Release Content Description

Release 4.0.0

9844093-001

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Contents

About This Manual

Scope

This document describes the new features in FileNet Image Services (IS) Release 4.0.0, including those enhancements that were released to Release 3.6.x post-GA but not documented previously. Image Services Release 4.0.0 software is comprised of the following products:

- Image Services for AIX/6000
- Image Services for HP-UX
- Image Services for the Solaris Operating Environment
- Image Services for Windows Server

Refer to the following documents for contents of prior releases:

Image Services Release 3.6 Content Description	9844045-001
Image Services Release 3.6 SP1 Content Description	9844050-001
Image Services Release 3.6 SP2 Content Description	9844055-001
Image Services Release 3.6 ESE Content Description	9844054-001

Refer to the *Image Services Toolkit Release 4.0.0 Content Description* (9844101-001) for the Image Services Toolkit content. This document is released on the Image Services Toolkit CD.

References

The following specifications, procedures, guides, and handbooks contain additional material regarding Release 4.0.0 features.

Specifications

Magnetic Storage and Retrieval (MSAR) Design Specification (Develop ID 011280019)

Procedures

Guidelines for Installing and Updating Site-Controlled Oracle Software for UNIX Servers

Guidelines for Installing and Updating Site-Controlled RDBMS Software for Windows Server

Guidelines for Upgrading HP-UX Systems from 32- to 64-bit Hardware (FileNet-Controlled Oracle Only) (available only from CS&S Install/Upgrade Assurance Team)

Image Services Combined Server to Dual Server Conversion Procedures

Image Services Installation and Configuration Procedures for AIX/6000

Image Services Installation and Configuration Procedures for HP-UX

Image Services Installation and Configuration Procedures for the Solaris Operating Environment

Image Services Installation and Configuration Procedures for Windows Server

Image Services MKF Database Conversion Procedure (available only from CS&S)

Image Services MSAR Procedures and Guidelines

Image Services Multi-Committal and Cross-Committal Configuration Handbook

Image Services Update Procedure for AIX/6000

Image Services Update Procedure for HP-UX

Image Services Update Procedure for the Solaris Operating Environment

Image Services Update Procedure for Windows Server

Image Services Windows Application Server Installation Procedures for UNIX Systems

Microsoft Cluster Server Installation & Update Procedures for Windows Server

Remote MS SQL Server Database Conversion Guidelines for Windows Server (available only from CS&S Install/Upgrade Assurance Team)

Remote Oracle Database Conversion Guidelines for UNIX Servers (available only from CS&S Install/Upgrade Assurance Team)

Remote Oracle Database Conversion Guidelines for Windows Server (available only from CS&S Install/Upgrade Assurance Team)

Remote Oracle Database Conversion Guidelines for Windows Image Services Servers & a UNIX Oracle Server (available only from CS&S Install/Upgrade Assurance Team)

Guides and Handbooks

Image Services COLD Handbook
Image Services Enterprise Backup and Restore User's Guide
Image Services Index and WorkFlo Database Contents
Image Services Restore Guide for Windows Server
Image Services SNMP Reference Manual
Image Services System Administrator's Companion for UNIX
Image Services System Administrator's Companion for Windows Server
Image Services System Administrator's Handbook
Image Services System Configuration Overview
Image Services System Information Manager
Image Services System Messages Handbook
Image Services System Reference Guide
Image Services System Tools Reference Manual
Image Services Third-Party Backup/Restore Guidelines

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Overview

Feature Summary

Image Services (IS) Release 4.0.0 includes a number of enhancements, including the following new features:

- MSAR surface checksumming
- Oracle 9i, including local extent management and undo segments
- Extended support for remote databases and Microsoft Cluster Server
- OS authentication for Microsoft SQL Server isql
- Export of LDAP users and groups from Active Directory and NDS
- MKF database default to large size
- New sync_write_test tool to test synchronized network connections
- Preservation of customer file permissions in /fnsw
- Preservation of custom serverConfig files
- Qualification of the following extender and adapters:

  FileNet optical SCSI bus extender
  HP A6829A LVD adapter
  Sun X6758A Ultra3 SCSI adapter

The **“Image Services 4.0.0 RCI Summary” on page 14** includes a complete list of Release Content Items (RCIs) included in Image Services 4.0.0. A few post-qualifications to Image Services SP2, not documented previously but applicable to Image Services 4.0.0, are also included.

These enhancements, as well as other changes that have no associated RCI, are described in more detail in the main section of this document. The descriptions are grouped by functional areas, such as Databases and Operating Systems, listed in alphabetical order and followed by various miscellaneous enhancements.

Most changes affect all versions of Image Services software. Refer to the implementation line of each description for exceptions.

Some features listed in this document will be post-qualified. Check the CSS Web site for notification of successful qualification.

To review the changes that affect a particular software subsystem, see **“List of Enhancements by Subsystem” on page 65**.

Image Services 4.0.0 RCI Summary

The following list summarizes the enhancements made to the FileNet Image Services software in this release. The list is in numerical order.

Certain Image Services 4.0.0 RCIs are NOT included in this list and/or documented in this Release Content Description. These RCIs fall in one of the following categories:

- RCIs for internal features, such as test scripts, that are not released to the field.
- RCIs for internal interfaces to other FileNet products.
- RCIs for preliminary work on features that will not be implemented until a future release.

RCIs Implemented in Image Services 4.0.0

RCI Number	Description	See Page
1703	Release German translated resource files and error message text.	42
2041	Release French translated resource files.	43
2072	Set permissions for specified directories under /fnsw	55
2269	Remove old software versions during an Image Services for HP-UX update.	64
2293	End support for HP-UX 11.0.	51
2344	Remove Image Services “msg” command.	64
2361	End support for AIX 4.3.3.	50
2416	Support Oracle 9i.	22
2456	End support for the Image Services Translation Environment.	41
2529	Change the default MKF database size from standard to large.	29
2547	Improve support for serverConfig file changes.	58
2556	Support MS SQL Server named and default instances on a remote server.	27
2562	Support Solaris 9 (post-GA).	52
2577	Provide MSAR surface checksumming capability.	44
2578	Support remote databases with fresh installations using SQL Server.	26
2581	Support Microsoft Cluster Server with Windows 2000 using Native Mode only.	18
2638	Support local extent management in Oracle.	24

