STLLUG

November 2019
December 2019
January 2020

SUSE, Enterprise Storage (SHHHHHHHHHH it's this really cool thing called ceph)

Michael Carrington, Engineer
Agenda

• Introductions
• Recent News at SUSE
• SUSE – Linux - reliability for enterprise
• SUSE – Storage
  • Architecture
  • More than cephfs
Recent News at SUSE

SUSE was acquired by investment firm EQT
Turned private March 2019
Recent News at SUSE...

Yes Thomas, making SUSE…..
mcarrington@mcsuse03:$  cd /tmp/stllug/
mcarrington@mcsuse03:/tmp/stllug> ...
mcarrington@mcsuse03:/tmp/stllug> alias stllug="cd /tmp/stllug/"
mcarrington@mcsuse03:/tmp/stllug> stllug
mcarrington@mcsuse03:/tmp/stllug> ls
imsorry.txt  nov162020.cal
mcarrington@mcsuse03:/tmp/stllug>
mcarrington@mcsuse03:/tmp/stllug> cat imsorry.txt
So, I owe you an apology.

See, I said my slides were boring and I'm used to CLI, but now LINUX has a GUI and stuff!!!

So the next slides are all pretty and well done... <whew>
I guess I'm going to try to tell a story with them, so here it goes
mcarrington@mcsuse03:/tmp/stllug>
Benefits for SUSE Partnering with EQT

**Direct Control & Accountability for All Aspects of the Business**

- We can further develop our approach to an open, open source development and business model, building on our unique culture as we expand the organization across all functions.
- We can increase agility, adaptability and strengthen strategic execution.

**Acceleration and Momentum**

- Investment will enable continued growth and innovation and will fuel the build and buy strategy needed to meet the market needs for enterprise-grade, software-defined infrastructure and application delivery solutions.
- The timing of this increased support is ideal, as our customers and partners increase their focus on open source technologies and solutions to transform their businesses.

**Continuity and Stability**

- Continuation of our growth charter and strategic direction.
- A stable leadership team focused on securing long-term profitable growth, combined with a clear and sharp focus on customer and partner success.
- We will continue to operate as an open source company, committed to the truly open, open source development and business model that is embedded in our culture and has been a key to our success.
SUSE and EQT

Developing Companies Across the Globe

• EQT invests into successful, midmarket businesses around the globe with a mission to help them develop into great and sustainable companies.

• During EQT's ownership, number of employees increased on average by 10%, sales by 10% and EBITDA by 11% each year.

• Will support the SUSE build and buy strategy with funding and industrial expertise.

What EQT is Saying About SUSE

“We were impressed by SUSE’s strong performance over the last years as well as by its strong culture and heritage as a pioneer in the open source space. These characteristics correspond well to EQT’s DNA of supporting and building strong and resilient companies, and driving growth.” — Johannes Reichel, Partner at EQT

www.eqtpartners.com
IBM buys RedHat for $34B
What does this mean?

You tell me…
SUSE at a Glance
SUSE at a Glance

- 25+ Years of Open Source Engineering Experience
- 1st Enterprise Linux Distribution
- 10 Awards in 2016 for SUSE Enterprise Storage
- 50%+ Development Engineers
- 1st Enterprise OpenStack Distribution
- 2/3+ of the Fortune Global 100 use SUSE Linux Enterprise
- +8% Higher growth for SUSE Linux vs. other Linux in 2016 (source IDC)
- $2.5B EQT Buyout FY19
<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainframe Linux</td>
<td>15+</td>
<td>Over 15 years of mainframe Linux market share leadership</td>
</tr>
<tr>
<td>Linux in Finance</td>
<td>4/5</td>
<td>4 out of 5 of the world’s largest banks use SUSE Linux Enterprise</td>
</tr>
<tr>
<td>SAP on Linux</td>
<td>70%</td>
<td>70% of all SAP applications running on Linux run on SUSE</td>
</tr>
<tr>
<td>Linux in Large Enterprise</td>
<td>80%</td>
<td>Over 80% of the Fortune Global 50 are active SUSE Customers</td>
</tr>
<tr>
<td>Linux in Aerospace</td>
<td>9/10</td>
<td>9 out of 10 of the largest aerospace companies rely on SUSE</td>
</tr>
<tr>
<td>Linux in Telecom</td>
<td>x10</td>
<td>10 of the largest telecommunications carriers rely on SUSE</td>
</tr>
<tr>
<td>Linux in Pharma</td>
<td>7/10</td>
<td>7 out of 10 of the largest pharmaceutical companies use SUSE Linux Enterprise</td>
</tr>
<tr>
<td>Linux in Retail</td>
<td>7/10</td>
<td>7 out of 10 of the largest retailers in the U.S. are active SUSE customers</td>
</tr>
<tr>
<td>Linux in Automotive</td>
<td>x10</td>
<td>10 of the largest global automobile mfgs. are active SUSE customers</td>
</tr>
<tr>
<td>Linux in HPC</td>
<td>50%</td>
<td>Half of the world’s 20 largest super computers run on SUSE</td>
</tr>
<tr>
<td>Linux in Manufacturing</td>
<td>7/10</td>
<td>7 out of 10 world’s largest manufacturers use SUSE Linux Enterprise</td>
</tr>
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SUSE Delivers from Edge to Core to Cloud

Application Delivery

- Container Management
  - SUSE CaaS Platform
- Platform as a Service
  - SUSE Cloud Application Platform

