

Red Hat
Summit

Connect

SAP Edge Integration Cell

Von der Cloud ins Data Center

Joachim Kunze

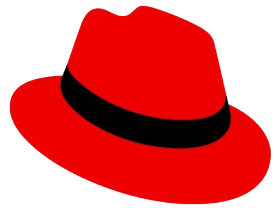
EMEA Senior Solution Architect SAP

jkunze@redhat.com

Udo Paltzer

Product Manager SAP Integration Suite

udo.paltzer@sap.com



Red Hat

Udo Paltzer

Product Manager SAP Integration Suite
SAP

Joachim Kunze

EMEA Senior Solutions Architect SAP
Red Hat

Agenda

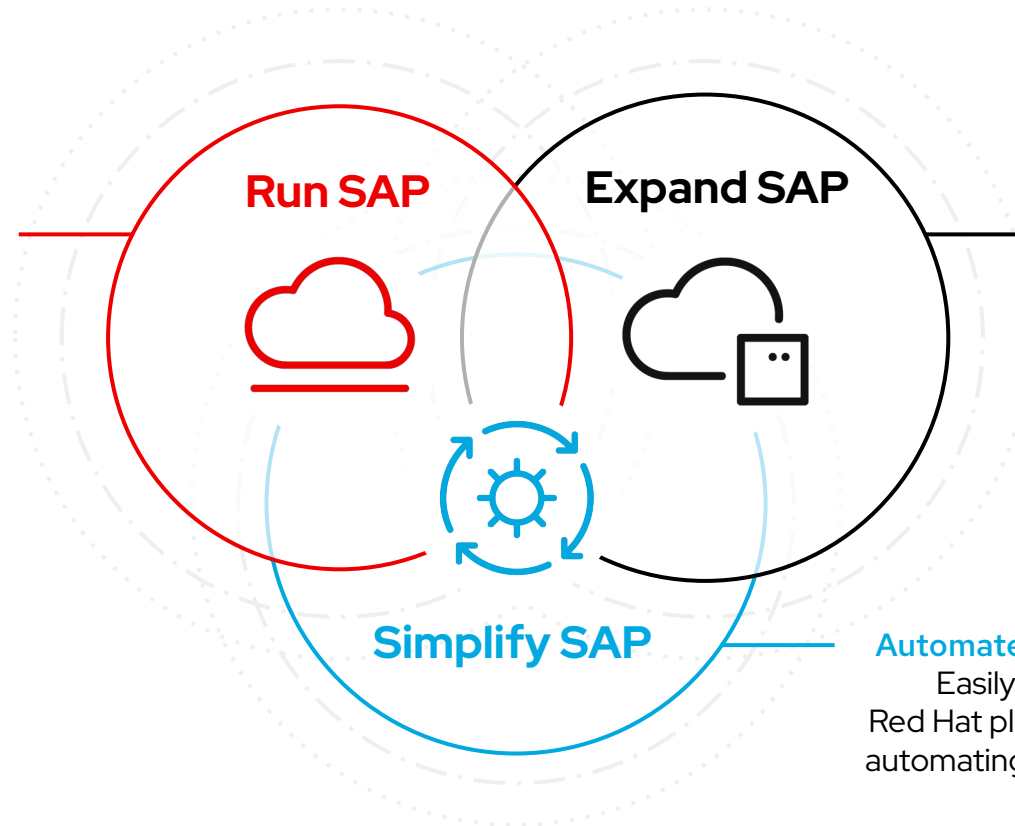
- Setting the scene - Why customers need it
 - What is SAP BTP?
 - Hybrid Integration Platform of SAP
 - Edge Integration Cell - Key Use Cases
 - What is SAP EIC and ELM
- High-level Architecture of SAP EIC on OpenShift
- Value of Openshift for SAP EIC
- Best practices
- Summary

How Red Hat adds value to SAP workloads

Open hybrid cloud

Effective Hybrid platform for all SAP workloads

Secure, scale, and manage foundations for traditional and cloud SAP workloads across all environments.



Complement, extend, and surround SAP with modern cloud native applications

Enterprise grade platform to run SAP complementary workloads providing a Trusted, Comprehensive, and Consistent hybrid approach in any delivery environment.

Automate the hybrid SAP enterprise

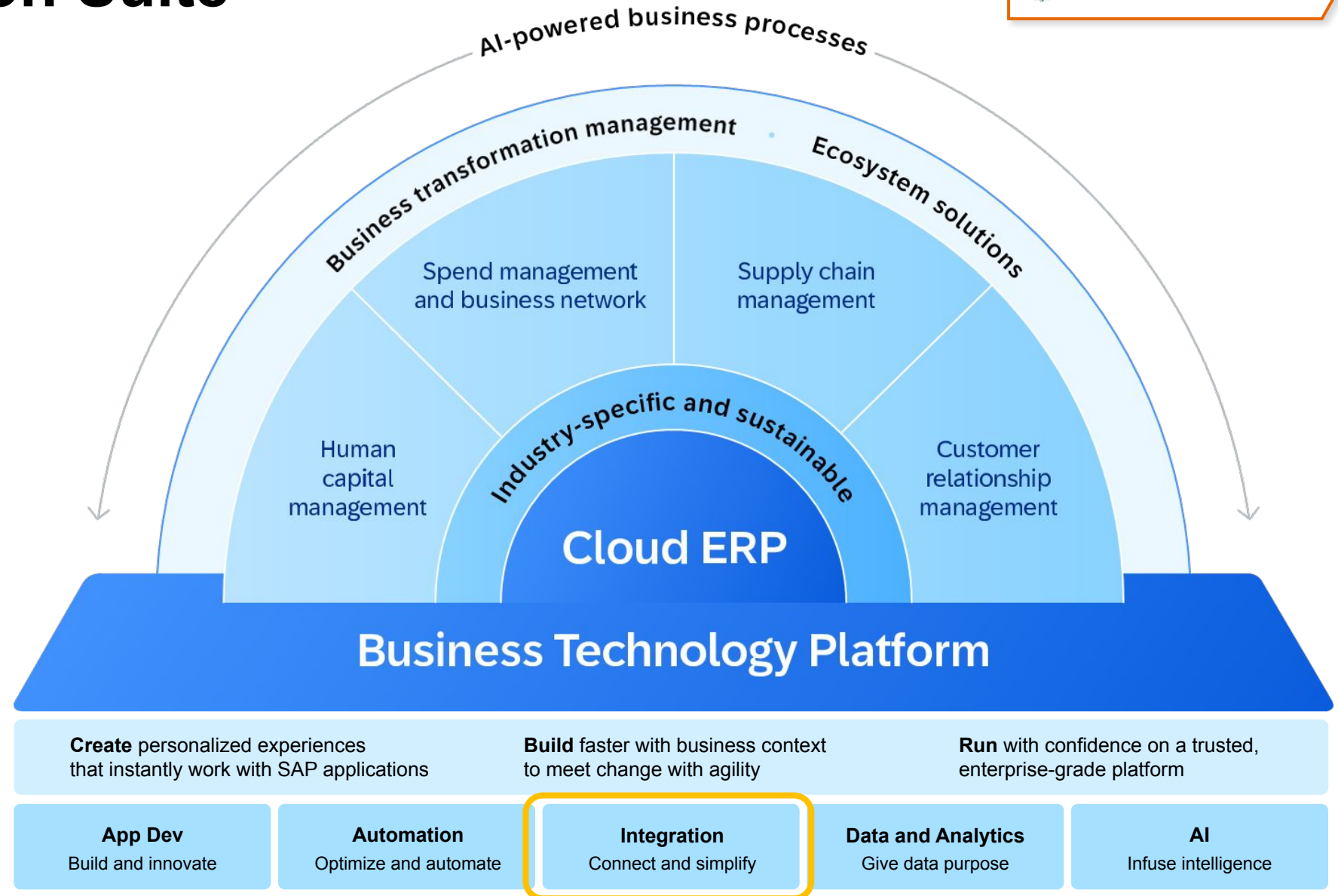
Easily and seamlessly manage Red Hat platforms for SAP and beyond, automating across hybrid environments.

