AGENDA

- Recap RHEL 8 announcement
- Red Hat® Enterprise Linux® roadmap
- Customer problems and solutions
- A few new things on the horizon
- Q&A
# RHEL 8 Announcement

- Red Hat Insights with all RHEL subscriptions
- Application Streams
- Red Hat Enterprise Linux web console
- Red Hat Enterprise Linux System Roles

"What's new in Red Hat Enterprise Linux 8" - Wednesday 4:30 - 5:15 PM
RED HAT INSIGHTS

Included with your Red Hat Enterprise Linux subscription
RED HAT INSIGHTS
Automated, experience driven, proactive guidance for customer success

- **DISCOVER**
  - 1,000,000+ solved cases

- **VALIDATE**
  - 100,000+ Unique solutions

- **RESOLVE**

Continuous identification of new risks driven by unique industry data
Based on real-world results from millions of enterprise deployments
No new infrastructure to manage
Integrates with tools you already have

“85% of critical issues raised to Red Hat® support are already known to Red Hat or our partners.”
— RED HAT GLOBAL SUPPORT SERVICES

“Getting Started with Red Hat Insights” - (recording) Tuesday 3:45 - 4:30 PM
The intermediate issuer certificate for this site is signed using SHA-1.

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[root@ml user]# update-crypto-policies --set FUTURE
Setting system policy to FUTURE
Note: System-wide crypto policies are applied on application start-up. It is recommended to restart the system for the change of policies to fully take place.
[root@ml user]# curl https://sha1-intermediate.badssl.com
curl: (60) SSL certificate problem: EE certificate key too weak
More details here: https://curl.haxx.se/docs/sslcerts.html

curl failed to verify the legitimacy of the server and therefore could not establish a secure connection to it. To learn more about this situation and how to fix it, please visit the web page mentioned above.
[root@ml user]# exit
[user@ml -]$ logout
Connection to ml.cockpit.lan closed.
[admin@ml -]$ logout
Connection to ml.cockpit.lan closed.
[stef@dragon demo]$
KEY RISKS DISCOVERED

Tailored resolution steps included for resolution

Performance issue
Network interface is not performing at maximum speed
Recommended action
Check cable, connections, and remote switch settings

Security risk detected
Privilege escalation
Recommended action
Apply mitigation and update the kernel

Availability
OpenShift operations fail if insufficient CPU or memory
Recommended action
Increase CPU and/or memory reservation

Stability
Filesystem has exceeded 95% capacity
Recommended action
Increase free space on the host.

“Getting Started with Red Hat Insights” - (recording) Tuesday 3:45 - 4:30 PM
RED HAT ENTERPRISE LINUX
ROADMAP OVERVIEW
LEGAL DISCLAIMER/NDA

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RED HAT ENTERPRISE LINUX ROADMAP

<table>
<thead>
<tr>
<th>CY 2018</th>
<th>CY 2019</th>
<th>CY 2020</th>
<th>CY 2021</th>
<th>CY 2022</th>
</tr>
</thead>
</table>
| Red Hat Enterprise Linux 8  
Red Hat Enterprise Linux for Real Time  
Red Hat Enterprise Linux for SAP® Solutions |
| .0 | .1 | .2 | .3 | .4 |
| Red Hat Enterprise Linux 7  
Red Hat Enterprise Linux Atomic Host  
Red Hat Enterprise Linux for Real Time  
Red Hat Enterprise Linux for SAP Solutions  
Red Hat Enterprise Linux for SAP Applications |
| .5 | .6 | .7 | .8 | .9 |
| Red Hat Enterprise Linux 6  
Red Hat Enterprise Linux for SAP Applications |
| .1 | | | | |
| Red Hat Software Collections |
| 3.1 | 3.2 | 3.3 | 3.4 | |
| Red Hat Developer Toolset |
| 7.0 | 8.0 | 8.1 | 9.0 | |

