IBM 3995 Migration to POWER7®
(Virtual Optical Media Library)

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Session Preview

- Audience – users of IBM i direct attached (SCSI) optical libraries
- Context - optical library enabled applications/solutions for archive, imaging, and document storage.
- Problem – optical library data migration to POWER7
- Solution Concept – virtual optical library and data migration
- Solution Detail – “how to”
- Solution Availability – IBM Lab Services offerings
- Examples of actual customer migration scenarios
- Questions
IBM i optical library enabled applications/solutions

- Imaging and Workflow
- Large File Serving
- Document Warehouse
- Database Archive
- Regulatory Compliance

Government

Financial Services

Natural Resources

Services

Legal

Education

Transportation

Medical

Manufacturing

Telecommunications

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History of Optical Library Attachment for the IBM i

- IBM 3995 – the backbone of optical library enabled archive applications for the IBM i operating system family since 1992.
  - Permanent optical storage was IBM’s premier archive storage offering

- Support for the Plasmon G-series and IBM 3996 optical libraries was introduced in 2004 and 2005. These libraries feature Ultra Density Optical (UDO) drives with 30GB and 60GB media capacities and the next generation in optical media technology.

- The IBM 3995 and IBM 3996 have been withdrawn from marketing.

- Thousands of these devices remain installed on pre-POWER7 servers with IBM i installed.
IBM 3995 Cxx Optical Library

- LAN Libraries - Token ring or Ethernet attachment (3995 C2X)
- IBM i supported direct attach libraries - HVD SCSI attachment (3995 C4X)

LAN attached libraries were withdrawn from marketing in 2003
Direct attached models were withdrawn from marketing in 2004
Plasmon G-series Optical Library (399F)

399F-G104
6.2 TB
104 cartridges
2 or 4 drives

399F-G164
9.8 TB
164 cartridges
2, 4, 6, 8, 10, or 12 drives

399F-G238
14.2 TB
238 cartridges
2, 4, 6, 8, 10, or 12 drives

399F-G438
26.2 TB
438 cartridges
2, 4, 6, 8, 10, or 12 drives

399F-G638
38.2 TB
638 cartridges
2, 4, 6, 8, 10, or 12 drives

- IBM i supported SCSI direct attach libraries
- Barcode reader and bulk load magazine
- Enterprise models
IBM 3996 Optical Library

Standard Features
- 30GB UDO Drives
- Dual Picker
- Single Import/Export I/O Station
- SCSI LVD Interface
- Panel Window and Lights
- WORM & Rewritable Media Support

Optional Features
- Barcode Reader
- Number of UDO drives
- 60GB UDO drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Slots</th>
<th>Number of UDO Drives</th>
<th>Maximum Library Capacity (TB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>32</td>
<td>1, 2</td>
<td>1.92</td>
</tr>
<tr>
<td>80</td>
<td>72, 80</td>
<td>4, 2</td>
<td>4.32, 4.8</td>
</tr>
<tr>
<td>174</td>
<td>166, 174</td>
<td>4, 2</td>
<td>9.96, 10.44</td>
</tr>
</tbody>
</table>

Single UDO optical cartridge capacities: 30GB and 60GB

Withdrawn from marketing 2009
Problem: Can I Move My Optical Library to POWER7?

- **IBM 3995** library attachment requires an IOP based adapter and an IOP
- POWER7 servers do not support IOP and IOP based adapters
  
  [www.ibm.com/systems/power/hardware/sod2.html](http://www.ibm.com/systems/power/hardware/sod2.html)
  
  - SCSI HVD IOA is not supported for IOP-less attachment
    - SCSI HVD-LVD converters are also not supported for the 3995
  
  - IOA for LAN attached 3995 C2X models also is not supported

- **The IBM 3995 is an inhibitor for POWER7 migrations**

- **IBM 3996 and Plasmon** libraries will attach to POWER7 server via SCSI LVD IOP-less IOA
- SCSI LVD adapter is supported on some POWER7 server models
The IBM 3995 is an inhibitor for POWER7 migrations

- How do I get my data from my 3995 to POWER7 server?
- Current solution/application investment
- Older applications that can’t change
- Data indexes
- **Requirement:** Unchanged access through /QOPT and IFS/HFS APIs
Alternatives to the IBM 3995 optical library

