

# IBM hybrid cloud software



Today's challenges are unprecedented



**79%**

say the disruption of coronavirus has underscored the immaturity of their

**Digitalization**

**96%**

say the pandemic will speed their digital reinvention by an average of

**5.3 Years**

# What is Hybrid Multicloud

## Hybrid Cloud

A hybrid cloud is a computing environment that combines a **private cloud and a public cloud** by allowing applications and data to be shared between them.

## Multicloud

Multicloud is a cloud approach made up of more than one cloud service, from **more than one cloud vendor**—public or private.

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## Hybrid Multicloud = Hybrid Cloud + Multicloud

A hybrid multicloud combines a private cloud, a public cloud and **more than one cloud** service, from **more than one cloud vendor**.

# Every business needs to become a smarter business

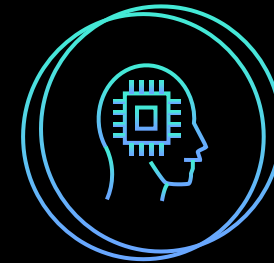
Today's highly dynamic digital business environment demands enterprises that are:

■ **Intelligent** in how they operate

■ **Resilient** in responding to change

■ **Flexible** in optimizing productivity

**Innovate at Scale**



To Fuel Digital  
Reinvention

# However, most face layers of systemic inhibitors

Changing customer expectations

Digital immaturity

Risk and security fears

Limited strategic optionality

Siloed business operations

Data overload

Technology skills shortages

Stagnate productivity

Rigid Infrastructures

**97%**

Desire greater operational agility and intelligence

**75%**

Find modernizing IT / data architectures an inhibitor

# Our clients have declared three core imperatives

## Resiliently

Respond To Change



## Flexibly

Optimize Productivity



## Intelligently

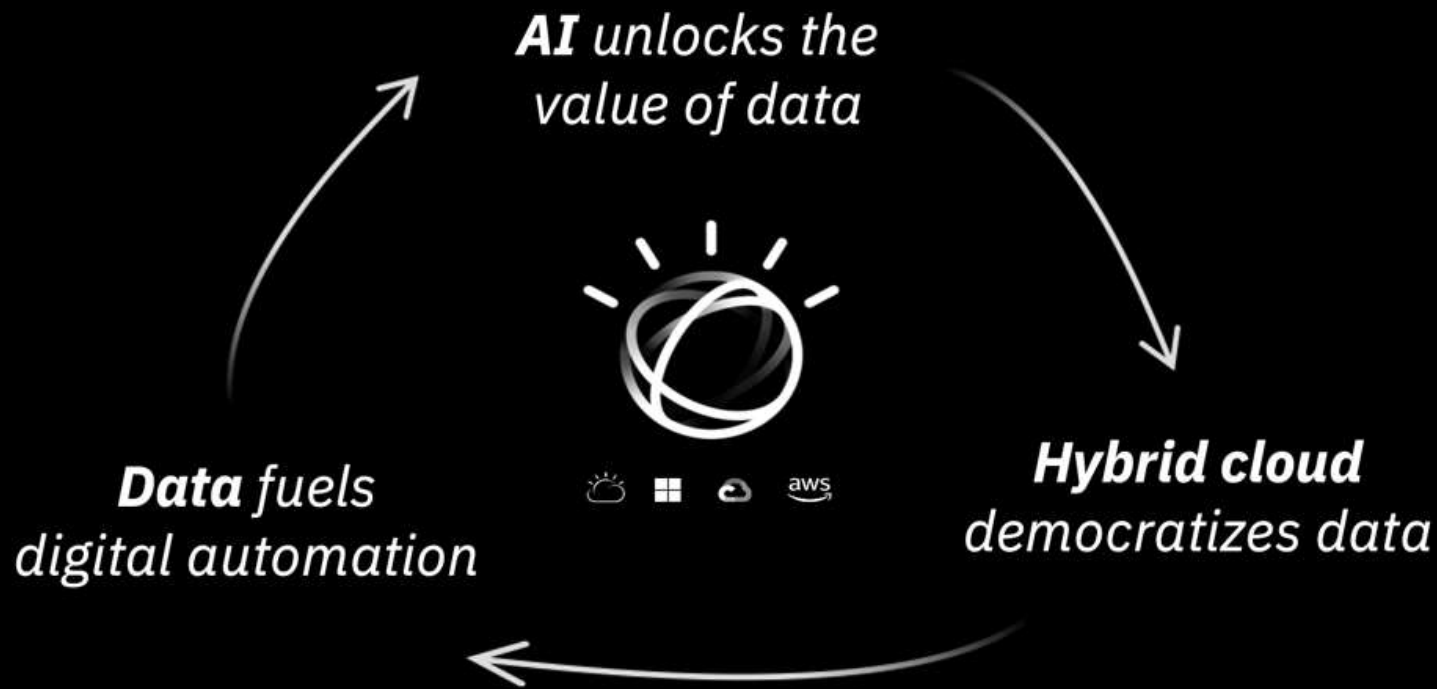
Operate & Engage

