Power Systems
Firmware Overview
Primary Power Firmware Components

- Following are the primary firmware/microcode components and are listed in the recommended order of installation:
  - HMC Code
  - System Firmware
    - Bulk Power Code (BPC) (applicable to some models)
  - Device (I/O) microcode
Firmware Components

POWER6 system firmware (packaged together):
  • The Flexible Service Processor (FSP) provides diagnostics, initialization, configuration, run-time error detection, and correction.
  • The Power Hypervisor (PHYP) provides VLAN, virtual I/O, and partitioning support.
  • The Partition Firmware (PFW) supports the System p Power Architecture Platform Requirements+ (PAPR+) interface.
  • The System Power Control Network (SPCN) interfaces with bulk power for power monitoring and control.

The Bulk Power Control (BPC) firmware controls each bulk power unit in the CEC as well as within power expansion frames for some models.

The Hardware Management Console (HMC) firmware provides configuration, management, and service functions on HMC controlled systems.
Release Level -vs- Service Pack

- **Release Level (RL):** A Release Level is the term for firmware that is released to support major new function (introduction of new hardware models and significant function/features enabled via firmware).
  - A Release Level is supported with Service Packs for two years following GA.
  - Upgrading to a new Release Level is **disruptive**.

- **Service Pack (SP):** A Service Pack contains a group of fixes applicable to a specific Release Level. Service Packs primarily contain firmware fixes however, minor function changes may be released within a service pack.
  - Updating to a new Service Pack within a Release Level is usually **concurrent**.
  - Service Packs are 'cumulative'. 
Fix Types within a Service Pack

- Service Packs (SP) will contain the following types of fixes:
  - **Concurrent** - A fix or set of fixes which can be applied and activated concurrently (i.e., no system IPL is required). A concurrent Service Pack can be installed and activated on a running system.
  - **Deferred** - A fix which can be installed concurrently but will remain 'pending' until the next system re-boot (Power on Reset (POR)).
    - A Service Pack containing deferred fixes can be installed concurrently but only the concurrent fixes will be active. The deferred content will require a system re-boot (POR) to activate.
  - **Partition Deferred** – A fix that can be installed concurrently but will only become active when a partition reactivate is performed.
  - **Disruptive** – A fix that requires a system re-boot (POR) to activate. Service Packs containing a disruptive fix(es) will cause the entire Service Pack to be disruptive.
    - Deferred, Partition Deferred and Disruptive content is identified in the firmware README.
Firmware Update / Upgrade Recommendations

- General recommendation is to plan for twice per year microcode maintenance.
  - Firmware maintenance frequency can be tailored to your environment. Schedule your upgrade / update with consideration for:
    - Maturity of the system and Release Level currently installed.
    - Applicability of fixes contained within the SP to your environment.
    - Exploitation of new features or functions (H/W or S/W).

- Service Packs are planned to be released twice per year.
  - The first Service Pack is planned to be released one quarter after the GA Release and then twice per year thereafter.
  - Release Levels are supported via Service Pack for two years.
  - A final Release Level may be supported with Service Packs longer than two years.

- Release Levels GA once or twice per year
  - Upgrading to a new Release Level should be a consideration when planning.
  - Power6 and Power7 cadence = GA Release, R+1 = 6mo, R+2 = 1year
Firmware Update / Upgrade Strategy

- **Update (Service Pack) Strategy:**
  - The first Service Pack is typically released one quarter after GA and then released twice per year.
  - When a new Service Pack is released you should review the README for the Service Pack. Particularly the Service Pack Fix List.
    - Are critical fixes applicable to your environment / configuration?
    - HIPER fixes:
      - If a HIPER fix (that is applicable to your environment) is released it is recommended that the Service Pack containing the HIPER fix is installed as soon as a maintenance window can be scheduled.
      - It is OK to allow a “deferred fix” to remain pending until the next scheduled IPL.

- **Upgrade (Release Level) Strategy:**
  - Release Levels are typically released twice a year.
  - It is important to be on a Release Level that is supported with Service Packs.
  - If you don't require the features / function being introduced via a new Release Level you may stay on the older Release Level and continue to receive fixes (Service Packs).
General Firmware Update / Upgrade Information

- OK to skip Service Packs (and Release Levels) if not applicable to your environment or you don't require features / function being provided.

