



IBM Installation Manager z/OS

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Sessions

Session	Title	Time	Room
17363	Debug 101-Using ISA Tools for Apps in WebSphere Application Server z/OS	Monday 11:15	Europe 11
17367	WebSphere Liberty on Windows and z/OS (Among Other Things) Hands-On Lab	Tuesday 10:00	Asia 5
17361	ABCs of WAS	Tuesday 1:45	Oceanic 7
17368	z/OS Connect: Opening up z/OS Assets to the Cloud and Mobile Worlds	Tuesday 3:15	Oceanic 7
17362	Configuring Timeouts for WebSphere Application Server on z/OS	Wednesday 8:30	Oceanic 7
17366	WebSphere Liberty and WebSphere Application Server Classic - What's New?	Wednesday 11:15	Oceanic 7
17364	IBM Installation Manager for z/OS System Programmers: Web-based Installs, Fix Packs, and How iFixes Really Work	Thursday 4:30	Oceanic 7
17365	JSR 352 - The Future of Java Batch and WebSphere Compute Grid	Friday 10:00	Oceanic 6

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<http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102554>

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IBM Installation Manager for z/OS

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Abstract: IBM Installation Manager is a tool for installing and maintaining computer software on a wide range of platforms. It provides both graphical and non-graphical interfaces.

This document provides information on planning and using Installation Manager on z/OS. It was written by Jeff Mierzejewski, who works on the IBM WebSphere for z/OS Install and Configuration team out of Poughkeepsie, New York.

 [IM for zOS.pdf](#)

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The best source of detailed information about Installation Manager for z/OS

Before We Get Started ... Why IM?

On z/OS we have, for many years, used SMP/E
SMP/E still exists, so “Why Installation Manager?”

1. SMP/E is very good at members in module libraries, but less good at files in a UNIX file system. WAS z/OS is all UNIX file system based now.
2. WAS (full-profile and now Liberty Profile) is moving more and more to composable installations – stack products, features ... SMP/E was not equipped to handle that installation model.
3. WAS is a multi-platform product, and IM is used for installing on *every other platform*. Packaging for SMP/E introduced lag *and* errors.
4. SMP/E skills are less and less prevalent; IM is IBM’s strategic installation framework ... thus WAS moves to IM.

