Red Hat Summit

Connect

Journey to Cloud reloaded: multicloud & cloud native integration

Hybrid Cloud & Automation track

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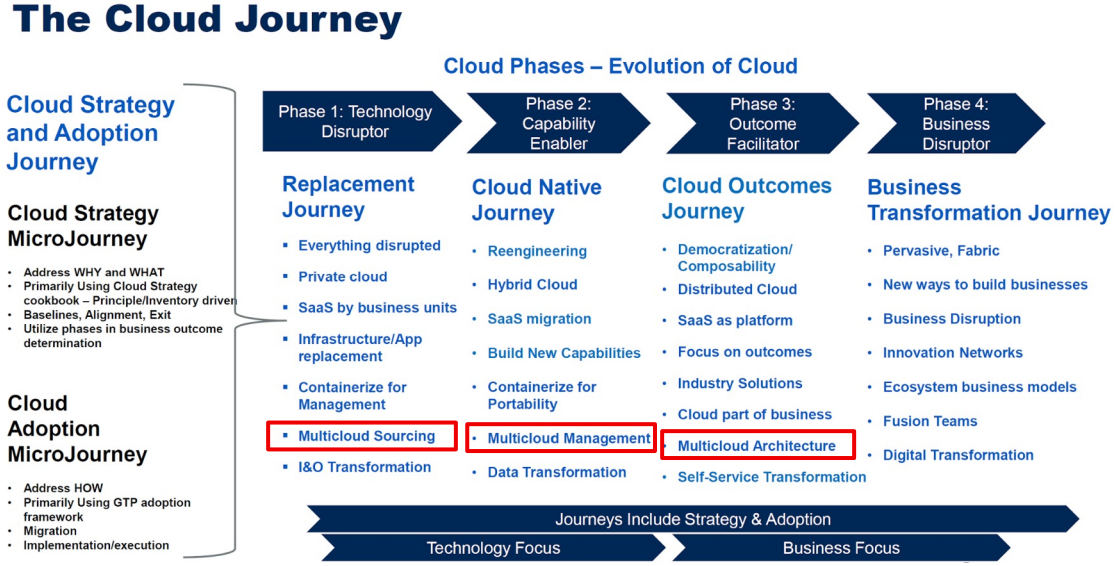
GARTNER – THE FUTURE OF CLOUD: PREPARE FOR 2025

From unintentional to intentional multicloud

Gartner predicts that between 2021 and 2025 we will move from an unintentional multicloud approach to an **intentional one**

2021	vs	2025
Popular computing style		Pervasive computing style
Technology innovation		Business innovation
Application development		Application assembly/integration
Centralized cloud		Centralized and distributed cloud
"Private" cloud		Distributed cloud
Unintentional multicloud		Intentional multicloud
Silos and DevOps		DevOps, platform teams, and fusion teams
Shared services		



In the Cloud Journey Gartner identifies an evolutionary path for the multicloud in three phases:

- multicloud **Sourcing**
- multicloud **Management**
- multicloud **Architecture**

WHY MULTICLOUD?

Some relevant benefits

MORE BUSINESS RELATED BENEFITS

WIDER SERVICE CATALOG

Possibility to meet the needs of the business with a **greater availability of innovative technologies**

REVENUE GENERATION

MORE CHOICES TO MEET COMPLIANCE

Possibility to use different services that allow you to **respect specific compliance rules**

REVENUE GENERATION

FLEXIBILITY & SCALABILITY

Greater availability of locations, resources and choices to address scalability needs

COST SAVING

LEGACY INTEGRATION

Making the most of the possibilities that distinguish the various CSPs for **workloads with special requirements**

COST SAVING

NO VENDOR LOCK-IN

Avoiding **lock-in on a single CSP** and taking advantage of any price reduction offered by alternative CSPs

COST SAVING

COMPETITIVE PRICING

Commercial lever towards individual CSPs, thanks to open contracts with multiple CSPs and an integrated multicloud approach

COST SAVING

NO SHADOW IT

Possibility to **accommodate solutions proposed by suppliers or internal offices** available only on specific CSPs and avoiding the proliferation of non-aligned initiatives

REVENUE GENERATION

ENHANCING RESILIENCE

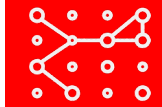
Higher system stability and reliability thanks to **multiple failover and DR** (Disaster Recovery) solutions

REVENUE GENERATION

MORE TECHNOLOGICAL BENEFITS

WHY MULTICLOUD?

