SERVICE EXPRESS

# Managing
# IBM i ~~PTFs~~ Fix Information

# Semiug April 2024

IBM Certified™
Advanced Technical Expert

IBMCHAMPION

Larry Bolhuis
IBM i Infrastructure Advisor
Service Express

People-Powered Data Center Solutions

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# Problems, fixes, enhancements. The connection?

- First a change is needed: A Fix, Enhancement or Change.
  - Beginning March 2025, this is documented as a 'Known Issue'
    - These are numbered DTnnnnnn, yes 8 long.
  - Previously these were APARs (Authorized Program Analysis Report)
    - APAR Numbers were formatted Mannnnn – 7 Long
- Then a fix, is provided and document in the Known Issue.
  - This is documented as 'Fix Information'
    - These are numbered FIxxnnnnn – 9 long
    - The xxnnnnn is the PTF number, which now known as the 'Legacy Number'
  - Previously this would have been a PTF (Program Temporary Fix)
    - These are numbered MJnnnnn and SJnnnnn (Formerly MI/SF/SInnnnn)

Information about the change at the link below:
www.ibm.com/support/pages/ibm-i-aparsptfs-will-migrate-known-issuesfix-information
https://www.ibm.com/support/pages/node/7130405

# March 2024 additional implications.

- Because the new numbers won't fit into the IBM i Db2 database they will be truncated from DTnnnnnn to Tnnnnnn.
- Instead of searching for '"IBM i" APARS'
  - 22,000 results, all of which are related to IBM i
- You'll now search for '"IBM i" Known Issues'
  - 350,000 results, very few are currently related to IBM i
- Also "IBM i PTFs" which returns 73,000 results will be replaced with:
  - '"IBM i" Fix Information' which returns 250,000 results.
  - Almost none of the above are for IBM i.
- 'Fix Information' and 'Known issus' are common terms so we'll want to find other ways that the google to find this stuff.

# The new Known Issues and Fix information list page

Home / IBM i /

Known issues and Fix information

Displaying 1409 items

1 × Known issues | 7.5.0 | All operating systems | All Status

| Item | Title | Status | Fix Available | Document Type | Opened | Updated |
|---|---|---|---|---|---|---|
| DT294793 | SE81339: OSP-DB-OTHER-F/QSQRUN1-T/QSQRUN1-RC167-MSGSQL0904 SAP | Closed | Yes | Known Issue | Mar 12, 2024, 12:00 | Apr 05, 2024, 06:40 |
| DT315656 | OSP-DB-OTHER-INCORROUT OLAP COUNT(*) OVER() LEFT JOIN | Closed | Yes | Known Issue | Mar 08, 2024, 12:00 | Mar 19, 2024, 15:23 |
| DT307097 | MA50521: LIC BASE FUNCTION TO ENABLE TECHNOLOGY REFRESH | Closed | Yes | Known Issue | Mar 08, 2024, 12:00 | Mar 16, 2024, 02:07 |
| DT294782 | SE81327: OSP-DB-MSGSQL0104 SQL routine with variable named LOCATION or ERROR | Closed | Yes | Known Issue | Mar 07, 2024, 12:00 | Mar 16, 2024, 12:53 |
| DT317222 | MA50514: SLIC-CRYPTO FIX MEMORY LEAK IN INTERNAL CRYPTOGRAPHIC INTERFACE | Closed | Yes | Known Issue | Mar 06, 2024, 03:00 | Mar 16, 2024, 02:02 |
| | MA50509: OSP QUERY USING XMLAGG IS RETURNING INCORRECT | | | | | |

This thing is VERY MUCH a work in progress. The above shot is from 20/Apr and you'll see EVERY Issue has fixes available! But none are newer than March 18. This is because I selected Known Issues and 7.5.0 only. If you leave the version blank you just don't see anything for IBM i at all!

LIKE MANY IBM PAGES do NOT use the browser back button!

# MA50521: LIC BASE FUNCTION TO ENABLE TECHNOLOGY REFRESH

D

## Description

This change provides base function to enable extensions for a Technology Refresh.

## Problem summary

## Problem conclusion

Additional base function is provided in this PTF.

## Temporary workaround

## Related Fix Informations

| Name | Title | Legacy | Created Date |
|---|---|---|---|
| FI0018206 | MF99404 - LIC BASE FUNCTION TO ENABLE TECHNOLOGY REFRESH | MF99404 | Mar 13, 2024, 20:57 EDT |

A

B

A- Fix Information Number (Note link!)
B- 'Legacy' number which is the PTF Number
C- This document, the Known Issue Number
D- The APAR number
E- Is this a HIPER Fix (Here NoHIPER)
F- Is this a PTF In Error (Here NoPE)
G- Component (This shows V5 V6 and V7. Hmmmm.)
H- Release for this document

Status
Closed
Programming Error - Fix provided (PER)

**A fix is available**

Fixed Version(s) :

**Subscribe**

By subscribing, you receive periodic emails alerting you to the status of the known issue, along with a link to the fix after it becomes available.

Notify me when a known issue for this product changes

Subscribe

Manage my notifications

**Document information**

Product
IBM i

Software version
7.5.0

H

C

Document number
DT307097

Last modified
Mar 15, 2024, 22:07 EDT

**Known Issue Information**

D

APAR Number
MA50521

Reported component name
5761 5770 5722

G

Reported component id
9400DG300

Reported component release
750

F

Status
Closed

E

PTF in error
NoPE

HIPER:
NoHIPER

Special attention
NoSpecatt

# MF99404 - LIC BASE FUNCTION TO ENABLE TECHNOLOGY REFRESH

This PTF is not yet available at this time (Part of TR4) so there is no information in this vast white space!

**Status**
Open

**A fix is available**
Fixed Version(s) :

**Document Information**

Product
IBM i

Last Modified Date
Mar 13, 2024

Legacy
MF99404

**Fix Informations**

Status
Open

Requesting Known Issue
DT307097

Type
Internal

Opened Date
Mar 11, 2024

Reported component id
5770999

Reported component name
5761 5770 5722 VLIC

Component ID release:
750

# MF99403 - LIC BASE FUNCTION TO ENABLE TECHNOLOGY REFRESH

**Cover Letter**

**Abstract**

LIC Base Function to Enable Technology Refresh

**Pre/Co-Requisite PTF / Fix List**

A

| REQ TYPE | LICENSED PROGRAM | RELEASE | PTF/FIX NUMBER | LEVEL MIN/MAX | OPTION |
|---|---|---|---|---|---|
| DIST | 5770SS1 | V7R5M0 | SI84177 | 00/00 | 0000 |
| DIST | 5770SS1 | V7R5M0 | SI82469 | 00/00 | 0000 |
| DIST | 5770SS1 | V7R5M0 | SI80935 | 00/00 | 0000 |

A – Pre and Co Req PTF List
B – List of things fixed
C – 'Legacy' or PTF Number
D – This issue
E – Code area affected
F – Component, here showing V5, V6, V7 oddly and VLIC
G – Release applies to.

**Known Issues Fixed List**

| Known Issue | Title | Date Added | Legacy | Created |
|---|---|---|---|---|
| B DT306828 | MA50043: LIC-OTHER-UNPRED-SRCB6005120-SRC21073109-SRC21453109 PALs logged (Watchdog timeouts) when attached to 2CFC and 2CFD FC | | MA50043 | |
| DT306456 | MA49275: LIC-OTHER-UNPRED 579C FC ADAPTER CRASHES SYSTEM WITH SRCB6000103 MSD OR GENERATES AN SRC579C8300 PAL | | MA49275 | |

**Status**
Closed PER

**A fix is available**
Fixed Version(s) :

**Document Information**

Product
IBM i

Last Modified Date
Mar 26, 2024

C
Legacy
MF99403

**Fix Informations**

Status
Closed PER

D
Requesting Known Issue
DT306997

Type
Internal

Volume ID
3306

Opened Date
Aug 14, 2023

E
Reported component id
5770999

F
Reported component name
5761 5770 5722 VLIC

Component ID release:
750
G

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# Fix Information (PTFs): a Quick Review

These are updates provided by IBM to correct problems or add new function.

- New function may be software capabilities or support for new hardware

The ‘Known Issue’ (fmr: APAR) documents the issue and lists the fix for each affected release

- The fix for each release has a unique number

They can be handled one at a time or in groups.

Getting fixes requires either a current software maintenance agreement (SMWA)

# Fix Packaging

An individual PTF can contain more than one object.

- Application of the fix may replace multiple objects
- It may add objects to the system
- It may remediate a problem by running a program

The package also contains a cover letter. Once loaded Cover letters live in the QAPZCOVER file in the QGPL library.

- Each cover letter is it's own member with the same name as the fix number but preceded with the letter 'Q'.
- If new function is provided the cover letter will describe how to enable this function.

If loaded separately the package is a save file in library QGPL.

- The name is the same as the Cover letter.

# Temporary vs Permanent

**The seemingly obvious distinction between Temp and Perm is that a temporarily applied fix can be removed, or 'UnApplied'.**

**A Fix that is permanently applied may be removed, but only in two ways:**

1) **Restore the system to a point prior to the fix application.**
2) **Get a new fix from IBM that 'undoes' the fix that needs to be uninstalled**
   - **This only occurs with defective fixes**

**Prerequisite and co requisite fixes**

- **These are VERY often found when applying fixes.**
- **Note that if a fix is being permanently applied the pre-requisite and co-requisite fixes also must be permanently applied**

SERVICE EXPRESS

# Agenda

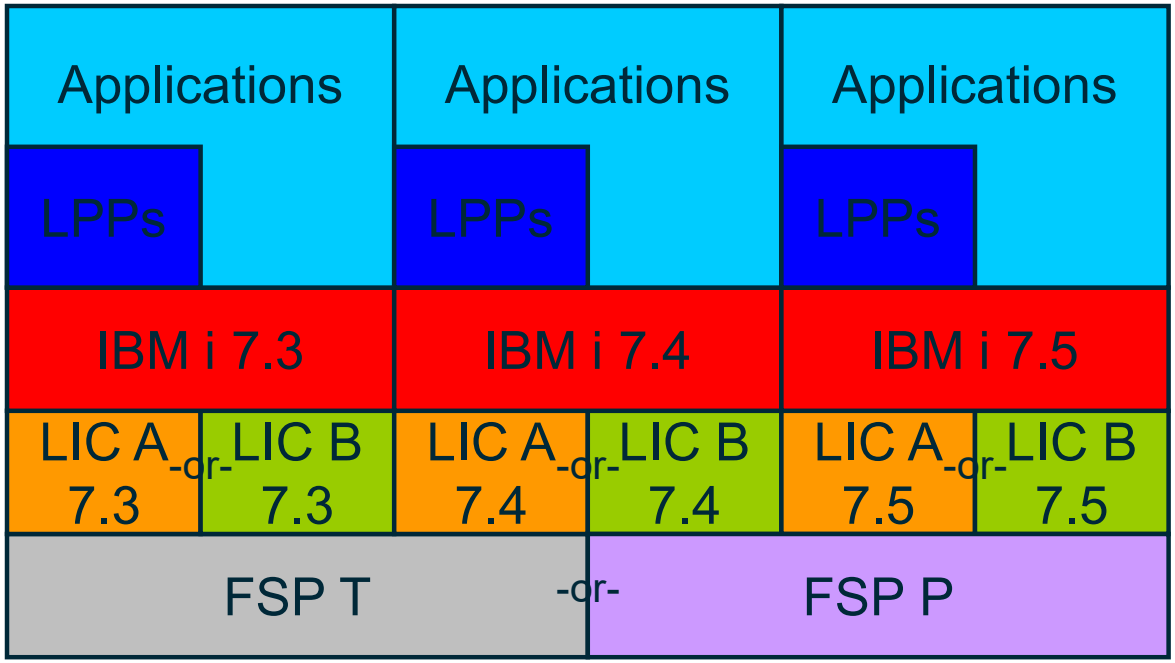
- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# Code Bases

In order to understand fix application, we must understand the three code bases of the system.

From the top down:

- IBM i and the Licensed Program Products (LPPs).
- Licensed Internal Code (LIC)
- System firmware in the FSP (Service Processor) or BMC (Baseboard Management Controller)



# IBM i and LPPs

- When a fix is temporarily applied the objects being updated are first copied to a holding space and then the new pieces are put in their place.
- Removing a temporarily applied fix reverses this process by putting the saved objects back in place.
- Permanently applying a fix deletes all the saved objects and frees up the disk space consumed by those saved objects.
- When IBM i IPLs any fix applied perm or temp in this space *will* be active.

# Licensed Internal Code (LIC)

There are two copies of the LIC on every system “A” and “B”

- The “A side” has only Permanently applied fixes
- The “B side” has both Permanently and Temporarily applied fixes

When a LIC fix is temporarily applied, it is applied to the “B” side only.

Removing a temporarily applied fix removes it from the “B” side.

Permanently applying a fix copies the PTF to the “A” side.

Any partition can be restarted from either “A” or “B” sides.

- If a temp applied LIC fix causes trouble the system can be restarted from the “A” side
- Once on the “A” side temporarily applied LIC fix can then be removed.

If all LIC PTFs are applied Permanent, then “A” and “B” are the same and the system will IPL normally IPL from the “A” side.

# System Firmware

There are two copies of the FSP code on every Power System, Temporary (“T”) and Permanent (“P”)

- The “P” side contains the ‘Accepted’ code level.
- The “T” side contains the ‘Activated’ code level.
- It’s also possible to have an ‘Installed’ level that will become the Activated level at the next deep IPL.
  - Deep IPL is when the FSP/BMC IPLs.
  - This requires ALL partitions to be shut down.

