
  - \*PTF
  - \*OTHER

## Notes: Additional Virtual Install Image commands

### WRKIMGCLGE - Work with Image Catalog Entries

The Work with Image Catalog Entries (WRKIMGCLGE) command is used to work with the images in the specified image catalog.

- WRKIMGCLGE IMGCLG(catalog-name)
  - IMGCLG - the name of the image catalog to work with.

The WRKIMGCLGE command allows the user to perform the following functions on images in the image catalog:

- Add - allows the user to add an optical image to the image catalog.
- Change - allows the user to change the index number or text of an image in the image catalog.
- Remove - allows the user to remove an optical image from the image catalog.
- Load - allows the user to load an optical image into the virtual optical device. Only images that have a status of unloaded can be loaded.
- Unload - This option allows the user to unload an optical image from the virtual optical device. Only images that have a status of loaded can be unloaded.
- Mount - allows the user to mount an optical image into the virtual optical device and activate it. Only images that have a status of loaded can be mounted.

### VFYIMGCLG - Verify that the images are in the correct order

The Verify Image Catalog (VFYIMGCLG) command is used to verify the images in an image catalog based on the value specified in the TYPE parameter. The user can optionally sort the images in install sequence based also on the TYPE parameter.

- VFYIMGCLG IMGCLG(catalog-name) TYPE(catalog-type) SORT(\*YES)
  - IMGCLG - the name of the image catalog to be verified
  - TYPE - specifies the type of image catalog to be verified. The possible values are
    - ▶ \*UPGRADE - The system will verify that the necessary images for a software upgrade exist and can be loaded.
    - ▶ \*PTF - The system will verify all PTF volume sets are complete and can be loaded into the virtual optical device.
    - ▶ \*OTHER - This option will load the images from the image catalog in the order they exist. It will not verify or sort the images.
  - SORT - Specifies whether the images of this type should be sorted in the order required for a software upgrade or PTF Install.

A status message will be issued upon successful completion of the command. If the VFYIMGCLG command fails, the Work with Image Catalog Entries (WRKIMGCLGE) command can be used to look at the images and the status of each. The VFYIMGCLG command is intended for verifying images for a complete software upgrade, licensed program install, installation of a PTF, or other types of installs

# ***Using the Image Catalog***

**To Install PTFs**

**To install LPPs**

**To install a Software Upgrade**

## Using the Image Catalog ...

### Additional parameters on the PWRDWN SYS command for V5R2

```

AS25 - [24 x 80]
File Edit View Communication Actions Window Help
Power Down System (PWRDWN SYS)

Type choices, press Enter.

How to end . . . . . *CNTRLD          *CNTRLD, *IMMED
Delay time, if *CNTRLD . . . . . 3600          Seconds, *NOLIMIT
Restart options:
  Restart after power down . . . . *NO          *NO, *YES
  Restart type . . . . . *IPLA          *IPLA, *SYS, *FULL
IPL source . . . . . *PANEL          *PANEL, A, B, C, *IMGCLG
Image catalog . . . . . _____          Name

Additional Parameters

End subsystem option . . . . . *DFT          *DFT, *NOJOBLOG, *CHGPTY...
      + for more values
Timeout option . . . . . *CONTINUE        *CONTINUE, *MSD, *SYSREFCDE
Confirm . . . . . *ENVVAR          *ENVVAR, *INTERACT, *YES, *NO

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

Mâ a MW 05/037
Connected to remote server/host AS25 using port 23
  
```

## Notes: Using the Image Catalog

### To install PTFs

To install the PTFs you only need to point to the Virtual Optical Device.

Example:- You can say Go PTF -- Option 8 and on the next screen in the device option give the name of the Virtual Optical device and it will install the PTFs.

### To install LPPs

To install the LPPs also you only need to point to the Virtual Optical Device.

Example:- You can say Go LICPGM -- Option 1 (Install all) and on the next screen in the Installation device option give the name of the Virtual Optical device and it will install the LPPs.

