Red Hat | Microsoft Azure

SIMPLIFY APPLICATION PLATFORM MANAGEMENT

Move your Jakarta EE applications to a managed application service with Red Hat and Microsoft

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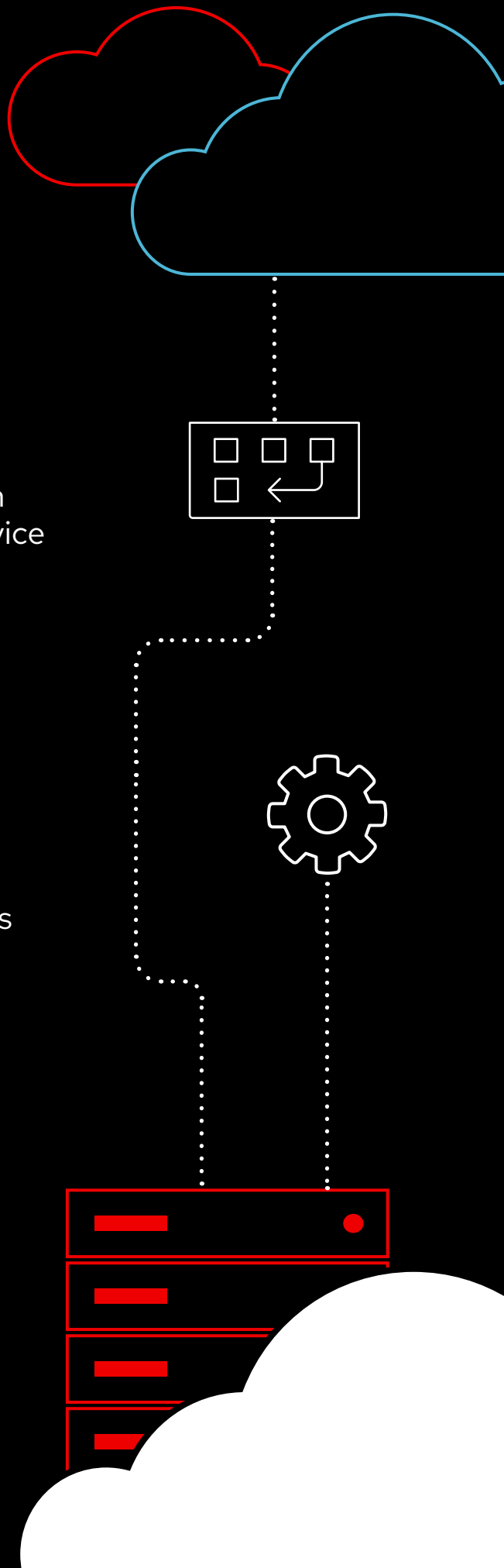

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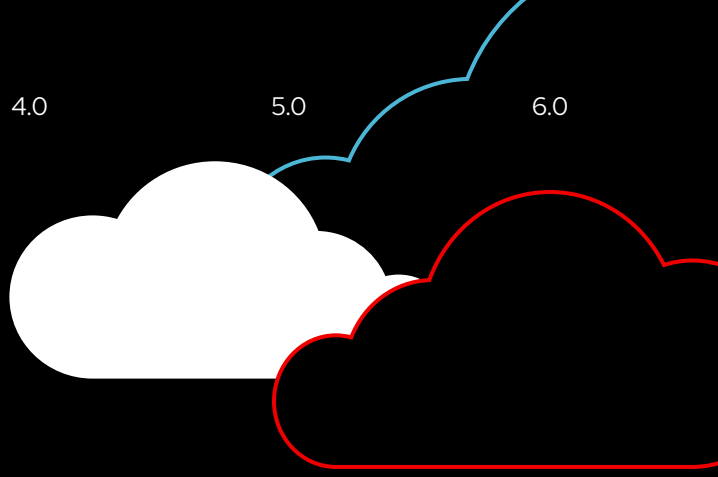
Cloud is now a requirement



Moving to a cloud environment can help your organization boost business agility, innovate faster, and deliver high-value products and services.

Your IT infrastructure and core applications are critical for success in today's digital world. At the same time, maintaining existing IT systems often consumes resources that could be used for innovation. Studies show that, on average, IT organizations spend 66% of their budgets on running current infrastructure and applications.[1]

Moving your Jakarta EE applications to a cloud-based platform can help you support modern business demands. Managed cloud services that take care of platform and infrastructure management for you can help you better control costs, increase operational efficiency, and free your staff to innovate.

Red Hat and Microsoft offer a fully managed, certified Jakarta EE platform service for lifting and shifting applications to the cloud. **Red Hat® JBoss® Enterprise Application Platform (EAP) on Azure App Service** can help you reduce costs and expand your capabilities while getting the most from your existing investments.