RCIs Implemented in Image Services 4.0.0, Continued

RCI Number	Description	See Page
2683	Support Image Services and Image Services Toolkit combinations.	62
2702	Remove support for obsolete printers.	61
2734	Support only site-controlled databases for fresh installations.	25
2735	Support Oracle 9i undo segments.	23
2745	Support additional slot counts for storage libraries.	30
2746	Use OS authentication as the default with the SQL Server isql tool.	28
2749	Qualify optical SCSI bus extender (post-GA for IS 3.6 SP2).	38
2752	Support Window 2000 Service Pack 3 (post-GA for IS 3.6 SP2).	54
2770	Add operational improvements in multiple storage library server configuration.	31
2771	Add docchk recognition of different flavors of supported image types (post-GA for IS 3.6 SP2).	36
2772	Support remote clustered databases (post-GA).	20
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2790	Support operating systems for IS Toolkit.	62
2791	Qualify HP A6829A LVD adapter (post-GA for IS 3.6 SP2).	40

RCIs Implemented in Image Services 4.0.0, Continued

RCI Number	Description	See Page
2797	Rename msar_sync_test tool to sync_write_test.	34
2802	MSAR support for converting optical surfaces.	49
2804	Support AIX 5L V5.2 with Oracle 9.2.0 (post-GA).	50
2821	Support Veritas Cluster Server (post-GA).	21
2829	Remove specific volume manager requirement for Image Services for the Solaris Operating Environment.	53
2836	Support LDAP export from Active Directory.	57
2842	Support LDAP export from NDS.	57
2845	Support MS SQL Server 2000 Service Pack 3 on Image Services for Windows Server (post-GA).	26
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2879	Test Solaris 8 patch releases.	52
2881	Support Oracle and MS SQL Server remote databases with Microsoft Cluster Server (post-GA).	20
2888	Support Windows Server 2003 (post-GA).	54
2892	Test HP-UX 11i patch bundle.	51
2893	Test AIX 5.1 maintenance level.	50
2915	Remove requirement for full domain administrator rights for Cluster Server installation	19
2945	Test HP-UX 11i March 2003 patch bundle.	51

Enhancement Descriptions

Cluster Server

Microsoft Cluster Server Native Mode Installation

RCIs: 2581

SCRs: 158314, 158845 (Setup Tools)

Implementation: Image Services for Windows Server

Support for Microsoft Cluster Server for systems using Microsoft SQL Server was first provided in Image Services Release 3.6, with support for systems using Oracle added in Images Services Release 3.6 SP1. Installations required the use of domainlets to support mixed and native mode domains.

Support for installations using native mode, rather than domainlets, was post-qualified in Image Services Release 3.6 SP1. However, installation required the use of manual procedures.

Now you can more easily install Microsoft Cluster Server using native mode. Manual instructions are no longer required. You can also continue to use domainlets for mixed or native mode domains.

Microsoft Cluster Server Installation Privileges

RCIs: 2915

Implementation: Image Services for Windows Server; feature post-qualified in Image Services 3.6 SP2, but not documented previously

Previously, Native Mode installations of Microsoft Cluster Server required full domain administrator privileges. That requirement has now been changed to allow installation with local administrator privileges.

Refer to ***Microsoft Cluster Server Installation & Update Procedures for Windows Server*** for installation details.

Microsoft Cluster Server with Remote Databases

RCIs: 2881

Implementation: Image Services for Windows Server, to be post-qualified

Previously, systems using Microsoft Cluster Server were supported with a local database only. As a post-qualification, systems using Microsoft Cluster Server will be supported with a remote database (clustered servers accessing one database). The remote database can be running either Microsoft SQL Server or Oracle. Check the CSS Web site for confirmation of successful qualification.

Remote Clustered Databases

RCIs: 2772

Implementation: Image Services for Windows Server, to be post-qualified

Previously, Image Services supported remote databases and also supported Microsoft Cluster Server with both Microsoft SQL Server and Oracle. However support did not extend to Microsoft Cluster Server databases on remote servers.

Support is now being added for remote Microsoft Cluster Server databases (one server accessing clustered databases), which will be post-qualified with Image Services 4.0.0. Check the CSS Web site for confirmation of successful qualification.

Veritas Cluster Server for Solaris

RCIs: 2821

Implementation: Image Services for the Solaris Operating Environment, to be post-qualified

Support is being added for Veritas Cluster Server. Veritas Cluster Server is designed to provide High Availability (HA) configurations. Initially, Veritas Cluster Server will be supported with Image Services for the Solaris Operating Environment, with a maximum of two nodes. Configurations may include optical libraries, MSAR, or cache-only systems.

Support with other platforms is planned in future Image Services releases.

Veritas Cluster Server will be post-qualified with Image Services 4.0.0. Check the CSS Web site for confirmation of successful qualification.

Databases

Oracle 9i

RCIs: 2416

SCRs: 151575, 152968, 152969, 153325, 153322, 158298, 154051, 154396, 156257, 157961, 158297, 158844 (Database Management)
152600 (Enterprise Backup Restore)
155172, 155878, 156940, 157581 (Installation Wizard)
151558, 151560, 151574, 152953, 153300, 154053, 155163, 155185, 155543, 155546, 155548, 155549, 155550, 155551, 155614, 155907, 156589, 156590, 156594, 156601, 156603, 156926, 156948, 158296, 158306 (System Configuration Tools)

Implementation: All platforms

Support has been added for Oracle 9i. Earlier versions of Oracle are not supported with Image Services 4.0.0.

Oracle 9i Undo Segments

RCIs: 2735

SCRs: 156948 (System Configuration Tools)

Implementation: All platforms

Oracle 9i supports both Rollback segments and the new Undo segments. Rollback and Undo segments provide a “before” image of data for uncommitted transactions, maintaining read consistency among multiple users and providing a means of rolling back transactions.

When Oracle 9i is configured to use Undo segments, all data is placed in an Undo Tablespace. Rollback data is managed via a system-managed undo. Undo segments can increase performance because the Undo tablespace is locally managed.

When you configure Oracle 9i, you must choose either Rollback or Undo segments. You cannot use both at the same time.

Images Services 4.0.0 supports Undo segments only with site-controlled Oracle databases. FileNet-controlled Oracle databases continue to use rollback segments.

Oracle Local Extent Management

RCIs: 2638

SCRs: 154396, 156956 (Database Management)
156258 (Generic Database)

Implementation: All platforms

Image Service now fully supports Oracle Local Extent Management. The only change required was to the spacerpt tool.

Previously, the spacerpt tool provided complete information for Oracle tablespaces configured with dictionary extent management only. Since spacerpt checked only the dictionary extent information in the database, the report was incomplete for tablespaces configured with local extent management.

Because local extent management is increasingly popular in site-controlled installations, spacerpt has been redesigned. The spacerpt tool now uses Oracle data dictionary views to provide the same information for database tablespaces, whether configured with local extent management or dictionary extent management.

Note that local extent management is supported only for site-controlled systems.

Site-controlled Databases Required for Installations

RCIs: 2734

SCRs: 158291, 158311, 158312, 158313, 161120, 161121, 161122, 161123 (Localized Files)
156593, 156597, 157590, 157959, 160138 (System Configuration Tools)

Implementation: All platforms

Previously, when you installed a new Image Services system, you could specify either that the RDBMS be installed and controlled through the Image Services software (FileNet-controlled) or that the RDBMS be installed and controlled by the customer site's RDBMS administrator (site-controlled). Now all new Image Services installations must have a site-controlled RDBMS.