...and some attention points.

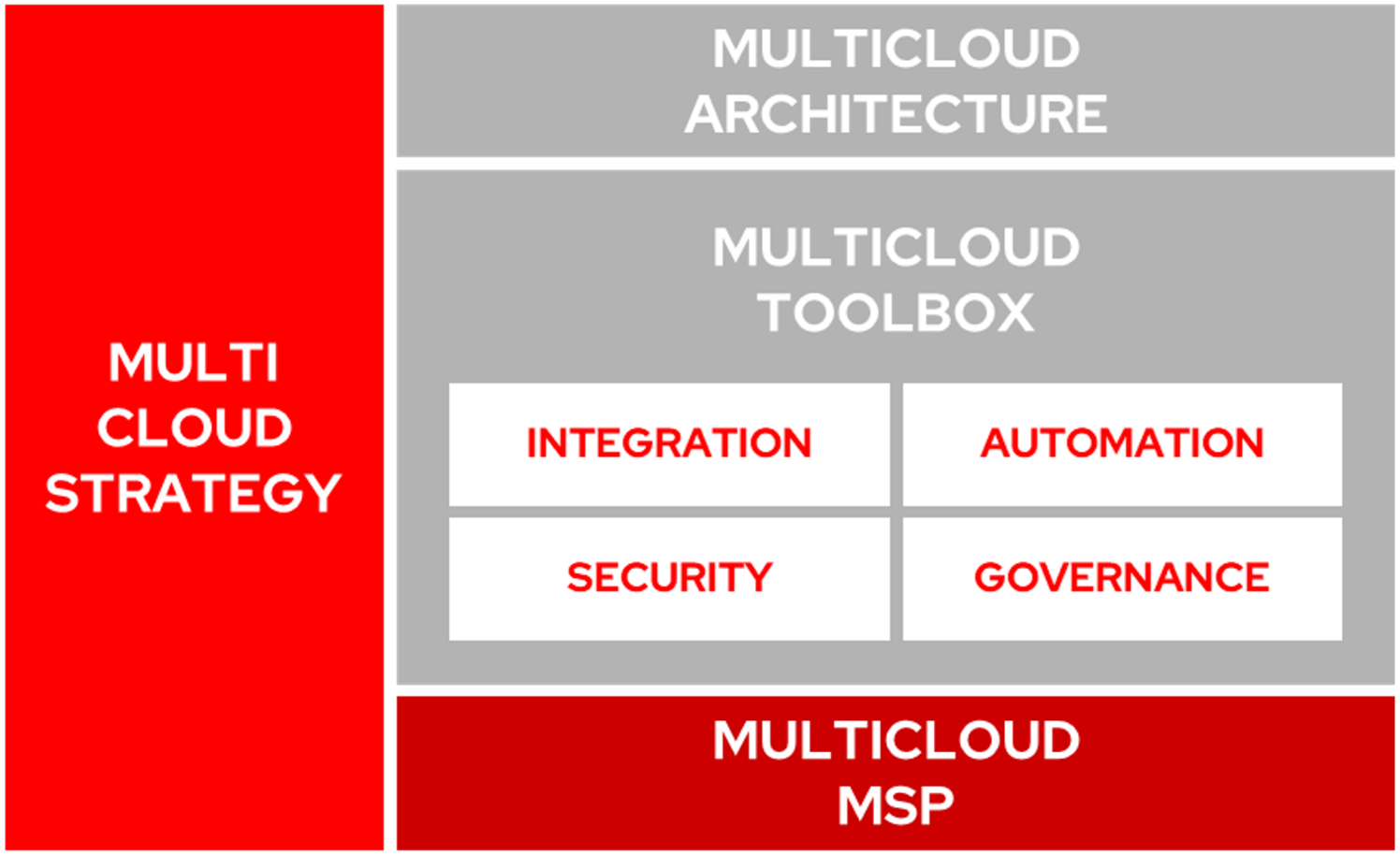
 **ROI MAY BE COMPLEX TO EVALUATE**	Using a **high number of CSPs** can lead to **higher costs**, so it is necessary to carefully evaluate TCO and ROI before proceeding with the initiatives.
 **FOCUS ON COMPLEXITY REDUCTION**	The high heterogeneity of the Systems requires a **greater focus on the issues of controllability and observability** in order not to worsen service levels.
 **SPECIALIST MANAGEMENT EXPERTISE**	Multicloud requires the presence of **highly specialized personnel on different CSPs** in order to keep up the governance of the systems
 **LEGACY CONCERNS**	A significant challenge for companies is the **migration of Legacy technologies to the cloud**: architectures are often stressed beyond their limits to satisfy Multicloud strategies
 **DATA PRIVACY AND SECURITY**	The issue of security and data, already very much felt in the on-premise field, **require even more attention and control** when addressed in Multicloud

