Keep Your Firmware Firm

By John Still

So the new year rolled around, spring is almost here, and you are wondering why you can't get your belt done up in the same notch as you did a few months ago. Maybe all of those second helpings on cold winter evenings weren't such a good idea after all. Instead of tossing out all those fitness club flyers you get in the mail, you are actually starting to read them because you know you have to do something quick before you need a bigger belt altogether.

We've all been told before that regular exercise is the key to a healthy body and spirit. The same holds true for your System i5. Still, many shops adopt the "if it ain't broke, don't fix it" attitude. Sadly, these are the systems that end up in the emergency room for "unscheduled" maintenance.

Implementing a maintenance strategy for your i5 will help you stay out of the emergency room and, to be honest, just makes good business sense. Would you rather have short, scheduled outages for maintenance, or unscheduled, middle of the day scrambles with panic calls to IBM support and users lighting up your help desk lines?

Recommendations for Server Maintenance

When it comes to server maintenance, IBM recommends the following:

1. Keep your server on a supported release level.
2. Stay current with the latest available fix packages:
   - Cumulative PTF Packages
   - HIPER Group PTFs
   - Database Group PTFs
   - Other Group PTFs as related to your environment
   - HMC and server firmware fixes

Most shops I have visited tend to stay on supported release levels. Falling behind in OS levels could make for more complicated (and costly) upgrades in the future as you may have to do an interim upgrade before you can get to the new release level. If you get to the point where you are running an unsupported release, getting help after your system crashed will be difficult. IBM's technical support databases are always pushing the information on the unsupported releases out to make room for the APARS and Knowledge Base documents for the supported releases. You might find a hit doing a Google search on the error code…maybe. If you find yourself in this position, contact us here at Mid-Range and we will do our best to help resolve the problem. Helping you put together a strategy to get to the latest release and fix levels would be our top priority.

Staying current with the latest available fix packages may be desirable but for most shops, having to IPL their system with a frequency that matches IBM's PTF updates is just not possible. As far as Cumulative PTFs and other Group PTF packages, I think a quarterly maintenance schedule is sufficient.

The High Impact and Pervasive Problems (HIPER) bulletin lists new PTFs every week. Again, finding a weekly maintenance window to stay current with the HIPER bulletin is nearly impossible for most. I would still recommend all shops subscribe to this bulletin and review it for any critical issues that have been dis-

covered. You may see something that may impact your business…a defective PTF or a DASD microcode patch. In fact, the most recent HIPER bulletins have listed PTFs required to handle the changes this year to Daylight Saving Time. By all means, schedule time to take care of these issues. Scheduled versus unscheduled is always the better way to go. You can subscribe to the HIPER bulletin at no charge. Just send an email to hiper@ca.ibm.com and include your IBM customer number.
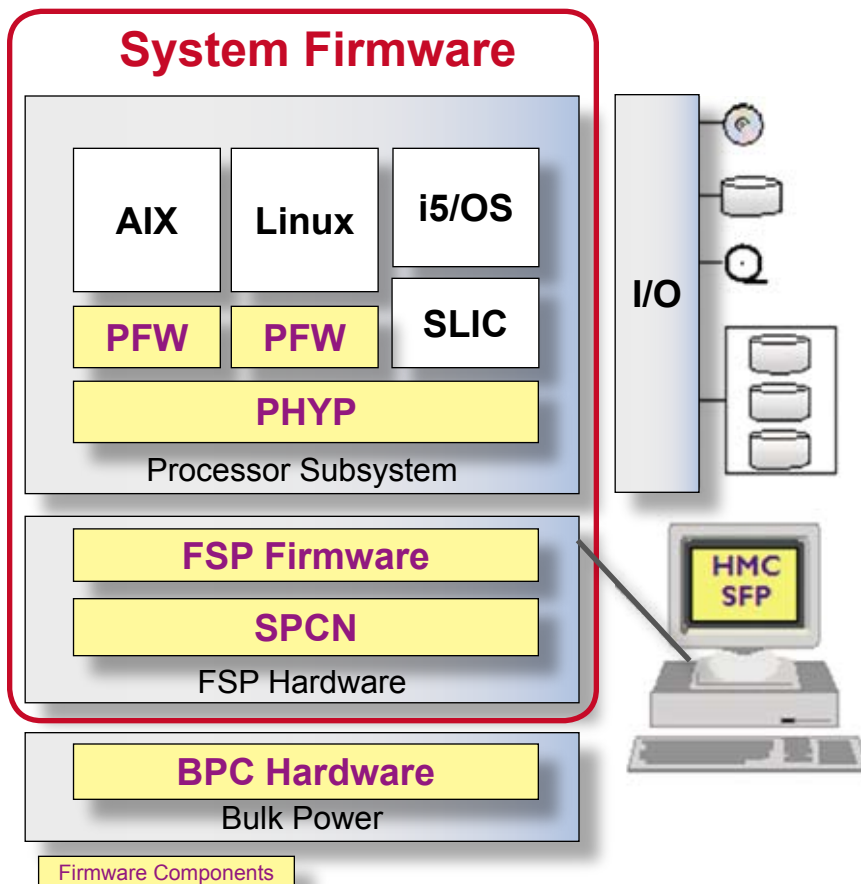
What is firmware?