- IBM 3996 and Plasmon optical libraries
  - Data migration to UDO
  - Media migration to Plasmon libraries with MO drives (for some 3995 media types)
- Data migration to an IFS directory
- Network attached options (e.g. NFS, TSM…)
  - IBM DR550, IBM Information Archive
  - Non-IBM appliances
  - Separate server (not IBM i) with self contained compliance function
  - Support is application dependent
- Image Catalog Virtual Optical Media Library
  - IBM Lab Services offering
  - Focus of this session
Solution Concept –
Virtual Optical Library and Data Migration
Image Catalog Virtual Optical Media Library

- Virtualization of optical library access and behavior for transparency to client applications.
  - Preserves existing optical library based archive application investments when moving to POWER7
  - Eases the transition from IBM 3995, IBM 3996, and Plasmon G-series optical libraries

- Image catalog and virtual optical device enhancements available in IBM i 7.1 with PTFs and IBM Lab Services license.

- Image catalog is loaded to 632B virtual optical device in “library mode”

- All volume images in the image catalog are visible and concurrently accessible under the /QOPT file system (as for any other optical library) with existing APIs.

- Optical library media types WORM and ERASE are supported for compliance with government and industry data retention requirements
  - WORM emulation at the device driver level and WORM file system
  - New virtual optical media of type WORM or ERASE can be created for ongoing production usage.
Image Catalog Virtual Optical Media Library - more

- No dependencies on optical library and system adapter hardware that can no longer be purchased
- Continued integrated solution – no additional archive device required
- Fast migration of existing optical library volumes directly to the image catalog is supported.
- Archive and retrieval performance of disk instead of optical device.
- Image catalogs and/or individual volume images can be part of a regular backup strategy.
- Disk storage backing options for virtual library image catalog
Data Migration Using Image Catalog

- Originally developed for data migration from 3995 to UDO
- Optimize performance
  - Improvement (5-10x) over traditional migration methods
- Create an image of the 3995 optical volume
  - Allows file system accesses without physical optical media
- Data movement beyond the image catalog is optional
  - File system accesses at virtual volume (disk) performance
- Migrate directly to image catalog for virtual optical library
- Migration can occur to a loaded (online) image catalog
IBM i Interfaces to Optical Storage (Historical)

Hierarchical File System

Integrated File System

Native Save/Restore

Media Mgmt Commands

3995 LAN Libraries

SCSI (Direct) Attach Libraries, CD, DVD, Virtual Optical
IBM i Interfaces to Optical Storage

Hierarchical File System  
Integrated File System  
Native Save/Restore  
Media Mgmt Commands

3995 LAN Libraries  
SCSI (Direct) Attach Libraries, CD, DVD, Virtual Optical, Virtual Optical Library
Programming Interface - /QOPT File System

Data is organized in hierarchical structure by volume, directory, file within QOPT file system.
Programming Interface - /QOPT File System

Data is organized in hierarchical structure by volume, directory, file within QOPT file system.

```
/QOPT/LIBVOL1/DIR1/FILEA
```

```
/QOPT/LIBVOL2/DIR1/FILEB
```

```
/QOPT/LIBVOL1/DIR2/FILEA
```

```
/QOPT/CD01/FILE1
```

```
/QOPT/DVD01/DIR3/FILEB
```

```
/QOPT/LIBVOL1/DIR1/FILEA
```

```
/QOPT/LIBVOL2/DIR1/FILEB
```

```
/QOPT/LIBVOL1/DIR2/FILEA
```
Data is organized in hierarchical structure by volume, directory, file within QOPT file system.
Solution Concept “Checkpoint”

- Data Migration Using Image Catalog
- Virtual Optical Library

- Both are based on image catalog enhancements
- Data movement is transparent to application using /QOPT file system and HFS/IFS APIs
- Together the offerings provide a solution for the 3995 optical library and POWER7 problem
Data Migration Path - 3995 to UDO

Sample volume: 60,088 files -- 68 directories – 100% full – 35 Kbytes average file size

*Actual performance depends on system resources, number of files and directories, average file size
Enhanced Data Migration Path - 3995 to UDO

**Enhanced**: Total 70 minutes  
**Existing**: Total 380 minutes  

*Approximate times

Sample volume: 60,088 files -- 68 directories – 100% full – 35 Kbytes average file size

*Actual performance depends on system resources, number of files and directories, average file size

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Data Migration Path – 3995 to IFS

Sample volume: 60,088 files -- 68 directories – 100% full – 35 Kbytes average file size