**1 - IT will become decentralized, open, secure**

**2 - Automation will fuel the future of work**

**3 - Winners will scale the value of data with AI**

# Enterprises are rapidly modernizing with digital reinvention in mind



**94%**

use multiple clouds and data platforms

**120B**  
Hours/Year

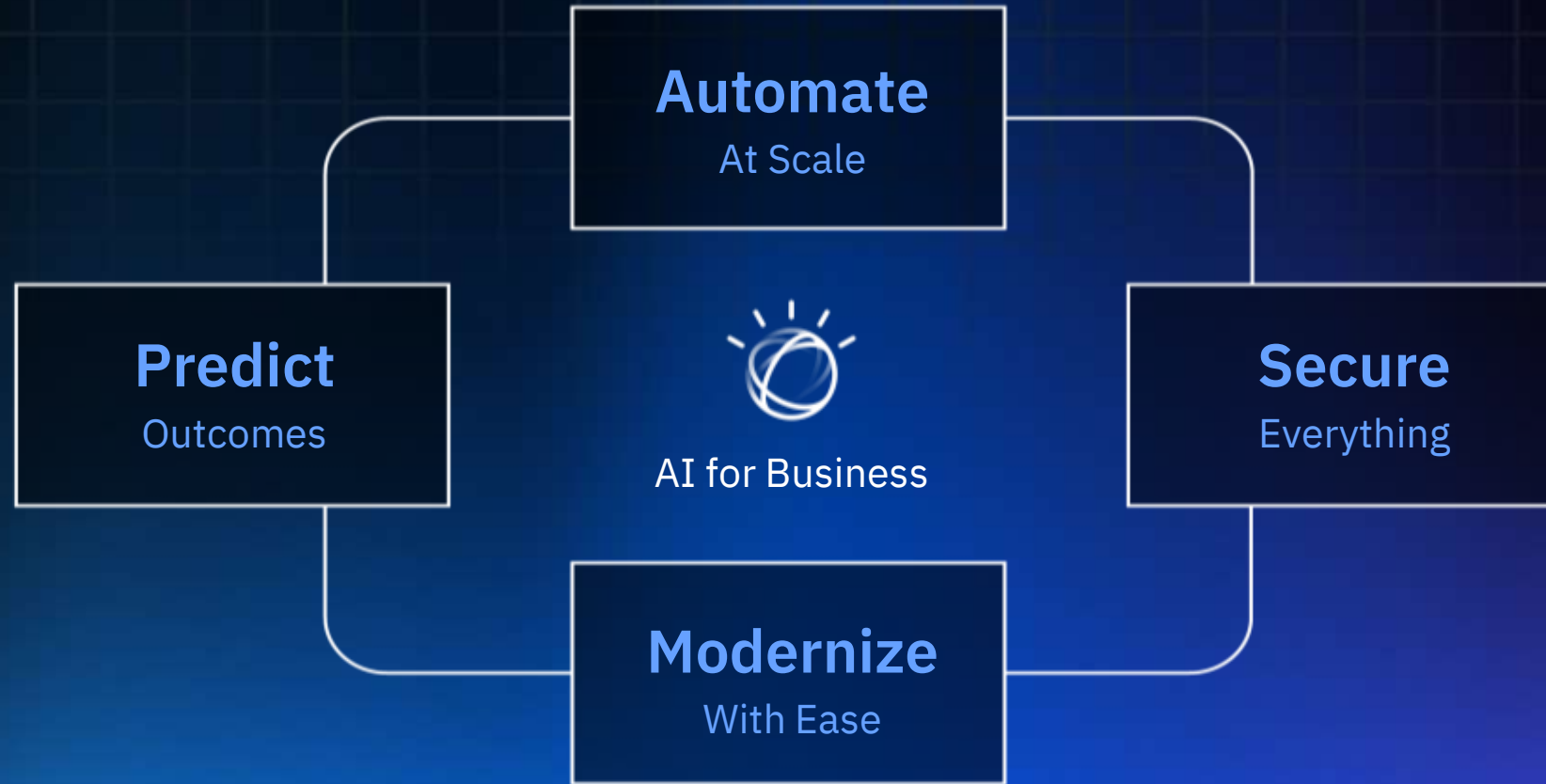
of lower value work to be reclaimed

**90%**

of enterprise data goes unanalyzed



# By unlocking the intelligence of AI and the agility of hybrid cloud

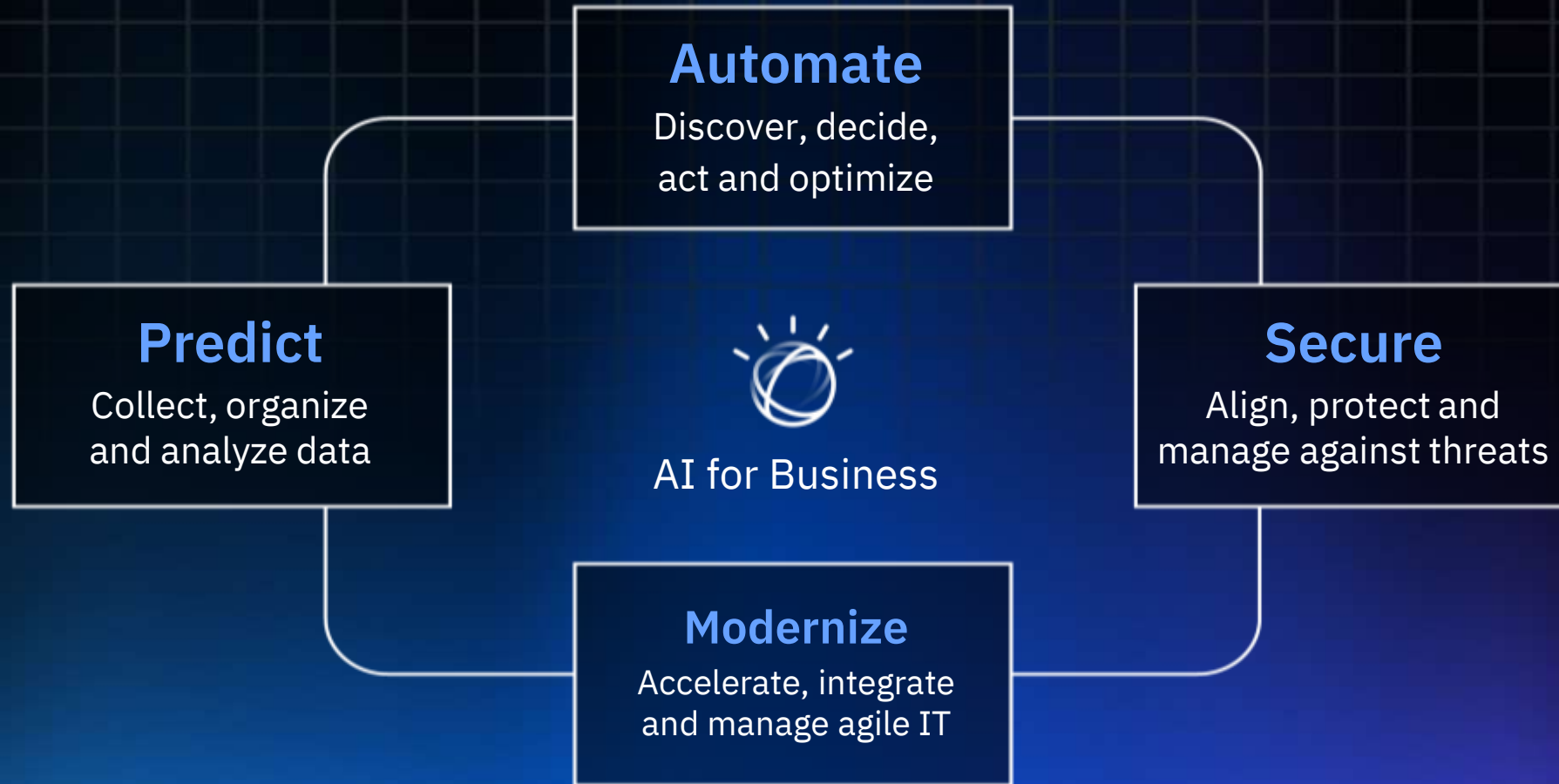


 **Red Hat**  
OpenShift Hybrid cloud platform





# IBM hybrid cloud software for a smarter business



Hybrid cloud platform

# We unlock AI for business and the agility of hybrid cloud

## Language

- Understands the language of business with NLP/Debater
- Analyzes sentiment, summarizations and briefs
- Discovers, extracts, translates and correlates insights

## Automation

- Transfers learnings from pre-trained models
- Automates the AI lifecycle – prep, build, run, manage
- Enables leaps in productivity - AIOps, RPA, etc.