### To perform a Software Upgrade from V5R2-to-V5R2 and above

When performing a software upgrade you point to the image catalog instead of the Virtual Optical Device.

When preparing for an upgrade, you need to verify that the required media for an upgrade exist and are sorted in the correct sequence. To begin the Upgrade issue the following command on the command line:

- PWRDWN SYS RESTART(\*YES) IPLSRC(\*IMGCLG) IMGCLG(image-catalog-name)
  - IPLSRC - Specifies the image catalog used when IPLSRC(\*IMGCLG) is selected
  - IMGCLG - the name of the image catalog in library QUSRSYS which contains the install media for the upgrade.

After the system is powered down, an install using the specified image catalog is performed. RESTART(\*YES) must be used when this parameter is specified.

## Notes: Using the Image Catalog ...

### To perform a Software Upgrade from V5R1-to-V5R2

The PTF SI03120 provides this support in V5R1 to upgrade from an image catalog. As the support is provided by a PTF, you get the same functionality but not all the commands are same.

In V5R1 the major differences are

- the system-recognized identifier for the image catalog object type is a \*USRSPC instead of \*IMGCLG. These will get converted to \*IMGCLG objects as part of the upgrade.
- The image catalog name is restricted to QUPGRADE1, QUPGRADE2 and QUPGRADE3
- The 632B (Virtual Optical Device) device type doesn't exist in V5R1. Customers will be given instructions on how to create it via CRTDEVOPT command with a special resource name of QVRTOPT.
- PTF and LPP installation is not supported.

After preparing the image catalogs and verifying that the required media for an upgrade exist and are sorted in the correct sequence, issue the following command on the command line:

- STRVRTINS IMGCLG(catalog-name)
  - IMGCLG - the name of the image catalog in library QUSRSYS which contains the install media for the upgrade

This is a new command which comes along with this PTF. On issuing this command, the media in the catalog is verified. If any problems are found, a message will be issued and the command will return. Otherwise a PWRDWN SYS RESTART (\*YES) command will start with the IPLSRC coming from the image catalog.

## **Notes: How to free up space in the load-source disk unit**

Image catalog installation requires at least 1 GB of free space on the load-source disk unit of your server. If you using an image catalog to install software, perform the following steps to clean up the disk unit, verify how much free space you have available and if less make it available:

### **General cleanup tasks**

- Use the automatic cleanup option in Operational Assistant to keep your system free of unnecessary clutter
- Permanently apply any PTFs that are temporarily applied on your system
- Delete PTF save files and cover letters
- Delete any software applications that you installed from software sampler CD-ROMs.
- Delete licensed programs or optional parts that you no longer used
- Delete any user profiles that you no longer need.
- Delete the enrollment for any user who is no longer with your organization

### **For V5R2:**

Use the Work with Disk Status (WRKDSKSTS) command to determine if your load-source disk unit (unit 1) has at least 1 GB of free space. If you do not have 1 GB of free space, continue with the following steps:

- Use the Start ASP Balance (STRASPBAL) command to end the allocation for storage in the load-source disk unit:
  - STRASPBAL TYPE(\*ENDALC) UNIT(1)
- Use the STRASPBAL command to move data off of the load-source disk unit:
  - STRASPBAL TYPE(\*MOVDTA) TIMLMT(30)

Use the WRKDSKSTS command to monitor when the disk unit has 1 GB of free space. Repeat the previous step until you have 1 GB of free space.

### **For V5R1**

Use the Work with Disk Status (WRKDSKSTS) command to determine if your load-source disk unit (unit 1) has at least 1 GB of free space. If you do not have 1 GB of free space, continue with the following steps:

- Use the STRASPBAL command to move data off of the load-source disk unit:
  - STRASPBAL ASP(1) TYPE(\*CAPACITY) TIMLMT(30)

Use the WRKDSKSTS command to monitor when the disk unit has 1 GB of free space. Repeat the previous step until you have 1 GB of free space.

