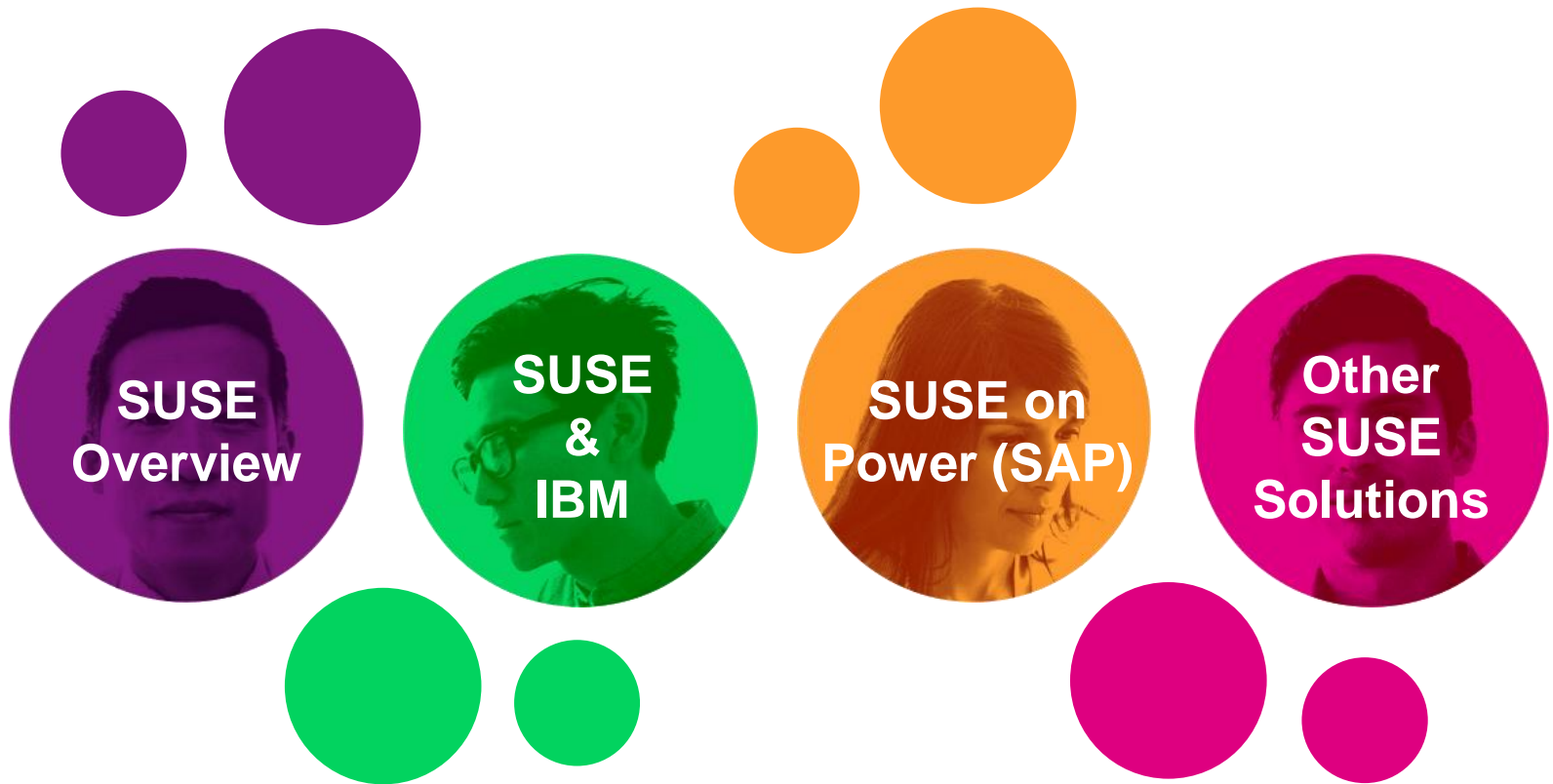# SUSE on IBM Power

The very best combination for IT performance

Thomas Di Giacomo, Chief Technology Officer
David Pedevilla, Account Executive

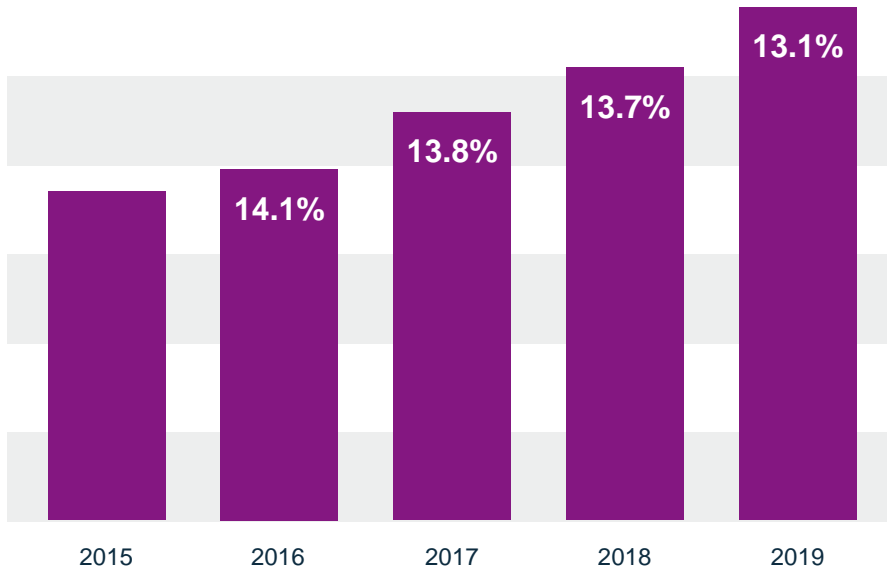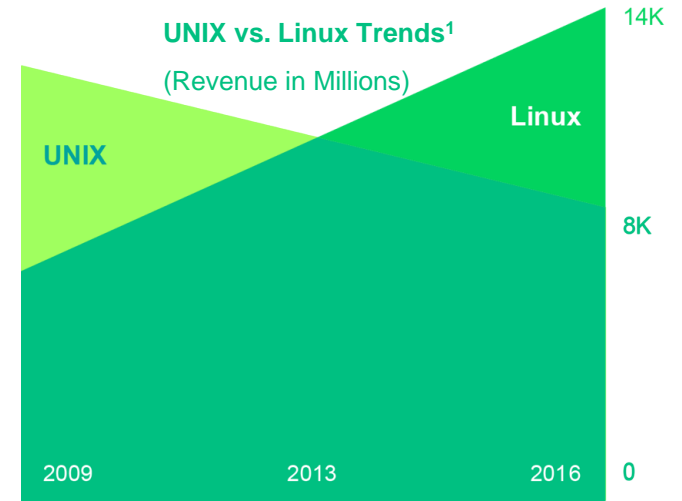Montreux, June 2nd 2016