WAS z/OS installation with IM is what it is ... let’s now explore how it works

Agenda

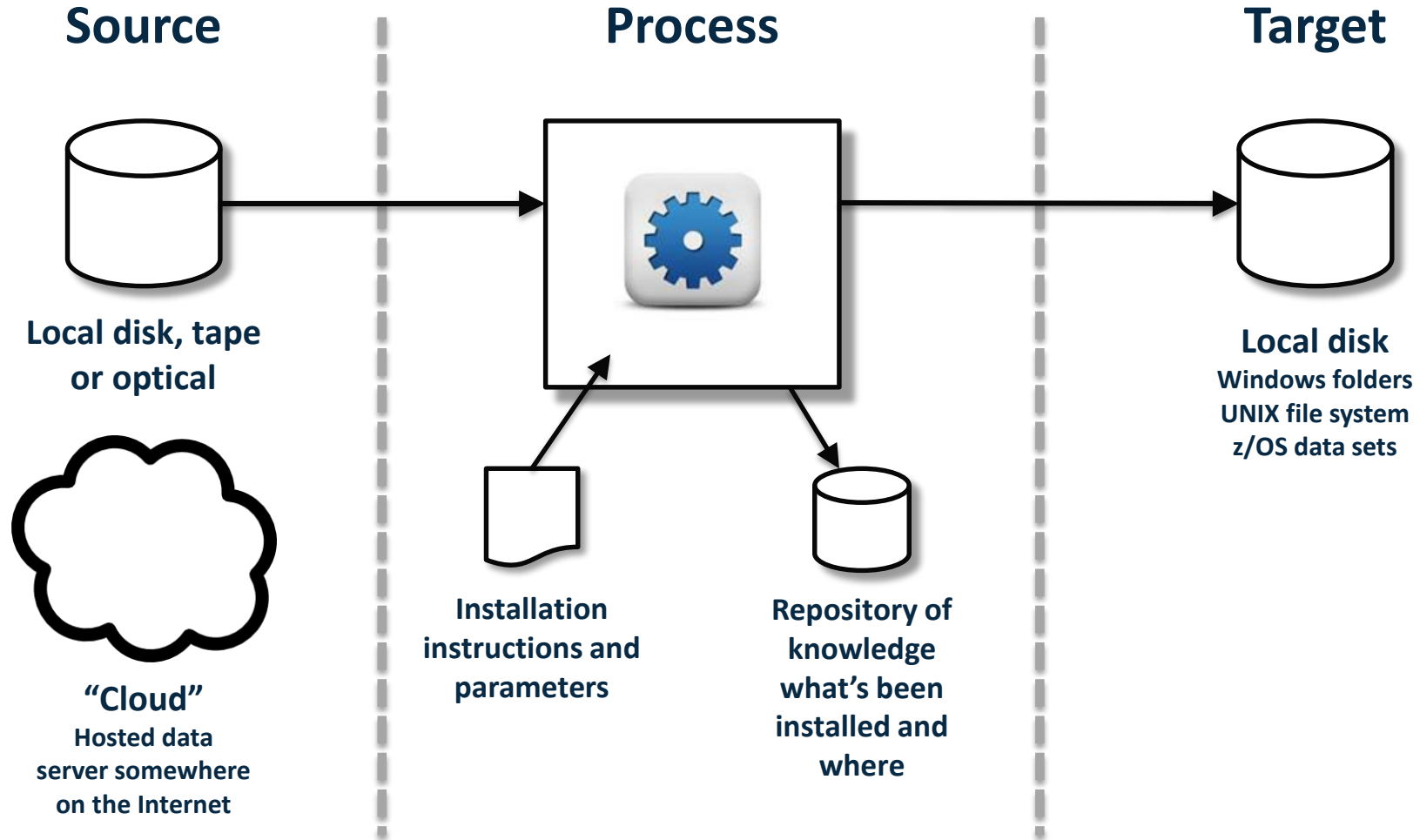
- **Overview**
- **Using IM for WAS z/OS and Liberty**
- **Installing/Updating IM itself**
- **IM and IMS**

Overview

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Generic Concept – Installing Software



IBM Installation Manager Other Platforms



Graphical interface for installing IBM software on Windows

Gets install artifacts from a “repository” (source location) and installs at a target location

Keeps track of what’s installed

Can be used for new installs, updating existing installs, rolling back to previous install levels

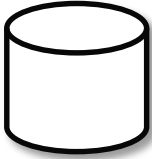
Installation Manager for z/OS is the same in concept. The key difference is the interface is command line rather than GUI.

There is a GUI interface for IM z/OS (runs in Apache server), but WAS z/OS does not support that at present time

Yes, the commands can be packaged in JCL and run as a batch job

IM Concept #1 – “Repository”

This is simply where Installation Manager goes to get the product files to install

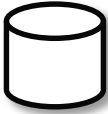


It is, essentially, just a large ZIP-format file that contains directories and files for a product

Each product has its own repository ... different directories and files, therefore different repository

Each version and fixpack level is a different repository ... again, different files from earlier versions

Local Repository



Installed with SMP/E, or

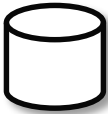
Uploaded from DVD, or

Downloaded from Fix Central

Point IM at path/file



IBM Hosted Repository



IBM maintains “in the cloud”

