IBM

WebSphere Application Server V8

Installing and maintaining WebSphere Application Server V8 on z/OS

Systems and servers

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This presentation looks at the changes to WebSphere Application Server for z/OS in Version 8.

IBM Installation Manager on z/OS

- WebSphere Application Server V8 uses the same installer and updater on all platforms: IBM Installation Manager
- On z/OS, IBM Installation Manager runs as a command-line UNIX System Services application
- The basic concepts are the same as those used with the Installation Manager graphical user interface

When you install WebSphere Application Server Version 8 on z/OS, you will see the first major changes to the installation process in several years. A new installer, IBM Installation Manager, is being adopted by WebSphere Application Server across all platforms.

On the z/OS platform, IBM Installation Manager runs as a command line application under UNIX System Services, and can also be invoked from batch jobs or scripting.

The command line interface (which is also available on other platforms) uses the same basic concepts as the Installation Manager graphical user interface.

Agenda

- IBM Installation Manager
  - Overview
  - Commands
  - Installing and setting up an Installation Manager
- Installing products with the Installation Manager
- Installing service with the Installation Manager
- Hints and tips
- Troubleshooting

3

In this presentation, you will learn about the basic Installation Manager concepts. How to set up IBM Installation Manager on z/OS, and use it to install WebSphere Application Server Version 8. The application of preventive and corrective services using IBM Installation Manager will be described, and you will be provided with some usage suggestions and basic troubleshooting information.

Why a new installer?

1. Consistency across WebSphere Application Server platforms

–Common methodologies

–Common mechanisms

2. Useable by all WebSphere products

–Common look & feel

3. Common packaging and dependency metadata for products, feature packs, fix packs, and interim fixes

4. Simplified stack product installs

5. Improved efficiency

–Delta packaging for updates

–Online service repository

6. Service can be downloaded and installed more quickly

–iFixes can be installed on z/OS, without requiring creation of a ++APAR

The new installer provides WebSphere customers with consistency across platform types, and across products in the WebSphere family, many of which will be adopting this new installer.

Although not all platforms will support the IBM Installation Manager graphical user interface, they will all use a common install and maintenance approach, common tools, and a common command line interface.

Common packaging of products and service will simplify installation and maintenance, especially for customers who run WebSphere products on several platforms, and will also reduce the need for WebSphere administrators on z/OS to possess SMP/E skills.

Adoption of IBM Installation Manager will also simplify the installation of stack products such as WebSphere Extended Deployment Compute Grid. When used with WebSphere Application Server Version 8, these products are installed into the WebSphere Application Server product file system, eliminating the need for separate file systems for each stack product. Installation Manager can also provide better assurance that inter-product relationships and minimum service levels are maintained.

All product service will be available from an on-line service repository, and packaging improvements now allow fix packs to be smaller than they have been in the past.

Corrective service created for non-z/OS platforms, in the form of interim fixes or iFixes, will be able to be installed immediately on z/OS, without requiring the creation of a ++APAR.
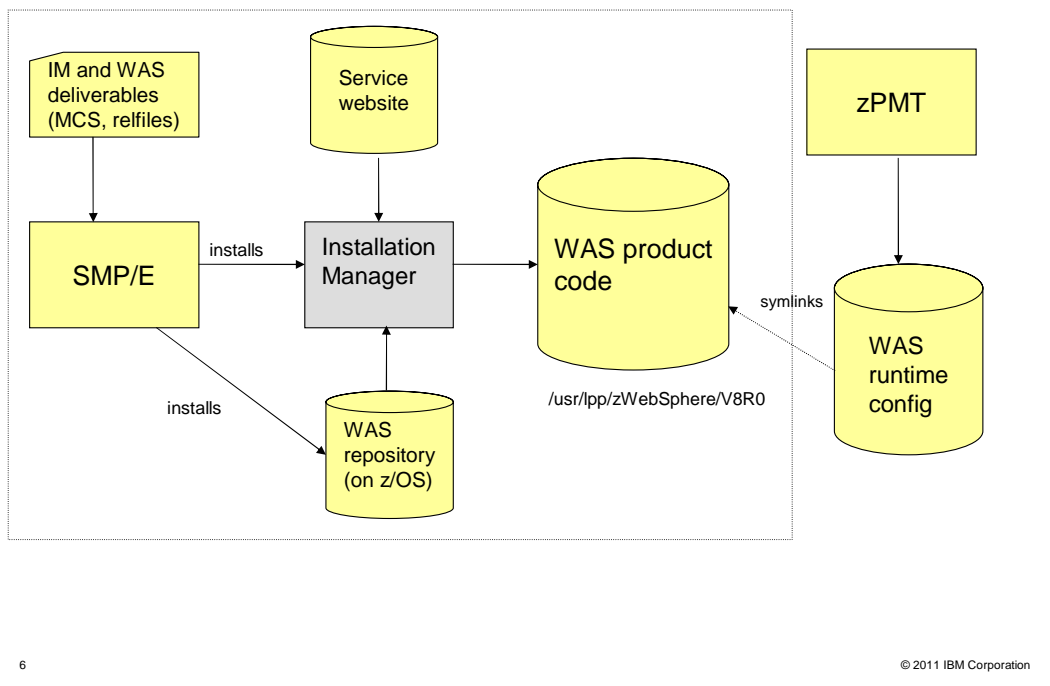
Install / configuration process for WebSphere Application Server V7 on z/OS
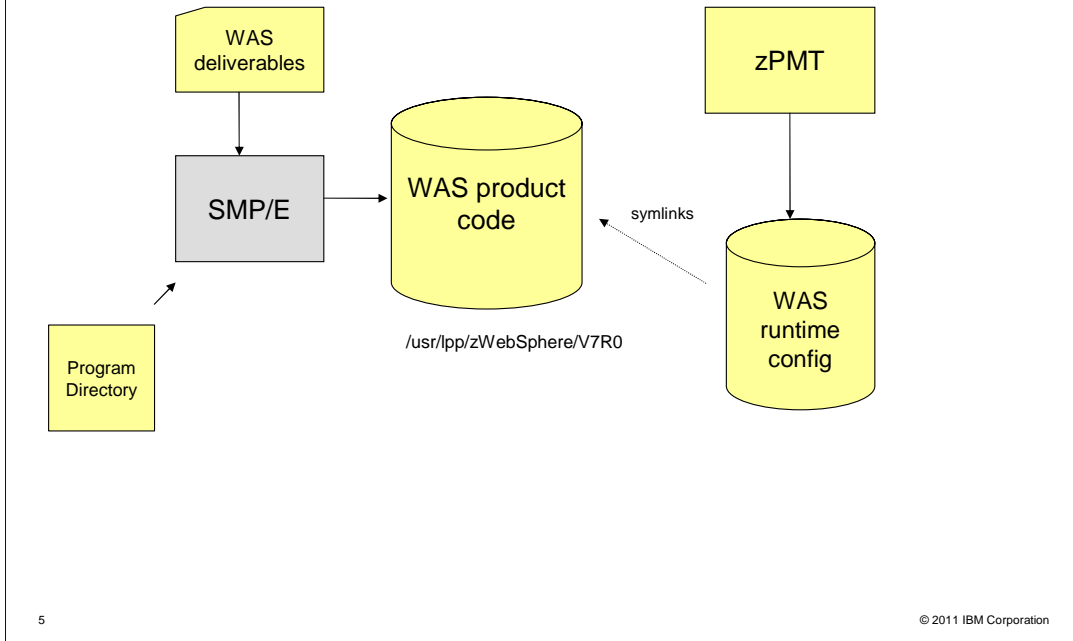
In WebSphere Application Server for z/OS Version 6.1 or Version 7, the System Maintenance Program / Extended, or SMP/E, is used to install the WebSphere Application Server product code.

Run-time product configuration is done with the other tools, such as the z/OS Profile Management Tool, and symbolic links are used to connect the configuration to the product files.

Install / configuration process for WAS V8 on z/OS

```
IM and WAS
deliverables
(MCS, relfiles)

Service
website

zPMT

SMP/E  --installs-->  Installation
                      Manager  -->  WAS product
                                    code

installs                                  symlinks

WAS
repository
(on z/OS)

/usr/lpp/zWebSphere/V8R0

WAS
runtime
config
```

With WebSphere Application Server for z/OS Version 8, customers will use the IBM Installation Manager to install and maintain copies of WebSphere product code.

The initial "repository" for each product, along with Installation Manager itself, are installed using SMP/E.

Installation Manager uses the contents of this repository, along with online service repositories, to install new copies of WebSphere Application Server product code, or update existing copies of WebSphere Application Server Version 8.

The same tools are used for customization in WebSphere Application Server Version 8 as in Version 7 – namely, the z/OS Profile Management Tool (now part of the WebSphere Customization Toolkit) and the line-mode zpmt.sh command.

The run-time configuration will continue to use symbolic links to the WebSphere product code, but the merging of feature pack and stack product code into the base product file system greatly reduces the overall complexity of these symbolic links. Each copy of the WebSphere Application Server Version 8 product code can include a set of feature packs and stack products, at a consistent service level, integrated into one file system.

Section

**Introduction to IBM Installation Manager
on z/OS**

In this section IBM Installation Manager will be discussed.

IBM Installation Manager

– Currently at Version 1.4.3
– Available on z/OS (download) as of IM 1.4.3
– Information center:
  http://publib.boulder.ibm.com/infocenter/install/v1r4/index.jsp
– Ships in SMP/E format as FMID HGIN140 with each z/OS product that requires it
– Upward compatible

IBM Installation Manager was released in 2006, and is currently at Version 1.4.3.

Version 1.4.3 added z/OS support for Installation Manager, and a copy of the Installation Manager install kit for z/OS can be downloaded using the instructions in the Installation Manager Version 1.4 information center.

Beginning with WebSphere Application Server Version 8, IBM Installation Manager will also ship in SMP/E format with every z/OS product that uses IBM Installation Manager for product installation and maintenance.

IBM Installation Manager is strictly upward compatible. A product may require a minimum level of Installation Manager for installation of that product, but the new level of Installation Manager can be used to manage older products as well.

Installation Manager – the view from 10,000 feet
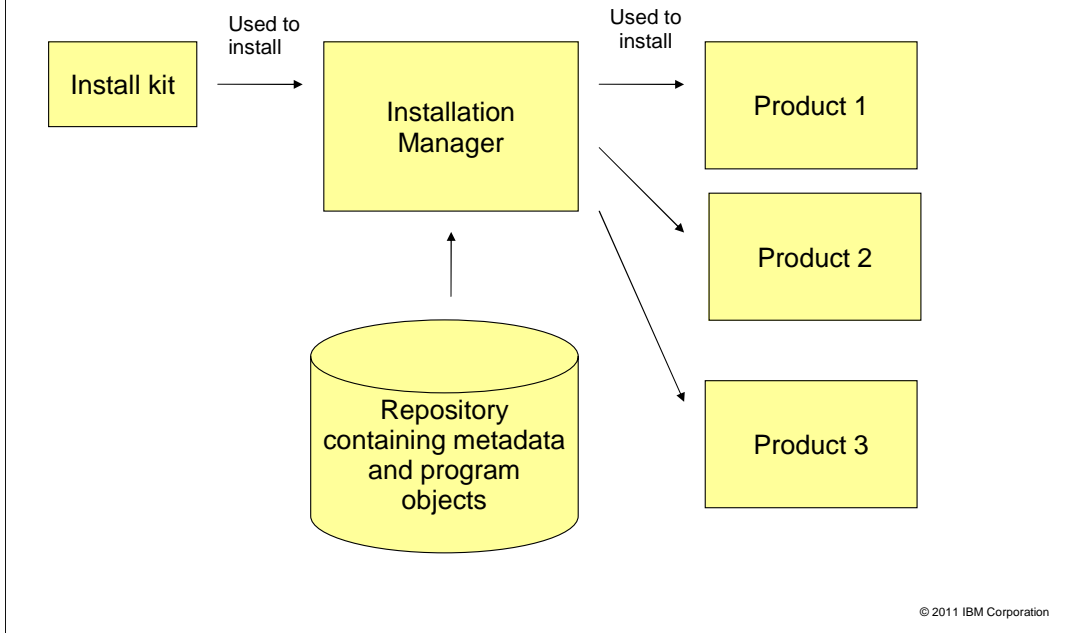
In this example, a high-level view of the Installation Manager and the products it used to install is shown.

