Build foundations of operational resilience in financial services

Third-party platforms and services such as public clouds have become increasingly important to financial services operations.

84%

of financial firms say that cloud is essential to their business operation, with 60% reporting significant adoption.[1]

43%

of firms currently rely on a single vendor for their cloud services needs.[2]

New approaches to operational resilience needed in the age of digital and AI

In response to increasing demand and changing market conditions, financial services organizations are rapidly expanding their operations to digital platforms. This growth is markedly accelerated by the adoption of artificial intelligence (AI), and a significant reliance on 3rd-party platforms and services, such as public clouds. In fact, 84% of financial firms are already using some form of public cloud, including hybrid and multicloud strategies.[1]

As a result, firms' critical operations and regulated data are now being hosted on 3rd-party vendors more than ever before. This shift often leads to increased reliance on a select few cloud service providers, amplifying the risks throughout the financial services value chain. Notably, firms relying on a single vendor increased from 35% in 2020 to 43% in 2023.[2]

Accordingly, digital operational resilience has become a greater concern, and regulatory agencies are responding to these challenges with new, stringent requirements aimed at making sure financial institutions can withstand and recover from disruptions. The European Union's Digital Operational Resilience Act (DORA) and the U.K.'s Prudential Regulation Authority Policy Statement 6/21 (PRA PS6/21) and Financial Conduct Authority Policy Statement 21/3 (FCA PS21/3), set to be fully implemented in 2025, are leading examples of this regulatory focus, pushing firms to adopt more holistic approaches to managing these risks. North American regulators, including the U.S. Security Exchange Commission (SEC), the U.S. Office of Comptroller of the Currency (OCC), and the Canadian Office of the Superintendent of Financial Institutions (OSFI), are also signaling forthcoming guidance that may further shape operational resilience requirements.[3]

Even so, existing approaches to operational resilience often fall short of what is needed to mitigate operational failures and disruption and comply with these growing regulations. Disruptions to services have become more frequent, with 60% of financial firms experiencing at least 1 major incident in the past year,[3] underscoring the regulatory urgency. These 2 factors are pushing financial services organizations to consider new strategies for addressing operational resilience in a digital, cloud-based world.

What is operational resilience?

The term operational resilience is typically used to refer to an organization's ability to recover from incidents and events. For example, if the servers running a core application fail, your organization may invoke emergency procedures to recover lost data and restart the application on different servers.

1 *"The cyber clock is ticking: Derisking emerging technologies in financial services." McKinsey & Company, 11 March 2024.*

2 *Koh, Ting Yang, and Jermy Prenio. "Managing cloud risk - some considerations for the oversight of critical cloud service providers in the financial sector." Bank for International Settlements, FSI Insights No 53, 16 Nov. 2023.*

3 *Forrester Consulting study commissioned by Red Hat and Intel. "The Path To Operational Resilience Begins With Reliability And Risk Management." 8 May 2024.*

At Red Hat, we view operational resilience as more than just the ability to bounce back from disruptions. We believe that to be truly resilient, your whole organization must be adaptable, integrating change into normal operations as a process, rather than simply responding to events in a reactive manner. This approach aligns with current industry trends, where the focus is shifting towards proactive risk management to mitigate risks before they escalate.

This means implementing organizational structures, operational processes, and IT that is flexible, agile, and ready for change at any moment. In addition to minimizing the effect of incidents and failures, this approach allows organizations to capitalize on new opportunities, meet evolving regulatory demands promptly and efficiently, and build long-term trust with customers and stakeholders.

This overview discusses key considerations for building a technology foundation to support operational resilience across your organization.

How do you plan for operational efficiency?

While operational resilience encompasses more than just technology—organizational culture and processes are also critical—your technology stack serves as a foundation for your staff and operations.

An effective technology foundation can help you:

- Articulate your resilience to regulators and shareholders.
- Comply with existing and new regulations.
- Improve business and IT agility to remain competitive.
- Attract the next generation of technologists and customers.

When designing your technology foundation, focus on capabilities that will support operational resilience, business continuity, and rapid adaptation of services and vendors. You should base your strategy of diversification on an open hybrid cloud and design with the core principles that disruption will happen and failures will occur.

Given the growing complexity and interdependencies in the financial services ecosystem—including increasing use of AI and reliance on a few major 3rd-party providers—the long-term success of your operational resilience and technology strategy relies on collaboration and acceptance across your organization.

You should also be sure that all applicable teams—including application development, data privacy, security, compliance, infrastructure, and operations teams—are involved in both creating your strategy and building your technology foundation. Making sure that business leaders support the transformation is important to embedding resilience throughout the organization, and each team has unique needs that should be addressed from cultural, procedural, and technical perspectives.

