

# SUSE® Linux Enterprise Server 12 on IBM POWER8

August 2015

## What is happening with SUSE® Linux Enterprise 12 and IBM POWER8?

Once again SUSE and IBM have jointly developed the next generation of the Linux operating system (OS) for IBM hardware. "We adapt, you succeed." In 1999 SUSE worked together with IBM to bring its mainframe business into a new area, bringing Linux to IBM z Systems. Now SUSE Linux Enterprise 12 ushers in a new era on IBM POWER8. SUSE Linux Enterprise Server for POWER 12 runs in little-endian mode on the POWER8 architecture. Using little endian mode removes a portability barrier for software application vendors that started out on the x86 and x86-64 platforms. With great tools such as the Open Build Service, SUSE provides an environment that supports partners, enabling them to bring their latest innovations to the dynamic Linux market.

## What is big-endian / little-endian?

Endian or Endianness refers to how bytes of a data word are ordered in memory (see <http://en.wikipedia.org/wiki/Endianness>). Big-endian systems like POWER6, POWER7 and System z store *the most significant byte* in the *smallest address* consumed by an integer number or address, and the least significant byte is stored in the largest. In contrast, little-endian systems, such as the x86 and x86-64 architectures, are those in which the *least significant byte* is stored in the *smallest address*.

## Why is little-endian important to POWER?

There are a number of advantages to supporting little-endian in the Linux ecosystem:

- *Supporting little-endian on Power will simplify source code porting from little-endian x86 Linux applications to little-endian Linux on Power.*
- *Data produced by existing x86 Linux applications can be accessed more easily by other little-endian Linux applications.*

- *Modern I/O systems (particularly GPUs) assume little-endian access models.*

## What endian mode does POWER8 support?

IBM POWER8 hardware supports both big- and little-endian modes. The in-memory data layout is set up by the operating system. SUSE Linux Enterprise Server for POWER 12 sets the POWER8 processor to run in little-endian mode. SUSE Linux Enterprise Server 11 will continue to operate in big-endian mode on POWER8-based servers. The POWER6 and POWER7 architectures are big-endian only and are not supported by SUSE Linux Enterprise 12.

## What is PPC64LE?

PPC64LE stands for Power PC 64 Little Endian, indicating that a 64 bit kernel is running in little-endian mode on IBM's Power Architecture. POWER8 will be the first supported implementation of little-endian in the IBM Power family, and SUSE Linux Enterprise 12 will be the first enterprise Linux supporting it.

## Can I run SUSE Linux Enterprise Server for POWER 12 on POWER8?

Yes. SUSE Linux Enterprise Server 12 will operate the POWER8 processor in little-endian mode, which has no effect on the functionality of the OS or the features provided by the processor. SUSE Linux Enterprise Server for POWER 12 takes full advantage of POWER8's Simultaneous Multithreading (SMT) and other hardware advances made available in the modern 3.12 Linux kernel. POWER8 supports SUSE Linux Enterprise Server for POWER as a KVM guest in addition to support for PowerVM. SUSE's industry-leading features like Full System Rollback, Linux containers with Docker and Modules are supported on POWER8-based servers.

## Can I run SUSE Linux Enterprise Server 11 on POWER8?

Yes. SUSE Linux Enterprise Server 11 supports POWER8; the processor operates in big-endian mode. SUSE Linux Enterprise Server 11 SP4 is enabled to specifically take advantage of all POWER8 processor features, and can take full advantage of all the POWER8 threads. Earlier service packs of SUSE Linux Enterprise Server 11 run in compatibility mode and cannot take full advantage of all of the POWER8 threads.

## Can I run SUSE Linux Enterprise Server 12 on POWER6, POWER7/7+?

No. POWER6 and POWER7 hardware are big-endian only, and SUSE Linux Enterprise Server for POWER 12 only supports little-endian.

## How long will SUSE support big-endian on Power?

SUSE Linux Enterprise Server for POWER 11 provides excellent support and a robust software ecosystem for POWER 6/7/7+ and POWER8 in big-endian mode. Currently SUSE is providing support for Service Pack 4. With the newest SUSE product support lifecycle, we will continue to provide general support for SUSE Linux Enterprise Server 11 until March 31, 2019.

## Which applications are available for POWER8 little-endian?

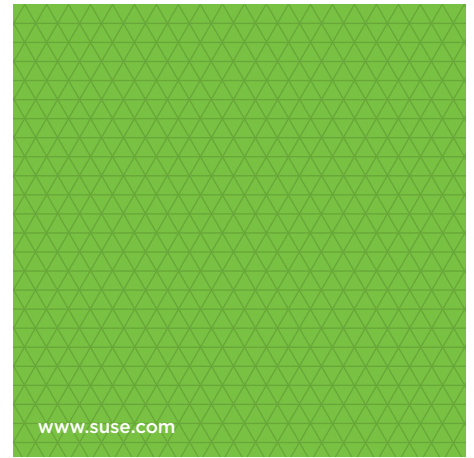
IBM continues to focus on building a strong ecosystem for Linux on IBM Power Systems. IBM is working internally with IBM Software Group and is aggressively working with premier third-party ISVs to bring modern enterprise workloads to Linux on Power.

## Why is big-endian mode not supported in SUSE Linux Enterprise 12?

IBM is expecting significant adoption of POWER8 in little-endian mode, and as most applications available on Power today are also available on little endian architectures, it is a reasonably straightforward exercise for those software providers to move to little-endian on Power. Therefore, there is no compelling reason to support POWER8 with SUSE Linux Enterprise 12 in both modes. Customers are expected to gain additional application choices in the future due to the switch to little-endian mode.

## Can I run my SAP applications on SUSE Linux Enterprise Server for POWER 12 and POWER8?

Yes, most SAP applications will run on POWER8-based servers and SUSE Linux Enterprise Server for POWER 12, as long as little-endian mode is supported by SAP. You should be aware SAP has certified SUSE Linux Enterprise Server for SAP applications 11 SP4 as the only operating system for IBM Power Systems to run SAP HANA.



**Contact your local SUSE Solutions Provider, or call SUSE at:**

1 800 796 3700 U.S./Canada  
1 801 861 4500 Worldwide

SUSE  
Maxfeldstrasse 5  
90409 Nuremberg  
Germany