IBM Installation Manager starts out as an "install kit", either provided on media such as compact disk, or as a set of downloaded files.

The install kit is used to create an Installation Manager, which resides in read/write file space.

The Installation Manager takes objects and metadata from a product repository, and uses it to create copies of installed product code.

Although it is not shown here, you can actually have several Installation Managers on a system, although most customers will only need one. Installation Manager may also access several repositories – some on the local machine, and some reached by HTTP or FTP.

Installation Manager – the view on the ground

Here some actual Installation Manager scenarios on z/OS will be discussed.

Here, you log into the UNIX System Services shell under a special user ID that you set up to run the Installation Manager, and change directory to the location where the Installation Manager's command line tool resides.

Installation Manager – new product installation

```
EZYTE27I login: imadmin
EZYTE28I imadmin Password:
IBM
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(C) Copyright Mortice Kern Systems, Inc., 1985, 1996.
(C) Copyright Software Development Group, University of Waterloo, 1989.

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$ cd /InstallationManager/bin/eclipse/tools
$ imcl install com.ibm.websphere.zOS.v80 -installationDirectory /usr/lpp/zWebSphere/V8R0
 -repositories /usr/lpp/InstallationManagerRepository/HBBO800 -acceptLicense
$
```
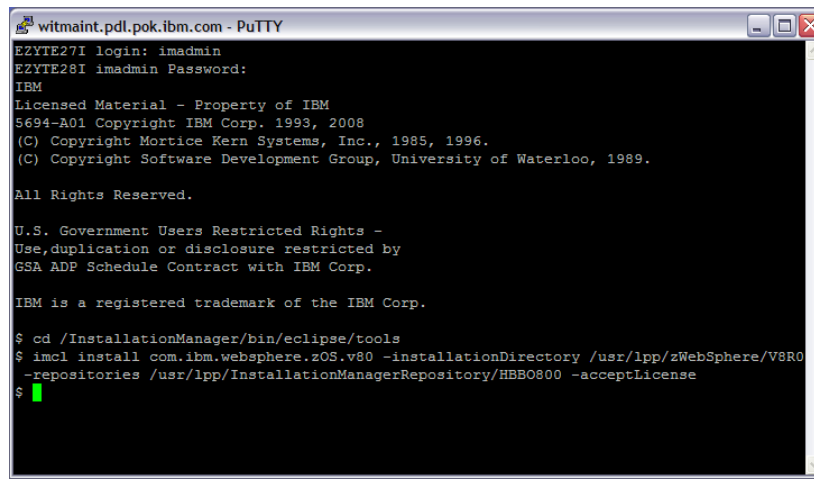
The command shown here is the only step necessary to install a copy of the WebSphere Application Server V8 code for z/OS. It runs for about 14 minutes.

The -installationDirectory option points to the location at which WebSphere Application Server is to be installed.

The -repositories option points to a repository containing the WebSphere Application Server parts and metadata.

The -acceptLicense option means that you accept the license terms. (The license text can be found in the product repository.)

Installation Manager – install a fix pack level

```
witmaint.pdl.pok.ibm.com - PuTTY
EZYTE27I login: imadmin
EZYTE28I imadmin Password:
IBM
Licensed Material - Property of IBM
5694-A01 Copyright IBM Corp. 1993, 2008
(C) Copyright Mortice Kern Systems, Inc., 1985, 1996.
(C) Copyright Software Development Group, University of Waterloo, 1989.

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$ cd /InstallationManager/bin/eclipse/tools
$ imcl install com.ibm.websphere.zOS.v80_8.0.2.20120117_0100 -installationDirectory /usr
/lpp/zWebSphere/V8R0 -repositories /usr/lpp/InstallationManagerRepository/HBBO800 -accep
tLicense
$
```

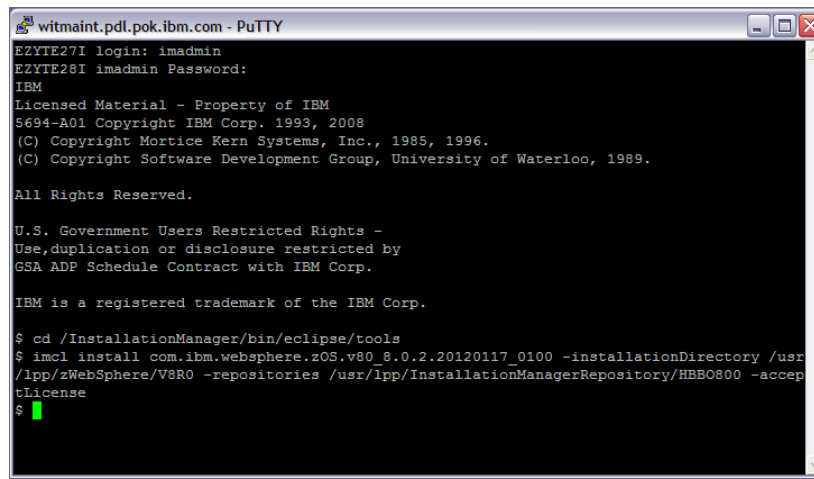In the previous example the product of WebSphere Application Server Version 8 was installed at the highest or most recent level in the repository.

Here the WebSphere Application Server is being installed at level 8.0.0.2.
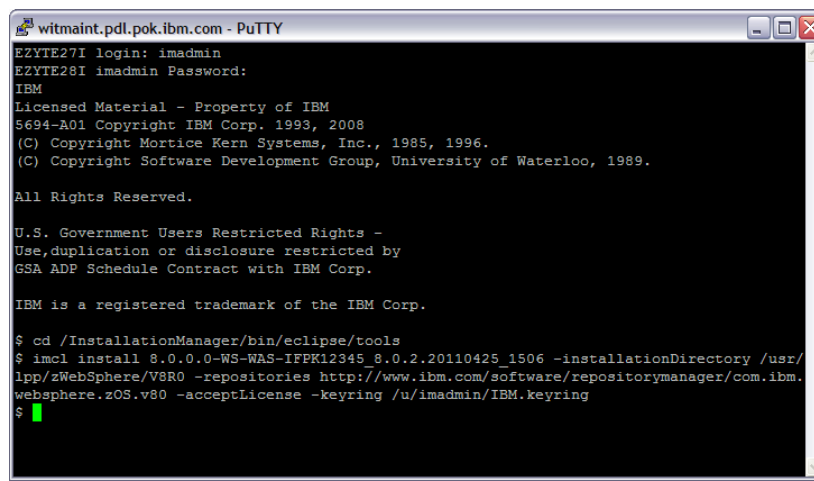
If /usr/lpp/zWebSphere/V8R0 is empty, then this command will install a new copy of WebSphere Application Server at that location, at fix pack 8.0.0.2.

If /usr/lpp/zWebSphere/V8R0 contains a copy of the product at the GA or 8.0.0.1, then this command will upgrade it to fix pack 8.0.0.2.

If /usr/lpp/zWebSphere/V8R0 contains a copy of the product at a later level – such as 8.0.0.5 – then this command will roll that copy back to fix pack 8.0.0.2.

You can use the imcl install command to move smoothly between any two product levels in the available repositories.

Installation Manager – install an iFix

```
witmaint.pdl.pok.ibm.com - PuTTY

EZYTE27I login: imadmin
EZYTE28I imadmin Password:
IBM
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(C) Copyright Mortice Kern Systems, Inc., 1985, 1996.
(C) Copyright Software Development Group, University of Waterloo, 1989.

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U.S. Government Users Restricted Rights –
Use,duplication or disclosure restricted by
GSA ADP Schedule Contract with IBM Corp.

IBM is a registered trademark of the IBM Corp.

$ cd /InstallationManager/bin/eclipse/tools
$ imcl install 8.0.0.0-WS-WAS-IFPK12345_8.0.2.20110425_1506 -installationDirectory /usr/
lpp/zWebSphere/V8R0 -repositories http://www.ibm.com/software/repositorymanager/com.ibm.
websphere.zOS.v80 -acceptLicense -keyring /u/imadmin/IBM.keyring
$
```

Here is an example of an iFix installation. In WebSphere Application Server Version 8 for z/OS, iFixes replace ++APARs for corrective service, and the same iFix can be installed on all platforms to which it applies.

The iFix name is provided by IBM support, or obtained from the service website or PSP bucket.

To install the iFix, you simply name the iFix, point Installation Manager at the copy of the WebSphere Application Server to be updated, and specify where to find the iFix.

In this case, the iFix is downloaded from the IBM online service repository. The -keyring option points to a file you create on your system that contains your IBM Software user ID and password.

Note that the online service repository contains all available product fix packs, and all publicly available iFixes.

Installation Manager terminology (1 of 3)

A **package** is a software product that can be installed with IBM Installation Manager.

Each package has:

A **package name**: com.ibm.websphere.zOS.v80

A **package version**: 8.0.1.20100417_0105

So the **package identifier** is: com.ibm.websphere.zOS.v80_8.0.1.20100417_0105

A package is sometimes called an **offering.**

Each software product to be installed with Installation Manager is called a package.

A package has a name, which identifies the product, and a version. The version usually consists of three levels (example, 8.0.1) and the date and time that the package was built.

When just the package name (without a version) is used in Installation Manager commands, it refers to any version of the product, or to the latest available version, depending on the context.

Use the full package name, with the version, when installing or rolling back to a particular product version.

Note: WebSphere products, like many products from IBM Software Group, use four-level versions of products and fix packs – for example, WebSphere Application Server Version 7.0.0.15.   Service announcements for products installed with IBM Installation Manager will normally provide both the full 4-level version, and the full Installation Manager product identifier.

Installation Manager will also display the four-level version in its complete description of installed products.

The word offering is sometimes used as an alternative to package in Installation Manager documentation.

Installation Manager terminology (2 of 3)

- Packages are installed at a particular **installation location**
    - On z/OS, this will in the UNIX System Services file system

- A package can be installed several times
    - at the same or a different level
    - separate location for each install
    - each copy can be independently maintained
    - when Installation Manager works with a product, the product must always be mounted at the initial installation location

- Certain products can be installed together at a single location
    - example: WebSphere Application Server V8 and its stack products
    - Installation Manager verifies version compatibility at install time

- P**ackage group:** all the products installed at a particular installation location
    - Package group name is chosen automatically by Installation Manager

When IBM Installation Manager installs a product or package, it installs it at a particular location. On z/OS, this will be a location in the UNIX System Services file structure.

You can install a package as many times as you like, at the same or different product levels. You must choose a separate installation location for each copy, and each copy must be mounted at the same location whenever Installation Manager applies service to it or makes other modifications to the product code. Each copy has its own service history, and is maintained independently. The Installation Manager can only work on software it has installed.

In general, separate products will have separate installation locations. The exceptions are products like WebSphere Application Server feature packs. In WebSphere Application Server Version 6.1 and Version 7, these were installed "on top of" the WebSphere Application Server code on distributed platforms, but were installed into separate file systems on z/OS. This required additional customization steps and maintenance work on z/OS.

With IBM Installation Manager, WebSphere Application Server feature packs and some stack products, such as WebSphere Compute Grid, will be installed into the same installation location as a copy of WebSphere Application Server.   Installation Manager will ,maintain both products, ensuring that they are at compatible maintenance levels.

The products installed at a particular installation location make up a package group.   A package group have a name and an installation location.   Currently, the package group name is set automatically by IBM Installation Manager, and is based on the full name of the first package to be installed at that location, together with an underscore and a numeric sequence number to make the package group name unique.

One consequence of the Installation Manager package group structure is that an installation location cannot be used by two different package groups. So if you install two copies of WebSphere Application Server, you must choose separate installation locations, and use these locations whenever you apply service or modify the product code with Installation Manager.

Installation Manager terminology (3 of 3)

- **Repository –** contains the parts required to install a package
    - A single repository can hold parts for one or more versions of a package
    - metadata in the repository describes how each version is to be built

- A repository is a tree-structured set of files
    - Can reside on a local disk
    - Can reside on a server (access with FTP, HTTP)

- Can contain entire versions of a product, or a base version and service

The program parts that make up a package are contained in a repository. A single repository can contain any number of packages, or versions of packages.   Metadata associated with each package or package version tells Installation Manager how the product code is to be built.