The following sections detail areas of consideration for planning your strategy and foundation.

Application portability

A key statute of operational resilience is portability: you must be able to deploy and move applications and data across different infrastructures to deal with changing conditions.

A consistent technology foundation, spanning on-site datacenters and public cloud environments, is critical for achieving application and data portability. Deploying a hybrid cloud platform that supports both traditional and modern applications, including AI-powered workloads, makes sure you have flexibility and scalability to mitigate risks associated with reliance on single providers.

Open source and open standards-based hybrid cloud platforms facilitate consistent operations across a wide selection of vendors and technologies you can rely on. This provides the interoperability needed to integrate with diverse software, hardware, and cloud vendors. By using a valued ecosystem of certified partners, financial institutions can further enhance this interoperability, integrating with a broad range of trusted 3rd-party solutions to meet their unique needs and regulatory requirements.

32% of firms' business critical workloads were in production at cloud providers in 2023.[2]

Data sovereignty and availability

Many financial services organizations operate across multiple geopolitical regions and must comply with regulatory requirements in these jurisdictions. Your technology foundation should include detailed data placement and control capabilities to make sure that you can meet regulatory requirements. However, because applications rely on data for operation, your technology foundation also needs to account for data portability in addition to application portability. Your foundation should also address overall data protection, availability, and scalability to support both traditional and cloud-native applications.

75% of financial firms recognize that the applicability of modern software development is essential to their business operations.[1]

Application architecture

New application architectures and development approaches let you rapidly deliver critical applications and services that can run across datacenter and cloud environments. An operationally resilient technology foundation should support all types of applications—traditional, cloud-native, and those with embedded AI models. By adopting DevOps you can build high-quality, resilient, portable applications that operate across various infrastructures. These applications should minimize unnecessary dependencies and maintain well-defined interfaces, while making sure there is appropriate access to necessary contextual data for model-centric decision making. When your architecture follows these principles, you can use your IT foundation's features for better performance, more capabilities, and reliable operation.

70% of [European Union] EU financial firms use AI in areas such as credit scoring, fraud detection, and compliance with anti-money laundering and combating the financing of terrorism (AML/CFT) policies.[4]

Responsible AI systems

AI-powered tools can play a central role to automate incident response, optimize resource allocation, and facilitate data-backed business decision making, culminating in enhanced operational efficiency and resilience. On the flipside, firms must adjust their risk management practices to keep pace with rapid technological advancements. The speed of AI development is testing the limits of existing frameworks, especially in the absence of clear standards for identifying and measuring AI-related risks.

As financial institutions increasingly rely on AI and machine learning (ML), including generative AI (gen AI), it becomes a prominent area for disruptions and potential threat to the business.

4 *Campa, José Manuel. "José Manuel Campa keynote speech at the 14th Financial meeting organised by Expansion." European Banking Authority, 10 Oct. 2023.*

With their complex integrations and data flows across diverse infrastructures, AI systems must be resilient and free of single points of failures to ensure reliable service to customers and critical operations in financial services. A key challenge lies in understanding how AI risks differ from those of other digital technologies. Building trusted AI capabilities requires a resilient technology foundation, supported by robust infrastructure, governance, and control systems.

Traditional application support

Many organizations operate a mix of traditional and modern applications. Your technology foundation should support all of the existing applications that you intend to deploy on it.

While most financial organizations plan to modernize their traditional applications, they cannot immediately abandon these investments and must modernize iteratively over time. The ability to run in virtual machines (VMs) alongside containers allows firms to improve their operating models, and develop, manage, and deploy applications consistently across environments. Adopting a hybrid cloud foundation that can support scalability, availability, and resilience for traditional applications can ease your transition to modern, cloud-native application architectures.

Automation

IT automation is indispensable for operational resilience. Manual failover and migration processes can result in delays, errors, lost business, and regulatory repercussions. IT automation lets you handle both simple tasks and complex scenarios with less, if any, human intervention. As a result, you can respond to unexpected events in less time and streamline planned deployments and migrations.

IT automation can also help you maintain compliance with security and regulatory policies and control configuration drift. Adding a flexible IT automation platform to your technology foundation lets you automate across your infrastructure and organization to improve speed, efficiency, and consistency. It can also help you operate traditional applications in a more resilient manner.

Red Hat OpenShift Platform Plus

Deploy a unified hybrid cloud foundation with Red Hat OpenShift Platform Plus. This offering combines many of the key components needed for operational resilience:

- Red Hat OpenShift
- Red Hat Advanced Cluster Management for Kubernetes
- Red Hat Advanced Cluster Security for Kubernetes
- Red Hat Quay
- Red Hat OpenShift Data Foundation

Learn more about Red Hat OpenShift Platform Plus.