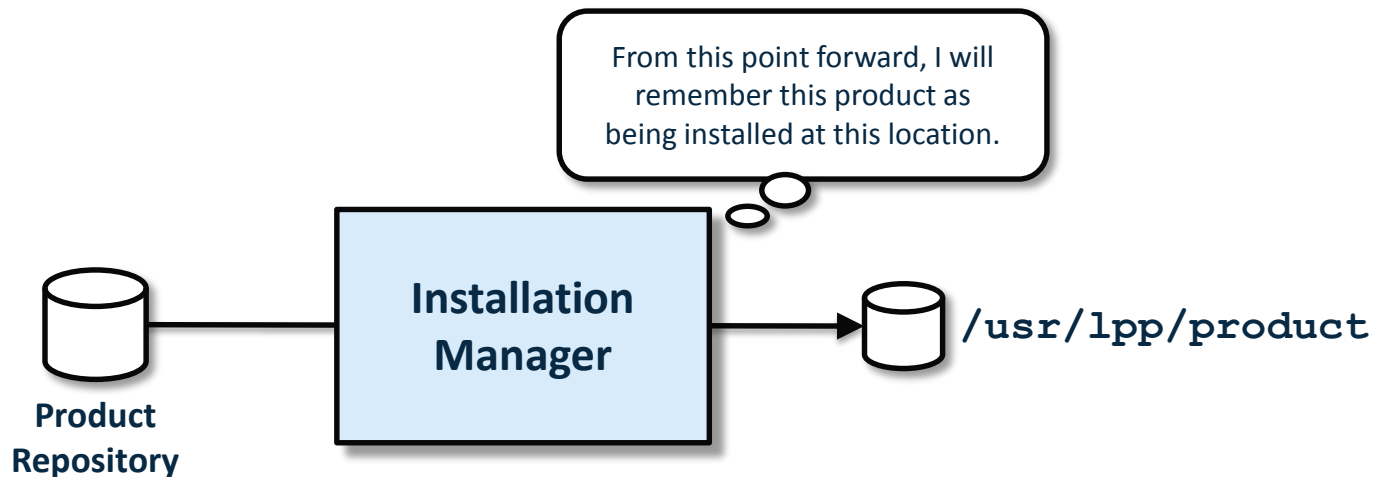
Accessible through Internet

Point IM at host:port/path

Except for the syntax of the command to point to the repository, all three are the same to Installation Manager

Which you use is really based on your preference of how you want to manage and make accessible product repositories

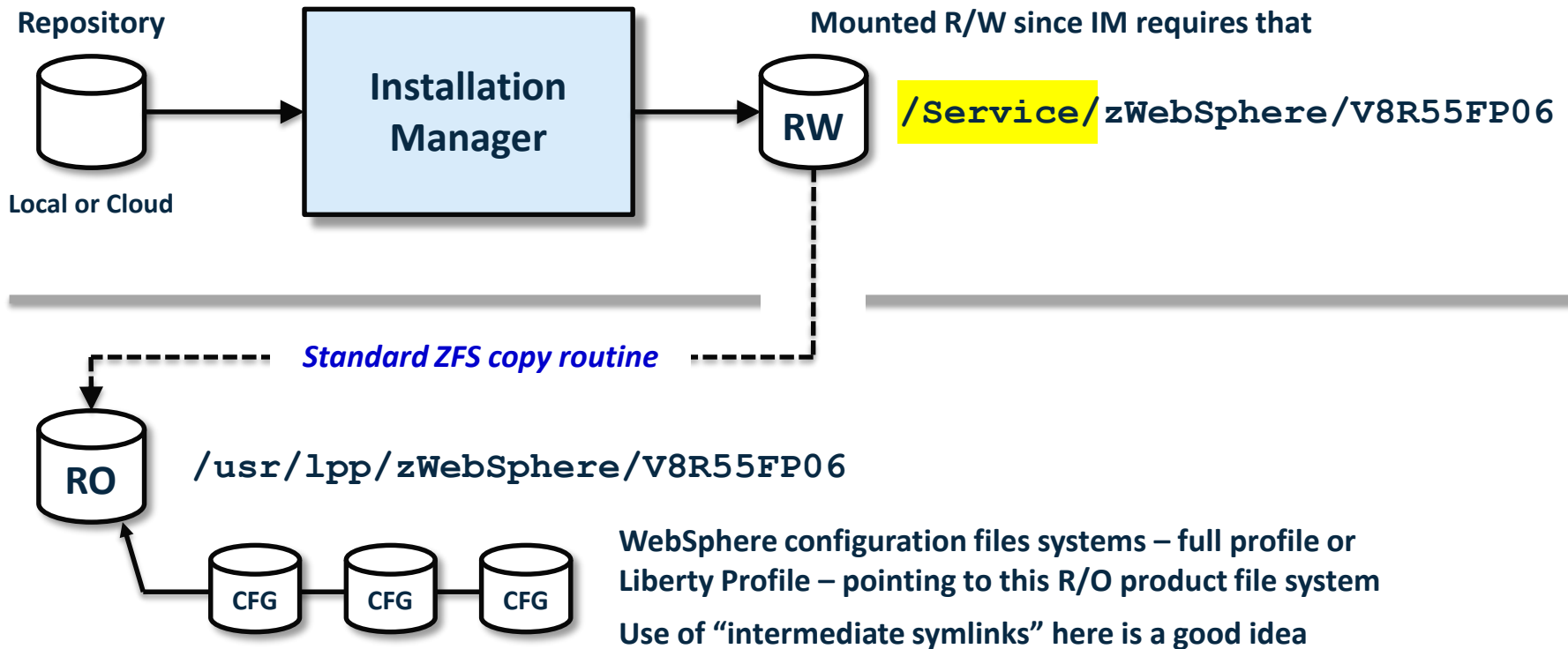
IM Concept #2 – “Installation Directory”



