



SUSE® Linux Enterprise Server for System z*

Lower total cost of ownership, increased flexibility, better resource utilization and reduced administration—these are just a few of the benefits of server consolidation with SUSE® Linux Enterprise Server for System z*. Leading firms around the world have selected IBM* System z mainframes for their data center, and have chosen SUSE Linux Enterprise Server for System z as their operating system.

Computing with System z

The strengths of IBM System z servers are well known: rock-solid reliability; virtualization for server consolidation; the ability to quickly add processing power and run multiple workloads; security and high scalability. These strengths make System z the ideal choice for hosting back-end databases and other mission-critical applications. And when Linux*—specifically SUSE Linux Enterprise Server—is added to System z, there are many additional benefits for today's businesses.

IBM is enhancing the reliability, availability and scalability (RAS) features of its System z servers. The newest systems extend the limits of partition scalability—allowing a single z/VM v5.3 operating system instance to span 32 processors, up from 24 processors—and lower the cost of owning a System z server. With this 33-percent increase in processors, your organization can allocate more CPU,

memory and input/output (I/O) capacity to a group of Linux instances. You will have the flexibility and scalability you need to add more Linux instances and meet a wide range of workload demands. It's also an efficient product that reduces the number of required Integrated Facility for Linux (IFL) licenses you need for your systems.

Take Control of Your Data Center with SUSE Linux Enterprise Server for System z

Novell® has tailored this powerful product to include more than 150 enhancements requested by IBM. And there are more than 740 applications compatible with SUSE Linux Enterprise Server for System z, including hundreds of IBM products (e.g., IBM DB2* and WebSphere* Application Server) and open source applications such as Apache, Samba, MySQL, Sendmail and others.

■ Solutions:

Linux Operating Systems

■ Products:

SUSE Linux Enterprise Server for System z

SUSE Linux Enterprise Server for System z is an ideal product if you need to:

- Consolidate servers
- Move data closer to essential applications
- Maximize floor space
- Conserve power
- Cut hardware and administrative costs

Nationwide chose SUSE Linux Enterprise Server for System z to run multiple Linux virtual machines under z/VM. The insurance giant has forecast a savings of US\$15 million over three years, seen a 50-percent reduction in hardware and operating system costs, realized significant savings on middleware costs and enjoyed an 80-percent reduction in floor space and power consumption.

A few years ago, IBM sought to lower the cost of using mainframes to run Linux by

introducing the IFL specialty engine. An IFL costs much less than a general-purpose System z engine, making it extremely economical to run Linux workloads. In the past year, the demand for IFLs has surged. Now, about 25 percent of the processing power on System z servers is used to run Linux workloads in IFLs. And the adoption rate for Linux is even higher—nearly 30 percent—on the lower-priced System z Business Class server.

Many organizations that run Linux workloads on System z servers choose to run Linux as one or more z/VM guest operating systems in an IFL. The illustration below depicts a System z platform running a mix of Linux and z/VSE workloads.

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Typical architecture with z/VM and z/VSE

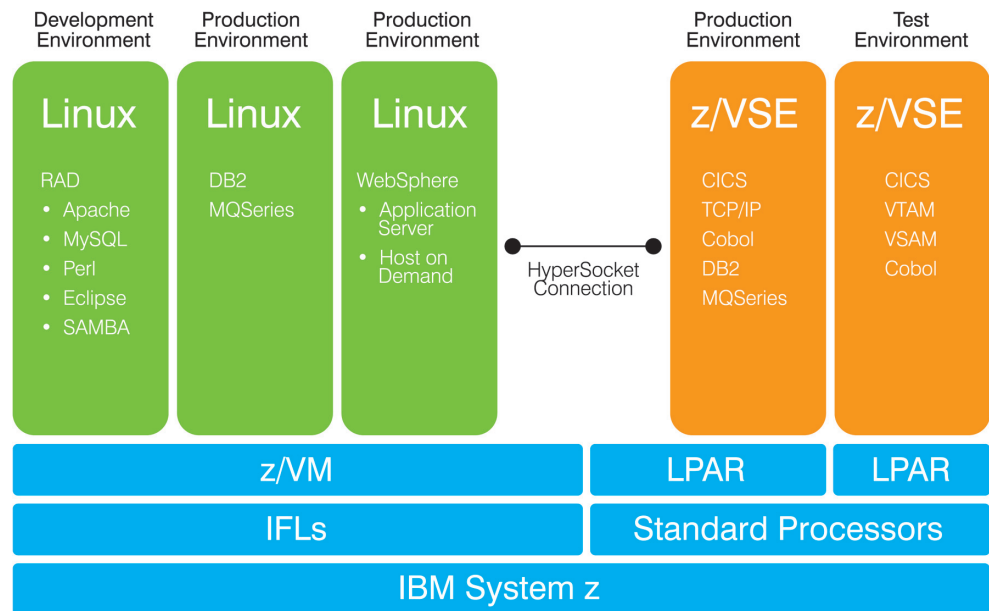


Figure 1. Linux opens the world for mainframe users to a broader application portfolio—in the form of ISV and open source applications.

