
# RED HAT SECURITY ROADMAP 2019

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# AGENDA

Red Hat and Security in the Community

What we are seeing as trends in :

1. Creating secure foundations
2. Enabling hybrid cloud deployments
3. Automating security compliance

Where else to go for more information

Q&A

# RED HAT AND SECURITY

# RED HAT AND SECURITY?

Red Hat is not a security company, but….

We build security into everything we ship and deliver security capabilities

Over 50 sessions, labs, lightning talks with security content at this Summit!

# SECURITY THROUGHOUT THE STACK + LIFECYCLE


**DESIGN**

- RED HAT® CONSULTING Guided Transition
- RED HAT® SERVICES
- RED HAT® TRAINING

**BUILD**

- RED HAT® OPENSHIFT Container Platform
- RED HAT® MIDDLEWARE
- 3scale BY RED HAT®

**RUN**

- RED HAT® ENTERPRISE LINUX®
- RED HAT® CoreOS
- RED HAT® VIRTUALIZATION
- RED HAT® OPENSTACK® PLATFORM
- RED HAT® STORAGE

**MANAGE & AUTOMATE**

- RED HAT® ANSIBLE® Automation
- RED HAT® SATELLITE
- RED HAT® CLOUDFORMS

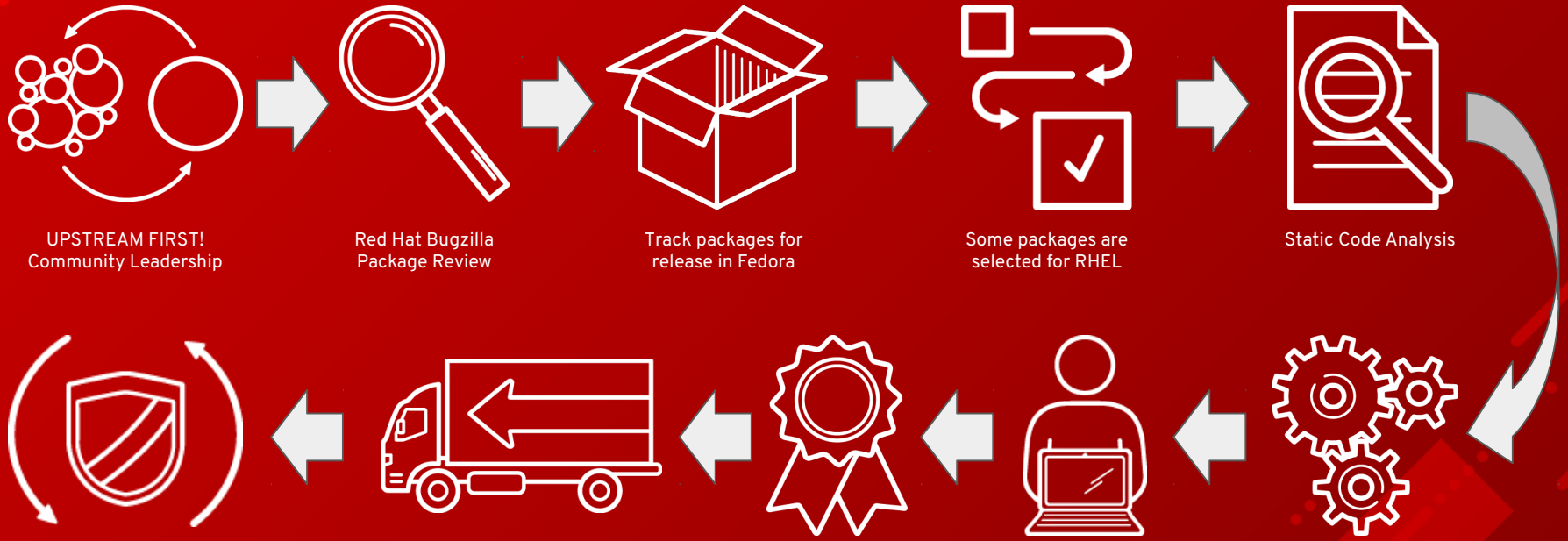
**ADAPT**

- RED HAT® INSIGHTS
- RED HAT SECURITY ADVISORIES

TESTED, CERTIFIED, STABLE, AND SUPPORTED OPEN SOURCE SOFTWARE

# RED HAT SUPPLY CHAIN SECURITY

## Reducing Risk and Making Open Source Consumable by the Enterprise



1. CREATING SECURE FOUNDATION
2. ENABLING HYBRID CLOUD DEPLOYMENTS
3. AUTOMATING COMPLIANCE

# CREATING SECURE FOUNDATIONS

The foundation drives the security of the rest of the stack

## Preventing intrusions and attacks

- SELinux mandatory access controls to prevent breaches with bare metal, VMs and Containers
- USBGuard prevents mounting of rogue / suspect USB devices
- UEFI Secure Boot for verified integrity of boot image
- Trusted Platform Module (TPM) 2.0 support for hardware based key storage
- Smartcard and HSM support for tamper proof digital certificate storage

## Cryptographic protection

- Wide variety of strong, peer-reviewed and FIPS certified crypto algorithms for privacy
- Encrypted data at rest and in-flight throughout the Red Hat software stack
- Deprecation of old crypto algorithms to remove attack vectors

## Networking / Firewall

- NFTables firewall for stateful firewalls with online policy change
- IPSec and MACSec L2 for encrypted network communications

# TRENDS IN CREATING SECURE FOUNDATIONS

- Advanced cryptographic algorithms
  - While respecting the need for binary compatibility with existing releases (i.e. TLS 1.3)
  - Post-Quantum Computing cryptography research (a.k.a. Watch this space)
