WebSphere Application Server –
Getting Started with Version 8 – Part Zero!

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1:30 PM
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WebSphere Application Server on z/OS

Session	Day	Time	Room	Title	Speaker
10560	Monday	9:30	International Ballroom F	Version 8 – Overview and Update	David Follis
10580	Monday	11:00	Cottonwood A/B	Back to Basics	Mike Loos
10633	Wednesday	1:30	International Ballroom C	Installation Manager – The Cross Platform Installer for WAS	Mike Loos
10561	Wednesday	3:00	Cottonwood A/B	Version 8 – New z/OS Exploitation Features	David Follis
10562	Thursday	11:00	Cottonwood A/B	Batch Update	John Hutchinson
10581	Thursday	1:30	Cottonwood A/B	Getting Started with Version 8 – Part Zero!	Mike Loos
10518	Thursday	6:00	Cottonwood A/B	Potpourri	Anybody
10516	Friday	8:00	Dogwood B	Level 2 Update	Mike Stephen
10563	Friday	9:30	Pine	Hands on Lab	Mike Stephen, David Follis, Ken Irwin

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Installation Manager Overview

- Why a new installer? And why should I care?
- IBM Installation Manager overview
- Setting up the Installation Manager
- Installing WebSphere Application Server V8
- Maintaining the product repository
- Maintaining your installed products
    - Using Installation Manager to Apply Maintenance to WebSphere on z/OS.
- Using Installation Manager to Install the WebSphere Customization Tool (WCT) on Windows
- Hints, tips, and gotchas
- Etc...
- Q & A?

If there is time…

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Why a new installer?

And why should I care?

Why a new installer?

Previous versions of WebSphere products have used a variety of different install and update tools. With WebSphere Application Server Version 8, Websphere-branded products are moving to a single cross-platform installer: IBM Installation Manager.

Moving to a single installer will:

• Simplify the overall installation and maintenance process for WebSphere products;

• Allow better coordination between base products, stack products, and feature packs;

• Provide direct electronic delivery of products and service in a consistent fashion across platforms.

Installation Manager documentation:

http://publib.boulder.ibm.com/infocenter/install/v1r5/index.jsp

But what about SMP/E?

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Why a new installer?

SMP/E is a venerable tool which continues to evolve. But for products such as WebSphere Application Server which run on a wide range of platforms, SMP/E installation provides fewer advantages. This is especially true if the products install entirely into Un*x file systems rather than making use of MVS native data sets.

In this presentation, we will be providing an overview of IBM Installation Manager and how it works on z/OS – and showing how you can take advantage of some of the new opportunities it provides. We will also go over the WebSphere Application Server V8 install process, with hints, tips, and recommended best practices.

Why should you care? Because the family of WebSphere branded products (on all platforms) will be using this installer in a consistent fashion, and the best way to use it well is to be aware of its capabilities.

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Overview of IBM Installation Manager

On Windows and distributed platforms, IBM Installation Manager can run as a GUI application, a command line application, or from response files. Here is the GUI main panel:
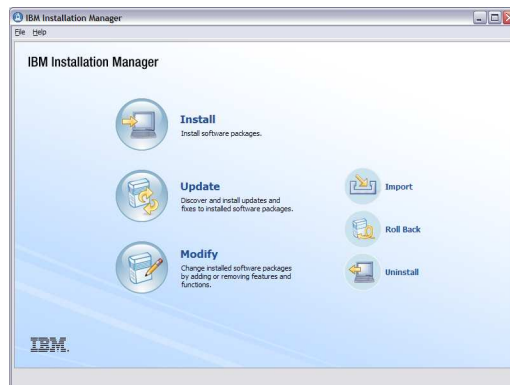
This is what you will probably be using to install the zPMT on Windows or Linux.

These same functions – install, update, modify, roll back, uninstall – are available via the command line.

Why use IBM Installation Manager?

Once Installation Manager and your product repository are set up, here is all it takes to install a copy of WebSphere Application Server V8:

```
$ cd /InstallationManager/bin/eclipse/tools
```
/InstallationManager/bin is where the Installation Manager code resides.

```
$ zCreateFileSystem.sh -name WAS.V80.SBBOHFS
     -type HFS  -volume WAS80V -cylinders 3360 300
     -mountpoint /usr/lpp/zWebSphere/V8R0
     -owner IMADMIN  -group IMGROUP
```
can also be in megabytes

```
$ imcl install com.ibm.websphere.zOS.v80
     -installDirectory /usr/lpp/zWebSphere/V8R0
     -repositories /usr/lpp/InstallationManagerRepository/HBBO800
     -acceptLicense
```

```
$
```

And that's it – Installation Manager will create a copy of WAS V8 at the designated location. You can install multiple copies of WAS, at specific product levels, using variations of these same commands. *Each copy can be separately maintained and updated.*

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Why use IBM Installation Manager?

Here's how to install an interim fix or iFix. (The iFix format is the same across platforms – no more waiting for a ++APAR – and you can install any combination of compatible iFixes.)

```
$ imcl install 8.0.0.0-WS-WAS-IFPM39074          name of the iFix
        -installDirectory /usr/lpp/zWebSphere/V8R0   copy of WAS to be updated – must be R/W
        -repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
        -acceptLicense
```

Here's how to install a fix pack (such as WAS 8.0.0.5):

```
$ imcl install com.ibm.websphere.zOS.v80_8.0.5.20120915_0100
        -installDirectory /usr/lpp/zWebSphere/V8R0
        -repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
        -acceptLicense -keyring /u/smith/IM.software.keyring
```

Both of these examples use an IBM-provided, web based repository from which Installation Manager downloads service as needed. (IM has proxy support.)