When you are configuring a new system using fn_edit, you are no longer prompted to specify site-control or FileNet-control. Site-control mode is automatically selected for you, various fields in the fn_edit screen are grayed out, and FileNet-control procedures are not made available.

If you have an existing Image Services system with a FileNet-controlled RDBMS, you can upgrade to Image Services 4.0.0 without changing the control of the database. You continue to maintain your RDBMS through System Configuration tools such as fn_edit.

In case of disaster recovery, or if you need to upgrade from 32-bit to 64-bit servers, you can maintain your existing FileNet-controlled RDBMS even though you must perform a software installation. The FileNet Upgrade/Install Assurance Team will assist you with the procedure.

MS SQL Server 2000

RCIs: 2845

Implementation: Image Services for Windows Server; SP3 to be post-qualified

Support continues for Microsoft SQL Server 2000 with the Image Services 4.0.0 release.

Microsoft SQL Server 2000, Service Pack 3, will be post-qualified with Image Services 4.0.0. Check the CSS Web site for confirmation of successful qualification.

Remote MS SQL Server Databases for New Installations

RCIs: 2578

Implementation: Image Services for Windows Server; post-qualified in Release 3.6 SP1 but not documented previously.

You can now set up a remote site-controlled Microsoft SQL Server database for a new Image Services installation. Previously, remote site-controlled Microsoft SQL Server databases were only supported for conversions of existing systems.

For additional details, refer to the ***Guidelines for Installing and Updating Site-Controlled RDBMS Software for Windows Server***.

Named and Default Instances on Remote MS SQL Server Databases

RCIs: 2556

SCRs: 165005 (Generic Database)
165284 (Setup Tools)
165008 (System Configuration Tools)

Implementation: Image Services for Windows Server; post-qualified in Release 3.6 SP1 but not documented previously.

Image Services 3.6 SP1 added support for remote site-controlled Microsoft SQL Server databases. Initially only named instances were supported remotely. Support has now been added for the default instance as well.

Authentication for MS SQL Server isql

RCIs: 2746

SCRs: 157588 (System Configuration Tools)

Implementation: Image Services for Windows Server

Previously, the Image Services configuration, initialization, and startup software required the Microsoft SQL Server Administrator user's logon password to be put in clear text in the Windows 2000 MSSQL_SA_PW system environment variable. This requirement has now been eliminated and OS Authentication is now the default for the MS SQL Server isql tool.

The fn_mssql.exe tool uses OS Authentication conditionally, based on the registry information. The fn_mssql.exe tool looks for the following registry entry:

/HKEY_LOCAL_MACHINE/SOFTWARE/FileNet/IMS/
CurrentVersion/MSSQL_OS_AUTH

If the registry value does not exist - or exists and is set to ON - OS Authentication is used.

If the registry variable exists and is set to OFF or FALSE, OS Authentication is turned off and a password is required for isql. If the password is not in the MSSQL_SA_PW environment variable, you are prompted for the password.

MKF Database Default to Large Size

RCIs: 2529

SCRs: 159386, 159738, 160124 (System Configuration Tools)

Implementation: All platforms

In Image Services 3.6 SP1 the maximum size of MKF databases was increased by allowing database page sizes of 1 KB (the former limit), 4 KB, 8 KB, or 16 KB. The default remained 1 KB.

Now the default value for new installations has been changed from 1 KB to 8 KB, considered to be appropriate for “large” databases. You can change the MKF database page size during installation using System Configuration Tools.

Document and OSAR Services

Additional Slot Counts for Storage Libraries

RCIs: 2745

SCRs: 158665 (Diagnostics)
158662 (Document Services)
158291 (Localized Files)
157606, 157930, 158661, 158663 (OSAR Services)
158664 (Server Control/Management)
159295 (System Configuration Tools)

Implementation: All platforms.

An MSAR configuration can now support two additional slot counts: 16 slots and 1024 slots. The 16-slot count is suitable for MSAR development systems. The 1024-slot count is suitable for larger MSAR capacities. MSAR slot count choices are now 16, 128, 256, 512, and 1024.

The slot count has also been increased for large optical storage libraries. The CDB devices template has been modified to allow the full number of slots in the larger Plasmon libraries, which had previously been limited to 288.

Multiple Storage Libraries Server Configuration Checks

RCIs: 2770

SCRs: 161829, 161892 (Database Maintenance)
162570, 163282 (Document Services)
162929, 162930, 162931, 162932, 163641, 163642, 163644, 164372, 164373, 164374, 164375, 167371, 167373, 167374, 167370 (Localized Files)
161810, 161864, 161868, 161878, 161885, 161894, 161909, 161910, 161933, 162564, 163281 (OSAR Services)
161831, 161863 (Server Control/Management)
163625 (System Configuration Tools)
161809, 161823, 161908 (SystemV Miscellaneous)

Implementation: All platforms

Enhancements have been made to ensure that documents stored in any multiple storage library server configuration can be migrated successfully and retrieved from tranlogs. In conjunction with this change, you can no longer copy documents remotely. Copying locally ensures that primary and tranlog surfaces are never separated when you perform commands such as Document Copy, Rebuild Media, Consolidate Media, or stdoccpy.

Background

When an Image Services system has multiple storage library servers and a primary family is associated with a tranlog, the document committals are spread among the different servers and multiple primary and tranlog surfaces are used. This is true even when the document family does not have a preferred library or the preferred libraries are assigned to multiple storage library servers. The primary

and tranlog surfaces for each document must always be on the same storage library server.

Under unusual circumstances prior to Image Services 3.6 SP2 two problems could occur. First, it was possible that Rebuild Media, Document Copy, Consolidate Media, or stdoccpy could place the primary and tranlog surfaces for some documents on different storage library servers. This could only occur when the primary family and the associated tranlog did not specify a preferred library or the preferred libraries were assigned to multiple storage library servers and compatible libraries existed on the target servers. If the primary and tranlog surfaces were separated, it would not be possible to retrieve documents from the tranlog, since the primary surface was not accessible on the same server.

A second problem could have occurred when the primary family and the associated tranlog did not specify a preferred library and the primary family and/or tranlog were not supported on the same server. In this case some of the documents could not be migrated successfully. On the servers where the primary or tranlog family was not supported, the committed documents stayed in cache and could not be written to storage library media.

In Image Services 3.6 ESE restrictions were added that required associated primary and tranlog families to specify preferred libraries which reside on the same storage library server. Also, primary and tranlog families were restricted to a single storage library server. This restriction was undesirable because it prevented committals from being spread among servers.

