

# Certify your Cloud Native Functions with Red Hat powered by Intel

Paul Lancaster

Partner Development Manager, Red Hat Cloud Platforms Business Unit

Chandresh Ruparel

Director 5G/Wireless Core Infrastructure Segment, Intel Corporation

Sergey Patrushin

Sr. Network Platform Architect, Intel Network Builders

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Business resiliency is being redefined by changes of today and uncertainties of tomorrow.

## PANDEMIC IMPACT

54% of all CFOs say their companies will make remote work a permanent option for roles that allow it

Source: [PwC US CFO Pulse Survey](#)

## BUSINESS ACCELERATION

32% of CFOs look to technology-driven products and services to accelerate business growth

Source: [PwC US CFO Pulse Survey](#)

## ARTIFICIAL INTELLIGENCE

85% of enterprise businesses have deployed AI in production

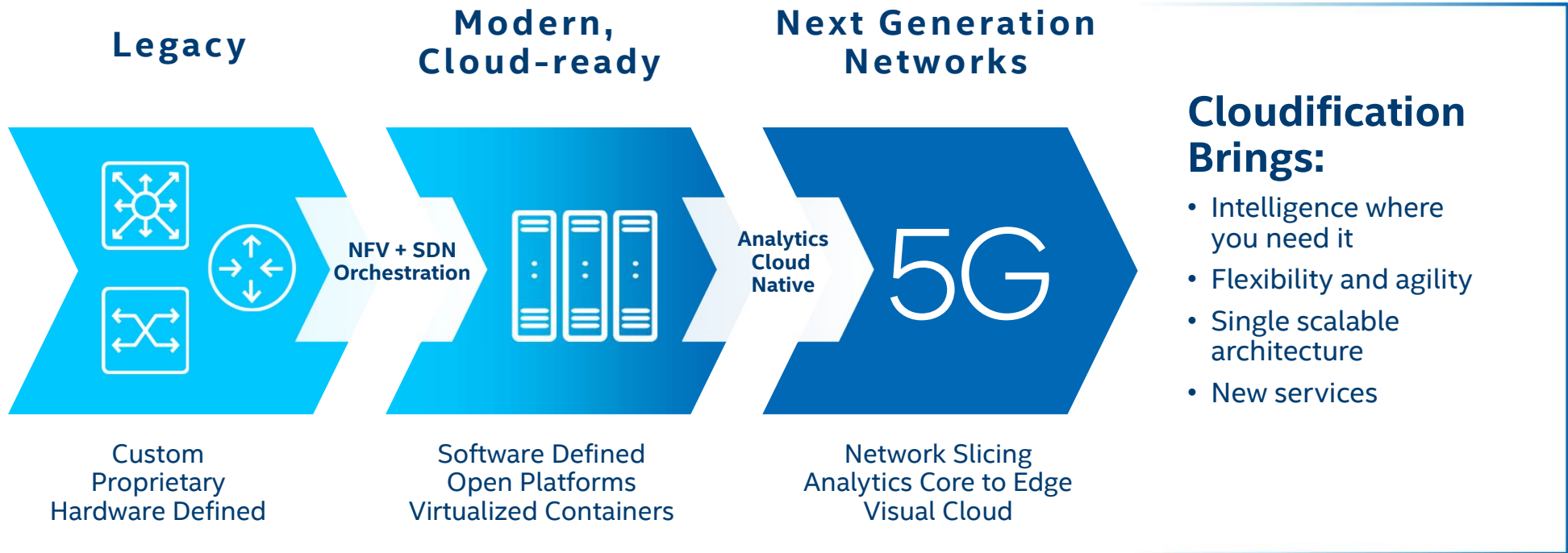
Source: [O'Reilly AI adoption in the Enterprise March 2020](#)