If your z/OS system doesn't have direct access to the web, you have a variety of options for a local or enterprise service repository.

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IBM Installation Manager for z/OS

Structure and Setup

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What is an Installation Manager?

On z/OS, IBM Installation Manager runs as a Unix System Services command line application. Commands can be run from the Unix System Service shell or from batch jobs.

Each Installation Manager consists of a copy of the IBM Installation Manager code, a set of run-time data, and a cache location (for downloaded objects).; it can be used to update itself, and any number of products or copies of products. Each installed product has a location directory.
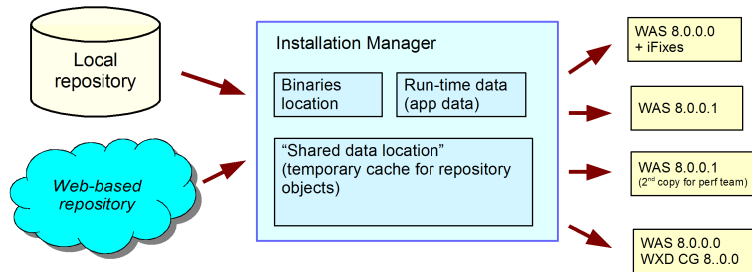
You can have several Installation Managers on a z/OS system, but you will usually need just one.

Who can use the Installation Manager?

An Installation Manager can set up to run in one of three administrative modes:

• **Admin mode** – must be in **uid 0** to invoke. A file in /etc/.ibm/registry points to the Installation Manager binaries, so there can be one admin-mode Installation Manager per system.

• **User mode** – can only be invoked by the user ID that created the Installation Manager. A file in $HOME/.ibm.registry points to the binaries, so there can be one user-mode IM per user.

• **Group mode** – can be invoked by any user ID that is connected to the USS group that owns the Installation Manager files. There can be any number of group-mode Installation Managers.

Installation Manager user IDs also require access to the following RACF profiles:

FACILITY:	BPX.FILEATTR.APF	UNIXPRIV:	SUPERUSER.FILESYS.CHOWN
	BPX.FILEATTR.PROGCTL		SUPERUSER.FILESYS.CHANGEPERMS
	BPX.FILEATTR.SHARELIB		

See sample job GIN2ADMN in the install kit SGINJCL data set (described next).

You can create a new user ID or use an existing one.

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Setting up an Installation Manager

Setting up an Installation Manager is something you do *once*. The setup instructions can be found in the Installation Manager infoCenter, and in the IM program directory.

Before you start:

- **Make sure z/OS APAR fix OA34228 is installed.**

- Review IEFUSI and BPXPRMxx for the z/OS system that will run Installation Manager. The user ID(s) that invoke it, and the address spaces it runs in, will require 512M of virtual memory.

- Consider turning off SMF type 92 records.

You will need:

- An installation kit (install kit) for IBM Installation Manager.

- Sufficient DASD for a R/W copy of the Installation Manager binaries (5000 tracks), run-time data (1000 tracks), and cache / work area (varies by product; 30,000 tracks for WAS V8). These directories can reside in a single file system. *Do not use shared HFS.*

- A user ID to run the Installation Manager – can be superuser or non-superuser.

- Basic familiarity with Unix System Services.

You can have several Installation Managers on a z/OS system, but you will usually need just one.

Setting up an Installation Manager

The IBM Installation Manager install kit consists of a set of initial binaries, a current repository for Installation Manager, and some setup scripts.
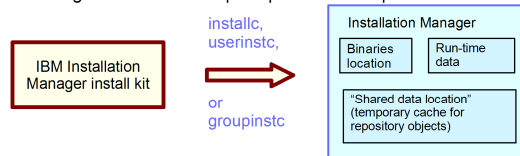
- A copy of the install kit (FMID HGIN140) is included automatically with each z/OS program product that requires Installation Manager. For a CBPDO, follow the instructions in the Program Directory. For a ServerPac, see the Installing Your Order document.

- You can also download the current Installation Manager install kit for z/OS from

  https://www.ibm.com/support/docview.wss?uid=swg24029226

  Unzip this file into a 5500-track file system and run the set-ext-attr.sh script.

By default, the install kit resides at /usr/lpp/InstallationManager/V1R4.   PTF service to FMID HGIN140 replaces the install kit with the most current version. The install kit is normally mounted read-only.

The install kit is ONLY needed when you create an Installation Manager, or update it to a newer level of the Installation Manager code! The setup scripts create or update the Installation Manager:

IBM Installation Manager install kit

installc, userinstc,

or groupinstc

Installation Manager

Binaries location

Run-time data

"Shared data location" (temporary cache for repository objects)

Setting up an Installation Manager

So with the install kit in hand:

1) Decide whether you want an admin-mode, user-mode, or group-mode Installation Manager.

2) Set up the user ID. (See job GIN2ADMN in the Installation Manager samples, SGINJCL).

3) Choose locations for:

- Installation Manager binaries (5500 tracks) – the IM code you will actually run

- Installation Manager run-time data (<1000) – records product status

- Shared data location (32000 tracks for WAS V8) – work area (like SMPWRK6)

  The defaults for z/OS are:
  ```
  binaries:         /InstallationManager/bin
  run-time data:    /InstallationManager/appdata
  cache:            /InstallationManager/sharedResources
  ```

  This arrangement allows you to have a single file system at /InstallationManager (or some other location of your choice) that contains all the Installation Manager's files and data.