Current changes

In Image Services 4.0.0, the restriction requiring a primary and tranlog family to share one storage library server has been removed. This allows committals to be spread among servers if the family does not have a preferred library and is supported on multiple servers.

When the primary family is being updated, Database Maintenance now validates that the primary and associated tranlog media type is write-compatible on the same storage library servers. If the tranlog media type is not write-compatible, the family cannot be updated. If the primary family is not write-compatible on any storage library servers, the family is still allowed to be saved to support cache-only systems. However, documents can be committed only to servers with write-compatible libraries.

Documents can only be copied locally. This prevents the separation of primary and tranlog surfaces after Document Copy, Rebuild Media, Consolidate Media and stdoccpy.

Remote copy is no longer supported. Instead, you can first copy to the local server and then use move_disk to move the surface to a remote server.

The new Database Maintenance checks do not happen automatically. After you upgrade to Image Services 4.0.0, you must re-save all defined media families using Database Maintenance and correct all reported errors. When you add or delete a library or a storage library server, you must update and re-save all media families to ensure a correct family definition.

sync_write_test for Testing Synchronized Network Connections

RCIs: 2797

SCRs: 162924, 164280, 171089 (OSAR Services)

Implementation: All platforms.

The msar_sync_test tool was introduced in the Image Services 3.6 ESE release. The tool allowed you to test your storage management system, such as Network Attached Storage (NAS), for synchronized network connections. Synchronized connections are required for Magnetic Storage and Retrieval (MSAR) creation directories.

Because the tool has also proven useful with systems that do not use the MSAR feature, msar_sync_test has been enhanced and renamed sync_write_test.

The purpose of sync_write_test is to determine if a given directory is running in a synchronous mode, that is, supports SYNC writes. To prevent data loss, directories used for storing database files or CSM cache files, as well as MSAR creation directories, must support synchronous writes.

The sync_write_test tool requires one parameter, the storage management system target directory, for example a NAS or Hierarchical Storage Management (HSM) device. The syntax of sync_write_test is:

```
sync_write_test <target directory>
```

The tool creates a file that is opened with the SYNC flag(s) in the target directory. For UNIX systems the flag is O_SYNC. For Windows Server systems, the flags are FILE_FLAG_NO_BUFFERING and FILE_FLAG_WRITE_THROUGH.

The tool writes 1024-byte blocks to the file indefinitely. The block contains the block number repeatedly stored in long words. The first block contains 256 long words with the value of 1, the second block contains 256 long words with the value of 2, etc. Note that for Windows 2000 systems, the last 1024-byte block is written twice.

When sync_write_test has written 10K of data, you are prompted to disconnect from the target storage system. When you disconnect from the storage system, sync_write_test fails on the next write to the target file, writes a message to the screen indicating the last successfully written 1K block, and prompts you to reconnect to the target storage system. If you do not disconnect the target system, sync_write_test terminates after writing 1 GB of data.

When you have reconnected to the target storage system, sync_write_test performs the verification phase and indicates whether the file system passed the SYNC write test. If the file system passed the SYNC write, the target test file is deleted. If the file system did not pass the SYNC test, the target file is not deleted.

To prevent an unlikely, but possible, false positive result when buffers are flushed before the disconnect is complete, it is recommended that you run sync_write_test five times on a given device.

If the target directory does not support synchronous writes, it should not be used for storing MSAR surfaces, database files, or CSM cache data files.

Refer to the ***Image Services System Tools Reference Manual*** for a detailed description of the sync_write_test tool.

docchk Distinguishes More Flavors of Image Types

RCIs: 2771

SCRs: 160769, 161822, 163284, 165024 (OSAR Services)
161464 (SystemV Graphics Utilities)

Implementation: All platforms, post-qualified in Image Services 3.6 SP2 and Image Services 3.6 ESE but not documented previously

The docchk tool tests for corrupted images. Previously, docchk issued an error for unsupported flavors of supported image types, for example color images in TIFF format. The docchk tool can now distinguish these unsupported flavors of supported image types and no longer treats them as corrupted images.

Graphical User Interface

XVT Releases

RCIs: 2773, 2774

SCRs: 160080, 160117, 160660 (Cache Backup)
160078, 160115, 160658 (COLD 2.X)
160077, 160114, 160664 (Database Maintenance)
160129, 160704 (Installation Wizard)
161866, 161873, 161865 (Localized Files)
160079, 160116, 160707 (Security Administration Application)
160076, 160113, 160706 (Server Control/Management)
160081, 160128, 160693 (Server Print)
160082, 160111, 160697 (System Configuration Tools)
160074, 160112, 160599 (SystemV Applications Executive)
160097, 160118, 160219 (SystemV Miscellaneous)
160069, 160073, 160075, 160083, 160096, 160105, 160106, 160107, 160108, 160119, 161835, 160292, 160478, 160479, 160493, 160782, 161837 (XVT Portable Toolkit)

Implementation: All platforms.

Graphical user interface (GUI) applications within Image Services are compiled using XVT. Image Services for HP_UX and Image Services for Windows server use XVT 5.1. Image Services for AIX/6000 uses XVT 5.0. Image Services for the Solaris Operating Environment uses XVT 4.58.

Hardware

FileNet Optical SCSI Bus Extender

RCIs: 2749

Implementation: All platforms; post-qualified in Image Services 3.6 SP2 but not documented previously

Support has been added for the FileNet Optical SCSI Bus Extender. The extender replicates the signals from the SCSI bus on one end of the fiber optic cable to the SCSI bus on the other end of the fiber. The maximum length of fiber optic cable supported by Image Services is 1.6 km.

With a simple SCSI extender like the FileNet device, the signal propagation delay through a long fiber can cause system problems. One such problem is due to the shared nature of the SCSI bus. When any SCSI device, including the host, wants to gain access to the bus, it waits for the bus to become idle and then goes through an arbitration process that determines which device will next have bus access. This process is time sensitive, and the propagation delay through the fiber can allow devices on the SCSI bus segments on both ends of the fiber to think that they have won arbitration. When they both start using the bus at the same time, parity errors occur and the host may reset the bus. Solutions to the problem are to use short fibers, to have the host single-thread commands to the bus, or to prevent the target devices from disconnecting from the bus.

The FileNet OSAR HTS can be configured so that neither the drives nor the arm will disconnect from the SCSI bus, even if the host gives them permission to do so. This feature allows you to use the FileNet

OSAR HTS with the FileNet Optical SCSI Bus Extender on any of the four server platforms with any length fiber.

Since an HP storage library cannot be configured to not disconnect from the SCSI bus, the server must be set up to either not allow disconnects or to single thread the commands on the SCSI bus when using long fiber optic cables.

On Windows and Solaris systems, you can configure the SCSI host adapters to not allow the target devices to disconnect from the SCSI bus while executing commands.