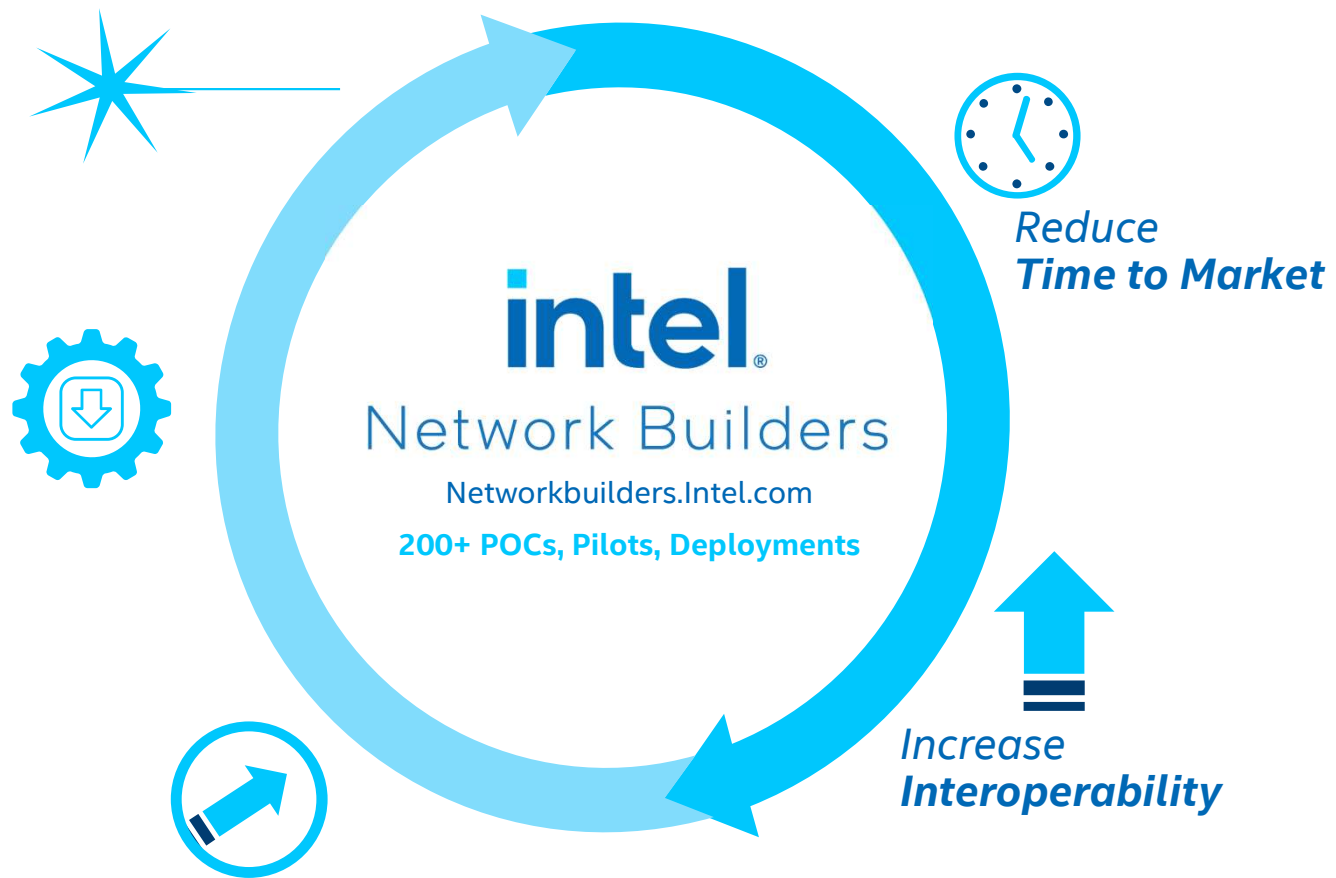
## EDGE COMPUTING

By 2022, more than 50% of enterprise-generated data will be created and processed outside the data center or cloud

Source: [Gartner](#)

“Cloud” is fundamental to how companies run and drive operations in the digital economy