## Trust

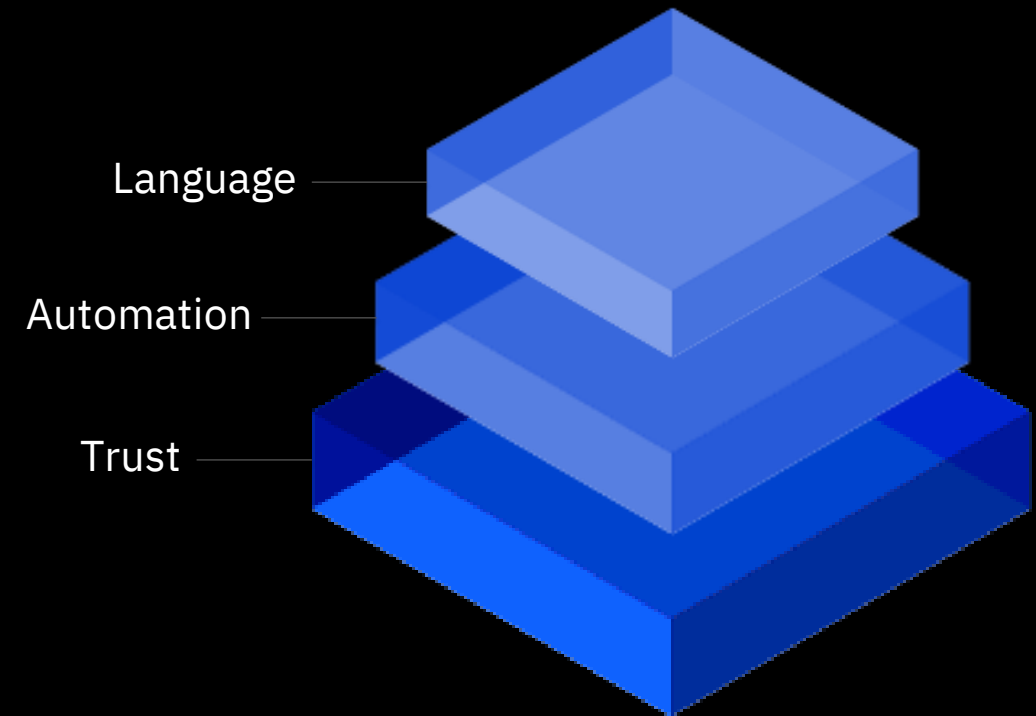
- Explains, measures and validates with transparency
- Governs to detect and manage bias, drift and risk
- Dynamically adapts models to improve outcomes

## Anywhere

- Virtualizes and orchestrates data and apps, on any cloud
- Containerization delivers repeatability and agility
- Eases management, integration and adaptability



Watson



Hybrid cloud platform



# The IBM hybrid cloud software approach

Deliver software for specific use cases or personas in Cloud Paks or cloud standalone

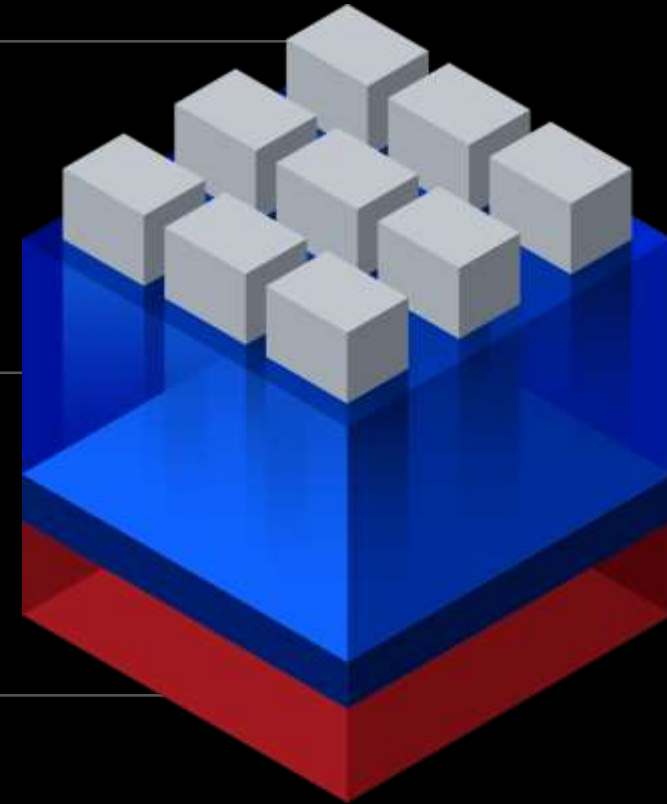
Unify and simplify software experiences with seamless integration of related capabilities