Similar to applying LIC fixes, permanently the ‘Accept’ function copies the Activated level to the “P” side

As with permanently applied PTFs, the Accepted code level cannot be removed.

Note that for systems without an HMC the “T” and “P” sides are always kept in sync.

# PTF Numbering

Fixs are identified with seven-character identifiers formatted as “XXnnnnn”

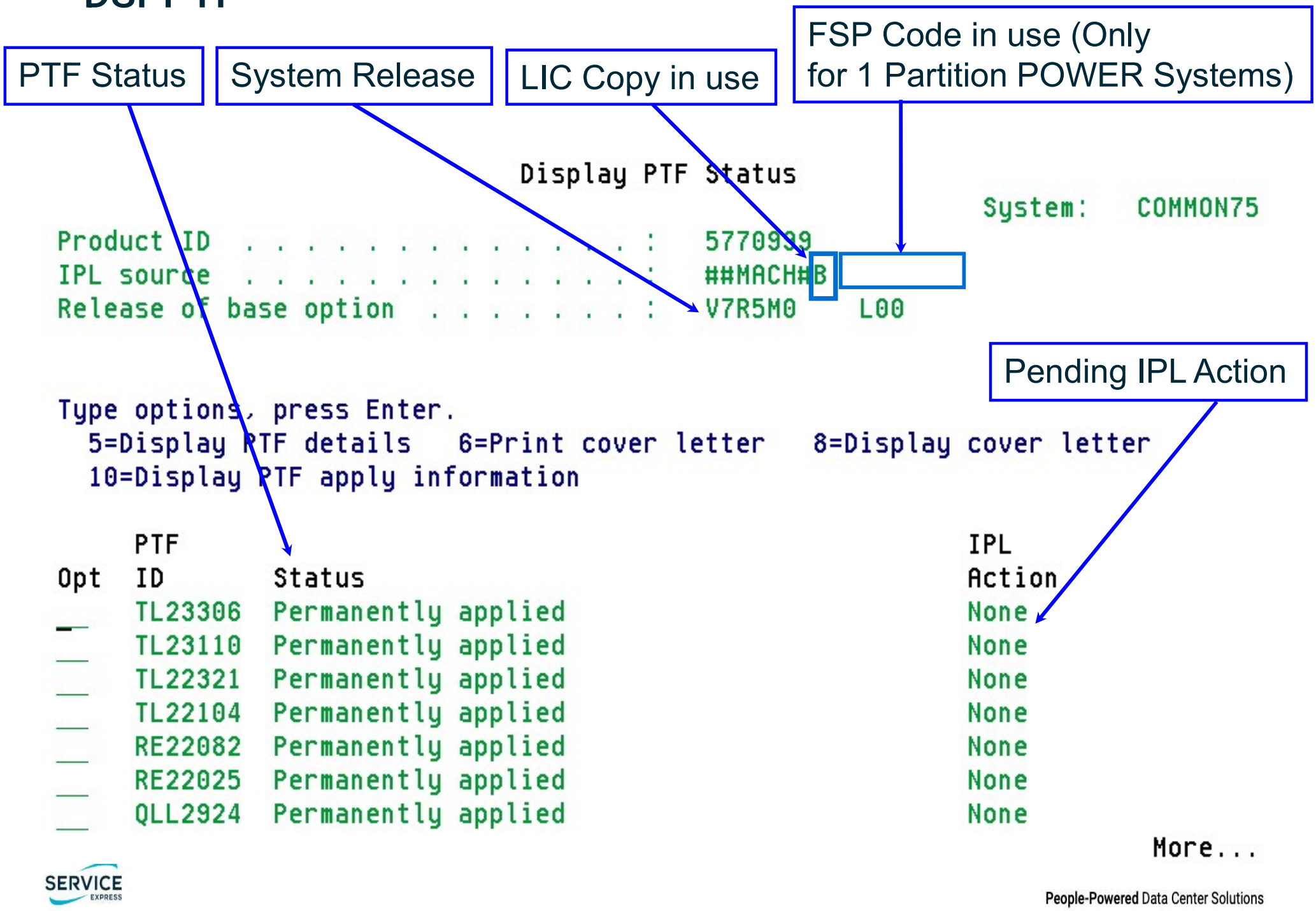
XX is one of the following letter pairs:

- SF
  - In releases prior to V5 all OS/400 and LPP PTFs began with the letters SF.
  - Now SF PTFs are only used for group fixes.
- SI
  - Through April, 2024 IBM i and LPP fixes began with SI
- SJ
  - Beginning March 2024, IBM i and LPP Fixes begin with SJ
- MF
  - LIC fixes through March 2024 begin with letters MF
- MJ
  - Beginning March 2024, LIC Fixes begin with MJ
- MH
  - These PTFs are FSP code.
  - These exists even on non i5 systems.
  - These are applied only from a Service Partition.
- RE
  - These indicated the various Resave(Respin) levels present.
  - IBM periodically creates new LIC media, and each gets an RE
    - If you get printed media they show RSx where x=A, B etc.
  - https://www.ibm.com/support/pages/node/6567209
- TL (999) and TC/TA (SS1)
  - These are markers for the CUMEs present.
  - The TC PTF carries the cover letter for the CUME package.

# Meaningful fix Numbers

- Most Fix numbers don’t mean anything.
- Numbers for MF, MJ, SI, and SJ fixes are given out in order as needed, so other than ‘relative’ age they mean nothing.
  - Also, due to multiple releases being supported concurrently the fix numbers for multiple releases interleave.
  - MF<->MJ and SI<->SJ split on March 19, 2024 (Before<->After)
- The SF numbers designating group fixes are static
  - New SFnnnnn numbers are assigned to each release
- The TL/TC/TA marker PTFs indicate the dates of cumulative PTF packages installed. These are formatted TLYYJJJ.
  - YY is the last two digits of the year
  - JJJ is the Julian date
- RE (respin) markers use the same YYJJJ format
- QLLnnnn Markers show installed languages. ‘2924’=US English

# DSPPTF


PTF Status
System Release
LIC Copy in use
FSP Code in use (Only for 1 Partition POWER Systems)
Pending IPL Action
Display PTF Status
System: COMMON75
Product ID . . . . . : 5770999
IPL source . . . . . : ##MACH#B
Release of base option . . . . . : V7R5M0 L00
Type options, press Enter.
5=Display PTF details 6=Print cover letter 8=Display cover letter
10=Display PTF apply information
Opt PTF ID Status IPL Action
TL23306 Permanently applied None
TL23110 Permanently applied None
TL22321 Permanently applied None
TL22104 Permanently applied None
RE22082 Permanently applied None
RE22025 Permanently applied None
QLL2924 Permanently applied None
More...

# DSPPTF Notes

Pressing ENTER will forward to the next program product.

- 5770999, 5770SS1, 5733SC1 …..
  - After SS1 it will depend on what programs you have installed.

Pressing F12 will go back to previous product.

Parameter SELECT lets you display a single PTF

- Problem is you need to know the product number.
- So, this is great if you know that, but you cannot specify *ALL for the product when using SELECT
- Instead use OUTPUT(*PRINT) and then search the spooled file.

SELECT Also allows

- *PTFSAVF, *ONORDER, *SAVFONLY, *ONORDERONLY and others.

## Cover Letters

- PTFs each have cover letters
  - Individual cover letters can be displayed in 2 ways
    - DSPPTF LICPGM(5770SS1) SELECT(TC11116) COVERONLY(*YES)
    - DSPPTFCVR LICPGM(5770SS1) SELECT(TC11116)
  - View all cover letters with special instructions
    - DSPPTFCVR LICPGM(5770SS1) SELECT(*ALL) CVRATR(*SPCINST)
  - View all unapplied cover letters with special instructions
    - DSPPTFCVR LICPGM(5770SS1) SELECT(*NOTAPY) CVRATR(*SPCINST)
  - CVRATR has five options:
    - *SPCINST, *PREIMM, *PREDLY, *PREOPR, *POSTOPR

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

## The 21 stati of PTFs

- **On order.** The PTF is ordered from IBM, but not yet on the system.
- **Not applied.** The PTF has been loaded on the system, but is not applied and is not in use. A PTF in this state may also have been temporarily applied and then temporarily removed.
- **Save file only.** The PTF exists on the system in a save file, but has not been loaded or applied yet.
- **Not applied-IPL.** The PTF is loaded, but will not be applied until the next IPL.
- **Temporarily applied.** The PTF is temporarily applied and is active. It can be temporarily removed or permanently applied from this state.
- **Permanently applied.** The PTF is a permanent part of the system and cannot be removed.
- **Temporarily removed.** The PTF has been temporarily removed from the system.
- **Superseded.** The PTF is no longer on the system because it has been replaced by at least one subsequent PTF.
- **Damaged.** The PTF is damaged and must be loaded again in order to correct the damaged condition.

## PTF stati continued

- OK that wasn't all of them but the rest are quite rare indeed.
- There is no status of permanently removed because in that case the PTF is completely gone.
- Note that PTFs with these modifiers that have *almost* reached their new stati:
  - **IPL.** An IPL is required to complete the action.
  - **PND (pending).** Some action is required (see the PTF's cover letter for the specific action to take). The action is updated when the PTF's status is displayed.
  - **ACN (action).** Some action is required (see the PTF's cover letter for the specific action to take). This modifier can be removed from the PTF if the action is taken, or the modifier will be cleared at the next IPL

# PTF Life Cycle

- **On Order** until it is exists on the system.
- **Save file only** if it was ordered via Electronic Customer Support (ECS). (Often PTFs will never show a Save file only status.)
- **Not applied** state when it is loaded, but not yet applied.
- **Not applied-IPL** state when it is loaded and set to apply at IPL
  - Many PTFs will never show this status because they are applied immediately.
- Most remain **Temporarily applied** for a long time, however, some PTFs go directly to **Permanently applied** (many of these are LIC PTFs).
- PTFs that have been **Temporarily applied** for some time (usually long enough to prove that they aren't defective) are usually P**ermanently Applied** to save disk space.
- PTFs are eventually **Superseded** by another PTF with newer code. Once the newer PTF is applied, the older PTF is flagged as **Superseded**.
  - The reason the PTF identifier remains on the system is because there is code that will check for a particular PTF (as a prerequisite or co-requisite for another PTF), and that code must find the prerequisite PTF it requires before it will load another on the system.

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# PTF Groupings

## **Single PTF**s.

- A single PTF may be ordered to correct a specific problem, or to add a new function that didn't exist when the release first became available. Any number of single PTFs can be ordered at one time

## **Cumulative PTF Packages** or CUMes

- CUMes contain fixes for all parts of IBM i.
- These accumulate from the time the latest version of the operating system is released.
- Once a PTF has been placed on a CUMe, it will be on every further CUMe unless it is superseded by another, or marked defective.
- When you order a CUMe you also get the current Database and HIPER PTF groups with your order.
- Cumulative packages are heavily tested. That is, systems with these PTF levels are run through multiple tests to assure that the PTFs all work together. A CUMe has the highest level of testing, and the lowest level of risk for your system.

SERVICE EXPRESS

# PTF Groups

**HIPER - HI**gh-Impact **PER**vasive,

**Security (Only Security PTFs from HIPER group)**

**Database (DB)**

**JAVA**

**HTTP**

**TCP/IP**

**Backup and Recovery**

**Performance Tools**

**Technology Refresh**

**Hardware**

**Websphere (Several versions){Retiring}**

**Web Query (Several versions){Retiring}**

# Coolest Group- Tech Refresh

This group brings LIC for new hardware and firmware function.

- A combination of LIC PTFs and O/S PTFs.
- Not a release upgrade but significant function added.