IBM servers single-thread commands by SCSI ID so an HP library operating in LUN mode with all devices configured under a single SCSI ID work correctly with long fiber optic cables. However, for all of the devices to be under a single SCSI ID, a library with more than 6 drives must be connected to two different host adapter ports using two sets of SCSI extenders.

HP servers cannot be configured to not allow disconnects and they do not single-thread commands. Therefore FileNet SCSI bus extenders cannot be used with HP servers and HP storage libraries with long length fiber optic cables.

Another SCSI characteristic that is affected by the length of the fiber optic cable is that the host and the device use a handshaking protocol to confirm transmission of data through the SCSI bus. As the fiber gets longer, the propagation delay through the fiber causes this handshaking process to slow down, reducing the data transfer rate of the bus. At very long distances, this reduction can be severe. This performance impact limits the allowable fiber optic cable length to 1.6 km with Image Services.

Sun X6758A Ultra-3 SCSI Adapter

RCIs: 2784

SCRs: 168394 (Kernel Drivers)

Implementation: Image Services for the Solaris Operating Environment; post-qualified in Image Services 3.6 SP2 but not documented previously

Support has been added for the Sun X6758A dual port Ultra-3 SCSI adapter. This LVD/SE type of SCSI adapter is for use with Plasmon G Series libraries and is supported on the Sun Fire 280R, V880R, Sun Enterprise 220R, 250, 420R and 450 servers.

A6829A LVD Adapter

RCIs: 2791

Implementation: Image Services for HP-UX; post-qualified in Image Services 3.6 SP2 but not documented previously

Support has been added for the HP A6829A LVD Adapter for use with HP 5405 and 7405 servers. The HP 5405 and 7405 servers do not support the A5150A dual-port LVD SCSI adapter. The A6829A LVD/SE type of adapter is a replacement for the A5150A adapter for use with LVD libraries connected to the new servers.

Localization

Translation Environment CD No Longer Created

RCIs: 2456

SCRs: 155892 (Cache Backup)
155891 (COLD 2.X)
155879 (Database Maintenance)
155894 (Security Administration Application)
155893 (Server Control/Management)
155875, 155876 (Setup Tools)
155896 (System Configuration Tools)
155890 (SystemV Applications Executive)
155527, 155528, 155870, 155871, 155873, 155874 (XVT Portable Toolkit)

Implementation: All platforms.

Previously, FileNet created a Translation Environment CD for release with Image Services. The purpose of Translation Environment was to allow customers to modify the delivered GUI's to display messages in another language. It has been determined that this feature is not used, and the Translation Environment CD will no longer be created.

German Resource and Error Message Files

RCIs: 1703

SCRs: 155154, 155155, 155156, 155157 (Localized Files)

Implementation: All platforms

German versions of the resource files and error message text have been updated for this release.

If the LANG environment variable is set appropriately, the German localized resource files are used by the server applications and the German error message file is accessed by the ERM shared library. If the LANG variable is set to one of the following values, German files are used:

de_DE	AIX
de_DE.iso88591	HP-UX
de	Solaris
DEU	Windows Server

French Resource Files

RCIs: 2041

SCRs: 155154, 155155, 155156, 155157 (Localized Files)

Implementation: All platforms

French versions of the resource files have been updated for this release.

If the LANG environment variable is set appropriately, the French localized resource files are used by server applications. If the LANG variable is set to one of the following values, French files are used:

fr_FR	AIX
fr_FR.iso88591	HP-UX
fr	Solaris
FRA	Windows Server

French error message text is not available.

Magnetic Storage and Retrieval (MSAR)

Surface Checksumming

RCIs: 2577

SCRs: 161865, 161866, 161872, 161873 (Localized Files)
159292, 160772, 160776, 160778, 160779, 160781, 160790, 160934, 161110, 161117, 161820, 161824, 162600, 162447, 162946, 165010, 171079, 171080, 171081, 172044, 172082 (OSAR Services)
160780, 161053, 171090 (Server Control/Management)
160774, 160791 (SystemV Miscellaneous)

Implementation: All platforms.

Checksum feature

A new MSAR surface checksumming feature has been added to prevent making a copy of an MSAR surface that is in an inconsistent state. For example, if a surface is copied while being written, the document may have been written but not have an associated short descriptor entry. Checksumming also insures that the MSAR surface file is complete, for example not truncated while using FTP.

Checksums are done before the highwater mark areas and in selected locations throughout the surface. The entire surface is not checksummed. The checksum values are written to the MSAR label. In addition, the highwater mark of the MSAR surface file is also written to the MSAR label.

A valid checksum is written to the MSAR label when an MSAR surface is ejected or when an MSAR library is put into backup mode. When an

MSAR library is put into backup mode, all the MSAR surfaces in the library are updated with up-to-date checksums if necessary.

If the checksum is valid, the MSAR label is not updated, allowing surfaces to be inserted after they have been ejected or restored from backup.

When an MSAR surface file is inserted or incorporated into an MSAR library, the checksum values and highwater mark are calculated and compared with the label values. If the values do not match, the MSAR surface file is not inserted and an appropriate message is displayed.

The checksum feature is designed to work easily with systems that already have MSAR surfaces. If a surface was ejected or extracted from an MSAR library prior to the installation of this feature, the label levels are compared and the surfaces can be inserted without checksums or highwater mark verification. For surfaces added to an MSAR library prior to installing the checksum feature, the MSAR label format level is automatically changed from the former format level (2) to the current format level (3) after checksumming has been installed and the IS software has been re-cycled.

When certain error conditions occur, for example when the file does not exist or there is a network error, the surfaces are ejected although the checksums cannot be updated. A new state has been added to the Lib_surfaces table so that the file can be inserted back into the same system. You cannot incorporate a file in this state into a foreign system, preventing you from inadvertently incorporating a partial or work-in-progress MSAR file. DOC_tool and Storage LIbrary Control issue a warning when a file is ejected without the checksums having been updated. The message includes a recovery procedure for putting the surface in the correct state prior to transferring the surface to another system.

DOC_tool changes

To support the new checksumming feature, a new DOC_tool READMsarlabel command has been added. In addition, the DOC_tool INSmsar command has been enhanced.

ReadMsarlabel command

The new DOC_tool READMsarlabel command displays the MSAR label and volume label (sector 16). When you run the command you are prompted for an absolute path to the MSAR surface file (.dat). If the surface is in box, the checksum and highwater mark values in the MSAR label are not validated. If the surface is not in box, the checksum and highwater mark values are validated.

For MSAR surface files that have the old format (no checksum), the MSAR label and the volume label content are displayed with no validation.

READMsarlabel is not password protected.