THE MULTICLOUD "CCOE"

In a Multicloud adoption process, it is necessary to act in three main phases, as shown below:

- **Strategy**
- **Architecture**
- **Adoption Suite**
- **MSP**

Intervention Areas



THE MULTICLOUD TOOLBOX

4 macro area to be considered in a multicloud approach

INTEGRATION

Multicloud Integration extends the **architectural and network logics** and **patterns relating to the integration and composition of services**, to fully exploit the capabilities offered by CSPs

- MULTICLOUD LANDING ZONE
- NAAS
- NETWORK MGMT
- MULTICLOUD CONNECTIVITY
- MULTICLOUD SERVICE COMPOSITION
- API MANAGEMENT

AUTOMATION

Automation becomes central: in order to abstract as much as possible, everything is managed by **avoiding manual activities**, maximizing **operational agility** and **minimizing risks**.

- DEVOPS AUTOMATION
- APPLICATION PORTABILITY
- IaC & CONF. MGMT
- DATAOPS
- SELF SERVICE MGMT PLATFORM
- SELF HEALING & QUALITY GATES

SECURITY

Security **adapts to the complexity of heterogeneous environments** and increases the focus on areas that guarantee delivery quality and stability.

- IDENTITY GOVERNANCE
- BUSINESS CONTINUITY
- CONF. SECURITY ENFORCEMENT
- ACCESS MANAGEMENT
- DATA SECURITY & KEY MANAGEMENT
- CLOUD SECURITY POSTURE MGMT