A SUSE Linux Enterprise Server for System z subscription is required for each IFL. The Linux subscription includes access to an unlimited number of virtual machines. Typically, dozens—and often hundreds—of SUSE Linux Enterprise Server virtual machines can run per IFL, which ensures a low total cost of ownership (TCO) after server consolidation.

Benefits of Server Consolidation on System z

Today's IT organizations are increasing in complexity, often experiencing server sprawl as more servers are added to handle increased business demands. Unfortunately, many of these servers host just one application apiece and typically have utilization rates of around 10–15 percent. This extra hardware and wasted processing power will affect your bottom line unless you use virtualization to consolidate your servers and lower costs.

Linux on a System z machine running z/VM is an enterprise virtualization platform. SUSE Linux Enterprise Server for System z is the leading example of this platform, delivering everything you need in one box and providing faster, more secure communication among servers. In addition to lowering your TCO, the product offering also features the benefits of System z, including:

- *Resource sharing*
- *Server consolidation*
- *Co-location of applications and data*
- *Virtualization*
- *Horizontal growth*
- *Decreasing price curve for Linux*

Server consolidation is one of the main benefits of using SUSE Linux Enterprise Server for System z. In fact, many organizations are moving their Web server applications off of individual servers, now consolidating them on multiple virtual Linux servers running on one System z server.

Huge Savings for Nationwide Insurance

Gartner¹ recently released a case study detailing how Nationwide Insurance significantly

reduced its costs by consolidating non-mainframe server workloads on two Linux-only System z mainframes. This consolidation effort also increased growth and improved quality of service with little or no impact on floor space, power and cooling.

Nationwide chose SUSE Linux Enterprise Server for System z to run multiple Linux virtual machines under z/VM.

An initial deployment of 150 virtual Linux servers has grown to 450 virtual Linux servers, and the two System z servers now have an average utilization of 70 percent. Nationwide also has the potential to more than triple its capacity in the same footprint, and its server provisioning times have dropped significantly. Best of all, TCO has been reduced. The insurance giant has forecasted an estimated savings of US\$15 million over three years, seen a 50-percent reduction in hardware and operating system costs, realized significant savings on middleware costs, and enjoyed an 80-percent reduction in floor space and power consumption.

The Last Word on TCO

IBM notes² some interesting differences you might experience when consolidating your servers on System z instead of on distributed systems such as x86-64 machines. These differences—outlined below—can greatly affect TCO:

- *Customers who use System z servers are more likely to lower TCO in the areas of annual system maintenance, network connectivity and software support.*
- *Provisioning a new Linux virtual machine using z/VM can be done in minutes, while it often takes weeks to install a new x86-64 system.*

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1 Gartner, Inc., G00148213, June 2007.

2 [www.computerworld.com/softwaretopics/os/linux/story/0,10801,99667,00.html?SKC=news99667 --- bank of Omaha](http://www.computerworld.com/softwaretopics/os/linux/story/0,10801,99667,00.html?SKC=news99667---bankofOmaha)

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- *System z workload managers can schedule multiple and varied workloads with no operator intervention.*
- *The cost of running incremental workloads on the mainframe goes down as the total workload grows; however, the cost goes up linearly for distributed systems with added workloads.*
- *Disaster recovery, a large issue for many IT organizations, is generally a big win for System z users.*

There is more evidence than ever before that you can lower TCO by using SUSE Linux Enterprise Server for System z. It's as simple as consolidating your non-mainframe workloads (Linux, Solaris* and Windows*) onto virtual Linux servers that run on one or more System z servers.

Before you can quantify the potential cost savings of server consolidation with SUSE Linux Enterprise Server for System z, you need to understand the characteristics of the workloads to be consolidated. Specifically, you'll need to know more about your I/O, memory and CPU usage, unused processing power and other considerations before you can calculate possible TCO. Fortunately, IBM has developed a number of TCO models that can help you determine whether it makes sense to consolidate your servers to SUSE Linux Enterprise Server for System z. For more information on these TCO models, please visit: www.novell.com/mainframe



Contact your local Novell Solutions Provider, or call Novell at:

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IBM System z™

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