  - More products with FIPS compliance & regular FIPS validation of products
- Unified crypto policies across all apps on a system for easier management
  - Disable an algorithm system or site-wide without breaking the stack
- Hardware root of trust
  - Attestation standards for proving a system hasn't been tampered with
  - Trusted Platform Modules using PKCS#11 for broader crypto integration
  - Disk crypto key storage (LUKS and NBDE) in TPM for protecting against disk theft*
  - More applications using TPM, Virtual TPMs & other HSMs for the VMs and Containers
- Methods for executing only 'white-listed' utilities and applications to reduce risk
  - Leveraging Software ID (SWID) Tags across all of Red Hat portfolio
- Automatic disk decryption in secured manner (see NBDE)
  - Better integration into Gluster and Ceph



*See booth for example

# IDENTITY MANAGEMENT & AUTHENTICATION

It’s not a separate product, it’s a core capability

## Identity Management is a core part of the Red Hat stack

- Centralized Linux authentication and authorization for users, groups
- Integrates with integration into Active Directory
- Centralized management of system services (host name, services, etc)
- Smartcard authentication across Linux & Windows systems

## Certificate Services

- Provides PKI and X.509v3 certificates for encrypted and authenticated communications

## Directory Server

- Provides standards-based LDAP identity for Linux and Unix IDs

# TRENDS IN IDENTITY MANAGEMENT & AUTHENTICATION

- Better integration of Identity Manager with middleware identity management
  - Beyond OpenStack
- Automatic enrollment of systems into Identity Management upon deployment
  - Using Ansible and other tools
  - RHEL Engineering maintained modules
- Hardware Security Module use
  - TPM, Virtual TPM and other dedicated hardware devices
  - Consistent, Easier Smartcard support
- Better integration of PKI across whole stack
  - What about LetsEncrypt? Smartcard and PKI

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# HYBRID CLOUD PLATFORMS

## Red Hat Virtualization, Red Hat OpenStack Platform and Red Hat OpenShift Container Platform*

### Control

- Content scanning upon deployment to prevent non-compliant instances from running
- Signing and scanning of Container images to allow verification of trust back to build time
- SELinux mount points for isolation of container block devices and file systems
- Red Hat CoreOS (minimized, immutable OS) powering OpenShift 4.x