**Note:** You need to have enough free space in ASP1. The STRASPBAL command will balance (by percentage) the storage allocated to each unit within the specified ASP.

# *Migrating disk data while active*

## **Disk Migration While Active**

### **Enables disk migration task**

- Reduce downtime

### **Start ASP Balance (STRASPBAL) command**

- TYPE(\*ENDALC)
- TYPE(\*MOVDTA)

**User may specify a time limit that the function is to run**

## **Notes: Disk Migration While Active**

To enable disk migration tasks, for example during system upgrades, this option can be used to reduce the down time associated with removing a disk unit.

The Start ASP Balance (STRASPBAL) command allows the user to (re)move data from disk unit(s), while the system is active.

### **Move data from units**

A unit that is scheduled for removal can be marked to end allocations by specifying UNIT(unit-number) and TYPE(\*ENDALC). This will keep new allocations away from this unit. For all units marked \*ENDALC, specifying TYPE(\*MOVDTA) will move data from the marked units to other units in the same ASP. To resume allocations for units marked \*ENDALC, specify UNIT(unit-number) and TYPE(\*RSMALC). New allocations will once again be allowed to this unit. The Check ASP Balance (CHKASPBAL) command can be used to determine which units are currently marked \*ENDALC.

The user may specify a time limit that the function is to run for each ASP being balanced or the balance can be set to run to completion. If the balance function needs to be ended, use the End ASP Balance (ENDASPBAL) command. A message will be sent to the system history (QHST) log when the balancing function is started for each ASP. A message will also be sent to the QHST log when the balancing function completes or is ended.

If the balance function is run for a few hours and then stopped, it will continue from where it left off when the balance function restarts. This allows the balancing to be run during off hours over a several day period.

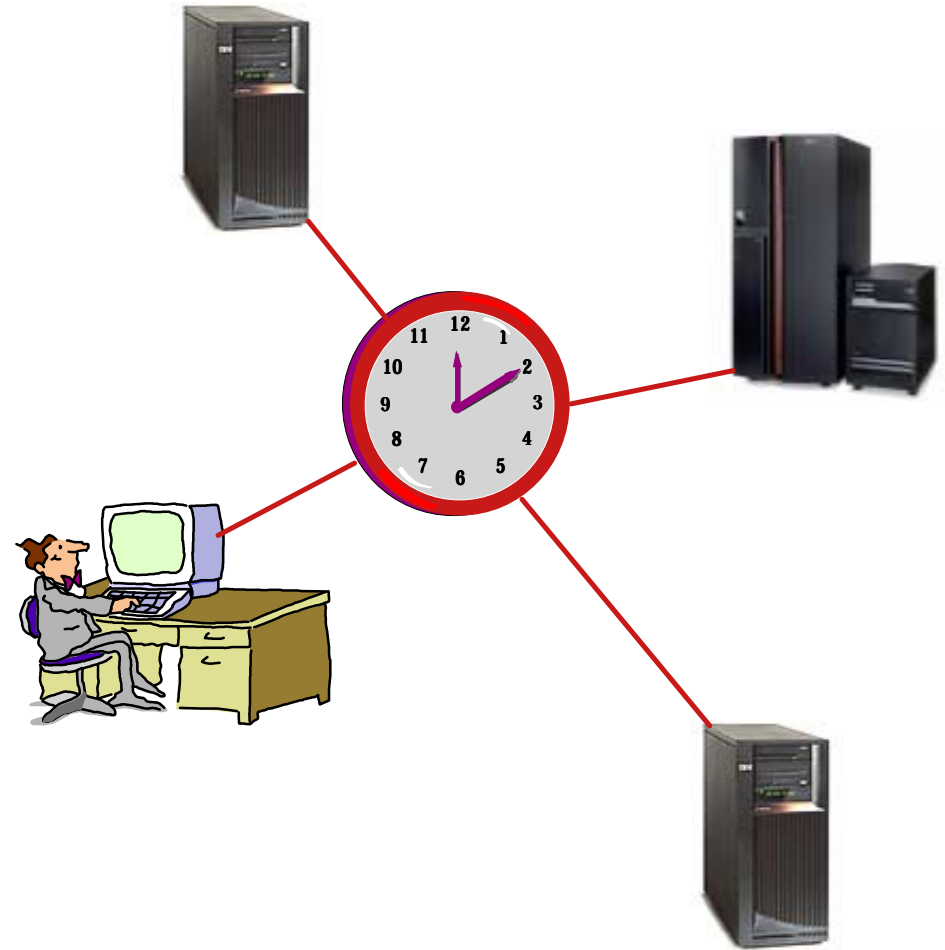
See the detailed Availability presentation for more information.