Red Hat's strategy and vision for its portfolio of software, tools, and services built in the open source development model and designed for future architectures that are open, secure, and agile across hybrid multicloud.

SAP Integration Suite

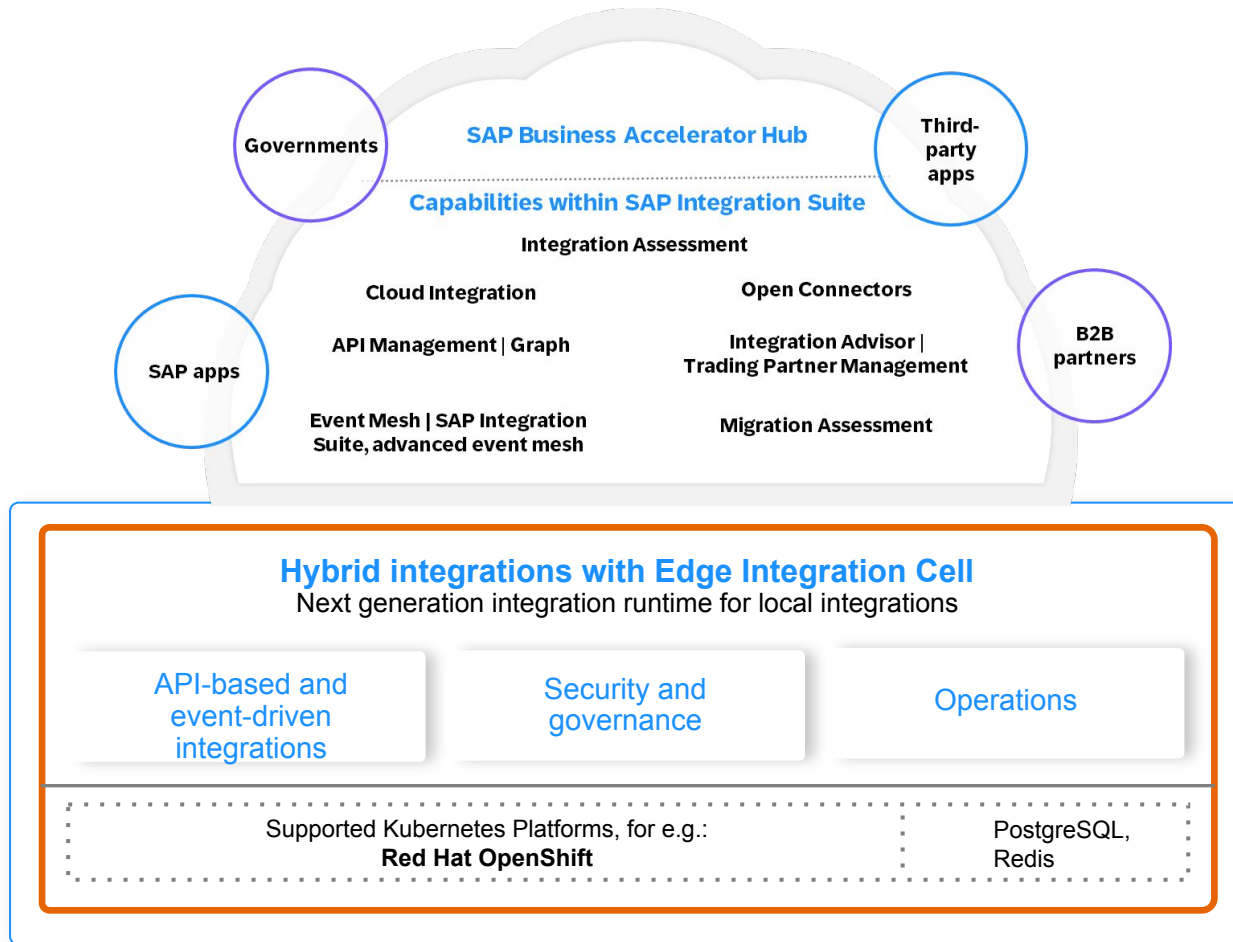
is core to SAP BTP

Learn more in the [SAP Integration Strategy Paper](#)



Edge Integration Cell

Next generation *hybrid* integration runtime



- **Flexible deployment** in customer environments on Kubernetes
- **Data compliance and governance** by processing data locally
- **Operations** (installation, software updates, etc.) managed by customer
- **Integration Studio** for design and monitoring **in the Cloud**
- Integration flows modeled in Cloud Integration are compatible
- Enables design and management of APIs with policies
- **Route business events** from SAP application to event brokers
- Configure and manage **multiple cells** with an SAP Integration Suite tenant
- Business continuity during **temporary connectivity loss**
- Migration path for **SAP Process Orchestration customers**

Edge Integration Cell

Key Use Cases

1

'Hybrid' deployment at cloud speed



Repository-based shipment channel delivers workloads to container registries in remote environment (e.g. offshore businesses, remote warehouse)

Grafana-based Monitoring and logging stack to allow central system diagnostics

2

Customer-controlled governance and lifecycle



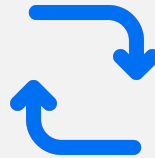
Customer can size and scale cluster based on their computation needs.