Enable software to run anywhere, on any cloud, as agile cloud-native services

## Products and solutions

## Cloud Paks

 **Hybrid cloud platform**



**Watson**

Infuse AI for business throughout our software



# Our approach delivers 3x the capability at half the run cost

## Built to Simplify

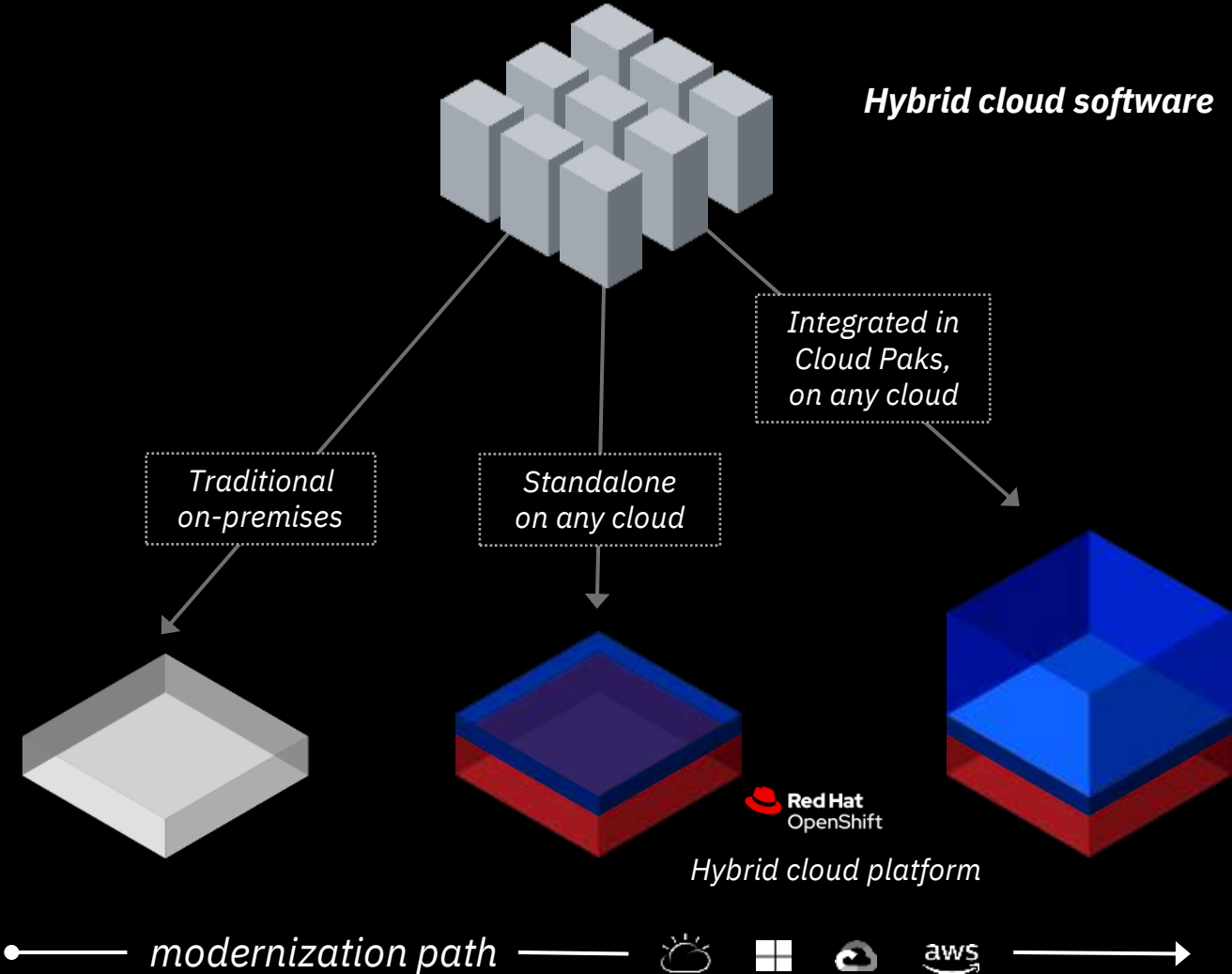
Software capabilities seamlessly integrate within a unified experience

## Consume Anywhere

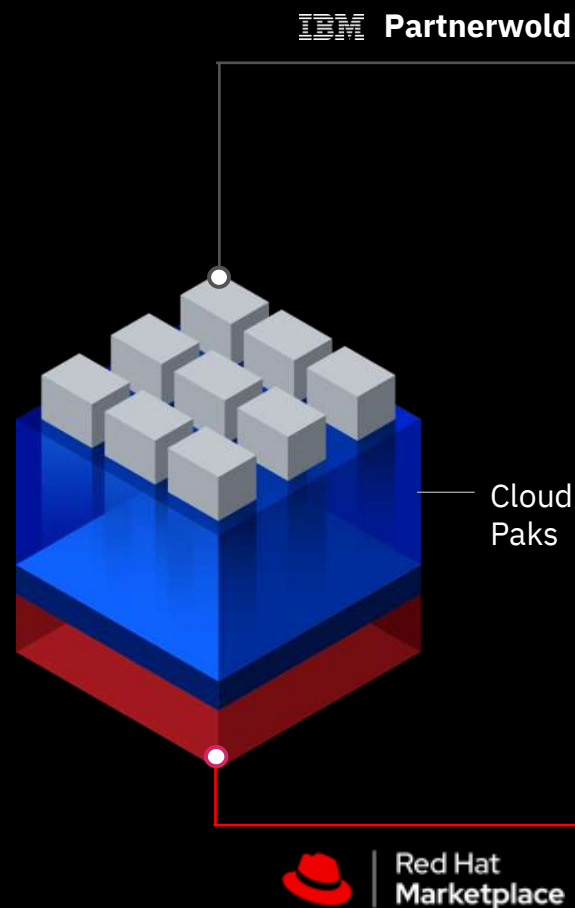
Delivered as-a-service on a modular architecture, with subscription licensing