Technology Refresh for i 7.5 SF99957

- TR 3 is current, Includes MF99408 (RS-750-D RE23277)
- TR 4 is expected soon

Technology Refresh for i 7.4 SF99737

- TR 9 is current, Includes MF99309 (RS-740-N RE23272)
- TR 10 is expected soon

Technology Refresh for i 7.3 SF99727

- TR 13 is FINAL, Includes MF99213 (RS-730-R RE22283)
- Delivered Fall of 2022
- 7.3 is now out of production support

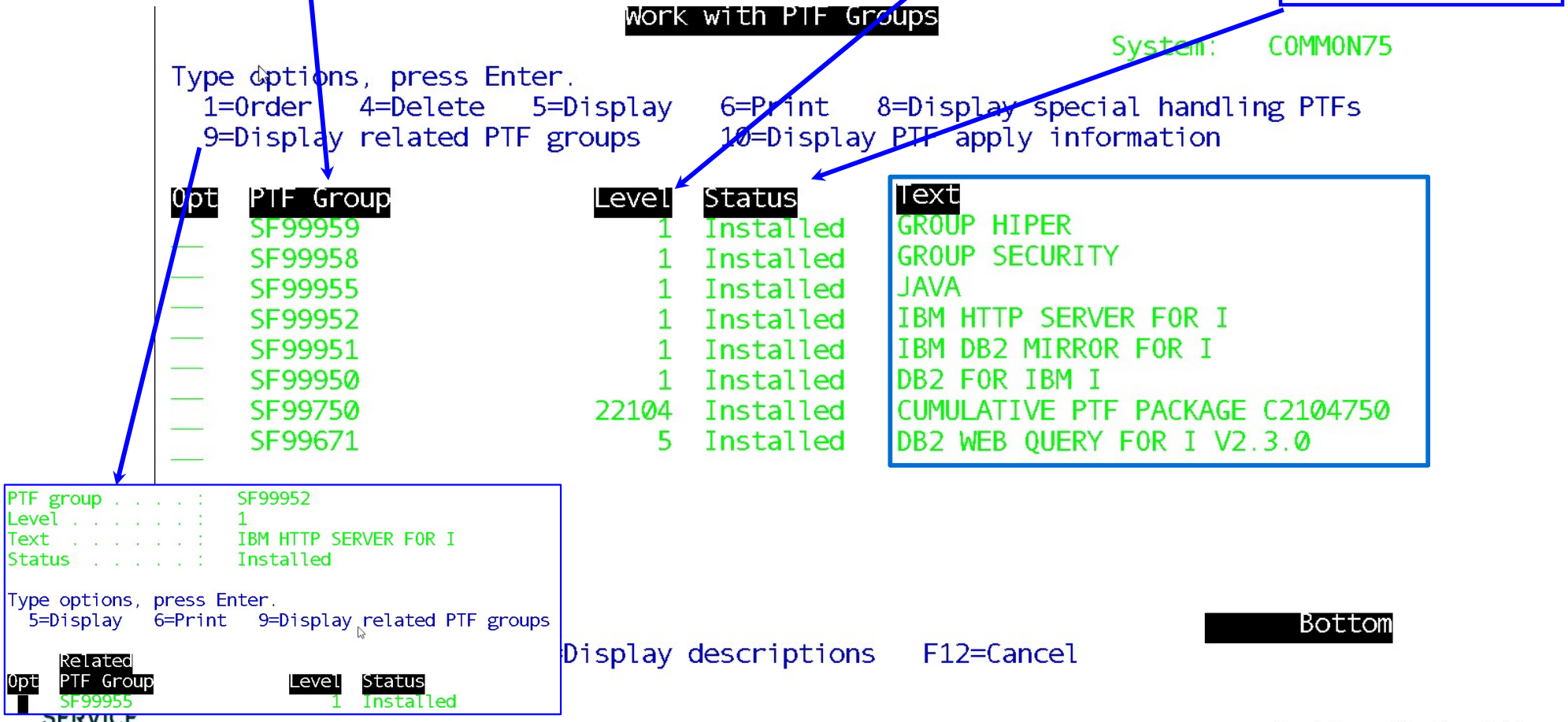
# WRKPTFGRP

Group Number

Note that F11 displays text describing the group
Option 9 displays related groups.

Group Level

Group Status




Show latest group only with: WRKPTFGRP PTFGRPLVL(*LATEST)

People-Powered Data Center Solutions

SERVICE EXPRESS

## BUT are my groups current?

IBM i has a function that uses and SQL stored procedure to communicate to IBM.

The results are compared to your current PTF groups and displayed.

Note that your job must ***NOT*** be CCSID 65535 for this to work.

# Compare installed groups to available groups

SELECT * FROM systools.group_ptf_currency;

- Dump it into a file to be used with CL or other:

CREATE TABLE qgpl.GrpPtfUpdt As (SELECT * FROM systools.group_ptf_currency
Where Ptf_Group_Currency = 'UPDATE AVAILABLE') With Data;

| PTF_GROUP_CURRENCY | PTF_GROUP_ID | PTF_GROUP_TITLE | PTF Group Level PTF_GROUP_LEVEL_INSTALLED | PTF_GROUP_LEVEL_AVAILABLE | LAST_UPDATED_BY_IBM | PTF_GROUP_RELEASE | PTF Group Status PTF_GROUP_STATUS_ON_SYSTEM | PTF_GROUP_LAST_UPDATED_BY_IBM |
|---|---|---|---|---|---|---|---|---|
| - | SF99669 | SF99669 750 Content Manager OnDemand for ... | 6 | 6 | 2023-08-25 | R750 | NOT APPLI... | 08/25/2023 |
| UPDATE AVAILABLE | SF99671 | SF99671 750 Db2 Web Query for i V2.3.0 | 8 | 9 | 2023-07-19 | R750 | INSTALLED | 07/19/2023 |
| INSTALLED LEVEL IS CURRENT | SF99676 | SF99676 750 High Availability for IBM i | 7 | 7 | 2024-01-19 | R750 | INSTALLED | 01/19/2024 |
| INSTALLED LEVEL IS CURRENT | SF99677 | SF99677 750 750 TCP/IP PTF | 4 | 4 | 2023-11-27 | R750 | INSTALLED | 11/27/2023 |
| INSTALLED LEVEL IS CURRENT | SF99750 | Current Cumulative PTF Media Documentation | 23306 | 23306 | 2023-11-16 | R750 | INSTALLED | 11/16/2023 |
| INSTALLED LEVEL IS CURRENT | SF99950 | SF99950 750 DB2 for IBM i | 6 | 6 | 2024-03-11 | R750 | INSTALLED | 03/11/2024 |
| INSTALLED LEVEL IS CURRENT | SF99951 | SF99951 750 IBM Db2 Mirror for i | 5 | 5 | 2023-11-15 | R750 | INSTALLED | 11/15/2023 |
| INSTALLED LEVEL IS CURRENT | SF99952 | SF99952 750 IBM HTTP Server for i | 14 | 14 | 2024-03-26 | R750 | INSTALLED | 03/26/2024 |
| INSTALLED LEVEL IS CURRENT | SF99953 | SF99953 750 Performance Tools | 3 | 3 | 2024-01-16 | R750 | INSTALLED | 01/16/2024 |
| INSTALLED LEVEL IS CURRENT | SF99954 | SF99954 750 Backup Recovery Solutions | 11 | 11 | 2023-10-31 | R750 | INSTALLED | 10/31/2023 |
| INSTALLED LEVEL IS CURRENT | SF99955 | SF99955 750 Java | 9 | 9 | 2024-03-19 | R750 | INSTALLED | 03/19/2024 |
| INSTALLED LEVEL IS CURRENT | SF99957 | SF99957 750 Technology Refresh | 3 | 3 | 2023-11-16 | R750 | INSTALLED | 11/16/2023 |
| INSTALLED LEVEL IS CURRENT | SF99958 | SF99958 750 Group Security | 29 | 29 | 2024-03-21 | R750 | INSTALLED | 03/21/2024 |
| INSTALLED LEVEL IS CURRENT | SF99959 | SF99959 750 Group Hiper | 50 | 50 | 2024-03-21 | R750 | INSTALLED | 03/21/2024 |

# View group levels on the web

Scroll to the desired Release

## Content

### PSP - IBM i Group PTFs with Level

Attached is the list of IBM i PSPs in XML format
PSPbvNumL

| Release | Title |
|---|---|
| R750 | SF99959: SF99959 750 Group Hiper |
| R750 | SF99958: SF99958 750 Group Security |
| R750 | SF99957: SF99957 750 Technology Refresh |

### PSP - IBM i Group PTFs with Level

Attached is the list of IBM i PSPs in XML format
PSPbyNumL

| Release | Title | Group Level | Last Updated |
|---|---|---|---|
| R750 | SF99959: SF99959 750 Group Hiper | 37 | 09/26/2023 |
| R750 | SF99958: SF99958 750 Group Security | 21 | 09/26/2023 |
| R750 | SF99957: SF99957 750 Technology Refresh | 2 | 05/04/2023 |
| R750 | SF99956: SF99956 750 Technology Refresh plus Recommended Groups | 1 | 12/01/2022 |
| R750 | SF99955: SF99955 750 Java | 6 | 08/18/2023 |
| R750 | SF99954: SF99954 750 Backup Recovery Solutions | 10 | 08/21/2023 |

http://www-01.ibm.com/support/docview.wss?uid=nas4PSPbyNum

SERVICE EXPRESS

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

SERVICE EXPRESS

# To PTF or not to PTF

You need to have a strategy. Ones I've seen:

- If it ain't broke, don't fix it.
- Once a year is good enough.
- Get the CUMe's but ditch the rest.
- CUMe plus all the rest now and then.
- Get 'em all constantly.

Somewhere in the middle is a good place to be but there are specific PTFs to consider from time to time.

# Why PTFs?

PTF's have three major purposes

- First is the obvious fix.
- Second is new function or support for new devices.
- Third are the odd PTF to change a default.
  - For example, the behavior of WRKJOB option 14.

Besides the major functions there may be PTFs issued to 'fix' a major application (e.g. BPCS or SAP) to work even though IBM's code isn't really 'broken' just behaving differently since a previous release.

Can you understand why you don't want every PTF?

- Fortunately, there is no way to get them all!!
- Getting none of them isn't a good option either!

# Make a plan!

Most important piece is your software.

- Some packaged software has specific PTF requirements and these are priority #1
- You must also consider what pieces you are currently utilizing for in house projects. If you're using RPG III (shame on you) the fixes will be few, if it's PHP and JAVA the fixes will be frequent and more urgent.

Following that is your hardware.

- Certain, especially newer features, require minimum PTF levels or potentially have true 'Fix PTFs' which you should have.
- This is a good place to stay current on HIPER groups

Next is the age of your OS Version.

- i 6.1 PTF activity went dark as of Oct 2015 and i 7.1 in April 2018
- i 7.2 and 7.3 are are in extended support mode
- i 7.4 and i 7.5 PTF activity is live and active!
- Clearly this affects how often you need fixes on your system.

SERVICE EXPRESS

# The Process

As alluded to some slides back a PTF goes through a series of stati on your system.

Order – Methods

- Fix Central (Preferred)
- SNDPTFORD
- 1-800-IBM-SERV

Load

- LODPTF
- PTF menu Option 8 - Install program temporary fix package

Apply

- APYPTF
- PTF menu Option 8 - Install program temporary fix package

Active

- Often true as soon as they are applied
- Some require an IPL or other additional action.

# Apply cycle Theory

## There are certain patterns that help keep you out of trouble.

- Consider that when applying Technology refresh the system permanently applies all the MF/MJ (LIC) PTFs.
- If all the MF/MJ PTFs are perm applied, doesn't it make sense to also have the associated SI/SJ PTFs perm applied?

### Safe Sequence of PTF Processing. Starting point:

- Previous PTFs are active for 'a time'. This may be 6 to 8 weeks.
- A SAVSYS exists from when they were applied.

### Phase 1 in a planned maintenance window

- Apply all PTFs permanently.
- IPL To complete the apply
- SAVSYS at a minimum SAVE 22 is better, SAVE 21 is best.

### Phase 2 in a subsequent maintenance window

- Load and apply next PTF Groups temporarily
- SAVSYS at a minimum SAVE 22 is better, SAVE 21 is best.

### Note about IPL From SAVSYS Media

- When IPLing from a SAVSYS media it is the "A" copy of the LIC that is IPLed
- If you are moving to new hardware, then any PTFs needed on the new Hardware MUST be perm applied

SERVICE EXPRESS

# Agenda

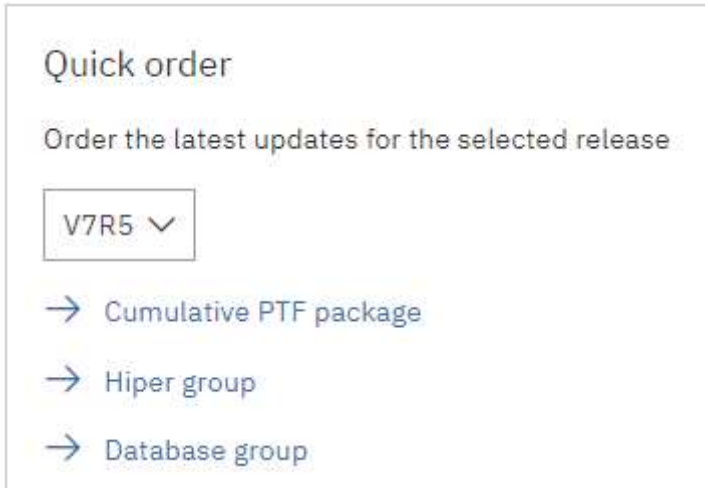
- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- **Fix Central**
- Load and Apply
- Customize Defaults and using Virtual Media