Agenda

SUSE Overview

SUSE & IBM

SUSE on Power (SAP)

Other SUSE Solutions

SUSE Overview

Undisputed Growth of Enterprise Linux OS

Worldwide Linux Server Operating Environment Paid Subscriptions Revenue 2015 - 2019

- 2015
- 2016 — **14.1%**
- 2017 — **13.8%**
- 2018 — **13.7%**
- 2019 — **13.1%**

Source: IDC, 2016

Growth Yr Over Yr

UNIX vs. Linux Trends[1]

(Revenue in Millions)

- UNIX
- Linux

14K

8K

0

2009   2013   2016

[1]*Source: Gartner*

LINUX 17.9%

WINDOWS 4.2%

MAINFRAME -2.2%

UNIX -7.3%
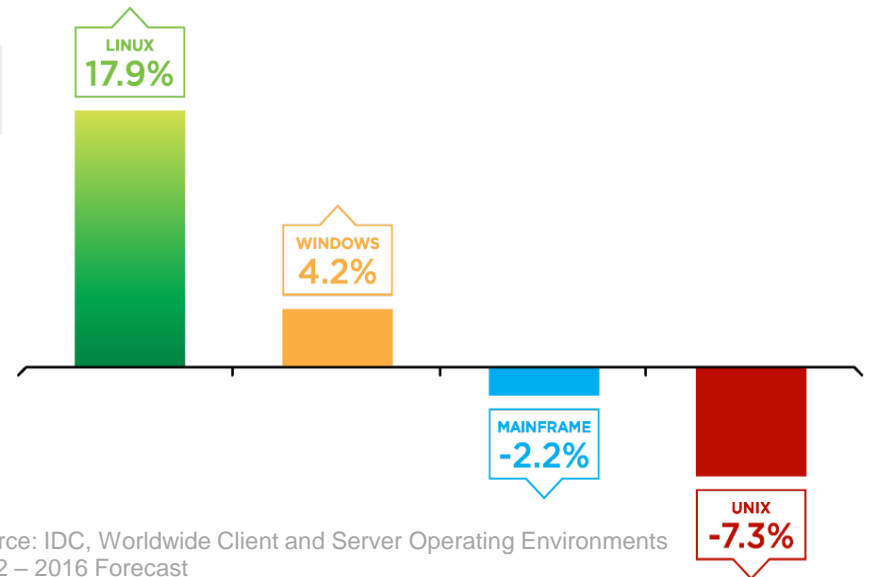
Source: IDC, Worldwide Client and Server Operating Environments 2012 – 2016 Forecast