*Approximate times

*Actual performance depends on system resources, number of files and directories, average file size
Enhanced Data Migration Path – 3995 to IFS

Physical
2.6 GB WORM
2K sectors

Virtual
2.6 GB WORM
2K sectors

Create Image

CPY

Sample volume: 60,088 files -- 68 directories – 100% full – 35 Kbytes average file size

Enhanced: Total 65 minutes
Existing: Total 700 minutes

*Approximate times

*Actual performance depends on system resources, number of files and directories, average file size

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Optical Library migration to i 7.1 Virtual Optical Library

/OQOPT

i 5.4, i 6.1
or i 7.1

i 7.1 (POWER7)

Optical Library Volume
(WORM)

Direct Attached Optical Library

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Optical Library migration to i 7.1 Virtual Optical Library

/QOPT

Direct Attached Optical Library

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Optical Library migration to i 7.1 Virtual Optical Library

Move Image Catalog to POWER7 system with i 7.1

i 5.4, i 6.1 or i 7.1

i 7.1 (POWER7)

Virtual Optical Volume (WORM)

Image Catalog (IMGCLG)

ADDIMGCLGE (*VOL) or QVOIADDV (i 5.4)

Direct Attached Optical Library

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Optical Library migration to i 7.1 Virtual Optical Library

Move Image Catalog to POWER7 system with i 7.1

ADDIMGCLGE (*VOL) or QVOIADDV (i 5.4)

Image Catalog (IMGCLG)

Virtual Optical Volume (WORM)

Optical Library Volume (WORM)

Direct Attached Optical Library

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Additional Concept: Difference between Catalog Directory and /QOPT Directory

- Image Catalog directory contains volume images
  - No knowledge of volume contents
- /QOPT directory is path to optical volume contents (directories and files)
  - Catalog must be loaded to virtual optical device
Image Catalog – IFS Directory

The Image Catalog (MyImageCatalog) is defined over an IFS directory (MyImageCatalogDir). All volume images are files within that directory.
Image Catalog – Load to virtual optical device

The Image Catalog (MyImageCatalog) is defined over an IFS directory (MyImageCatalogDir). All volume images are files within that directory.

```
MyImageCatalogDir
    QIMGCLG
    VOL1FILE
    VOL2FILE
    VOL3FILE

LODIMGCLG MyImageCatalog
            (library mode)

OPTVRT01
```
Loaded Image Catalog – Library mode

/QOPT/LIBVOL1/DIR1/FILEA
Solution Detail – “how to”
Data Migration and Virtual Optical Library
Document References

- Both of these documents are available for download on the IBM i Optical Storage Support Website
  
  www.ibm.com/systems/i/hardware/storage/optical/
Migration – ADDIMGCLGE (from 3995 volume)

Add Image Catalog Entry (ADIMGCLGE)

Type choices, press Enter.

Image catalog ............... > MYIMAGECAT Name
From optical device, or .... > *VOL Name, *VOL
Volume identifier ............ VOL003
From image file ..............

To image file .............. VOL003

Image catalog index ........... *AVAIL 1–256, *AVAIL
Replace catalog entry ........ *NO *NO, *YES, *INSERT

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
Migration – “M_” rename in source device

---

```
Work with Optical Volumes

Device . . . . . . . . . . . . . . : *ALL
Side information . . . . . . . : *ALL
Type options, press Enter.
   1=Add   2=Change   3=Copy   4=Remove   5=Display   8=Work with directories
   10=Initialize  11=Work with object links  12=Duplicate ...

Opt  Volume  Device  Type  Type  Authorization
     ______   ______   ______   ______      ______
     M_VOL003  OPTML06  *PRIMARY  *ERASE  QOPTSEC
     VOL003  OPTVRT04  *PRIMARY  *ERASE  QOPTSEC

Parameters or command
===>
F3=Exit  F4=Prompt  F5=Refresh  F6=Print list  F9=Retrieve  F11=View 2
F12=Cancel  F14=Show extended information  F24=More keys
```
Virtual Library – Create new WORM volume

Add Image Catalog Entry (ADIMGCLGE)

Type choices, press Enter.