Now, assuming you have been a good little IT manager and have kept your iSeries on a current OS level and you have also been diligent by applying PTFs on a quarterly basis, along comes a shiny new System i5 into your shop. How does this change your maintenance strategy? The introduction of the Hardware Management Console (HMC) and i5 firmware will require some minor but important adjustments.

Let us first discuss the concept of firmware as this is something new that was introduced with the i5 hardware lineup. The simple definition of firmware is it is low level software that controls the system hardware.

As you can see in this diagram, firmware on the System i5 is more complex than the simple definition leads you to believe. Here is a brief description of each of the firmware components:

- **FSP** is the Flexible Service Processor firmware. This provides diagnostics, initialization, configuration, run-time error detection, and correction.
- **PHYP** is the Power Hypervisor firmware. Based

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System Firmware

AIX Linux i5/OS

PFW PFW SLIC

PHYP

Processor Subsystem

FSP Firmware

SPCN

FSP Hardware

BPC Hardware

Bulk Power

I/O

HMC SFP

Firmware Components

on the iSeries hypervisor, this provides VLAN, virtual I/O, and subprocessor partitioning support.
- **PFW** is the Partition Firmware that supports the pSeries Power Architecture Platform Requirements+ (PAPR+) interface.
- **HMC** is the Hardware Management Console firmware. This provides converged platform configuration, management, and services.
- **SPCN** is the System Power Control Network firmware. This interfaces with bulk power for power monitoring and control.
- **BPC** is the Bulk Power Control firmware that controls each bulk power unit in CEC and towers. This firmware is specific to the i595 system.

As with OS and System Licensed Internal Code (SLIC) PTFs, updating

firmware will fix known problems with these components, add new function, and keep the server and HMC operating at their peak.

Firmware Update Policy

There are many ways to order firmware for your System i5. You can use an HMC, order a CD, use the SNDPTFORD command from a green screen, or go to the Fix Central web site. Before you do this however, you need to know what the firmware update policy is set to on your server. If your system is not controlled by an HMC, the firmware update policy is set to "Operating System". This simply means that you would order the Firmware fix as you would any other PTF using the SNDPTFORD command or through Fix Central. Firmware fixes and updates are also included in Cumulative PTF packages and HIPER Group PTFs…when you load and apply these, you are also applying firmware fixes.

The only other setting for the firmware update policy is "HMC". If your server is controlled by an HMC

... firmware

this is the default setting. You could change the setting to "Operating System" but you would also have to designate a "Service Partition" to act as the vehicle for loading and applying the fixes. If you only have a single partition, this is not a problem. When you have multiple partitions, this is not recommended since applying Cumulative or HIPER PTFs on the Service Partition that has firmware fixes included **WILL** force a shutdown of the entire System i5 as firmware fixes are applied. If you are not prepared, this could mean abnormal shutdowns of all your partitions. You have more control over this when the HMC manages the firmware.