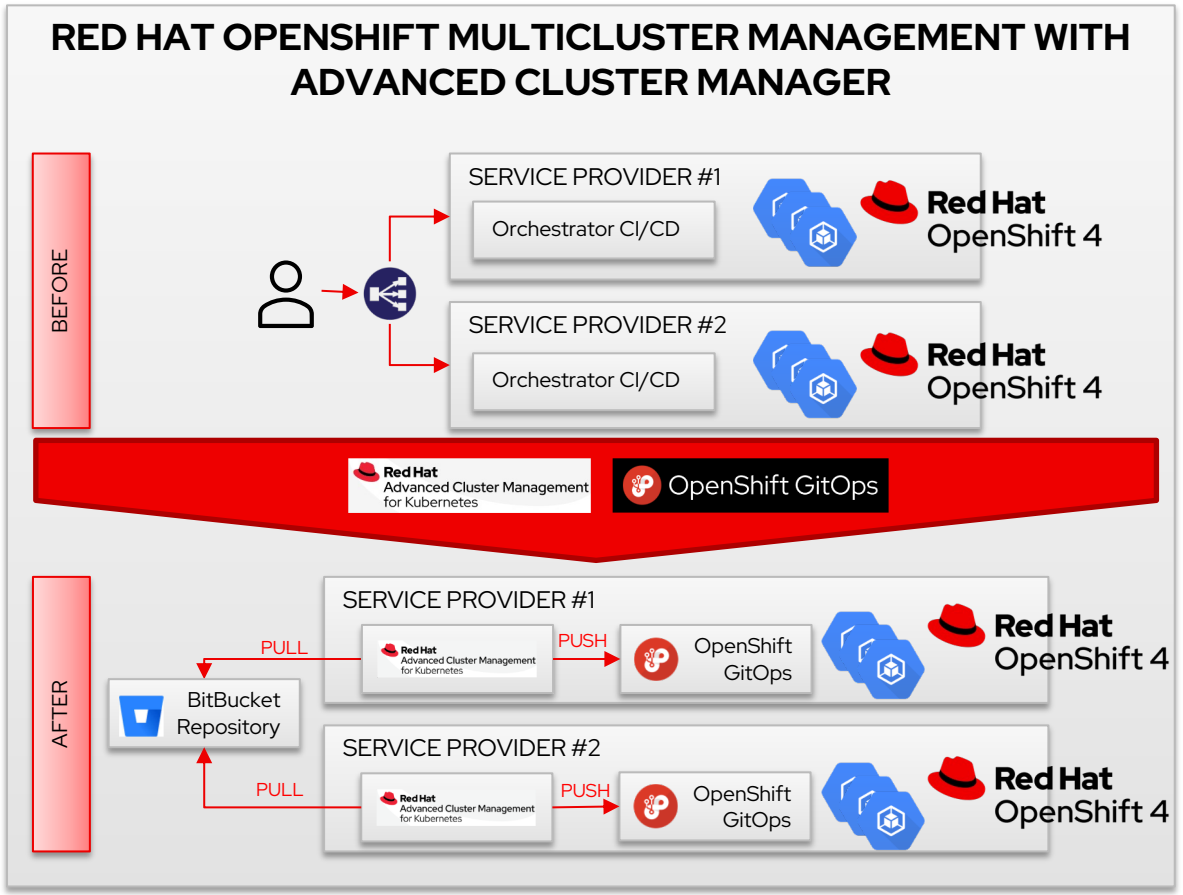
GOVERNANCE

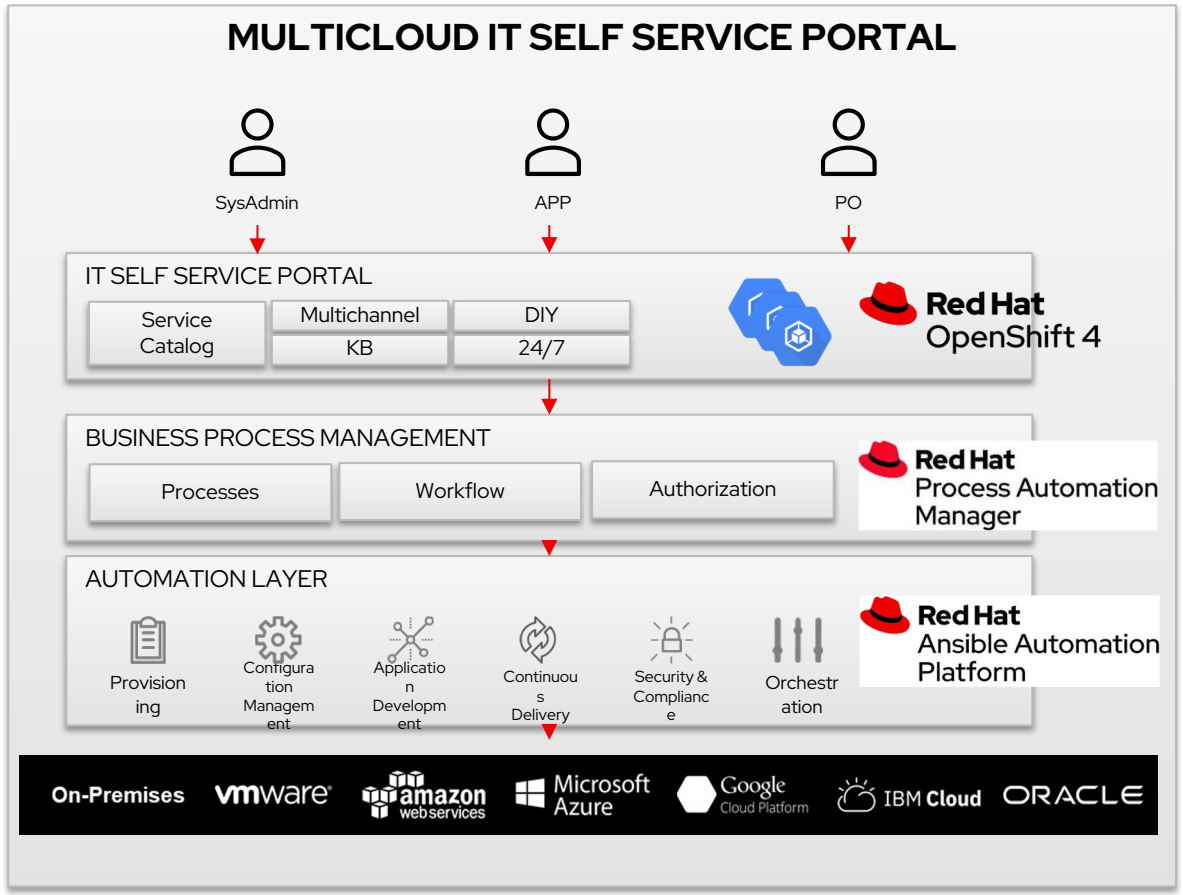
The Multicloud government must **keep the technological complexity under control** but also the **financial** and **eco-sustainability aspects**.