Image catalog ............... > MYIMAGECAT Name
From optical device, or .... > Name, *VOL
From image file ............ > *NEW

To image file .............. > VOLUMENAME

Image catalog index ........ > *AVAIL 1-256, *AVAIL
Replace catalog entry ...... > *NO *NO, *YES, *INSERT
Media type ................. > *WORM *RAM, *WORM, *ERASE
Image size ................. > *DVD2600 Megabytes, *CD650, *DVD2600...
Text 'description' .......... New WORM volume for archive

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
Virtual Library – Unloaded Image Catalog

Work with Image Catalog Entries

Catalog : MYIMAGECAT
Type . Optical
Directory : /MYIMAGECAT

System: Y0645P2
Status . Not ready
Device .

Type options, press Enter.

1=Add  2=Change  4=Remove  6=Mount  8=Load  9=Unload
10=Initialize volume  12=Work with volume

Opt Index Status Image File Name
(currentUser) *AVAIL
—  1 Mounted VOL001
—  2 Loaded VOL005
—  3 Loaded VOL003
—  4 Loaded VOL007
—  5 Loaded VOL008

Bottom

F3=Exit  F5=Refresh  F6=Load/Unload image catalog  F7=Verify image catalog
F8=Reorder by index  F12=Cancel  F24=More keys
### Virtual Library – Load Image Catalog in Lib Mode

**Load or Unload Image Catalog (LODIMGCLG)**

Type choices, press Enter.

<table>
<thead>
<tr>
<th>Choice</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image catalog</td>
<td></td>
<td>MYIMAGECAT Name</td>
</tr>
<tr>
<td>Option</td>
<td></td>
<td>*LOAD *LOAD, *UNLOAD</td>
</tr>
<tr>
<td>Virtual device</td>
<td>OPTVRT04</td>
<td>Name</td>
</tr>
<tr>
<td>Write protect</td>
<td>*DFT</td>
<td>*DFT, *ALL, *NONE</td>
</tr>
<tr>
<td>Library mode</td>
<td>*YES</td>
<td>*NO, *YES</td>
</tr>
</tbody>
</table>

**Keyboard Shortcuts**

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
Virtual Library – Catalog loaded in Library Mode

![Work with Image Catalog Entries](image)

Catalog: MYIMAGECAT
Type: Optical
Directory: /MYIMAGECAT

Status: Ready
Device: OPTVRT04

Type options, press Enter.
1=Add  2=Change  4=Remove  6=Mount  8=Load  9=Unload
10=Initialize volume  12=Work with volume

<table>
<thead>
<tr>
<th>Opt</th>
<th>Index</th>
<th>Status</th>
<th>Image File Name</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>*AVAIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Mounted</td>
<td>VOL001</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Available</td>
<td>VOL005</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Available</td>
<td>VOL003</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Available</td>
<td>VOL007</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Available</td>
<td>VOL008</td>
</tr>
</tbody>
</table>

F3=Exit  F5=Refresh  F6=Load/Unload image catalog  F7=Verify image catalog
F8=Reorder by index  F12=Cancel  F24=More keys

Bottom
### Virtual Library – WRKOPTVOL

#### Work with Optical Volumes

- **Device**: OPTVRT04
- **Side information**: *ALL
- **Type options, press Enter**:
  - 1=Add
  - 2=Change
  - 3=Copy
  - 4=Remove
  - 5=Display
  - 8=Work with directories
  - 10=Initialize
  - 11=Work with object links
  - 12=Duplicate

<table>
<thead>
<tr>
<th>Opt</th>
<th>Volume</th>
<th>Device</th>
<th>Volume</th>
<th>Media</th>
<th>Authorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VOL001</td>
<td>OPTVRT04</td>
<td>*PRIMARY</td>
<td>*WORM</td>
<td>QOPTSEC</td>
</tr>
<tr>
<td>2</td>
<td>VOL003</td>
<td>OPTVRT04</td>
<td>*PRIMARY</td>
<td>*WORM</td>
<td>QOPTSEC</td>
</tr>
<tr>
<td>3</td>
<td>VOL005</td>
<td>OPTVRT04</td>
<td>*PRIMARY</td>
<td>*WORM</td>
<td>QOPTSEC</td>
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<tr>
<td>4</td>
<td>VOL007</td>
<td>OPTVRT04</td>
<td>*PRIMARY</td>
<td>*WORM</td>
<td>QOPTSEC</td>
</tr>
<tr>
<td>5</td>
<td>1104191718</td>
<td>OPTVRT04</td>
<td>*UNFORMATTED</td>
<td>*WORM</td>
<td>QOPTSEC</td>
</tr>
</tbody>
</table>