A repository is a tree-structured set of files and directories on disk. It can reside on the local system, or on a server. Installation Manager can access server-based repositories by means of FTP or HTTP.

Some repositories contain all versions of a product; in other cases, the base product and each service level may be in separate repositories.

An Installation Manager repository

Index of /gsa/ausgsa/projects/w/was.build/botp/WAS80.IM /test/m1116.12.linux/linux/zipper/repository/WAS

Name	Last modified	Size	Description
Parent Directory	24-Apr-2011 13:05	-	
Offerings/	24-Apr-2011 12:51	-	
atoc/	24-Apr-2011 12:51	-	
files/	24-Apr-2011 12:56	-	
native/	24-Apr-2011 12:58	-	
plugins/	24-Apr-2011 12:58	-	
repository.config	24-Apr-2011 12:58	44	
repository.xml	24-Apr-2011 12:58	298.6k	

Apache/1.3.41 Server at ausgsa.ibm.com Port 443

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Here is an example of the top level of an Installation Manager repository. You can look in the Offerings directory to see files containing the names of the packages in the repository.

The repository.xml file contains a description of the repository contents.

Installation Manager terminology

Example of repository.xml

```
- <repositoryDigest>
  - <repository>
      <property name="LayoutPolicy" value="P1"/>
      <property name="LayoutPolicyVersion" value="0.0.0.1"/>
    - <offering id="com.ibm.websphere.zOS.v80" version="8.0.0.20110424_1209">
        <information name="%Offering.name" version="8.0.0.0"> %Offering.description </information>
        <property name="offering.type" value=""/>
        <property name="default.profile" value="%Offering.profile"/>
        <property name="default.user.profile" value=""/>
        <property name="vendor.name" value="IBM"/>
        <property name="offering.service.repositories" value=""/>
        <property name="offering.RequiresAdmin" value="false"/>
        <property name="offering.SupportsGroupMode" value="true"/>
        <property name="beta.compatible" value="true"/>
        <property name="OfferingReference.LicensesKinds" value=""/>
        <property name="OfferingReference.enablement.lum.id" value=""/>
        <property name="OfferingReference.enablement.lum.version" value=""/>
        <property name="supportedOS" value="zos"/>
        <property name="import.profile.validation" value="true"/>
      - <dictionary lang="es">
          <property name="Offering.name" value="IBM WebSphere Application Server for z/OS"/>
          <property name="Offering.description" value="La familia IBM WebSphere Application Server es la base principal de aplicación
```
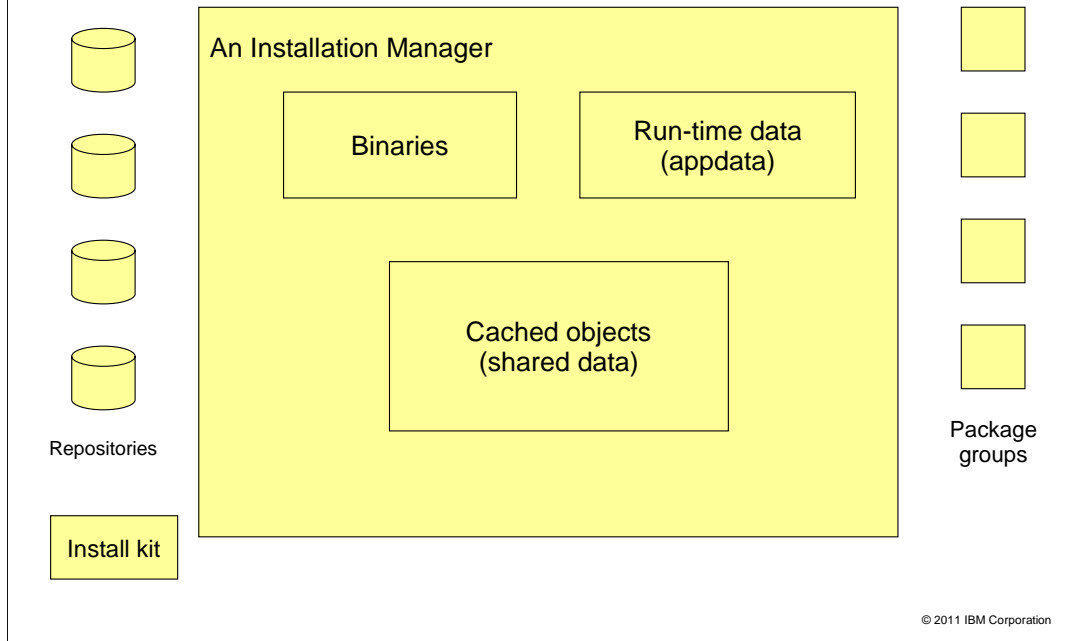
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In the repository.xml file, you can see that the first package in the repository is com.ibm.websphere.zOS.v80, or WebSphere Application Server for z/OS V8.

The applicable platform for this package is "z/OS".

Further down in the file, information such as the package name and description in each language supported by the package is shown (for example, the one at the bottom of this screen-shot is in Spanish.)

If there are several packages in the repository, then each one will have its own "offering" section in the repository.xml.

Installation Manager structure (1 of 2)

An Installation Manager

Binaries

Run-time data (appdata)

Cached objects (shared data)

Repositories

Install kit

Package groups

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This is the structure of an Installation Manager.

An Installation Manager is created from an Installation Manager install kit, and consists of:

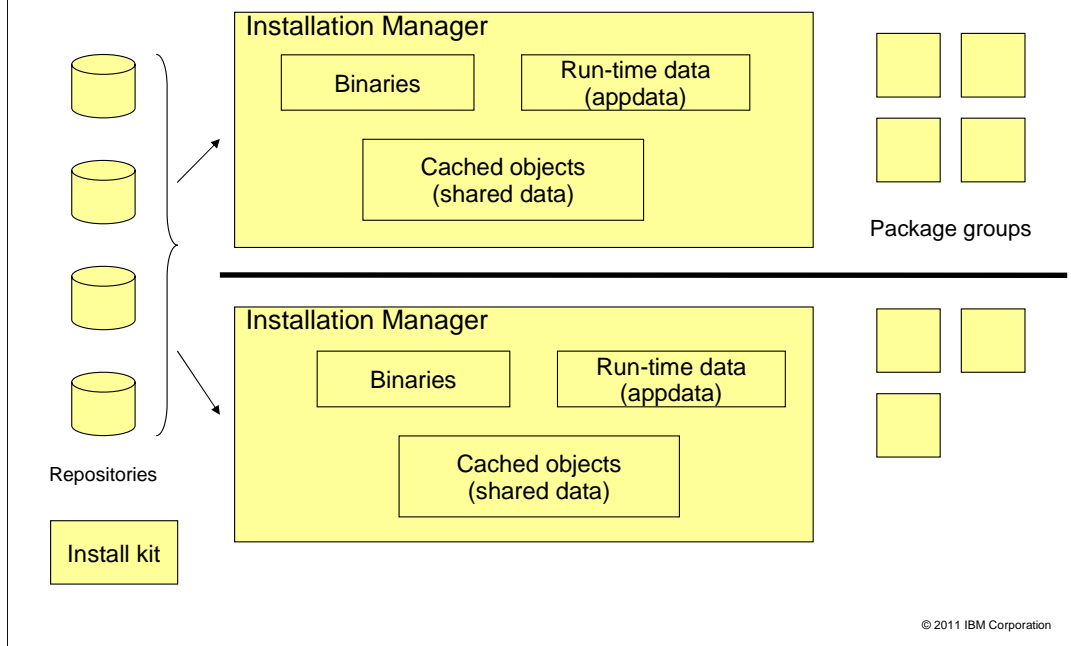A set of executable binary files, copied from the install kit

A set of run-time data, describing the products that have been installed by this Installation Manager

A collection of shared program objects and cached files.

Each of these three sets of files has its own location in the read/write file system.

The Installation Manager accesses one or more repositories (shown on the left), and uses them to install and maintain one or more package groups (shown on the right).

Installation Manager structure (2 of 2)

Installation Manager
Binaries
Run-time data (appdata)
Cached objects (shared data)

Package groups

Installation Manager
Binaries
Run-time data (appdata)
Cached objects (shared data)

Repositories

Install kit

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In most cases, you only need one Installation Manager, since it can manage any number of products and product versions.

If you need more than one Installation Manager on your system – for example, if you have two different install teams, neither of which should have access to the other's products – then you can create individual Installation Managers as needed. Each Installation Manager must have its own read/write binaries, run-time data, and shared data locations.

A package group can only be modified or updated by the Installation Manager that created it.

Installation Manager default locations

	"generic" UNIX	z/OS
Binaries	/opt/IBM/InstallationManager	/InstallationManager/bin
Appdata	/var/ibm/InstallationManager	/InstallationManager/appdata
Shared data	*(set by product)*	

When an Installation Manager is installed in "user mode" (described later), all paths are relative to the user's home directory.

Here are the default locations for the Installation Manager binaries, run-time data (also called "appdata"), and shared data.

The defaults on the left are used on "generic" UNIX environments, such as AIX. Because these are not particularly good choices for most z/OS shops, the Installation Manager defaults for z/OS have been chosen so as to put all of an Installation Manager's files in a single part of the Unix System Services file tree, so that they can reside in a single read/write file system.

These defaults are used for "admin mode" and "group mode" Installation Managers, which are described later.

You can create only one admin-mode Installation Manager per system. If you create several group-mode Installation Managers, you must choose separate binaries, appdata, and shared data locations for each.

You can also have one "user-mode" Installation Manager per user ID. By default, the files for such an Installation Manager go into the user's home directory. For example, the default binaries location would be $HOME/InstallationManager/bin.

Installation Manager commands

On z/OS, Installation Manager runs as a UNIX System Services command line application.

The imcl command is used to run most Installation Manager commands:

imcl install
imcl uninstall
imcl listAvailablePackages
imcl listAvailableFixes
imcl listInstalledPackages
imcl version
imcl -f *response_file*

The imutilsc command is used to create credentials files for accessing secured repositories.

All commands reside in <IM binaries>/eclipse/tools.

On z/OS, IBM Installation Manager is invoked from the UNIX System Services command line, or from a batch job.

The Installation Manager command line, command is used to perform most functions.

The Installation Manager utility – save credentials command is used to create credentials files for accessing secured repositories.

Both of these commands, along with some tools to create and mount z/OS file systems, can be found in the eclipse/tools subdirectory of the Installation Manager's binaries location. For example:

/InstallationManager/bin/eclipse/tools.

Installation Manager commands - install (1 of 2)

Install one or more packages:

```
imcl   install   <package>
    -installationDirectory    <where to install>
    -repositories    <list of repository URL's, separated by commas>
    -sharedResourcesDirectory    <cache location>
    -acceptLicense
```

Example:

```
imcl   install  com.ibm.websphere.zOS.v80
    -installationDirectory   /usr/lpp/zWebSphere/V8R0
    -repositories  /usr/lpp/InstallationManagerRepository/HBBO800
    -sharedResourcesDirectory  /InstallationManager/sharedResources
    -acceptLicense
```

The imcl install command is used to install packages. It is also used to install maintenance, such as fix packs or interim fixes, and add optional features.

When you install a package, you specify the package name; the installation location; a list of the repositories to be used, separated by commas; and the shared resources directory to be used.

In most cases, you must also specify the acceptLicense option, which indicates that you accept the terms of the product license. For most products installed on z/OS with Installation Manager, the product license can be found in a subdirectory named lafiles in the product repository.

The installation location is expressed as a UNIX System Services path. Avoid using a symbolic as the target of an install; point to the actual mount point instead.

Repository locations can be provided as file, ftp, or http URL's.   If the repository is in the local Unix System Services file space, then you can specify the repository path instead of a full URL.

Installation Manager commands - install (2 of 2)

If no package version is specified, then the highest version (usually the most recent) is installed:

```
imcl  install  com.ibm.websphere.zOS.v80
```

To specify a particular version:

```
imcl  install  com.ibm.websphere.zOS.v80_8.0.3.20120304_0100
```

See the service website or listAvailablePackages for exact versions.

List any optional features after the package identifier:

```
imcl  install  com.ibm.websphere.zOS.v80,samples
```

This will override any default optional features.

A package is always installed at some particular version. If you do not specify a version on the imcl install command, then the highest version is installed. (This will usually be the most recent version.)

You can specify a particular version by appending an underscore and the full version to the package name. Wild cards are not supported.