This e-book discusses the benefits of moving to JBoss EAP on Azure App Service and considerations for planning a successful migration.

Gain more value with hybrid cloud

Hybrid clouds connect IT infrastructures across locations, helping you modernize more easily and at your own pace.

72%

of organizations have a hybrid cloud strategy.[2]

85%

of organizations run both modern and traditional application architectures.[3]

*1 Flexera. "**Flexera 2022 Tech Spend Pulse**," June 2022.*

*2 Flexera. "**Flexera 2023 State of the Cloud Report**," March 2023.*

*3 F5 Networks. "**2023 State of Application Strategy Report**," March 2023.*

Focus on delivering business value

Red Hat JBoss EAP is a Jakarta EE-certified platform that helps you deliver applications faster, from anywhere. Azure App Service is a managed cloud service for deploying, scaling, monitoring, and managing web applications. Combining these two offerings, Red Hat JBoss EAP on Azure App Service provides a hosted open source application server, integrated support model, and tools and features for rapid, efficient application development. Red Hat and Microsoft manage the application server, operating system, and infrastructure for you, so you can focus on building and running applications and increasing business value.

JBoss EAP on Azure App Service lets you lift and shift your existing workloads to the cloud without requiring you to rewrite applications or make extensive modifications to your runtime environment. Enterprise-grade security, performance, and scalability provide an ideal foundation for datacenter and vendor migration, open source stack adoption, independent software vendor (ISV) reductions and platform consolidation initiatives. With JBoss EAP on Azure App Service, you can support fast innovation while controlling costs and making the most of your current IT investments.

Key features and capabilities

- Platform support
- Networking configuration
- Autoscaling
- High availability
- Automatic application server clustering
- Azure Active Directory (AAD) integration
- Monitoring and logging
- Managed infrastructure
- Operating system and application server updates
- Deployment slots

Read the datasheet. →

Red Hat JBoss EAP

Microsoft Azure App Service

Integrated support

Experience benefits across your organization

Reduce costs

Move from expensive, proprietary, monolithic platforms to a cost-effective, lightweight, open source alternative. Reduce on-site datacenter expenses—including real estate, rack space rental, power, cooling, and fire suppression systems—with a managed cloud service. Shift large, periodic capital expenses (CapEx) like server and networking hardware to smaller, consistent operational expenses (OpEx) with pay-as-you-go service plans. Trim IT administration costs for operating systems, storage, networking, and more.

Gain pricing flexibility

JBoss EAP on Azure App Service is offered through both on-demand and reservation-based pricing plans.

- Choose a pay-as-you-go metered subscription to use the service on-demand, billed by time down to the second of use.
- Reserve Azure instances in advance—on a one-year or three-year term—at a discounted rate.

Streamline operations

Simplify management operations with built-in infrastructure maintenance, security patching, and scaling for Jakarta EE applications. Access, manage, and scale resources and instances via an intuitive interface. Configure autoscaling rules to dynamically adjust instances based on resource consumption. Use a common set of tools to manage on-site and cloud environments. Free IT staff from repetitive maintenance responsibilities and redeploy them to more innovative and interesting tasks. Simplify and speed issue resolution with integrated support that you can access from either the Red Hat Customer Portal or the Microsoft Azure portal.

Maintain security and compliance

More easily comply with rigorous security regulations and industry standards like Service and Organization Control (SOC), Federal Risk and Authorization Management Program (FedRAMP), Health Insurance Portability and Accountability Act (HIPAA), and Payment Card Industry (PCI) using **Azure Policy** and **Azure Blueprints**. Adhere to data sovereignty requirements with specified geographic distribution of data and applications. Simplify security and compliance operations with built-in monitoring and logging. Protect critical data during unplanned events using JBoss EAP's transaction manager and failure recovery capabilities. Meet requirements for tenant isolation with dedicated Azure App Service environments (ASE).

Innovate faster

Boost productivity by allowing developers to use their preferred frameworks, tools, and methodologies. Speed time to market for applications using built-in continuous integration/continuous deployment (CI/CD) tools, zero-downtime deployment, and deployment slots. Streamline development and deployment with consistent environments and tools for development, testing, and production. Build innovative applications and application programming interfaces (APIs) using Microsoft Azure's cognitive and event-driven services.

Boost flexibility

Take advantage of the flexibility and interoperability of an open source platform. Deploy and move applications, data, and resources across your environment with a standards-based foundation. Integrate with a large ecosystem of Jakarta EE frameworks, libraries, and databases, as well as complementary Microsoft Azure services and capabilities. Scale rapidly with an efficient, modular architecture and services-driven components.

