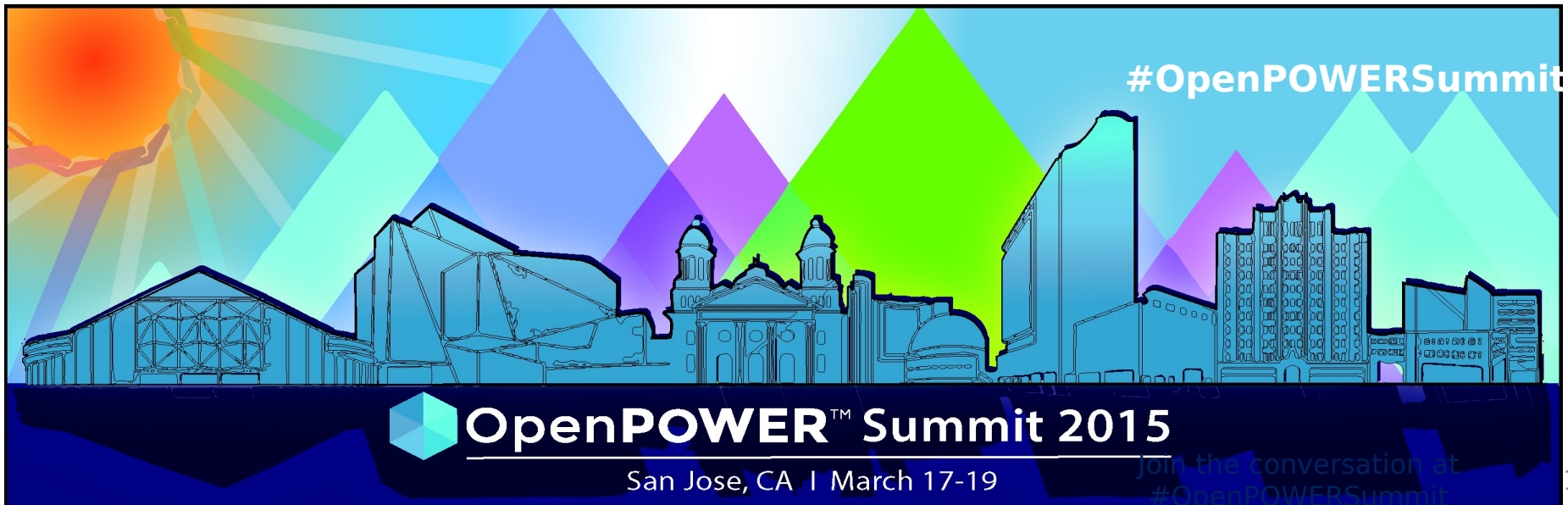




Porting to Power is Easy

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IBM Systems Business Unit



Content

- IBM Linux on Power Commitment
- Linux is Linux... and then some
- Reduced Entry Barrier
- Power Eco-System DOES Exist
- Server Deployment & Application Porting is Soaring



Starting in 2001 IBM invested \$1 billion in Linux
 Starting in 2013 IBM is investing \$1 billion in Linux on Power



Our leadership in Linux and the Open Community has made Linux an ongoing competitive choice



Watson

Enabling IBM products

2005–2006 **Application and data serving**

Mainstream for IBM

2010... **Next-generation workloads**



2000

2002

2004

2006

2008

2010

Making Linux better

1999–2004 **Edge and web infrastructure**

Core to the IBM business

2007–2009 **Business-critical workloads**



Linux on Power provides the same Linux as x86 WITH more features



- › Built from the same source as x86
- › Delivered on same schedule as x86
- › Supported at the same time as x86



Example
CUDA 7.0



■ Supports Industry Standard Linux

- Red Hat, SUSE Enterprise, Ubuntu Linux versions consistent with x86_64
 - POWER support available simultaneously with other platforms
 - List of packages nearly identical (except minor differences like bootloader)
 - Packages at same version/level – including kernel and device drivers

■ Leverage same opens source system tools

- SDK: Same Free Eclipse-based development environment
- Advance Toolchain: Same Open Source tools (GNU)
- IBM tested and supported on Power
- Tuned for Power Performance: Linux on Power servers exploit workload optimized advantages of POWER architecture



Linux on Power is industry standard

More powerful than x86 Linux and more reliable than Windows.