How Red Hat can help you achieve operational resilience

Red Hat takes an open hybrid cloud approach to modern applications and IT. An open hybrid cloud strategy lets you architect, develop, and operate a mix of applications and deliver a flexible cloud experience with the speed, stability, and scale required for digital business.

An open hybrid cloud inherently addresses operational resilience challenges, helping you to comply with industry regulations. With Red Hat, financial institutions can reduce their dependence on provider-specific cloud services and build their capabilities to achieve greater operational resilience, while confidently relying on the same trusted foundation to deliver efficient services on-premise and across multiple environments.

The benefits of our open hybrid cloud approach also extend beyond operational resilience.

- A modern, open hybrid cloud environment provides the flexibility and interoperability needed to adapt to new technologies and methodologies.
- A consistent operating and application foundation unifies your on-site and cloud infrastructures to provide increased visibility into and control over resources across your environment.
- Standardized development processes, design approaches, and operating models connect disparate tools and teams across your organization to increase collaboration and innovation.

- An open hybrid cloud also includes the capabilities needed to support modern DevOps and cloud-native approaches to application development across your entire environment.

Based on this open hybrid cloud strategy, Red Hat offers a foundation for operational resilience for financial services organizations.

Build your hybrid cloud environment using open, integrated products and platforms

Red Hat provides a portfolio of integrated products that address the pressing challenges of operational resilience. As firms grapple with the complexities of consistent application portability, managing scalability across diverse infrastructures, and meeting stringent regulatory demands, Red Hat's open hybrid cloud solutions offer a unified foundation to tackle these issues directly. These solutions are modular, allowing you to deploy essential components immediately, expand your environment as your needs evolve, and integrate with Red Hat and certified partner products to build a resilient, compliant, and adaptable infrastructure. Each component provides key functionality:

- Red Hat® OpenShift® is an enterprise-ready application platform with full-stack automated operations to manage hybrid cloud and multicloud deployments. It lets you consistently run and move traditional and modern applications across on-site datacenters and cloud environments, including Amazon Web Services (AWS), Google Cloud, IBM Cloud, and Microsoft Azure with Red Hat OpenShift cloud services, allowing organizations to build, deploy, and scale applications across clouds, and refocus on innovation with confidence. Red Hat OpenShift also supports a mix of containerized and VM workloads, for both traditional and cloud-native applications, and provides key capabilities for constructing a hybrid cloud foundation, including built-in security capabilities, observability, monitoring, logging, and service and resource management.
- Red Hat OpenShift Virtualization, included with Red Hat OpenShift, helps you create more consistency by strengthening your operational resilience strategy in the shifting virtualization marketplace. Putting VMs and containers next to each other in the same environment, it unites your teams on a single, cost-effective platform to deliver applications and services. For those looking to modernize, it lets you add VMs to container-based applications, and containerize those VMs over time.
- Red Hat Enterprise Linux® CoreOS is a specialized distribution of Red Hat Enterprise Linux, optimized for running Linux containers on Kubernetes. Through minimal system use, immutability, regular updates, and managed operations, it reduces risk and complexity for your environment. Because it is based on Red Hat Enterprise Linux, Red Hat Enterprise Linux CoreOS inherits a mature, comprehensive delivery and support model with a robust ecosystem. Included with Red Hat Enterprise Linux CoreOS, the Compliance Operator assesses the compliance of both Red Hat OpenShift's Kubernetes application programming interface (API) resources and the nodes running the cluster. The Compliance Operator uses OpenSCAP, a collection of tools certified by the National Institute of Standards and Technology (NIST), to scan and enforce security policies.
- Red Hat Ansible® Automation Platform delivers consistent, user-friendly automation for your entire IT environment and organization, allowing you to adopt resilient operating models. The platform includes all the tools needed to implement enterprise-wide automation—including deployment, configuration, backup, recovery, and migration operations—in hybrid cloud environments, at scale.

Learn more about automating your hybrid cloud environment with Ansible Automation Platform with Red Hat OpenShift.

- Red Hat AI platforms offer generative and predictive AI capabilities, along with MLOps support, for building flexible, trusted AI solutions at scale across hybrid cloud environments. Red Hat OpenShift AI is an integrated MLOps platform for managing the lifecycle of predictive and gen AI models and delivering AI-enabled applications at scale across hybrid cloud environments. OpenShift AI helps you serve AI models where the data resides while maintaining that data in locations defined by regulation.