  See job GIN2CFS for a sample job that creates such a filesystem. (If you create several Installation Managers later one, you will need new locations for all three for each separate Installation Manager.)

Creating an Installation Manager

A word about "mode".
- Admin mode.
  - Uid=0
  - One per system.
- User mode.
  - Only the creating user.
  - One per userid.
- Group mode.
  - Any userid connected to the group.
  - As many as you want per system.

Security setup.
- One User and one Group.
- Access to the following:
  - FACILITY:
    - BPX.FILEATTR.APF READ
    - BPX.FILEATTR.PROGCTL READ
    - BPX.FILEATTR.SHARELIB READ
  - UNIXPRIV:
    - SUPERUSER.FILESYS.CHOWN READ
    - SUPERUSER.FILESYS.CHANGEPERMS READ

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Installation Manager mode selection.

The Installation Manager may be created in any of three possible modes: admin, user, or group.

Admin mode: You must be in uid=0 to run in admin mode. A file in /etc/.ibm/registry points to the Installation Manager binaries, so there can only be one admin mode Installation Manager per system. Any user ID with uid=0 can invoke this Installation Manager.

User mode: The userid used when creating the Installation Manager is the only userid that may ever use it. A file in the $HOME/.ibm/registry points to the binaries, so there can only be one user mode Installation Manager per user.

Group mode: A group mode Installation Manager may be invoked by any userid connected to the USS group that owns the Installation Manager files. There can be any number of group mode Installation Managers and there can be any number of userids connected to the group.

Since many (most) installations restrict the assignment of uid=0 to actual z/OS users, admin mode is probably not the mode of choice for most installations.

The restriction to only one user using a user mode Installation Manager makes that mode undesirable for most z/OS installations.

That leaves us with group mode as the probable choice.

(notes continue on the next page)

Multi-part Process.

Use SMPE to install the Installation Manager Install Kit.

Use SMPE to install the WebSphere on z/OS repository.

Use the Installation Manager Install Kit to create the Installation Manager.

Create the filesystem components for WebSphere on z/OS V8 and mount them at /Service.

Use Installation Manager to populate the filesystem components.

Talk about maintenance.

The first two steps are SMPE steps and everyone that needs to be should already be familiar with that process. At any rate, SMPE education is WAY beyond our scope here.

The Installation Manager Install Kit is used to create a working copy of the Installation Manager.

Regular Unix tools are used to create the filesystem components needed to get a working copy of WebSphere on z/OS. We'll discuss the creation of these at the /Service mountpoint as if we were working on a "real" system.

The Installation Manager we created is then used to "load" the WebSphere on z/OS filesystem from the repository (and/or) the remote IBM based repository.

After it is loaded, we can them maintain it, also using Installation Manager.

Setup of the Security System.

The setup of the security system is simple. It involves setting up one userid connected to one new group. The userid, or more likely the group, needs to have access to certain profiles in the RACF FACILITY and UNIXPRIV classes with the stated level of access.

The following JCL fragment (which is available in the GIN.SGINJCL dataset member GIN2ADMN) contains a sample set of commands to accomplish the required setup.

```
//RACF     EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=0M
//SYSTSPRT DD  SYSOUT=*
//SYSTSIN  DD  *
 ADDGROUP IMGROUP OMVS(GID(gid))
 ADDUSER IMADMIN DFLTGRP(IMGROUP) OMVS(UID(uid) HOME('/u/imadmin') +
    PROGRAM('/bin/sh')) NOPASSWORD
 PERMIT BPX.FILEATTR.APF      CL(FACILITY) ID(IMADMIN) ACCESS(READ)
 PERMIT BPX.FILEATTR.PROGCTL  CL(FACILITY) ID(IMADMIN) ACCESS(READ)
 PERMIT BPX.FILEATTR.SHARELIB CL(FACILITY) ID(IMADMIN) ACCESS(READ)
 PERMIT SUPERUSER.FILESYS.CHOWN       CL(UNIXPRIV) +
       ID(IMADMIN) ACCESS(READ)
 PERMIT SUPERUSER.FILESYS.CHANGEPERMS CL(UNIXPRIV) +
       ID(IMADMIN) ACCESS(READ)
 SETR RACLIST(FACILITY) REFRESH
 SETR RACLIST(UNIXPRIV) REFRESH
/*
```

Creating an Installation Manager

Creating the filesystem.

Mountpoint: `/Service/InstallationManager`

Filesystem: `WAS800.GRPMODE.GINHFS.ZFS`

JOB: `GIN.SGINJCL(GIN2CFS)`

```
//SYSTSIN  DD  *
 BPXBATCH SH +
  /usr/lpp/InstallationManager/V1R5/tools/zCreateFileSystem.sh   +
    -name WAS800.GRPMODE.GINHFS.ZFS                              +
    -type ZFS                                                    +
    -volume NGIV8A                                               +
    -cylinders 2500 250                                          +
    -mountpoint /Service/InstallationManager                     +
    -owner IMADMIN                                               +
    -group IMGROUP
```

We need to create a filesystem and mount it before we can create the Installation Manager. The default mountpoint is at `/InstallationManager` but we will be doing all of our work in the `/Service` directory so our mountpoint will be `/Service/InstallationManager`. The JCL fragment (which is available in the `GIN.SGINJCL` dataset member `GIN2CFS`) will create the required filesystem, mountpoint, set the permissions and ownership properly, and mount the filesystem at the mountpoint.

Creating an Installation Manager

Creating the Installation Manager.