This is an important thing to keep in mind because if you want to apply fixes to the product, you need to make sure that file system is mounted at that location.

IM can list out what it sees as the current inventory of installed software, so you do not have to keep your own records. Just be aware of this aspect of IM.

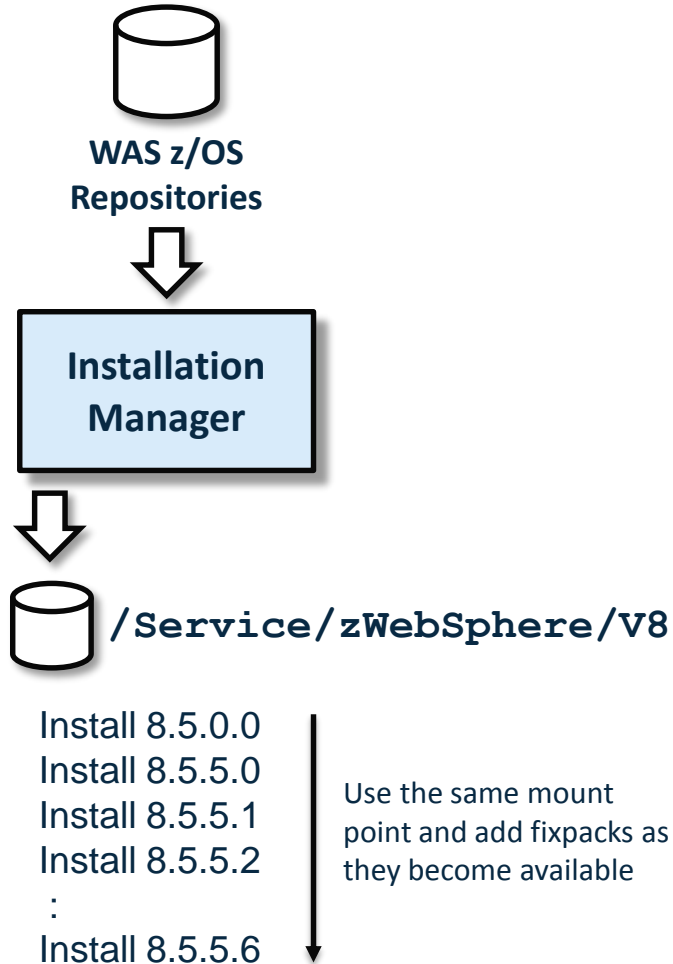