  Red Hat Enterprise Linux AI is a foundation model platform to develop, test, and run Granite family large language models (LLMs) to power enterprise applications. It has a derisked, simplified approach to gen AI designed to be more accessible to developers and domain experts who may lack the data science expertise normally required to tune models, allowing them to collaborate on this process and help realize business results faster. These platforms help accelerate AI adoption, abstract the complexities of delivering AI solutions, and bring flexibility to develop and deploy wherever your data resides.

- Red Hat Advanced Cluster Management for Kubernetes offers end-to-end visibility and control to manage your Red Hat OpenShift clusters and application lifecycles. A unified interface helps you continually enforce security and compliance policies at scale across your environment to meet operational resilience requirements.

- Red Hat Advanced Cluster Security for Kubernetes is an enterprise-ready, Kubernetes-native container security solution that helps you build, deploy, and run cloud-native applications with a greater security focus. It integrates with DevOps and security tools to help mitigate threats and enforce security policies that minimize operational risk to your applications.

- Red Hat OpenShift Data Foundation is a scalable data and storage services layer that provides data efficiency, resilience, and a security focus for Red Hat OpenShift environments. Engineered as the data and storage services platform for Red Hat OpenShift, it helps teams develop and deploy applications more quickly and efficiently across your cloud environments.

- Red Hat Quay is an open source container image registry that provides storage and allows you to build, distribute, and deploy trusted containers across datacenter and cloud environments to support resilient operations and application portability. It provides an additional security focus for image repositories with automation, authentication, and authorization systems.

- Red Hat partner ecosystem is a community of expert partners trusted by Red Hat to create innovative technology and solutions that provide business value. When you choose Red Hat, you benefit from a scalable foundation for whatever you want to build, and this partner ecosystem offers extensive options for who you can build it with.

Achieve operational resilience more quickly

Through consulting engagements, service offerings, and Red Hat Open Innovation Labs, Red Hat can help you achieve operational resilience more smoothly and in less time. Work with experts to:

- Build hybrid cloud infrastructure.
- Gain skills and learn best practices for cloud-native application and service development and operating hybrid environments.
- Develop tests and validation processes—and learn the technological capabilities needed—to demonstrate operational resilience to regulators, shareholders, and customers.
- Align IT, development, and compliance teams with common overall goals and understanding.