Command: `groupinstc`

installationDirectory: `/Service/InstallationManager/bin`

dataLocation: `/Service/InstallationManager/appdata`

JOB: `GIN.SGINJCL(GIN2INST)`

```
//SYSTSIN  DD  *
 BPXBATCH SH +
   /usr/lpp/InstallationManager/V1R5/groupinstc                +
     -installationDirectory    /Service/InstallationManager/bin     +
     -dataLocation             /Service/InstallationManager/appdata +
     -acceptLicense
/*
```

Creating the Installation Manager.

We're now ready to create the Installation Manager that we will use for all further tasks involved with creating and maintaining the WebSphere on z/OS V8 binaries. We had previously decided to use group mode, so the sample jcl provided in the GIN.SGINJCL dataset member GIN2INST may require some editing.

The userid created previously should be used to run this job, so the job card will need to be modified appropriately.

The command that will be used determines the mode:

installc   Admin mode

userinstc   User mode

groupinstc   Group mode

So the command will have to be changed from installc to groupinstc.

The paths specified for the -installationDirectory and -dataLocation arguments will need to be changed to reflect the pathname we created in the previous step.

Installation Manager commands

Here is the basic Installation Manager install command:

```
imcl install  <package>
        -installationDirectory    <targetlocation>
        -repositories  <repository list>
        -sharedDataLocation   <cache location>
        -acceptLicense
        -keyring  <credentials file>
```

<package> identifies the product being installed; each package ID consists of a product identifier (such as com.ibm.websphere.v80.zOS for WAS V8 on z/OS) and a version (three levels plus a date/time stamp – for example, 8.0.1.20110903_0100).   If you omit the version, then Installation Manager will install the product with the highest version number.

In those rare circumstances in which several products are being installed at one location (for exanple, WAS V8 and the WEB 2.0 feature pack), you can specify a list of packages, separated by blanks.

<targetlocation> is the directory into which the product will be installed. It should be R/W to the Installation Manager user ID, and large enough to hold the product (IM does check). **You must choose a *different* target location for each new product install.**

So you can install WAS 8.0.0.0, another copy of WAS 8.0.0.0, and a copy of WAS 8.0.0.1 – but each install must have its own install location. Each install must be mounted at its original install location for maintenance or modification with Installation Manager.

Installation Manager commands

<repositories> is a list of URLs that tell Installation Manager where to find the program parts and metadata it will need to install the desired products.   You can specify:

a local repository: -repositories /usr/lpp/InstallationManagerRepository/HBBO800   the file:/ part of the URL is optional

a Web server URL:
    -repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80

an FTP server URL: -repositories ftp://sofiware.acme.com:8085/service_repo

To point Installation Manager to several repositories, separate the URL's with commas (and no white space.)

<cache location> is the shared resources location discussed earlier. It is set during the first product install with an Installation Manager, and cannot be changed – *except*, as we will see later, it may be "unset" if it is cleared. So it is a good idea to specify the (unchanging) shared resources location for the current Installation Manager on each install command.

Specifying **-acceptLicense** means that you accept the license terms, which are typically found in an lafiles directory in the product repository.

<credentials file> is a file created by Installation Manager that includes user ID / password pairs for repositories that require them. Not needed for repositories in local file systems.

If you use a new target location, Installation Manager will perform a full product install. If the target location already contains the specified product, the Installation Manager will upgrade it or roll it back to the product level you specify.

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Installation Manager commands

Other useful commands:

```
imcl listAvailablePackages
     -repositories  <repository list>
     [-long]

imcl listAvailableFixes  <package with exact version>
     -repositories  <repository list>
     [-long]

imcl listInstalledPackages
     [-long]

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

Installation Manager updates

Occasionally you will want to update the IBM Installation Manager code – either to make use of new features in the Installation Manager, or because a new product or product level requires a higher level of IBM Installation Manager than you are currently running.

• Apply service to your Installation Manager install kit, via PTFs to FMID HGIN140, to bring the install kit up to the desired level.

• Then re-run the original Installation Manager setup command (installc, userinstc, or groupinstc) from the updated install kit, under the Installation Manager user ID and specifying the same values you did when you created the Installation Manager.

This will update the code in the Installation Manager's binaries location, and update the Installation Manager's run-time data. The next invocation of the Installation Manager will use the new code level.

The Installation Manager team has fairly strict standards for upward compatibility, so it is fairly safe to upgrade to the newest Installation Manager level as you see fit.

Repositories

To install products and apply service to them, you need product repositories, which can be:

Web-based repository

on your own HTTP or FTP server

or in a local or NFS file system:
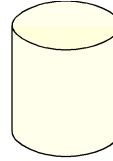
For non-z/OS WebSphere products, IBM provides a Web-based repository with base product code, fix packs, and iFixes; initial product install requires Passport Advantage. The product and service repositories and also available on media (DVD) and downloadable .zip files.

For z/OS products, the **initial** product repository is provided in SMP/E format:

ServerPac or CBPDO

Fix packs and iFixes for z/OS products are available from the Web-based service repository, and as .zip downloads from Fix Central. These require an IBM Software user ID.

You have a lot of potential choices here, which we will address later on!

Installing WebSphere Application Server V8 on z/OS

When you order WebSphere Application Server V8 for z/OS, you will receive:

- an Installation Manager install kit (described above) as FMID HGIN140

    GIN.SGINHFS, to be mounted at /usr/lpp/InstallationManager/V1R4
    GIN.SGINHJCL, containing Installation Manager sample jobs

- a product repository for WAS V8, as FMID HBBO800

    BBO.SBBOIMR, to be mounted at /usr/lpp/InstallationManagerRepository/HBBO800
    BBO.SBBOJCL, containing WAS V8 sample jobs

- a product repository for ITCAM for WAS V7.2, as FMID HCYE720

    CYE.SCYEIMR, to be mounted at /usr/lpp/InstallationManagerRepository/HCYEIMR
    CYE.SCYEJCL, containing ITCAM 7.2 sample jobs

If you ordered a CBPDO, following the instructions in each Program Directory to set up Installation Manager and the two repositories, and complete product installation.

If you ordered a ServerPac, consult the Installing Your Order guide; the IM install kit and the two repositories will be preinstalled, and you only need to invoke IM to build the product code.

Installing WebSphere on z/OS V8 using the Installation Manager

A side discussion on repositories.

Local Repository:
`/usr/lpp/InstallationManagerRepository/HBBO800`

IBM Hosted Repository:

`http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80`

Need for a userid/password to access.

Use the saveCredential Installation Manager command to create a "keyring".

Note that you may need to add `repository.config` to the end of the url and change `http` to `https` for the `saveCredential` command.