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SUSE at a Glance

1st
Enterprise Open Stack Distribution

24
Years of Linux Engineering Experience

800+
Employees

5'000+
Global Partners

150+
Support Engineers

10'000+
Certified Applications

20'000+
Certified Systems

70
of the Fortune Global 100 use SUSE Linux Enterprise
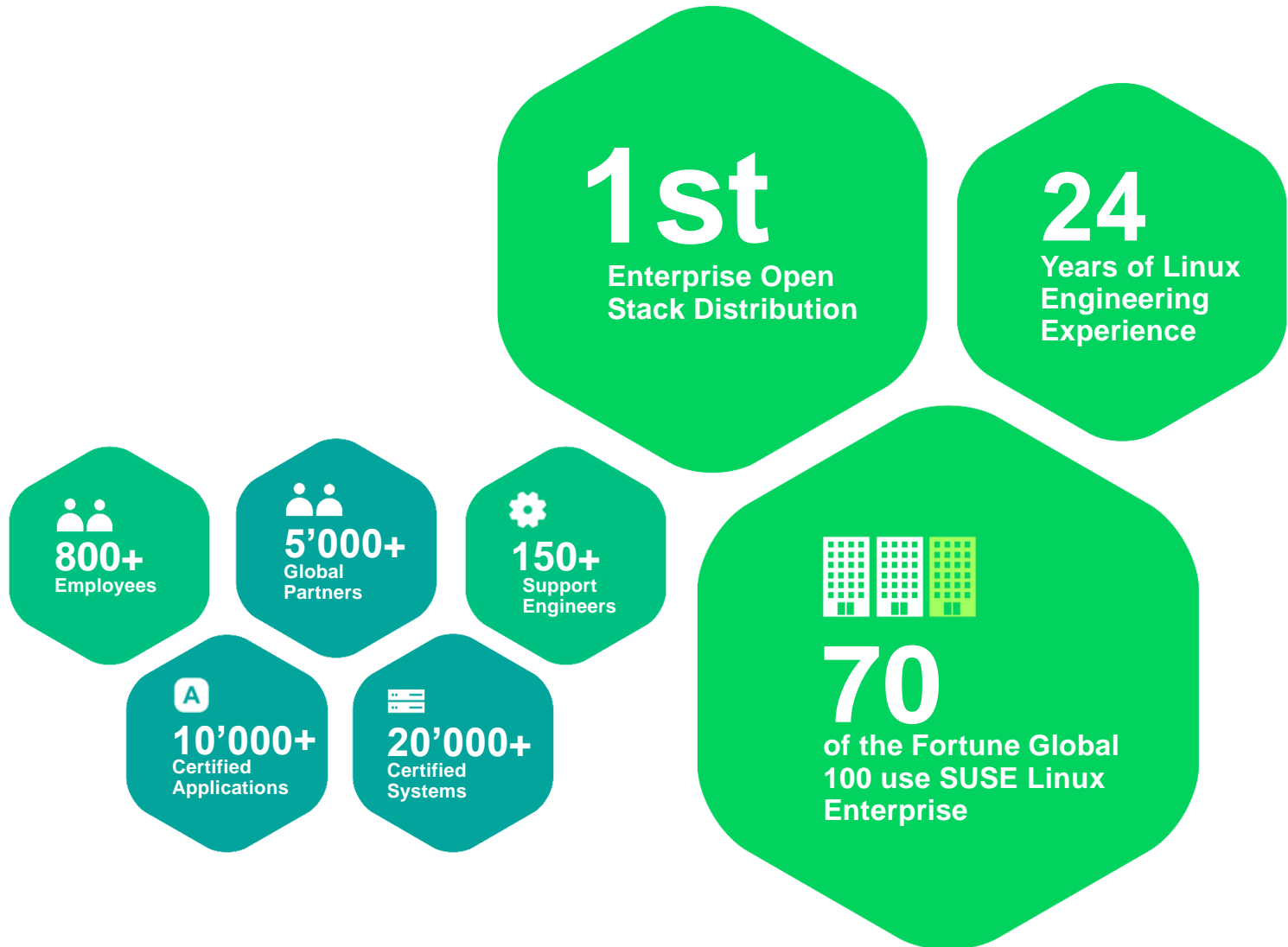
What Do We Mean by Always Open?

It's not just WHAT we do.
It's HOW we do it.

- True to open source vision
- Flexible and adaptive
- Enterprise support

always open

Where SUSE Leads

15Y+
Mainframe Linux
Over 15 years of mainframe Linux market share leadership, 80%+

4/5
Linux in Finance
4 out of 5 of the world's largest banks use SUSE Linux Enterprise

70%
SAP on Linux
70% of all SAP applications running on Linux run on SUSE, 95%+ for HANA

80%
Linux in Large Enterprise
Over 80% of the Fortune Global 50 are active SUSE Customers

9/10
Linux in Aerospace
9 out of 10 of the largest aerospace companies rely on SUSE

x10
Linux in Telecom
10 of the largest telecommunications carriers rely on SUSE

7/10
Linux in Pharma
7 out of 10 of the largest pharmaceutical companies use SUSE Linux Enterprise

7/10
Linux in Retail
7 out of 10 of the largest retailers in the U.S. are active SUSE customers

x10
Linux in Automotive
10 of the largest global automobile mfgs. are active SUSE customers

50%
Linux in HPC
Half of the world's 20 largest super computers run on SUSE

7/10
Linux in Manufacturing
7 out of 10 world's largest manufacturers use SUSE Linux Enterprise

Product Portfolio

Server and Desktop

- SUSE Linux Enterprise Server
- SUSE Linux Enterprise Server for System z
- SUSE Linux Enterprise Server for IBM Power
- SUSE Linux Enterprise Server for SAP Applications
- SUSE Linux Enterprise Server for High Performance Computing
- SUSE Linux Enterprise Server with Expanded Support
- SUSE Linux Enterprise Point of Service
- SUSE Linux Enterprise Desktop

Server Extensions

- SUSE Linux Enterprise High Availability Extension
- GEO Clustering for SUSE Linux Enterprise High Availability Extension
- SUSE Linux Enterprise Real Time Extension
- SUSE Linux Enterprise Workstation Extension
- SUSE Linux Enterprise Virtual Machine Driver Pack
- SUSE Manager Management Pack for Microsoft System Center
- Long Term Service Pack Support
- SUSE Linux Enterprise Live Patching

Cloud, Storage and Management

- SUSE OpenStack Cloud
- SUSE Manager
- SUSE Enterprise Storage
- SUSE Studio
- SUSE Linux Enterprise Server for Amazon EC2
- SUSE Linux Enterprise Server for Windows Azure

SUSE & IBM

SUSE + IBM

Enabling Advanced Data Center Solutions for More Than 20 Years

- 15 years of collaboration and market leadership for Linux mainframe
  - z, Power, Linux One

- Tight integration between IBM and SUSE engineering
  - 1st Linux based mainframe, 1st KVM support

- SUSE Linux Enterprise Server for SAP Applications is the default distribution for SAP HANA on IBM Power Systems

- Only distribution with z/VM support in SUSE OpenStack Cloud

SUSE and IBM

- **SUSE Linux Enterprise Software supported on all major IBM Hardware Platforms**
  - SUSE Linux **Enterprise Server** (incl. SAP)
  - SLE **High Availability** Extension
  - SUSE **Manager Client**

- **SUSE Linux Enterprise Server is IBM OS of choice for**
  - IBM Business Warehouse Accelerator
  - IBM High Performance Analytical Appliance
  - IBM DB2 pureScale
  - IBM Retail Solution
  - IBM Watson

Why SUSE Linux on IBM Power?