# Fix Central

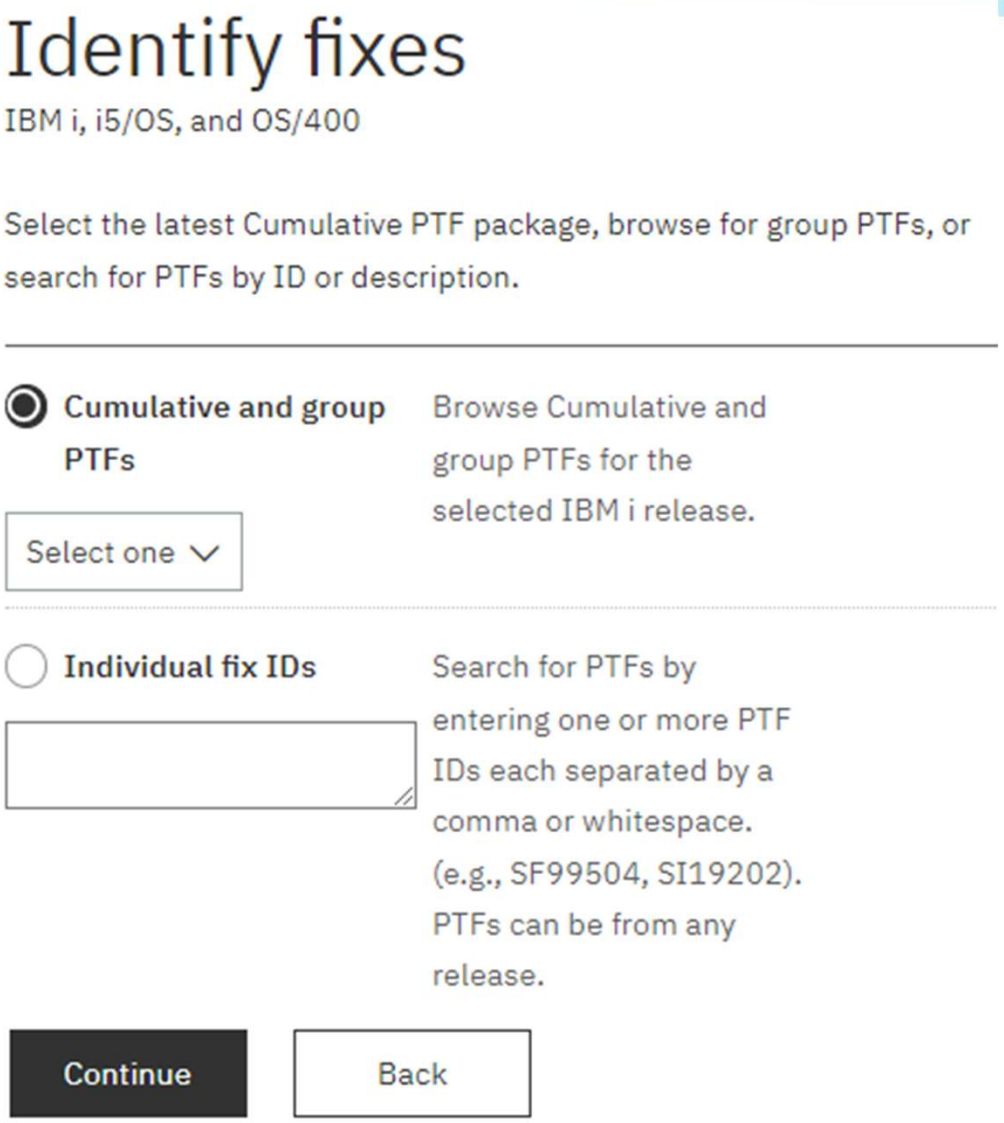
www.ibm.com/support/fixcentral

You need an IBM ID (Free)

You need M/T and S/N of a machine with active SWMA

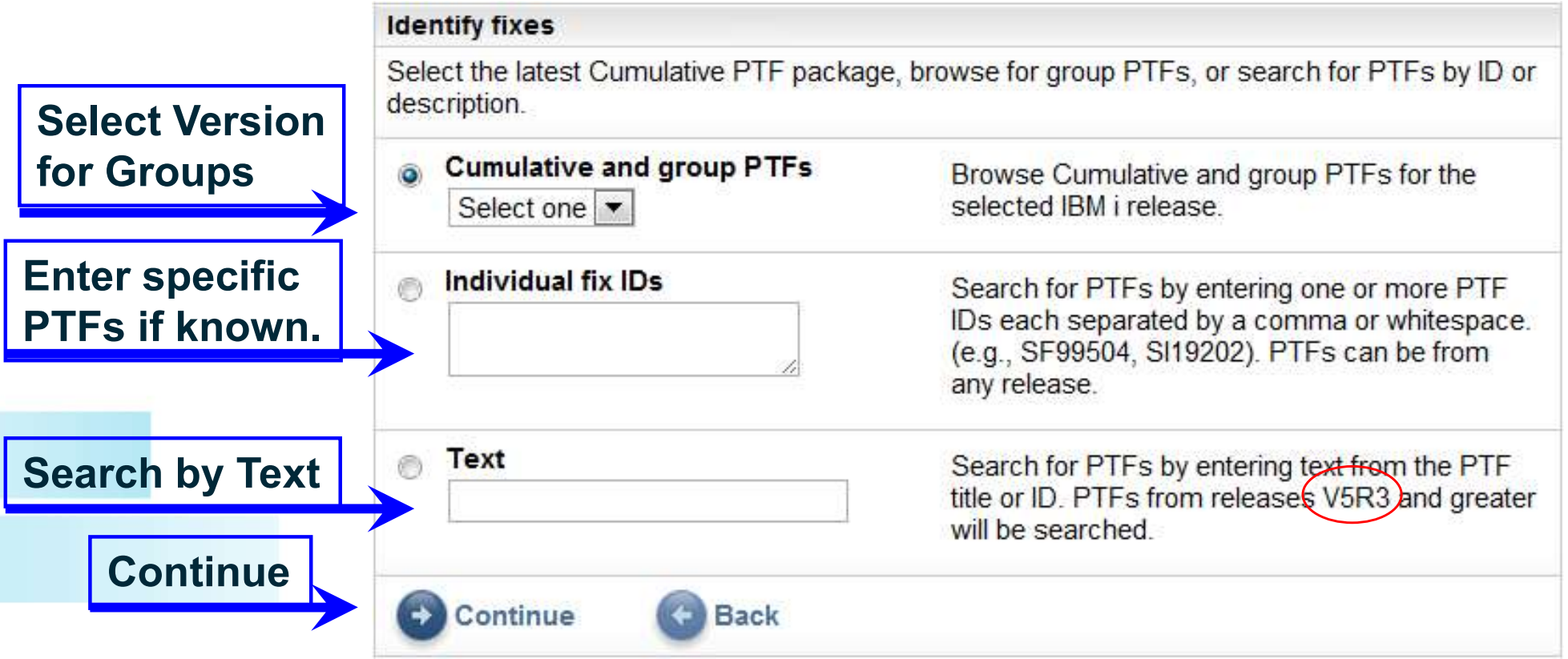



SERVICE EXPRESS



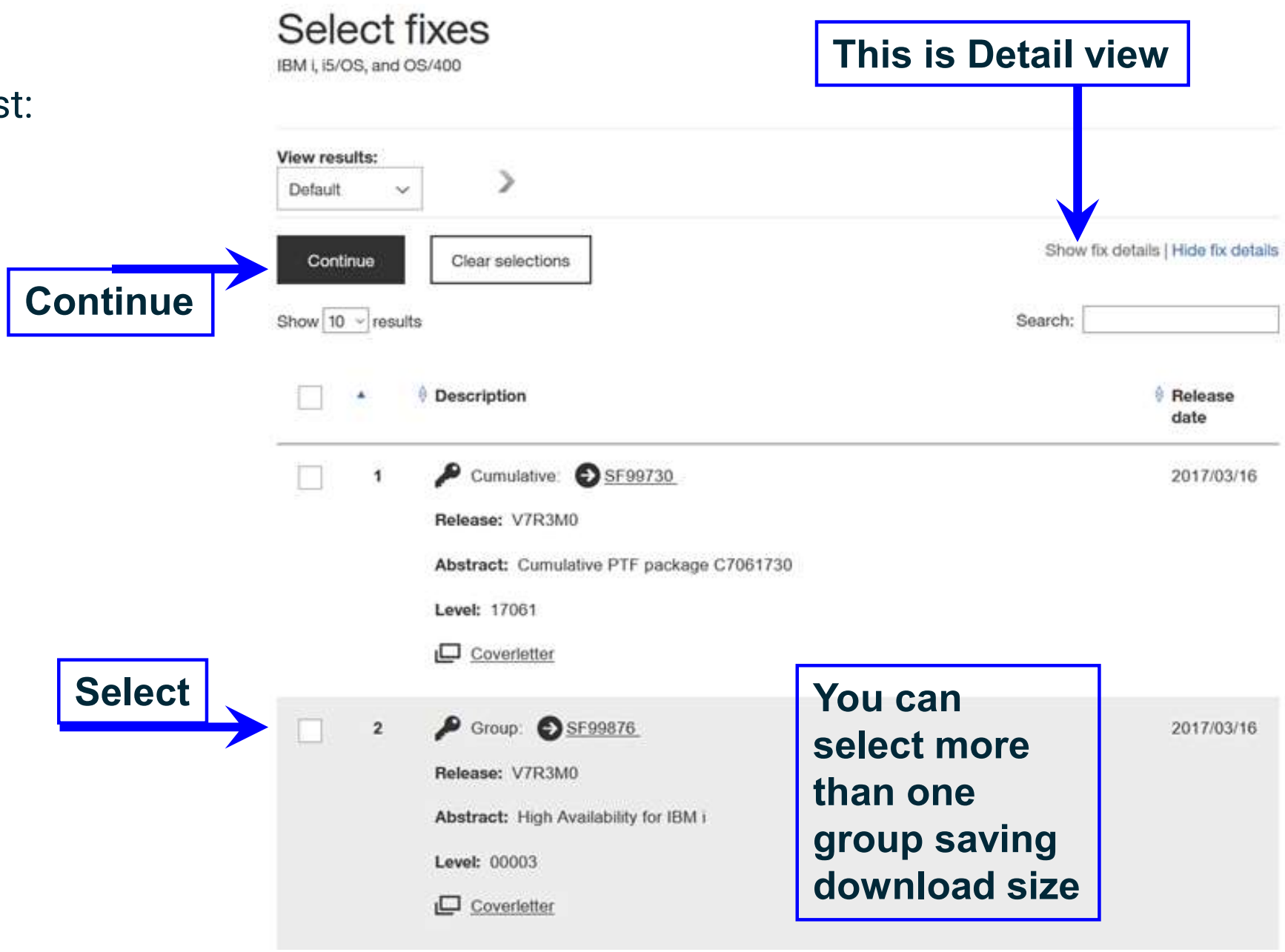
# Select PTFs to get

- Starting point to select which way you're going to identify PTFs to download.
- Individual fix IDs can also be group PTFs
  - Thus, you can paste in a saved list of group numbers to easily order them all at once.



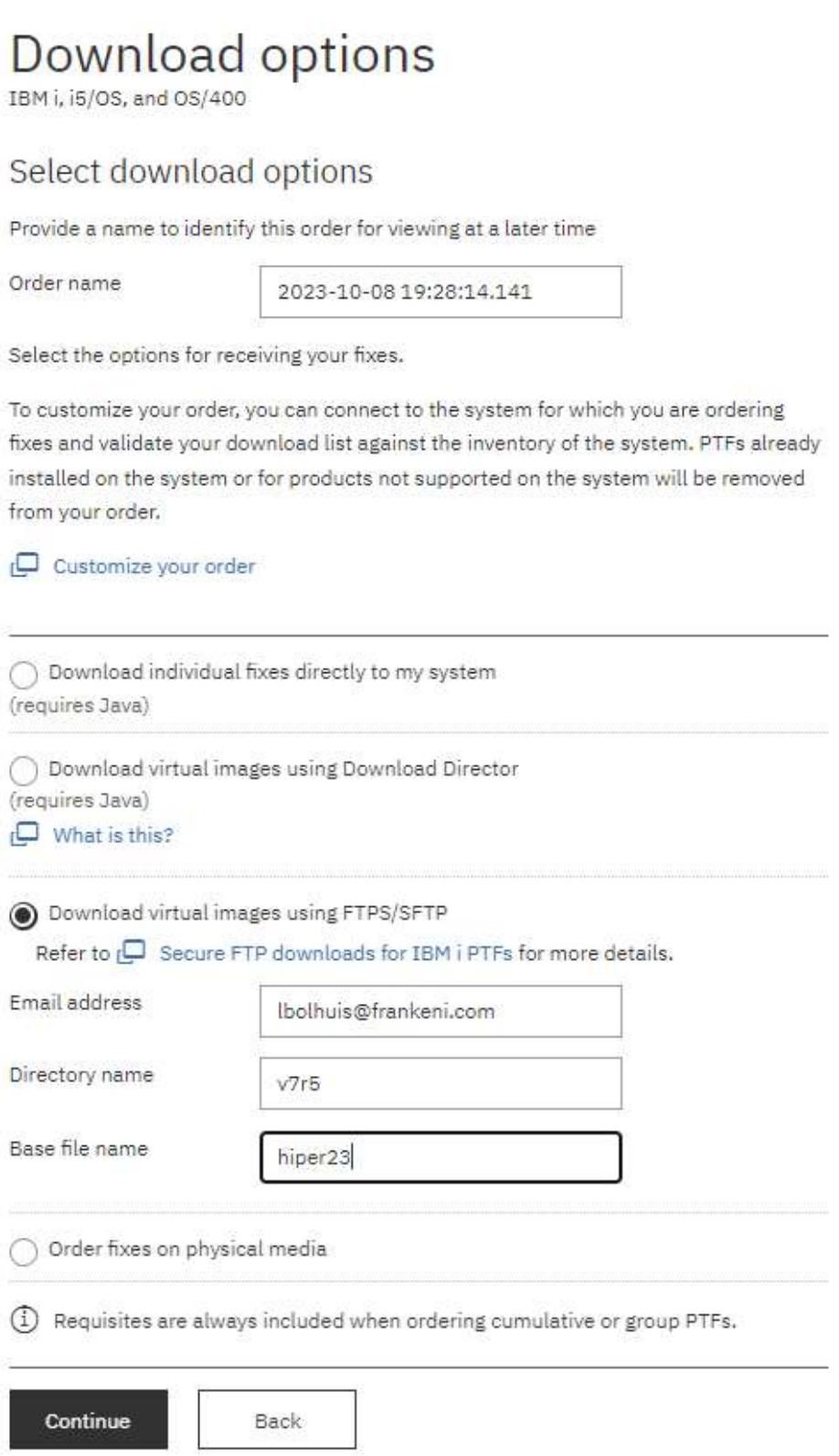
# Groups

- Group List:



# What and how to get fixes.

- Connected
  - Checks system for pre and co-reqs
  - Orders only what you need
  - Can select to order all
  - Can order without Reqs
- Disconnected
  - Download with Director or FTP
  - With FTP name the directory and file name on the FTP server (so you can identify them!)