PowerVM is more scalable and secure than VMware

PowerKVM now available for open standard virtualization support





Moving Linux Apps to Power has never been easier

The LE Advantage

Allows Hardware dependent solutions such as GPU acceleration

Well-written Java applications written in **scripting or interpretive languages** will **run as is**



Estimated **>95%** x86/Linux applications written in **C/C++** will require **no source code change, only a recompile. No Data Worries!**



Supported by Canonical

40,000+ binary packages



deploys container, Ubuntu and WebSphere Application Server in < 4 minutes

5 months of porting and testing from inception to beta

250 applications

ported per day

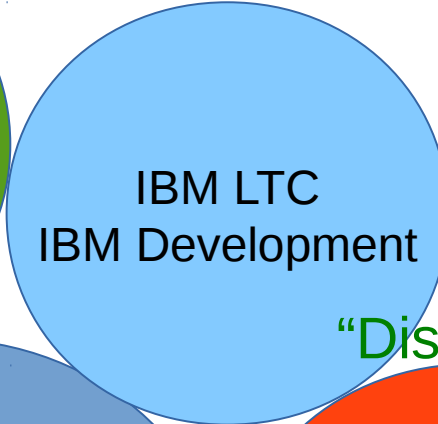
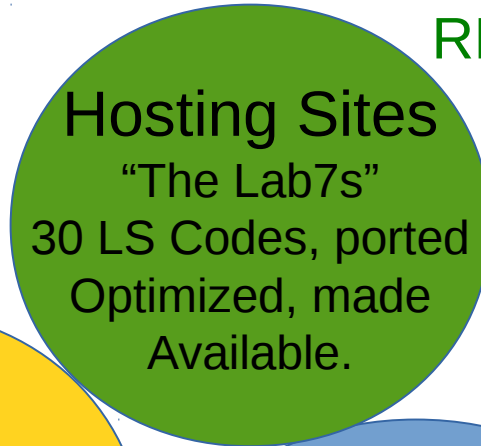


LoP EcoSystem Building Creating the Environment

Build Bots
Compile
Farms

RHEL/Fedora

Ubuntu/Debian

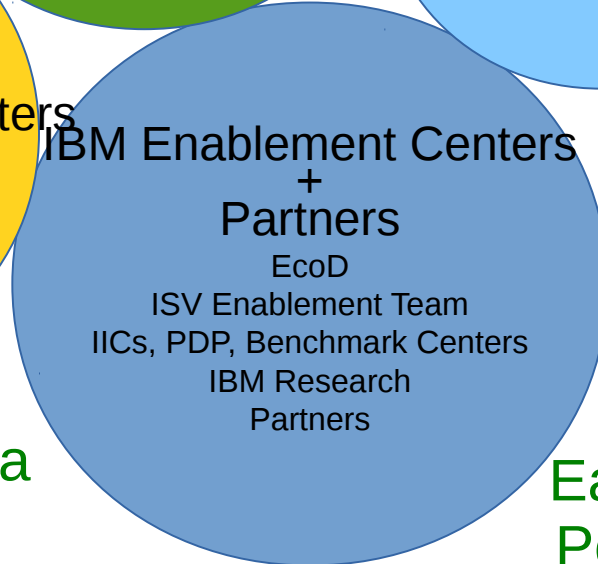
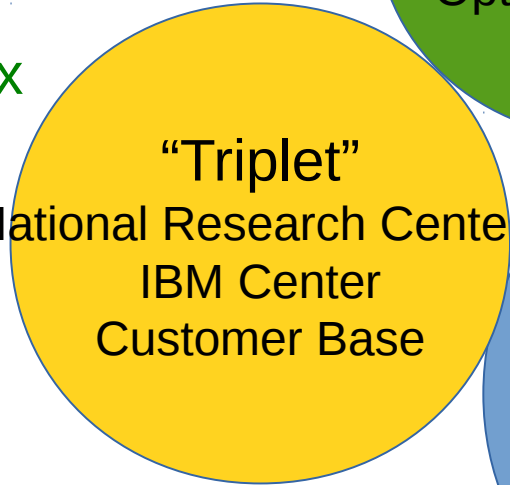


