



IBM Power Systems miscellaneous feature enhancements

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At a glance

Power Systems™ I/O feature enhancements

- A single root I/O virtualization (SR-IOV) capability for NIC workloads allows native sharing of Ethernet adapters without VIOS for the IBM^(R) Power^(R) E870 and E880 system node. This enhancement eases migration to IBM POWER8™ technology for IBM POWER7+™ 770/780 clients who are already using SR-IOV.
- When ordering IBM Power System S812L, S822L, and S824L, clients can specify Open Power™ Abstraction Layer (OPAL) firmware.

Overview

SR-IOV is supported for NIC workloads with the feature EN0J and EN0L adapters in the Power E870/E880 system node. SR-IOV can provide simple virtualization without VIOS with greater efficiency and also provide quality of service controls. SR-IOV can also be combined with VIOS to provide higher virtualization function and quality of service controls.

This announcement partially fulfills the POWER8 SR-IOV statement of direction made in October 2014.

This Power E870/E880 enhancement eases migration to POWER8 technology from POWER7+ 770/780 clients who are already using SR-IOV.

When ordering the following hardware models, clients can select the Open Power Abstraction Layer (OPAL) firmware (#EC16):

- IBM Power System S812L (8247-21L)
- IBM Power System S822L (8247-22L)
- IBM Power System S824L (8247-42L)

The OPAL system firmware is designed to allow a properly enabled Linux™ operating system to run directly on the POWER8 system, enabling it to be a KVM host or to run the Ubuntu 14.04.2 operating system. Running a single operating system image directly on the system is often referred to as *nonvirtualized or bare metal mode*.

Planned availability date

March 6, 2015, except for:

- February 24, 2015, for feature B0UW
- March 5, 2015, for feature EB33
- March 27, 2015, for features EHK2, EHKT, and EHKU

Description

SR-IOV

Previously, SR-IOV NIC was supported only on the POWER7+ model 770 and 780 (9117-MMD and 9179-MHD) running later levels of firmware and software. Partially fulfilling the October 2014 SR-IOV statement of direction, IBM now announces that SR-IOV NIC is also supported on the Power E870 and E880 (9119-MME and 9119-MHE).

Two Ethernet adapters are supported with the SR-IOV NIC capability, when placed in the Power E880/E870:

- PCIe2 LP 4-port (10Gb FCoE and 1GbE) SR&RJ45 Adapter (#EN0L)
- PCIe2 LP 4-port (10Gb FCoE and 1GbE) SFP+Copper and RJ4 Adapter (#EN0J)

These adapters each have four ports, and all four ports are enabled with SR-IOV function. The entire adapter (all four ports) is configured for SR-IOV or none of the ports is.

The client can chose to configure as SR-IOV and assign 100% of a port to one partition. The FCoE capability of the adapter is not supported when using SR-IOV.

SR-IOV can provide simple virtualization without VIOS with greater server efficiency as more of the virtualization work is done in the hardware and less in the software. SR-IOV can also provide bandwidth quality of service (QoS) controls to help ensure that client-specified partitions have a minimum level of Ethernet port bandwidth and thus improve the ability to share Ethernet ports more effectively.

As a QoS example, assume there are three partitions: Partition A, B, and C. If Partition A is assigned a minimum of 20% of the bandwidth of a port, Partitions B and C cannot use more than 80% of the bandwidth unless Partition A is using less than 20%. Partition A can use more than 20% if bandwidth is available. This applies to outbound NIC traffic from the port. It does not apply to inbound NIC traffic into the port, but remember that these ports run in full duplex and thus QoS for outgoing traffic remains in effect even with high levels of inbound NIC traffic.

SR-IOV is considered simple virtualization and does not include higher-level virtualization functions provided by VIOS such as Live Partition Mobility. SR-IOV can optionally be combined with VIOS to leverage VIOS's higher level of functionality, but continues to provide bandwidth QoS. The portion of the Ethernet port's bandwidth controlled by VIOS would use software virtualization.

SR-IOV NIC on the Power E870/E880 is supported by:

- AIX^(R) 6.1 TL9 SP4 and APAR IV63331, or later
- AIX 7.1 TL3 SP4 and APAR IV63332, or later
- IBM i 7.1 TR9, or later

Note: IBM i requires either VIOS or SR-IOV

- IBM i 7.2 TR1, or later
- **Note:** IBM i requires either VIOS or SR-IOV
- Red Hat Enterprise Linux 6.5, or later
- Red Hat Enterprise Linux 7, or later
- SUSE Linux Enterprise Server 11 SP3, or later
- VIOS 2.2.3.4 with interim fix IV63331, or later
- Firmware 820.10 SP, available March 1, 2015

IBM Manufacturing is not announcing the capability to preconfigure SR-IOV-capable I/O using SR-IOV. Such hardware will be shipped from IBM when ordered with a server in the same way adapters have been shipped previously. The client will need to configure the SR-IOV capability. An HMC is required for this configuration.

Support for SR-IOV-capable adapters in the PCIe Gen3 I/O Expansion Drawer is not announced.

Product number

The following are newly announced features on the specific models of the IBM Power Systems 7014, 7120, 7893, 7955, 7965, 8247, 8284, 8286, and 8956 machine type:

New feature available February 24, 2015

Description	Machine type	Model	Feature number
SP WAMO 3Y 24x7 SD	7965	94Y	B0UW

New feature available March 5, 2015

Description	Machine type	Model	Feature number
Dynamic Platform Optimizer	9117	MMC	EB33
	9179	MHC	

New features available March 6, 2015

Description	Machine type	Model	Feature number
15M FDR IB Optical cable QSFP	8247	21L	EB4D
	8247	22L	
20M FDR IB Optical Cable QSFP	8247	21L	EB4E
	8247	22L	
Open Power Abstraction Layer (OPAL)	8247	21L	EC16
	8247	22L	
	8247	42L	

Publications

No publications are shipped with these features.

The IBM Publications Center Portal is located at

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, which can currently be downloaded.

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http://www.ibm.com/services/learning/ites.wss/zz/en?pageType=tp_search_new

Technical information

Specified operating environment

Physical specifications

For physical specifications, refer to the Sales Manual.

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

Planning information

Cable orders

No cables required.

Security, auditability, and control

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

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To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

Terms and conditions

Field-installable feature

Yes

Warranty period

These features assume the same warranty or maintenance terms as the machine in which they are installed for the full warranty or maintenance period announced for such machine.

Customer setup

Yes

Machine code

Same license terms and conditions as base machine

Prices

For all local charges, contact your IBM representative.

Announcement countries

All European, Middle Eastern, and African countries.

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