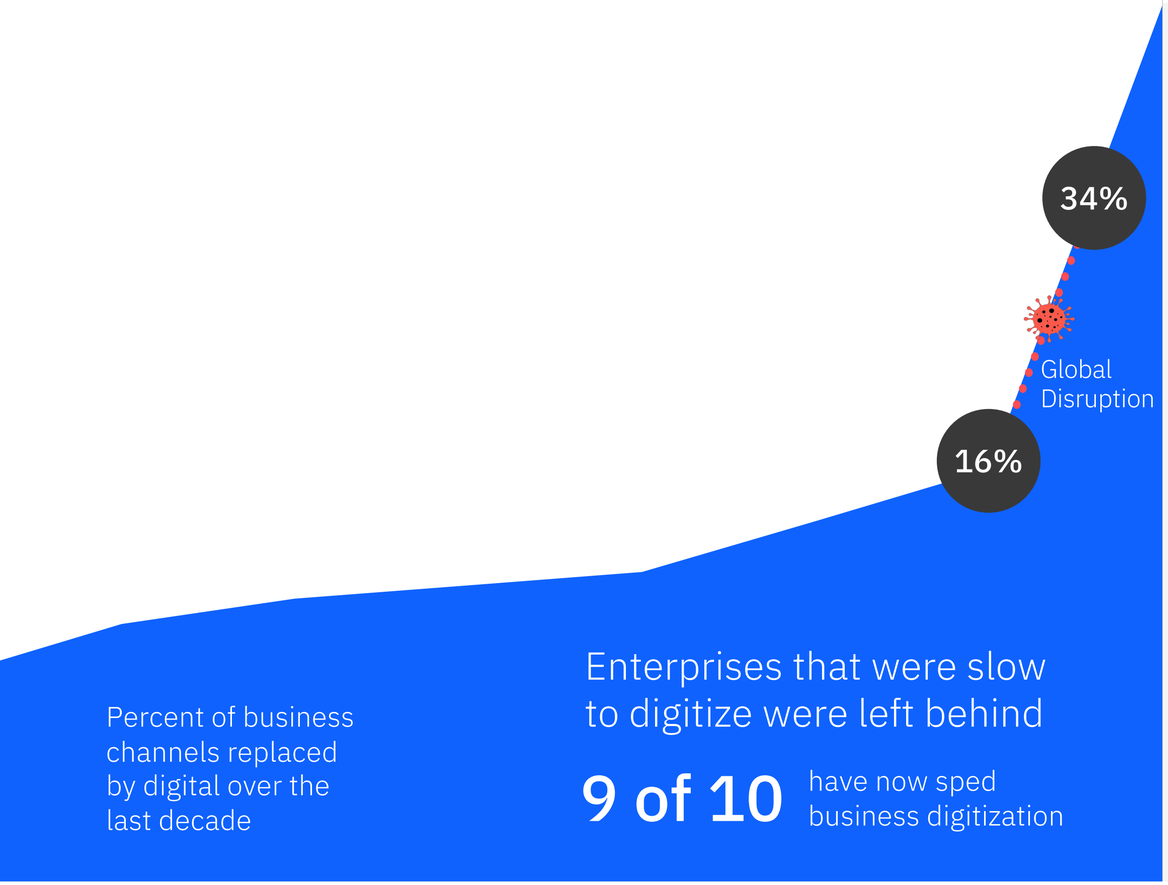
IBM Cloud Paks
Foundational Services

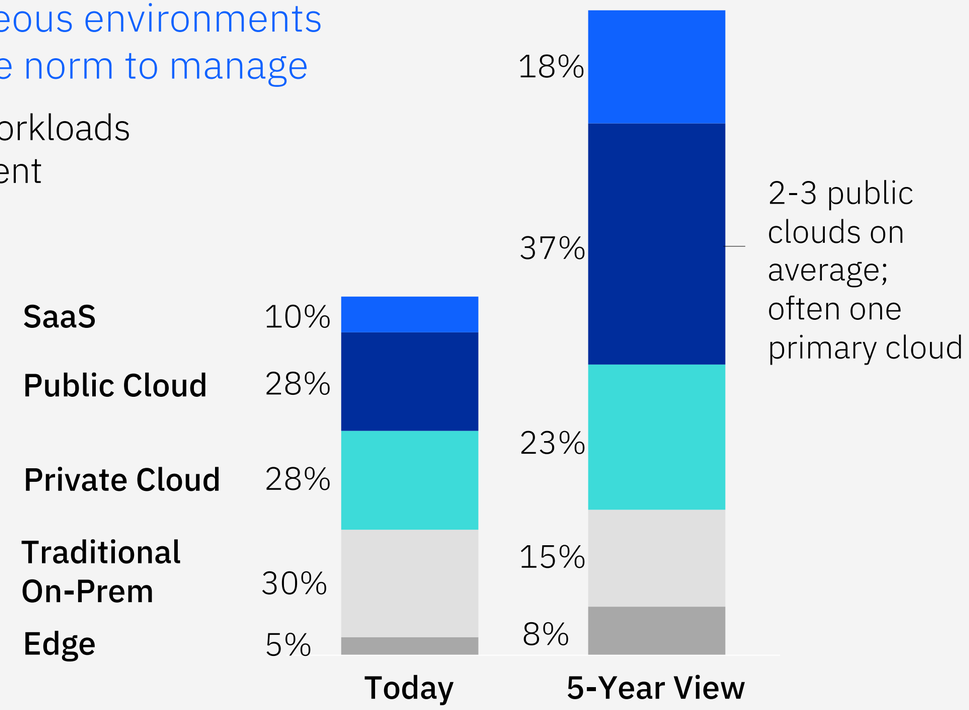