Increase reliability

Boost availability with Microsoft Azure's 99.95% uptime service-level agreement (SLA). Ensure applications are never resource-constrained—and reduce capacity when resources are not needed—by configuring dynamic autoscaling rules.

Feature highlight: Deployment slots

Deployment slots let you set up multiple environments for staging and running applications. You can deploy applications to a non-production slot to validate changes and eliminate downtime due to startup. When you're ready, you can swap your production and non-production slots without dropping requests. If a problem occurs, you can swap back to the previous production environment.

Learn about deployment slots.→

Explore more

See how JBoss EAP on Azure App Service can benefit your organization.

Read the checklist.→

Choose your migration path

You can deploy Red Hat JBoss EAP on Microsoft Azure in several ways. Each option varies in the amount of direct control you retain over the platforms and infrastructure and which aspects are managed for you. As a result, each delivers different benefits for your organization.

Focus on developing and running applications with **JBoss EAP on Azure App Service**.

Develop and deploy apps on a fully managed and maintained platform and Azure infrastructure.

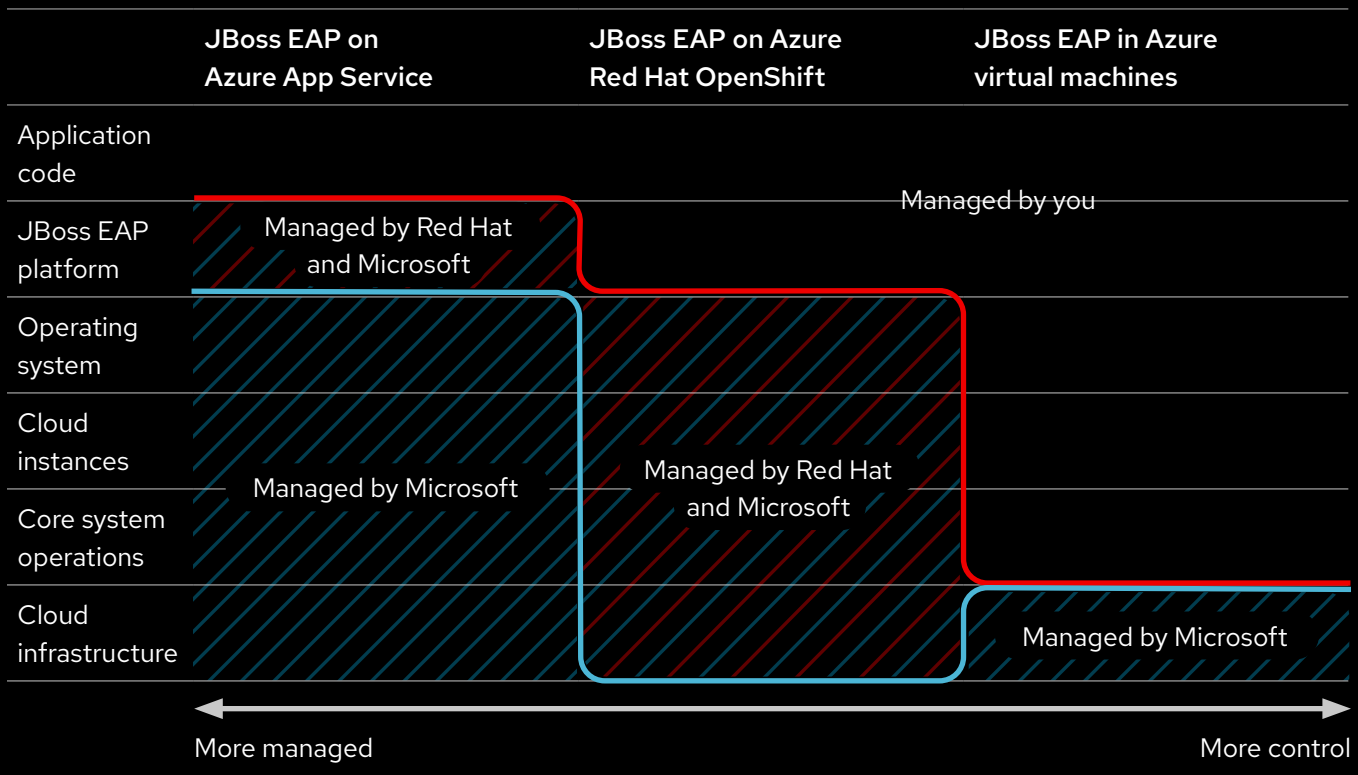
Adopt containers with less effort and complexity through **JBoss EAP on Azure Red Hat OpenShift**.

Deploy and manage JBoss EAP in containers running on the fully managed Azure Red Hat OpenShift service.