# *Time Synchronization*

# ***Simplified Time Synchronization across iSeries***

**Synchronize time based on a model system**

**Alignment of performance collection data points**



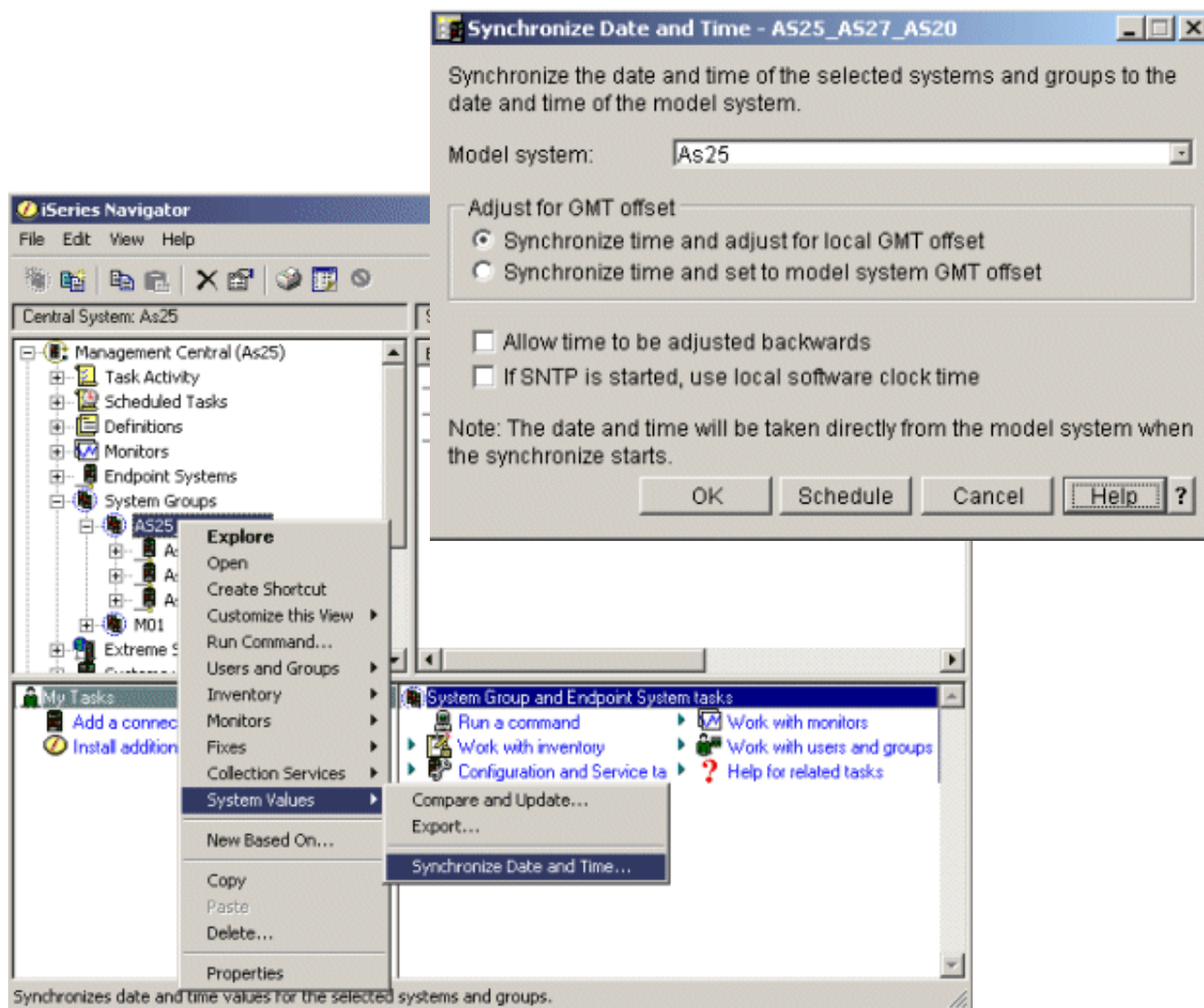
## Notes: Simplified Time Synchronization iSeries Systems