```
:/Service/InstallationManager/bin/eclipse/tools.
/imutilsc saveCredential -keyring /u/mjloos/imkeyring -url
https://www.ibm.com/software/repositorymanager/com.ibm.webs
phere.zOS.v80/repository.config  -userName
mikeloos@us.ibm.com -userPassword ********
Successfully saved the credential to the keyring.
:/Service/InstallationManager/bin/eclipse/tools
```

Setup work to Use the IBM Hosted Repository.

Accessing the IBM repository requires that you have an ID and password. This is the same IBM ID that you would use to download things from developerworks, alphaworks, and access other parts of the IBM network. They are freely available and easy to obtain.

You also need the correct URL. The URL can be found in the WebSphere V8 InfoCenter. It is:
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80

Since you probably don't want to specify your IBM ID and password in batch jobs, you'll need to set up a "keyring" for Installation Manager use. This is very easy to do. From a telnet, ssh, or OMVS shell:
`:/Service/InstallationManager/bin/eclipse/tools.`

/imutilsc saveCredential -keyring /u/mjloos/imkeyring -url
https://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80/repository.config
-userName mikeloos@us.ibm.com -userPassword ********

`Successfully saved the credential to the keyring.`

:/Service/InstallationManager/bin/eclipse/tools

The `imutilsc saveCredential` command can be used to create a keyring for use with Installation Manager. The parameters necessary are:

a path to a keyring file,

a url for which it will be used,

a username

and a password.

You'll note that it may be necessary to add `/repository.config` to the end of the url and to specify `https` in place of `http` on the `saveCredential` command.

If the password and/or the userid gets changed, simply delete the keyring file and recreate it.

More about repositories

Initial product
repository (SMP/E)

/usr/lpp/InstallationManagerRepository/<fmid>

Online service
repository
(fix packs and *published
iFixes)*

http://www.ibm.com/software/repositorymanager/<package>

Downloaded fix
packs and
iFixes

/IMrepo/WAS/service

Enterprise repository

http://it.mycorp.com/software

More about repositories

Initial product repository (SMP/E)

On z/OS, initial product repositories are shipped in SMP/E format, via CBPDO or Server Pac.

Follow the Program Directory or ServerPac instructions!

/usr/lpp/InstallationManagerRepository/<fmid>

PTF service to each product's FMID will add the latest fix pack (only), while retaining the base repository. So with current service, you can install either the base product level, or the fix pack corresponding to the PTFs you have installed.

Each PTF set supercedes the previous ones, keeping the total PTF set small.

Now	PTF set 1	PTF set 2	PTF set 3
WAS 8.0.0.0	WAS 8.0.0.0 WAS 8.0.0.1	WAS 8.0.0.0 WAS 8.0.0.2	WAS 8.0.0.0 WAS 8.0.0.3

So if you are using *only* the SMP/E-shipped repositories, you can install the base level, the "latest" level you've chosen. iFixes and any other fix pack levels will come from different source repositories.
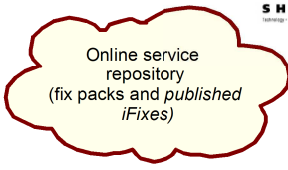
Use the imcl listAvailablePackages command to see which packages and levels a given repository contains.

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More about repositories

This repository also contains iFixes, which you
can install by specifying the iFix name on an imcl
install command.

```
imcl install 8.0.0.0-WS-WAS-IFPM39074
        -installDirectory /usr/lpp/zWebSphere/V8R0
        -repositories http://www.ibm.com/software/repositorymanager/...
        -acceptLicense
```

The WAS V8 InfoCenter has more information on
finding, downloading and applying iFixes,

Online service
repository
(fix packs and *published
iFixes*)

http://www.ibm.com/software/repositorymanager/<package>

The service repository can also be used for an initial product install.
Just specify the product level you want, and *both* the initial and service repositories.

```
imcl install com.ibm.websphere.zOS.v80_8.0.5.20120915_0100
        -installDirectory /usr/lpp/zWebSphere/V8R0
        -repositories /usr/lpp/InstallationManagerRepository/HBBO800,     ← comma, no white space
            http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
        -acceptLicense -keyring /u/smith/IM.software.keyring
```

You *could* just omit the version (_8.0.5.20120915_100) to get the latest product version found in either of
the repositories in the -repositories list. But more likely you will want a specific product version.

If your z/OS system has (direct or proxy) Internet access, we recommend this path for all product installs
and maintenance. (See the IM InfoCenter for information on using proxies.)

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More about repositories

Downloaded fix
packs and
iFixes

/IMrepo/WAS/service

If your z/OS system does not have Internet access
– or if you need to install certain materials such as
non-published iFixes – you will need to download
some service. Usually this will be in the form of
compressed (.zip) repositories.

IBM Installation Manager *can* process compressed
repositories directly, there are hefty performance
penalties. So you will usually want to unzip the
downloaded repositories before using them.