Service Zone Concept Still Applies



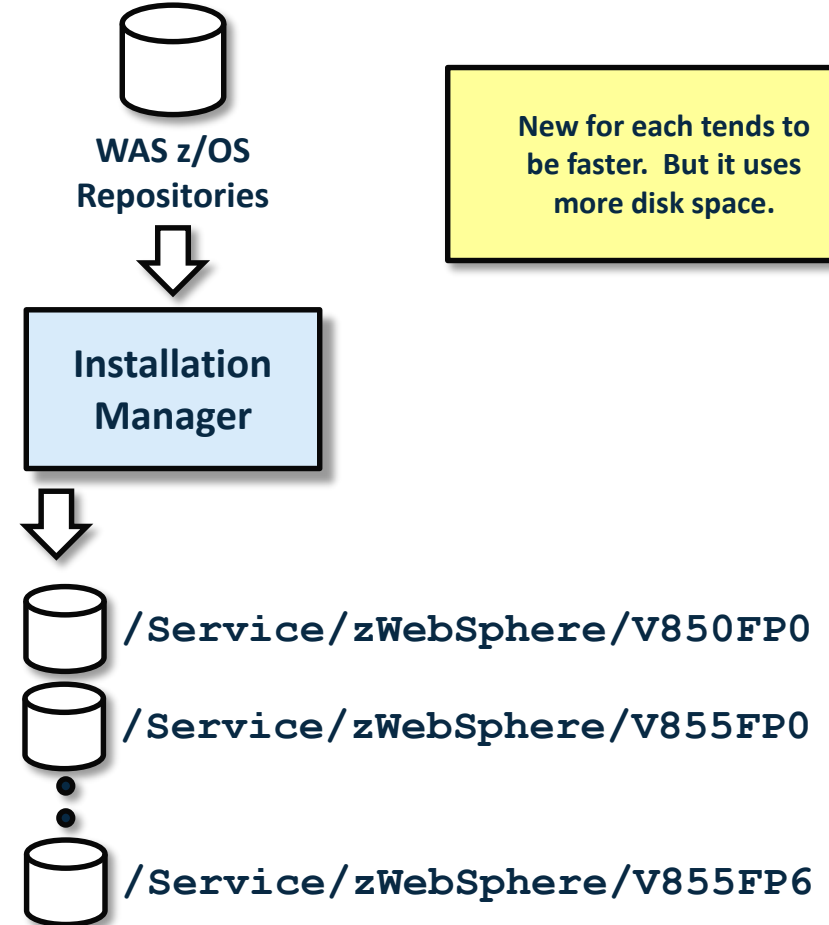
Uses twice the disk, but it gives you additional flexibility and control
You can do this with IM just like you did with SMP/E

Updates “In Place” vs “New Mount Point”

“In Place”



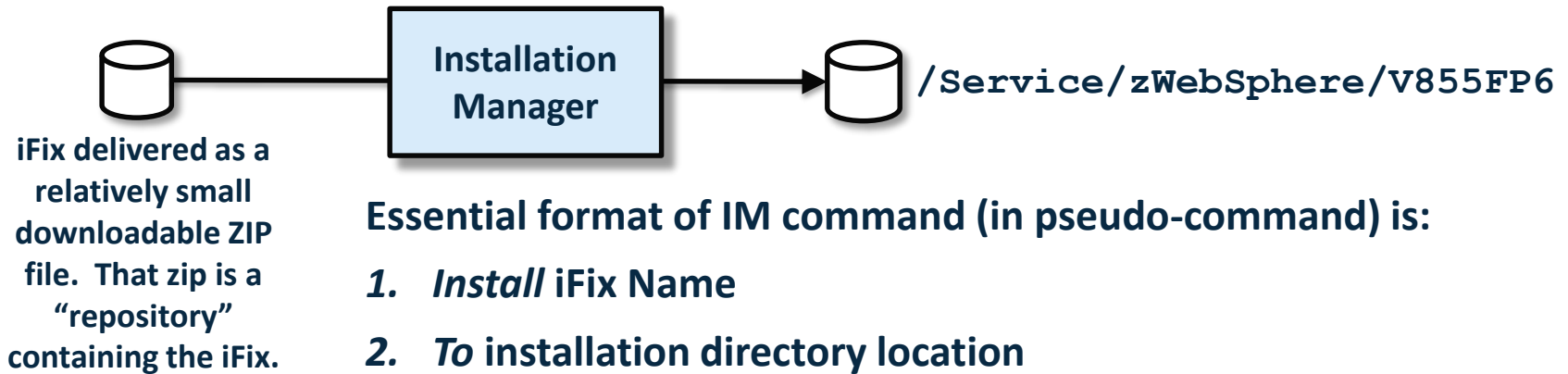
“New Mount Point”



New for each tends to
be faster. But it uses
more disk space.