# What is Red Hat Technology Certification?



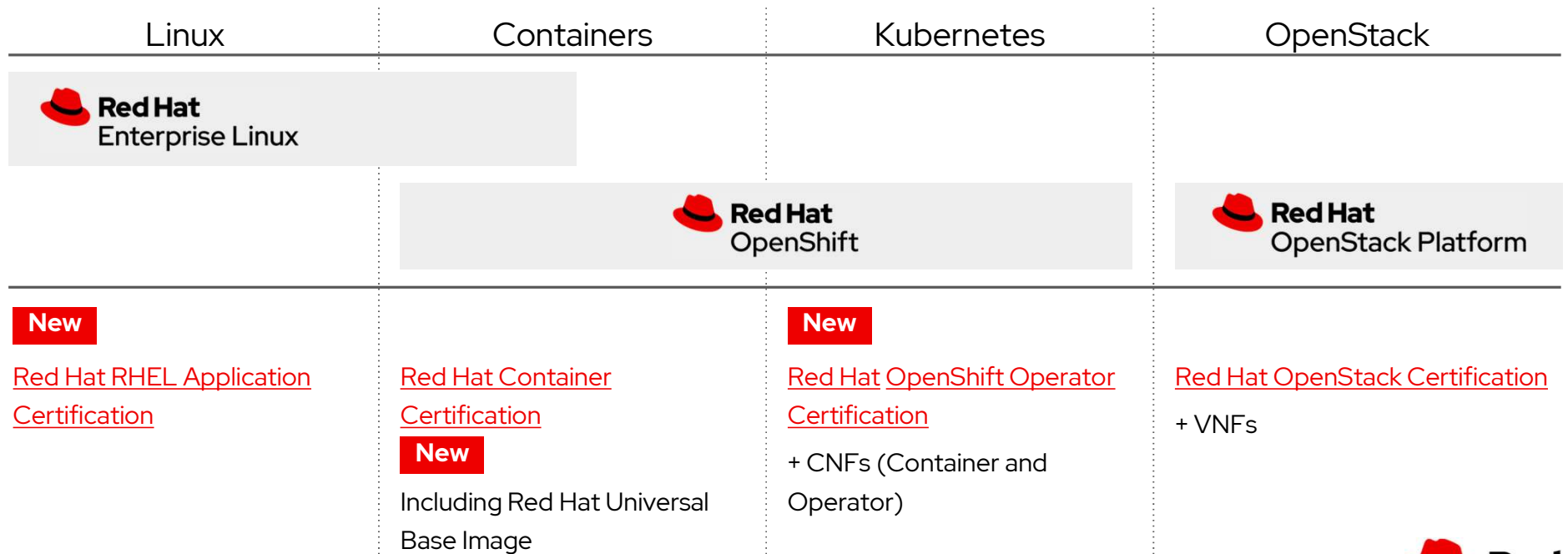
Assurance that a product or solution interoperates with the Red Hat platform throughout its lifecycle, and is commercially supported by Red Hat and partners.





# Hybrid Cloud Technology Foundation

## Certification Offerings



## Red Hat OpenShift CNF Certification

Assurance that a CNF managed by a Kubernetes Operator interoperates with the Red Hat OpenShift container platform throughout its lifecycle, and is commercially supported by Red Hat and partners.



### CNF Validation

Partner tests and validates functionality on Red Hat OpenShift Container Platform in a customer environment or in-house lab.



### Red Hat Verification

Red Hat verifies that CNF integrates with OpenShift through an Operator, follows best practices.



### Collaborative Support

Red Hat and partner collaboration to troubleshoot and resolve customer issues.



### Lifecycle Commitment

Continuous Certification to ensure interoperability across releases.

