INCREASE OSS AND BSS EFFICIENCY WITH RED HAT AGILE INTEGRATION

OVERVIEW

"In the next five years:

- Overall telecom API market revenue reaching $207 billion by 2022
- IoT [Internet of Things] API services becoming the lead driver of future growth

In addition to growth areas, [there are] some specific untapped opportunities including carrier branded application stores, B2B revenue to third parties, and more."[1]

INTRODUCTION

Disparate operations support systems (OSS) and business support systems (BSS) lack scalability and limit the value of network and application data. IT teams need federated access to legacy systems and data, while developers and partners need secure, easy access to systems.

An application programming interface (API)-centric approach to integration, secured via API management, addresses these issues for modern, containerized technology and application adoption. Exposing data and functionality using APIs supports reuse and modernization of legacy applications and systems, increases agility and scalability of internal and partner OSS and BSS systems, and reduces maintenance costs.

Red Hat's API-centric agile integration solution for OSS and BSS processes and systems combines multivendor products with customer-owned systems. This Red Hat solution provides a single security framework that also supports TM Forum API specification standards[2] and an automated, service-oriented approach.

CHALLENGES OF ENTERPRISE INTEGRATION

Integrating internal, vendor, and partner OSS and BSS presents multiple challenges, including:

- Addressing slow service delivery due to traditional technical and organizational enterprise service bus (ESB) approaches.
- Integrating and consolidating ESBs to expose integrated services to customers and partners.
- Keeping pace with integrations of the latest cloud and as-a-Service offerings.
- Addressing the multitude and diversity of channels.
- Consolidating contractor-built interfaces with different authentication mechanisms, limited documentation, and lack of access control.
- Maintaining IT devices that were acquired from other vendors. Teams often have limited knowledge of these devices, particularly when the vendors no longer exist.
- Mitigating excessive risk and cost of redesigning or changing existing applications. Many service providers need to standardize management and security across applications while keeping legacy applications untouched.

BENEFITS OF API-CENTRIC INTEGRATION

A fine-grained and modular system design, in which all systems interact via well-defined APIs, offers a range of key benefits:

- Avoids central bottlenecks with distributed integration based on smart endpoints

1 *Carter, Eric. "New Research: Telecom API Market Outlook and Forecasts". ProgrammableWeb. Sept. 21, 2017. https://www.programmableweb.com/news/new-research-telecom-api-market-outlook-and-forecasts/research/2017/09/21*

2 *https://projects.tmforum.org/wiki/display/API/Open+API+Table*

Red Hat's agile integration solution supports Open API Table specifications.

Learn more about this project at: https://projects.tmforum.org/wiki/display/API/Open+API+Table

- Reuse of well-defined interfaces (APIs) across modularized systems
- Scales on demand
- Provides services dynamically and API discovery
- Provides APIs via self-service developer portals
- Centralizes API catalog and documentation
- Exposes APIs internally and externally to address different API consumer segments with different API policies
- Integrates with single sign-on (SSO) or identity provider solutions
- Implements consolidated, consistent, and controlled security and access model

With API-centric integration, service providers have the foundation for effective asset monetization and partner ecosystem establishment.

SERVICE PROVIDER SUCCESS WITH RED HAT AGILE INTEGRATION

Red Hat's agile integration solution addresses integration challenges and provides the previously described benefits via APIs and API management. Agile methods and practices are combined with specific technologies to produce a flexible, adaptive, and reusable platform for rapid application and data integration, as well as integration of OSS and BSS, with legacy systems.

This agile integration solution outlines three pillars: distributed, containerized, and API-based integration. These three pillars translate into concrete capabilities for communications service providers:

- Distributed integration increases communications service provider flexibility
- Containers increase scalability
- Managed APIs increase reusability