Retain platform control while moving to the cloud using **JBoss EAP in Azure virtual machines**.

Deploy and manage JBoss EAP in Red Hat Enterprise Linux® virtual machines on Azure infrastructure.

Who manages which aspects of each environment?



Plan for migration success

All application migrations require careful planning and execution to be successful. When planning your migration to Red Hat JBoss EAP on Azure App Service, be sure to consider how your application will be affected. You may need to migrate additional resources or make changes to your application or processes. Even so, these changes often offer greater innovation, flexibility, and opportunities, making them well worth the investment.

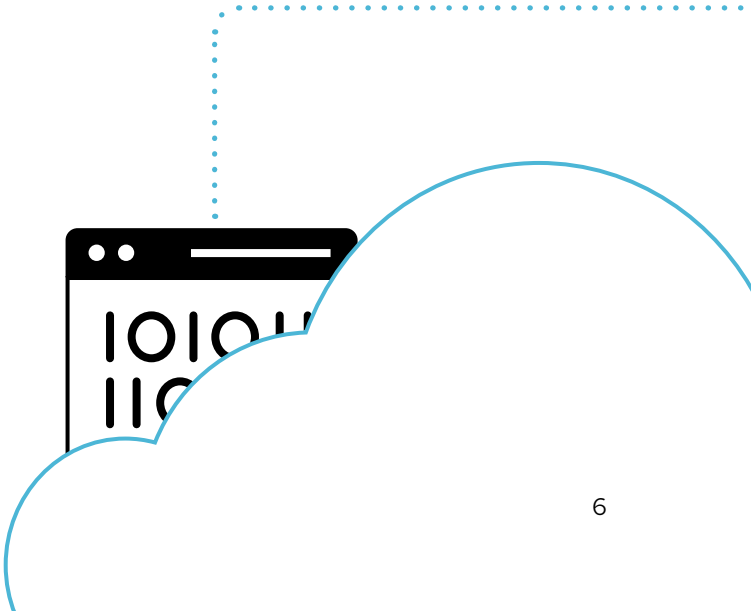
Consideration 1:

Application dependencies and attached resources

Most applications rely on other resources to run. These dependencies must be understood before you migrate your application to the cloud. Often, these dependencies must be migrated with your application or redeployed as a cloud service to ensure proper operation and acceptable performance. If you have resources that cannot be moved to the cloud, you may need to configure a **Hybrid Connection** that allows your cloud-based application to connect to on-site resources. You can also augment your applications with Azure services to add new capabilities and address changing needs.

Common dependencies and attached resources include:

- Databases and data stores
- Message queues
- Internal on-site services
- Underlying operating platforms
- Application servers
- Monitoring tools
- Third-party services
- Static content and files



Application server considerations

If you currently use an older version of JBoss EAP or a different application server, you will need to migrate your application to a **supported version** of JBoss EAP before moving it to the Azure App Service.

We recommend performing your migration in two phases:

1. Migrate your application to a version of JBoss EAP supported on Azure App Service and ensure it operates as expected.
2. Migrate your application to the Azure App Service.

Red Hat offers tools and guidance to help you perform this migration successfully. See page 15 to learn more about migrating.

Experience the benefits of Red Hat JBoss EAP

JBoss EAP provides several key features and benefits:

- Optimizations for cloud and containers
- Lightweight, modular architecture
- Unified security APIs
- Wide range of platform integrations
- Support for the latest Jakarta EE and Java™ SE platforms

Consideration 2:

Management and controls

When you move your application from an on-site datacenter to JBoss EAP on Azure App Service, your application management capabilities and controls change. Microsoft manages the platform for you, simplifying operations for your team. While you would use the JBoss EAP management console to take care of configuration, scaling, and application deployment on-site applications, these tasks are handled through the unified Azure Portal with JBoss EAP on Azure App Service.

File system configuration and embedded states also change with migration. The immutable architecture of the cloud service prevents you from making out-of-band changes to your application server's file system and does not preserve internally saved application state in the event of a failure. Consequently, you may need to make changes to your application when migrating to the cloud. Red Hat's **migration toolkit for applications** can help you assess which changes are needed. Learn more about this toolkit on page 15.