- Update/Upgrade HMC first, then System FW and I/O
  - HMC needs to be at a level equal to or higher than the System Firmware
  - Sometimes FW update issues can be fixed in the HMC code.

- Upgrade to new release after first or second Service Pack has been released.
  - Allows time to gain field experience with a new Release Level.
  - Additional Service Packs allow for correction of recently reported issues.

- Recommended / Maximum Stability status:
  - Once a new Release Level or Service Pack is made available we will monitor its performance in the field. When we feel we have adequate field experience that Release and/or Service Pack will be marked as “recommended” (aka “Maximum stability level”).
    - Service Packs: 4-6 weeks
    - Release Levels: 3-4 months
Possible Update / Upgrade Paths

Example of “twice per year” FW Maintenance
Possible Update / Upgrade Paths

Example of “once per year” FW Maintenance

Note: Although skipping Service Packs may be OK; it is strongly recommended that you review the SP fix content in the README when the SP is released for relevant fixes.
Important Links:

- **Fix Central:**
  - Repository containing System Firmware, HMC code and I/O.

- **Subscription Services:**
  - Used to subscribe to Firmware related info. New FW releases, HIPERs, known firmware related issues.
    - Subscribe from the Fix Central Main landing page.

- **Fix Level Recommendation Tool (FLRT):**
  - Tool used to compare current system fix levels against recommendations from IBM. (Supports – System Firmware, HMC, AIX, IBM-i, Virtual I/O Server, HACMP, GPFS, CSM, etc.)

- **Power Code Matrix Page:**
Fix Level Recommendation Tool (FLRT)

- FLRT is a tool that you can use to compare your current server Firmware and Operating Systems levels with an 'IBM recommendation'.
Power code Matrix Page

- Initially, the Power Code Matrix page was developed to show HMC – System Firmware compatibility as well as identifying the 'latest available' HMC and System Firmware levels with a high-level description of the features/functions being provided by each.
Supported combinations for HMC/Server code and SDMC/Server code

IBM Systems with POWER7 processors

The following tables list currently supported firmware (FW) Release Levels for the specified POWER7 systems, as well as the compatibility of Hardware Management Console (HMC) and Systems Director Management Console (SDMC) firmware levels with system firmware levels. For specific recommendations within a Release Level, please refer to FLRT.

For MTM 9119-FHB

<table>
<thead>
<tr>
<th>HMC levels</th>
<th>AH760 Release</th>
<th>AH730 Release</th>
<th>AH720 Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>V7R7.7.0</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Latest level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V7R7.6.0</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Latest level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V7R7.5.0</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.4.0</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.3.0</td>
<td>Not supported</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.2.0</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SDMC levels</th>
<th>AH730 Release</th>
<th>AH720 Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>V6R7.3.0</td>
<td>Supported</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

Matrix key
- Latest Release Level
- Maximum Stability Release Level
- Reduced Fix support
- End of Service Pack support

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**Supported combinations for HMC/Server code and SDMC/Server code**

**IBM Systems with POWER7 processors**

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### For MTM 9117-MMC and 9179-MHC

<table>
<thead>
<tr>
<th>HMC levels</th>
<th>POWER7 system firmware levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>V7R7.7.0 Latest level</td>
<td>AM740 Release</td>
</tr>
<tr>
<td>V7R7.6.0 Latest level</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.5.0</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.4.0</td>
<td>Supported</td>
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</table>

<table>
<thead>
<tr>
<th>SDMC levels</th>
<th>POWER7 system firmware levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>V6R7.3.0</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

**Matrix key**

- Latest Release Level
- Maximum Stability Release Level
- Reduced Fix support
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Supported combinations for HMC/Server code and SDMC/Server code

IBM Systems with POWER7 processors

The following tables list currently supported firmware (FW) Release Levels for the specified POWER7 systems, as well as the compatibility of Hardware Management Console (HMC) and Systems Director Management Console (SDMC) firmware levels with system firmware levels. For specific recommendations within a Release Level, please refer to FLRT.