## CNF Certification Levels

OpenShift CNF Certification

Good

**Vendor  
Validated**

Better

**Container and  
Operator  
Certification**

Best

**CNF  
Certification**

**Zero Cost for Red Hat Partners**



# CNF Certification

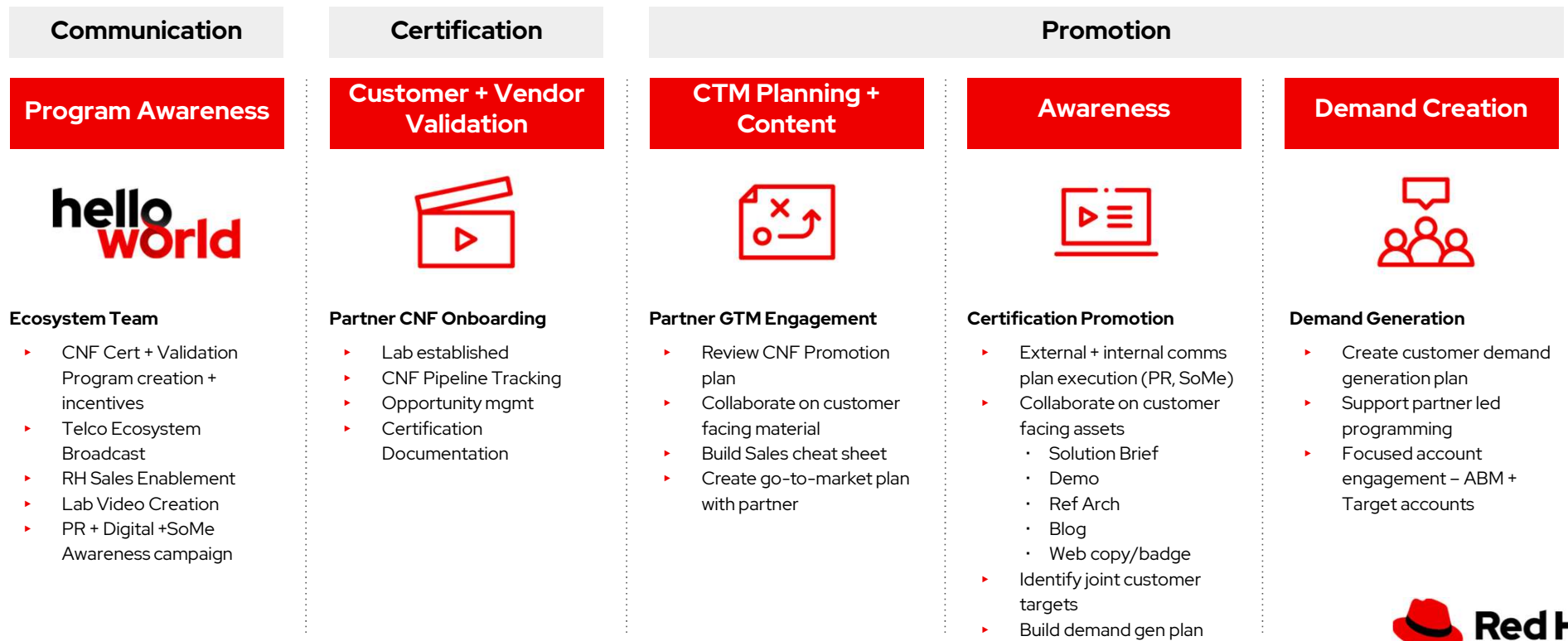
## Value to partners



Value proposition of achieving and maintaining Red Hat Certification:

- ▶ Demonstrating **technology leadership** to customers
- ▶ Competitive **differentiation** through certification
- ▶ Achieving **efficiencies** in developing and supporting software
- ▶ **Winning new customers** based on Red Hat certified solutions
- ▶ Leveraging **Red Hat marketing** support and activities
- ▶ **Increased revenue** through certified products
- ▶ Increasing **synergies** with Red Hat in terms of focus on cloud and containers

# Red Hat Certification Initiative: Further Value to Partners



## CNF Certification criteria



### Requirements

- ▶ CNF tested on OCP on bare metal
- ▶ CNF components (operands) meet Red Hat Container Certification criteria\*
- ▶ CNF is managed by an Operator that meets Red Hat Operator certification criteria
- ▶ Operator can handle application and OpenShift upgrades- Maturity level 2
- ▶ Provide application documentation for OpenShift
- ▶ Execute platform verification tests
- ▶ Conduct architectural review
- ▶ Multus support, SCC, HW dependencies

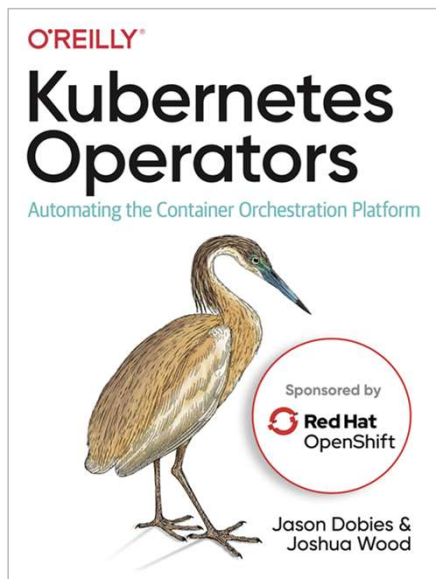
## What is tested?