See the product support website for the version string for each fix pack, or use the imcl listAvailablePackages command to list the available packages and fix pack versions in a repository.

Some products also have optional features, such as samples, which may be installed by default, or only if requested.   The list of desired features is added to the package identifier, separated by commas. If you list any optional features, then this overrides any default optional features, so be sure to provide the complete list of the features you want.

See each product's Information for a list and description of the product's optional features.

You can add optional features to an existing product install by re-issuing the imcl install command, specifying the exact package identifier and the features to be added, along with the installation location and repository list.

Installation Manager commands - uninstall

Uninstall one or more packages

```
imcl   uninstall   <package>
  -installationDirectory  <where to install>
```

Example:

```
imcl   uninstall  com.ibm.websphere.zOS.v80
   -installationDirectory   /usr/lpp/zWebSphere/V8R0
```

Only the selected copy of the package is uninstalled.

You may have to delete any remaining files at the installation location before re-using that location for a new install.

The imcl uninstall command is used to uninstall packages. It is also used to uninstall optional features.

When you uninstall a package, you specify the package name and the installation location. Installation Manager will remove the package from the installation location, and delete information about the product from the Installation Manager's run-time data.

In some cases, files or directories may be left behind in the installation location, even if the uninstall is successful. If you are uninstalling all packages from an installation location, you should manually delete any remaining files in the installation location before re-using it for a new product install.

If you list optional features after the package name, the optional features are removed, but the base product itself is not uninstalled.

Installation Manager commands - miscellaneous

To display the Installation Manager version:

```
imcl version
```

To list packages that can be installed:

```
imcl listAvailablePackages  -repositories <list of URLs>
```

To list fixes that can be installed:

```
imcl listAvailableFixes <package> -repositories  <list of URLs>
```

To list installed packages:

```
imcl listInstalledPackages
```

Use `imcl help` to list commands, and `imcl help` <command> for syntax.

Here are some additional Installation Manager commands.

The imcl version command displays the version of Installation Manager, and is also a good way to verify that the Installation Manager is correctly installed and set up.

The imcl listAvailablePackages command lists all packages and package versions in one or more selected repositories. Add the -long option for more details.

The imcl listAvailableFixes command lists all interim fixes (iFixes, or patches) for a particular product. You must provide the exact package level that you need fixes for, along with the list of repositories containing the fixes.

The imcl listInstalledPackages command lists all the packages that are currently installed by this Installation Manager.   Add the -long option to see the installation location for each.

You can use imcl help to list the available imcl commands, and imcl help <command> for a description of each.

Installation Manager commands - imutilsc

Create a "keyring" file containing credentials to access a remote repository:

```
imutilsc   saveCredential
   -url   <repository URL>
   -userName   <user ID>   -userPassword   <password>
   -keyring <keyring file>
```

Example:

```
imutilsc   saveCredential
   -url  http://common.mycorp.com/repository
   -userName  jsmith01   -userPassword   secret
   -keyring /u/jsmith01/mycorp.keyring
```

A keyring file can contain several sets of credentials.

One additional command, the imutilsc, is used when you need to access repositories that require a user ID and password.

The imutilsc saveCredential command validates access to a particular repository, and adds the user ID and password for that repository (which you provide) to a saved credentials or "keyring" file.

If you use the online service repository for WebSphere Application Server V8, you will need to create a credentials file containing your IBM Software ID and password.

The imutilsc command is also used to collect information for troubleshooting purposes, which will be described later.

Installation Manager response files

You can also invoke Installation Manager and pass it an XML-formatted response file (in ASCII). See the Installation Manager information center articles on "silent install" for details.

```
imcl -file  <response file>
```

```xml
<?xml version="1.0" encoding="UTF-8" ?>
- <agent-input acceptLicense="true" clean="true" temporary="true">
- <server>
  <repository location="https://ausgsa.ibm.com/gsa/ausgsa/projects/w/was.build/botp/WAS80X.IM/test/bl1043.09.linux/linux/zipper/repository/WASOS390/" />
  </server>
- <profile installLocation="/usr/lpp/zWebSphere/V8R0" id="Application Server V8.0">
  <data key="cic.selector.nl" value="en" />
  </profile>
- <install modify="false">
  <offering profile="Application Server V8.0" features="core.feature,samples" id="com.ibm.websphere.zOS.v80" />
  </install>
  <preference value="false" name="PassportAdvantageIsEnabled" />
  <preference value="30" name="com.ibm.cic.common.core.preferences.connectTimeout" />
  <preference value="0" name="com.ibm.cic.common.core.preferences.downloadAutoRetryCount" />
  <preference value="/InstallationManager/sharedResources" name="com.ibm.cic.common.core.preferences.eclipseCache" />
  <preference value="false" name="com.ibm.cic.common.core.preferences.http.disablePreemptiveAuthentication" />
  <preference value="false" name="com.ibm.cic.common.core.preferences.keepFetchedFiles" />
  <preference value="true" name="com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts" />
  <preference value="30" name="com.ibm.cic.common.core.preferences.readTimeout" />
  <preference value="false" name="com.ibm.cic.common.core.preferences.searchForUpdates" />
  <preference value="false" name="com.ibm.cic.common.core.preferences.ssl.nonsecureMode" />
  <preference value="true" name="http.ntlm.auth.enableIntegrated.win32" />
  <preference value="NTLM" name="http.ntlm.auth.kind" />
  </agent-input>
```
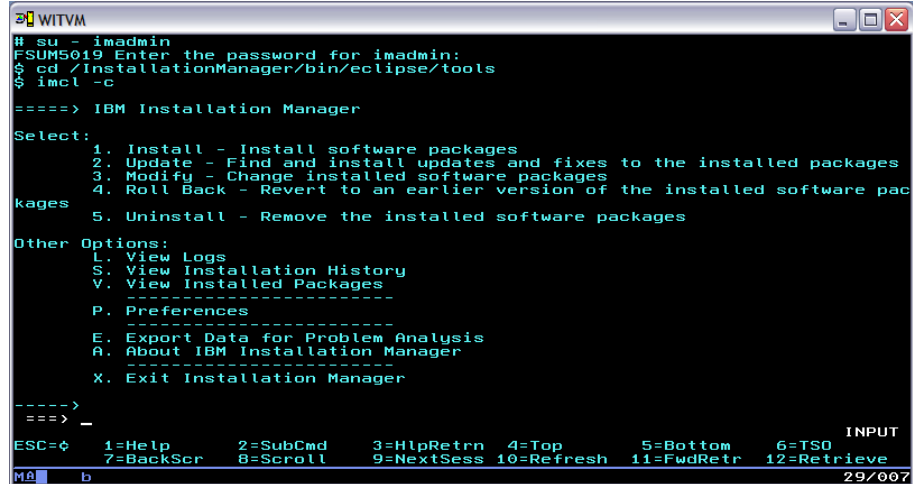
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As an alternative to issuing commands, you can package the required information in a response file and pass this to Installation Manager.

On non-z/OS platforms, this is normally used to perform remote product installs, and z/OS customers could do this as well (though it may be just as easy to put an imcl command into a script or batch job).

See the Installation Manager information center articles on "silent install" for details.

Installation Manager console mode

IBM Installation Manager 1.4.3 introduced a prompt-driven, line mode interface. WebSphere Application Server may be enabled for this interface in the future.

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Finally, Installation Manager Version 1.4.3 added a prompt-driver, line mode interface called "console mode". This option is not currently available for WebSphere Application Server installs, but may be enabled for WebSphere Application Server in the future.

Setting up IBM Installation Manager on z/OS

Only needs to be done once!

- Obtain a current copy of the Installation Manager install kit for z/OS.

- Choose the Installation Manager mode (admin, user, or group), which determines who can use the Installation Manager.

- Create an owning user ID and group for the Installation Manager.

- Choose locations for the Installation Manager binaries and run-time data. (You may also want to choose the shared resources location at this point.) Create file systems for these locations.

- Run the appropriate command – installc, userinstc, or groupinstc – to create the Installation Manager. This can be done from the UNIX System Services shell, or from an MVS batch job. Be sure to run the command from the "owning" user ID.

Setting up an Installation Manager on z/OS is a fairly straightforward process – certainly easier than an initial setup of SMP/E. It only needs to be done once, before your first product install with Installation Manager.

First, obtain a copy of the Installation Manager install kit for z/OS.

Next, decide whether the Installation Manager will be accessed by a single user ID (uid 0 or non-uid 0) or by a group of users IDs, and create a group and user IDs for the Installation Manager if necessary.

Choose locations for the Installation Manager's binaries, run-time data, and shared data, and create a file system or systems to contain them, setting the ownership and permissions appropriately.

Finally, run the appropriate installation command from the install kit to copy the Installation Manager binaries from the install kit to the new binaries location, and initialize the Installation Manager's run-time data.

Each of these steps will be described in more detail.

Obtaining the Installation Manager install kit for z/OS

- Order a z/OS product that uses IBM Installation Manager for install. You will receive an Installation Manager Program Directory and SMP/E deliverables for FMID HGIN140. Follow the instructions in the Program Directory. The default location for the install kit is

  /usr/lpp/InstallationManager/V1R4

OR

- Download the current level of the IBM Installation Manager install kit for z/OS from:

  https://www-304.ibm.com/support/docview.wss?uid=swg24028743

- Unzip this file into a directory of your choice. Run the set-attr-attr.sh script to set extended attributes.

The install kit can be mounted read/only; it is only used to create or upgrade Installation Managers.

The Installation Manager install kit is simply a set of files. On some platforms, the install kit would be distributed on media such as compact disk, along with a preformatted response file for product install.

On z/OS, the IBM Installation Manager install kit is available in SMP/E format as FMID HGIN140. If you order a z/OS product that requires IBM Installation Manager, you will receive a copy of this FMID as part of your ServerPac or CBPDO.

The default location for the Installation Manager install kit is /usr/lpp/InstallationManager/V1R4.

You can also download the install kit from the Installation Manager support page. Details can be found in the Installation Manager information center. Regardless of which method you use to obtain the install kit, it can be mounted read/only after the initial SMP/E install or download, unzip, and attributes settings process. The install kit is only used to create or upgrade Installation Managers; it is not updated during Installation Manager processing.

Obtaining the Installation Manager install kit for z/OS

If you obtain the IBM Installation Manager install kit (FMID HGIN140) as part of an IBM ServerPac, then the install kit will be ready to use.

If you obtain the install kit as part of a CBPDO, then you will need to run the following jobs:

- GINALLOC – allocate target and distribution data sets
- GINDDDEF – create SMP/E DDDEFs
- GINISMKD – mount the install kit file system and create directories
- GINAPPLY – apply the install kit FMID
- GINACCEP – accept the install kit FMID

The SMP/E version of the Installation Manager install kit also provides sample jobs for setting up and using Installation Managers.

PTFs for FMID HGIN140 contain service to the install kit, which can be used in turn to upgrade existing Installation Managers.

If you obtain the Installation Manager install kit as part of a ServerPac, then the install kit file system, SGINKIT, will come pre-installed at a current service level.

If you obtain the install kit as part of a CBPDO, then follow the instructions in the Installation Manager program directory.

The SMP/E version of the Installation Manager install kit (whether part of a ServerPac or a CBPDO) also provides sample batch jobs for setting up and using Installation Managers. These jobs can be found in SGINJCL.

PTFs for the install kit FMID, HGIN140, update the install kit to the most current Installation Manager level.   Once the PTFs are installed, you can use the install kit to upgrade each Installation Manager's binaries to the new level of Installation Manager.

The Installation Manager install kit for z/OS

Here is what the Installation Manager install kit looks like.

Here it is installed at the default location, /usr/lpp/InstallationManager/V1R4.

The installc, userinstc, and groupinstc commands are used to create or update an Installation Manager in admin mode, user mode, or group mode.

The Offerings, atoc, files, native, and plugins directories, together with the repository.xml file, make up an Installation Manager repository for the current level of the Installation Manager product.

The tools directory contains a "bootstrap" copy of the imcl command, and some z/OS-specific scripts to create and mount HFS or ZFS file systems.

Creating the Installation Manager (1 of 2)

- To create an Installation Manager, invoke one of the three install scripts in the Installation Manager install kit, and specify the read/write locations for the Installation Manager's binaries and run-time data.