---

## Matrix key
- Latest Release Level
- Maximum Stability Release Level
- Reduced Fix support
- End of Service Pack support

---

### For MTM 9117-MMD and 9179-MHD

<table>
<thead>
<tr>
<th>HMC levels</th>
<th>POWER7 system firmware levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>V7R7.7.0</td>
<td>AM760 Release</td>
</tr>
<tr>
<td>Latest HMC level</td>
<td>Supported</td>
</tr>
<tr>
<td>V7R7.6.0</td>
<td>Latest HMC level</td>
</tr>
<tr>
<td></td>
<td>Supported</td>
</tr>
</tbody>
</table>

**Note:** SDMC is not supported for these MTMs.
End of Presentation

Thank You!
Firmware Overview and Recommendations

Backup Information......
z/p Microcode/Firmware Comparison

- **System z:**
  - Driver
  - MCL (aka patches)
  - MCL Bundle
    - Mandatory Sequential
    - More Fix Granularity
    - Fix Impact/severity (HIPER, SPE / Availability, Serviceability, Function)
  - MCL Delivery
    - Automatically retrieve latest MCLs
  - Resource Link

- **Power:**
  - Release Level
  - eFixes (HMC only)
  - Service Pack
    - Cumulative
    - Less Granular
    - Fix Impact/severity (HIPER, SPE / Availability, Serviceability, Function)
  - Service Pack Delivery
    - Manually initiated
  - InfoCenter
Power Firmware / HMC Naming Convention

- **POWER5:**
  - 01SFXXX_YYY_ZZZ
    - XXX is the release level,
    - YYY is the service pack level, and
    - ZZZ is the last disruptive service pack level.
    - 01SF240_403_382
    - 01SF240_382_382

- **POWER6**
  - EMXXX_YYY_ZZZ
    - EM designates Machine type
      - EL, EM & EH = Low, Mid & High
      - EL350_103_038
      - EM350_103_038
      - EH350_103_038
      - EB350_085_034 – Bulk Power Controller (BPC)
Power Firmware / HMC Naming Convention

**POWER7**
- **AMXXX_YYY_ZZZ**
  - AM designates Machine type
    - AL, AM & AH = Low, Mid & High
  - AL720_090_066
  - AM720_090_064
  - AH720_090_064
    - AB720_090_064 = Bulk Power Controller (BPC)

**HMC**
- **HMC V7 R7.2.0 Mx**
  - HMC Version 7 Release 7.2.x
    - Mx = Service Pack for given HMC Release
  - HMC V7R7.2.0 M1
    - M1 = PTF MH01246
Power Firmware / HMC Naming Convention

- **HMC**
  - HMC V7 R7.2.0 Mx
    - HMC Version 7 Release 7.2.x
      - Mx = Service Pack for given HMC Release
    - HMC V7R7.2.0 M1
      - M1 = PTF MH01246
  - As displayed on the HMC:
    - `version=` Version: 7
    - `Release: 7.2.0`
    - `Service Pack: 1`
    - `HMC Build level 20101123.1`
    - `base_version=V7R7.2.0`
Upgrade and Update Strategies

- **Upgrading to a new Release Level:**
  - Release Levels are intended to deliver new features and functions.
  - Release Level cadence is twice per year (can vary).
  - Installation of a new Release Level is disruptive.
  - Unless you require the features or functions introduced by the latest Release Level, it is OK to wait until Release Level stability has been demonstrated in the field.
    - If you are on a Release Level that is still being supported via Service Packs you will continue to receive fixes.
    - If your Release Level is no longer being supported via Service Packs (End of Servicepack Support (EOSS)) or approaching the EOSS, you should plan to upgrade to a current Release Level.
  - Being at a current Release Level makes it easier to manage HMC – System Firmware dependencies.
Upgrade and Update Strategies

- **Updating to a new Service Pack:**
  - The strategy to update to the latest Service Pack needs to be more aggressive than upgrading to the latest Release Level. Service Packs contain fixes to problems discovered in testing and reported from the field. The IBM fix strategy is to encourage the installation of a fix before the problem is encountered in the field.
  - Service Packs are generally released once per quarter.
    - Frequency depends on age of Release Level as well as reported field problems.
  - You should review the READMEs to determine fix applicability to your environment.