SERVICE EXPRESS

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# LODPTF - Load PTF

Where the PTF is being loaded from:
- A Device, a Save File, *SERVICE
- *Service automatically finds the *SAVF

Product PTF Applies to

Which PTFs

```
                    Load Program Temporary Fix (LODPTF)

Type choices, press Enter.

Product  . . . . . . . . . . . .   5722999      F4 for list
Device . . . . . . . . . . . . .   *service     Name, *SERVICE, *SAVF
PTF numbers to select  . . . . .   mf31234      Character value, *ALL
               + for more values   mf34567
PTF numbers to omit  . . . . . .   _______      Character value
               + for more values   _______
Superseded PTFs  . . . . . . . .   *apyperm     *APYPERM, *NOAPY
Release  . . . . . . . . . . . .   *ONLY        *ONLY, VxRyMz
```

What to do about PTFs that are superseded



SERVICE EXPRESS

# APYPTF – Apply PTF

Product PTF Applies to.
•Can use *ALL here

Which PTFs to deal with

Apply Perm or Temp

```
                      Apply Program Temporary Fix (APYPTF)

Type choices, press Enter.

Product  . . . . . . . . . . . . . > 5722999      F4 for list
Release  . . . . . . . . . . . . .   *ONLY       *ONLY, VxRxMx
PTF numbers to select  . . . . . > MF31234      Character value, *ALL
               + for more values > MF34567
PTF numbers to omit  . . . . . .   _______      Character value
               + for more values   _______
Extent of change . . . . . . . .   *TEMP       *TEMP, *PERM
Delayed PTFs . . . . . . . . . . > *YES        *NO, *YES, *IMMDLY
IPL apply options:
  Apply at unattended IPL  . . . > *YES        *NO, *YES
  Prerequisite lic int code  . . > *APYPERM    *APYPERM, *NOAPY
Apply requisite PTFs . . . . . . > *YES        *NO, *YES
```

Apply now (*NO)
or at IPL (*YES)

Handle Pre and CoReqs

Handle Delayed PTFs



SERVICE EXPRESS

# Getting time to apply

When PTFs are applied they can be applied either Immediately or Delayed.

Immediate Apply

- The changes or updates become active Immediately
- Not all PTFs can be applied Immediately
  - Some require a particular program be inactive
  - Some require an action be performed to be active
  - Some flat out require an IPL
- Some will happily apply immediately but then require an IPL to become active. (Booo!)

# Getting time to apply

## Delayed Apply

- Some PTFs have requirements that can only be met by doing the apply during an IPL.
  - Typically, these are co-req and pre-req requirements.
  - Can also be code that is always in use so and IPL is the only time to replace it.
  - For example, one MF (LIC) PTF may be replacing another. In order to do that the one being replaced may need to be permanently applied.
- The PTF is applied at the next IBM i IPL
  - All Pre and Co-req PTFs are also applied at this time.
  - Remember that some PTFs may get permanently applied even when you are doing a temp apply.
    - Remember the option on APYPTF that says don't apply if this is the case.

## Bulk PTF apply

Doing any quantity of PTFs typically involves install from Optical.

Rarely now is this a physical drive!

Normally virtual optical.

This is done from PTF menu option 8 – Install package

PTFs can be loaded during normal operations and set for apply at next IPL.

- LAND MINE! If an IPL occurs when you don't expect you will be doing PTFs when you may not want to.

# PTF Menu option 8 (Install Package)

```
                Install Options for Program Temporary Fixes
                                                        System:   FIIIV5R4
Type choices, press Enter.

  Device . . . . . .  OPTVRT01     Name, *SERVICE, *NONE

  Automatic IPL . . . . . .  Y     Y=Yes
                                   N=No

  Prompt for media . . . .  1      1=Single PTF volume set
                                   2=Multiple PTF volume sets
                                   3=Multiple volume sets and *SERVICE

  Restart type . . . . . .  *SYS   *SYS, *FULL

  Other options . . . . . .  Y     Y=Yes
                                   N=No

  Omit PTFs . .  N          Y=Yes, N=No

  Apply type . .  1         1=Set all PTFs delayed
                            2=Apply immediate, set delayed PTFs
                            3=Apply only immediate PTFs

  PTF type . . .  1         1=All PTFs
                            2=HIPER PTFs and HIPER LIC fixes only
                            3=HIPER LIC fixes only
                            4=Refresh Licensed Internal Code

  Copy PTFs . .  N          Y=Yes, N=No
```

SERVICE EXPRESS

# Batch PTF Installs

- Sometimes you don't want to sit and watch
- Instead, use the INSPTF command in batch
- All the parms below line up with the option 8 fields

```
                    Install Program Temporary Fix (INSPTF)

Type choices, press Enter.

Product description:                    _
  Product  . . . . . . . . . . . . > *ALL___        F4 for list
  Release  . . . . . . . . . . . . > *ONLY_         *ONLY, VxRyMz
             + for more values _
Device . . . . . . . . . . . . . . > OPTVRT01__     Name, *SERVICE, *NONE
PTF apply type . . . . . . . . . . > *DLYALL_       *SRVATT, *DLYIPL, *DLYALL..
PTF omit list:                          _
  Product  . . . . . . . . . . . . > 5770SS1        F4 for list
  PTF identifier . . . . . . . . . > SI00666        Character value
  Release  . . . . . . . . . . . .   *ONLY_         *ONLY, VxRyMz
             + for more values _
HIPER PTFs only  . . . . . . . . . > *NO_           *YES, *NO
End of media option  . . . . . .   *REWIND         *REWIND, *LEAVE, *UNLOAD
Prompt for media . . . . . . . .   *SNGVOLSET       *SNGVOLSET, *MLTVOLSET...
Copy PTFs  . . . . . . . . . . . . > *YES___        *SRVATT, *YES, *NO
```

# Validating the Install

Two options.

- GO LICPGM and take option 50 – Display Install History.
- DSPLOG PERIOD((<time> <date>)) MSGID(CPC1200 CPI3600 CPD3D00 CPI3D00 CPC3600 CPI3500 CPF3500)
  - Substitute the date and time you started doing PTFs

The first is simpler but the second gives a bit more information.

- Important to do at least one of the options to be sure that PTFs are loaded and applied correctly.

# Further Validation of group fix status

- Use DSPPTF and look for any PTFs that show “Not Applied” or show an IPL action of YES.
- Use WRKPTFGRP PTFGRPLVL(*LATEST) and look for a nice clean column of “Installed”

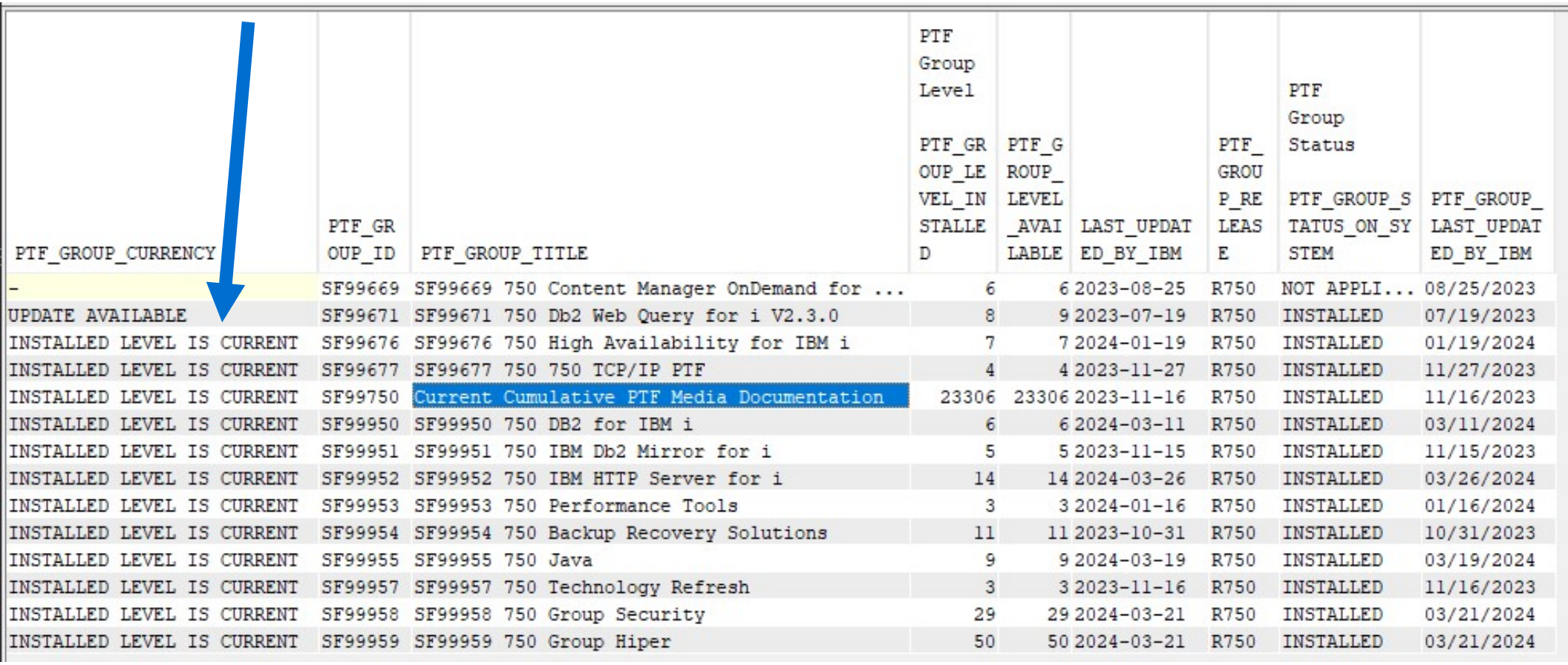
| PTF Group | Level | Status |
|---|---|---|
| SF99959 | 50 | Installed |
| SF99958 | 29 | Installed |
| SF99957 | 3 | Installed |
| SF99955 | 9 | Installed |
| SF99954 | 11 | Installed |
| SF99953 | 3 | Installed |
| SF99952 | 14 | Installed |
| SF99951 | 5 | Installed |
| SF99950 | 6 | Installed |
| SF99750 | 23306 | Installed |
| SF99677 | 4 | Installed |
| SF99676 | 7 | Installed |
| SF99671 | 8 | Installed |

# Compare installed groups to available groups

SELECT * FROM systools.group_ptf_currency;

- Dump it into a file to be used with CL or other:

CREATE TABLE qgpl.GrpPtfUpdt As (SELECT * FROM systools.group_ptf_currency
Where Ptf_Group_Currency = 'UPDATE AVAILABLE') With Data;



| PTF_GROUP_CURRENCY | PTF_GROUP_ID | PTF_GROUP_TITLE | PTF Group Level PTF_GROUP_LEVEL_INSTALLED | PTF_GROUP_LEVEL_AVAILABLE | LAST_UPDATED_BY_IBM | PTF_GROUP_RELEASE | PTF Group Status PTF_GROUP_STATUS_ON_SYSTEM | PTF_GROUP_LAST_UPDATED_BY_IBM |
|---|---|---|---|---|---|---|---|---|
| - | SF99669 | SF99669 750 Content Manager OnDemand for ... | 6 | 6 | 2023-08-25 | R750 | NOT APPLI... | 08/25/2023 |
| UPDATE AVAILABLE | SF99671 | SF99671 750 Db2 Web Query for i V2.3.0 | 8 | 9 | 2023-07-19 | R750 | INSTALLED | 07/19/2023 |
| INSTALLED LEVEL IS CURRENT | SF99676 | SF99676 750 High Availability for IBM i | 7 | 7 | 2024-01-19 | R750 | INSTALLED | 01/19/2024 |
| INSTALLED LEVEL IS CURRENT | SF99677 | SF99677 750 750 TCP/IP PTF | 4 | 4 | 2023-11-27 | R750 | INSTALLED | 11/27/2023 |
| INSTALLED LEVEL IS CURRENT | SF99750 | Current Cumulative PTF Media Documentation | 23306 | 23306 | 2023-11-16 | R750 | INSTALLED | 11/16/2023 |
| INSTALLED LEVEL IS CURRENT | SF99950 | SF99950 750 DB2 for IBM i | 6 | 6 | 2024-03-11 | R750 | INSTALLED | 03/11/2024 |
| INSTALLED LEVEL IS CURRENT | SF99951 | SF99951 750 IBM Db2 Mirror for i | 5 | 5 | 2023-11-15 | R750 | INSTALLED | 11/15/2023 |
| INSTALLED LEVEL IS CURRENT | SF99952 | SF99952 750 IBM HTTP Server for i | 14 | 14 | 2024-03-26 | R750 | INSTALLED | 03/26/2024 |
| INSTALLED LEVEL IS CURRENT | SF99953 | SF99953 750 Performance Tools | 3 | 3 | 2024-01-16 | R750 | INSTALLED | 01/16/2024 |
| INSTALLED LEVEL IS CURRENT | SF99954 | SF99954 750 Backup Recovery Solutions | 11 | 11 | 2023-10-31 | R750 | INSTALLED | 10/31/2023 |
| INSTALLED LEVEL IS CURRENT | SF99955 | SF99955 750 Java | 9 | 9 | 2024-03-19 | R750 | INSTALLED | 03/19/2024 |
| INSTALLED LEVEL IS CURRENT | SF99957 | SF99957 750 Technology Refresh | 3 | 3 | 2023-11-16 | R750 | INSTALLED | 11/16/2023 |
| INSTALLED LEVEL IS CURRENT | SF99958 | SF99958 750 Group Security | 29 | 29 | 2024-03-21 | R750 | INSTALLED | 03/21/2024 |
| INSTALLED LEVEL IS CURRENT | SF99959 | SF99959 750 Group Hiper | 50 | 50 | 2024-03-21 | R750 | INSTALLED | 03/21/2024 |