- The user ID which runs the install script "owns" the Installation Manager. Installation Manager runs in three different "modes":
  - Admin mode – owning user ID is a superuser, and any superuser can invoke this Installation Manager
    - Limit: one admin mode Installation Manager per system
  - User ("nonAdmin") mode – only the owning user can invoke the Installation Manager
    - Limit: one user-mode Installation Manager per *user*
  - Group mode – any user ID connected to the default UNIX System Services group of the owning user ID can invoke the Installation Manager
    - No limits on the number of group-mode Installation Managers

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To create an Installation Manager, you will run one of the three install commands in the install kit.

But first, you need to decide which user IDs will use the Installation Manager.

An admin-mode Installation Manager is installed by a super-user – that is, a user ID with uid 0. Any super-user can invoke the Installation Manager and use it to install and maintain products. There can only be one admin-mode Installation Manager per system.

A user-mode Installation Manager can be installed by either a super-user or non-superuser. It's files normally reside in the home directory of the "owning" user, and only that use can invoke the Installation Manager or use it to install and maintain products. There can only be one user-mode Installation Manager per user.

Note than Installation Manager sometimes refers to a user mode as "nonAdmin" mode.

A group mode Installation Manager is "owned" by the user ID and default group of the user ID that creates it. Any user ID connected to this group can invoke the Installation Manager and use it to install and maintain products. (Each user ID must also have the permissions listed in the GIN2ADMN sample job.) There is no limit on the number of group-mode Installation Managers per system or user.

Creating the Installation Manager (2 of 2)

Detailed Installation Manager creation process:

1) Choose the mode for the Installation Manager (admin, user, or group)

2) Choose the user ID and group that are to "own" the Installation Manager, and create them if necessary (sample job GIN2ADMN)

3) Choose R/W directories for the Installation Manager binaries and run-time data, and create file systems for them (sample job GIN2CFS)

4) Invoke the appropriate command (installc, userinstc, or groupinstc) from the install kit to create the Installation Manager.

Complete instructions can be found in the Installation Manager program directory and information center.

Repeat this process to create additional Installation Managers, if needed. Each Installation Manager must have its own binaries and run-time data locations.

To create an Installation Manager on z/OS:

Choose the desired mode for your Installation Manager.

Choose the user ID and group to "own" the Installation Manager. You can create this user ID and group with the GIN2ADMN sample job in SGINJCL. If you use an existing user ID, it must have the "owning" group as its default group, and it must have the permissions listed in GIN2ADMN.

Choose the read/write locations for the Installation Manager's binaries, run-time data, and shared data. These locations cannot be shared between Installation Managers. Locations which place all three in a single file system is recommended if possible. You can use the GIN2CFS sample job in SGINJCL to create an HFS or zFS file system for the new Installation Manager.

Finally, invoke the appropriate install command from the install kit to create the Installation Manager. When you issue this command, specify the desired binaries and run-time data locations, or accept the defaults. You can use the GIN2INST sample job in SGINJCL to create the Installation Manager.

The Installation Manager program directory and information center provide complete instructions from creating an Installation Manager.

To create additional Installation Managers, repeat these steps. Two Installation Managers can share the same owning user ID and group, but each must have its own binaries, run-time data, and shared data locations.

Sample job : Create the owning group and user ID

```
WITVM                                                                    _ □ X
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT        IM.V143.N000036.JCL(GIN2ADMN) - 01.00         Columns 00001 00072
000064 //*                                                                    *
000065 //*   These user IDs must be given the same permissions granted below  *
000066 //*   to the default Installation Manager user ID.                     *
000067 //*                                                                    *
000068 //*   Expected return code and messages: 0, no messages                *
000069 //*                                                                    *
000070 //**********************************************************************
000071 //RACF     EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=0M
000072 //SYSTSPRT DD   SYSOUT=*
000073 //SYSTSIN  DD   *
000074  ADDGROUP IMGROUP OMVS(GID(1400))
000075  ADDUSER IMADMIN DFLTGRP(IMGROUP) OMVS(UID(1401) HOME('/u/imadmin') +
000076     PROGRAM('/bin/sh')) NOPASSWORD
000077  PERMIT BPX.FILEATTR.APF      CL(FACILITY) ID(IMADMIN) ACCESS(READ)
000078  PERMIT BPX.FILEATTR.PROGCTL  CL(FACILITY) ID(IMADMIN) ACCESS(READ)
000079  PERMIT BPX.FILEATTR.SHARELIB CL(FACILITY) ID(IMADMIN) ACCESS(READ)
000080  PERMIT SUPERUSER.FILESYS.CHOWN       CL(UNIXPRIV) +
000081        ID(IMADMIN) ACCESS(READ)
000082  PERMIT SUPERUSER.FILESYS.CHANGEPERMS CL(UNIXPRIV) +
000083        ID(IMADMIN) ACCESS(READ)
000084  SETR RACLIST(FACILITY) REFRESH
000085  SETR RACLIST(UNIXPRIV) REFRESH
000086 /*
****** *********************** Bottom of Data ***************************

Command ===> _____ Scroll ===> PAGE
MA   c                                                              32/015
```

Here is an edited copy of the GIN2ADMN job, to create a new group and user for an Installation Manager and assign required permissions.

Sample job: Create the Installation Manager file system

```
WITVM                                                                    _ □ ✕
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT        IM.V143.N000036.JCL(GIN2CFS) - 01.01           Columns 00001 00072
000078 //*********************************************************************
000079 //*
000080 //*********************************************************************
000081 //*    The following step allocates a filesystem for an              *
000082 //*    Installation Manager.                                         *
000083 //*********************************************************************
000084 //CREATE    EXEC PGM=IKJEFT01,REGION=0M
000085 //SYSTSPRT DD  SYSOUT=*
000086 //BPXOUT   DD  SYSOUT=*
000087 //STDOUT   DD  SYSOUT=*
000088 //SYSTSIN  DD  *
000089  BPXBATCH SH +
000090   /usr/lpp/InstallationManager/V1R4/tools/zCreateFileSystem.sh   +
000091     -name OMVS.PRV.WITMAINT.GINHFS                              +
000092     -type HFS                                                  +
000093     -volume PRV001                                             +
000094     -cylinders 2500 250                                        +
000095     -mountpoint /InstallationManager                           +
000096     -owner IMADMIN                                             +
000097     -group IMGROUP
000098 /*
****** ************************** Bottom of Data *****************************

Command ===> _____ Scroll ===> PAGE
MA    c                                                                  32/015
```

Here is an edited copy of the GIN2CFS job, to create a file system for the new Installation Manager's binaries, run-time data, and shared data. The owning user and group are also specified in the job.

You can use the zCreateFileSystem.sh script (and a corresponding mount script, zMountFileSystem.sh) to create or mount either HFS or zFS file systems, and set ownership or permissions if desired. These scripts are in the tools subdirectory of the Installation Manager install kit, and in the eclipse/tools subdirectory of each Installation Manager's binaries location.

Sample job: Create the Installation Manager


```
WITVM
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IM.V143.N000036.JCL(GIN2INST) - 01.01          Columns 00001 00072
000080 //**********************************************************************
000081 //*
000082 //**********************************************************************
000083 //*    The following step creates an Installation Manager.           *
000084 //**********************************************************************
000085 //BUILDIM  EXEC PGM=IKJEFT01,REGION=0M
000086 //SYSTSPRT DD  SYSOUT=*
000087 //BPXOUT   DD  SYSOUT=*
000088 //STDOUT   DD  SYSOUT=*
000089 //SYSTSIN  DD  *
000090  BPXBATCH SH +
000091   /usr/lpp/InstallationManager/V1R4/groupinstc                        +
000092     -installationDirectory   /InstallationManager/bin                 +
000093     -dataLocation            /InstallationManager/appdata             +
000094     -acceptLicense
000095 /*
****** *************************** Bottom of Data ****************************
Command ===> _____ Scroll ===> PAGE
MA    c                                                              32/015
```

Here is an edited copy of the GIN2INST job, to create a new Installation Manager. In this example, the Installation Manager is being created in group mode.

This job is run under user IMADMIN, which will then "own" the Installation Manager.

Creating the Installation Manager from the shell

```
WITVM

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# su
# cd /usr/lpp/InstallationManager/V1R4
# installc -installationDirectory /InstallationManager/bin -dataLocation /Instal
lationManager/appdata -acceptLicense
# ls /InstallationManager
appdata  bin
# ls -l /InstallationManager/bin/eclipse/tools
total 536
-rwxr--r--   1 G0MARK    IMGROUP    118784 Apr 27 11:20 imcl
-rw-r--r--   1 G0MARK    IMGROUP       476 Apr 27 11:20 imcl.ini
-rwxr--r--   1 G0MARK    IMGROUP    118784 Apr 27 11:20 imutilsc
-rw-r--r--   1 G0MARK    IMGROUP       480 Apr 27 11:20 imutilsc.ini
-rwxr-xr-x   1 G0MARK    IMGROUP     15444 Apr 27 11:20 zCreateFileSystem.sh
-rwxr-xr-x   1 G0MARK    IMGROUP      9864 Apr 27 11:20 zMountFileSystem.sh
#
 ===>
                                                          RUNNING
ESC=¢    1=Help      2=SubCmd    3=HlpRetrn  4=Top      5=Bottom    6=TSO
         7=BackScr   8=Scroll    9=NextSess 10=Refresh 11=FwdRetr  12=Retrieve
MA    c                                                          29/007
```

If the user ID and any necessary file systems have been created, you can invoke the installc, userinstc, or groupinstc command directly from the UNIX System Services shell instead of from a batch job.

Here an admin-mode Installation Manager is being created. Since the default binaries and run-time location were chosen, the same results could have been achieved by issuing the installc command with just the -acceptLicense option.

The /InstallationManager directory contains the binaries in the bin subdirectory, and the run-time data in the appdata subdirectory.

The imcl and imutilsc commands are in the eclipse/tools subdirectory of the binaries location.

You can now change to the /InstallationManager/bin/eclipse/tools directory and issue imcl commands.

IBM

Updating an Installation Manager on z/OS

To update an Installation Manager, re-run the Installation Manager setup command (installc, userinstc, or groupinst) from a newer level of the Installation Manager install kit.

The install kit itself contains a repository for the Installation Manager product.

To update an install kit that you obtained in SMP/E format (ServerPac or CBPDO), apply current maintenance to FMID HGIN140.

If you downloaded your install kit from the Installation Manager website, just download a new copy at the latest level.

Installation Manager has options to enable or disable automatic self-update; it will also alert you if the installation of a particular program product requires a more recent level of IBM Installation Manager.

To update an Installation Manager, just reissue the original Installation Manager setup command (installc, userinstc, or groupinst) from a new level of the Installation Manager install kit. Run this command from the owning user ID for the Installation Manager, and specify the same binaries and run-time data locations as before.

The Installation Manager install kit actually contains a repository for the Installation Manager product, at the level that was current when the install kit was created.

If you obtained the Installation Manager install kit as part of a ServerPac or CBPDO, you can update it by installing the latest PTFs for FMID HGIN140.

If you downloaded the Installation Manager install kit in zip format, simply download a new copy.

Installation Manager also has the capability to update itself from the online service website.

Occasionally, a product install may require a newer level of Installation Manager. In this case, you will receive a message indicating that your Installation Manager must be updated before proceeding.

Section

Installing products with IBM Installation Manager on z/OS

This section will discuss the installation of products on z/OS with IBM Installation Manager, starting with WebSphere Application Server V8.

Installing products on z/OS with Installation Manager

For the time being, the *initial* Installation Manager repositories for z/OS program products will be delivered and installed with SMP/E.

Each repository can be obtained as part of a CBPDO or ServerPac, and will have its own FMID and Program Directory. The default location for each initial repository is

/usr/lpp/InstallationManagerRepository/<FMID>

As product fix packs become available, the initial product repositories will be serviced via PTFs to include the fix pack repository materials as well. Customers who have applied all current PTF service for a repository can use Installation Manager to install any level of the product, from GA to the latest fix pack level.

You can also download fix pack repositories and iFixes from the IBM service website (Fix Central), or have Installation Manager retrieve the repository contents from a central service repository.

In the future it may be possible for a licensed WebSphere Application Server for z/OS customer to simply point IBM Installation Manager at an IBM repository website and install WebSphere Application Server on the local z/OS system. (This will in fact be possible with WebSphere Application Server V8 feature packs.)