Digital transformation turns to reinvention



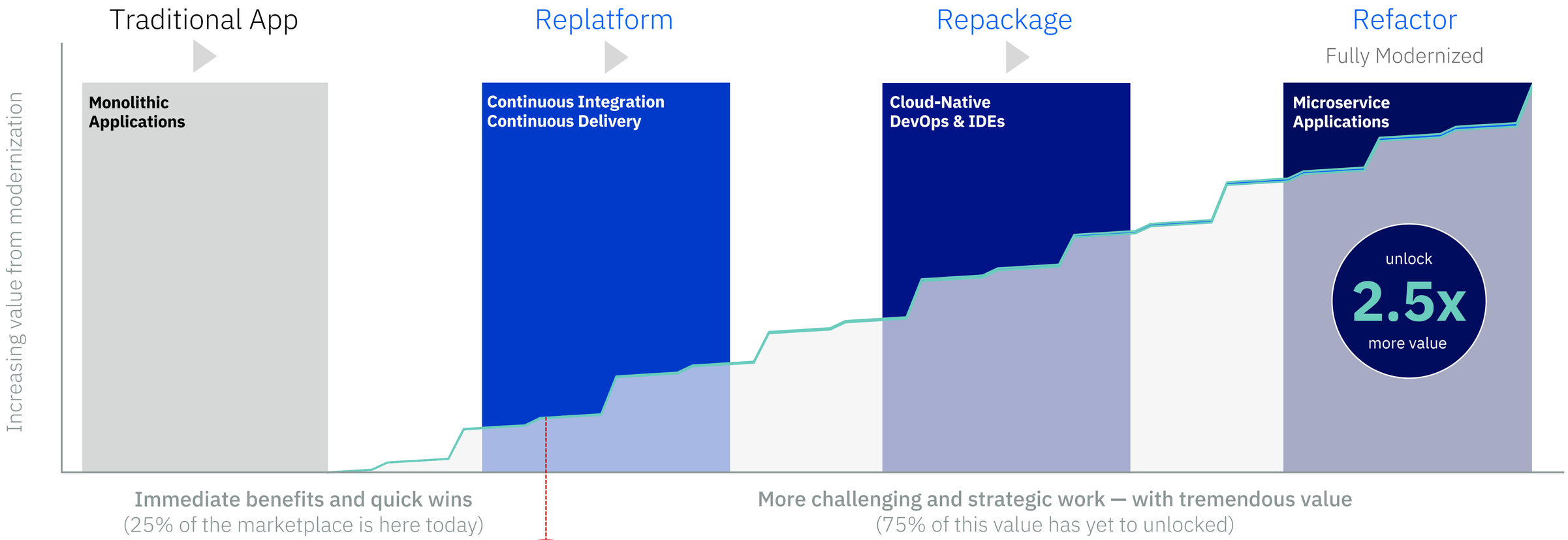
10 years of digitization in under **one year**