Supported Kubernetes Platforms like Red Hat OpenShift

Customers can adhere to strict architecture requirements, region specific laws and regulations

3

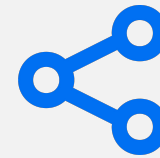
Hand-in-hand with PI/PO migration scenarios, and local integration use cases



Legacy PIPO interfaces can be first migrated to Integration Suite via migration assessment & migration tooling and then deployed to Edge Integration Cell

4

Bring together APIs, events and integrations into one containerized runtime



Design & manage APIs, route business events from SAP applications to event brokers and seamlessly integrate applications and systems in your private landscape, thereby ensuring the highest quality of services.

One unified editor to model APIs, apply policies, transformations and mediation steps

5

Potentially can boost performance by reducing network latency



Istio based ingress controls for load balancing and managing virtual host settings

Avoid multiple Internet hops between service and backends, Cloud Connector not needed to access backends

SAP Integration Suite, Edge Integration Cell

Personas and Tasks



System admin

- Provision, maintain, and decommission Kubernetes resources and systems



Tenant admin

- Activate Edge Integration Cell
- Manage roles
- Create and manage edge nodes
- Deploy Edge Integration Cell solution on K8s
- Monitor system
- Manage upgrades
- Operate Edge Integration Cell



Integration and API developer

- Design APIs and integrations
- Deploy, monitor, and execute APIs and integration
- Test, debug, and troubleshoot integration scenarios

SAP Integration Suite, Edge Integration Cell

Design of API in Integration Designer

The screenshot displays the SAP Integration Suite interface for designing an API in the Edge Integration Cell. The top navigation bar shows the 'Integration Suite' logo and user information. The left sidebar contains a navigation menu with options like Home, Discover, Design, Integrations and APIs, B2B Scenarios, Custom Type Systems, MIGs, MAGs, Test, Configure, Monitor, Engage, Inspect, Monetize, Operate, and Settings. The main workspace shows the 'Integrations and APIs / Edge Integration Cell API / Edge API / Edge API' configuration. The status is 'Not Deployed' and the API URL is 'https://eic-teched2023-demo.sapintegrationsuite.de/apiuser99'. The 'Policies' tab is selected, showing a 'Policy Model' diagram. The diagram illustrates a flow from a 'Client' to a 'Start' node (envelope icon), which connects to an 'Authentication' policy (lock icon). From there, the flow goes to a 'Request Reply' node (gear icon), which then connects to a 'Target' via an 'HTTP' connection. An 'Exception Subprocess 1' is shown at the bottom, containing 'Error Start 1' and 'Error End 1' nodes. The interface also includes a search bar for steps and various tool icons for editing the diagram.

SAP Integration Suite, Edge Integration Cell

Configuration of Integration Flow with Edge Integration Cell as Product Profile

Configure "Replicate Order from SAP Order Management Foundation to SAP S4HANA"

Sender Receiver More

Receiver: S4HANA

Adapter Type: SOAP

Connection

Address: https://proxyavrdev.hana.ondemand.com/Proxy/jenkslave55.cpi.c.eu-de-1.clo...

Proxy Type: Internet

Authentication: None

Confirmation

Do you want to deploy on the selected runtime profile?

Runtime Profile: Cloud Integration

- Cloud Integration
- Edge Integration Cell - sap_teched-node

SAP Integration Suite, Edge Integration Cell

Monitoring of Integration Flow with Edge Integration Cell as Product Profile

The screenshot shows the SAP Integration Suite interface. On the left is a navigation menu with sections: Home, Discover (Integrations, APIs, Type Systems), Design (Integrations and APIs, B2B Scenarios, Custom Type Systems, MIGs, MAGs), and Manage Integration Content. The main area is titled 'Overview' and 'Runtime: Cloud Integration'. A dropdown menu is open, showing 'Cloud Integration' and 'Edge Integration Cell - sap-teched-node'. Below this, three monitoring cards are visible: 'All Artifacts Past Hour Messages' (0), 'All Artifacts Past Hour Failed Messages' (0), and 'All Artifacts Past Hour Retry Messages' (0). A hand cursor is pointing at the 'Edge Integration Cell' option in the dropdown.