### Defend

- SVirt provides automatic SELinux protecting VMs, Containers and host from exploiting each other
- Security Context Controls and non-root Containers for limiting risk and exploits
- Automatic firewall and VPN encrypted (MACSec L2, TLS & IPSec) communications between guests and hosts
- Automatic firewall configuration
- Isolation of users and root processes and namespaces from each other for strong protection

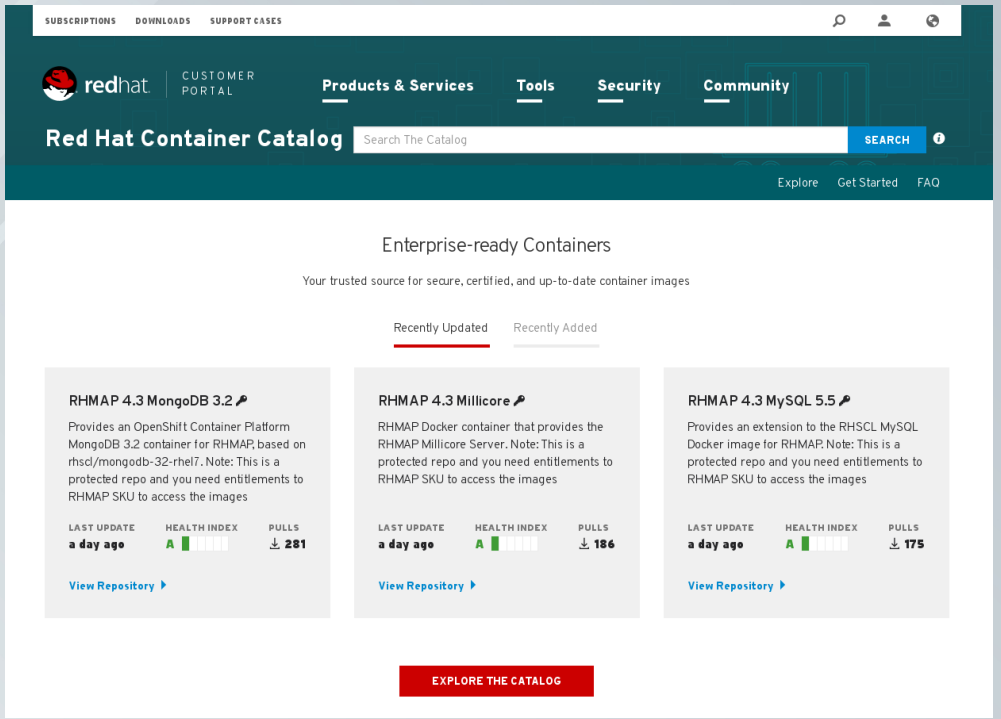
### Extend

- Partners for PKI, identity, encryption and storage integration - extensible scanning API