- OBSERVABILITY
- CLOUD SUSTAINABILITY
- APPLICATION RESOURCE MGMT
- SITE RELIABILITY ENGINEERING
- FINOPS
- KNOWLEDGE SHARING

SOME REAL EXAMPLE

How Red Hat helps take a multicloud approach





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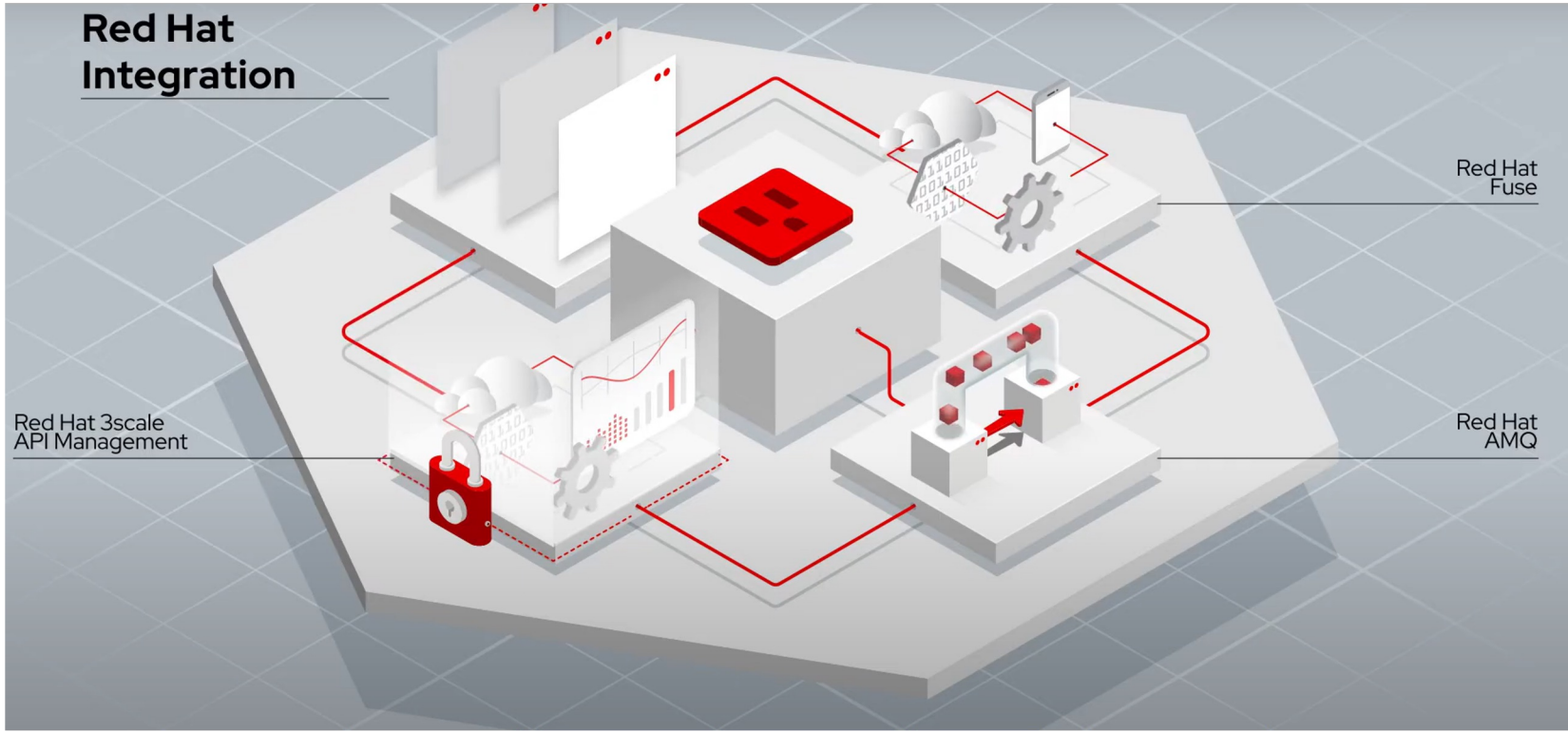
Red Hat Integration