Corrective Service (“iFixes”)

These are like ++APARs from the SMP/E world. They are fixes on top a specific version and fixpack for a software product. Installation Manager can install / manage them:



Essential format of IM command (in pseudo-command) is:

1. *Install* iFix Name
2. *To* installation directory location
3. *From* iFix ZIP file location

IM will then extract “from” the repository and perform the iFix install against the “to” installation directory.

Make sure the “installation directory” you point at contains the appropriate level of software for the iFix.

If the fix does not work, you can uninstall the iFix. The process is nearly the same, it just uses “uninstall” rather than “install” command.

Usage Examples

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Listing What IM Views as Installed

To start, here's something relatively simple ... listing out the installed packages:

```
//SYSTSIN DD *  
BPXBATCH SH +  
  /Service/InstallationManager/bin/eclipse/tools/imcl +  
  listInstalledPackages -long -features  
/*
```

Showing that these long IM
commands can be packaged in JCL
using BPXBATCH

"imcl" is the IM command line utility. In
this example it is installed down the path
shown here.

"listInstalledPackages" is
the command verb

These parameters provide further details
about what's installed

Result: a listing with a line for *each* installed package and fixes ... example:

```
/Service/usr/lpp/zWebSphere/Liberty/V8R55FP05 :
```

Installation directory

```
com.ibm.websphere.liberty.zOS.v85_8.5.5005.20150305_2214 :
```

Installation "package"

```
IBM WebSphere Application Server Liberty for z/OS : 8.5.5.5 : embeddablecontainer
```

Package name : version : features

Listing What's Available in Repository

This works against repository and reports what packages are there to install:

```
//SYSTSIN DD *
BPXBATCH SH +
  /Service/InstallationManager/bin/eclipse/tools/imcl +
  listAvailablePackages -long -features +
  -repositories +
  http://www.ibm.com/software/repositorymanager+
  /com.ibm.websphere.zOS.v85 +
  -secureStorageFile /u/myuser/credential.store +
  -masterPasswordFile /u/myuser/masterpasswordfile.txt
/*
```

Verb: listAvailablePackages

Pointer to repository; this case it's the IBM cloud repository for WAS z/OS

A separate utility generates file with ID and encoded password

Result: a listing with a line for each available package ... example:

```
http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v85 : Repository
com.ibm.websphere.zOS.v85_8.5.5005.20150220_0450 : Package
IBM WebSphere Application Server for z/OS : 8.5.5.5 : Product name : version
core.feature,ejbdeploy,thinclient,embeddablecontainer,samples
Available features
```

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File System Utilities

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/+
zCreateFileSystem.sh +
-name WAS850.SERVICE.V8R55.FP05.WLP.SBBOZFS +
-type ZFS +
-volume SCB705 +
-cylinders 400 100 +
-mountpoint /Service/usr/lpp/zWebSphere/Liberty/V8R55FP05 +
-owner IMADMIN +
-group IMGROUP
/*
```

Allocate and Mount

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/+
zMountFileSystem.sh +
-name WAS850.SERVICE.V8R55.FP05.WLP.SBBOZFS +
-type ZFS +
-mountpoint /shared/zWebSphere/Liberty/V8R55FP05 +
-perm 755 +
-owner IMADMIN +
-group IMGROUP
/*
```

Mount existing file system

This is in prep for install ... IM needs a place to put the software it installs

You may use whatever method you wish for allocate / mount ... IM provides these as a function of the IM tools.