Edge Integration Cell

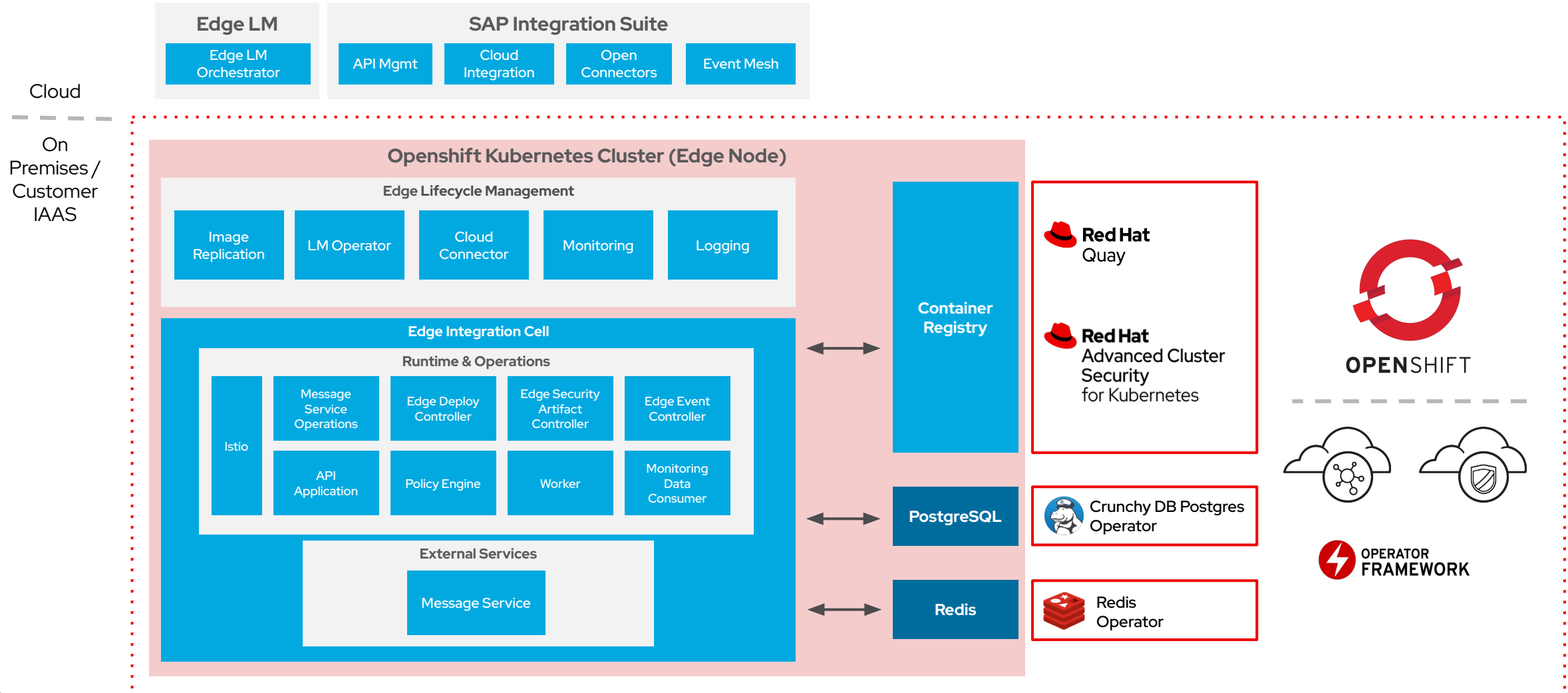
Road Map

- Support for adapters specific to Edge Integration Cell, e. g. File, RFC Sender, OFTP2, X.400, ...
- Downgrade to previous version, scheduled upgrade
- Support of remote OData API access
- Support for additional policies for API management
- Feature parity with Cloud Integration (see release restriction SAP Note [3391207](#)), e. g. partner adapters, principle propagation, access policies, archiving of MPLs, external logging, message metering, B2B scenarios, ...



SAP Edge Integration Cell on Red Hat Openshift

High Level Architecture



Why our joint customers use OpenShift



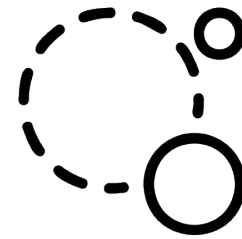
100% Kubernetes

OpenShift is certified as 100% Kubernetes by the CNCF.



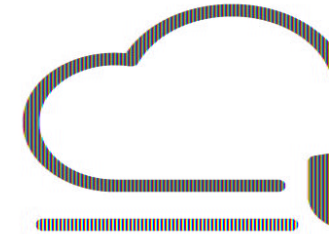
Ecosystem of choice

Red Hat partners offer customers a choice of technologies: Networking, Storage etc without lock-in



Open source

OpenShift platform code is 100% open source, developed and collaborated in the upstream community.

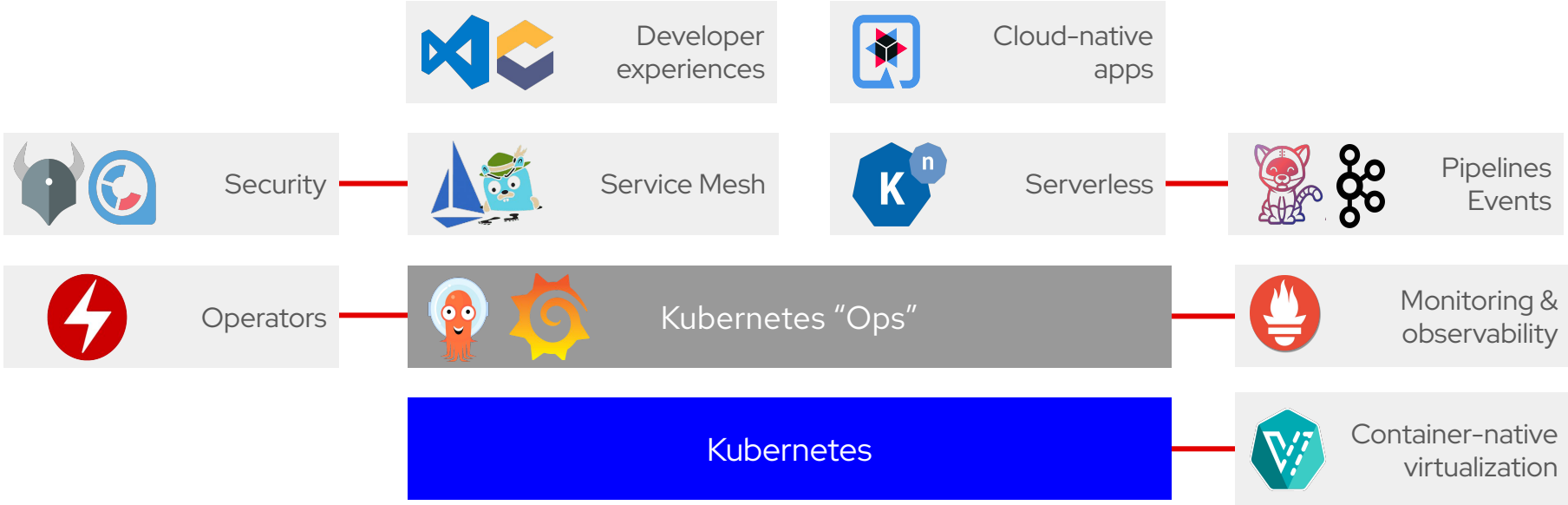


Open Hybrid Cloud

OpenShift provides a consistent operator and developer experience on-prem and in public cloud