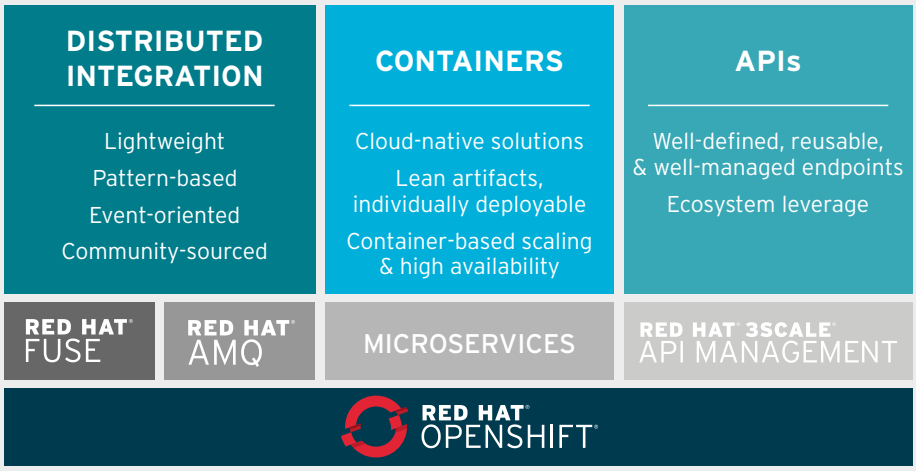

Figure 1. Red Hat agile integration solution delivered through Red Hat products

The agile integration solution from Red Hat unites legacy systems, OSS and BSS, and network systems with internal and external end-user applications. Components of this solution are included in all areas of a typical telecommunications stack.

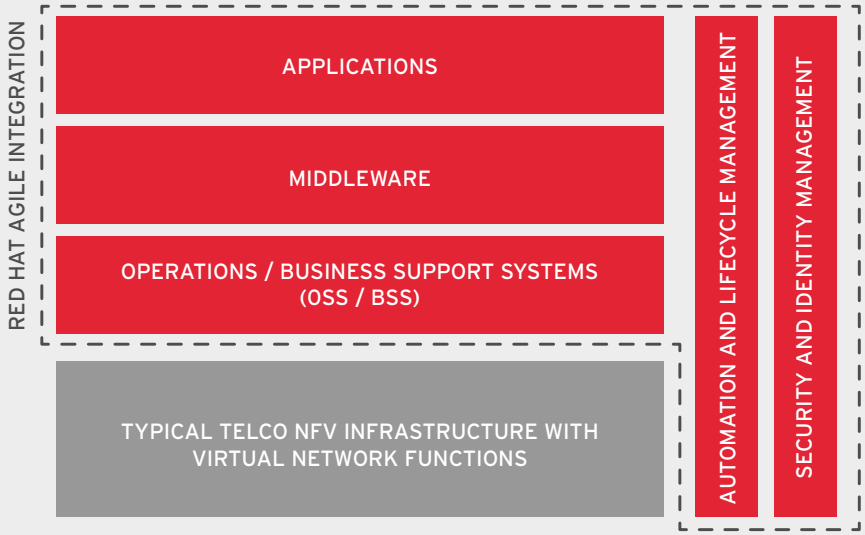

Figure 2. Red Hat agile integration component alignment with architectural stack

The agile integration pillars translate into an effective reference architecture for service providers.

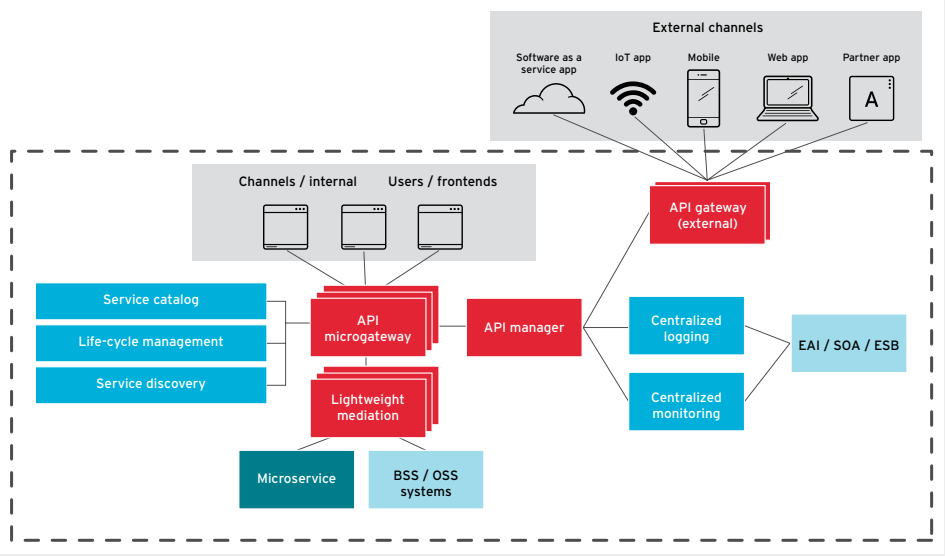

Figure 3. Red Hat agile integration reference architecture

This reference architecture is organized into several key functional areas:

- **API microgateways** that interface with internal and external channels via shared or dedicated gateways, aggregating thousands of integration points from the back end.
- **Lightweight mediation** that offers composition, integration, and transformation functionalities.
  - Mediation logic can be broken up into standalone integration components that can be distributed, deployed, and scaled on demand.
  - The mediation layer is between the gateways and the actual microservices or back ends.
- **Microservices** that interface with the mediation layer and are separate from legacy architecture—enterprise application integration (EAI) and service-oriented architecture (SOA).
  - Functionality that is shared with the legacy architecture for operational purposes, including logging and monitoring, can reside in containers.
  - Microservices provide new back-end functionality and can replace specific BSS or OSS functionalities.
- **Messaging** that can be used to interconnect various components, enabling high-speed, asynchronous communication with reliable delivery.
  - Real-time messaging is built for high-throughput streams, fault tolerance, and horizontal scalability and supports geographically distributed data streams and stream processing applications.
- **Operations functions** that include service discovery, service catalogs, and life-cycle management and automation.
  - These functions interface with the API microgateway to provide shared functionality. Microservices can take advantage of this shared functionality through mediation.
  - Business process automation is an optional, compatible capability.

These functions are containerized and certified for Red Hat® OpenShift® Container Platform. OpenShift Container Platform offers a range of hybrid cloud deployments, automated, on-demand scaling, and DevOps benefits. In addition, all agile integration components are API-driven, giving service providers flexibility to extend and integrate within an existing IT landscape.

Like all Red Hat offerings, Red Hat's agile integration solution is based on open source community development. This model benefits from a large, global community of software developers who continuously contribute to and improve the code. In addition, Red Hat provides quality assurance, 24x7 support, and other benefits for transparency, security, speed, and innovation.

Red Hat has helped many CSPs worldwide, including managed service providers, implement API-centric integration of internal and external systems. Benefits include compliance and security improvements, increased innovation, and reduced costs.

TABLE 1. REGIONAL RED HAT AGILE INTEGRATION USE CASES

REGION	BUSINESS CHALLENGES	SOLUTION
North America	• Maintained multiple internal and external configurations for traffic management and access control • Hybrid cloud, Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS) strategies complicated consistent rate limiting, billing, and access control	• Used unified solution including Red Hat API management technologies to eliminate workarounds and complex setup, as well as interface with Short Message Peer-to-Peer (SMPP) and Java™ Message Service (JMS) protocols. • Red Hat solution provides significant security and cost benefits.
Latin America	• Managed complex combination of legacy applications and systems, with components from multiple business acquisitions	• Management layer standardizes security across disparate applications and systems. • Untouched legacy code was integrated with Red Hat API management and integration solutions, avoiding the cost and risk of updating applications.
Europe, Middle East, and Africa	• Containerization needed for big data applications and data monetization • Integration needed for hundreds of systems across multiple vendors	• Used OpenShift Container Platform and API management solutions to modernize applications, scale on-demand, provide API-centric third-party system integration, and expose and monetize APIs. • The Red Hat platform supports service reuse and interface and protocol standardization.

NEXT STEPS WITH AGILE INTEGRATION

For communications service providers, effective integration of internal and external OSS and BSS systems and components is a technical, organizational, and financial challenge. Red Hat's industry-recognized[3] API-centric agile integration solution directly addresses service provider challenges with flexibility through distributed integration, scalability with containers, and reusability through managed APIs.

To initiate or expand API-centric agile integration, service providers can engage Red Hat Consulting in a Red Hat Discovery Session to analyze optimization potential for internal and third-party integration.

For a more comprehensive API-centric integration program, service providers can engage Red Hat for a Red Hat Consulting API-centric integration solution.

- This solution includes and expands on a Discovery Session to help CSPs analyze requirements and establish best-practices for integrating internal, external, and partner systems.
- It also identifies and translates business objectives into technology requirements and actionable items.

Learn more about other Red Hat offerings and expert services for communications service providers at redhat.com/telco.

3 *"Agile Integration for Today's Cloud-Enabled Enterprise." IDC (sponsored by Red Hat). Oct. 2017. https://www.redhat.com/en/engage/cloud-enabled-enterprise-20171107*

ABOUT RED HAT

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