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Product Install - IBM Hosted Repository

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/imcl +
install com.ibm.websphere.liberty.zOS.v85, +
liberty,embeddablecontainer +
-installationDirectory +
/Service/usr/lpp/zWebSphere/Liberty/V8R55FP05 +
-sharedResourcesDirectory +
/Service/InstallationManager/sharedResources +
-repositories +
http://www.ibm.com/software/repositorymanager+
/com.ibm.websphere.liberty.zOS.v85 +
-preferences com.ibm.cic.common.core.preferences.preserveDownload+
adedArtifacts=false +
-installFixes recommended +
-secureStorageFile /u/myuser/cred
-masterPasswordFile /u/myuser/mas
-acceptLicense
/*
```

Package name. If you leave off the specific qualifier at the end, it gets the latest available

The installation directory. Make sure there's a file system mounted there 😊

The repository ... here is IBM cloud.

This will search for and install any recommended iFixes to the product install

Result: product installed into the file system mounted at the installation directory location.

Product Install - Local SMP/E Repository

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/imcl +
install com.ibm.websphere.liberty.zOS.v85, +
liberty,embeddablecontainer +
-installationDirectory +
/Service/usr/lpp/zWebSphere/Liberty/V8R55FP05 +
-sharedResourcesDirectory +
/Service/InstallationManager/sharedResources +
-repositories +
/usr/lpp/InstallationManagerRepository/HBB0855 +
-preferences com.ibm.cic.common.core.preferences.pres
adedArtifacts=false +
-installFixes recommended +
-secureStorageFile /u/myuser/cred
-masterPasswordFile /u/myuser/mas
-acceptLicense
/*
```

Package name. If you leave off the specific qualifier at the end, it gets the latest available

The installation directory. Make sure there's a file system mounted there 😊

The repository ... here is a local SMP/E install of a product repository

This will search for and install any recommended iFixes to the product install

Result: product installed into the file system mounted at the installation directory location.

Product Uninstall

The reverse of installing a product is uninstalling it. Here's a sample:

```
//SYSTSIN DD *  
BPXBATCH SH +  
  /Service/InstallationManager/bin/eclipse/tools/imcl +  
    uninstall com.ibm.websphere.liberty.zOS.v85_8.5.5005.20150305_2214 +  
    -installationDirectory +  
    /Service/usr/lpp/zWebSphere/Liberty/V8R55FP05/  
/*
```

Installation Manager will ...

- Verify the named package is in the named installation direction
- Remove the files from that directory
- Update its knowledge base of installed products

If you're looking to clear space, it's best to use IM to uninstall first, *then* unmount and discard the file systems. That keeps IM's knowledge base properly reflective of what's actually present.

Corrective Service -- iFixes

These are like ++APARs ... they are fixes on top of a given version / fixpack

Packaged, they represent a “repository” ... IM installs the iFix from that ZIP repository

You can download from Fix Central, install from the web, or receive from L2 Support

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/imcl +
install 8.5.5.0-WS-WAS-IFPM89206 +
-repositories /u/myuser/fixes/8.5.5.0-WS-WAS-IFPM89206 +
-installationDirectory /Service/usr/lpp/zWebSphere/V8R5FP00 +
-acceptLicense
/*
```

Install of iFix you downloaded and have available locally as a ZIP in a directory

```
//SYSTSIN DD *
BPXBATCH SH +
/Service/InstallationManager/bin/eclipse/tools/imcl +
install 8.5.5.0-WS-WAS-IFPM89206 +
-repositories http://www.ibm.com/software/repositorymanager/com.ibm.websphere.zOS.v85 +
-installationDirectory /Service/usr/lpp/zWebSphere/V8R5FP00 +
-secureStorageFile u/myuser/credential.store +
-masterPasswordFile /u/myuser/masterpasswordfile.txt +
-acceptLicense
/*
```

Install of iFix from Fix Central, which is the IBM hosted repository “in the cloud”

Notes about Liberty “Features”

Liberty Profile is “composable” ... the “composable units” are called “Features”

Some features are installed when Liberty itself is installed

Some are not installed, unless you tell IM to do it (see below)

If later you find a feature isn’t installed, you can use the `installUtility` function:

```
installUtility install zosLocalAdapters-1.0
```

This may be from IBM-hosted repository (web, or “cloud”), or from a local repository you download from IBM.

```
productInfo featureInfo
```

This will produce a listing of all the features seen in the installed instance of Liberty Profile ... verify using this tool

But if you wish to install the features when IM installs Liberty, then ...