In V5R1, you could compare and update system values across a network of iSeries servers by using Management Central's Compare and Update System Values dialog. Now, you can also synchronize date and time system values across a network of iSeries servers, allowing for differences in time zones. You simply choose a model system that has the date and time values that you want, and then use that system to update one or more endpoint systems or system groups.

This capability will allow you to synchronize time clocks on multiple systems, hence enabling you to monitor performance datapoints based on a common set of date and time, for example when monitoring real time performance data across a series of iSeries systems.

# How time synchronization works across iSeries servers

## iSeries Navigator interface



## Notes: How time synchronization works across iSeries

The Synchronize Date and Time dialog box can be used to update the date and time system values for a single system or for a group of systems.

The date and time system values that are updated on the target systems include

- For System Date
  - QDAYOFWEEK, QDATE, QDAY, QMONTH, QYEAR
- For System Time
  - QTIME, QHOUR, QMINUTE, QSECOND
- and the offset from Greenwich Mean Time
  - QUTCOFFSET.

The time used from the model system is the **software clock time** rather than the QTIME system value. The software clock time is the same as the QTIME system value except when the Simple Network Time Protocol (SNTP) client is started on the model system. **When SNTP is running on the model system, the software clock is synchronized to the time server specified in the SNTP configuration.**

**Note:** If SNTP is running on the target system, updating the QTIME system value may cause the software clock to report an incorrect time value until SNTP again synchronizes the software clock time to the SNTP time server. This happens because the software clock stores its time value as "QTIME plus or minus n seconds", where n represents the difference between the QTIME system value and the time on the SNTP time server.

You can select whether you want to use the Greenwich Mean Time (GMT) offset of the target (local) system or the GMT offset of the model system to adjust for the time zone and also whether to allow the time to be adjusted backwards on the target systems.

**Note:** If you select this option, you need to consider very carefully the impact on any target system where the time on the model system is before the time on the target system. For example you may have SQL-based applications running that are using a time value column of information. Do not run this synchronization while such an application is active. You can select whether to use the target system's software clock time as the model time to update the QTIME system value on the target system whenever the SNTP (Simple Network Time Protocol) client is started on the target system.

You can click Schedule to specify how often you want the synchronize task to run and when you want it to start, or you can click OK to start the task immediately.

# Notes: How time synchronization works across iSeries ...

## Options in the Dialog Box Explained

**Model system:** Any endpoint system in your network with the time values that you want to use to synchronize the date and time system values on the selected target systems.

**Adjust for GMT offset:** This specifies whether to use the Greenwich Mean Time (GMT) offset of the target (local) system or the GMT offset of the model system to adjust for the time zone.

If you select to adjust for local GMT offset, the time used to update the QTIME system value on the target system is the software clock time on the model system plus the difference between the GMT offset (QUTCOFFSET system value) on the model system and the GMT offset on the target system. This allows you to synchronize the time without changing the time zone.

**Allow time to be adjusted backwards:** This specifies whether to allow the time to be adjusted backward on the target systems.