INSmsar command

The DOC_tool INSmsar command allows you to insert or incorporate an MSAR surface file. The INSmsar command now displays new error messages appropriate to the new checksumming feature.

oddump change

The oddump tool now displays the new checksumming fields for the MSAR label.

msar_convert_bkg change

The MSAR convert background job program, msar_convert_bkg, now recognizes the new checksumming fields.The msar_convert_bkg program writes an MSAR label with the file highwater mark set to zero (0). The checksum for the MSAR label is calculated and stored before the surface is inserted into an MSAR library.

dsched changes

The dsched identify disk function and the process of transitioning an MSAR library from normal to backup mode have been modified to support MSAR checksumming.

Identify disks

Previously, the identify_disks dsched function was only enabled at start up. The Storage Library Control menu choice to identify Media in Library was grayed out for MSAR libraries. The identify_disks function at start up made the OSA entries consistent with the lib_surfaces entries and the drives with surfaces were started up. In-slot surfaces were not swapped into drives.

The identify_disks function now swaps the in-slot surfaces into drives. As an MSAR surface is swapped into an MSAR drive, the MSAR surface is read. If an error is encountered while identifying the surface, the dtp process generates an appropriate RSVP or INFO message. As an MSAR surface is swapped into a drive, the MSAR label format level (2) is updated to the current format level (3) when necessary.

The enhanced identify_disks function has two phases:

1. Make the OSA entries consistent with the lib_surfaces table, and start up all drives that have surfaces. This phase is performed only at Image Services start up.

2. Swap every in slot surface into a drive and start up the drive. If no drives are available for swapping or the library is in backup mode, an Storage Library Control INFO message is generated indicating the reason that the identify_disks operation could not be performed.

The Storage Library Control menu choice to identify Media in Library is no longer grayed out.

If the MSAR library is not in backup mode, unlabeled in-slot surfaces are labeled as a result of the identify_disks function. Note that identify_disks is called automatically at Image Services start up.

Changing to backup mode

Previously, the dsched process transitioned an MSAR library to backup mode by swapping all the in-drive surfaces to slots. This is done so that short descriptor buffers are flushed and to insure that surfaces are not opened with the WRITE flag set.

Now, when transitioning to backup mode, the dsched process also checksums every surface in the library. This is done so that MSAR surface files restored from backup can be re-inserted into an MSAR library. Note that the MSAR label is not updated if the highwater mark and checksum values are valid.

If checksumming results in an error for any of the surfaces, dsched continues to update all the surfaces, but the library is not transitioned to backup mode. If an error is encountered, an informational message is generated.

Converting Foreign Optical Surfaces

RCIs: 2802

SCRs: 163636 (OSAR Surfaces)

Implementation: All platforms; post-qualified in Image Services 3.6 ESE but not documented previously

Previously, you could convert all optical surfaces - except foreign surfaces - to MSAR surfaces. Now you can also convert foreign optical surfaces to MSAR surfaces.

When converting from a foreign optical surface, the target MSAR surface becomes a local surface rather than inheriting the foreign attributes from the source optical surface.

The msar_convert_bkg program has been changed to:

- accept the foreign optical surface
- use the local SSN as the ssn (the system_id field) in the volume label of the target converted MSAR surface
- set the orig_ssn and orig_surfid fields with zero in the surf_info table of the target converted MSAR surface.

Operating Systems

AIX

RCIs: 2361, 2785, 2804, 2893

SCRs: 162577, 162578, 166030 (Kernel Drivers)

Implementation: Image Services for AIX/6000

The following AIX releases are supported for Image Services for AIX/6000:

AIX 5L Version 5.1 64-bit
AIX 5L Version 5.2 (to be post-qualified)

Earlier versions of AIX, including the 32-bit version of AIX 5L Version 5.1, are not supported with Oracle 9i but can be run on application servers that are not installed with Oracle. Oracle 9i requires a 64-bit version of AIX.

The following maintenance levels have been tested with this release:

AIX 5.1 Maintenance Level 2 (AIX 5100-02)
AIX 5.1 Maintenance Level 3 (AIX 5100-03)

For the most up-to-date information on maintenance level testing, refer to the specification for your Images Services release and operating system on the FileNet Customer Service & Support Web site: Product Tech Info > Image Services > Compatibility & Dependency.

HP-UX

RCIs: 2293, 2892, 2945

Implementation: Image Services for HP-UX

The following HP-UX release is supported for Image Services for HP-UX:

HP-UX 11i

Image Services can run with both the 32-bit and 64-bit versions of HP-UX 11i. Oracle 9i requires a 64-bit version of HP-UX.

HP-UX 11.0 is no longer supported.

The following patch bundles have been tested with this release:

HP-UX 11i Patch Bundle June 2002
HP-UX 11i Patch Bundle September 2002
HP-UX 11i Patch Bundle December 2002
HP-UX 11i Patch Bundle March 2003

For the most up-to-date information on patch bundle testing, refer to the specification for your Images Services release and operating system on the FileNet Customer Service & Support Web site: Product Tech Info > Image Services > Compatibility & Dependency.

Solaris

RCIs: 2562, 2879

Implementation: Image Services for the Solaris Operating Environment

The following Solaris release is supported for the initial release of Image Services for the Solaris Operating Environment:

Solaris 8

In addition, the following Solaris release is supported for Image Services for the Solaris Operating Environment as a post-qualification:

Solaris 9

Refer to the FileNet CSS Web site for information on the completion of this qualification.

The following patch release has been tested with this release:

Solaris 8 February 2002 release

For the most up-to-date information on patch testing, refer to the specification for your Images Services release and operating system on the FileNet Customer Service & Support Web site: Product Tech Info > Image Services > Compatibility & Dependency.

Volume Managers for Solaris

RCIs: 2829

Implementation: Image Services for the Solaris Operating Environment, to be post-qualified

Image Services for the Solaris Operating Environment supports any version of the Veritas Volume Manager (VxVM) supported by Solaris 8 and Solaris 9.

In addition, as an Image Services 4.0.0 post-qualification, you are no longer restricted to use of the Veritas Volume Manager. For example, you will also be able to manage volumes using Solstice DiskSuite (Solaris 8) or Solaris Volume Manager (Solaris 9). Refer to the FileNet CSS Web site for information on the completion of this qualification.

Windows Server

RCIs: 2752, 2888

Implementation: Image Services for Windows Server

The following Windows releases are supported for Image Services for Windows Server:

Windows 2000 Server
Windows 2000 Advanced Server
Windows 2000 Datacenter Server

Windows 2000 Service Pack 3 was post-qualified with Image Services 3.6 SP2, as well as Image Services 4.0.0, but not documented previously.

The following releases will be post-qualified for Image Services for Windows Server:

Windows Server 2003
Windows Advanced Server 2003
Windows Datacenter Server 2003

Check the CSS Web site for confirmation of successful qualification.