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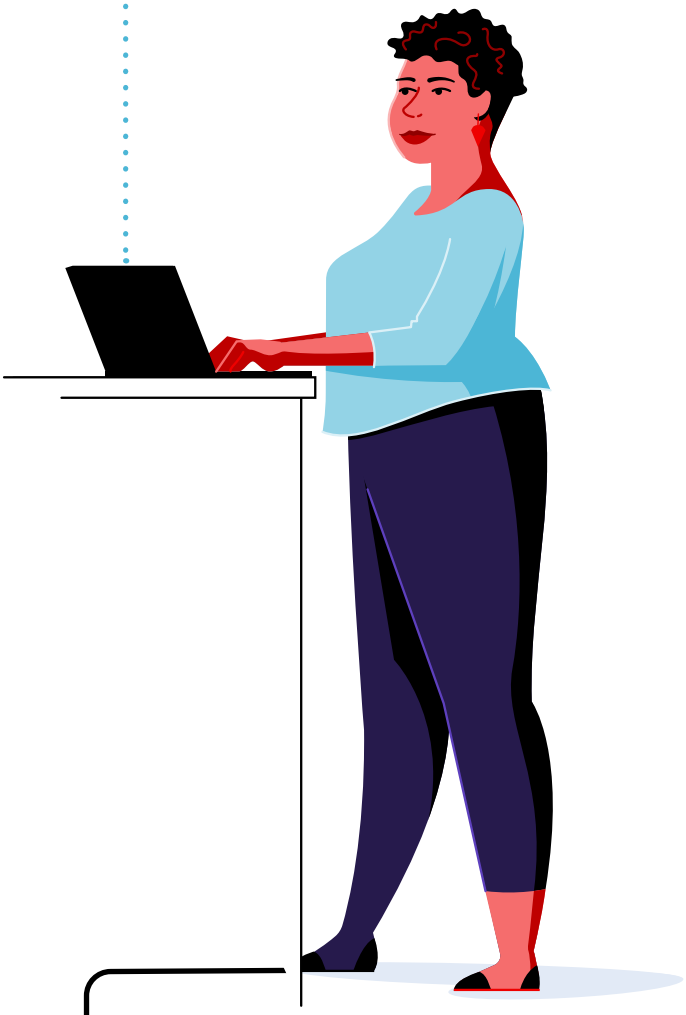
Microsoft automatically updates the operating system, Java virtual machine, and JBoss EAP server for you. If needed, you can also choose specific versions of JBoss EAP and initiate updates on your own schedule.

Consideration 3:

Monitoring and analysis

Moving to JBoss EAP on Azure App Service can simplify your monitoring operations while providing increased visibility into your applications. The service includes **managed monitoring capabilities** like live metrics, stack trace analysis, and log aggregation and auditing to help you track your application performance. You can also configure your application to automatically scale based on metrics like number of requests, processor or memory use, and time of day. In addition, you can incorporate custom metrics from popular frameworks like Micrometer – these metrics are automatically recognized and ingested into the included **Application Insights** monitoring service.

When migrating your applications, assess your logging processes to determine whether they will work in a cloud environment. If you need to make significant changes, or if you need additional capabilities, consider moving to a new, cloud-based monitoring solution like **Azure Monitor**.



Consideration 4:

Development tools and processes

You can continue to use many of your existing development tools and processes with JBoss EAP on Azure App Service. The service works with a variety of integrated development environments (IDEs) and tools, including **Visual Studio Code (VS Code) for Java**, **IntelliJ**, and **Eclipse**.

Your migration also provides an opportunity to modernize your development environments and adopt new cloud-native tools and methodologies. You can take advantage of capabilities included with the Azure App Service like deployment slots as well as other services – including **Azure DevOps** and **GitHub Actions for Azure** – to modernize your development processes and move to **Infrastructure-as-Code (IaC)** operations.

Consideration 5:

Security and governance

JBoss EAP on Azure App Service uses proven cloud security measures like identity management and access controls to protect your applications, data, and business.

Identity management integration

Integrate with your existing identity management system, or use **Azure Active Directory**, to centralize user information for all services.

Role-based access controls (RBAC)

Specify which users can access applications, data, and resources and take actions based on **roles and groups**. You can also create and enforce detailed access policies using **Azure Policy**.

Location

Choose where applications run and data resides to meet privacy and governance requirements. Microsoft offers Azure App Service in more than 35 deployment regions globally.

Single- and multitenant configurations

JBoss EAP on Azure App Service can be deployed in multitenant or single-tenant configurations. Multitenant configurations run your applications on dedicated compute and storage resources, but share some supporting infrastructure like load balancers across several tenants. If you require increased isolation, you can choose to deploy an App Service Environment, which provides a fully isolated and dedicated environment similar to on-site deployments. Both configurations isolate your applications from the public internet via networking integrations.

Security standards certifications

Simplify compliance with SOC, FedRAMP, HIPAA, and PCI standards for deployments across public cloud, Azure Government, and on-site environments. Available at no extra cost to Azure subscribers, Azure Policy and Azure Blueprints help you create and enforce cloud environments that comply with regulations.