Heterogeneous environments become the norm to manage

Split of IT workloads by deployment



Let’s create ↷
a cross-premises, multi-vendor cloud for the future



Modernization strategies should **not** be predicated on technologies alone; they are predicated on what a business needs and the challenges to be solved.

Let’s create ↷
an open and hybrid cloud to **unlock 2.5x value** from business acceleration (0.5x), developer productivity (1.0x), infra cost efficiency (0.8x), compliance and security (0.2x).

1

Platform for Digital Transformation

IBM approach to hybrid cloud and AI

Integrated with Red Hat platform and focused on digital innovation across hybrid cloud + artificial intelligence

Automate
productivity at scale

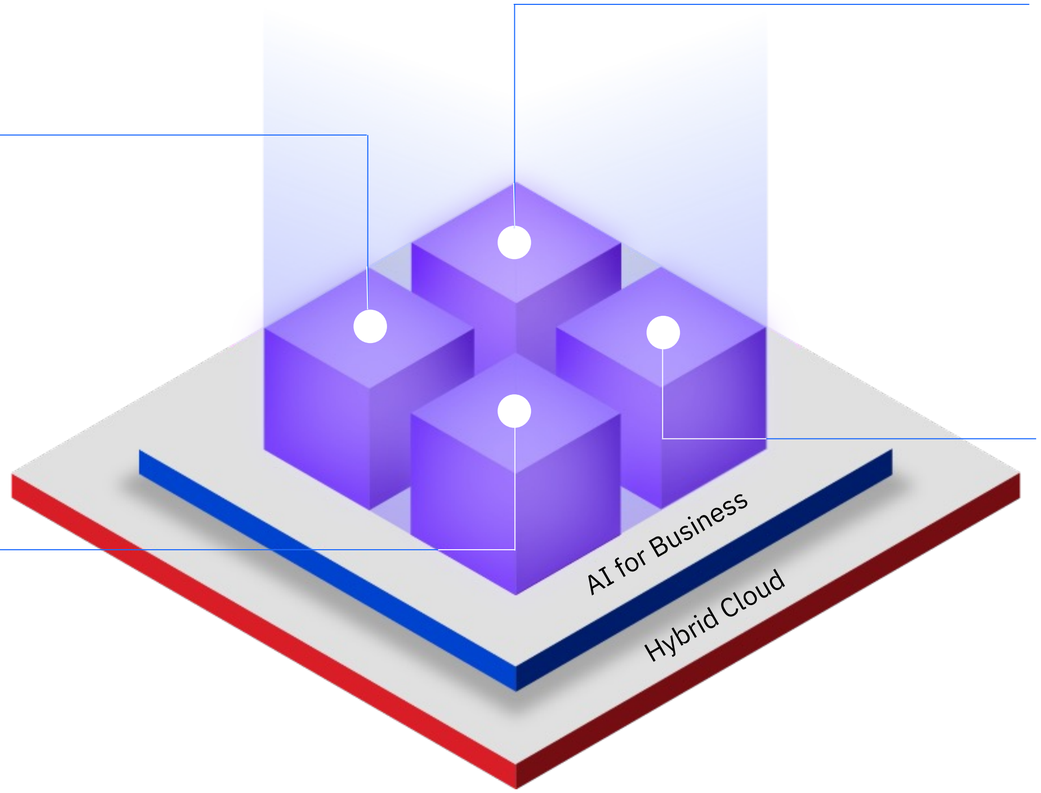
Business Automation | AIOps | Customer Care
Make experiences and tasks more productive with intelligent workflows that enable people to achieve higher value outcomes, faster.