Create naturally resilient applications and environments

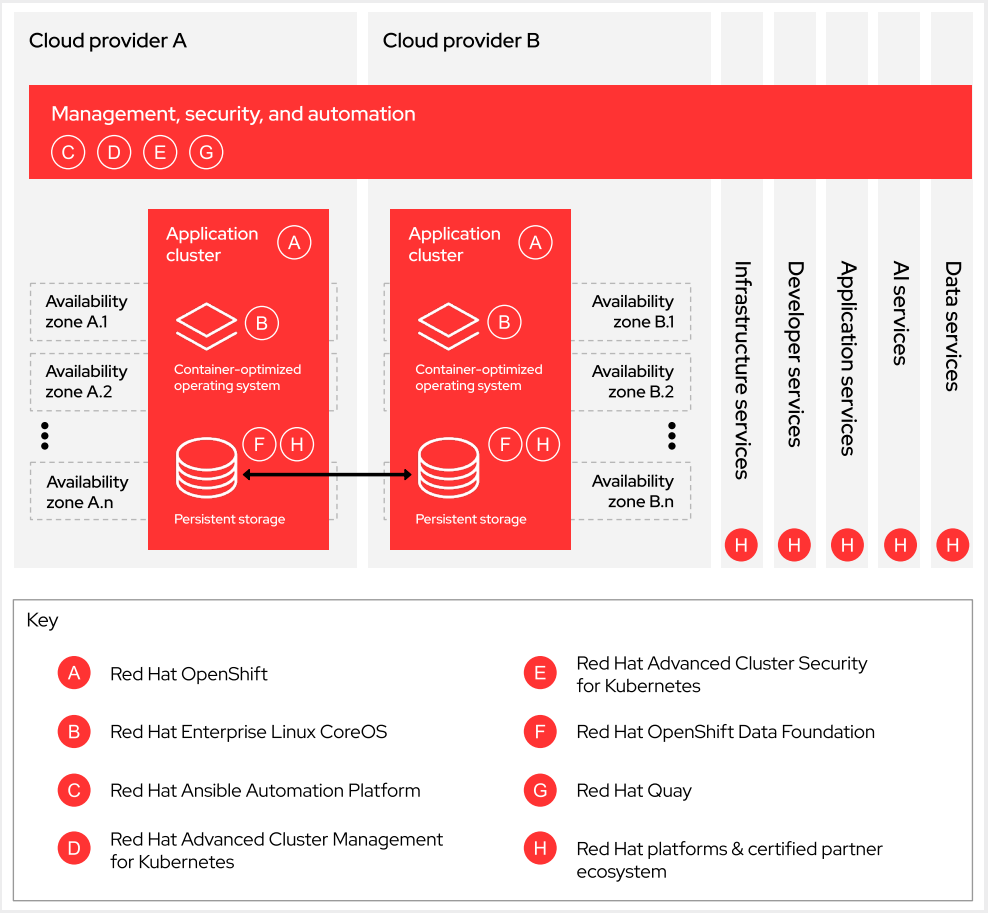

Figure 1. Red Hat open hybrid cloud foundation for supporting operational resilience in financial services

A Red Hat open hybrid cloud foundation allows you to build naturally resilient applications and environments that support both traditional and modern workloads, from core systems to AI-powered critical services. The following practices can help you get started on your path to operational resilience. The letters that follow each Red Hat product correspond to those shown in Figure 1.

- Start by deploying Red Hat OpenShift (A) on 2 or more infrastructures—including on-site datacenters, private clouds, and public clouds—to create your hybrid cloud. This approach supports both traditional and modern, cloud-native applications. Incorporate Red Hat OpenShift Virtualization to bring virtualized applications into a unified platform, allowing you to create a consistent operating environment while using existing investments in traditional applications. This helps you modernize at your own pace, while you build your resilient digital business.

- Use Red Hat OpenShift Data Foundation (F) to create, replicate, and synchronize persistent storage across multiple environments or availability zones.
- Incorporate traditional applications alongside modern workloads, using Red Hat OpenShift Virtualization to run VMs within the same Kubernetes platform that supports your cloud-native and AI workloads. This unification simplifies management and enhances operational efficiency across your technology estate, incrementally building resilience.
- Adopt industry best practices with built-in operating system and platform capabilities to consistently configure, manage, and operate your environment via Red Hat's integrated management and automation tools (C, D, E). Common best practices include Infrastructure-as-Code (IaC) approaches, implementation of source control and change management practices, and configuration of security and network guardrails. Automation of provisioning, policy enforcement, and AI-powered optimization further enhance operational speed and accuracy.
- Use Ansible Automation Platform (C) to connect your hybrid environments, orchestrate application deployment and movement between environments and availability zones, and increase overall operational speed and accuracy. Ansible Automation Platform equips you to build additional operational layers by defining playbooks for remediation plans and digital resilient testing, bridging traditional existing infrastructure and Red Hat OpenShift and virtual infrastructure.
- Integrate your generative and predictive AI capabilities with Red Hat AI platforms (H), along with MLOps support, for building flexible, trusted AI solutions at scale across hybrid cloud environments. This integration makes sure you benefit from the same security, monitoring, and automation capabilities that support your broader operational resilience strategy.
- Use Red Hat's management and automation tools (C, D, E) to connect to and manage native service offerings like infrastructure, developer, application, and data services. For example, you can choose to use database services from your public cloud provider and create automation playbooks to orchestrate data portability and availability between infrastructures. Red Hat OpenShift (A) also offers many services to increase consistency across dependencies and streamline movement between infrastructures.
- Customize your environment with 3rd-party tools and services through Red Hat's partner ecosystem (H). Open integration interfaces and partner certification let you use both existing and new development, test, operations, and security tools with your Red Hat hybrid cloud foundation. Many vendors offer certified Red Hat OpenShift operators or certified software containers to simplify installation and management.

Customer success highlight: Leading European insurance provider

Many financial services organizations are already benefiting from hybrid cloud foundations based on Red Hat OpenShift. For example, a leading insurance provider in Europe uses a full stack of Red Hat technology to support their public managed cloud strategy, which incorporates multiple public cloud vendors. Red Hat OpenShift allows the company to comply with local financial regulatory requirements while staying as flexible as possible to minimize migration efforts if they need to change 1 of their public cloud vendors. Their Red Hat foundation has also helped the insurance provider accelerate software development, boost employee productivity, and improve financial transparency and business agility.

See how other financial services organizations are using Red Hat technologies.

Learn more

Operational resilience is a top concern for financial services organizations that operate in a cloud-based, AI-powered world. Red Hat provides an integrated, flexible, and consistent open hybrid cloud foundation to support operational resilience across datacenter and cloud environments, helping prepare you for future change and success.

Discover more about how Red Hat can help you boost your operational resilience.

About Red Hat

Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with award-winning support, training, and consulting services.

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