Consideration 6:

Global availability and disaster recovery

Moving to a cloud-based service gives you the flexibility to deploy your applications in your choice of Azure regions and availability zones to meet compliance requirements, optimize performance, comply with data sovereignty regulations, and provide the best customer experience. This global availability also offers cost-effective disaster recovery options – for example, you can deploy cold spares to balance costs with recovery time.

Consideration 7:

Subscriptions and pricing plans

JBoss EAP on Azure App Service is offered through both on-demand and reserved instance pricing plans. Choose a pay-as-you-go metered subscription to use the service on-demand and pay only for the resources used. Or select reservation-based pricing to prepurchase instances at a discounted rate. JBoss EAP on Azure App Service use also counts towards your Microsoft Azure Consumption Commitment (MACC).

When planning your migration, be sure to consider how your organization structures Azure subscriptions and which of those subscriptions you'll use for this service. You should also take advantage of Azure's tools for managing your cloud subscriptions to gain visibility into use, control costs, and plan your Azure use over time.

Migration planning tips

Application and platform migrations require careful planning to ensure success. Follow these tips to minimize the risks associated with migration.

- **Align your migration plans** with larger organizational initiatives like application modernization and digital transformation.
- **Carefully assess the amount of work needed** to get from where you are today to where you want to be – and be realistic about your timeline.
- **Take an iterative approach** to your migration to ensure business continuity – take a small step, validate, adjust, and repeat.
- **Set up your validation plan and tools** before beginning your migration. You may need to migrate your existing validation mechanisms in the cloud, though application-focused validation methods and test suites should work in the cloud with minimal change. If you haven't set up automated application testing, consider doing so before your migration.
- **Time your migration** well before major events and assess your organization's – and users' – tolerance for downtime. Create a rollout plan that aligns with this assessment.

Best practices by application type

Different types of applications have different requirements that must be considered when moving to a cloud environment.

Transactional applications

Core banking applications, backend business systems, and others that rely on stateful transactional databases

- Move your data source as close as possible to your application server to minimize latency.
- Be sure to consider all applicable regulations for data privacy and sovereignty when choosing where to locate your data source.

Tip: Take advantage of Microsoft Azure storage and database services when moving your data sources to the cloud.

Exposed APIs

APIs that allow others to access your applications, systems, and data

- Maintain your existing resource naming, if possible, as changes may break your APIs for users.
- Consider adopting cloud-based monitoring, visibility, and measurement capabilities to gain greater insight into your API use and operations.

Tip: Use Azure Monitor to gain detailed insight into your APIs.

Web applications

Websites and retail sites

- Identify static resources and consider moving them to the cloud as well.
- Consider adopting cloud-based monitoring, visibility, and measurement capabilities to gain greater insight into your application use and operations.

Tip: Take advantage of Microsoft Azure content delivery network (CDN) services when moving static resources to the cloud.