### CNF Tests - Cert 1.0 High level:

- ▶ CNF Testing Methodology - Basic
  - Containers: Base image supportability, CVE scans, privileged mode status, can log
  - Operators: Interoperability with OpenShift and Operator Lifecycle Manager
  - Platform tests for CNFs: SR-IOV, DPDK, PTP and other capabilities
  - NF (Network function) tests - early release -
    - Link State
    - Ping (alive tests)
    - Packet Sizes / Jumbo Frame support test
    - Route setting
    - 'BERT' test - TRex and TestPMD
    - Life-cycle Use cases
    - L2/L3 - (being explored)
- ▶ CNF Testing Methodology - Advanced
  - Open Source CNFs (from CNCF Foundation) TBA



# Kubernetes Operators



## Automate the entire lifecycle of an application

Installation, configuration management, seamless upgrades, storage lifecycle, deep insights, autopilot.

## Similar to VNFM but for CNFs and open source

Wide industry adoption

Network Equipment Provider agnostic

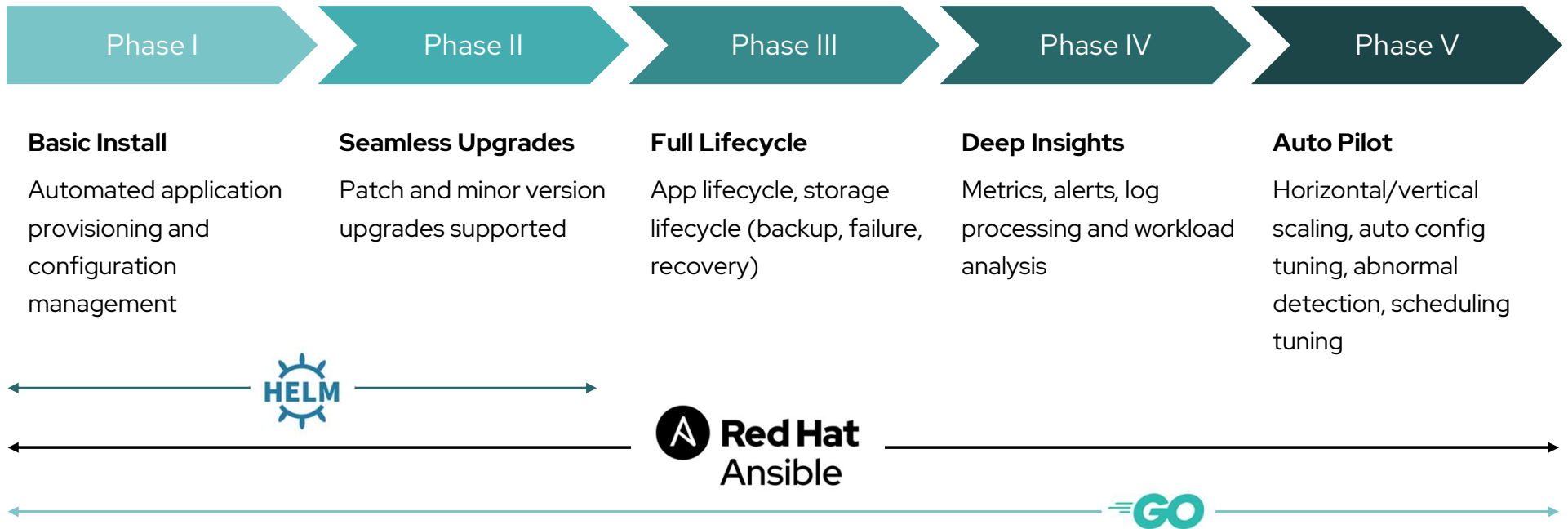
## Automates day 2 operations

Cloud-like experience

Eases operation and maintenance of cloud native applications and OpenShift clusters