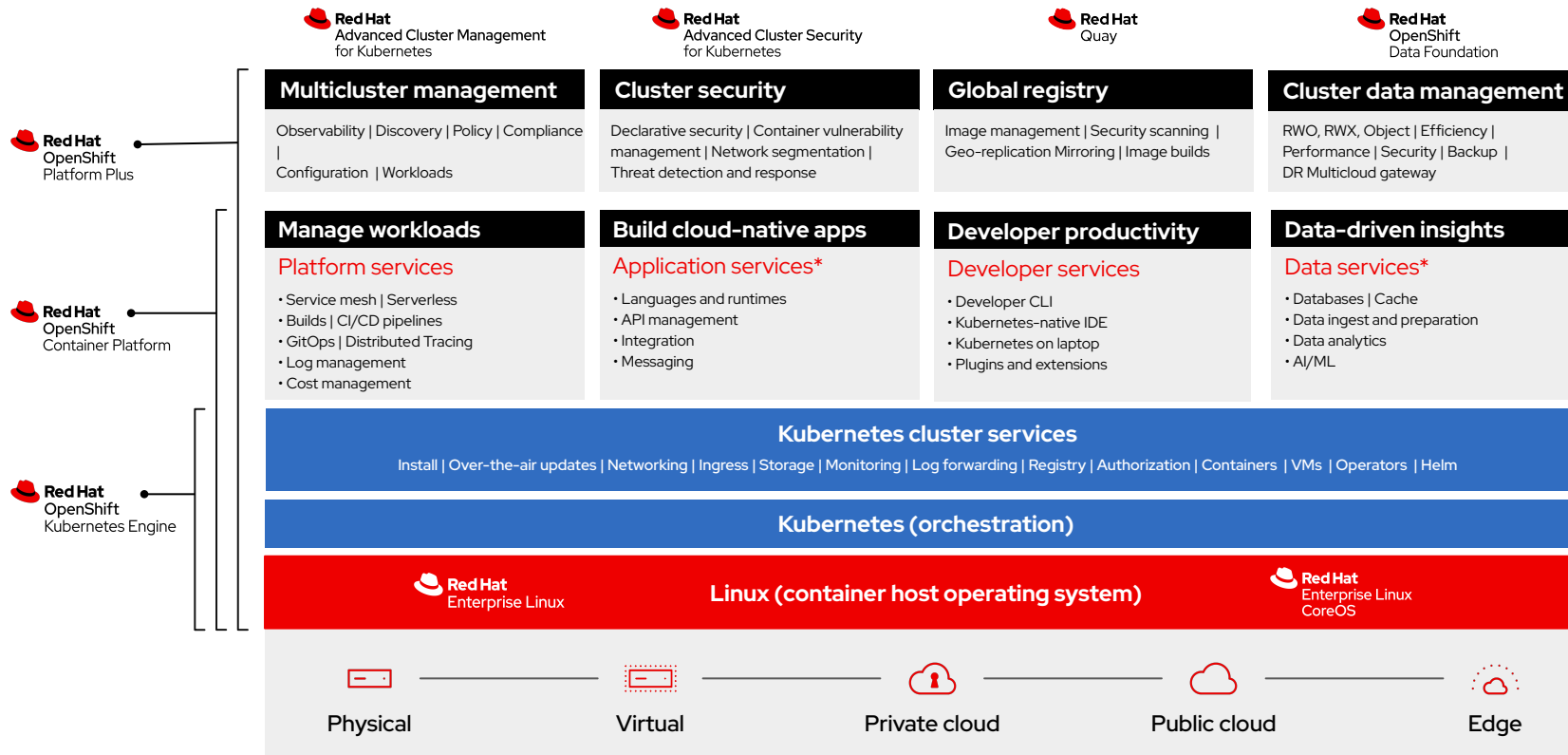
Applications require more than Kubernetes