Batch workloads

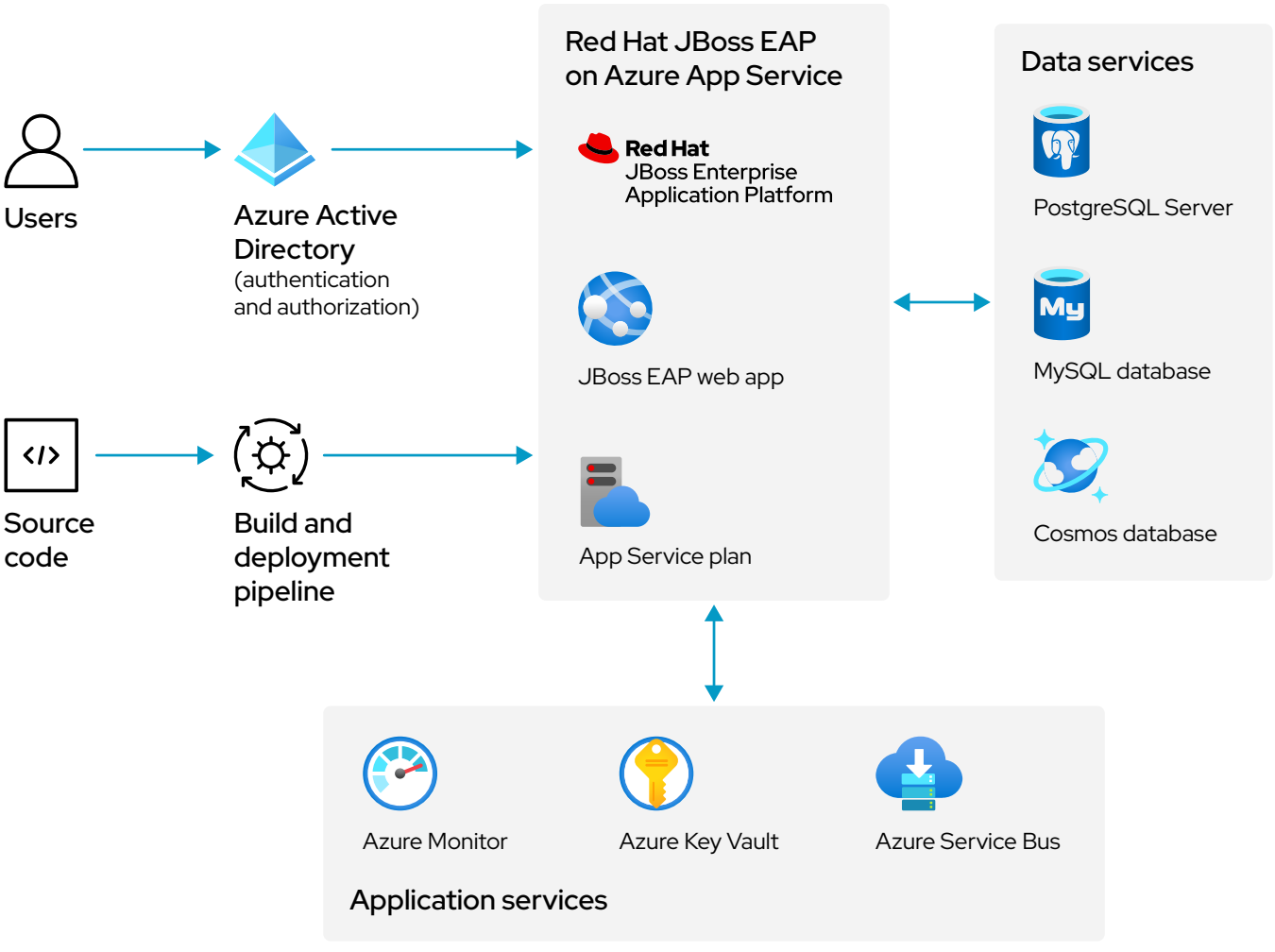
Workloads that are coupled with larger applications and internal dependencies

- Identify all of the endpoints that your batch workload will interact with. Moving your batch workload to the cloud may break these endpoint connections or introduce an unacceptable amount of latency. Consider moving these connected resources to the cloud with your batch workload to meet your performance requirements.

Tip: Use Azure cloud services to move connected resources to the cloud.

Take advantage of Azure cloud services

Migrating your applications to Red Hat JBoss EAP on Azure App Service gives you the opportunity to use Azure services to support and enhance your applications and operations. Many of these services can also be used to move your applications' dependencies and connected resources to the cloud.



Key Azure cloud services

Monitoring services

- **Azure Monitor**: A comprehensive monitoring solution for collecting, analyzing, and acting on telemetry from your cloud and on-site environments
- **Application Insights**: An application performance management (APM) service for monitoring live applications, detecting performance anomalies, and diagnosing issues

Messaging services

- **Azure Service Bus Messaging**: A fully managed enterprise message broker – including message queues and publish-subscribe topics – that works with the Java Message Service (JMS) 2.0 API
- **Azure DNS**: A domain name system (DNS) hosting service that provides name resolution using Microsoft Azure infrastructure

Data and storage services

- **Azure Database services**: Managed database services for popular offerings like MariaDB, MySQL, PostgreSQL, Microsoft SQL Server, and Redis Cache
- **Azure Storage services**: Data storage services in various formats and structures that can be used for static resources, CDNs, and general application data

Security services

- **Azure Key Vault**: A hardware-backed service that provides secrets, key, and certificate management with encrypted storage, auditing, and rotation
- **Microsoft Defender for Cloud**: A unified security management and threat protection system for workloads across on-site and cloud environments
- **Azure Active Directory**: A cloud-based identity and access management service that works with both internal and external resources
- **Azure Policy**: A compliance service for defining, enforcing, and tracking policies and rules in a detailed manner across your environment

Developer services

- **Azure Pipelines**: A complete CI/CD service that automatically builds and tests code projects and makes them available to others
- **GitHub Actions for Azure**: A utility that lets you automate your software development workflows from within GitHub
- **Azure DevOps**: A set of developer services that allows teams to plan work, collaborate on code development, and build and deploy applications

Migrate more easily

Red Hat offers migration tools and services to help you migrate your applications to Red Hat JBoss EAP on Azure App Service.

Migration toolkit for applications

Red Hat's migration toolkit for applications is a set of tools – based on years of experience – that supports large-scale application modernization and migration projects. It speeds code analysis and migration, provides effort estimates, and helps you move applications to cloud and container environments like Microsoft Azure and Red Hat OpenShift.