```
imcl install 8.0.0.0-WS-WAS-IFPM39074
    -installDirectory /usr/lpp/zWebSphere/V8R0
    -repositories /iFixes/8.0.0.0-WS-WAS-IFPM39074.zip
    -acceptLicense
```

We recommend that you set up a product-based directory structure so that downloaded
and unzipped repositories are easy to find. (The zip files themselves can be deleted.)

If you use downloaded fix pack files, remember that each one requires the previous product
level. So to upgrade from WAS 8.0.01 to 8.0.0.4, your repository list would look like this:

-repositories /Imrepo/WAS8002,/IMrepo/WAS8003,/IMrepo/WAS8004

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Installing WebSphere on z/OS V8 using the Installation Manager

Let's see what's available.

IBM Hosted Repository:

http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80

Keyring: /u/mjloos/imkeyring

Use the listAvailablePackages Installation Manager command to see which fix packs are available.

```
:/Service/InstallationManager/bin/eclipse/tools

-> ./imcl listAvailablePackages -long -repositories
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80
-keyring /u/mjloos/imkeyring
```

Partial output

Fix Pack 1

```
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80 :
com.ibm.websphere.zOS.v80_8.0.1.20110829_1901 : IBM WebSphere Application
Server for z/OS : 8.0.0.1
```

Fix Pack 2

```
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80 :
com.ibm.websphere.zOS.v80_8.0.2.20111202_1716 : IBM WebSphere Application
Server for z/OS : 8.0.0.2
```

Getting a list of available fix packages.

The Installation Manager command "listAvailablePackages" can be used to determine which fix packs are available in a repository (or set of repostitories). The -long option give a more readable name for each package.

The partial output from the command at the time it was issued indicates that the most current fix pack available was fix pack 2 (8.0.0.2).

Finally, let's install.

Local Repository: `/usr/lpp/InstallationManagerRepository/HBBO800`

IBM Hosted Repository:

`http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80`

Keyring: `/u/mjloos/imkeyring`

Installation Directory: `/Service/usr/lpp/zWebSphere/V8R0FP02`

JOB: `BBO.SBBOJCL(BBO1INST)`

Use the install command to cause Installation Manager to populate the target filesystem.

```
/SYSTSIN  DD  *
 BPXBATCH SH +
  /Service/InstallationManager/bin/eclipse/tools/imcl             +
    install com.ibm.websphere.zOS.v80_8.0.2.20111202_1716         +

   -installationDirectory /Service/usr/lpp/zWebSphere/V8R0FP02    +
   -sharedResourcesDirectory                                      +
   /Service/InstallationManager/sharedResources                   +
   -repositories /usr/lpp/InstallationManagerRepository/HBBO800,+
   http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v80 +
   -preferences com.ibm.cic.common.core.preferences.preserveDownlo+
    adedArtifacts=false -keyring /u/mjloos/imkeyring              +
   -acceptLicense
 /*
```

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Installation of the Code at the fix pack 2 level.

The package name that we are installing: com.ibm.websphere.zOS.v80_8.0.2.20111202_1716 is the "fully quallified" package name, including the product level. The package name without the product level would have been: com.ibm.websphere.zOS.v80 which would have caused the product to be installed at the most current level available in the repository (in this case the same level, fix pack 2). Since we wanted to demonstrate selection of the fix pack 2 level of the product, we specified the fully qualified package name.

The execution of this job may take quite a while. Since most of the work will be done by USS processes that are "spawned" off of the main task, the main task may be in a wait state for a time which could exceed your installation's SMF JWT value. This suggests that it may be a good idea to include the parameter, TIME=1440 or TIME=NOLIMIT on the job card.

Since the Installation Manager we are using is a group mode Installation Manager, this job must be run either by a userid which is connected to the Installation Manager group (IMGROUP) or by the Installation Manager userid (IMADMIN).

You'll note that we specified both the SMPE installed local repository and the IBMhosted repository. The local repository is specified to "prove" that we are licensed for the product. The IBM hosted repository actually holds all of the code we need for the install.

Installing WebSphere on z/OS V8 using the Installation Manager

Next step...put it into use.

Currently mounted at `/Service`.

Unmount and remount at the "standard" location.

`/usr/lpp/zWebSphere/V8R0FP02`

Or, simply copy the filesystem to a newname, and mount it in the "standard" location.

If this is just the beginning of your use with V8, it would be appropriate to begin configuration processes.

If this is an "upgrade" to a new maintenance level, then it is time to start changing the intermediate symlinks as discussed earlier.

Maintaining products

To see all the products / product levels currently installed by a particular Installation Manager, run the following Installation Manager command:

imcl listInstalledPackages -long

This will show you the installation directory, complete package name, printable name and version for each.

Note: Many IBM products, including WebSphere Application Server. use "four level" versioning – 8.0.0.3. On the other hand, Installation Manager's versioning, and appended to the package name, is three levels plus a date / time stamp: 8.0.3_20120312_0101 (WAS 8.0.0.3, built at 1:01 AM on March 12, 2012).

Each product, as managed by Installation Manager, has a fixed installation location which cannot be changed, and must be unique within that Installation Manager's scope. We recommend you choose and stick to one of the following schemes:

• Create a product install for with a **logical** service path, such as /prod/WebSphere/V8R0/Test1

When the Test1 copy needs service, apply it (upgrade, rollback, etc.).

OR

• Install each product version from scratch (this is easy to do with Installation Manager), and assign a version specific installation location such as /prod/WebSphere/V8.0.0.

Apply iFixes for WAS 8.0.0.1as needed; when you are done with WAS 8.0.0.1, just uninstall that copy.

Maintaining products

Once you have installed a copy of any product with Installation Manager, you can copy the target file system and use it across your data center, just as if it had been created with SMP/E.

Applying service to a copy of a product

With SMP/E, you can make a copy of a product serviceable by copying target and dlib zones along with target and distribution data sets, and using SMP/E on the system when the copy of the product resides.

You can do something similar with Installation Manager. If you copy:

> the Installation Manager binaries
> the Instalation Manager appdata
> product target filesystems

for a **group-mode** Installation Manager to another z/OS system, mount them at the *same* locations, and create the necessary Installation Manager user ID (use the same UID/GID values), you can run the Installation Manager on the new system and apply service there to the copy. (Obviously, the original Installation Manager knows nothing about this change.)

You will also need access to any product repositories (using the Web-based service repository or an enterprise repository makes this easier.) But this way, you can apply iFixes in particular at any location.

(You can also do this with an admin-mode or user-mode Installation Manager, but you will have to move the Installation Manager registry file from /etc/.ibm/registry or $HOME/.ibm/registry to the same location on the new system, in order to start Installation Manager there.)

Using Installation Manager to Apply Maintenance to WebSphere on z/OS.

A little bit about maintenance.

- Maintenance.
  - A fix pack is installed as we have already shown
  - iFixes (similar to APARFIXs)
  - Only in the /Service area (not by design, but by custom).
- listAvailableFixes Installation Manager Command.