# SQL tools for PTFs

- PTFs loaded by not applied:

```
SELECT PTF_IDENTIFIER, PTF_IPL_REQUIRED, A.*
  FROM QSYS2.PTF_INFO A
  WHERE PTF_LOADED_STATUS = 'LOADED'
  ORDER BY PTF_PRODUCT_ID;
```

- PTFs missing from installed groups:

```
SELECT * FROM SYSTOOLS.GROUP_PTF_DETAILS
  WHERE PTF_STATUS <> 'PTF APPLIED'
  ORDER BY PTF_GROUP_NAME;
```

SERVICE EXPRESS

## Are any of my PTFs defective?

Go QMGTOOLS/MG

Option 24 - PTF Menu

Option 3 - Compare DEFECTIVE PTFs from IBM

Defective PTFs not superseded on system: COMMON1

---

MF70457 MA50037 5770999 MF70688
SI81255 SE79238 5770SS1 SI82518
SI80771 SE79143 5770SS1 SI82487

# OR you could get the same from SQL

select * from systools.defective_ptf_currency;

| PARTITION_NAME | HOST_NAME | SERIAL_NUMBER | OS_RELEASE_LEVEL | DEFECTIVE_PTF | APAR_ID | PRODUCT_ID | FIXING_PTF |
|---|---|---|---|---|---|---|---|
| COMMON1 | Common1.Frankeni.com | 780EB30 | V7R4 | MF70457 | MA50037 | 5770999 | MF70688 |
| COMMON1 | Common1.Frankeni.com | 780EB30 | V7R4 | SI81255 | SE79238 | 5770SS1 | SI82518 |
| COMMON1 | Common1.Frankeni.com | 780EB30 | V7R4 | SI80771 | SE79143 | 5770SS1 | SI82487 |
| COMMON1 | Common1.Frankeni.com | 780EB30 | V7R4 | MF67678 | MA48544 | 5770999 | UNKNOWN |

Why four here and three from MGTools?

The above is not standard (yet?)

Get it from github, compliments of Scott Forstie:

https://gist.github.com/forstie/cfe2636bf9b13d175b3c830aa1527165

SERVICE EXPRESS

# Agenda

- Problems, fixes, enhancements?
- Fix Information a quick review
- What to PTF
- PTF Stati and Life Cycle
- PTF Groups
- To PTF or not to PTF
- Fix Central
- Load and Apply
- Customize Defaults and using Virtual Media

# Customizing PTF Defaults

## CHGSRVA allows customizing some aspects of PTF behavior

- PTFINSTYP parm sets the default install type.
  - *DLYIPL: Set all PTFs for delayed IPL and automatically IPL
  - *DLYALL: Set all PTFs for delayed IPL but do NOT IPL
  - *IMMONLY: Only immediate PTFs are applied, delayed PTFs are omitted. No IPL is done.
    - NOT recommended for use with CUMEs
  - *IMMDLY: Immediate PTFs are applies, delayed PTFs are set for delayed apply but NO IPL is done.
    - NOT recommended for use with CUMEs
- CPYPTF parm sets default for copying PTFs
  - *YES: PTFs and cover letters are copied to *SERVICE (SAVFs) when loaded from Optical or Tape
  - *NO: They ain't.

# Customizing PTF Defaults

## CHGSRVA additional PTF behaviors:

- PTFGRPLVL parm sets the number of previous group levels kept for WRKPTFGRP.
  - A simple integer value with a default of 2
  - *NOMAX says keep them all
- ORDPTFAUTO parm sets up automatic PTF order and download
  - *YES: PTFs and cover letters are downloaded to QGPL ans *SAVFs monthly.
  - *NO: They ain’t.
  - Job QORDPTFGRP is added to IBM Job Scheduler.
    - You may modify the schedule of course!!

# Customizing PTF Defaults

## CHGSRVA more additional PTF behaviors:

- ORDPTFGRP (Order PTF Groups) parm indicates which groups should be ordered if automatic downloads are selected.
- Valid values are:
  - *CUMPKG
  - *ALLGRP
  - *HIPERGRP
  - *DB2GRP
  - *BRSGRP
  - *JVAGRP
  - *HTTPGRP
  - *PFRGRP
- SNDPTFORD is used for the downloads so this must be configured for your system in order for the download to work.

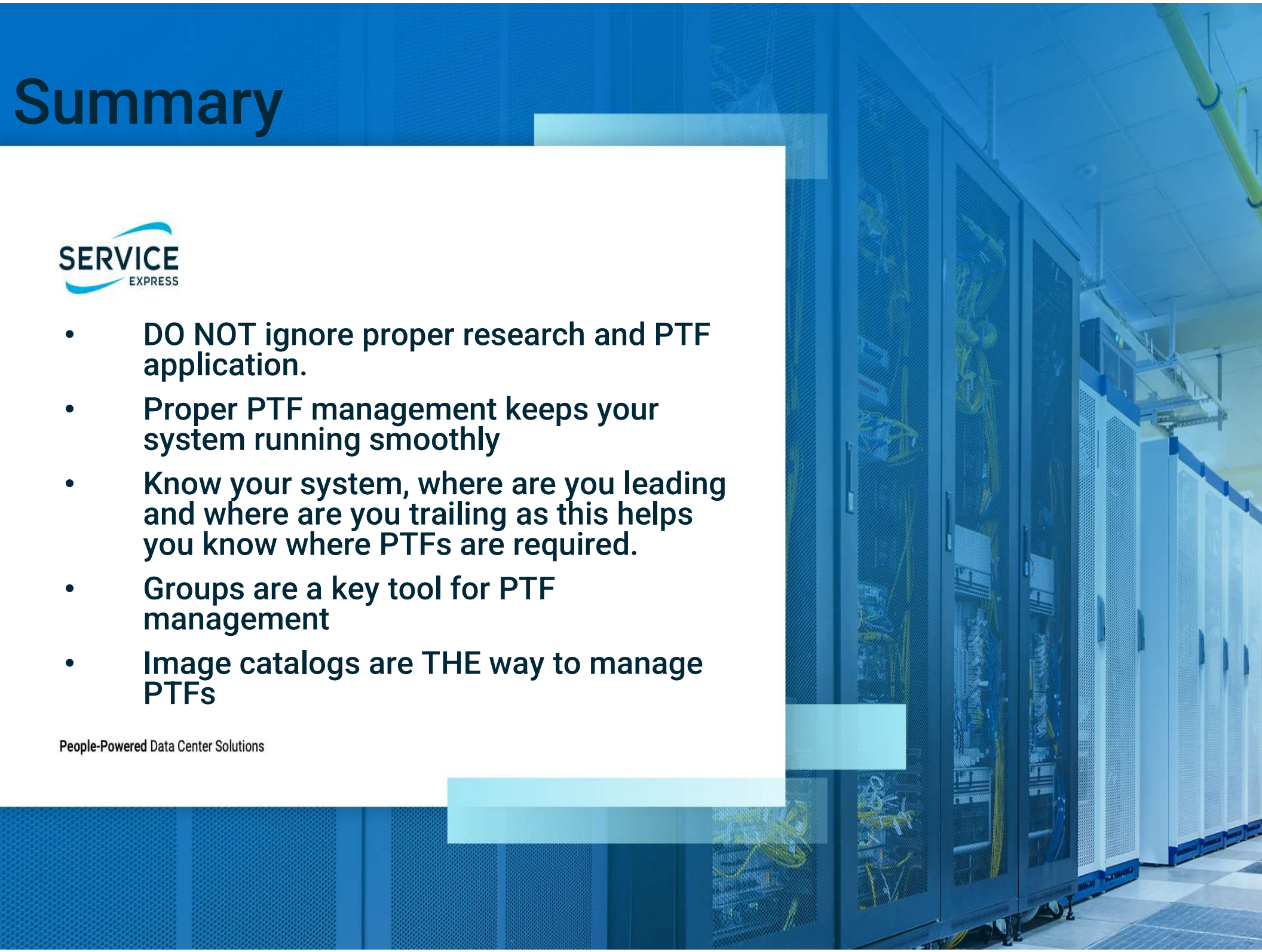
# PTF Cleanup

- UPDPTFINF will scan all the *SAVF objects in QGPL and sync the PTF table with the objects found.
  - Sometimes you see them there, but ‘not found’ when you use device *SERVICE
- Too many PTFs in *SAVF in QGPL is bad for backup and disk usage.
  - Note: You MAY want to keep these around if you use management central distribution.
- DLTPTF can be used to clean up PTF *SAFVs for PTFs that are already applied.
  - Note that DLTPTF does NOT delete PTFs, only the *SAVFs

# Virtual Media Advantages

- Never touch plastic.
- No need to actually be on site.
- Fantastically faster than any plastic disk.
  - Seriously you can’t see the numbers go by on i5 systems!
- Virtual Drives never need cleaning!
- Un-scratchable Media!
- No I/O errors during the PTF load as these are detected at the time of load or VFYIMGCLG.
- Easy to copy the images to another system or partition. (under 20 seconds per CD Image across GbE with FTP.)
- As of V6R1 THEY DO NOT NEED TO BE COPIED!!
  - See instructions in the extended portion of the Handout!

# Summary



- DO NOT ignore proper research and PTF application.
- Proper PTF management keeps your system running smoothly
- Know your system, where are you leading and where are you trailing as this helps you know where PTFs are required.
- Groups are a key tool for PTF management
- Image catalogs are THE way to manage PTFs

# Managing IBM i Fix Information

"What applications have you brought to IBM i today?"

## Contact Information:

Larry Bolhuis
IBM i Infrastructure Advisor
lbolhuis@serviceexpress.com
serviceexpress.com

# Appendices

- Using Virtual Media
- Getting PTF Save files recognized to the PTF process
- Fix Central PTF Download flow

## Virtual Media Interface (VMI)

- VMI is the Rochester term for Virtual Optical and Virtual Tape.
- Essentially they have created a virtual bus and a virtual IOP to which virtual optical drives (CD and DVD) and virtual tape drives.
- WRKHDWRSC *STG and observe the FC #268C IOP and FC #6B02 storage controller.
  - Option 9 against the FC #6B02 will show each of the Virtual Optical and Virtual Tape drives on your system.
    - Virtual Optical FC #632B
    - Virtual Tape FC #63B0

## Creating Virtual Devices

- Optical drive

CRTDEVOPT DEVD(OPTVRT01) RSRCNAME(*VRT) TEXT('Virtual Optical drive # 01')

  - Virtual Optical drives are DVD-RAM type.
  - Support started in V5R2 and V5R3 allowed multiple drives.

- Tape drive

CRTDEVTAP DEVD(TAPVRT01) RSRCNAME(*VRT) TEXT('Virtual Tape Drive #01')

  - Sort of a cross between a tape drive and a tape library.
  - Works like a tape drive, except if you specify a volume ID and that ID exists in the image catalog it will ‘auto load’ that volume.
  - Support started in V5R4 and allows multiple drives.

- Don’t forget to vary them on!

# But what goes into a virtual drive?

- Virtual Media of course, hence the name!
  - For the purpose of PTFs the media are created by IBM.
    - Downloaded with methods already described.
  - For other uses the media can be created from physical media or created blank and written to.
- Virtual Media are stored in Image Catalogs
  - The Image catalog object lives in QUSRSYS library
    - It is just a list of the images and the directory in which they live.
  - The binary Images of the disks are stored in the IFS directory specified in the Catalog obect.

# How to build the catalog

CRTIMGCLG IMGCLG(V7R5PTF) DIR(‘/IBMi/v7r5/ptf') TYPE(*OPT)
CRTDIR(*YES) TEXT(‘V7R5 PTF Images')

- Creates the catalog object and the directory.
- Use whatever tools you want to get the images into the directory specified above: FTP and the Netserver are the most likely suspects.
- Normally you would create the catalog before loading any images however this is not required unless you will be copying from physical media.

## Adding media to the catalog

- First method is to import the contents of a physical CD or DVD
  - ADDIMGCLGE IMGCLG(V7R5PTF) FROMDEV(OPT01)
  - Interestingly the CD/DVD drive will eject once the copy is complete.
  - Size of the IFS object corresponds to the amount of information on the disk.
    - Time required is also based on this amount.
    - DVD's take a LOT longer (DUH!)
- My favorite option is to FTP in the catalog images to the appropriate directory and then:
  - ADDIMGCLGE IMGCLG(V7R5PTF) FROMFILE('hiper02_1.bin') TOFILE(*fromfile)
  - This requires the file 'hiper02_1.bin' is in the directory and takes about 1 second because it is only adding the catalog entry.