How can you tell if LIC is HMC managed or operating system managed on your i5? One way is to try to start the HMC's **Change Internal Code Wizard**:

- Click on Licensed Internal Code Maintenance on the HMC's Navigation area
- In the contents area, click on Licensed Internal Code Updates.

- Select Change Licensed Internal Code for the Current Release.

You will receive the message "*The requested action is not allowed. One or more targets are configured for LIC updates through the operating system.*" if the operating system has LIC update control.

The only way to change this setting is through the Advanced System Management Interface (ASMI) which you access from the Service Applications menu on the HMC or by using the updlic command from the HMC command line interface.

What Firmware Fixes are Available?

Now that you know what your firmware update policy is set to, you can go to IBM's Recommended Fixes site and see what firmware fixes are available:

http://www-912.ibm.com/s_dir/slkbase.nsf/recommendedfixes

Select the OS level you are running, and then select the Server Firmware link base on the setting

of the firmware update policy. Note - if your firmware update policy is set to Operating System and you are running V5R3 OS, you will need to know if your SLIC level is V5R3 or V5R3M5 as the firmware fixes are different. Type DSPSFWRSC on a command line and press enter. Press F11 and you will see the installed release level of the SLIC.

It is important to note that in most cases the HMC code level needs to be updated to the most recent level prior to updating firmware. Fortunately, the HMC code can be updated without disrupting running partitions and usually takes less than an hour to complete. HMC code can be ordered directly from the HMC if it is on a public network with access to the Internet. You can also order CDs from the Recommended Fixes or Fix Central sites.

To determine the current level of HMC code, click the help tab at the top of the HMC GUI screen and then select "About HMC".

To determine the current level of firmware installed using an HMC, click on Licensed Internal Code Maintenance on the HMC's Navigation area:

- In the contents area, click on Licensed Internal Code Updates.
- Select Change Licensed Internal Code for the Current Release.
- Select the managed system (your i5).
- Select View System Information and click OK.
- Select None for the LIC repository and click OK.

For servers without an HMC you need to sign on to System Service Tools (STRSST) then select the following:

- 1. Start a service tool
- 4. Display/alter dump
- 1. Display/alter storage
- 2. Licensed Internal Code (LIC) data
- 14. Advanced analysis
- Put a 1 next to Flashlevels and press enter

IBM® System i™ family

- Press enter again to see the installed level of firmware

Fixpacks VS Releases

There are two options available to change the firmware running on your server:

1. Upgrade to a new release. This is always a disruptive process as the i5 will be shutdown, powered off, and then reactivated again.

2. Update the existing Firmware running on the system. Updates are also called "Fixpacks". If your system is managed by an HMC and the Firmware Update Policy is set to "HMC", updating the existing Firmware will in most cases be a concurrent process that will not disrupt partition operations. The instructions for the Firmware update will indicate if the process will be disruptive or not. Remember, if your system is not managed by an HMC or if your Firmware Update Policy is set to "Operating System", installing Fixpacks will always be a disruptive process so you will need to plan accordingly.

If the firmware instructions indicate the process will be disruptive, do a normal shutdown on all your partitions. Once the partitions are in a powered off state, proceed with the firmware upgrade or update.

On an HMC managed system, go to the Licensed Internal Code Updates section on the HMC to install Firmware. Take the option to "Upgrade Licensed Internal Code to a new release" task for release updates or "Change Licensed Internal Code for the current release" task if you are installing a Fixpack.

Once the upgrade has completed, you can right click on each of your partitions, activate them, and resume operations. That's all there is to it.

In a Nutshell

Planned versus unplanned, scheduled versus unscheduled… this is the mantra. In the meantime, where did I put all those fitness club flyers? **M-R**