```
:/Service/InstallationManager/bin/eclipse/tools

-> ./imcl listAvailableFixes
com.ibm.websphere.zOS.v80_8.0.2.20111202_1716 -long -repositories
http://www.ibm.com/software/repositorymanager/con.ibm.websphere.zOS
.v80 -keyring /u/mjloos/imkeyring

http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS
.v80 : 8.0.0.2-WS-WAS-IFPM53930_8.0.2.20120112_0922 :
recommended=true
```

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Maintenance in the form of Fix packs is installed as we have already showed. Basically it is a full replacement of the filesystem, and the steps above can simple be repeated.

Maintenance in the form of an iFix can either be applied directly to any of the existing copies of the filesystem mounted in the /Service directory.

Installation Manager will only apply maintenance to copies about which it already knows. So if it was built in /Service, it must be maintained in /Service.

You can get a list of iFixes available for a particular package version (fix pack level) with the Installation Manager Command: listAvailableFixes.

The output from the command shows one available iFix:

 8.0.0.2-WS-WAS-IFPM53930_8.0.2.20120112_0922

Installing the iFix.

- A Sample Job.

```
//SYSTSIN  DD  *
 BPXBATCH SH +
  /Service/InstallationManager/bin/eclipse/tools/imcl            +
    install 8.0.0.2-WS-WAS-IFPM53930_8.0.2.20120112_0922          +
    -installDirectory /Service/usr/lpp/zWebSphere/V8R0FP02         +
    -repositories                                                 +
   http://www.ibm.com/software/repositorymanager/+
    com.ibm.websphere.zOS.v80                                    +
    -preferences ce.zOS.v80c.common.core.preferences.preserveDownlo+
    adedArtifacts=false                                          +
    -keyring /u/mjloos/imkeyring                                 +
    -acceptLicense
/*
```

This sample job will install the iFix: 8.0.0.2-WS-WAS-IFPM53930_8.0.2.20120112_0922 onto the filesystem mounted at: /Service/usr/lpp/zWebSphere/V8R0FP02 from the IBM hosted repository.

The filesystem would then be ready for remounting or copying and mounting into the testing area.

Using Installation Manager to Install the WebSphere Customization Tool (WCT) on Windows.

Installing Installation Manager for Windows

First you have to find it...
Start with the WebSphere V8 Infocenter.
http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?
topic=/com.ibm.websphere.zseries.doc/info/zseries/ae/welcome_zseries.html

To Install the WebSphere Customization Toolbox on your Windows machine, you first have to install a copy of Installation Manager.

A good starting point for all of this work is the WebSphere V8 Infocenter. The url is (all on one line)

`http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?`

`topic=/com.ibm.websphere.zseries.doc/info/zseries/ae/welcome_zseries.html`

(If using PDF, the link is here.)

Once in the infocenter you should set your "scope" to the z/OS topics only. Then you can search on the string: "installing wct" or something fairly close to that. Next click on the link in the navigation pane for "Installing the WebSphere Customization Toolbox using the GUI".

Now you're ready to start.

Installing Installation Manager for Windows

Browsing down you'll find instructions.

- **Access the live repositories, and use web-based installation**

  If you have a Passport Advantage ID and password, you can install the product from the web-based repositories.

  i. Install Installation Manager on your system.

  You can install Installation Manager using the product media, using a file obtained from the Passport Advantage site, or using a file containing the most current version of Installation Manager from the IBM Installation Manager download website.

  ii. Use Installation Manager to install the product from the web-based repository located at