## Adding media - Continued

- Another option if you have a QFileSvr.400, NFS mount, or QNTC share that contains the image files:
  - ADDIMGCLGE IMGCLG(V7R5PTF) FROMFILE('/some/nfs/mounted/dir/hiper02_1.bin') TOFILE(*fromfile)
  - This will copy the file from the remote file system and add it to the catalog.
  - Time depends on speed of connection and size of file.
- Additional options:
  - You may replace existing images with REPLACE(*YES) parm
  - You may specify the sequence number in the catalog with the IMGCLGIDX(nn) parm
  - You may add text as: TEXT('This is HIPER group 02 disk 1')

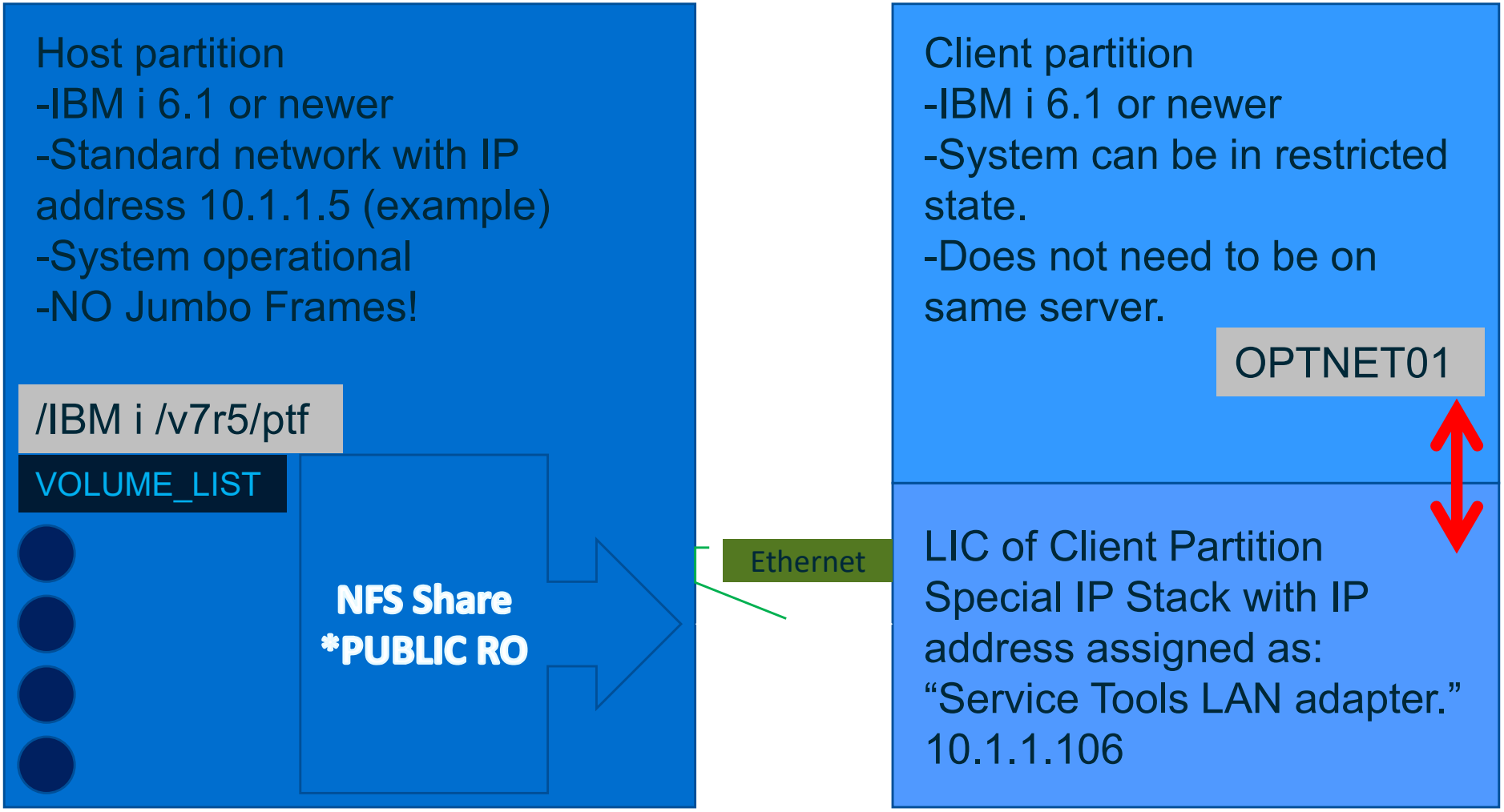
# Sharing Virtual Media

- Starting with POWER6 links VSCSI connections can be created between IBM i partitions.
  - In i 6.1 this connection passes along any optical devices
    - This includes virtual optical.
  - In i 7.1 IOPLess tape devices are also passed along.
    - This includes virtual tape.
- In WRKHDWRSC *STG these appear as FC #290A Storage Controller.
  - Option 9 against the FC #290A will show each of the Virtual Optical and Virtual Tape drives on your system.
    - Virtual Optical FC #632C
    - Virtual Tape FC #63B0
- In i 6.1 the optical ‘disks’ must be manually changed on the host partition
  - With i 7.1 they auto-load just as they do on the local partition.

# Newest (and coolest!) Sharing.

- In i 6.1 IBM introduced network based virtual optical drives.
- NFS is used on a ‘host’ partition to hold all the image catalog objects.
  - A VOLUME_LIST file must exist in the directory with the images and contain the names of the images.
  - This is a simple text file (EDTF) But must be CCSID 819 (F15 in EDTF)
  - The Image Catalog isn’t actually used on the host and the images need not be mounted in an optical drive on the host.
- A service tools (AKA ‘LAN Console’) interface is used on client partitions to reach across to and load the images.
  - An active Ethernet connection outside of Service Tools is not required while using network based virtual optical.
- A virtual optical drive is created on ‘client’ partitions that utilizes the service tools interface.
- This means no more copying images from partition to partition!!!
- To utilize these for UPGRADES a POWER6 or newer CPU is required.
- Host and Client do NOT need to be on the same machine or the same release.

# Logical diagram of Network Optical



# Service Tools LAN Configuration

```
Display LAN Adapter Configure On Dasd                    System:   V7R1DEV

Adapter type  . . . . . :   268C
Adapter serial number . . . :   00-00000

Internet address  . . . . . :   10.1.1.106
Gateway router address  . . :   10.1.1.5
Subnet mask . . . . . :   255.255.255.0
Host name for service tools :   V71DEVLANCON
Node  . . . . . :   000000000000
Duplex  . . . . . :   AUTO
Network speed . . . . . :   AUTO

Ethernet standard . . . . . :   ETHV2
```

← In this case a Virtual Ethernet

← Unique and in Same subnet as host partition

← Optional if Same subnet

<------- Leave 0s to use adapter MAC

- Needed only on Client Partition or system.
- Host partition only needs standard IBM i IP address to host NFS.

SERVICE EXPRESS

## Host side setup

Once the images are in the IFS on the host, share them with these steps:

- Create VOLUME_LIST file:

- Set proper permissions:

- Start NFS

- Share with NFS:

# Network based Optical Device

```
Crete Device Desc (Optical) (CRTDEVOPT)

Type choices, press Enter.

Device description . . . . . > OPTNET01      Name
Resource name  . . . . . .   *VRT          Name, *SAME, *NONE...
Device type  . . . . . .     *RSRCNAME     *RSRCNAME, 632A, 632B..
Local internet address . . . .   *SRVLAN       *SAME, *NONE, *SRVLAN
Remote internet address  . . . .   '10.1.1.5'
Network image directory  . . . .   '/ibmi/v7r5/ptf'
User ID number . . . . . .   0             0-4294967295, *SAME
Group ID number  . . . . . .   0             0-4294967295, *SAME
Online at IPL  . . . . . .   *NO           *SAME, *YES, *NO
Message queue  . . . . . .   QSYSOPR       Name
  Library  . . . . . .     QSYS          Name, *LIBL, *CURLIB
Text 'description' . . . . . .   'Virtual Drive for PTFs'
```

- Now vary it on.
- If you get code 0020 instead of ‘Varied On’ you did something wrong. ☹

SERVICE EXPRESS

## Using the virtual media

- Load the catalog into the virtual drive.
  - LODIMGCLG IMGCLG(V7R5PTF) DEV(OPTVRT01) OPTION(*LOAD) WRTPTC(*DFT)
  - Write protect is always *YES for IBM i and PTF media.
  - The first entry in the catalog will be available and can be seen with WRKOPTVOL or WRKLNK ‘/QOPT/*’
- Verify and Sort the catalog

VFYIMGCLG IMGCLG(V7R5PTF) TYPE(*PTF) SORT(*YES)

  - Basically makes sure the images are ‘readable’ and groups with multiple disks are in ascending sequence.
- Finally use the OPTVRT01 drive in PTF menu option 8.

# PTFs in Save Files?

- Why would you want them to hang around?
  - 1) I sell disk.
  - 2) If you want to distribute with Management Central you must have them on the source system.
  - 3) If you want to use SAVSYSINF you need the PTF Save files on your system that have been applied since your last SAVSYS.
    - SAVSYSINF does not require a dedicated system.

## PTFs in Save Files, but…

- Using WRKOBJ you can find all the save files in QGPL
  - such as QSI12345
- Using DSPPTF option 1 shows Save File *NO
- This means that from an object standpoint the files are there however PTF management doesn't have the data recorded.
- To correct this condition run the UPDPTFINF command (no parameters)

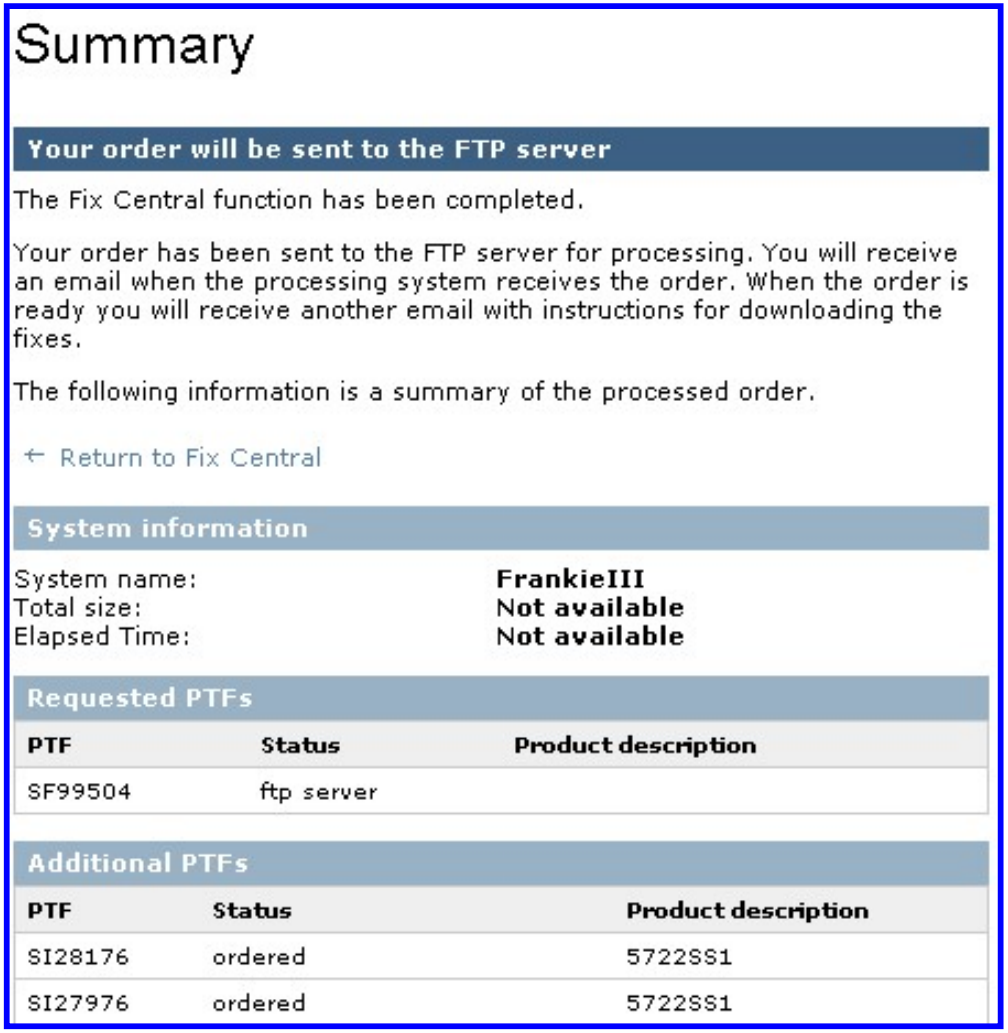
# Fix Central PTF Downloads

- FTP method
- Immediate Method

SERVICE EXPRESS

# FTP Order Summary

- All PTFs that got ordered are listed
- Size is not available
- Three emails follow
  - Notification of reciept
  - Instructions for downloading and placing the images on your system
  - Password for download



Summary

**Your order will be sent to the FTP server**

The Fix Central function has been completed.

Your order has been sent to the FTP server for processing. You will receive an email when the processing system receives the order. When the order is ready you will receive another email with instructions for downloading the fixes.

The following information is a summary of the processed order.

← Return to Fix Central

**System information**

| | |
|---|---|
| System name: | **FrankieIII** |
| Total size: | **Not available** |
| Elapsed Time: | **Not available** |

**Requested PTFs**

| PTF | Status | Product description |
|---|---|---|
| SF99504 | ftp server | |

**Additional PTFs**

| PTF | Status | Product description |
|---|---|---|
| SI28176 | ordered | 5722SS1 |
| SI27976 | ordered | 5722SS1 |

SERVICE EXPRESS

# FTP PTF email number 1

- This note comes from bldml@vnet.ibm.com
  - White-list this address if it's getting blocked.
- The only useful thing is the link to order status.
- I delete these immediately. ☺

This email is being sent by International Business Machines Corporation following your recent request for Corrective Services.