- The general guideline is to plan to install microcode maintenance twice per year. Upgrading (disruptive) to a new release level if applicable should also be considered when scheduling a microcode maintenance window.
Obtaining Firmware

- **Fix Central:**
  - Repository containing HMC, System Firmware, BPC and Device (I/O).
  - Code can be selected, packaged and downloaded.
    - .iso that can be burned to media for installation via HMC.

- **HMC Retrieve from Firmware Download site:**
  - The HMC can be used to access and retrieve the necessary files from the Firmware Download site.

- **Microcode Discovery CD:**
  - Physical media that can be ordered via Fix Central
  - Contains System Firmware, BPC and Device (I/O)
    - Only contains the latest levels
Fix Central

- Fix Central:
  - Information is presented based on Machine Type and Model (MTM).
  - Two paths
    - "I know what I want"
    - "Guide me"
  - Ability to select:
    - All Firmware (including I/O)
    - System Firmware (including BPC if applicable)
    - Device Firmware (only)
    - HMC
      - Recommended and/or Latest levels are pre-selected.
  - Each firmware/code package (SFW, BPC, HMC, Device (I/O) has an associated "README".
    - README contains fix list, requisite information (minimum HMC level), special installation instructions, etc.
  - Packaged into an .iso and downloaded
Fix Central

Fix Central provides fixes and updates for your system's software, hardware, and operating system.
For additional information, click on the following link:
Getting started with Fix Central

Select product  Find product

Select the product below.
When using the keyboard to navigate the page, use the Alt and down arrow keys to navigate the selection lists.

Product Group
Systems

Select from Systems
Power

Product
Firmware, SDMC and HMC

Machine type-model
9119-FHB
Firmware and HMC

Select fixes

Current selections

⇒ Your Machine Type-Model is 9119-FHB
⇒ "System Firmware only" has been selected
⇒ You know what you want
⇒ AH730_095 is the currently installed system firmware level
⇒ You have requested Release Level AH760

Service packs for system firmware

ℹ️ NOTE: All firmware selections must be made within the same Service Pack.

POWER7 System Firmware AH760_062 (FW760.20)

This is the latest package for this Release Level. Initial availability was 27 Feb 2013. Firmware updates within the AH760 Release Level can be installed concurrently, unless otherwise noted in the firmware readme. If upgrading from an earlier Release Level or installing without an HMC, installation of the system firmware is always disruptive.

- System firmware          AH760_062
- Power subsystem firmware  AB760_056
Best Practices Link:

<table>
<thead>
<tr>
<th>HMC</th>
<th>p7 System Firmware</th>
<th>p8 System Firmware</th>
<th>p6 System Firmware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y7R7.2.0</td>
<td>AMT20_090</td>
<td>EH350_193</td>
<td>SF240_463</td>
</tr>
<tr>
<td></td>
<td>AMT20_090</td>
<td>EH350_695</td>
<td>SF240_362</td>
</tr>
<tr>
<td></td>
<td>AMT20_090</td>
<td>EH350_691</td>
<td>SF240_362</td>
</tr>
<tr>
<td></td>
<td>AMT20_090</td>
<td>EH350_649</td>
<td>SF240_371</td>
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<tr>
<td></td>
<td>AMT20_090</td>
<td>EH350_630</td>
<td>SF240_368</td>
</tr>
<tr>
<td></td>
<td>AMT20_090</td>
<td>ES3350_193</td>
<td>SF240_368</td>
</tr>
</tbody>
</table>
Subscription Services

- Important to subscribe to this service as it is the primary mechanism that we use to communicate important Firmware information to you.
Subscribe to Subscription Service

Fix Central

Fix Central provides fixes and updates for your system's software, hardware, and operating system.

Select the product below. When using the keyboard to navigate the page, use the Alt and down arrow keys to navigate the selection lists.

For additional information, click on the following link.
Getting started with Fix Central

Product Group
Select one

Continue
Subscribe to Subscription Service

Support overview

Your customized support experience
To modify the contents of this page, choose your products and a page.

Featured links
- Introducing the IBM Support Portal

Notifications
- Manage all my subscriptions
- Support RSS feeds
Choose your products to view notifications. Notifications are not available for selections at the family or brand (general) level.