SUBJECT TO CHANGE WITHOUT NOTICE - DO NOT MAKE BUSINESS PLANS BASED ON THIS SLIDE
AN IMMUTABLE HOST
Combines the innovations of Container Linux and Atomic with the stability and ecosystem of RHEL

INTEGRATED AND DELIVERED W/ OPENSIFT
- Small footprint, ~400 RHEL packages
- Fast provisioning: clusters deploy in minutes
- Cluster-centric over-the-air updates & upgrades
- Managed and automated via operators

APPLICATION/SERVICE
Red Hat Enterprise Linux Application Binary Interface (ABI)

- kubelet
- cri-o
- ignition
- kernel
- systemd
- SELinux
PREDICTABLE RELEASES*

Major releases

*Release numbers & cadence for illustrative purposes only
PREDICTABLE RELEASES*

*Release numbers & cadence for illustrative purposes only

Minor releases

Month: 6 12 18 24 30 36 42 48

RHEL 8.0
RHEL 8.1
RHEL 8.2
RHEL 8.3
RHEL 8.4
RHEL 8.5
RHEL 8.6
RHEL 8.7

………
MANAGING & SECURING DATA IN THE HYBRID CLOUD
MANAGING STORAGE COSTS IN THE HYBRID CLOUD

“IT’s one thing to secure and manage my company’s data, but storage costs can sometimes be unpredictable. How can I contain this cost in my datacenter? And in the Cloud?”
VDO data reduction processing

1. **Data blocks**
   - 4 KB
   - Diagram showing data blocks

2. **Thin provisioning**
   - Eliminate zero blocks
   - Diagram showing elimination of zero blocks

3. **Data de-duplication**
   - Eliminate duplicate blocks
   - Diagram showing elimination of duplicate blocks

4. **Data compression**
   - Compress remaining blocks
   - Diagram showing compression of remaining blocks
## HOW MUCH CAN I SAVE?

Depends on your data and workflow

### COMPRESSIBLE DATA
- Databases (textual content)
- Messaging
- Monitoring, alerting, tracing
- Systems, application logging

### REDUNDANT WORKFLOW
- Backups
- Virtual desktops
- Virtual servers
- Containers
- Shared home directories

<table>
<thead>
<tr>
<th>SAVINGS POTENTIAL</th>
<th>50% (2x)</th>
<th>66% (3x)</th>
<th>75% (4x)</th>
<th>80% (5x)</th>
<th>83% (6x)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td></td>
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</tbody>
</table>
SECURELY MANAGING DATA IN THE HYBRID CLOUD

“I need to move some workloads into the Cloud, but I don’t trust anyone with my company’s data. How do I secure my data while also maintaining total control?”

CHARLIE
Architect
Financial Sisters, a financial services provider
NETWORK BOUND DISK ENCRYPTION & TPM

ARCHITECT DEFINES THE TRUSTED NETWORK!

LUKS encrypted volumes allow you to transparently encrypt data at rest across flexible, software-defined disks.

Keep the stateless server behind your firewall. Manage access to LUKS encrypted volumes anywhere!

Store the key with TPM

RHEL 7: Use LUKS1 & TPM 1.2

RHEL 8: Use LUKS2 & TPM 2.0

- Full disk encryption, not just the boot volume
- Hardware Root of Trust to store and manage encryption keys
- Manage from Web Console

“Top 10 security changes in Red Hat Enterprise Linux 8” - Wednesday 3:30 - 4:15 PM
“I’m a Command Line Hero (fan). I have all kinds of kickstart files, monitoring, alerting, debugging scripts and more that have worked for me for 15-20 years. Why would I bother with a web console to do my job?”
“I’ve been managing systems for a while, but am relatively new to Linux. How can I get productive within a week? Please don’t tell me to read man pages or search the web to figure out how to manage RHEL.”
The Web Console is a main systems interface that helps to:

- Modernize RBAC user interface (UI) tooling for networking, storage, SELinux and more!
- Deliver more sophisticated health indicators
- Provide better gateway for Windows admins
- Support jump to admin console support in Red Hat Satellite
EASIER ADMINISTRATION WITH ANSIBLE

ANSIBLE PLAYBOOKS
hosts: all
role: rhel-system-roles.network

RED HAT ENTERPRISE LINUX SYSTEM ROLES

<table>
<thead>
<tr>
<th>Network</th>
<th>SELinux</th>
<th>TimeSync</th>
<th>kdump</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>Logging</td>
<td>Firewall</td>
<td>Tuned</td>
</tr>
<tr>
<td>NFS</td>
<td>Metrics</td>
<td>Identity</td>
<td>Boot</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8.x</td>
<td></td>
</tr>
</tbody>
</table>

CURRENT ROLES
- Network
- Security-Enhanced Linux (SELinux)
- TimeSync
- Postfix
- kdump

TARGETED ROLES
- Storage
- Logging
- Network file system (NFS)
- Metrics
- Tuned
- Firewall
ENABLING HARDWARE & CLOUDS

ENABLING NEW DEPLOYMENTS
TRUSTED PARTNER ECOSYSTEM*

*Small representative set of partners
NUMBER 1 AND 2 IN THE TOP500*

Collaboration with IBM, Nvidia, Mellanox & public sector customers

Powering both compute-intensive workloads and AI/ML workloads that are taking advantage of GPU computing

**Summit**: 9216 x 22 core Power 9 Servers with 27648 NVIDIA Tesla v100 GPUs: **200 petaflops**

**Sierra**: 4320 x 44 core Power 9 Servers with 17280 NVIDIA Tesla v100 GPUs: **125 petaflops**

Visit IBM, Mellanox & Nvidia at the Expo Center

*https://en.wikipedia.org/wiki/TOP500#TOP_500*
ENABLING NEW WORKLOADS ON RHEL & OPENSHIFT

Collaboration with Nvidia results in certification of DGX-1 and DGX-2 for RHEL & OpenShift to power AI/ML/DL workloads

Powering both compute-intensive workloads and AI/ML workloads that are taking advantage of GPU computing

Visit Nvidia at the Expo Center
RHEL ARM INSTANCES ON AWS

Enabling new deployments on architectures & footprints of customer choice

Powering both compute-intensive workloads and AI/ML workloads that are taking advantage of additional architectures in the cloud.

Visit AWS and Arm in the Expo Center
UP AND COMING TECHNOLOGIES
Using eBPF to dynamically expand kernel capabilities

- **eBPF** — allows userspace applications to attach programs at different hooks in the kernel
- **Tools already implemented to aid dynamic system tracing and debugging (bcctools, bpftrace)**
- **XDP** — hooks for packet processing
  - Allow packet processing at the earliest point in the kernel
  - XDP actions: drop, forward, receive
STRATIS

Stratis is Technology Preview for Red Hat Enterprise Linux 8.0

Local storage management from filesystem through to storage pools

- Ties together block device and filesystem management akin to "volume-managing filesystems" like btrfs and ZFS.
- Multiple VMFs can be created on top of a pool of block devices.
- Manages snapshots and thin provisioning.
- Automatically can grow filesystem size as needed.
RELATED SESSIONS

Please fill out the survey for this session before you leave! Thanks!

Tuesday Sessions (Watch the recordings)
- “Getting Started with Red Hat Insights” - 3:45 - 4:30 PM

Wednesday Sessions
- “Top 10 security changes in Red Hat Enterprise Linux 8” - 3:30 - 4:15 PM
- “What’s new in Red Hat Enterprise Linux 8” - 4:30 - 5:15 PM

Thursday Sessions:
- “Red Hat Enterprise Linux 8 Networking" - 1:00 - 1:45 PM

Interactive Training:
- VDO Configuration: https://www.katacoda.com/smcbrien/scenarios/vdo-configure
- eBPF Tracing: https://www.katacoda.com/smcbrien/scenarios/ebpf-tracing