For the time being, the initial Installation Manager repository for each z/OS program product will be delivered and installed with SMP/E.

Initial repositories can be obtained as part of a CBPDO or ServerPac. Each will have its own FMID and program directory.

By default, all product repositories will be installed at a path beginning with /usr/lpp/InstallationManagerRepository, and ending with the FMID of the product's initial repository. For example, the default repository location for WebSphere Application Server for z/OS V8 will be

/usr/lpp/InstallationManagerRepository/HBBO800

As product fix packs become available, the product repositories will be serviced with PTFs that add the new fix pack levels to the existing initial repository. Customers who have applied all PTF service to a repository can use Installation Manager to install any level of the product, from the GA level to the latest fix pack level.

(Fix pack repositories and iFixes can also be downloaded from the IBM service website, Fix Central, or you can point Installation Manager to the product's online service repository.)

Installing the initial repository for WAS for z/OS V8 (1 of 2)

The WebSphere Application Server for z/OS V8 initial repository contains all the program objects needed to create multiple copies of:

- the WebSphere Application Server V8 base code
- the WebSphere Application Server V8 DMZ secure proxy server code
- the web server plug-ins for WebSphere Application Server V8
- the IBM HTTP Server V8 product code

If you order the product as part of a CBPDO, follow the instructions in the Program Directory to create the repository file system (SBBOIMR) and the samples PDS (SBBOJCL).   The SBBOJCL data set contains Installation Manager jobs to install each component of the product.

If you order the product as part of a ServerPac, follow the instructions in the Installing Your Order guide to create the repository file system (SBBOIMR). and the samples PDS (SBBOJCL), along with customized setup jobs based on your system layout.

The initial product repository for WebSphere Application Server for z/OS V8 is delivered as FMID HBBO800.

This initial product repository contains all files and metadata to create the initial levels of the WebSphere Application Server base code, the DMZ secure proxy server code, the web server plug-ins, and the IBM HTTP Server, all at the version 8 level.

If you order the product as part of a CBPDO, follow the instructions In the WebSphere Application Server Version 8 Program Directory to install FMID HBBO800. This will create the repository file system (SBBOIMR) and the samples data set (SBBOJCL).   The SBBOJCL data set contains installation Manager jobs to install each component of the product, and the program directory tells you how the jobs are to be run to create the WebSphere Application Server code.

If you order the product as part of a ServerPac, you will receive pre-installed copies of the repository file system (SBBOIMR) and the samples data set (SBBOJCL). Follow the instructions in the Installing Your Order guide to complete installation of WebSphere Application Server V8 using IBM Installation Manager.

Installing the initial repository for WAS for z/OS V8 (2 of 2)

The SBBOJCL data set contains the following Installation Manager jobs:

BBO1CFS   Create a target file system for the base code
BBO1INST   Install the base code with Installation Manager

BBO2CFS   Create a target file system for the secure proxy code
BBO2INST   Install the secure proxy code with Installation Manager

BBO3CFS   Create a target file system for the web server plug-ins
BBO3INST   Install the web server plug-ins with Installation Manager

BBO4CFS   Create a target file system for the IBM HTTP Server
BBO4INST   Install the IBM HTTP Server with Installation Manager

You can customize and run these jobs, or use them as models for running
your own install commands from the UNIX System Services shell, batch
jobs, or shell scripts.

The samples data set, SBBOJCL, provide three jobs for each product component: a create-file-system job to create an HFS or zFS file system for the installed component; an install job to install the code; and an uninstall job. (The uninstall jobs are not listed here).

Each job already contains the correct package name and the default installation location for each component. Customize the jobs according to the comments in each, and submit them under the appropriate user IDs.

In general, the CFS job will have to be run under a privileged user ID in order to create, mount, and initialize the file system, while the install or uninstall jobs must be run under a user ID that is authorized to invoke the Installation Manager being used.

You can make copies of these jobs, customize, and run them, or simply use them as example when invoking Installation Manager from the UNIX System Services shell, your own batch jobs, or shell scripts.

Installing WebSphere Application Server V8 on z/OS

For each component you want to install:

1) Choose an install location. This is the location at which the component file system MUST BE MOUNTED whenever you manipulate it with the Installation Manager. Each installation location must be unique; that is, two package groups cannot share an installation location.

2) Create a file system at this location, giving it the proper space and permissions, as described in the Program Directory.

3) Make sure the repository is mounted and available.

4) Run the Installation Manager imcl install command to install the component.

5) Unmount the target file system, and remount it on your target z/OS system.

To install one of the WebSphere Application Server product components – base, secure proxy, plug-ins, or IBM HTTP Server – you must first set up an Installation Manager, if you have not done so already.

Next, choose an install location, which must NOT be the same as the install location for any other package group known to the Installation Manager. The product file system must be mounted at this location whenever product maintenance is being done with Installation Manager, so the location will normally be different from the production location that will be used by your servers.

Create a file system at this location, using the recommended space allocations In the Program Directory or the sample create-file-system job.

Make sure the repository is mounted and available.

Invoke Installation Manager to install the component.

Finally, unmount the product file system and re-mount it, read-only, on the z/OS system where it will be used.

Sample job: Create the product file system

```
WITVM
File  Edit  View  Communication  Actions  Window  Help
    File    Edit    Edit_Settings    Menu    Utilities    Compilers    Test    Help
EDIT        WAS.V80.JCL(BBO1CFS) - 01.04                    Columns 00001 00072
000058 //*
000059 //*********************************************************************
000060 //*    The following step allocates a new filesystem for the     *
000061 //*    WebSphere Application Server V8 base product.              *
000062 //*********************************************************************
000063 //CREATE    EXEC PGM=IKJEFT01,REGION=0M
000064 //SYSTSPRT DD   SYSOUT=*
000065 //BPXOUT   DD   SYSOUT=*
000066 //STDOUT   DD   SYSOUT=*
000067 //SYSTSIN  DD   *
000068   BPXBATCH SH +
000069    /InstallationManager/bin/eclipse/tools/zCreateFileSystem.sh    +
000070       -name WAS.V80.SBBOHFS                                       +
000071       -type HFS                                                   +
000072       -volume WAS80T                                              +
000073       -cylinders 2200 220                                         +
000074       -mountpoint /usr/lpp/zWebSphere/V8R0                        +
000075       -owner IMADMIN                                              +
000076       -group IMGROUP
000077 /*
****** ************************* Bottom of Data ************************

Command ===> _____  Scroll ===> CSR
  F1=Help      F2=Split     F3=Exit     F5=Rfind    F6=Rchange   F7=Up
  F8=Down      F9=Swap     F10=Left    F11=Right   F12=Cancel
MA    c                                                            09/067
```

Here is a customized sample job to create a file system for the WebSphere Application Server for z/OS base product. (In this case, the zCreateFileSystem.sh script is run from the Installation Manager's binaries directory, since we do not know if the Installation Manager install kit is mounted.)

Note that the file system will be mounted at /usr/lpp/zWebSphere/V8R0, and the file ownership will be set to user IMADMIN and group IMGROUP.

Sample job: Install WebSphere Application Server

```
File    Edit    Edit_Settings    Menu    Utilities    Compilers    Test    Help
EDIT         WAS.V80.JCL(BBO1INST) - 01.09                Columns 00001 00072
000106 //*
000107 //****************************************************************
000108 //*    The following step invokes IBM Installation Manager to    *
000109 //*    install the WebSphere Application Server V8 base product.  *
000110 //****************************************************************
000111 //INSTALL   EXEC PGM=IKJEFT01,REGION=0M
000112 //SYSTSPRT DD   SYSOUT=*
000113 //BPXOUT   DD   SYSOUT=*
000114 //STDOUT   DD   SYSOUT=*
000115 //SYSTSIN  DD   *
000116  BPXBATCH SH +
000117    /InstallationManager/bin/eclipse/tools/imcl              +
000118      install com.ibm.websphere.zOS.v80                      +
000119      -installationDirectory /usr/lpp/zWebSphere/V8R0        +
000120      -sharedResourcesDirectory /InstallationManager/sharedResources +
000121      -repositories /usr/lpp/InstallationManagerRepository/HBBO800   +
000122      -preferences com.ibm.cic.common.core.preferences.preserveDownlo+
000123       adedArtifacts=false                                    +
000124      -acceptLicense
000125 /*
****** *************************** Bottom of Data ****************************

Command ===> _____  Scroll ===> CSR
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
                                                                    30/015
```

Here is a customized sample job to install the WebSphere Application Server for z/OS base product with IBM Installation Manager.

Note that the file system will be mounted at /usr/lpp/zWebSphere/V8R0, and the file ownership will be set to user IMADMIN and group IMGROUP.

Installing products on z/OS with Installation Manager

In the previous example, only the package name (com.ibm.websphere.zOS.v80) was specified. As a result, the highest level of the product that is present in the repository is installed.

If you have never installed PTFs to the initial repository, then this will be the initial level of the product.

If you have installed PTFs to the repository, then the product will be installed at the latest fix pack level for which PTFs have been applied.

These are not your only choices, You can install the product at any level that is present in the repository, by specifying the version after the package name:

imcl install com.ibm.websphere.zOS.v80_8.0.3.20120304_0130
  -repositories /usr/lpp/InstallationManagerRepository/HBBO800

and so on.

The complete version string for each fix pack level can be found on the support website.

The install job just shown only specified the package name, without a version. As a result, the product level that is installed will be the highest one present in the repository – either the initial level (if no PTFs have been applied to the repository) or the latest fix pack level contained in the repository.

You can install the product at any level contained in the repository, by specifying the exact package version after the package name (separated by an underscore).

Here, the level being installed is WebSphere Application Server Version 8.0.0.3, created on March 4, 2012.

The support website will list the exact package version for each fix pack level.

.

The shared resources directory

The shared resources directory is a common location (one per Installation Manager) that is used for

- Run-time parts common to several products, such as copies of the Java Development Kit . (It is not currently used for this purpose on z/OS)

- Caching parts downloaded from local or remote repositories

The shared resources directory requires a fair amount of space during install processing (approximately 35,000 tracks for a WebSphere Application Server V8 install). Over time it can grow to require a great deal of space.

However, the cached parts are only needed for product rollback if the required product or service repositories are not available. In all other circumstances, we recommend that you use preferences (described later) to discard these cached objects as soon as they are no longer needed.

The shared resources location is set the first time a package is installed, and cannot be changed. However, if cached objects are dropped and the shared resources directory becomes empty, Installation Manager may "unset" the shared resources location.

IBM Installation Manager uses the shared resources directory for two purposes:

Objects which are common to several installed products can be stored here, to reduce overheard. (No z/OS products currently use this capability.)

Installation Manager also uses this directory as a place to cache objects from local or remote repositories during a product install.

There can only be one shared resources directory per Installation Manager, and it can become quite large over time.

Cached parts are only needed for product rollback, and even then are only needed if the product repositories are not available.

Therefore we recommend that you use an Installation Manager preference (which we will describe later) to have Installation Manager delete cached objects from the shared resources directory as soon as they are no longer needed during an install.

The shared resources directory is set the first time a product is installed with an Installation Manager, and cannot be changed. However, if all cached objects have been dropped, Installation Manager may "unset" the shared resources directory location, requiring it to be reset.

Sharing resource locations for each Installation Manager, and specifying it on each imcl install command is also recommended. This will ensure that enough space is available to support product install.

Section

**Applying product service with
IBM Installation Manager on z/OS**

In this section Applying product service with IBM Installation Manager on z/OS will be discussed.

Applying product service with Installation Manager (1 of 6)

There are two basic kinds of product service that can be applied to WebSphere Application Server V8:

A **fix pack** is a new product level. Each fix pack repository is a delta on top of the previous fix pack level, containing the new product parts and metadata needed for the new level.

Each fix pack has the same package name as the initial level of the package, but a new version.

A **interim** fix or **iFix** is a patch. It has a package name of its own, which identifies the iFix. Metadata in the iFix specifies which products or product levels onto which the iFix can be applied.

All WebSphere Application Server V8 fix packs and iFixes can be downloaded from Fix Central, or obtained directly by Installation Manager by pointing to a central online service repository.

Fix packs (but not iFixes) are also distributed for z/OS as PTF service to the initial product repository.