Integrate apps, data, and processes

Red Hat Fuse	Based on open source communities like Apache Camel and Apache ActiveMQ. The API-centric, container-based architecture decouples services so they can be created, extended, and deployed independently
Red Hat 3scale API Management	Makes it easy to manage APIs. Centralizes control of the API program—including analytics, access control, monetization, developer workflows, and more
Red Hat AMQ	Based on open source communities like Apache ActiveMQ and Apache Kafka—is a flexible messaging platform that delivers information reliably, enabling real-time integration and connecting the Internet of Things (IoT)



A real hybrid cloud e-commerce solution

Multicloud e-commerce solution based upon a containerized Red Hat Fuse light service bus

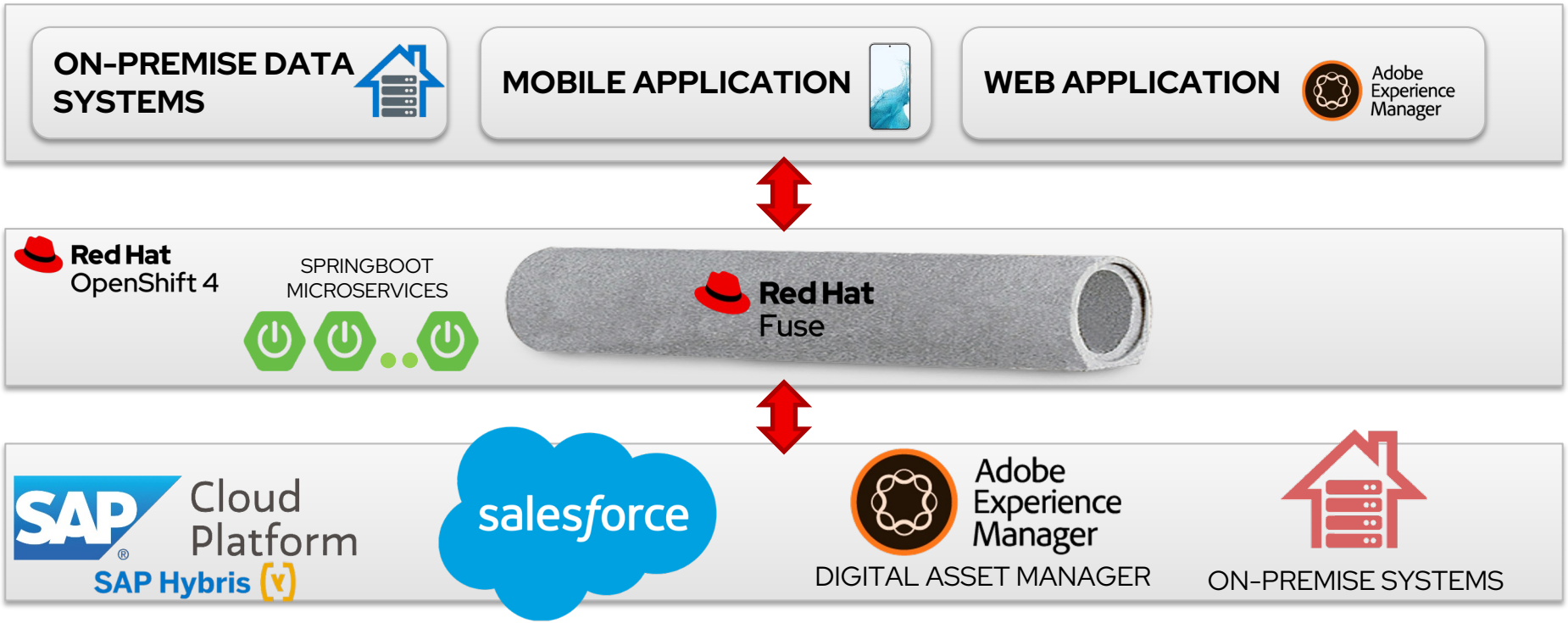
Red Hat Fuse

Takes e-commerce source data like **assortments, timeslots, prices, stocks** coming from multiple on-premise ERPs and send them out to SAP Hybris (cloud e-commerce backend platform)

Exposes **REST APIs** to web and mobile applications as well as to on-premise **order fulfilment** systems

Imports **customer data** from on-premise CRM and send them to Salesforce customer care

Imports **products** from on-premise databases and send them to SAP Hybris. **Product Images** are sent to the Adobe digital asset manager for them to be available on Adobe Experience Manager webapp



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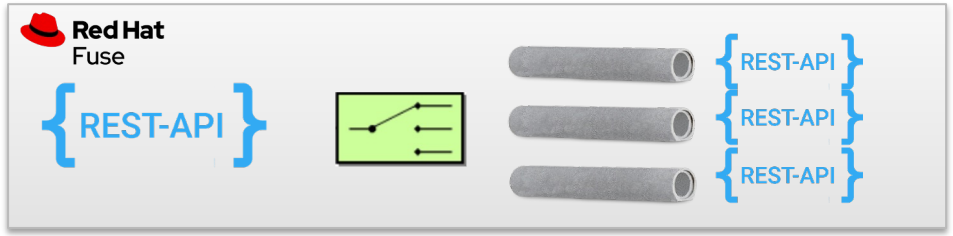
A real hybrid cloud e-commerce solution

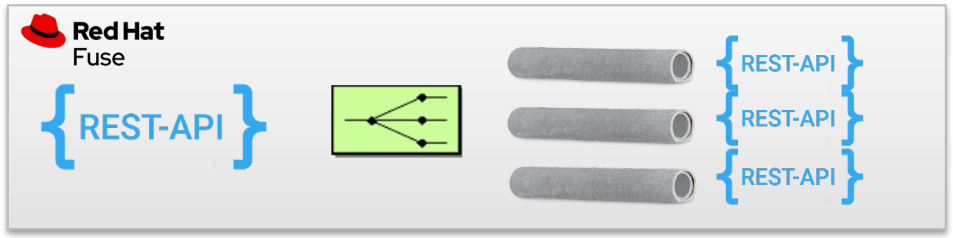
Some Enterprise Integration Patterns and their use in the solution

MESSAGE TRANSLATION / CONTENT ENRICHER
Camel routes which run for example a REST service and invoke others REST-like services like SAP and Salesforce REST protocols. It has been used to **expose APIs to frontends** and invoke proprietary SAP e-commerce and Salesforce customer care backend systems.