Differentiator: Reduce time spent on manual processes by 90%

Create data-driven insights
to predict outcomes

Data Fabric | AI | Sustainability
Weave together all your data from anywhere it exists and apply AI to empower predictive decision-making and real-time digital intelligence and sustainable operations

Differentiator: 8x faster, ½ the cost, 30% more productivity, lower GHG emissions



Secure
all touchpoints, all the time

Data Resilience | Zero Trust
Operate as a secure, risk-aware and resilient business employing real-time threat insights, automated detection and orchestrated response

Differentiator: Reduce threat investigation and root cause analysis from 3 hours to 3 minutes

Modernize
for agility and speed

Hybrid Cloud
Create digital infrastructures that are responsive, efficient and easily consumed, composed from the cloud and AI services of your choice

Differentiator: 300% Apps integration

IBM approach to hybrid cloud and AI

Run Anywhere

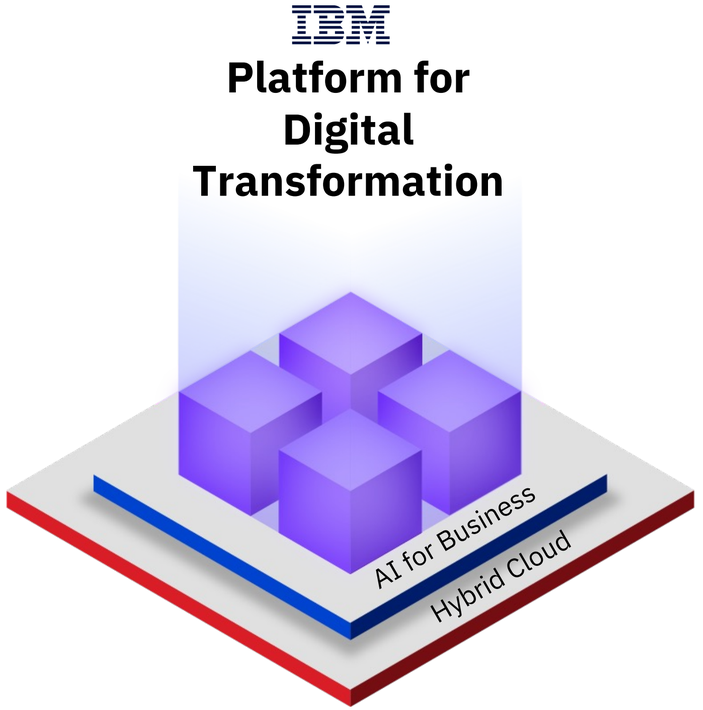
- Run on-premises, in different form factors and across a variety of hardware architectures, as well as off-premises in the cloud (IBM Cloud, as well as other vendors)
- Modern containerized apps that follow the axiom of "write once, run anywhere" are able to migrate fluidly across a wide range of hybrid multicloud architectures

Run Any Workload

- Support any type of application: not just new cloud-native apps, but also existing investment footprints and enterprise services

Run In Containers

- Enterprise faces more hurdles to overcome than most when it comes to application modernization with containers
- True enterprise platform has unique requirements for availability, resiliency, and security that are often overlooked (or naively implemented) by nascent open source projects



IBM approach to hybrid cloud and AI

Create data-driven insights

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Weave together all your data from anywhere it exists and apply AI to empower predictive decision-making and real-time digital intelligence and sustainable operations.

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Make experiences and tasks more productive with intelligent workflows that enable people to achieve higher value outcomes, faster.

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Operate as a secure, risk-aware and resilient business employing real-time threat insights, and automated detection & response.

Moderniz e

Hybrid Cloud | Red Hat OpenShift

Create digital infrastructures that are responsive, efficient, and easily consumed, composed from the cloud and AI services.