Product service for WebSphere Application Server comes in two forms:

Fix packs are new product levels. They are distributed as repositories which contain only the new material and metadata for the fix pack level.

Each fix pack has the same package name as the base product, but a new version

An Interim fix or iFix is a patch – corrective service to resolve a particular problem. Each iFix is a package in its own right, and the package metadata identifies with products or product level onto which the iFix can be applied. In previous versions, iFixes had to be repackaged for z/OS as ++APARs. IBM Installation Manager allows the same iFix to be installed on any platform.

All fix packs and iFixes for WebSphere Application Server V8 can be downloaded from Fix Central. You can also point your Installation Manager to the online service repository and have it retrieve any fix packs or iFixes you chose to install.

As we saw earlier, fix packs (but not iFixes) are distributed to z/OS customers as PTF service to the initial product repository. When the PTFs are applied to the SMP/E-managed repository, the repository can be used to install the products in the repository at the new fix pack level, in addition to any levels that were already in the repository.

Applying product service with Installation Manager (2 of 6)

- You can find service to be applied by going to Fix Central or to the IBM support website for WebSphere Application Server. In some cases, IBM support staff may recommend that you install a particular fix pack or iFix.
- Fix packs and iFixes for the WebSphere Application Server for z/OS V8 base product and secure proxy server:
- http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
- Fix packs and iFixes for the web server plug-ins for WebSphere Application Server for z/OS V8:
- http://www.ibm.com/software/repositorymanager/com.ibm.websphere.PLG.zOS.v80
- Fix packs and iFixes for the IBM HTTP Server V8 for z/OS:
- http://www.ibm.com/software/repositorymanager/com.ibm.websphere.IHS.zOS.v80
- You will need an IBM Software user ID and password to access these repositories
- OR you can apply PTFs to add fix packs to the SMP/E-managed repository

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You can find service by going to Fix Central or to the IBM support web page for WebSphere Application Server. In some cases, you may also be asked by IBM support staff to install a particular fix pack of iFix.

This page shows the online services repository URL's for each WebSphere Application Server for z/OS Version 8 component.

You will need an IBM Software user ID and password to access these repositories.

Again, if you only need fix packs, you can install PTF service to your initial repository instead of using the online repository. If you need to install an iFix, you must either download it from Fix Central, or use the online service repository.

Applying product service with Installation Manager (3 of 6)

Whether you are applying service from an SMP/E-managed repository or an online repository, you can have Installation Manager list the available packages (initial product levels and fix pack levels) and iFixes.

```
imcl listAvailablePackages
   -repositories /usr/lpp/InstallationManagerRepository/HBBO800
```

```
imcl listAvailablePackages
   -repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
   -keyring /u/jsmith01/Software.keyring
```

```
imcl listAvailableFixes com.ibm.websphere.zOS.v80_8.0.0.20110617_0100
   -repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
   -keyring /u/jsmith01/Software.keyring
```

You can use the imcl listAvailablePackages command to list all available product and product levels in a particular repository, or group of repositories. Both initial product levels and fix packs will be listed.

The first example shows how to list packages in the initial product repository, installed with SMP/E. You will see the base product level; if you have installed PTFs containing repository updates, you will also see the associated fix packs.

The second example shows how to list packages in the online service repository for the base and secure proxy components of WebSphere Application Server for z/OS V8. You must already have created the named credentials file, or keyring, with your IBM Software ID and password

You can use the imcl listAvailableFixes command to list all available interim fixes that apply to a particular package version. When listing iFixes, the full package name, including version, of the base product must be provided.

Applying product service with Installation Manager (4 of 6)

To apply an fix pack from the SMP/E managed repository:

- Apply the repository PTFs that contain the desired fix pack level, if they have not already been applied, and mount the repository file system.

- Mount the copy of the product to be updated, at the same location at which it was originally installed with Installation Manager.

- From the Installation Manager that "owns" this copy of the product, and running from an authorized user ID, issue the imcl install command to install the fix pack:

```
imcl install  <package name>_<new level>
  -installationDirectory <install location>
  -repositories <repository path>
```

You may also need to specify the -sharedResourcesDirectory path if it is not already set.

To apply a new fix pack level using the SMP/E-managed product repository:

Apply the repository PTFs that contain the desired fix pack level, if necessary. (PTFs for the previous fix pack levels must also be applied.)

Mount the product file system to be updated, at the same location at which this copy of the product was originally installed with Installation Manager.   The file system must be mounted R/W, and accessible to the user ID that will be used to run the Installation Manager.

From this user ID, issue the imcl install command to install the fix pack. Specify the exact version of the fix pack level to be installed.

If the shared resources directory is not currently said, you should specify that as well.

Applying product service with Installation Manager (5 of 6)

To apply an fix pack from the online service repository:

- Use imutilsc to create a keyring file with your IBM Software ID and password, if you have not done so already.

- Mount the copy of the product to be updated, at the same location at which it was originally installed with Installation Manager.

- From the Installation Manager that "owns" this copy of the product, and running from an authorized user ID, issue the imcl install command to install the fix pack:

```
imcl install <package name>_<new level>
  -installationDirectory <install location>
  -repositories <repository URL>
  -keyring <keyring file>
```

You may also need to specify the -sharedResourcesDirectory path if it is not already set.

To apply a new fix pack level from the online service repository instead of using the SMP/E-managed product repository:

Create a credentials file, if necessary. The imutilsc command can also verify that you have access to the online repository. Use the listAvailablePackages command to make sure that the fix pack level you want to install is present.

Mount the product file system to be updated, at the same location at which this copy of the product was originally installed with Installation Manager.   The file system must be mounted R/W, and accessible to the user ID that will be used to run the Installation Manager.

From this user ID, issue the imcl install command to install the fix pack. Specify the exact version of the fix pack level to be installed.

Applying product service with Installation Manager (6 of 6)

To apply an iFix from the online service repository:

- Use imutilsc to create a keyring file with your IBM Software ID and password, if you have not done so already.

- Mount the copy of the product to which the iFix is to be applied, at the same location at which it was originally installed with Installation Manager.

- From the Installation Manager that "owns" this copy of the product, and running from an authorized user ID, issue the imcl install command to install the iFix on top of the product being updated:

```
imcl install  <ifix name>
  -installationDirectory <install location>
  -repositories <repository URL>
```

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iFixes cannot be installed from the SMP/E-managed product repository. You must either download them from Fix Central – download the iFix , unzip it, and point Installation Manager to unzipped iFix – or apply the iFix from the online service repository.

To install an iFix from the online repository:

Create a credentials file, if necessary. The imutilsc command can also verify that you have access to the online repository. Use the listAvailablePackages command to make sure that the fix pack level you want to install is present.

Mount the product file system to be updated, at the same location at which this copy of the product was originally installed with Installation Manager.   The file system must be mounted R/W, and accessible to the user ID that will be used to run the Installation Manager.

From this user ID, issue the imcl install command to install the fix pack. Specify the exact package name of the iFix to be installed.

Rolling back product service with Installation Manager

To roll back product service, simply use the imcl install command to reinstall the *old* product level at the specified location.

If you had iFixes installed on the old level, they will need to be reinstalled. You can tell Installation Manager to install the old level and a list of iFixes at the same time.

When rolling back to an older level, Installation Manager may need to take parts from any previous level (initial level of fix pack). Therefore, when rolling back service, you should list both the initial repository, and any other repositories (such as the online service repository) that contain fix pack level or iFixes you used to construct the old level. Separate the repository names with a comma, and no intervening spaces.

As an alternative to rolling back service, you could install a new copy of the product at the old service level, or simply perform a new install with IBM Installation Manager when you need a new level. This would allow you to install service or iFixes to either the old or new level, independently.

The imcl install command can also be used to roll back a service level, by pointing to the installation location for a product and installing a previous level of the product at that location.

Any iFixes will normally be uninstalled, and must be reinstalled on the previous version. You can do this by listing the iFix package names along with the package name and version for the product level you are rolling back to.

When installing an older level of the product, you may provide access to all repositories from the initial product level up to the level you are rolling back to.

Instead of rolling back service, you have the option of installing a new copy of a product for each service upgrade. Your old service level stays available, and you can uninstall it from the Installation Manager when you are sure you will no longer need it. Corrective service (iFixes) can be installed on any of the product levels, as needed.

Service information and the PSP bucket

The Preventive Service Planning "bucket" has been used for years as a source of service planning information for IBM mainframe products.

Since IBM Installation Manager does not currently provide a function similar to the ACTION HOLD in SMP/E, you should plan to check product PSP buckets before applying service with Installation Manager.

PSP values for WebSphere Application Server for z/OS V8:

Upgrade: WASAS800   Subset: HBBO800

PSP values for IBM Installation Manager for z/OS:

Upgrade: IIMZOSV1 Subset: HGIN140

PSP buckets can be viewed at this web page:

   http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp

At the present time, IBM Installation Manager does not have a way to present text information associated with a particular install, as SMP/E does withy ACTION and DOC holds.

Therefore, customers should be sure to check the Preventive Service Planning bucket for each product they install with Installation Manager, before installing or servicing the product. The PSP bucket will be used to provide any specific installation instructions associated with particular fix pack levels.

The PSP bucket information for each product can be found in that product's Program Directory. The values for IBM Installation Manager and WebSphere Application Server for z/OS Version 8 are provided here, along with the URL for a web page at which PSP buckets can be viewed.

Reporting on installed products with Installation Manager

Installation Manager keeps a record of all installed products in a file called **installed.xml** in the Installation Manager's application data directory. This information can be displayed with the Installation Manager command listInstalledPackages:

```
imcl listInstalledPackages
```

This lists all installed packages and the version of each, but does not show the installation directories. You can add the -long option to see the installation directories (at the start of each line):

```
imcl listInstalledPackages -long
```

Relevant portions of the installed.xml file are also copied into each installed product's `properties/version` directory when the product is installed or serviced. This information can be displayed with the WebSphere Application Server `versionInfo.sh` command.
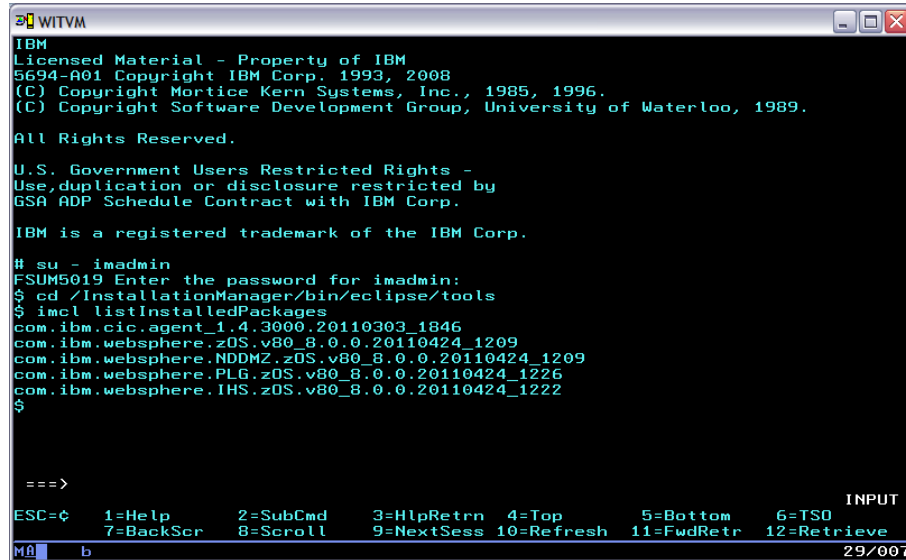
Installation Manager's provide a "record" of installed products in the file installed.xml in the Installation Manager's run-time data directory.

The contents of this file can be displayed with the imcl listInstalledPackages command. By default, this command only lists the package name and version. Add the -long option to see the installation directory for each package as well.

The installed.xml file is copied into each installed product's properties/version directory when the product is installed or serviced.

You can also use the versionInfo.sh command in the WebSphere Application Server's bin directory to display the driver level of each installed product being used by WebSphere Application Server. This output does not currently contain the Installation Manager package name and version, but we hope to provide that information in a fix pack in the near future.