Security

Permissions for Customer Directories and Files in /fnsw

RCIs: 2072

SCRs: 161470 (System Configuration Tools)

Implementation: All UNIX-based platforms.

Customers often store their own programs and files under the FileNet Image Services directory structure. Common examples include customer backup scripts and FileNet Professional Services utilities.

While storing the files under the /fnsw directory structure has never been a problem, in the past, during updates fn_setup would change the permissions associated with these programs to match the permissions required by the FileNet software. Now you can store files and programs with their own permissions under the /fnsw directory, and fn_setup will no longer change those permissions.

As part of the FileNet installation/upgrade process, fn_setup sets the permissions of all files under the /fnsw directory structure. The permissions set for any particular directory are based on an entry in the permission_table file. Previously, if no entry existed in this file for a particular directory under /fnsw, the directory inherited the permissions of its parent directory.

Now you can add directories and files to an optional local_permission_table. The fn_setup program uses both the standard permission_ table and the local_permission_table to set permissions. Because the local_permission_table is not a released file, it is not overwritten when the Image Services software is updated, and

fn_setup does not overwrite permission settings for directories and files specified in the local_permission_table.

A template for the local_permission_table is provided in the same directory as the permission_table, providing instructions on how to create a local_permission_table. This text file is named:

local_permission_table.template

The local_permission_table is optional, and fn_setup runs as it did previously if the local_permission_table is not present.

The permission_table (permission_table.aix, permission_table.hpux, or permission_table.sun) now contains a warning against modifying the permission_table.

As a result of this change, if the /fnsw directory is mounted as a separate UNIX file system, the permissions of the /fnsw/lost+found directory remain unchanged.

LDAP Export from Active Directory and NDS

RCIs: 2836, 2842

SCRs: 169350, 173041 (Security Services)

Implementation: All platforms.

Image Services 3.6 SP2 added support for the Lightweight Directory Access Protocol (LDAP). Although Image Services could import users, groups, and organizations from any LDAP directory via the FileNet-published XML interchange format, the FileNet ldap_exp tool could export from an iPlanet LDAP directory only.

The ldap_exp tool can now export from Active Directory and Novell Directory Services (NDS) as well as iPlanet. ldap_exp creates an XML file that can be used by the LDAP import tools for both Image Services and Content Services.

System Configuration

Custom serverConfig File Changes Preserved

RCIs: 2547

SCRs: 158294 (Installation Wizard)
157948, 158303 (Setup Tools)
158837 (SystemV Applications Executive)
158636, 158829, 158830, 158831, 158832, 158833, 158842, 168043 (SystemV Miscellaneous)
159173 (SystemV Networking)

Implementation: All platforms.

Previously, when you updated your Image Services software, the existing serverConfig file was replaced by the default file for the new release. If you had customized your serverConfig file, you were forced to preserve and update your changes manually for the system to work as expected for your site. Your serverConfig file changes are no longer automatically replaced during the update process.

General Procedure

Two Image Services programs - cormon and TM_daemon - and the PPM library previously looked for the serverConfig file in two different places: /fnsw/etc and /fnsw/sd/#. Now cormon, TM_daemon, and PPM access serverConfig using the new fnc_open_server_config_file library function. This function looks for the serverConfig file only in /fnsw/etc.

The default, non-customized serverConfig file is:

/fnsw/etc/serverConfig

A customized version of this file is:

/fnsw/etc/serverConfig.custom

The fnc_open_server_config_file library function first looks for a customized version of the file. If a customized version is not found, the default version is used. If the serverConfig.custom file exists but is not readable by the process, the following error message is posted in the elog file:

```
The path and filename file exists but cannot be accessed by
this process.
The file will not be used. errno=XX
```

If the custom file is not readable, the default serverConfig file is used instead.

Updates when serverConfig has not changed

If the format of the serverConfig file has not changed, and there is no change in request handlers, the upgrade process searches for /fnsw/etc/serverConfig.custom. If a custom file does not exist, the existing /fnsw/etc/serverConfig is copied to a temporary file and the new serverConfig is installed. If the two files are different, the temporary file is renamed to serverConfig.custom. If the two files are identical, the newly installed serverConfig is now the default.

Updates when serverConfig has changed

If the format of the serverConfig file has changed, or there are changes in request handlers, the upgrade process searches for /fnsw/etc/serverConfig.custom. If a custom file does not exist, the existing serverConfig is copied to /fnsw/etc/serverConfig.conflict and the new serverConfig is installed. If serverConfig.custom does exist, it is renamed to serverConfig.conflict and the new serverConfig is installed.

The existence of /fnsw/etc/serverConfig.conflict results in an elog warning each time the serverConfig file is consulted. This warning reminds the system administrator either to remove the serverConfig.conflict file, if no customization is required, or to update the serverConfig.conflict file as appropriate and rename it to serverConfig.custom.

The default /fnsw/etc/serverConfig is used whenever serverConfig.conflict exists. When serverConfig.conflict no longer exists, the library function once again searches for a custom file. If a custom file is not found, the default file is used.

Obsolete Printers Not Displayed

RCIs: 2702

SCRs: 171055, 171056, 171058, 171059 (Localized Files)
153302, 170724, 170725, 170730, 172063 (System Configuration Tools)

Implementation: All platforms.

A number of printers are no longer displayed in the list of printers that you can add through fn_edit. These printers are not deleted from the Printer_Constants table. Instead, a new column identifies the printers as obsolete and they are not included in the Add_Printers table.

Obsolete printers include:

Ricoh LP-M20 Print Engine
Ricoh LP-M32 Print Engine
Xerox 8840C (C-size)
Versatec 8636 (E-size)
3M 689 US (C-size)
3M 689 International (A2-size)
3M LBQ (C-size)
CalComp RasterMaster Model 52236 (E-size)
CalComp DrawingMaster Model 600 (E-size)
JRL 1220D (D-size)
Ricoh LP-M38 Print Engine - printer_type = 22

In addition, the WorkFlo/Fax 3.0 selection has been renamed Fax.

Miscellaneous Enhancements

Image Services and IS Toolkit Support

RCIs: 2683, 2790

Implementation: All platforms

The following Image Services and IS Toolkit releases are supported together.

- Image Services 4.0.0 supports IS Toolkit 3.6.x and 4.0.0.
- IS Toolkit 4.0.0 supports Image Services 3.6.x and 4.0.0.

IS Toolkit 4.0.0 supports the following server operating systems:

AIX 5L
HP-UX 11i
Solaris 8
Windows 2000

IS Toolkit 4.0.0 supports the following client operating systems:

AIX 4.3.x and AIX 5L
HP-UX 11.0 and HP-UX 11i
Solaris 2.6, Solaris 8, and Solaris 9
Windows 98, Windows NT 4.0, Windows 2000, Windows XP, and Windows 2003 (to be post-qualified)

Image Services and Content Services Collocation

RCIs: 2859

Implementation: Image Services for HP-UX, Image Services for the Solaris Operating Environment, Image Services for Windows Server; to be post-qualified.