LTC "Seeding"

OpenPower

"Distro Based Porting"

Linux



OpenSource

NVidia

Ease of
Porting

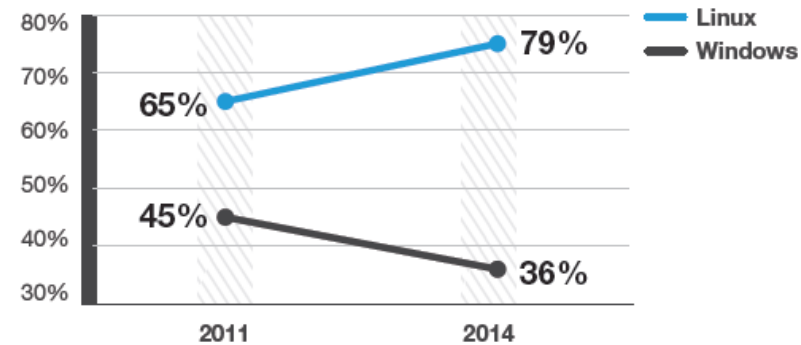
Little Endian

=> EcoSystem of EcoSystems
Facilitate Exponential Growth

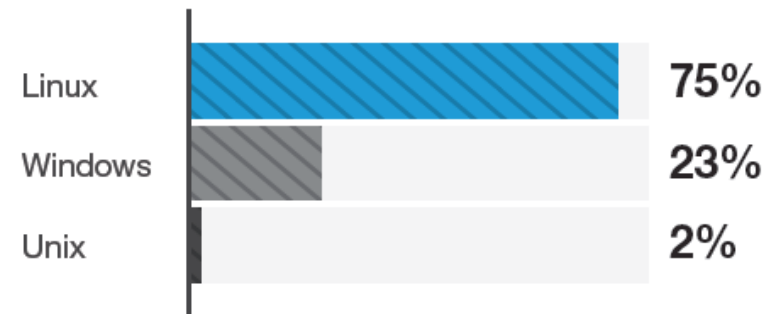
Worldwide Linux server deployments are soaring

- **Linux continues on its growth path**
 - More than 87 percent of enterprises added Linux servers in 2014
 - 82 percent plan to add more in 2015
- **Linux leads enterprise shift to cloud**
 - In 2011, 70 percent of the organizations in the cloud cited Linux as their primary cloud platform.
 - In 2014, that number climbed to 75 percent.

LINUX DEPLOYMENTS INCREASE AT EXPENSE OF WINDOWS DEPLOYMENTS



PRIMARY CLOUD PLATFORM IN 2014



Source: Linux Foundation - 2014 Enterprise End User Trends Report (Dec. 2014)

<http://www.linuxfoundation.org/publications/linux-foundation/linux-end-user-trends-report-2014>

Over 1,200 Linux ISVs developing on Power

- Support for little endian applications
- PoCs available through the Power Development Platform
- 50 IBM Innovation Centers and Client Centers World Wide

ubuntu 



BACKUP

The LE Advantage



-
- Same Byte Order as x86 Model
 - Developer has less to look at porting from an x86 base
 - Data never changes - no touch required
 - Application Migration considerations coming from x86 (Advisor help)
 - Type Casting
 - Pointer Manipulation
 - Bitfield/Structure Manipulations
 - GIF/BMP files (stored in LE format)
 - Simpler for Accelerator (e.g. Nvidia GPU) port
 - Data streaming into NIC cards – no translation necessary
 - Character Strings not an issue
 - Performance Optimization for POWER8 features added value