Product news
- IBM acquired and sold products

Training
- Certification by product
- IBM software training and certification
- IBM systems education
- IBM technical training
### Fix Level Recommendation Tool

For IBM Power Systems administrators

The following consolidated information is for guidance purposes only. This information was obtained from generally available product support documentation. These combinations of product levels are supported by IBM.

**Date:** 2011.05.10  
**Model:** IBM Power 570 (9117-MMA)  
**Clock:** 5.0 ghz

#### Your selected levels

<table>
<thead>
<tr>
<th>Product</th>
<th>Version/Release</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>6100-05-03</td>
<td></td>
</tr>
<tr>
<td>HMC Software</td>
<td>V7 R710 SP3</td>
<td></td>
</tr>
<tr>
<td>System Firmware</td>
<td>EM350_071</td>
<td></td>
</tr>
<tr>
<td>Virtual I/O Server</td>
<td>2.1.2.13</td>
<td></td>
</tr>
</tbody>
</table>

#### Detailed results

- **AX**  
  Version: 6100-05-03  
  
  Note: You selected a level lower than the recommended level. The current recommended SP level for this AX TL is 6100-05-04.

- **System Firmware**  
  Version: EM350_071

  Upgrade recommended  
  [View package](#)

- **Virtual I/O Server**  
  Version: 2.1.2.13

  Upgrade recommended  
  [View package](#)
# POWER code matrix

Latest release levels for IBM Power Systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>System firmware</td>
<td>EL350_103 Entry Systems firmware</td>
</tr>
<tr>
<td></td>
<td>EM350_103 Mid-range Systems firmware</td>
</tr>
<tr>
<td></td>
<td>EH350_103 High-end Systems firmware (9119-FHA)</td>
</tr>
<tr>
<td></td>
<td>ES350_103 H Systems firmware (9125-F2A)</td>
</tr>
<tr>
<td>Power subsystem firmware</td>
<td>EB350_005 (9119-FHA)</td>
</tr>
<tr>
<td></td>
<td>EP350_005 (9125-F2A)</td>
</tr>
<tr>
<td></td>
<td>Power Firmware is not applicable to Entry and Mid-Range Systems</td>
</tr>
<tr>
<td>Hardware Management Console</td>
<td>Version 7 Release 7.2.6 + NH01246</td>
</tr>
</tbody>
</table>

List of new HMC features and functionality

## 340 Release

<table>
<thead>
<tr>
<th>Component</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>System firmware</td>
<td>EL340_122 Entry Systems firmware</td>
</tr>
<tr>
<td></td>
<td>EM340_122 Mid-range Systems firmware</td>
</tr>
<tr>
<td></td>
<td>EH340_122 High-end Systems firmware (9119-FHA)</td>
</tr>
<tr>
<td></td>
<td>ES340_123 H Systems firmware (9125-F2A)</td>
</tr>
</tbody>
</table>
### POWER code matrix
Supported code combinations for IBM Power Systems

<table>
<thead>
<tr>
<th>POWER7</th>
<th>POWER6</th>
<th>POWER5</th>
<th>Support lifecycle</th>
<th>Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latest release levels</td>
<td><strong>Supported code combinations</strong></td>
<td>Verify HMC and server firmware combinations for IBM Systems that use POWER6 processors.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Supported code combinations for HMC and server firmware**
The following links provide a matrix of POWER6 HMC and system firmware levels. Use these tables to find recommended or supported combinations of HMC and system firmware levels. See the **Terminology** tab for a key to reading the matrix tables and a glossary of terms.

- Supported code combinations for High-End IBM Systems with POWER6 processors
- Supported code combinations for Mid-Range IBM Systems with POWER6 processors
- Supported code combinations for Entry-Level IBM Systems with POWER6 processors

**Related support**
- System firmware & HMC V7 and higher
- HMC V6 and lower
- Other system firmware
- Virtualization software
- Cluster software
- AIX updates
- Linux updates

**Did you know?**
You can quickly find APARs marked PE or HIPER in the Technical help database for AIX.
Simply add the word 'YesPE' or 'YesHIPER' to your query.