✓ Leverage existing capital investments

- Increase data center resource utilization by consolidating assets
- Reduce software licensing expense
- Avoid vendor lock in

✓ Enterprise quality maintenance

✓ Vast support ecosystem

✓ Industry standards

✓ Collaborative development

✓ Linux is a logical technical transition from Unix

✓ Leverage existing Unix management skills and expertise

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SUSE Linux Enterprise Server for IBM Power

- Native support for POWER7 and POWER8
- Support for Hardware RAS features
- Active memory sharing, NPIV
- Dynamic reallocation for DLPAR
- KVM virtualization included, PowerVM, PowerKVM
- Free access to openSUSE Build Service on POWER
- OS of choice for SAP HANA on IBM POWER (+ HA certified)
- High Availability for DB2, Websphere MQ, …

- Soon
  - Native support for POWER8 Little Endian
  - Full Snapshot and Rollback for btrfs filesystem
  - MariaDB 10 included
  - Kernel Live Patching

36+ Published benchmarks for SUSE Linux Enterprise on IBM Power

Power Linux Market Solutions

1 **Open Source Infrastructure Services**
http://www.suse.com/products/server/features/mission-critical.html

2 **SAP on Linux**
http://www.suse.com/partners/alliance-partners/sap/

3 **Watson, Hadoop and HPC**
http://www.suse.com/products/server/hpc.html

Linux on IBM Power
Workload Candidates

Best Fit Applications

– Leverage strengths of IBM Power:

- High availability
- High I/O bandwidth capabilities
- Parallel Processing applications

Examples:

WebSphere Application Server

SAP

Cognos

Informix

Java

Big Data

Insights/Streams

TSM

Good Fit Applications

– Optimized for SUSE Linux Enterprise Server, incl. x86

– Development and test

– Application availability on Linux

– Strategy within the organization

Examples:

DNS, DHCP

Rational

Messaging Broker

Apache Web Server

Samba

FTP, NFS, file and print, etc.

Benefits of a Paid Subscription

- **Timely, tested and guaranteed security updates**

- **Prompt resolution of support issues**

- **Patches that preserve application compatibility**

- **Hardware and software certifications**

- **Technology Assurance Program indemnification**

Result: Allows your staff to focus on **more valuable strategic initiatives**

Why SUSE for SAP on Power ?

Unrivaled Relationship Making SUSE the Smart Choice for SAP Workloads

- 17+ years of joint testing and development at the SAP LinuxLab
- Joint collaboration on Cloud Foundry
- SUSE Linux Enterprise is the leading platform for SAP workloads on Linux
- Seamless support from SAP and SUSE
- SUSE Linux Server for SAP Applications delivers built-in high availability, superior performance and security
- First and leading OS for SAP HANA
- The platform powering SAP HANA Enterprise Cloud
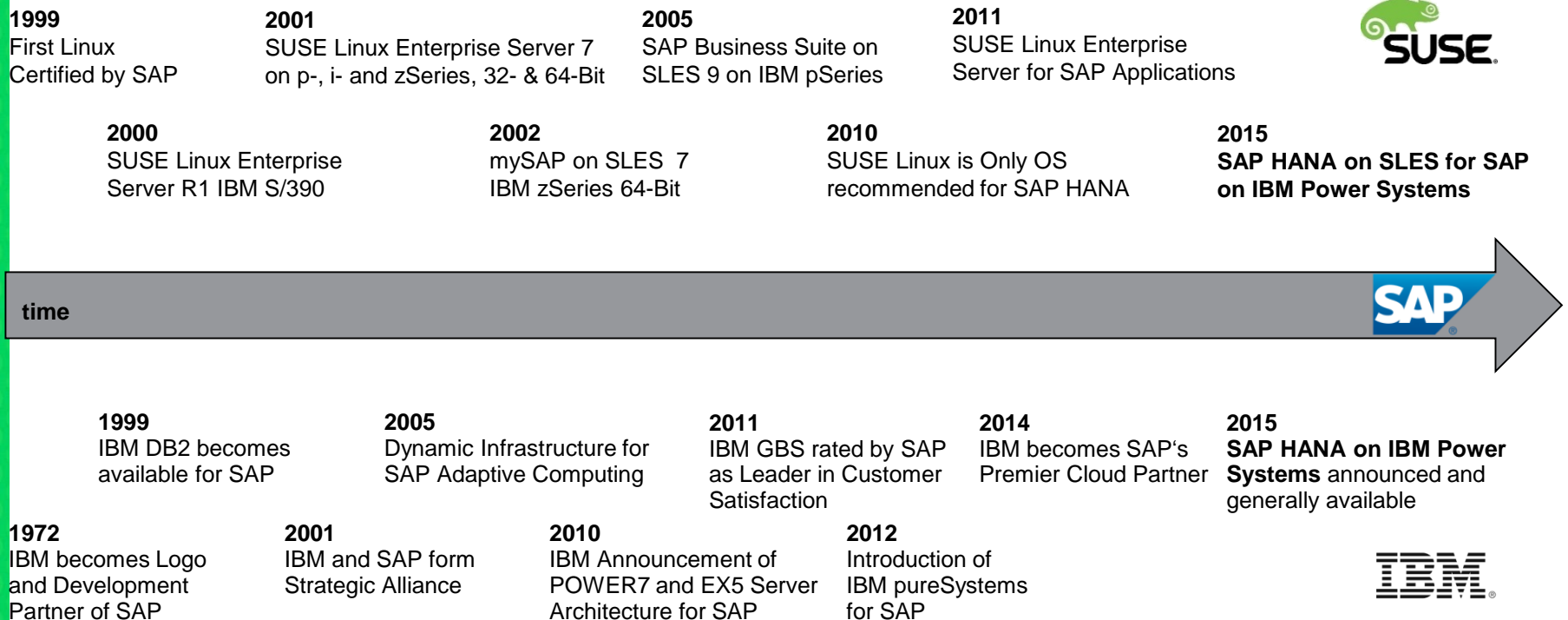- SUSE OpenStack Cloud powers SAP's HANA Cloud Platform