```
imcl install com.ibm.websphere.liberty.zOS.v85  
-installationDirectory ...  
-repositories ...  
-properties user.feature=adminCenter-1.0,,zosConnect-1.0
```

Note the “double comma” way of separating the features in the list you wish to have installed

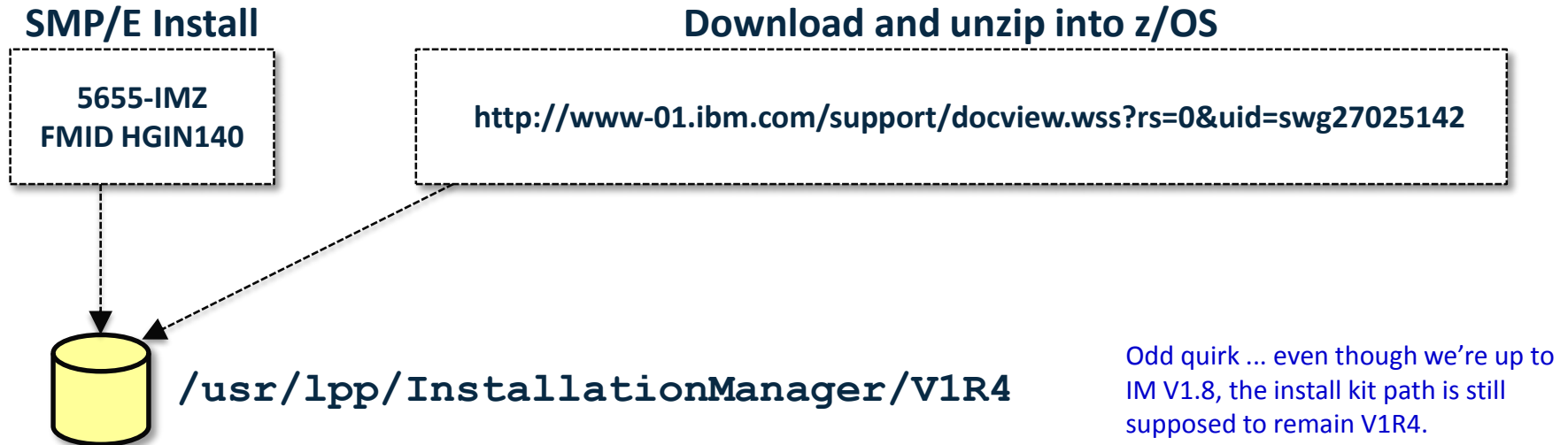
Installing/Updating IM Itself

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Installation Manager “Install Kit”

The “install kit” is what you use to create an Installation Manager



The next step is to create an instance of Installation Manager using the code you have in the file system shown here ...

Creating an Installation Manager

Choose an administrative model

Three choices: **Admin**, **Group**, or **User mode**

This really gets down to which user can use the IM ... Superuser, any user in owning group, or just one user.

For z/OS the recommendation is Group mode

The registry file for IM is created in the IM instance (better backup/restore), and any ID connected to owning group can use

Create the Installation Manager ID

Standard SAF user creation ... but the ID has certain requirements as spelled out in the documentation

For example, READ to certain BPX and SUPERUSER classes; it must have R/W home directory, etc.

Choose directories for an Installation Manager

Key thing is deciding where you want the IM instance to be created. Default is

/InstallationManager, but you can make that /Service/InstallationManager

Three sub-directories: Binaries, AppData, and Share Resources

Create the Installation Manager

From the Installation Kit /bin directory:

groupinstc

-installationDirectory <Installation Manager **binaries** directory>

-dataLocation <Installation Manager **appdata** directory>

-acceptLicense

Resources for Further Learning

IBM KnowledgeCenter for Installation Manager (all versions)

https://www.ibm.com/support/knowledgecenter/SSDV2W/im_family_welcome.html

Installation Manager Install Kit Download Site (all versions)

<http://www.ibm.com/support/docview.wss?uid=swg27025142>

Installation Manager for z/OS

<http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102554>

Installation Manager “Cookbook”

<http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102014>