IBM Cloud Pak for Data | IBM Cloud Pak for Business Automation | IBM Cloud Pak for Network Automation | IBM Cloud Pak for Watson AIOps | IBM Cloud Pak for Integration | IBM Cloud Pak for Security

IBM Cloud Paks Foundational Services

Red Hat Hybrid Cloud Platform
OpenShift | Red Hat Enterprise Linux | Ansible Automation Platform

IBM Infrastructure
IBM zSystems | IBM Cloud | IBM Power
IBM Storage | Infrastructure Support

Public Cloud
AWS | Azure | Others

Enterprise Infrastructure

Edge

2

Evolution of IBM Cloud Paks

Evolution of IBM Cloud Paks

Continually refining the architecture to bring it to where it needs to be in order to support the hybrid multicloud workloads expected by IBM clients

- IBM isn't throwing things away and starting from scratch with Cloud Paks and Foundational Services — rather, these refinements put IBM further on the path to building a Platform for Digital Transformation that the company is ultimately moving towards

Changes are designed to improve consistency of platform experiences with how clients interact with IBM’s offerings:

- The tools our clients use
- The operations they can perform
- The user interface they work upon

Users of the platform benefit from increased development efficiencies across all of IBM’s offerings — with tighter integrations between Cloud Paks, as IBM moves away from "vertical" silos towards "flat" horizontal architectures

Verticals to horizontals

Red Hat OpenShift remains very much the core of this platform, with common **Foundational Services** sitting atop of this platform to interoperate capabilities with the **IBM Cloud Paks**

- A common pain point with earlier Cloud Paks iterations was that they were relatively isolated and siloed
- Early architecture was too "vertical" and hard to integrate across the various Cloud Paks

IBM Cloud Paks now organized based on aggregations of capabilities for **Data-Driven Insights**, **Automation**, **Security**, and **Modernization** — in support of specific personas and clients

- Security and Data pillars existed as standalone Cloud Paks previously
- Newly-created Automation pillar contains multiple Cloud Paks (Business Automation, Watson AIOps, Integration, and Network Automation) tailored for specific use cases
- Modernization encompasses all of the Cloud Paks and places special emphasis on the OpenShift and Ansible platforms

Beneath the applications and Cloud Paks is the set of core, common, shared services — called the **Cloud Paks Foundational Services** or (in brief) **CPFS**

CPFS-supported Cloud Paks

IBM Cloud Paks currently supported by CPFS are listed below. A hyperlink has been provided to provide pointers on how to use the Foundational Services within each of the respective (and supported) IBM Cloud Paks.

IBM Cloud Pak for Business Automation
https://www.ibm.com/support/knowledgecenter/SSYHZ8/kc_welcome_dbamc.html

IBM Cloud Pak for Data
https://www.ibm.com/support/knowledgecenter/SSQNUZ

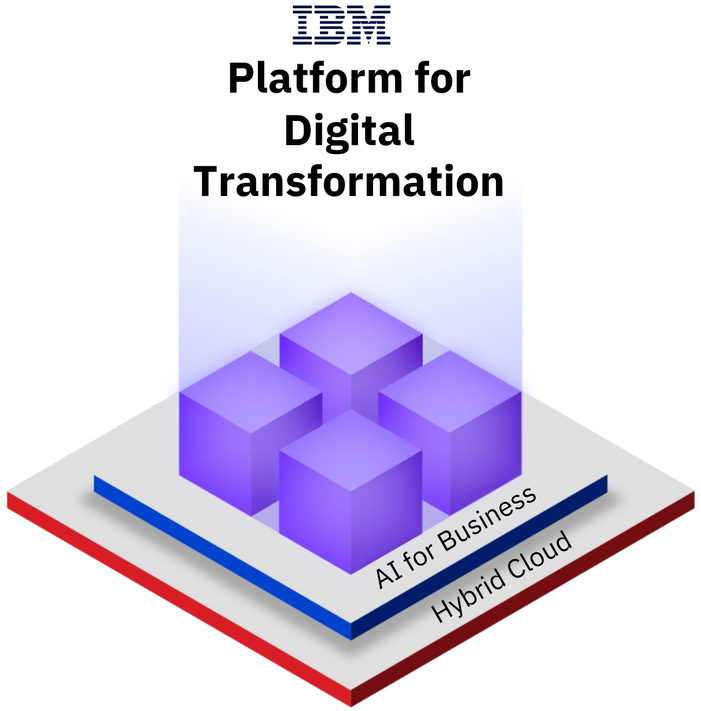
IBM Cloud Pak for Integration
https://www.ibm.com/support/knowledgecenter/SSGT7J