Software-defined Infrastructure

- Private Cloud / IaaS
  - SUSE OpenStack Cloud
- Compute
  - Virtual Machine & Container
- Storage
  - SUSE Enterprise Storage
- Networking
  - SDN and NFV
- Multimodal Operating System
  - SUSE Linux Enterprise Server
- Public Cloud
  - SUSE Cloud Service Provider Program

Physical Infrastructure: Multi-platform Servers, Switches, Storage

Services

- SUSE Global Services
- Consulting Services
- Select Services
- Premium Support Services
Linux
SUSE Linux Enterprise 15 – Portfolio

Server and Desktop
- SUSE Linux Enterprise Server for SAP Applications
- SUSE Linux Enterprise Server for High Performance Computing
- SUSE Linux Enterprise Desktop
- SUSE Linux Enterprise Real Time
- SUSE Linux Enterprise Server with Expanded Support
- SUSE Linux Enterprise Point of Service

Server Extensions
- SUSE Linux Enterprise High Availability Extension and GEO clustering
- SUSE Linux Enterprise Live Patching
- SUSE Linux Enterprise Workstation Extension
- Long Term Service Pack Support
- SUSE Linux Enterprise Virtual Machine Driver Pack

Cloud, Storage and Management
- SUSE Enterprise Storage
- SUSE CaaS Platform
- SUSE Cloud Application Platform
- SUSE Manager
SUSE Linux Enterprise 15
SP1 Released June 24, 2019

Mediums/Channels
- Unified Installer
  - Off-line installation medium
  - On-line installation & update channels
- JeOS
- Containers
- Windows Subsystem for Linux (WSL)
- Quarterly Update to install media

Architectures
- X86-64
- Power LE
- System z
- ARM64

Target scenarios
- Physical
- Virtual host
- Virtual guest
- Container
- Public cloud

Microsoft Azure, Amazon EC2, Google Cloud, Oracle Cloud Infrastructure, Alibaba Cloud
SUSE Linux Enterprise 15 – Install Screen

Language, Keyboard and
Product to Install

- SUSE Linux Enterprise Server 15 SP1
- SUSE Linux Enterprise High Performance Computing 15 SP1
- SUSE Linux Enterprise Real Time 15 SP1
- SUSE Linux Enterprise Server for SAP Applications 15 SP1
- SUSE Linux Enterprise Desktop 15 SP1
- SUSE Manager Server 4.0
- SUSE Manager Proxy 4.0
- SUSE Manager Retail Branch Server 4.0
Software Development
Developer Flexibility

- Move to production faster from developer setups
- Two options for a direct path to SUSE Linux Enterprise

Option 1
Community Linux openSUSE Leap → SLE 15

Option 2
Free Developer Subscription → SLE 15
Storage
The World is Changing

29 Billion
Connected Devices
are forecast by 2022

18 Billion
will be Related to IoT
including connected cars, machines, meters, wearables and other consumer electronics*

93% of Data
will be Unstructured by 2022
A Data Explosion
Demand For Data Storage Will Outstrip Production

Mobile Data
Medical Data
IoT Data
Videos
Transaction Data
Email

175ZB by 2025
Real World Examples

Body Cams

Nearly half the US law enforcement agencies use body cams

IoT Sensors

26.66 billion sensors in 2019

Email

Email users grow by more than 100 million per year
What You Have Today Can’t Keep Up

Difficult to Scale and Manage Data Growth

Expensive

Won’t Extend to the Software-defined Data Center
SUSE Storage Solutions

Our intelligent software-defined storage solutions enable you to transform your enterprise storage infrastructure to:

• **Manage data growth and complexity** with enterprise grade unified storage ensuring applications have access to storage they need, when and where they need it.

• **Reduce IT costs** by using commodity off-the-shelf servers and drives, in your data center or the cloud.

• **Seamlessly adapt to changing demands** by automatically optimizing storage when upgraded or added without disruption.
Real Success with SUSE Storage Solutions
SUSE: Underpinning Digital Transformation

Application Delivery

Container Management
SUSE CaaS Platform

Platform as a Service
SUSE Cloud Application Platform

Software-defined Infrastructure

Private Cloud / IaaS
SUSE OpenStack Cloud

Compute
Virtual Machine & Container

Storage
SUSE Enterprise Storage

Networking
SDN and NFV

Multimodal Operating System
SUSE Linux Enterprise Server

Physical Infrastructure: Multi-platform Servers, Switches, Storage

Services

SUSE Global Services
Consulting Services
Select Services
Premium Support Services

Open, Secure, Proven
SUSE Enterprise Storage

An intelligent software-defined storage solution, powered by Ceph technology, that enables IT to transform their enterprise storage infrastructure to deliver highly scalable and resilient storage that is cost-efficient and able to seamlessly adapt to changing business and data demands.
SUSE Enterprise Storage
Bridge to the Future

**Today’s Data Center**
- Traditional data center with storage silos
- Disparate network, compute and storage setup
- Data center disruptions because of regularly changing technologies

**Tomorrow’s Data Center**
- Software-defined data center
- Agile infrastructure with support for DevOps model through automation
- Simplified data center management
- Increased speed of delivery

SUSE Enterprise Storage is the first step in a software-defined future.
SUSE Enterprise Storage
Open Source Ceph as the Base
How to Deploy SUSE Enterprise Storage
Steps to Deploy with DeepSea

- `salt-run state.orch ceph.stage.0 (prep)`
- `salt-run state.orch ceph.stage.1 (discovery)`
- Edit proposal(s) and policy.cfg file
- `salt-run state.orch ceph.stage.2 (configure)`
- `salt-run state.orch ceph.stage.3 (deploy core)`
- `salt-run state.orch ceph.stage.4 (deploy iscsi, rgw, mds, etc)`
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