## Modernize with Ease

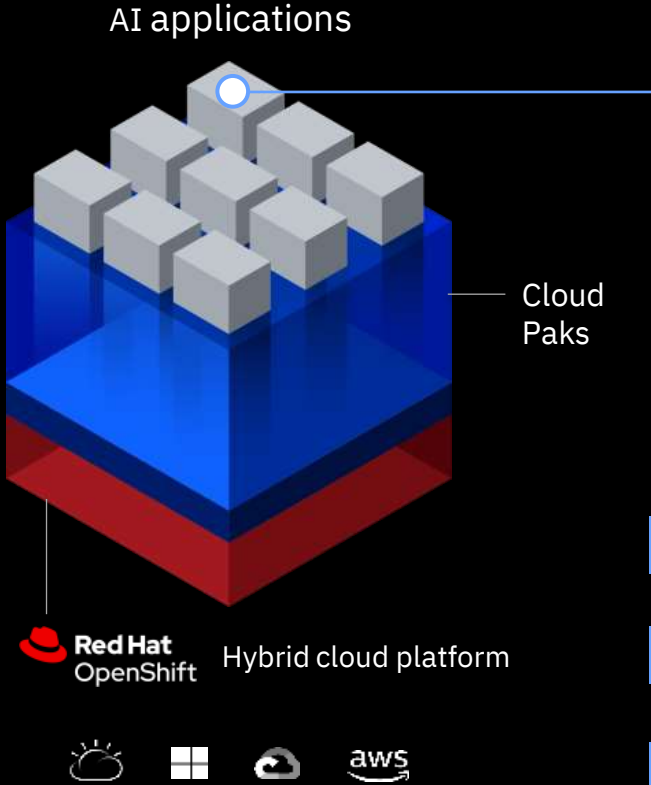
Gain strategic optionality by evolving from siloed products to agile platform services



# An open ecosystem enables endless extension and customization



# IBM hybrid cloud software is essential for smarter businesses

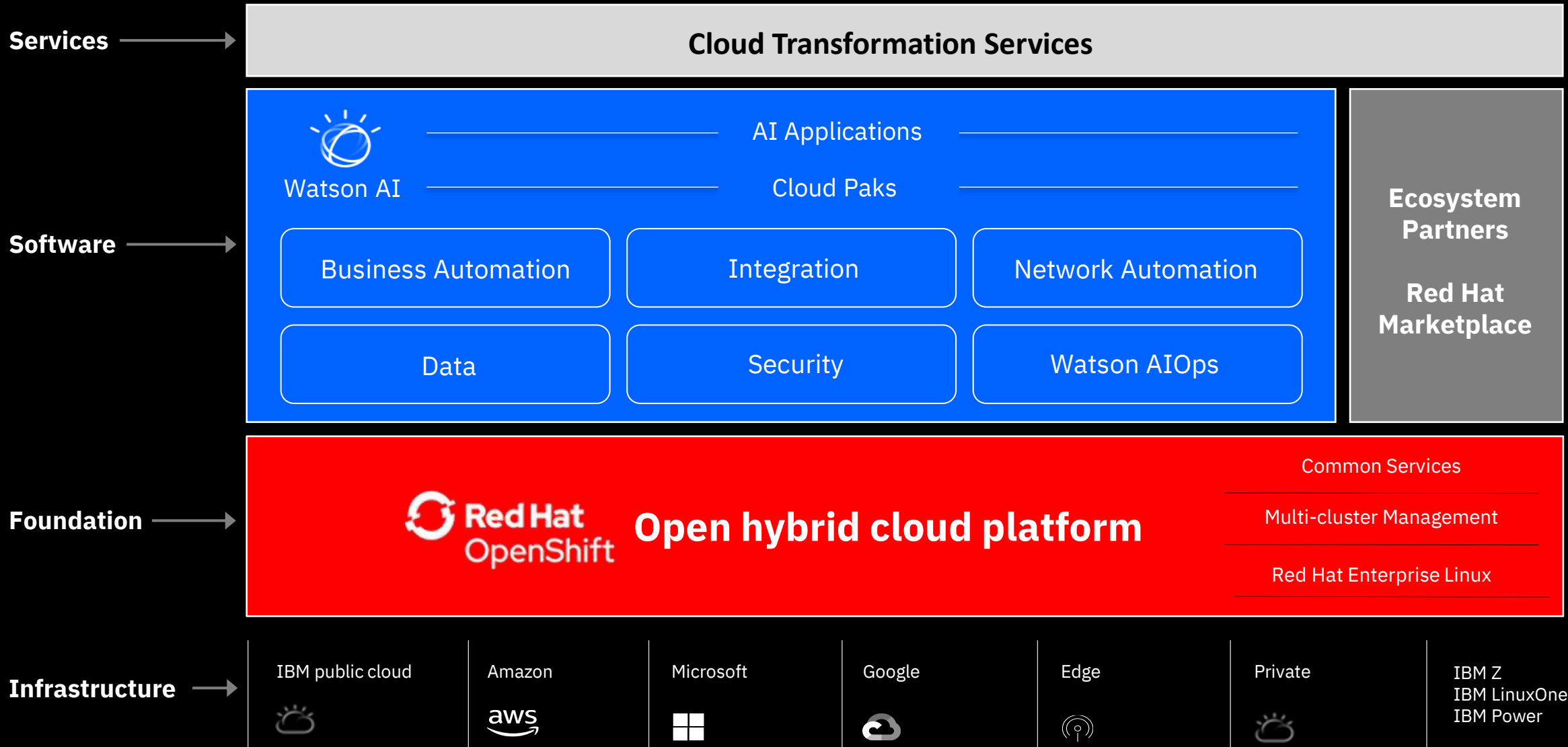


Empower intelligent workflows and experiences that securely run anywhere and integrate everywhere.