IBM Cloud Pak for Network Automation
https://www.ibm.com/docs/en/cloud-paks/cp-network-auto

IBM Cloud Pak for Security
https://www.ibm.com/support/knowledgecenter/SSTDPP

IBM Cloud Pak for Watson AIOps
https://www.ibm.com/docs/en/cloud-paks/cloud-pak-watson-aiops

IBM Cloud Pak for Data System
https://www.ibm.com/docs/en/cloud-paks/cloudpak-data-system



5 key pillars of CPFS

IBM Cloud Pak for Data | IBM Cloud Pak for Business Automation | IBM Cloud Pak for Network Automation | IBM Cloud Pak for Watson AIOps | IBM Cloud Pak for Integration | IBM Cloud Pak for Security

IBM Cloud Paks Foundational Services

Certification and Governance for Enterprise Standards

Application Services

- API/Endpoint Library
- Notifications
- Behavior Analytics
- Gateway / Front Door

Data & Event Services

- Execution Engines
- Kafka Service
- Repositories
- Databases

Operational Services

- Metering
- Licensing
- Operator-based Lifecycle Management
- Service Mapping Framework
- Bedrock Storage Map

Security Services

- IAM
- Vault Service
- Threat Detection
- Audit Log (Compliance)
- Certificate Management

User Experience Services

- UI/UX Standards
- App Lifecycle UI
- Bedrock Admin Hub
- Job Scheduling
- Extensible UI Framework & Extension Registry (ZenRock)

Red Hat Hybrid Cloud Platform

OpenShift | Red Hat Enterprise Linux | Ansible Automation Platform

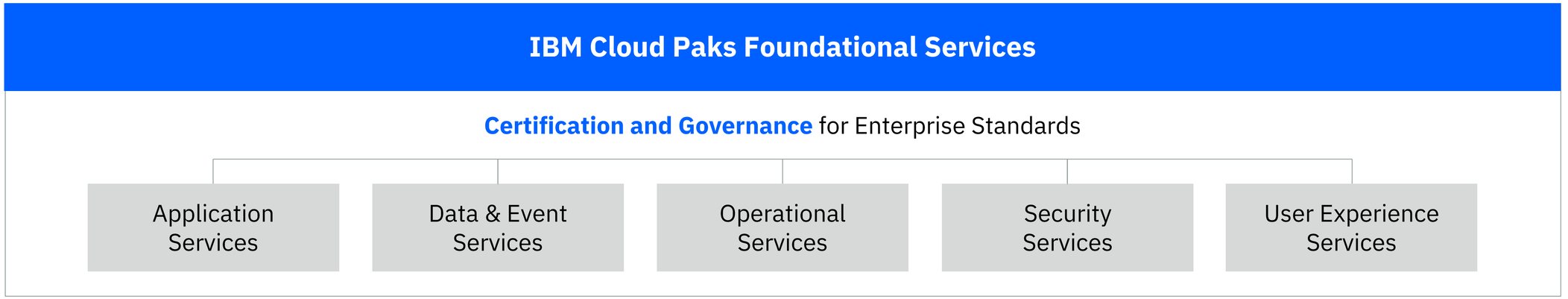
IBM Infrastructure
IBM zSystems | IBM Cloud | IBM Power
IBM Storage | Infrastructure Support

Public Cloud
AWS | Azure | Others

Enterprise Infrastructure

Edge

5 key pillars of CPFS



The foundational **CPFS** (accessible by each of the IBM Cloud Paks) represent aggregations of microservices, technologies, and capabilities.