#### Parameters or command

- F3=Exit
- F4=Prompt
- F5=Refresh
- F6=Print list
- F9=Retrieve
- F11=View 2
- F12=Cancel
- F14=Show extended information
- F24=More keys

---

**Power is performance redefined**
“Look and Feel” changes

- Optical Media
  - Single/double sided – virtual media always single sided
  - “Write protect” state managed by Image Catalog

- Adding and removing media from virtual library
  - Use Image Catalog to work with contents of library (catalog)
  - ADDOPTCTG and RMVOPTCTG do not change catalog contents

- Library capacity and “full library” behavior
  - Virtual library size is the current number of images defined in catalog
  - OPT1505 (Optical device is full) received if using ADDOPTCTG
  - No OPT1740 (Optical Library at or nearing capacity) message

- Media backup
  - Backup strategy for image catalog.
  - Was DUPOPT or CPYOPT.
Disk Storage Backing Options and Considerations

- Any disk storage that an IFS directory can be defined on
  - Internal Disk
  - Native attached external disk (e.g. DS8000, DS6000, DS5000)
  - Virtual attached disk (e.g. XIV, SVC, Storwize V7000)
- Use of IASP for virtual optical library backing storage if tiered storage topology
  - Varied on separately
  - Doesn’t slow the system/partition IPL
  - Reclaim storage or ASP balance separately
  - Not part of system pool
- Could be excluded from System Backup
- IBM Lab Services consulting skills to help optimize to requirements
Other Considerations

- Best Practices
  - Organization of image catalogs
  - Size of image catalogs
- 1 loaded catalog = 1 virtual optical library
- 35 virtual optical devices maximum
- 255 images per catalog maximum, but less is recommended
- Volume images can be duplicated to recordable DVD
- Backup strategy
- See reference documents for additional information
Virtual Optical Media Library

An IBM Systems Lab Services and Training offering with enhancements to the IBM i operating system that will provide an Image Catalog based virtual optical library.

Features

- All applications dependent on optical library hardware can continue to exist without modifications.
- New media images can be created for ongoing archive production usage.
- Virtual optical media types WORM and ERASE are supported for compliance with data retention requirements.
- Existing optical library media can be easily migrated to the virtual optical library.
- The Image Catalog serves as a library of virtual optical volumes that are concurrently visible and accessible under the /QOPT filesystem.

Audience

- IBM i customers who currently use IBM 3995, IBM 3996 or Plasmon G-series optical library devices
- Business partners with IBM i Optical Library enabled archive applications
- IBM advanced sales, marketing and technical support

Typical Benefits

- Preservation of existing optical library based archive application investments when moving to POWER7
- No dependency on optical library hardware and associated host system adapters
- Easier systems operations and management with reduction of hardware device and integration on system
- Customers can migrate to supported newer release

Why IBM?

- Deep skills in IBM i implementation and integration.
- Experience in application architecture and design gained from thousands of engagements across many industries.
- Ability to deliver skills transfer as part of service engagement

For additional product information, pricing and qualified business partners to assist with implementation contact Mark Even, even@us.ibm.com

www.ibm.com/systems/services/labservices stgls@us.ibm.com
Enhanced Performance for Optical Library Data Migration on IBM i

Take advantage of fast copy and transfer capabilities for migration of optical media data to new optical or other archive technologies.

Features

- Custom enhancement to IBM i Version 6.1 and 7.1
- Enables new image catalog support
  - Moves data from optical library media to a virtual optical
  - Data can be migrated from virtual volume to target destination at faster rates than previously possible

Audience

- IBM i customers who currently use IBM 3995, IBM 3996 or Plasmon G-series optical library devices
- Business partners with IBM i Optical Library enabled archive applications
- IBM advanced sales, marketing and technical support

Typical Benefits

- Reduces migration time from a typical 6-7 hours per optical volume*
- Helps achieve application and information infrastructure management performance benefits of new storage technology sooner
- Reduced transfer times can shorten migration project times and risks

Why IBM?