Reporting on installed products with Installation Manager

```
IBM
Licensed Material - Property of IBM
5694-A01 Copyright IBM Corp. 1993, 2008
(C) Copyright Mortice Kern Systems, Inc., 1985, 1996.
(C) Copyright Software Development Group, University of Waterloo, 1989.

All Rights Reserved.

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GSA ADP Schedule Contract with IBM Corp.

IBM is a registered trademark of the IBM Corp.

# su - imadmin
FSUM5019 Enter the password for imadmin:
$ cd /InstallationManager/bin/eclipse/tools
$ imcl listInstalledPackages
com.ibm.cic.agent_1.4.3000.20110303_1846
com.ibm.websphere.zOS.v80_8.0.0.20110424_1209
com.ibm.websphere.NDDMZ.zOS.v80_8.0.0.20110424_1209
com.ibm.websphere.PLG.zOS.v80_8.0.0.20110424_1226
com.ibm.websphere.IHS.zOS.v80_8.0.0.20110424_1222
$
```

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Here is a sample output from the imcl listInstalledPackages command.

The first package shown is Installation Manager itself. The remainder are WebSphere Application Server components.

This information is not quite enough if you have multiple copies of a package installed at different locations.

Reporting on installed products with Installation Manager

```
WITVM
$ imcl listInstalledPackages -full

{IM install directory}/tools/imcl:
Problem in command line: -toolId imcl -accessRights group -silent listInstalledP
ackages -full
Unrecognized command line argument "-full".

Use "help" command for information about available commands.
$ imcl listInstalledPackages
com.ibm.cic.agent_1.4.3000.20110303_1846
com.ibm.websphere.zOS.v80_8.0.0.20110424_1209
com.ibm.websphere.NDDMZ.zOS.v80_8.0.0.20110424_1209
com.ibm.websphere.PLG.zOS.v80_8.0.0.20110424_1226
com.ibm.websphere.IHS.zOS.v80_8.0.0.20110424_1222
$ imcl listInstalledPackages -long
/InstallationManager/bin/eclipse : com.ibm.cic.agent_1.4.3000.20110303_1846 : IB
M® Installation Manager : 1.4.3
/usr/lpp/zWebSphere/V8R0 : com.ibm.websphere.zOS.v80_8.0.0.20110424_1209 : IBM W
ebSphere Application Server for z/OS : 8.0.0.0
/usr/lpp/zWebSphere_SPS/V8R0 : com.ibm.websphere.NDDMZ.zOS.v80_8.0.0.20110424_12
09 : DMZ Secure Proxy Server for IBM WebSphere Application Server for z/OS : 8.0
.0.0
/usr/lpp/zWebSphere_Plugins/V8R0 : com.ibm.websphere.PLG.zOS.v80_8.0.0.20110424_
1226 : Web Server Plug-ins for IBM WebSphere Application Server for z/OS : 8.0.0
.0
/usr/lpp/IHSA/V8R0 : com.ibm.websphere.IHS.zOS.v80_8.0.0.20110424_1222 : IBM HTT
P Server for WebSphere Application Server for z/OS : 8.0.0.0
$
===>                                                                     INPUT

ESC=¢    1=Help      2=SubCmd    3=HlpRetrn  4=Top      5=Bottom    6=TSO
         7=BackScr   8=Scroll    9=NextSess 10=Refresh 11=FwdRetr  12=Retrieve
MA   b                                                                   17/041
```

Here we have added the -long option. Each line of output contains the installation location, package name and version, printable product name, and printable product level.

Section

Hints and tips

Here are some usage tips to help with IBM Installation Manager.

Group mode Installation Managers

IBM Installation Manager does not do any special processing for file ownership and permissions when used in group mode.

Therefore, you are responsible for ensuring that all products installed by a group mode Installation Manager are owned by the Installation Manager's "owning group", and that all files have group-write (g+w) enabled. The required permissions outlined in sample job GIN2ADMN simplify this somewhat.

The easiest solution is to change the file owner for a product's files to the user ID that will manipulate it with Installation Manager, before you start an Installation Manager session:

chown -R admin1 /usr/lpp/zWebSphere/V8R0

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Installation Manager group mode has some significant advantages, but requires that you do some manual work to ensure that the authorized users for a group-mode Installation Manager can access and update product files.

Whenever you switch between users, you will need to verify that the user ID to be used next can update the files belonging to the product it will be used to update. You can do this by setting group name and permissions after you are done using the previous user ID, or set ownership before switching to the new user ID.

If you use several different user IDs you may have to repeat this process when Installation Manager is invoked with a different user ID than last time.

Another alternative is to use a group mode Installation Manager, all of whose authorized users are superusers, that can switch to uid 0 before invoking IBM Installation Manager.

Keeping the cache small

The Installation Manager object cache (in the shared resources directory) is used to reduce the time required to roll back packages or re-use package objects, without the overhead of going to an online repository.

However, the cache can become quite large, especially when many products are being installed.

If you always have access to your product repositories, then you can delete the contents of the shared resources directory whenever the Installation Manager is not in used.

As an alternative, you can instruct the Installation Manager to discard cached objects as soon as an install is complete, by adding the following preference value to the imcl install command:

-preferences com.ibm.cic.common.core.preferences.preserveDownloadedArtifacts=false

This value is used in the sample jobs in SBBOJCL.

As noted earlier, the cached objects in the shared resources directory can take up a great deal of space, and are only required in rollback situations when one or more previously-used repositories are no longer available.

If you always have access to your product repositories (whether local or remote), you can either delete the contents of the shared resources directory whenever the Installation Manager is not running, or else set the preserveDownloadedArtifacts preference to tell the Installation Manager to discard cached objects as soon as it is done with them.

All sample install jobs for WebSphere Application Server for z/OS include this option.

Using this preference may cause the shared resource location to be "unset" at the end of Installation Manager install processing, if the directory becomes completely empty. Therefore, you should choose a shared resources directory for each Installation Manager, and always specify that value for each install, using the -sharedResourcesDirectory option.

Applying service on a remote system

Installation Manager can only apply service to a product that it originally installed.

However, you can relocate an entire group-mode Installation Manager by moving its binaries and run-time data. This is one reason that the sample Installation Manager jobs in SGINJCL are set up to use a single R/W file system at /InstallationManager (or another location) for the binaries and run-time data.

To apply service (fix packs or iFixes) on a remote system, you can transport a copy of the Installation Manager binaries and run-time data together with its target file systems. Mount the Installation Manager and product file systems in read/write mode, and you should be able to apply service there instead of on your original Installation Manager system.

You will also need to verify that user IDs are correctly set up on the remote system, and that any necessary product or service repositories are available.

(Admin- and user-mode Installation Managers can also be relocated, but involve additional steps related to the Installation Manager registry.)

Many z/OS customers perform product installs and maintenance on one system in their enterprise, then copy the installed product code to other systems or data centers in the enterprise.

In order to allow fix packs or iFixes to be installed in this situation, you may want to move a copy of the Installation Manager run-time binaries and appdata along with the Installation Manager-installed products.

To apply service on the remote system, mount the Installation Manager file systems at the same locations as on the original system, and make sure that the necessary repositories are available. Then you can perform product installs and service as if you were on the original system.

(Remember that the original Installation Manager is NOT updated by this operation, so do not mix the remotely-update files with the ones on the original system.)

Admin- and user-mode Installation Managers have registry files (see Troubleshooting, below) which must be present for Installation Manager to run correctly; these files must also be copied into the correct location on the remote system before Installation Manager can be used there. The use of a group-mode Installation Manager in this scenario, even if the "group" only consists of a single user ID, is recommended.

Understanding fix pack versions

- **Many IBM software products use four-level versions:**

- WebSphere Application Server Version 8.0.0.5

- On the other hand, the product version specification in IBM Installation Manager uses three levels of version information:
  - com.ibm.websphere.zOS.v80_8.0.5.20120918_0100

- The WebSphere Application Server support website will provide both version strings. Just be aware that the package version above is for fix pack 8.0.0.5, not fix pack 8.0.5.2.

Many IBM software products use four-level versions

See the examples below.

Section

Troubleshooting

In this section, information to help with problem resolution will be discussed.

Troubleshooting (1 of 2)

To diagnose an Installation Manager problem:

- Go the binaries location for the Installation Manager.

- Look in the eclipse/configuration directory for the config.ini file (which is in ASCII).

- The following line in config.ini gives the location of the run-time data (appdata):

  cic.appDataLocation=/InstallationManager/appdata

- The Installation Manager logs are in <appdata>/logs and are named <date>_<time>.xml. These files are in ASCII. You can either view them on your z/OS system, or download them in binary, together with the log.xsl file, to your workstation, where you can view with a web browser.

  The first time-stamped log will be for the initial creation of the Installation Manager.

  In the first and latest logs, look for "user.name" and "Installation manager mode:" and verify that these have the expected values.

Installation Manager must coordinate files in several different locations. Many startup problems occur because these locations are out of sync – for example, if a file system is not mounted.

To verify that the basic "parts" of an Installation Manager are all there:

Go to the Installation Manager's binaries location. Make a copy of the config.ini file in the eclipse/configuration subdirectory, and view the copy. Look for a line with the keyword "cic.appDataLocation." This tells you where the Installation Manager's run-time data is located. Go to this directory.

The Installation Manager logs are in the logs subdirectory of the run-time data located, named <date>_<time>.xml; they are in ASCII. Look for the user.name and Installation manager mode lines and verify that these values match what you expect.

Troubleshooting (2 of 2)

- For an admin mode Installation Manager, check that the registry file InstallationManager.dat is present in /etc/.ibm/registry.

- For a user-mode Installation Manager, check that the registry file InstallationManager.dat is present in $HOME/etc/.ibm/registry.

The registry file is in ASCII, and points back to the Installation Manager binaries location.

Make sure that all files and directories identified so far are present, and can be read and written by the Installation Manager user ID. Check to see if any ASCII control files have been inadvertently converted to EBCDIC.

Use the listAvailablePackages command to verify that repositories can be accessed.

Verify that any target file systems required for product installation or uninstallation are present, mounted read/write, and have the correct ownership and permissions.

Installation Manager will usually report an error if insufficient space is available in a file system to perform an operation. If it reports insufficient space in the root file system (/), this usually means that an Installation Manager or target file system is not mounted, or that the shared resources directory is not correctly set.

An admin mode Installation Manager will have a registry file named InstallationManager.dat in /etc/.ibm/registry.

A user-mode Installation Manager will have a registry file named InstallationManager.dat in $HOME/etc/.ibm/registry.

In either case, the registry file (which is in ASCII) points back to the Installation Manager binaries location.

Make sure that these files are present, and can be read and written by the Installation Manager user IDs. Verify that all files that should be in ASCII have not been converted to EBCDIC.

Issue the imcl listAvailablePackages to verify that repositories can be accessed.

Verify that any target (product) file systems required for product installation are present, mounted read/write, and have the correct ownership and permissions.

If Installation Manager reports insufficient space in a file system you recognize as belonging to the Installation Manager or a product file system, add space as necessary. If Installation Manager reports that more space is needed in the root file system (/) or some other unexpected location, this probably means that a needed file system is not mounted.

Troubleshooting – common problems

CRIMA5096821AE ERROR: Error installing.

CRIMA5096821AE ERROR: Error getting file for installation: Error copying Installation Manager folder "/usr/lpp/InstallationManager/V1R4/plugins/com.ibm.cic.common.core.zos_1.0.3.v20101105_2254" to "/InstallationManager/bin/eclipse/plugins/com.ibm.cic.common.core.zos_1.0.3.v20101105_2254".

→ Indicates that the fix for z/OS APAR OA34228 is not installed.   This fix resolves a problem when copying UNIX System Services files with extended attributes

If you see this error, it means that the fix for APAR OA34228 is not installed on your z/OS system. Apply this PTF for this APAR before continuing.

Troubleshooting – collecting internal data

Installation Manager provides a command to collect and export internal data which may required by IBM support to investigate and resolve a problem with IBM Installation Manager,

Change directory to the eclipse/tools subdirectory of the Installation Manager binaries location, and issue the command:

`imutilsc exportInstallData <outputFileName>`

The output file created by Installation Manager should be saved and provided to IBM if necessary.

Contact the IBM Support Center for any problems with Installation Manager. You will need to provide the name of the licensed product that you are installing with IBM Installation Manager, as initial trouble-shooting will be done by the support team for this product.

You can use the imutilsc exportInstallData command to create a condensed file which contains a variety of critical Installation Manager information. Provide this file to the IBM Support Center whenever you report an Installation Manager problem or defect.

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