As a post-qualification you will be able to collocate Image Services 4.0.0 and Content Services 5.2 or 5.3 on a single server. Collocation is available for the following operating system and database combinations:

- HP-UX 11i running Oracle 9i locally or remotely
- Solaris 8 running Oracle 9i locally or remotely
- Windows 2000 running Windows SQL Server 2000 locally or remotely
- Windows 2000 running Oracle 9i locally or remotely
- Windows 2000 running Oracle 9i remotely on AIX, HP-UX, or Solaris

You can collocate Image Services and Content Services using either a single instance or multiple instances of Oracle 9i.

Image Services 4.0.0 and Content Services 5.2 or 5.3 collocation will be post-qualified. Check the CSS Web site for confirmation of successful qualification.

FileNet msg removed

RCIs: 2344

SCRs: 157553, 157554, 161814 (Help-Error)
167711 (Installation Wizard)
167391 (Setup Tools)
157555 (System Configuration Tools)

Implementation: All platforms

In IDMIS 3.5.0, the FileNet msg command was renamed fn_msg to prevent potential conflicts with the Windows 2000 msg command and the Content Services msg command. To ease the transition, both FileNet msg and fn_msg provided the same function in IDMIS 3.5.0.

In IS 3.6, msg continued to provide the translation of the requested error tuple but appended an informative message about the change from msg to fn_msg.

With IS 4.0.0, you must use fn_msg for error tuple information; the FileNet msg command is no longer available.

File Clean-up during Update

RCIs: 2269

SCRs: 116086 (Installation Wizard)

Implementation: Image Services for HP-UX

Occasionally Image Services files from a previous release were not deleted during an update. The Wizard now deletes all files from previous releases.

List of Enhancements by Subsystem

Enhancements by Subsystem

Refer to the following list for the RCIs and SEPs that apply to each software subsystem of FileNet Image Services. Documentation and testing subsystems are not included.

Subsystem	RCI Number	Description
Cache Backup (CB)	2456	End support for the Image Services Translation Environment.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
COLD 2.X (C2)	2456	End support for the Image Services Translation Environment.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
Database Maintenance (DB)	2456	End support for the Image Services Translation Environment.
	2770	Add operational improvements in multiple storage library server configuration.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.

Subsystem	RCI Number	Description
Database Management (OR)	2315	Support the Oracle OCI interface.
	2416	Support Oracle 9i.
	2638	Support local extent management in Oracle.
Document Services (DS)	2745	Support additional slot counts for storage libraries.
Enterprise Backup Restore (B2)	2416	Support Oracle 9i.
Generic Database (GB)	2315	Support the Oracle OCI interface.
	2556	Support MS SQL Server named and default instances on a remote server.
	2638	Support local extent management in Oracle.
Help-Error (HE)	2344	Remove Image Services “msg” command.
Index Services (IS)	2315	Support the Oracle OCI interface.
Installation Wizard (W8)	2269	Remove old software versions during an Image Services for HP-UX update.
	2344	Remove Image Services “msg” command.
	2416	Support Oracle 9i.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
Kernel Drivers (KD)	2562	Support Solaris 9 (post-GA).
	2785	Support AIX 5L Version 5.1 (64-bit).
	2804	Support AIX 5L V5.2 with Oracle 9.2.0 (post-GA).

Subsystem	RCI Number	Description
Localized Files (LF)	1703	Release German translated resource files and error message text.
	2041	Release French translated resource files.
	2577	Provide MSAR surface checksumming capability.
	2702	Remove support for obsolete printers.
	2734	Support only site-controlled databases for fresh installations.
	2745	Support additional slot counts for storage libraries.
	2770	Add operational improvements in multiple storage library server configuration.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
OSAR Services (OS)	2577	Provide MSAR surface checksumming capability.
	2745	Support additional slot counts for storage libraries.
	2770	Add operational improvements in multiple storage library server configuration.
	2771	Add docchk recognition of different flavors of supported image types (post-GA for IS 3.6 SP2).
	2797	Rename msar_sync_test tool to sync_write_test.
	2802	MSAR support for converting optical surfaces.
Security Administration Application (XS)	2456	End support for the Image Services Translation Environment.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.

Subsystem	RCI Number	Description
Security Administration Application (continued)	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
Security Services (SE)	2836	Support LDAP export from Active Directory.
	2842	Support LDAP export from NDS.
Server Control/Management (XC)	2456	End support for the Image Services Translation Environment.
	2577	Provide MSAR surface checksumming capability.
	2745	Support additional slot counts for storage libraries.
	2770	Add operational improvements in multiple storage library server configuration.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
Server Print (PV)	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
Setup Tools (ST)	2344	Remove Image Services “msg” command.
	2456	End support for the Image Services Translation Environment.
	2547	Improve support for serverConfig file changes.
	2556	Support MS SQL Server named and default instances on a remote server.
	2581	Support Microsoft Cluster Server with Windows 2000 using Native Mode only.
SQL Services (SQ)	2315	Support the Oracle OCI interface.

Subsystem	RCI Number	Description
System Configuration Tools (SF)	2072	Set permissions for specified directories under /fnsw
	2344	Remove Image Services “msg” command.
	2416	Support Oracle 9i.
	2456	End support for the Image Services Translation Environment.
	2529	Change the default MKF database size from standard to large.
	2556	Support MS SQL Server named and default instances on a remote server.
	2702	Remove support for obsolete printers.
	2734	Support only site-controlled databases for fresh installations.
	2735	Support Oracle 9i undo segments.
	2745	Support additional slot counts for storage libraries.
	2746	Use OS authentication as the default with the SQL Server isql tool.
	2770	Add operational improvements in multiple storage library server configuration.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.

Subsystem	RCI Number	Description
SystemV Applications Executive (EV)	2456	End support for the Image Services Translation Environment.
	2547	Improve support for serverConfig file changes.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
SystemV Miscellaneous (MV)	2315	Support the Oracle OCI interface.
	2547	Improve support for serverConfig file changes.
	2577	Provide MSAR surface checksumming capability.
	2770	Add operational improvements in multiple storage library server configuration.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.
	2804	Support AIX 5L V5.2 with Oracle 9.2.0 (post-GA).
SystemV Networking (NV)	2547	Improve support for serverConfig file changes.
WorkFlo Queue Services (WQ)	2315	Support the Oracle OCI interface.
XVT Portable Toolkit (XV)	2456	End support for the Image Services Translation Environment.
	2773	Support XVT DSC for C Release 5.1 with Image Services for Windows Server and Image Services for HP-UX.
	2774	Support XVT DSC for C Release 5.0 with Image Services for AIX/6000.

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