Use this toolkit to assess and analyze your applications when migrating to JBoss EAP on Azure App Service. It helps you upgrade application platforms and migrate to cloud-native runtime environments.

Modernize your Java applications

Modernizing your monolithic Java applications can help you innovate faster and compete more effectively in a digital world.

Read the Plan your Java application modernization journey e-book. →

Simplify your migration with expert guidance

Red Hat Consulting experts can work with you to evaluate and implement application migration and modernization solutions that help you reduce costs, improve efficiency, and speed development. Our experts can also help you, your team, and your organization develop the practices, tools, and culture needed to rapidly build and evolve applications across your organization.

Learn more about consulting services. →

Update your skills with tailored training courses

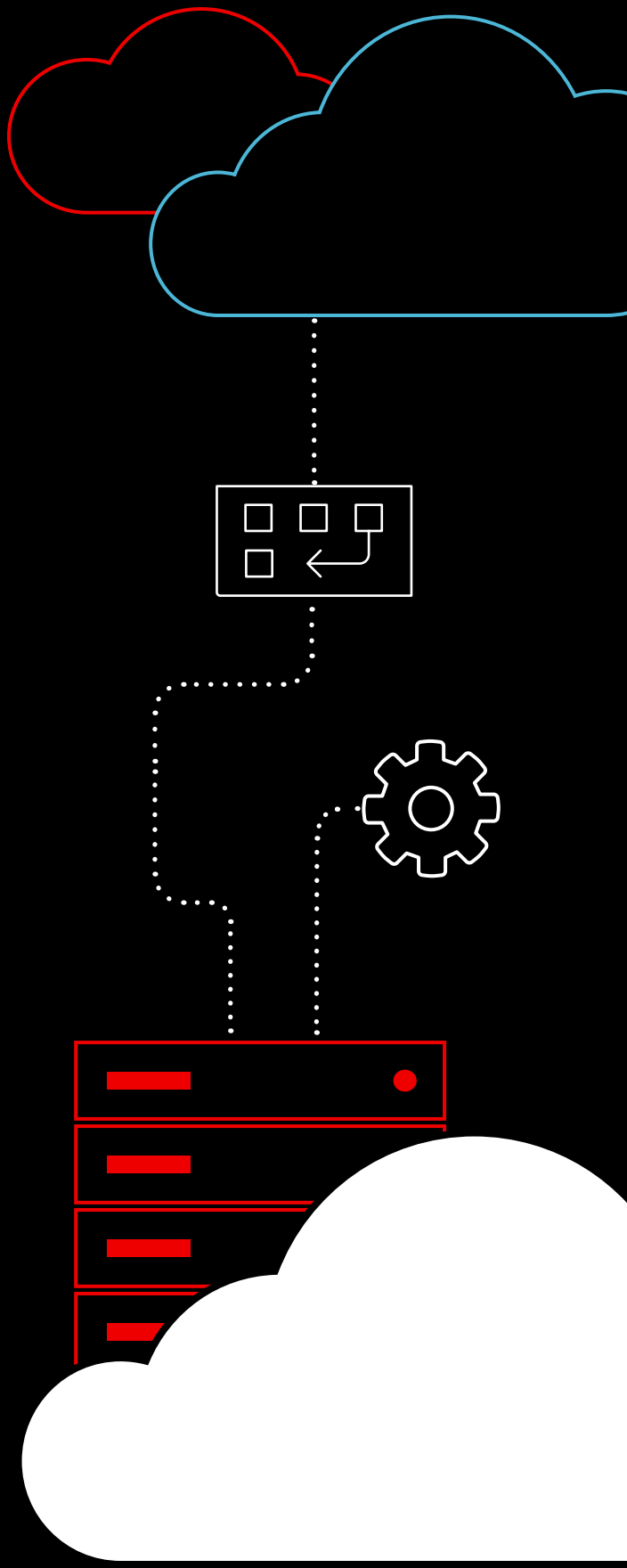
Red Hat also offers hands-on training and practical certification paths to help you make the most of your investment in JBoss EAP on Azure App Service and related Red Hat products.

See the JBoss EAP learning path. →

Ready to get started?

Migrate your Jakarta EE applications to Red Hat JBoss EAP on Azure App Service to boost business agility, innovate faster, and reduce costs.

- **Read more** about JBoss EAP on Azure App Service.
- **Learn how to deploy** applications onto JBoss EAP on Azure App Service.
- **Learn how to migrate** applications from other application servers to JBoss EAP on Azure App Service.
- **Discover** how Red Hat and Microsoft's partnership gives you more choice.



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