How & Why We Embraced Open-Source 20 years ago
And What We Learned!!

Amit Bhutani
Linux & Open Source Technologist
Dell EMC

@Amitinator
Pop Quiz #1
Which company has been “doing” open source longer?
Clarification on Pop Quiz #1:

“Doing” == Consuming + Solutionizing + Developing + Community Building
a) Microsoft
b) Google
c) Amazon
d) Rackspace
e) Canonical
f) Dell EMC

HINT: The company has been doing it longer than LF has existed ☺
Pop Quiz #2
Who developed the following open-source software projects?
Dell EMC
About Me

Education
• BS Chemical Engineering (CIT)
• MS Computer Engineering (WVU) → Discovered Linux in 1998

Work
• 18 years at Dell EMC
• Linux Technologist + Open Source Evangelist
• Data Center/Cloud product development - Appliances/Servers/Software Defined X
• Consumer product development - PCs/Workstations/Tablets/Chromebooks/Gaming

Life
• Non-judgmental “Born Again” Vegetarian 😊
• Unofficial spokesman for the city tagged “Keep Austin Weird”
• Snowboarding, Beach Volleyball and multi-discipline endurance sports (IM 140.6)
• Decentralization, Blockchain and Crypto Currency Hobbyist
<table>
<thead>
<tr>
<th>Affiliated Companies</th>
<th>Dell Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell</td>
<td>Information Technology and Services</td>
</tr>
<tr>
<td></td>
<td>Round Rock, Texas</td>
</tr>
<tr>
<td></td>
<td>82,475 followers</td>
</tr>
<tr>
<td>VMware</td>
<td>Computer Software</td>
</tr>
<tr>
<td></td>
<td>712,640 followers</td>
</tr>
<tr>
<td>Pivotal Software, Inc</td>
<td>Computer Software</td>
</tr>
<tr>
<td></td>
<td>60,682 followers</td>
</tr>
<tr>
<td>Secureworks</td>
<td>Computer &amp; Network Security</td>
</tr>
<tr>
<td></td>
<td>27,694 followers</td>
</tr>
<tr>
<td>Dell EMC</td>
<td>Information Technology and Services</td>
</tr>
<tr>
<td></td>
<td>863,280 followers</td>
</tr>
<tr>
<td>RSA Security</td>
<td>Computer &amp; Network Security</td>
</tr>
<tr>
<td></td>
<td>94,522 followers</td>
</tr>
<tr>
<td>Virtustream</td>
<td>Information Technology and Services</td>
</tr>
<tr>
<td></td>
<td>28,581 followers</td>
</tr>
</tbody>
</table>
Where did it all start?

PowerEdge Server
First Server OEM Vendor to offer Linux pre-installed

Apr 1999 Press Release:
Dell to offer Workstation, Server and Business Desktop products pre-installed and certified with RHL 6.0 on specific "Red Hat Ready" certified configurations
Motivation

- In response to increasing demand from users for Linux preinstalled and certified systems
- Visionary Founder & CEO who often thinks “outside of the box”
- No *NIX baggage
- Passionate and competent team of Linux engineers
Subsequent milestones for Servers

- SuSE SLES factory-installed
- First OEM to provide support for EM64T (AMD64)
- RHEV
- Ubuntu LTS Certified and recent full OEM support
- Linux based Solutions
  - HPC (contribute to openHPC)
  - Database (Oracle on Oracle Linux)
  - IaaS (Open Stack with Ceph)
  - SAP
Server Team Charter

- Linux “just works”
- Work early; Work often; Work upstream
- Every device driver baked into the upstream Linux kernel
- Best effort support for other community distros
Server Open-Source Dev Projects

- DKMS
- biosdevname
- libsmbios
- firmware-tools
- efibootmgr
- redfish-ansible-modules (for OOB mgmt.)
- Cockpit modules (for HW inventory and others)
- Many more…
Dell EMC Networking Open-Source Projects

• Open Networking OS/Virtualization/SDN Fabrics:
  – Cumulus Linux
  – Big Switch Networks “Switch Light” OS1 (based on ONL)
  – Pluribus Netvisor Open Network Edition(ONE) Network OS
  – IPinfusion OcNOS
  – Midokura MidoNet

• Participate actively in various LF “Open Source Networking” initiatives (Open Switch, ONOS, OvS, OPNFV, ODL etc.)
Dell Client Open-Source Projects

- First to market with pre-installed Linux on PCs (2007)
- Project Sputnik “Developer Edition” XPS Laptops (2012-present)
- First to market with UEFI, Secure Boot, LVFS (native capsule firmware updates using fwupdate)
- Subsystems like power management much improved due to work done in conjunction with CPU, GFx, WiFi vendors in the open
- RHEL certified across Precision line of Workstations Desktop / Mobile product line
- EdgeX Foundry™ is a vendor-neutral open source project building a common open framework for IoT edge computing.
Heritage EMC Open-Source Projects

- **REX-Ray** – A storage plugin to CSI that provides a vendor agnostic storage orchestration engine that solves the persistent storage challenge for cloud native workloads that are built using Docker containers, Kubernetes and Mesos.

- **Rack HD** - A platform for vendor agnostic management and orchestration of physical hardware

- **CoprHD** - An open source software defined storage controller and API platform.

- **Unik** - A tool for compiling application sources into unikernels

- Multiple Docker/Ansible/Puppet modules for all the Storage products
Get a Champion
(be a champion)

Get Top Down “Buy In”
You need someone high up to go to bat for you
You must be ever vigilant
Have a clear open source business model

Have a strategy and goal in place
Get the business folks involved early!
Have an OSPO!

Agree upon licensing terms

Make Open Source Licensing process a streamlined process
Listen to your customers

Look for problems to be solved and not some “cool” technology that is solving for a problem.
What did we learn? 5/8

Develop in the open

Upstream or GitHub wherever appropriate
Designate a Community Manager

Focus on community building. Be transparent.
Decentralize governance

Be the hub, encourage spokes. Encourage Contributors. Only way to scale.
Empower Developers with the right tools

Code audit, compliance, vulnerability checkers. Get a consulting service like LF if needed.
Thank You!

Reference URLs:

- https://github.com/dell
- https://github.com/thecodeteam
- https://opensource.dell.com
- https://linux.dell.com/
- http://lists.us.dell.com/mailman/listinfo
- https://www.dell.com/developers
PS: We are hiring!!

• Server Linux Team: https://jobs.delltechnologies.com/job/round-rock/linux-open-source-software-senior-engineer/5787/9012216

• Many more on https://jobs.dell.com/