- If you select this option and the time on the model system is before the time on the target system, the time is adjusted backward.  
**Note:** If you select this option, you need to consider very carefully the impact on any target system where the time on the model system is before the time on the target system.
- If you do not select this option, the synchronize task will fail on the target system whenever the time on the model system is before the time on the target system. No changes will be made to the date or time system values on the target system.

**If SNTP is started, use local software clock time:** This specifies whether to use the target system's software clock time as the model time to update the QTIME system value on the target system whenever the SNTP (Simple Network Time Protocol) client is started on the target system. If you do not select this option, the QTIME system value on the target system is set to the software clock time on the model system.

**Note:** If SNTP is running on the target system, updating the QTIME system value from the model system may cause the software clock to report an incorrect time value until SNTP again synchronizes the software clock time to the SNTP time server. This happens because the software clock stores its time value as "QTIME plus or minus n seconds", where n represents the difference between the QTIME system value and the time on the SNTP time server.

## ***V5R2 OS/400: Licensed Program disk storage considerations***

### **Load Source device:**

- 840, 890 require a minimum of 2.5 GB disk device
- All other systems require a minimum of 2.0 GB disk device
- If using Virtual Image installation (source is Virtual Image Catalog): minimum of 4.0 GB disk device

**Licensed programs disk storage estimates - see Information Center**

**See Memo to Users for additional information**

## **Notes: V5R2 OS/400: General Installation Considerations**

This foils summarizes the disk storage requirements for V5R2. You need to review Information Center for specific licensed program disk storage requirements.

See the next foil for examples of V5R2 Information Center pages addressing disk storage requirements.

# Licensed programs disk storage estimates in InfoCenter

**View:** All V5R2 information

**Search**  **Go** [Advanced search](#) [Search tips](#)

[Install the OS/400 release and related software](#) - [Software reference](#) - [Licensed program releases and sizes](#)

## Licensed program releases and sizes

The following iSeries licensed programs (LPs) are available this release and are compatible with the OS/400 operating system. To help you plan for installing your new release, use this information to find the release and current size of the LPs that are listed.

LP release and size information for the V5R1 release and earlier releases is available in the [Technical Studio](#).

Type	Model	Version	Status	Storage (MB)	Description
5722	999	V5R2M0	Refreshed	10 <sup>3</sup>	Licensed Internal Code
5722	SS1 base (QGPL, QUSRSYS, QSYS)	V5R2M0	Refreshed	1601.0	Operating System/400 (actual size ranges from 1302 to 1601)
5722	SS1 option 1	V5R2M0	Refreshed	18.1	OS/400 - Extended Base Support
5722	SS1 option 42	V5R2M0	New	4.2	OS/400 - HA Journal performance
5722	SS1 option 43	V5R2M0	New	348.9	OS/400 - Additional Fonts

**Navigation Menu:**

- Information Center home
- Connecting to iSeries
- Database
- e-business and Web serving
- File systems and management
- Hardware
- Installation, upgrades, and migration
  - Install the OS/400 release and related software
  - What's new for V5R2
  - Print this topic
  - Concepts
  - Install the OS/400 release
  - Install software other than the OS/400 release
  - Software reference
    - Licensed program releases and sizes**
    - OS/400 release interoperability
    - Installation notes about the OS/400 release
    - Installation notes about other licensed

**Right Panel:**

- OS/400 - PSF/400 1-45 IPM Printer Support
- OS/400 - PSF/400 1-100 IPM Printer Support
- OS/400 - PSF/400 Any Speed Printer Support
- OS/400 - International Components for Unicode
- OS/400 - HA Switchable Resources

## **Notes: LP disk storage estimates in InfoCenter**

This foils shows the first page in V5R2 Information Center listing V5R2 software disk storage requirements and, in the lower background window example, another page that includes some of the newer licensed program feature storage requirements, for example the new journal cache support.

Licensed P Program release and size information for the V5R1 release and earlier releases is available in the Technical Studio.

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