Why SUSE Linux Enterprise for SAP?

- **Close Engineering and Technology Partnership with SAP**
  - SAP's Software Development Reference Platform for UNIX and Linux
  - Supports all major SAP Workloads

- **Proven Platform with Excellent Customer References**
  - >4,000 SAP customers run on SUSE Linux Enterprise
  - Runs SAP HANA and SAP Cloud Solutions

- **Excedes Mission Critical Application Requirements**
  - First Linux distributor to certify HA extension for integration with SAP NetWeaver
  - Validated Best Practices Guides developed with SAP Linux Lab
  - Certified and validated Live Patching for SAP HANA

SUSE, SAP and IBM working together to deliver customer solutions Milestones

1999
First Linux
Certified by SAP

2001
SUSE Linux Enterprise Server 7
on p-, i- and zSeries, 32- & 64-Bit

2005
SAP Business Suite on
SLES 9 on IBM pSeries

2011
SUSE Linux Enterprise
Server for SAP Applications

2000
SUSE Linux Enterprise
Server R1 IBM S/390

2002
mySAP on SLES 7
IBM zSeries 64-Bit

2010
SUSE Linux is Only OS
recommended for SAP HANA

2015
**SAP HANA on SLES for SAP
on IBM Power Systems**

time

1999
IBM DB2 becomes
available for SAP

2005
Dynamic Infrastructure for
SAP Adaptive Computing

2011
IBM GBS rated by SAP
as Leader in Customer
Satisfaction

2014
IBM becomes SAP's
Premier Cloud Partner

2015
**SAP HANA on IBM Power
Systems** announced and
generally available

1972
IBM becomes Logo
and Development
Partner of SAP

2001
IBM and SAP form
Strategic Alliance

2010
IBM Announcement of
POWER7 and EX5 Server
Architecture for SAP

2012
Introduction of
IBM pureSystems
for SAP

SUSE and IBM offer a solution for fast and reliable SAP analytics

Reduce the time and effort for system set-up

Mitigate business impact with fast disaster recovery

Optimize performance

Simplify lifecycle management

SUSE Linux Enterprise Server for SAP Applications benefits

Leading platform for SAP solutions on Linux
Recommended and supported OS of choice for SAP HANA

You will benefit from …

- ✓ Improved performance
- ✓ Improved uptime
- ✓ Flexible cloud options
- ✓ Shorter deployment times
- ✓ Optimization for SAP HANA
- ✓ Extended Support option
- ✓ Integrated support from SAP and SUSE
- ✓ Validated stack that eliminates the risk of incompatibility issues
- ✓ Support for large workloads

SUSE Linux Enterprise Server for SAP Applications

- 70% reduction in TCO for a fashion retailer
- 99.99% server uptime for a glass manufacturer
- 60% performance boost for a warehouse control system

Software	Services
■ SUSE Linux Enterprise Server	■ Extended Service Pack Overlap Support
■ Installation Wizard	■ Separate Update Channel
■ SUSE Linux Enterprise High Availability Extension	■ SUSE Linux Enterprise Server Priority Support for SAP
■ Page Cache Limitation	

www.suse.com/products/sles-for-sap

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SLES for SAP Applications 12SP1

Increase the uptime of mission-critical SAP workloads

Rollback on service pack upgrade
Full System Rollback for better resiliency (take snapshots of the system, including the kernel files, and roll back if needed). Minimize risks and allow for rollback when upgrading.

Docker
Automates the deployment of applications inside software containers by providing an additional layer of abstraction and automation of OS-level virtualization on Linux.
Supported in SUSE Linux Enterprise Server 12 SP1 for SAP Applications for virtualization with non-SAP applications.

Built-in business continuity
SUSE Linux Enterprise for SAP Applications 12 SP1 extends the HA capabilities for SAP HANA, including the capability to run SAP HANA with high availability on the Amazon Web Services public cloud.
ClusterTools2 verifies that cluster configurations are set up correctly.