Foundational Services can be organized into 5 distinct pillars:
Application Services, **Security Services**, **Operational Services**, **User Experience**, and **Data Services**

- Each pillar of services support a common, consistent operational experience, user experience, and integration experience
- Not every Platform Service will be transparent to end-users or clients, but each service will directly (or indirectly) benefit those audiences
- These services are not something that can be purchased from a catalog — they are embedded as part of the IBM Cloud Paks experience on top of Red Hat OpenShift

Certification for Kubernetes and IBM Cloud Paks

Production Grade

- Multicloud
- Storage
- Networking
- Resiliency
- Scalability
- Self-healing

Security

- Vulnerability management
- Limited security privilege
- Secure access, keys, certs
- Network and data protection
- Security and privacy by design
- Secrets and SPI

Quality Assurance

- Comprehensive testing
- Architectures
- OCP versions
- Currency
- Airgap
- Upgrades

Lifecycle Management

- Patching
- Upgradeability
- Rollback / restore
- Backup / recovery
- OCP version alignment
- Kubernetes currency

Standards and Governance

- Red Hat Operators support
- Consistent packaging and publishing
- Consistent entitlement management
- Common management of open source software
- Red Hat Universal Base Image (UBI)
- Consistent use of OCP and IBM services
- Governed best-practices and anti-practices

Enterprise-Grade Kubernetes Orchestration Platform

- End-to-end support
- Managed container images
- Image packaging and publishing

Certification for Kubernetes and IBM Cloud Paks

Certification provides consistency across every aspect of the platform: consistency in user experience, consistency in operations, and consistency with how resources are deployed (and consumed) through IBM Cloud Paks once activated

- Certification is a key element of the common Foundational Services layer
- Enterprise requires production grade resources — which are often sorely lacking from "vanilla" open source flavors of Kubernetes orchestration, containers, and open frameworks

Standards across IBM and Red Hat eliminate the risk and waste of resources that might come from two teams duplicating the efforts of one another

- The intention is never to replicate anything that's already in OpenShift (or duplicate ongoing work)
- Codifying how we synchronize releases of Cloud Paks and Red Hat offerings smooths administration of the Platform (internally) and improves client experience (externally)

Security Context Constraints (SCCs)

Red Hat OpenShift administrators can use **Security Context Constraints** to control permissions for pods on a OpenShift cluster; consequently, **SCCs also apply to the IBM Cloud Paks and CPFS** that run atop OpenShift.

As of November 2022, a total of **16** CPFS make use of SCCs within OpenShift clusters

- By default, all of these services (with the exception one: user-data-services) are set to use the 'restricted' SCC
- A ‘restricted’ SCC has the most locked down (least permissive and most restrictive) attributes

Reporting on SCC usage with CPFS is available online:
https://www.ibm.com/docs/en/cpfs?topic=about-security-context-constraints

Explore the topic of SCCs in much greater detail with the **Modernizing Business for Hybrid Cloud with Red Hat OpenShift (CSO Persona) L3** learning plan.

- IBM Sales
- IBM Tech
- Business Partner Sales
- Business Partner Tech

Regulatory compliance — updated guidance for 2023

CPFS are regularly assessed against various Privacy and Compliance regulation standards. A number of CPFS and IBM Cloud Paks support **Federal Information Processing Standards (FIPS)** compliant encryption.

As of November 2022, numerous CPFS and IBM Cloud Paks are **FIPS compliant "enabled,"** meaning:

- Data is FIPS encrypted at rest
- Inbound communications are FIPS encrypted
- Outbound communications on "enabled" mode will support both FIPS and non-FIPS connections

An enhanced form of FIPS compliance— "strict" —is available for a smaller subset of CPFS services.