CONTENT-BASED ROUTER
The Message Router from the EIP patterns allows to consume from an input destination, evaluate some predicate then choose the right output destination. Used in the solution to properly **direct REST APIs to the right e-commerce backend** according to a multi-value field



MULTICAST
The Multicast EIP is capable of aggregating each multicasted message into a single response message as the result after the Multicast EIP. The message router has been used **for searching the user cart across e-commerce backend** systems as well as to **aggregate orders submitted by the same user** across different e-commerce backends



A real hybrid cloud e-commerce solution

Red Hat Fuse components applied to the e-commerce solution

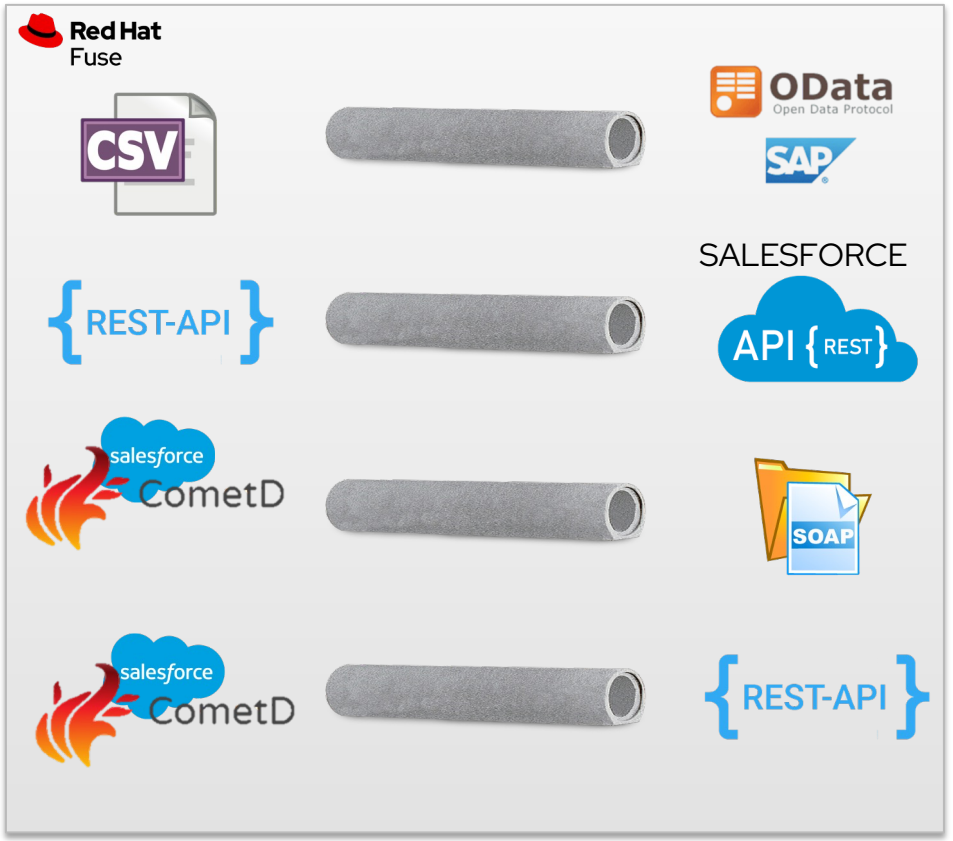
PROTOCOL CONVERSIONS

Red Hat Fuse supports several Apache Camel components which can be used either as consumers or producers of Camel routes. Some real uses of Camel routes in the e-commerce platform:

File component (CSV) -> SAP ODATA REST
Used to load CSV files data coming from on-premise systems to SAP Hybris (ecommerce backend) via the Odata protocol

REST -> SALESFORCE REST COMPOSITE
Exposing REST APIs and converting them to Salesforce proprietary REST COMPOSITE format. Used to allow frontend systems to call Salesforce proprietary Customer Care APIs via canonical REST APIs

SALESFORCE COMETD EVENT -> SOAP/REST
Used to arrange persistent consumers of Salesforce event bus, using the CometD protocol, and turn them to SOAP/REST requests against backend systems



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