SLES for SAP Applications 12SP1

Increase the uptime of mission-critical SAP workloads

Innovation for SAP HANA
SUSE developed the first automated system replication solution for SAP HANA database failovers.
SAP HANA Firewall to secure and fence off SAP HANA databases is also fully supported.
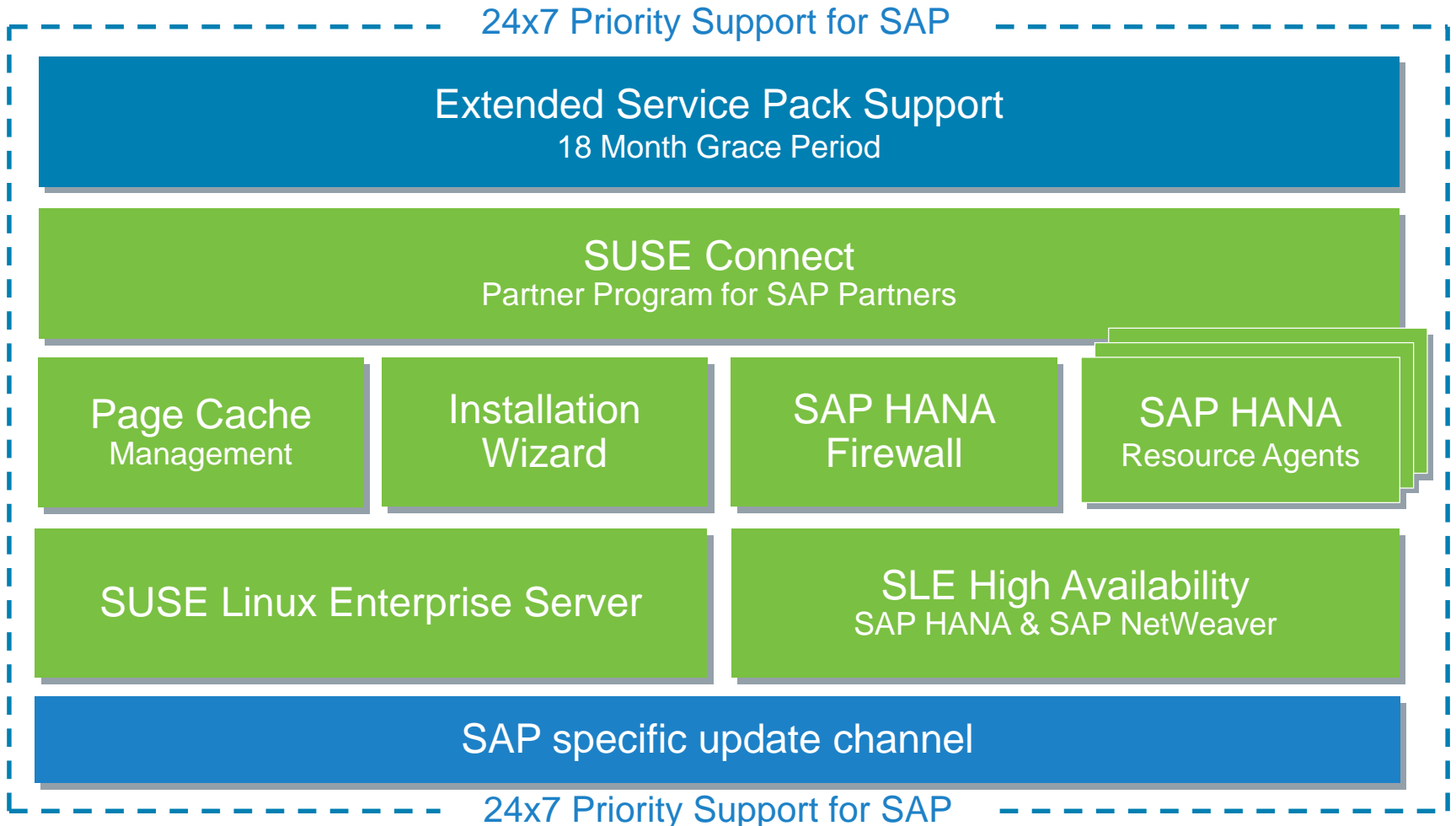
Simplified operations
System administrators can now automate routine tasks which were executed manually before.
SUSE delivers profiles for SAP HANA, SAP NetWeaver and other SAP applications, which can be changed to customize system parameters as needed.
Administrators can also build and activate custom profiles.

Leverage hardware enablement
Allow customers to run SAP solutions on new hardware platforms.
This results in better usability of SUSE Linux Enterprise Server for SAP Applications 12 as a platform for SAP in-memory products like SAP HANA.

Simplify Linux for SAP
SUSE Linux Enterprise Server for SAP Applications

24x7 Priority Support for SAP

Extended Service Pack Support
18 Month Grace Period

SUSE Connect
Partner Program for SAP Partners

| Page Cache Management | Installation Wizard | SAP HANA Firewall | SAP HANA Resource Agents |

SUSE Linux Enterprise Server

SLE High Availability
SAP HANA & SAP NetWeaver

SAP specific update channel

24x7 Priority Support for SAP

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SUSE in the SAP HANA Context

SUSE got a real head start

SAP HANA developed on SUSE Linux Enterprise Server

"Majority" of SAP HANA customers run on SUSE (95%+)

High availability for SAP HANA – SUSE leads the way (integrated with HANA System Replication)

17 SAP HANA benchmarks out – all on SUSE !
http://global.sap.com/solutions/benchmark/bweml-results.htm

What is the HANA on Power solution?

For mission-critical 24x7 customer enterprise operations

- Tailored Data Center Integration (TDI) offering - *not an appliance*

- Highly Reliable, Available and Serviceable (RAS)

- On-Demand Capacity

Customizable server options

- "IBM Power Systems Solution Editions for SAP HANA" scalable hardware configurations

- SAP HANA and SUSE Linux Enterprise Server All POWER8-based servers supported for production (POWER7+ Test/Dev only)

- Initial support for SAP HANA Business Warehouse (BW) only

IBM Press Announcement

Other SUSE Solutions

2010 to Present
Enabling an Always Open Data Center

2010

VMware partnership announced.