Reporting on which CPFS support FIPS compliance is available online:
https://www.ibm.com/docs/en/cpfs?topic=compliance-services-that-support-fips

3
The future of CPFS

This module is intended for internal audiences (IBM and business partners) only.

Do not distribute the following slides externally without explicit permission from the author. Statements of direction are subject to change.

New releases and deprecations

Significant updates for CPFS (v3.23 and prior):

- New installer and support for Red Hat OpenShift Container Platform v4.12
- New IAM features: SCIM for IBM Cloud Paks now integrates with Microsoft Azure IAM (Azure-IAM), managing authentication and authorization for resources between IBM Cloud Paks and Azure
- Common Web UI across all IBM Cloud Paks and CPFS
- Granular details on each new CPFS release, as well as all previous releases, are detailed online: https://www.ibm.com/docs/en/cpfs?topic=about-whats-new

Notable deprecated CPFS services and features (v3.23 and prior):

- As of CPFS v3.21, the Prometheus and Grafana UI have been replaced by the OpenShift Container Platform Observability Dashboard
- The following services have been removed from CPFS, due to removal of dependencies or retirement of features: *Audit Logging; Monitoring; Logging; Catalog; Helm Services*
- A full listing of all deprecated services and features can be found online: https://www.ibm.com/docs/en/cpfs?topic=about-deprecated-changed-services-features

Statement of direction for CPFS

In support of being truly portable and hybrid, IBM Cloud Paks need to run anywhere and everywhere that businesses need (or want) to be.

IBM Cloud Paks will gradually transition from a series of siloed verticals into a horizontally-integrated environment — in other words, a **Platform for Digital Transformation**:

- "Pluggability" is key: take advantage of services that already exist in a vendor's public cloud, rather than having to carry over a massive cartload of IBM Cloud services into foreign clouds for every deployment
- IBM has untangled the string of dependencies for current and future releases of the common Foundational Services, primarily by making use of Red Hat Operators
- A number of IBM Cloud Paks functions already fully based on Operators and more will continue to be deployed in this way as the roadmap evolves

The **cadence of new CPFS releases** follows 3 cycles, covering short-term fixes and long-term milestones:

- Continuous Delivery (CD)
- Long Term Service Release (LTSR)
- Extended Update Support (EUS)

4
Appendix

Troubleshooting and support

Looking for debugging or troubleshooting support? IBM documentation is available online for known issues (and fixes, where available) with CPFS:
https://www.ibm.com/docs/en/cpfs?topic=about-known-issues

Localization and supported languages are detailed online:
https://www.ibm.com/docs/en/cpfs?topic=about-supported-languages

Support channels— including support tickets, public Slack communities, Stack Overflow resources, and Watson virtual assistants —are summarized online:
https://www.ibm.com/docs/en/cpfs?topic=about-support

Additional learning and accreditations

- **Book:** Cloud Without Compromise
- **Sales Kit Hub:** Red Hat and Private Cloud Solutions for IBM Power Systems
- **IBM Tech Zone Platinum Demo:** Modernizing Business for Hybrid Cloud on OpenShift — Part I
- **IBM Tech Zone Platinum Demo:** Performing basic operations via Red Hat OpenShift running on Power
- **IBM Tech Zone Platinum Demo:** Deploying Red Hat Ansible on IBM Power with AIX
- **IBM Tech Zone Platinum Demo:** Configuring an Instance of IBM PowerVS

Additional learning and accreditations

- Modernizing Business for Hybrid Cloud on OpenShift — **Part 1** (Sales | Tech | BP Sales | BP Tech)
- Modernizing Business for Hybrid Cloud on OpenShift — **Part 2** (Sales | Tech | BP Sales | BP Tech)
- Red Hat Foundations
- Cloud Native Introductions
- OpenShift Fundamentals
- OpenShift 4 Foundations (12 hour hands-on lab)
- IBM Cloud Paks Foundations
- What's New for Red Hat Partners?
- Enterprise Kubernetes for all Workloads
- OpenShift Partner OneStop

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