Driven by open source projects



Red Hat OpenShift

Overview

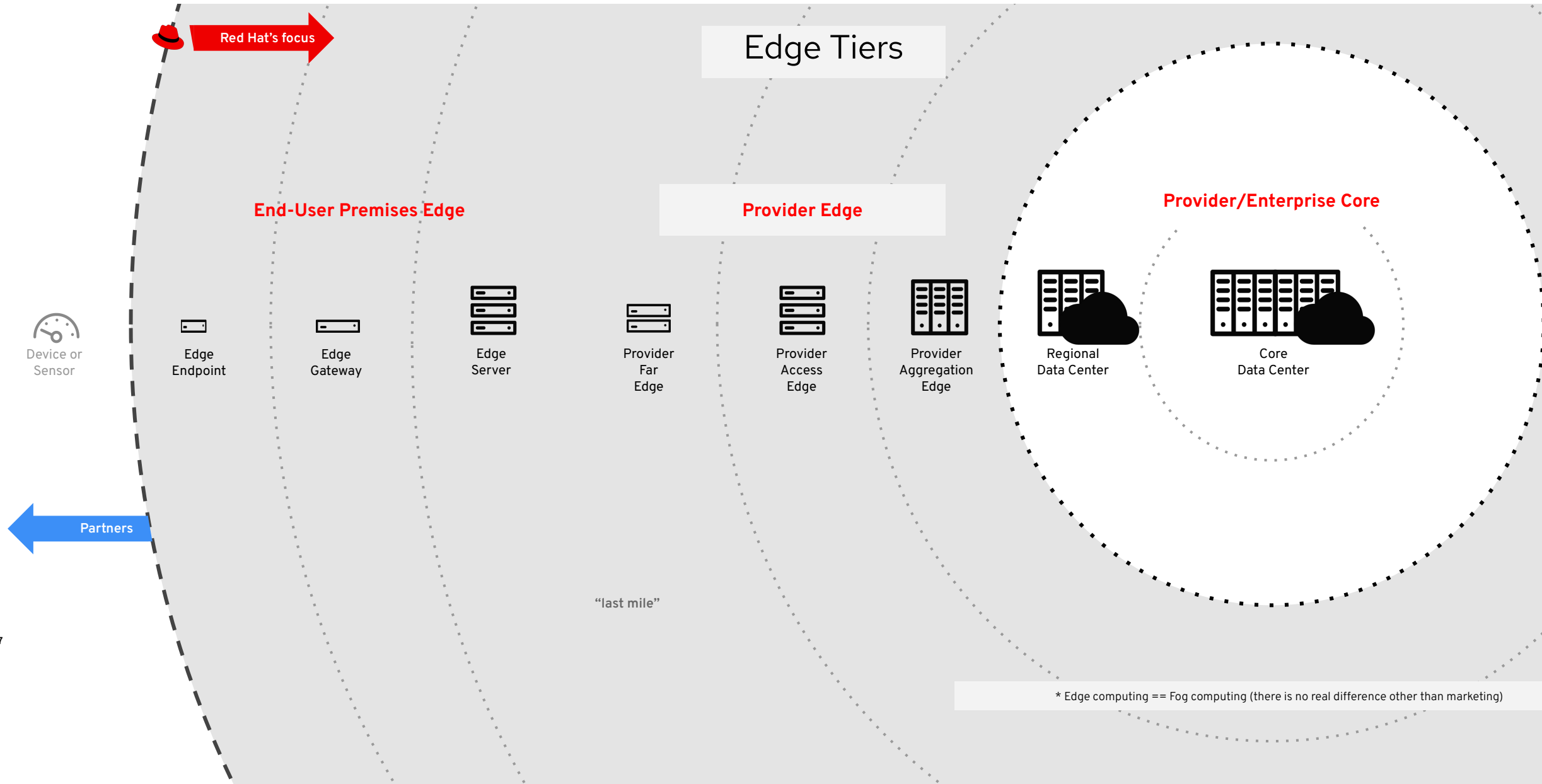


Benefit from the unique features which Red Hat OpenShift offers

- ultra-fast deployments
- flexibility
- scalability
- advanced security and compliance
- automation (like for e.g. automated installation and upgrades)
- multicloud management
- edge architecture support
- open source standards

* Red Hat OpenShift® includes supported runtimes for popular languages/frameworks/databases. Additional capabilities listed are from the Red Hat Application Services and Red Hat Data Services portfolios.
 ** Disaster recovery, volume and multicloud encryption, key management service, and support for multiple clusters and off-cluster workloads requires OpenShift Data Foundation Advanced

Unified Management of Openshift - From Datacenter to the Edge



Best Practices

Reference Architectures

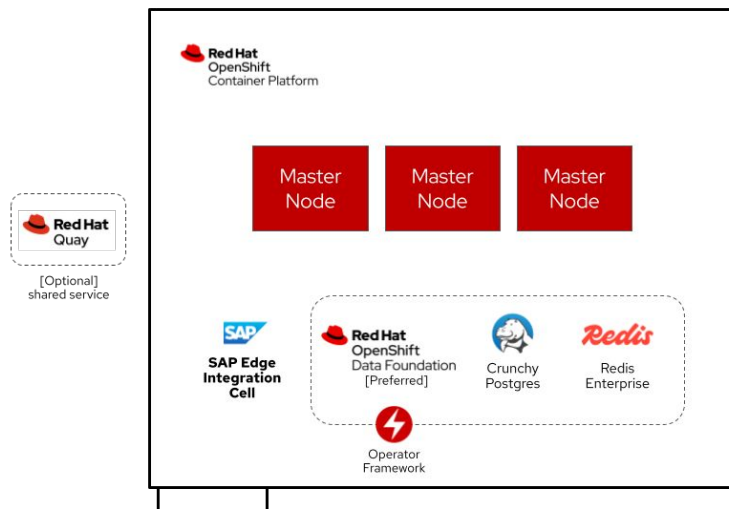
The following table presents various deployment configurations for OpenShift tailored for the SAP Edge Integration Cell (EIC), segmented into High Availability (HA) and Non-HA setups. Each configuration details the specific node composition, including master, worker, and OpenShift Data Foundation (ODF) as well as dependent external services. This comprehensive overview accommodates a range of operational needs, from resilient HA deployments to streamlined single-node setups, offering flexibility to optimize OpenShift implementations for diverse infrastructure environments.

		EIC	
		HA	Non-HA
OpenShift	HA	<ul style="list-style-type: none"> • <u>3 Master Nodes + 3 Worker Nodes + 3 ODF Nodes</u> • <u>3 Master Nodes + 3 Worker Nodes</u> • <u>3 Nodes Cluster</u> • <u>3 Master Nodes + 3 Worker Nodes (Without ODF)</u> 	<ul style="list-style-type: none"> • <u>3 Master Nodes + 3 Worker Nodes</u> • <u>3 Master Nodes + 3 Worker Nodes (Without External Services)</u> • <u>3 Nodes Cluster</u> • <u>3 Master Nodes + 3 Worker Nodes (Without ODF)</u>
	Non-HA	N/A	<u>Single Node OpenShift</u>

Best Practices

Reference Architectures (e.g. smallest footprint)

HA - 3 Nodes Cluster



Work Loads

[SAP Edge Integration Cell](#)

- 8 CPU / 32 GiB RAM / 101 GiB PV storage

[OpenShift Data Foundation](#) (Compact Mode)

- 24 CPU / 72 GiB RAM / 3 storage devices

[Crunchy Postgres](#) (1 replica)

- 1 CPU / 2 GiB RAM / 100 GiB PV storage

[Redis Enterprise](#) (1 node)

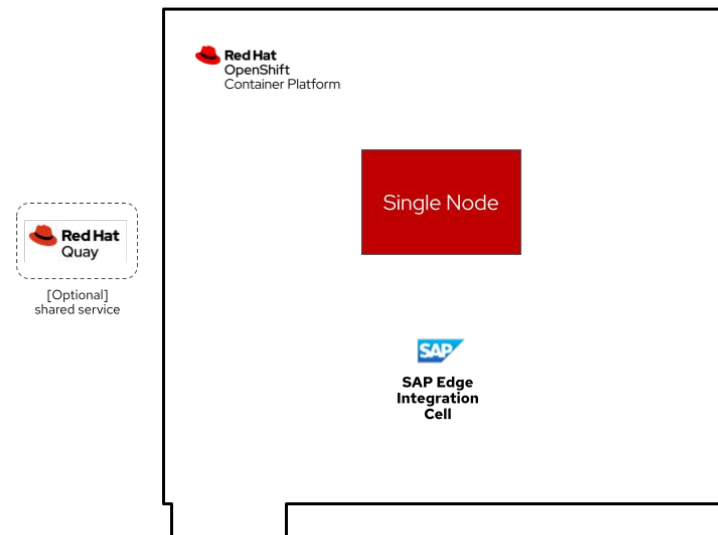
- 6 CPU / 6 GB RAM / 10 GB PV storage

- Each Master Node

18 vCPUs / 54 GB RAM / 120 GB Disk Storage (+Additional storage $\geq 0.3T$, e.g. [SSD](#)

[disks](#) for Bare Metal servers, [vSan VMDK](#), etc.)