SUSE Linux Enterprise available on Amazon EC2.

2011

SUSE Manager released.

SUSE OpenStack Cloud launched.

SUSE Linux Enterprise Server for SAP Applications.

SUSE selected for use with SAP HANA.

2012

SUSE Linux Enterprise available on Windows Azure.

SUSECON launched in North America.

2014

SUSE joins Micro Focus.

SUSE Linux Enterprise 12 released.

2015

SUSE Enterprise Storage based on Ceph launched.

SUSE joins Cloud Foundry.

2016

SUSE CEO joins Micro Focus board.

SUSE
Manager

Get improved usability, provisioning, power management and new IT compliance and security features.

- Automate your Linux server management to increase productivity
- Reduce the complexity of Linux systems management
- Secure your workloads and ensure compliance

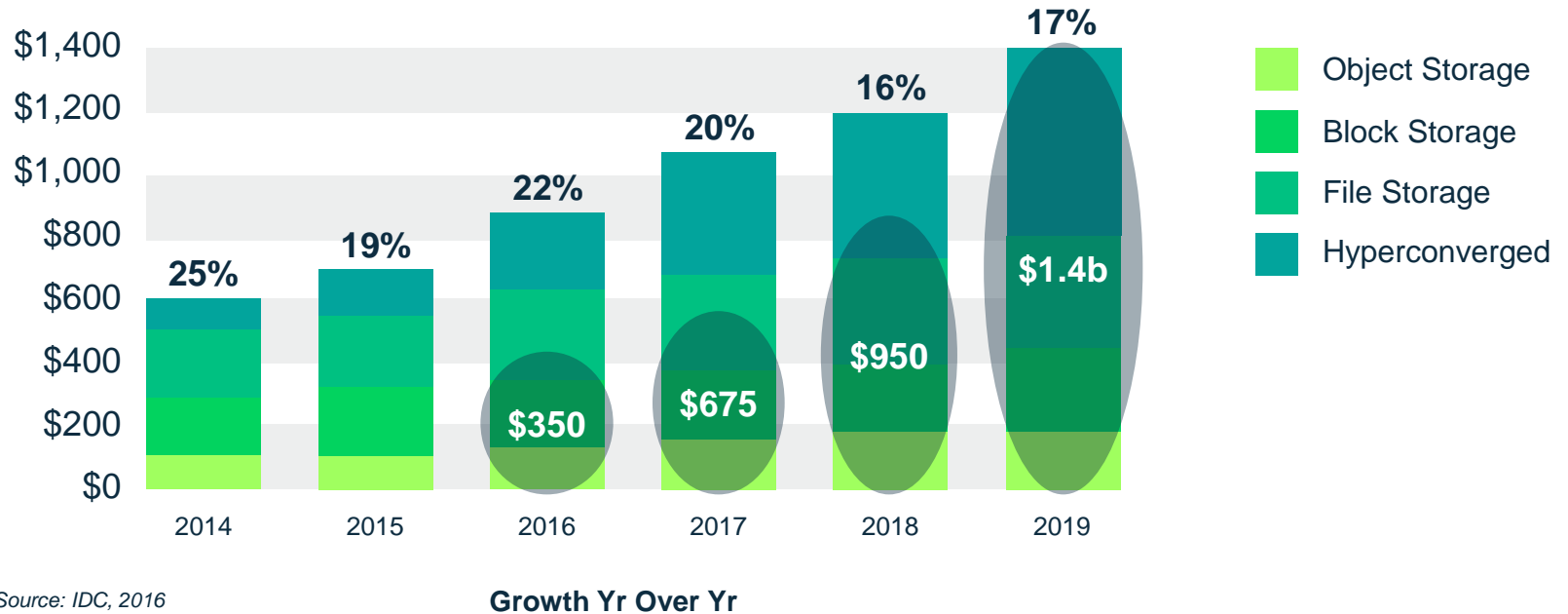# SUSE Linux Enterprise Live Patching

Keep up with compliance and security, and increase your service availability while saving the cost of downtime. And apply kernel fixes on the fly—without interruption.

- Minimize exposure to potential malicious attacks
- Ensures your workloads run without downtime
- Easily reuse your existing deployment methods

Market Opportunity: Software-defined Storage

SDS Market by Segment 2014-2019 ($m)

Legend:
- Object Storage
- Block Storage
- File Storage
- Hyperconverged

Chart values:
- 2014: 25%
- 2015: 19%
- 2016: 22% — $350
- 2017: 20% — $675
- 2018: 16% — $950
- 2019: 17% — $1.4b

Y-axis: $0, $200, $400, $600, $800, $1,000, $1,200, $1,400

Growth Yr Over Yr

Source: IDC, 2016

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SUSE Enterprise Storage

Build cost-efficient and highly scalable storage using commodity, off-the-shelf servers and disk drives. It's a highly scalable and resilient software-based storage solution, powered by Ceph.