- Intelligently operate and engage
- Resiliently respond to change
- Flexibly optimize productivity



# IBM hybrid cloud is the future architecture for enterprise IT





# IBM hybrid cloud delivers a generational leap in value

**2.5x**  
**More Value\***



Digital acceleration



Productivity



Cost efficiency



Compliance & Security



Strategic optionality

Only **20%** of value is captured from traditional cloud approaches

The remaining **80%** is captured by a hybrid cloud approach

Captured Cloud Value →

20%

100%

Traditional clouds



**Hybrid cloud platform**



Lessons learned from over 30,000 client engagements

**1 Hybrid cloud multiplies IT value**

**2 AI predictions are transformative**

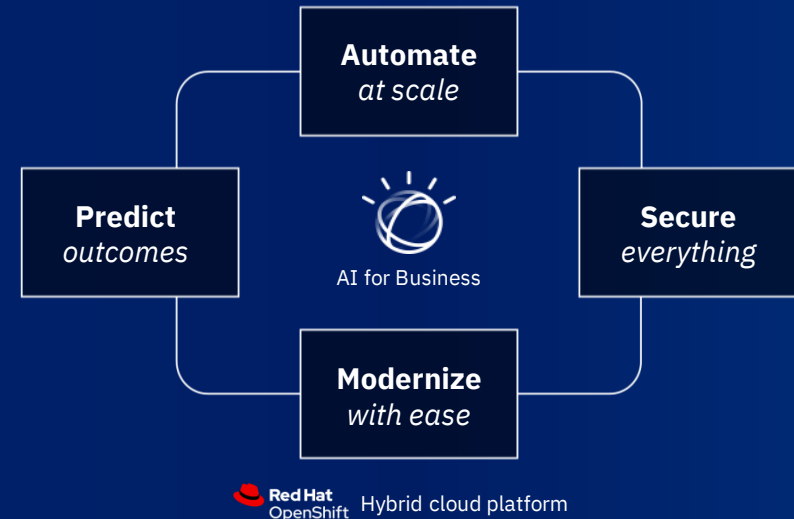
**3 Automation is inevitable**



**Security must be infused throughout  
the fabric of a digital business**

# IBM offers differentiation that truly matters

AI for business and the agility of hybrid cloud within **ONE** platform delivering a **2.5x** leap in value



- Power mission critical workloads
- Unlock AI, security & automation
- Run anywhere, integrate everything
- Achieve cost efficiencies
- Simplify architectural agility
- Enable strategic optionality

# IBM Power Systems in **Public Cloud**

# IBM Power Systems Virtual Server on IBM Cloud



## Power Systems in the IBM Cloud

- AIX and IBM i and Linux virtual machines **available on-demand**; hourly metered, billed monthly
- **Integrated into the IBM Cloud Catalog** for a consistent user experience and access to the cloud offering portfolio
- **Infrastructure equivalence** to on-prem with FC-SAN, VIOS and PowerVM
- Runs on Power Systems E880s, E980s and S922s
- **Now certified to run SAP HANA!**
- API-enabled with **Ansible** and **Terraform** automation
- **Geographies:** Dallas, Washington DC, Frankfurt, London, Toronto and Sydney

## Success Stories

### Major Manufacturing Company

### Major Furniture Company

### Leading European Tool & Equipment Manufacturer

### Leading Fine Food Company

## Use Cases

### Test AIX and IBM i in public cloud

A separate, secure sandbox environment for Power Systems users to test their own AIX or IBM i workloads, try out new OS versions operating systems and the latest POWER hardware.

### Run enterprise POWER workloads in public cloud

AIX and IBM i applications are no longer restricted to on on-premise. Help clients create a hybrid multicloud environment with the ability to host their AIX and IBM i apps in public cloud.

### Disaster recovery without double commitment

At present, AIX and IBM i clients need to build out their own data center to create a DR environment. Now, with public cloud, they get those options at a more affordable cost.

# IBM Power Systems in **Private Cloud**

# Cloud scaling and High availability with private cloud on IBM Power Systems

## Cloud scaling with Consumption-based IT

- Navigate demand fluctuations scaling up and down with always turned on pay-per-use capacity
- Manage high availability by optimizing capacity utilization across multiple systems
- Optimize TCA/TCO based on your goals with flexibility to choose the base capacity (as low as 1 core, 256 GB) you need
- Pay only for the precise capacity used with by the minute metering
- No monthly fixed fee, no minimum usage fee and no minimum contract duration