- Deep skills in IBM i implementation and integration.
- Experience in application architecture and design gained from thousands of engagements across many industries.
- Ability to deliver skills transfer as part of service engagement

For additional product information, pricing and qualified business partners to assist with implementation contact Mark Even, even@us.ibm.com

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Revised December 2, 2010
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All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, the latest versions of AIX were used. All other systems used previous versions of AIX. The SPEC CPU2006, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C for AIX v11.1, XL C/C++ for AIX v11.1, XL FORTRAN for AIX v13.1, XL C/C++ for Linux v11.1, and XL FORTRAN for Linux v13.1.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

TPC  [http://www.tpc.org](http://www.tpc.org)
SPEC  [http://www.spec.org](http://www.spec.org)
Pro/E  [http://www.proe.com](http://www.proe.com)
GPC  [http://www.spec.org/gpc](http://www.spec.org/gpc)
VolanoMark  [http://www.volano.com](http://www.volano.com)
Baan  [http://www.ssaglobal.com](http://www.ssaglobal.com)
TOP500 Supercomputers  [http://www.top500.org/](http://www.top500.org/)
Notes on HPC benchmarks and values

The IBM benchmarks results shown herein were derived using particular, well configured, development-level and generally-available computer systems. Buyers should consult other sources of information to evaluate the performance of systems they are considering buying and should consider conducting application oriented testing. For additional information about the benchmarks, values and systems tested, contact your local IBM office or IBM authorized reseller or access the Web site of the benchmark consortium or benchmark vendor.

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All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, the latest versions of AIX were used. All other systems used previous versions of AIX. The SPEC CPU2006, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C for AIX v11.1, XL C/C++ for AIX v11.1, XL FORTRAN for AIX v13.1, XL C/C++ for Linux v11.1, and XL FORTRAN for Linux v13.1. Linpack HPC (Highly Parallel Computing) used the current versions of the IBM Engineering and Scientific Subroutine Library (ESSL). For Power7 systems, IBM Engineering and Scientific Subroutine Library (ESSL) for AIX Version 5.1 and IBM Engineering and Scientific Subroutine Library (ESSL) for Linux Version 5.1 were used.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

SPEC http://www.spec.org
Pro/E http://www.proe.com
GFC http://www.spec.org/gpc
STREAM http://www.cs.virginia.edu/stream/
Fluent http://www.fluent.com/software/fluent/index.htm
TOP500 Supercomputers http://www.top500.org/
AMBER http://amber.scripps.edu/
FLUENT http://www.fluent.com/software/fluent/fl5bench/index.htm
GAMESS http://www.msg.chem.iastate.edu/gameess
GAUSSIAN http://www.gaussian.com
ANSYS http://www.ansys.com/services/hardware-support-db.htm

Click on the “Benchmarks” icon on the left hand side frame to expand. Click on ”Benchmark Results in a Table” icon for benchmark results.

ECLIPSE http://www.sis.slb.com/content/software/simulation/index.asp?seg=geoquest&
MM5 http://www.mmm.ucar.edu/mm5/
MSC.NASTRAN http://www.mscsoftware.com/support/prod%5Fsupport/nastran/performance/v04_sngl.cfm
NAMD http://www.ks.uiuc.edu/Research/namd
HMMER http://hmmer.janelia.org/

Click on the “Benchmarks” icon on the left hand side frame to expand. Click on ”Benchmark Results in a Table” icon for benchmark results.
Notes on performance estimates

rPerf for AIX

rPerf (Relative Performance) is an estimate of commercial processing performance relative to other IBM UNIX systems. It is derived from an IBM analytical model which uses characteristics from IBM internal workloads, TPC and SPEC benchmarks. The rPerf model is not intended to represent any specific public benchmark results and should not be reasonably used in that way. The model simulates some of the system operations such as CPU, cache and memory. However, the model does not simulate disk or network I/O operations.

- rPerf estimates are calculated based on systems with the latest levels of AIX and other pertinent software at the time of system announcement. Actual performance will vary based on application and configuration specifics. The IBM eServer pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to approximate relative IBM UNIX commercial processing performance, actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Note that the rPerf methodology used for the POWER6 systems is identical to that used for the POWER5 systems. Variations in incremental system performance may be observed in commercial workloads due to changes in the underlying system architecture.

All performance estimates are provided “AS IS” and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, and application sizing guides to evaluate the performance of a system they are considering buying. For additional information about rPerf, contact your local IBM office or IBM authorized reseller.

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CPW for IBM i

Commercial Processing Workload (CPW) is a relative measure of performance of processors running the IBM i operating system. Performance in customer environments may vary. The value is based on maximum configurations. More performance information is available in the Performance Capabilities Reference at: www.ibm.com/systems/i/solutions/perfmgmt/resource.html

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