# TRENDS FOR HYBRID CLOUD

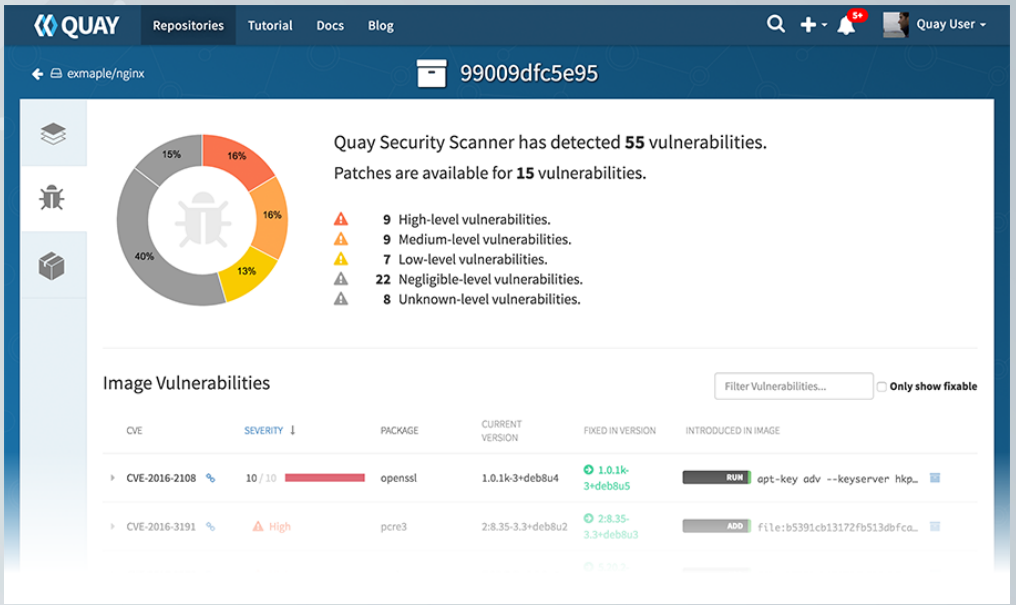
- Boot-time image verification and measurement
  - Using TPM for both RHEL and OpenStack - see Keylime
- Better secrets management for Containers
  - Avoid hard coding secrets, or a specific storage vault, into the Container
  - New Vault Operator from CoreOS
- OpenShift reduced attack vectors
  - Non-privileged Containers by default (no root daemon running)
  - Selective extensions of container security policy, avoiding the need for root (Udicia)
- Trusted Execution Environments (AMD SVE and others)
  - Encrypted memory for protection of VM/Container from host itself
  - Secure delivery and execution of encrypted payload
  - Better scale of solutions and better support for virtual TPM for cloud use

# TRUSTING THE CLOUD - THE CONTAINER HEALTH INDEX




- Trusted Container Images
- Letter grades A through F
  - Age of Image
  - Unapplied updates
  - Signed status
- Updated, maintained
- Unique, easy to use

# COREOS VULNERABILITY SCANNER - CLAIR




- Part of CoreOS acquisition
- Integrates with Quay container private registry
- Continuously scans your own container images
- Easily identify issues

1. CREATING SECURE FOUNDATION
2. ENABLING HYBRID CLOUD DEPLOYMENTS

# 3. AUTOMATING COMPLIANCE

# AUTOMATING SECURITY COMPLIANCE

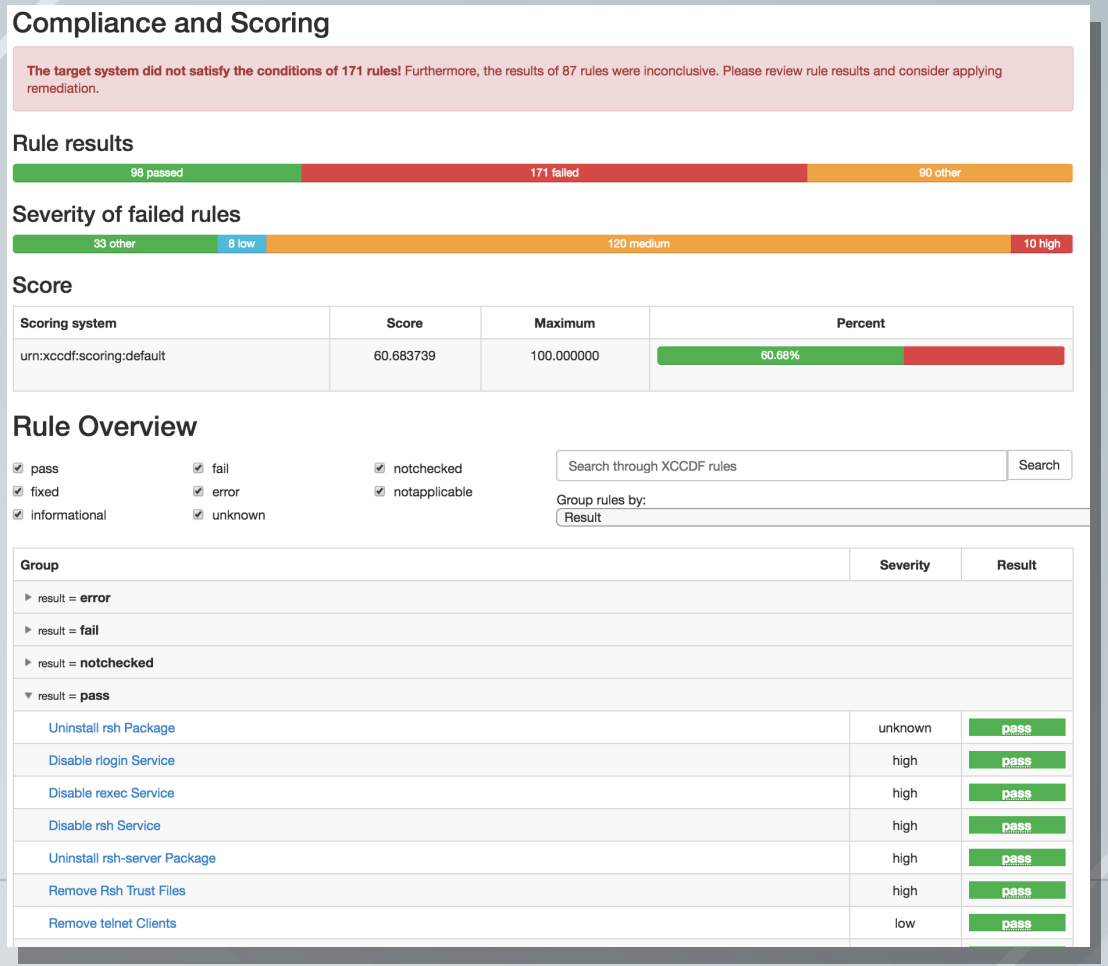
Are you sure you are running a secure system?