Click [here for a free copy](#) of the eBook

# Operator Capability Levels



## Value to Red Hat Customers

	Vendor Validated <b>Good</b>	Container/Operator Certified <b>Better</b>	Red Hat CNF Certified <b>Best</b>
CNF functionality: CNF verified and fully supported by the partner on OpenShift 4.x	Yes	Yes	Yes
Engineered with Red Hat: Container operating system base image (RHEL/UBI)** is maintained and supported by Red Hat	No	Yes	Yes
Integrated Lifecycle Management: CNF is deployed and maintained by a Red Hat Certified Operator	No	Yes	Yes
Ongoing vulnerability protection: Continuous scanning to identify and fix CVEs in Red Hat's components of the CNF	No	Yes	Yes
Collaborative support: Partner and Red Hat establish direct workflow between support teams	TSANet Recommended	Yes	Yes
Engineering relationship: Through Red Hat Partner Connect	Case-by-case	Yes	Yes
Ongoing testing on supported OpenShift versions	Required	Required	Yes
CNF-specific tests (NF)	No	No	Yes

# Red Hat CNF Certification Initiative

in partnership with Intel

**An ISV CNF Certification ecosystem based on Red Hat OpenShift and Intel Infrastructure**

## JOINT Intel & Red Hat OBJECTIVES

- ▶ Use the Lab primarily for CNF Certification on Red Hat OpenShift and Intel based platforms
- ▶ Accelerate Commercial Service Provider migration of VNFs to CNFs in support of cloud-native initiatives
- ▶ Enable ecosystem readiness with Cloud-Native Network Functions on the latest Red Hat and Intel Technologies

## LAB Current Primary Building Blocks

- ▶ Red Hat OpenShift OCP & RHEL
- ▶ Intel based Network Platforms
- ▶ Initial ISV CNFs and Commercial Service Provider Use Cases
- ▶ Selected OEM's, HPE, Dell, Lenovo, etc.



## A sample: OpenShift Service Provider Successes



# Network ISVs are adopting OpenShift

## Affirmed, Metaswitch and HPE



“With the extension of our collaboration, **Affirmed** now supports UnityCloud **from the core to the edge and across public, private and hybrid cloud environments**. This enables telecommunications providers to use “Any G” solutions on a broad spectrum of platforms, including Red Hat **OpenShift on bare metal**, Red Hat **OpenShift on Red Hat OpenStack Platform** and Red Hat **OpenShift in the public cloud**, like Microsoft Azure.”

—  
**Affirmed**



“**Metaswitch** Fusion Core and Clearwater Core have been validated on the Red Hat’s **OpenShift** and OpenStack platforms, dramatically simplifying the deployment of a cutting-edge **4G packet core** with VoLTE/VoWiFi or **advanced 5G voice** (Vo5G/VoNR) and data infrastructures.”

—  
**Metaswitch**



“With the integration of our industry leading container platform, Red Hat **OpenShift**, to the **HPE 5G Core Stack** and the new HPE 5G Lab, businesses can be empowered to test, innovate and build on an open cloud-native infrastructure.”

—  
**HPE**



## Samsung adopts OpenShift

“Red Hat, Inc., the world's leading provider of open source solutions, today announced collaboration with Samsung to deliver 5G network solutions built on Red Hat OpenShift, the industry’s most comprehensive enterprise Kubernetes platform, and will help service providers make 5G a reality across use cases, including 5G core, edge computing, IoT, machine learning and more.”