  ```
  http://www.ibm.com/software
  /repositorymanager
  /com.ibm.websphere.WCT.v80
  ```

Using the link in step one, and your IBM ID and password, you can download and (following the standard instructions) install the IBM Installation manager on your desktop.

Next use the Installation Manager GUI and the link in the gray box to install the WCT.

Installing Installation Manager for Windows

After starting and opening the Installation Manager on your Desktop...
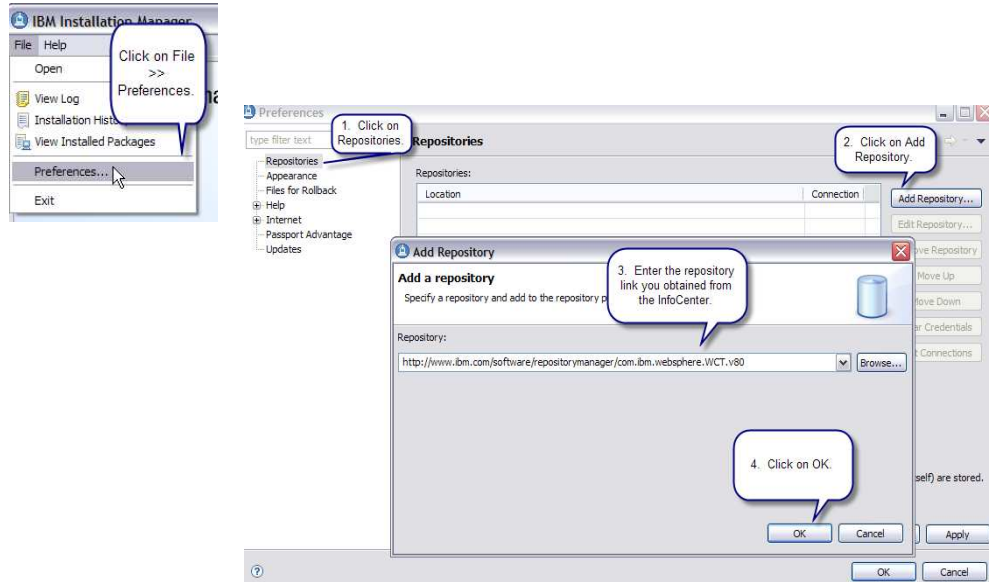
Once the Installation Manager GUI is started, click on File >> Preferences. On the next panel, select Repositories, and click on Add Repository. On the prompt panel enter the URL from the InfoCenter. Click OK.

Installing Installation Manager for Windows

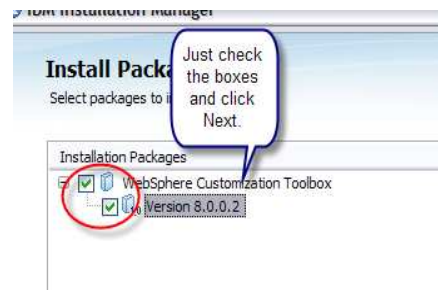Respond to the password prompt with your IBM ID and password.

The next prompt will be for a user name and password. This is your IBM ID and password which will be used to access the repository.

Once you are back to the main GUI screen, you can click on Install. The Installation Manager will search the repositories for available packages and then prompt you for selection. On the selection screen check the boxes to indicate what you want installed. Click Next, follow the remaining prompts, and the WCT will be installed.

Hints, Tip, Things to Know

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File Permissions and Group Mode IM

By default, WebSphere Application Server product files are created with 644 or 755 permissions, and files are owned by the user ID that invokes the Installation Manager.

This is appropriate for admin-mode and user-mode Installation Managers, since in both cases the user ID's that will invoke the Installation Manager can also update the installed files in the future.

If you use a group-mode Installation Manager, you will have to ensure that the user ID(s) that invoke the Installation Manager have permission to write and delete the files being manipulated.

The simplest way may be to issue the chown command for the files in a product's target location before invoking a group-mod Installation Manager, to change file ownership to the user ID that will be invoking the Installation Manager.

The zMountFilesystem.sh script (in the <IM binaries>/eclipse/tools directory) can be used to mount a filesystem in read/write mode, and optionally set file ownership and permissions.

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The Shared Resources Location

The shared resources directory (one per Installation Manager) is used to cache repository files, and hold them in case a future rollback is performed *and the initial repositories are not available.*

Assuming you are managing your repositories in such as way as to retain those levels of software you are currently running, you can have Installation Manager clear the cached files from the shared resources directory once an install operation is complete. Do this by adding the following preference parameter to the install command:

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

This parameter is recommended for z/OS customers, and is included in the shipped sample install jobs for WebSphere Application Server V8, such as member BBO1INST in the samples data set, SBBOJCL.

- *As noted above, when the shared resources location becomes empty, Installation Manager may "un-set" the location value. So it is a good idea to specify the -sharedResourcesDirectory on each install command*

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Good Things to Know...

- Location of "Fix Central".
  - http://www-933.ibm.com/support/fixcentral/
- Info on How to Locate and Install Interim Fixes (IFIXes).
  - http://www-01.ibm.com/support/docview.wss?
    rs=0&context=SS7K4U&q1=V8RNotes&uid=swg27021730&l
    oc=en_US&cs=utf-8&lang=
- Installation Manager V1.4.4 is now available.
  - Install Install Kit PTF UK68672.
  - Adds a success message after every install showing the
    package, version, and install location.
  - Other good stuff...

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Useful Information Sources

Installation Manager V1.5 InfoCenter:

http://publib.boulder.ibm.com/infocenter/install/v1r5/index.jsp

WebSphere Application Server V8 InfoCenter:

http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp

IBM Education Assistant (has a 1-hour presentation on WAS V8 install on z/OS):

http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp

PSP buckets:

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

IBM Installation Manager: Upgrade IIMZOSV1, subset HGIN140

WebSphere Application Server: Upgrade WASAS800, subset HBBO800

A cookbook for installing on z/OS:

http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102014

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Questions?

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