Single Node OpenShift



Work Loads

[SAP Edge Integration Cell](#)

- 8 CPU / 32 GiB RAM / 11 GiB PV storage

- Single Node

18 vCPUs / 50 GB RAM / 200 GB Disk Storage (+Additional 300 GB storage to be used by e.g., [LVM storage operator](#))

Best Practices

Prerequisites

As a primary prerequisite, customer who wants to use EIC/ELM should have BTP/SCP subscription and should activate some capabilities (like Cloud Integration, API management etc.) should be activated in their BTP/SCP subs mentioned in attached blog post:

<https://community.sap.com/t5/technology-blogs-by-sap/edge-integration-cell-design-deploy-and-manage-apis/ba-p/13579749>.

Of course, customer application(s) to be shipped to edge should initially be built in BTP.

Here is the SAP Note that contains initial sizing and platform information for EIC to run:

<https://me.sap.com/notes/0003247839>



The screenshot shows the SAP Note interface for note 3247839. The title is "3247839 - Voraussetzungen für die Installation von SAP Integration Suite Edge Integration Cell". The version is 37, released on 02.10.2024. The priority is "Empfehlungen/Zusatzinformationen" and the release status is "Für Kunden freigegeben". The prerequisite level is 0. The note is in German and includes sections for "Symptom", "Weitere Begriffe", and "Lösung". The "Lösung" section lists the supported container platforms: Amazon Elastic Kubernetes Service (EKS), Microsoft Azure Kubernetes Service (AKS), SUSE Rancher Kubernetes Engine (RKE2), and OpenShift Container Platform (OCP).

... / SAP Cloud Platform / SAP Cloud Platform Integration Suite / Edge-Integration - Zelle (BC-CP-IS-EDG) Änderungen einblenden

3247839 - Voraussetzungen für die Installation von SAP Integration Suite Edge Integration Cell

SAP-Hinweis, Version: 37, Freigegeben am: 02.10.2024

Priorität: Empfehlungen/Zusatzinformationen Freigabestatus: Für Kunden freigegeben Voraussetzung: 0

Beschreibung Verfügbare Sprachen

Symptom

Sie planen die Installation von Integration Suite Edge Integration Cell.

Weitere Begriffe

Stellen Sie für die entsprechende Landschaftsvariante sicher, dass Sie die richtige Kubernetes-, Docker-/Container- und Speicherinfrastruktur implementiert haben.

Lösung

Im folgenden Abschnitt werden die Plattformen definiert, auf denen Edge Integration Cell ausgeführt werden kann.

Edge Integration Cell ist für die Verwendung auf den folgenden Container-Anwendungsplattformen mit persistentem Speicher freigegeben, der von der entsprechenden dynamischen Volume-Bereitstellung zur Verfügung gestellt wird.

- Amazon Elastic Kubernetes Service (EKS) mit Kubernetes 1.26, 1.27, 1.28, 1.29 auf Amazon Web Services
- Microsoft Azure Kubernetes Service (AKS) mit Kubernetes 1.27, 1.28, 1.29 auf Microsoft Azure
- SUSE Rancher Kubernetes Engine (RKE2) mit Kubernetes 1.26, 1.27, 1.28, 1.29
- OpenShift Container Platform (OCP) 4.14 (basierend auf Kubernetes 1.27)

Best Practices

Sizing Information I/II

Minimum CPU / Memory requirements for High Availability (HA) and non-HA (agent / worker nodes)

Availability Mode	CPU / Memory	Persistent Volumes
non-HA	8 CPU / 32 GiB	101 GiB
HA	16 CPU / 64 GiB	204 GiB

Please note that the CPU and memory requirements listed above represent the total resources needed for the entire EIC application, not for individual worker nodes.

Where appropriate, Red Hat supports single node installation

SAP best practices can be found

<https://me.sap.com/notes/3247839>

please check for the latest guidance as this is being updated constantly.

Maximum number of pods per node

A non-HA setup will use ~40 pods (including kube components), depending on the platform. An HA setup will use around 80 to 90 pods with the minimum configuration.

SAP Message Service

Message Service supports specific configuration tiers. Tiers define internal configuration settings like maximum connections (concurrent client connections), maximum number of queue messages (references to messages queued for delivery to consumers) or maximum spool size (guaranteed messages are stored in a message spool on a persistent volume). Additionally, it defines the resource requirements for CPU, memory and disk.

Service Tier	Max Connections	Max Queue Messages [millions]	CPU Limit	Memory Limit [GiB]	Persistent Volume [GiB]
100	100	100	2	3.4	100
250	250 (VPN) / 1000 (System)	100	2	6.5	100
1K	1000	240	2	6.5	350
10K	10000	240	4	13.9	350

For an HA setup, Message Service runs 3 pods (primary, backup, monitoring) having the same CPU and memory requirements. Primary and backup use the same persistent volume size, whereas the monitoring pod only requires 3 Gi.

For production setups, it is recommended to consider Message Service Tier 250 or higher.

Memory limits need to be considered when choosing K8s agent / worker node instance type.



Best Practices

Sizing Information II/II

Storage

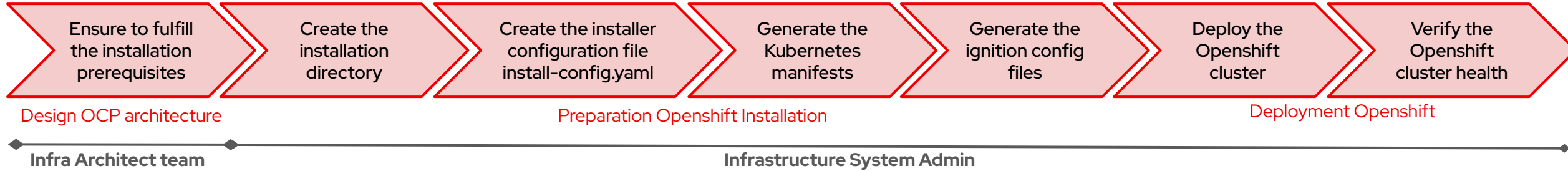
The table below provides an overview of the storage requirements for various components, detailing their access modes, whether they are optional, any relevant comments, and the required persistent volume sizes:

Component	Access Mode	Comments	Persistent Volume (GiB)
<i>Local Services - PostgreSQL database</i>	<i>RWO</i>	<i>Non-productive</i>	<i>50</i>
<i>Local Services - Redis data store</i>	<i>RWO</i>	<i>Non-productive</i>	<i>10</i>
<i>Monitoring - Prometheus (Optional)</i>	<i>RWO</i>		<i>20</i>
<i>Shared storage - Java thread, heap dumps (Optional)</i>	<i>RWX</i>		<i>50</i>
<i>Message Service Tier 100</i>	<i>RWO</i>	<i>Non-productive</i>	<i>100</i>
<i>Message Service Tier 250 (VPN/System)</i>	<i>RWO</i>		<i>100</i>
<i>Message Service Tier 1K</i>	<i>RWO</i>		<i>350</i>
<i>Message Service Tier 10K</i>	<i>RWO</i>		<i>350</i>
<i>Crunchy PostgreSQL</i>	<i>RWO</i>		<i>100</i>
<i>Redis Enterprise</i>	<i>RWO</i>		<i>60</i>

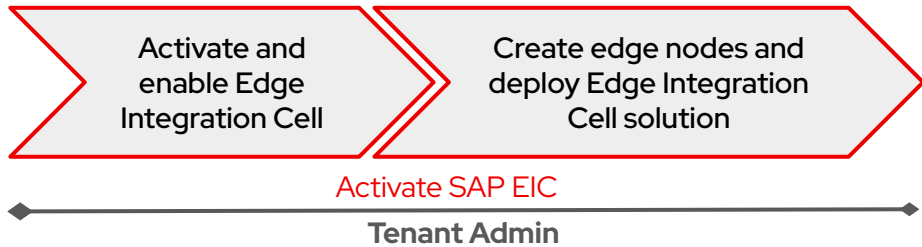
Deployment and Testing of SAP EIC on Red Hat Openshift

Process flow

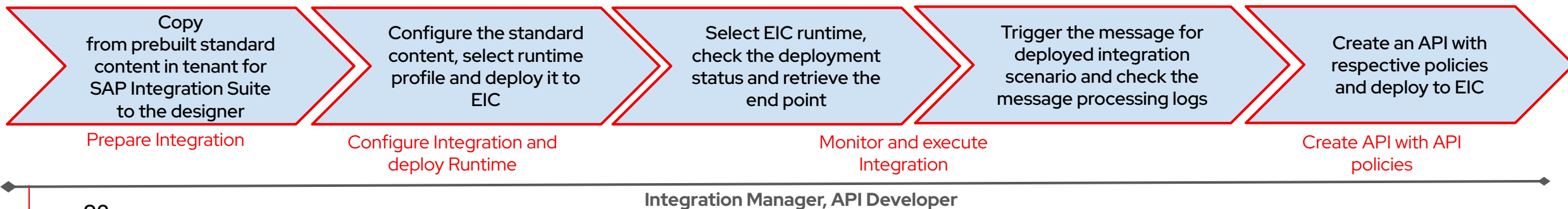
1 Installation Openshift Cluster



2 Activate, deploy and run SAP ELM and SAP EIC on OCP



3 SAP Integration Suite: Discover - Design - Test



SAP Edge Integration Cell – Roadmap

The screenshot displays the SAP Road Map Explorer interface for the 'Edge Integration Cell'. The top navigation bar includes the SAP logo, 'Road Map Explorer', and filters for 'Products', 'Processes', and 'Industries'. A search bar contains the text 'Search SAP Road Map by keyword, product, industry or process' and shows '28 Road Map Items'. Below the search bar, there are filters for 'Edge Integration Cell' and 'Clear all'. A 'Date Range' dropdown is set to 'Current - Latest', and there are buttons for 'Download', 'Share', and 'Save'. The main content area is divided into five columns representing quarters: Q4 2024, Q1 2025, Q2 2025, Q3 2025, and Q4 2025. Each column has a 'Collapse All' button. The items are categorized into 'Connectivity and Adapters', 'Process Integration', and 'B2B Integration'. Each item is marked as 'FUTURE RELEASE' and includes a brief description of the feature.

Quarter	Category	Item Description
Q4 2024	Connectivity and Adapters	JDBC support for IBM AS/400
		Support for "exactly once in order" processing using the...
	Process Integration	Changing edge lifecycle management HTTP proxy configuration
		Support for Kubernetes security policies
Process Integration	Support for the container application platform Google Kubernetes Engine	
Q1 2025	B2B Integration	RFC sender and receiver adapter
	Connectivity and Adapters	JDBC support for Teradata
		Support for "exactly once in order" (EOIO) processing functionality
Process Integration	Advance downloading of images for scanning	
Q2 2025	Connectivity and Adapters	Support for the partner directory
	Process Integration	Disabling message payload access from the cloud
		Local OData API access
Process Integration	Support for access policies	
	Support for principal propagation	
Connectivity and Adapters		
Connectivity and Adapters	Support for the SAP HANA database	
Process Integration	Downgrade to a previous version	
Q4 2025	B2B Integration	Support for the VDA message format
	Connectivity and Adapters	"Exactly-once" (EO) support for IDoc and SAP RM adapters
		File adapter to send and receive files
Connectivity and Adapters	Flat file to XML converter	
	IDoc over RFC	

Key Takeaways

- We have partnered with SAP so customers benefit from the best values which both **SAP Edge Integration Cell** and **Red Hat OpenShift** offers for hybrid cloud architectures
- Migrate safely and quickly from **SAP PI/PO** with **SAP Edge Integration Cell** running on **Red Hat Openshift**
- Red Hat OpenShift provides a **trusted, comprehensive, and consistent** OpenShift platform portfolio suitable for legacy, virtualized, cloud-native, and AI-powered applications, whether that's on-prem, in the cloud, or at the edge.
- Get in touch with us here after this talk or at our **SAP booth** to understand more about the value we can provide!

Red Hat
Summit

Connect

Thank you



[linkedin.com/company/red-hat](https://www.linkedin.com/company/red-hat)



[facebook.com/redhatinc](https://www.facebook.com/redhatinc)



[youtube.com/user/RedHatVideos](https://www.youtube.com/user/RedHatVideos)



twitter.com/RedHat