- OpenSCAP compliance scanning of a system
  - Both CVE exposure detection & security configuration validation
  - Automation of remediation w/Ansible, per-system or w/Satellite
  - Variety of compliance standard profiles : DISA STIG, PCI-DSS, USGCB...
- Compliance at install-time for RHEL
- Red Hat Insights service for proactive health & security monitoring
- Common Criteria and FIPS certification of solutions
  - Enterprise Linux, Certificate Server, JBOSS, etc.
- Security Patch Remediation and Response
- Vulnerability API allowing you to query our database

# TRENDS IN AUTOMATING SECURITY COMPLIANCE

- Service-based compliance
  - Making compliance just as easy to use as a service as the rest of your cloud
- Automation of scanning and remediation
  - RHEL System Roles, OpenSCAP Ansible remediation
- Common Logging
  - Collection of data, normalize and analysis of audit and log
  - Across Red Hat Enterprise Linux, OpenStack Container Platform, etc.
- Session recording and playback
  - Required by some customers, may be a requirement for certification
- More OpenSCAP profiles and easier contributions
  - Open Control efforts, ANSSI, FedRamp
  - Compliance as Code upstream (github.com/complianceascode)
- Reduced cycle time for certifications (FIPS & Common Criteria)

# OpenSCAP Scanner Example



## Compliance and Scoring

**The target system did not satisfy the conditions of 171 rules!** Furthermore, the results of 87 rules were inconclusive. Please review rule results and consider applying remediation.

### Rule results

98 passed | 171 failed | 90 other

### Severity of failed rules

33 other | 8 low | 120 medium | 10 high

### Score

| Scoring system | Score | Maximum | Percent |
|---|---|---|---|
| urn:xccdf:scoring:default | 60.683739 | 100.000000 | 60.68% |

### Rule Overview

pass, fail, notchecked, fixed, error, notapplicable, informational, unknown

Search through XCCDF rules — Search

Group rules by: Result

| Group | Severity | Result |
|---|---|---|
| result = **error** | | |
| result = **fail** | | |
| result = **notchecked** | | |
| result = **pass** | | |
| Uninstall rsh Package | unknown | pass |
| Disable rlogin Service | high | pass |
| Disable rexec Service | high | pass |
| Disable rsh Service | high | pass |
| Uninstall rsh-server Package | high | pass |
| Remove Rsh Trust Files | high | pass |
| Remove telnet Clients | low | pass |

# IN 2018:

redhat.