- Reduce your capital expenditures
- Reduce your operational expenditures
- Adapt quickly as your business needs to evolve

Market Opportunity: OpenStack Cloud

SUSE Addressable Market ($m)

Chart data:
- 2016: ~$330m, 20%
- 2017: ~$500m, 53%
- 2018: ~$645m, 30%
- 2019: ~$810m, 25%

Growth Yr Over Yr
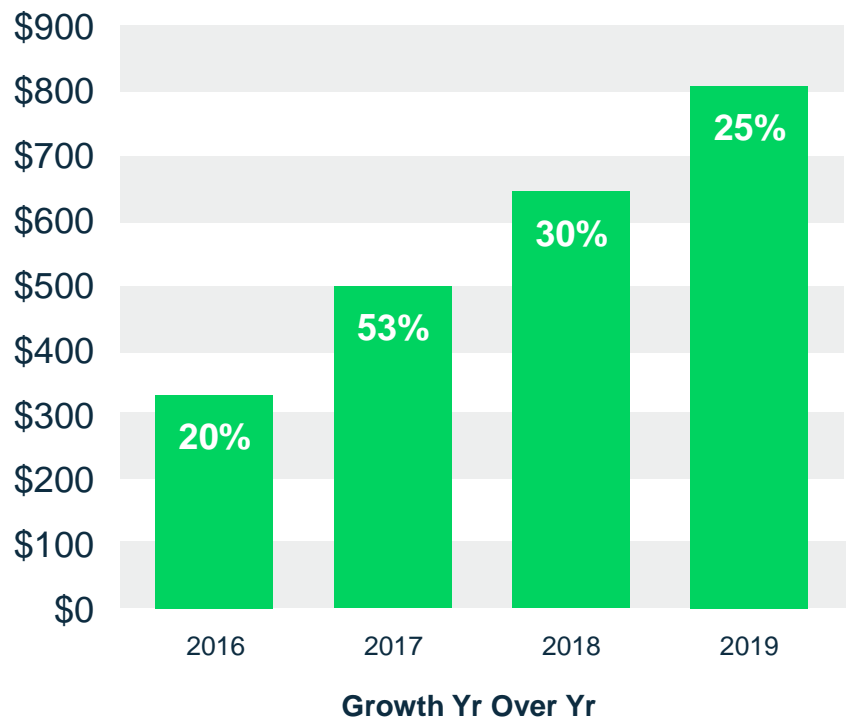
Source: 451 Research, 2015

SUSE OpenStack Cloud

Building a private cloud with OpenStack doesn't have to be so hard. SUSE OpenStack Cloud makes deploying, upgrading, and supporting open source private cloud easy.
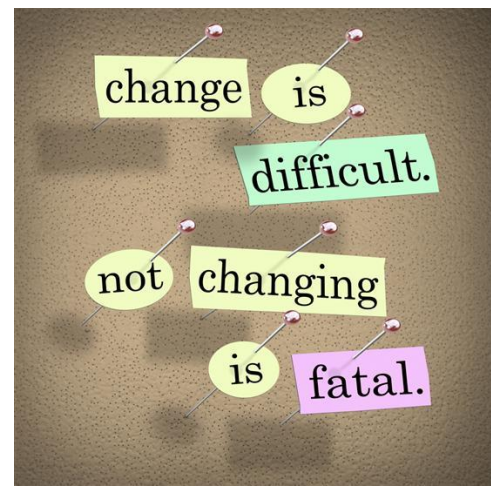
- Deliver the agility required to meet business needs
- Scale your infrastructure and IT staff efficiently

It's not «if»… It's «when» and «how fast»…

Dieter Dahmen for SAP

Learn More

1

Visit Our Website

www.suse.com

2

Download a Free Evaluation Copy

www.downloadlinux.com

3

Contact Us

david.pedevilla@suse.com

thomas.di.giacomo@suse.com

SUSECON

Training Sessions

- Outstanding technical content
- Hands-on training
- Total access to SUSE employees

Keynotes and Exams

- Customer and partner technology sessions
- Complimentary certification exams

Technology Showcase

- A unique technical experience that is different from other industry events

Washington Marriott Wardman Park, Washington, D.C., November 7-11, 2016

Save The Date ! 1st SUSE event in Romandie

14 septembre 2016, Lausanne

Where can I get more information?

- SLES for SAP Applications

    - **www.suse.com/products/sles-for-sap/features/**

    - **www.suse.com/products/sles-for-sap/technical-information/**

    - **www.suse.com/products/sles-for-sap/frequently-asked-questions/**

    - **www.suse.com/products/server/download/** (select "IBM POWER")

    - **www.suse.com/products/sles-for-sap/how-to-buy/** (select "POWER")

- Solution feature pages

    SUSE: **www.suse.com/blazing-speed-with-sap-hana.html**

    IBM: www.ibm.com/systems/power/solutions/bigdata-analytics/sap-hana/index.html

- IBM Red Guide business solution perspective paper

- IBM/SUSE/SAP Systems Webinar on Sept. 10, 2015:
  "Choose the Right Platform for your SAP HANA Strategy"
  Link to MP4 Replay:
  https://ibmsystemsmag.webex.com/ibmsystemsmag/lsr.php?RCID=3b542c31eb21b4570174853acb21a6ba

Comparison SLES vs. SLES-for-SAP

Technology / Feature	SUSE Linux Enterprise Server for POWER	SUSE Linux Enterprise Server for SAP Applications (POWER)
Operating System	Core Distribution	Core Distribution
System Management Agent	Included	Included
High Availability Extension *Load Balancing* *Cluster Engine* *Cluster File System* *Block Device Mirroring* *Data Replication* *Database Resource Agent*	Add-On	Included
SAP Enqueue Replication RA	Add-On	Included
HANA System Replication RA	**Not Available**	Included
Page Cache Limit	**Not Available**	Included
24x7 Priority Support (SUSE & SAP)	**Not Available**	Included
SAP Update channel	**Not Available**	Included