—  
Samsung



## What is Required From a Partner? (1/2)

	Vendor Validated Good	Container/Operator Certified Better	Red Hat CNF Certified Best
Deploy OpenShift 4 on-prem and verify CNF functionality	Yes	Yes	Yes
Commitment to support OpenShift 4 across its lifecycle, with a process to deploy and test OpenShift updates	Yes	Yes	Yes
Vendor will participate in <a href="#">TSANet</a> or have a formal support arrangement established with Red Hat	Yes	Yes	Yes
Container images used by the CNF must be built using RHEL/ <a href="#">UBI</a>	No	Yes	Yes
Container images must go through Red Hat Container Certification for ongoing security and supportability scans	No	Yes	Yes
CNF must include a <a href="#">Kubernetes Operator</a> to deploy the application and manage updates	No	Yes	Yes (Operator Maturity Level II or higher)
Operator must complete the Red Hat certification tests to verify metadata and OLM interoperability	No	Yes	Yes

## What is Required From a Partner? (2/2)

	Vendor Validated <b>Good</b>	Container/Operator Certified <b>Better</b>	Red Hat CNF Certified <b>Best</b>
CNF must handle OpenShift upgrades and node failures	No	No	Yes
CNF must support a CNI plugin included with OpenShift by default	No	No	Yes
OpenShift environment for CNF must complete platform validation tests (SR-IOV, DPDK, PTP, etc)	No	No	Yes
CNF must complete Network Function tests (Alive, Packet Size, 'BERT' tests)	No	No	Yes

## Red Hat Partner Connect

### Steps to become a Red Hat Partner

- ▶ Register at [connect.redhat.com](https://connect.redhat.com)
- ▶ Accept Red Hat partner agreement (includes mutual NDA)

### Benefits provided to Red Hat partners

- ▶ No-cost OpenShift subscription for cert/test purposes
- ▶ Ability to contact support for OpenShift and Certification issues
- ▶ Access to training resources
- ▶ Access to marketing services for certified products

### Engineering assistance

- ▶ Vendor Validated- case by case basis
- ▶ Container/Operator Certification: Red Hat Connect enablement team (design guidance, workshops, Q+A)
- ▶ CNF Certification: Red Hat Connect enablement team, Engineering Partner Management (EPM) engagement- The EPM team serves as a partner's single point of contact for product questions, road map updates, engineering interlocks and general guidance on working with Red Hat technologies



## Workflow Overview

		Red Hat	Partner
Vendor Validated	Deploy OpenShift 4 and verify CNF functionality		✓
	Contact your Red Hat Partner Manager to complete questionnaire and schedule an interview	✓	✓
	CNF listed in Red Hat CNF Vendor Validated Catalog	✓	
Operator Certification	<b>Build</b> containers and Operator to meet requirements		✓
	Deploy OpenShift 4 and verify CNF functionality		✓
	Follow the <b>container and Operator</b> certification steps		✓
	Operator listed in Red Hat Operator Catalog	✓	
CNF Certification	<b>Build</b> containers and Operator to meet requirements		✓
	Deploy OpenShift 4 and verify CNF functionality		✓
	Follow the <b>container and Operator</b> certification steps		✓
	Ensure <b>CNF certification rules</b> are followed	✓	
	Contact your Red Hat Partner Manager to schedule an interview and lab certification tests	✓	✓
	CNF listed in Red Hat CNF Certified Catalog		✓

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Build on Red Hat platforms and technologies with certified, enterprise-grade products you need to achieve your business outcomes. We make it easy for you to explore and find certified products from our large and robust ecosystem of enterprise hardware, software, and cloud and service providers.



### Certified hardware

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### Certified software

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### Certified cloud and service providers

Run your applications on Red Hat platforms and technologies in supported clouds and cloud service providers.

Explore →

Red Hat Ecosystem Catalog

[catalog.redhat.com/](https://catalog.redhat.com/)





## Links & Resources



- ▶ Red Hat CNF Catalog: [CNF's](#)
- ▶ Red Hat CNF Test Suite: [CNF Test Suite](#)
- ▶ Red Hat Container Catalog: [Containers](#)
- ▶ Red Hat Operator Catalog: [Operators](#)
- ▶ Partner guide for Container and Operator Certification: [Certification](#)
- ▶ Vendor Validated questionnaire URL: [CNF](#)

Questions?

Email Mark Longwell: [mlongwel@redhat.com](mailto:mlongwel@redhat.com)

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