International Business Machines Corporation
ISC/CCSS
6300 Diagonal Highway
Boulder, CO 80301, USA

<some legal schtuff omitted>

SDF Order# B8542171 was Received at 08:26:37 06/06/2009
*-*-*-*-*-*-*-*-*-* Internet Webpage *-*-*-*-*-*-*-*-*-*
If you have access to the Internet, IBM has a webpage
available for you to check your order's status. The URL
is- https://www14.software.ibm.com/webapp/ssos/order_status

# FTP PTF email number 2 and 3

- This comes from CCSSBLDR@bldisdmc.vnet.ibm.com
- Note the “Directory on Server” contains the FTP directory entered when ordered.
- Note the name of the “Files to get” is based on the name entered.
- Also included are a list of ALL ptfs delivered
- In the second email they give you everything except the password, while the third one contains ONLY the password

```
INFORMATION YOU WILL NEED TO RETRIEVE YOUR ORDER

 Your userid          --> BC982S
 FTP server           --> delivery01-bld.dhe.ibm.com
 Transfer type        --> ascii/binary
 Directory on server --> v7r5/C
 Files to get         --> ftpdb1.txt
                      --> ilstdb1.txt
                      --> db1_1.bin
```

```
INFORMATION YOU WILL NEED TO RETRIEVE YOUR ORDER

 Your password        --> f9s97s051t4L0Uf
```

SERVICE EXPRESS

## PTF Script for IBM i

- This is the CL Program, I submit it to batch!
  - Uses QGPL/FTPCMD for FTP cmds,  QGPL/FTPLOG for logs.
    - Both are source files.

```
PGM         PARM(&IPTF)

DCL         VAR(&IPTF) TYPE(*CHAR) LEN(10)

OVRDBF      FILE(INPUT) TOFILE(QGPL/FTPCMD) MBR(&IPTF)
CLRPFM      FILE(QGPL/FTPLOG) MBR(&IPTF)
MONMSG      MSGID(CPF0000)
OVRDBF      FILE(OUTPUT) TOFILE(QGPL/FTPLOG) MBR(&IPTF)

FTP         RMTSYS('127.0.0.1')
```

This is the FTP Cmd string

- Line 7 is where images go in this case. Adjust to taste.
- Line 4 is what changes from the email on last slide.
- Note secopen required now (line

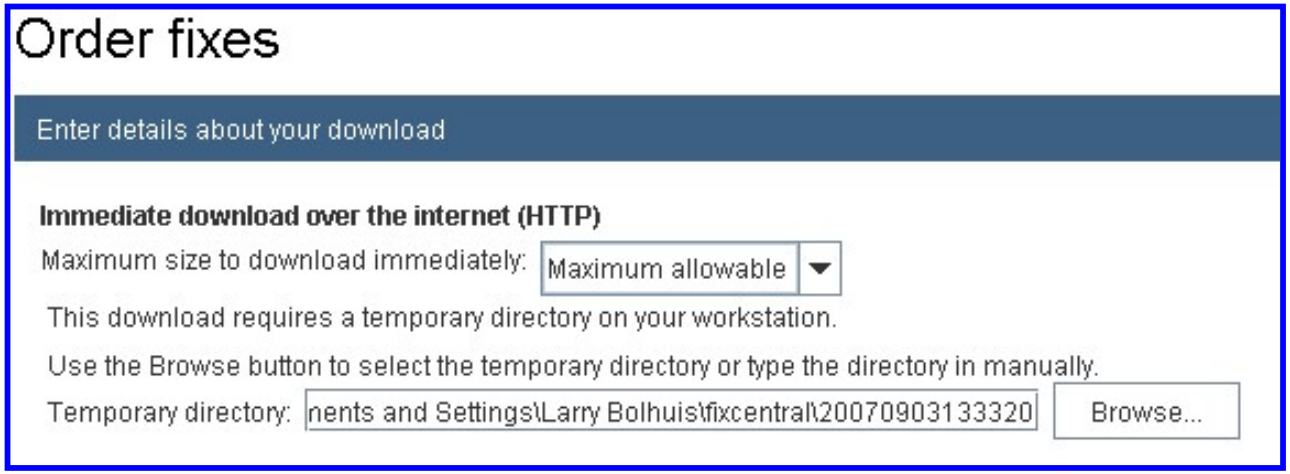
```
1   wont work
2   close
3   secopen delivery01-bld.dhe.ibm.com
4   user BC982S    f9s97s051t4L0Uf
5   namefmt 1
6   cd v7r5/C
7   lcd /ibmi/v7r5/ptf
8   binary
9   mget *.bin
10  quit
```

SERVICE EXPRESS

## Immediate Download

Indicate the maximum size you'll accept.

You name the temporary location on your PC



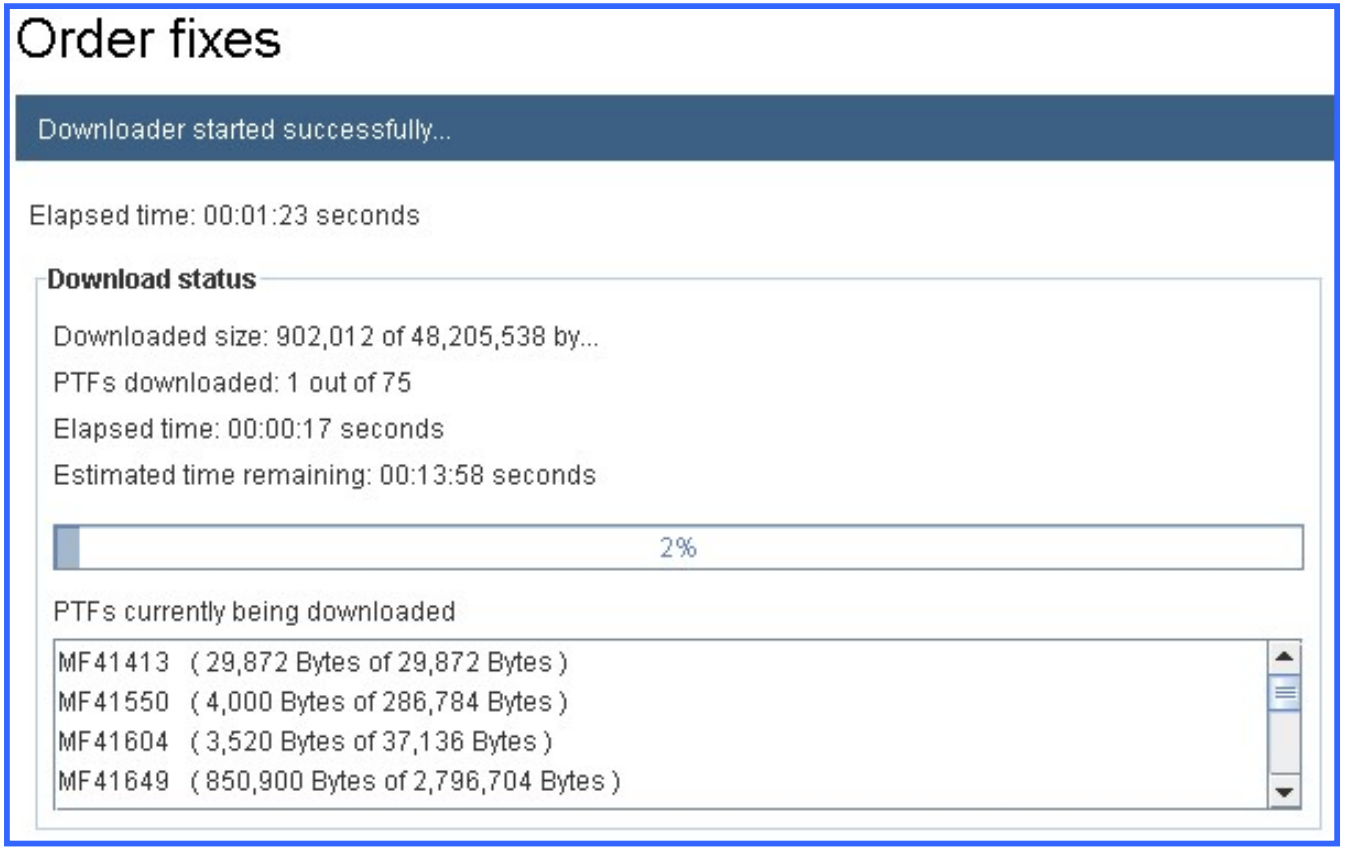

Note that PTFs can get large so two things are true:

- 1) Have enough space on the PC!
- 2) Have a FAST connection to your *i*!

SERVICE EXPRESS

# Immediate download Monitor

- Note that the PTFs are temporarily stored on your PC
- You must stay Connected to your *i* during the entire down-load



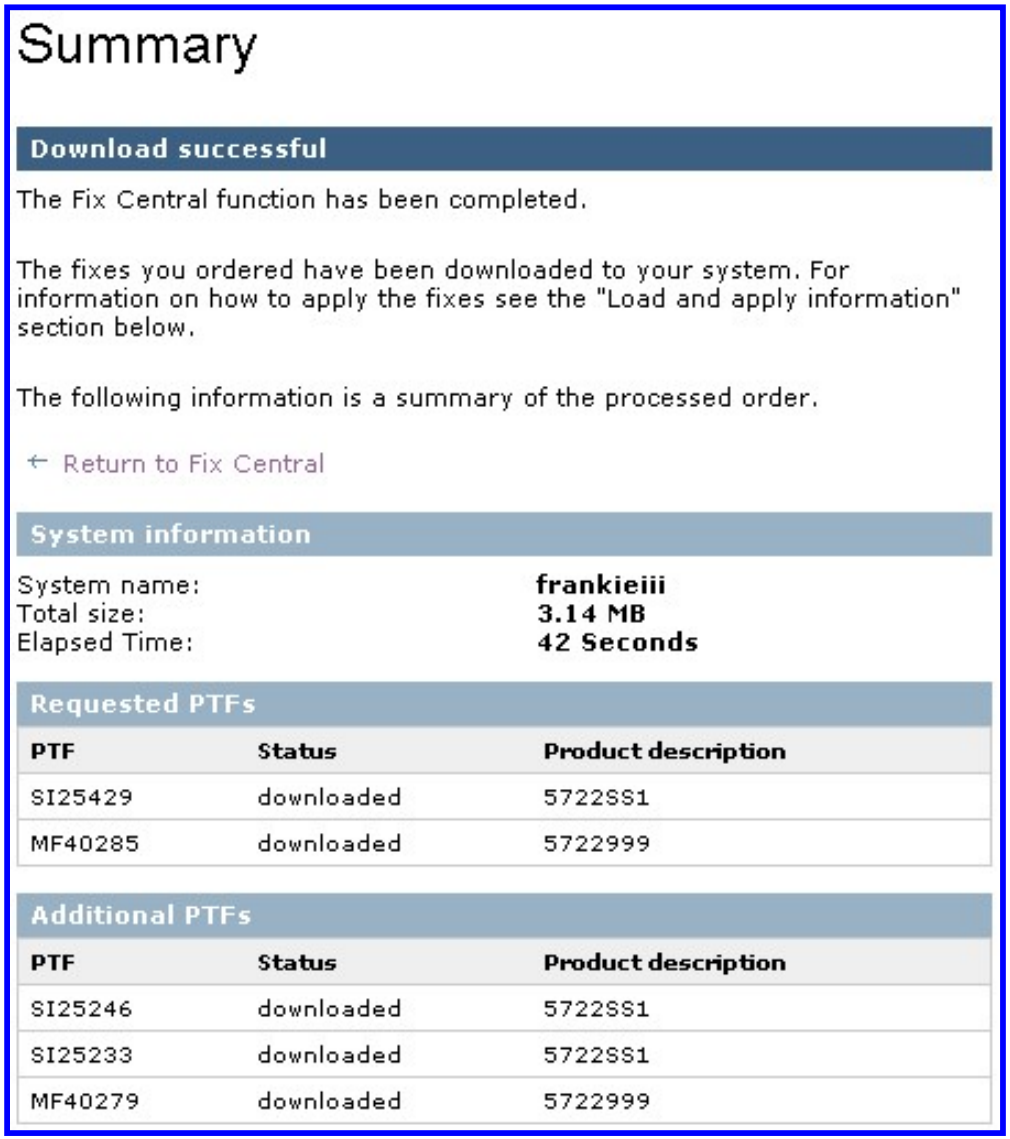

SERVICE EXPRESS

# Immediate Order Summary

- All PTFs that were

Downloaded are listed

- Total Size and time are shown.
- As with ALL Fix Central PTFs you must apply them yourself
- The PTFs here are in *SAVFs in QGPL while FTP method gets you images



Summary

**Download successful**

The Fix Central function has been completed.

The fixes you ordered have been downloaded to your system. For information on how to apply the fixes see the "Load and apply information" section below.

The following information is a summary of the processed order.

← Return to Fix Central

**System information**

| | |
|---|---|
| System name: | **frankieiii** |
| Total size: | **3.14 MB** |
| Elapsed Time: | **42 Seconds** |

**Requested PTFs**

| PTF | Status | Product description |
|---|---|---|
| SI25429 | downloaded | 5722SS1 |
| MF40285 | downloaded | 5722999 |

**Additional PTFs**

| PTF | Status | Product description |
|---|---|---|
| SI25246 | downloaded | 5722SS1 |
| SI25233 | downloaded | 5722SS1 |
| MF40279 | downloaded | 5722999 |

SERVICE EXPRESS