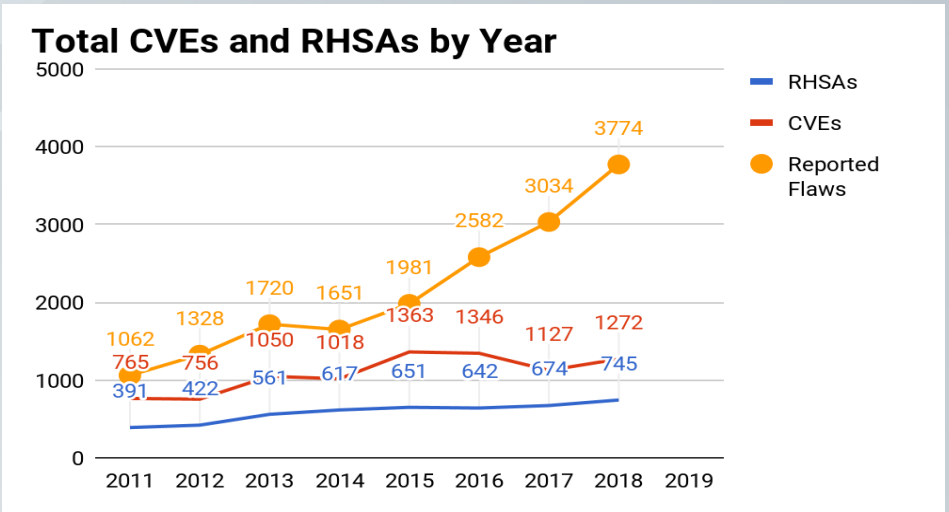
**745** Red Hat SECURITY ADVISORIES

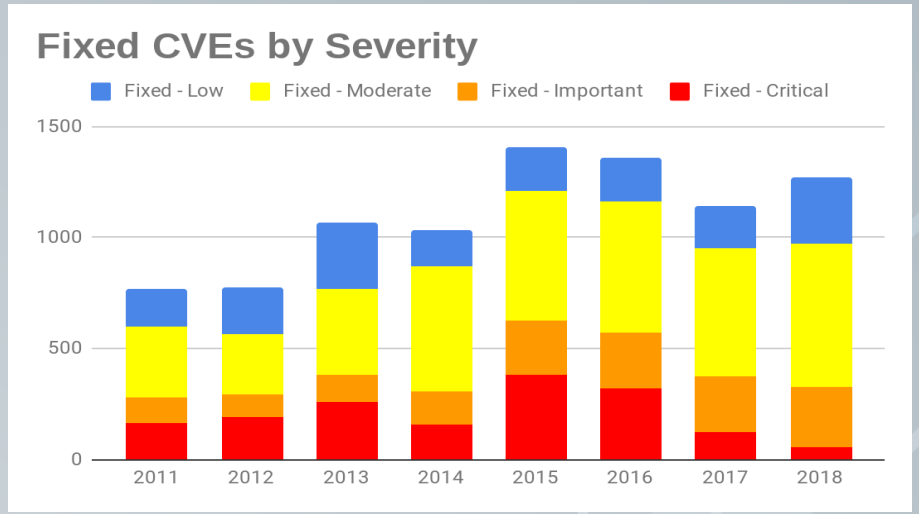
**1,272** CVEs ADDRESSED

Source: 2018 Red Hat Product Security Risk Report, February 2019. red.ht/2018riskreport

# VULNERABILITY METRICS

A snapshot of Red Hat Product Security response over the years




https://www.redhat.com/security/data/metrics/

# IN CONCLUSION...

# REMINDER OF WHAT WE TALKED ABOUT

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Q&A

# WHERE TO LEARN MORE

Report a Security Concern

- SecAlert@redhat.com

Product Documentation

- access.redhat.com

Product Security Center

- access.redhat.com/security

Customer Security Awareness Program

- access.redhat.com/articles/2968471


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