## Rapid IT provisioning with OpenStack and Kubernetes-based Private Cloud

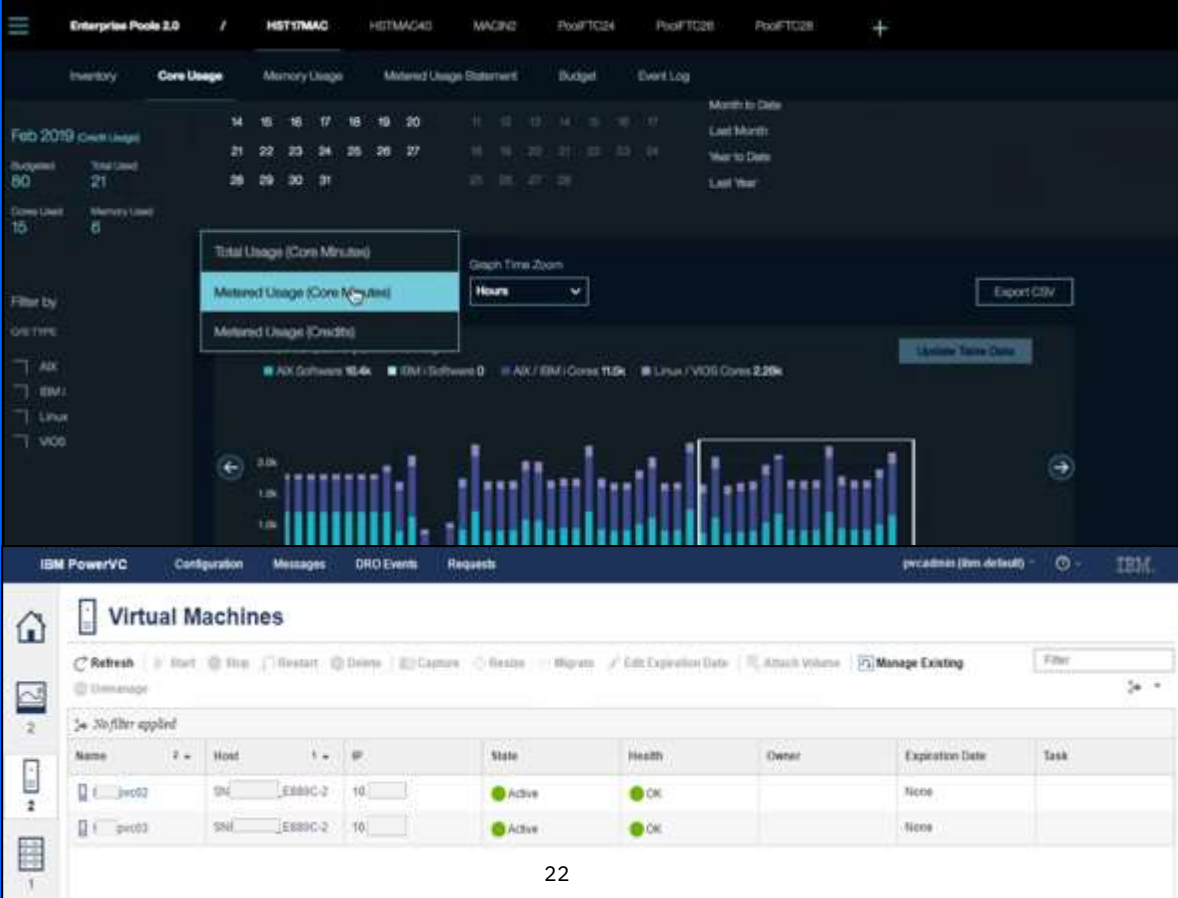
- Self-service provisioning with OpenStack-based PowerVC
- Platform-as-a-Service with Kubernetes-based Red Hat OpenShift
- Integrates with IBM Cloud Pak for Multicloud Management and other cloud orchestrators like VMware vRealize

Available Capacity (always turned on)



Dynamic Capacity (Pay-per-use, OPEX)

Permanent Capacity (Static/Base, CAPEX)



# Consistent enterprise automation across Power, Z and x86



## Key Ansible use cases



Provisioning



Configuration Management



Application Deployment



Continuous Delivery



Orchestration



Security Automation

## Consistency

- Consistent enterprise automation strategy across
  - z/OS, AIX, IBM i, Linux and Windows environments
  - Hybrid applications and infrastructure management

## Transparency

- Complete visibility of z/OS, AIX, IBM i and Linux automation
- Drive best practices to manage automation and move towards infrastructure as code
- Contribute to breaking down cultural walls

## Skills

- Leverage readily available Ansible and Python skills to automate z/OS, AIX, IBM i and Linux environments

# Introducing: IBM Power E1080



Enterprise-grade hybrid cloud infrastructure  
for business-critical applications

## Persistent security

Protect apps and data in hybrid cloud with end-to-end encryption and most secure workload isolation

## Scalable, sustainable compute

More software in fewer systems and smaller carbon footprint

## Industry leading reliability

Make the most reliable infrastructure even better with memory, processor and cabling enhancements

## AI at the point of data

Reduce costs, complexity and risks running AI where operational data resides



Cyber  
resiliency  
is about  
proactive  
prevention

\$ 300K

Avg. cost of an hour of downtime

\$ 3.9M

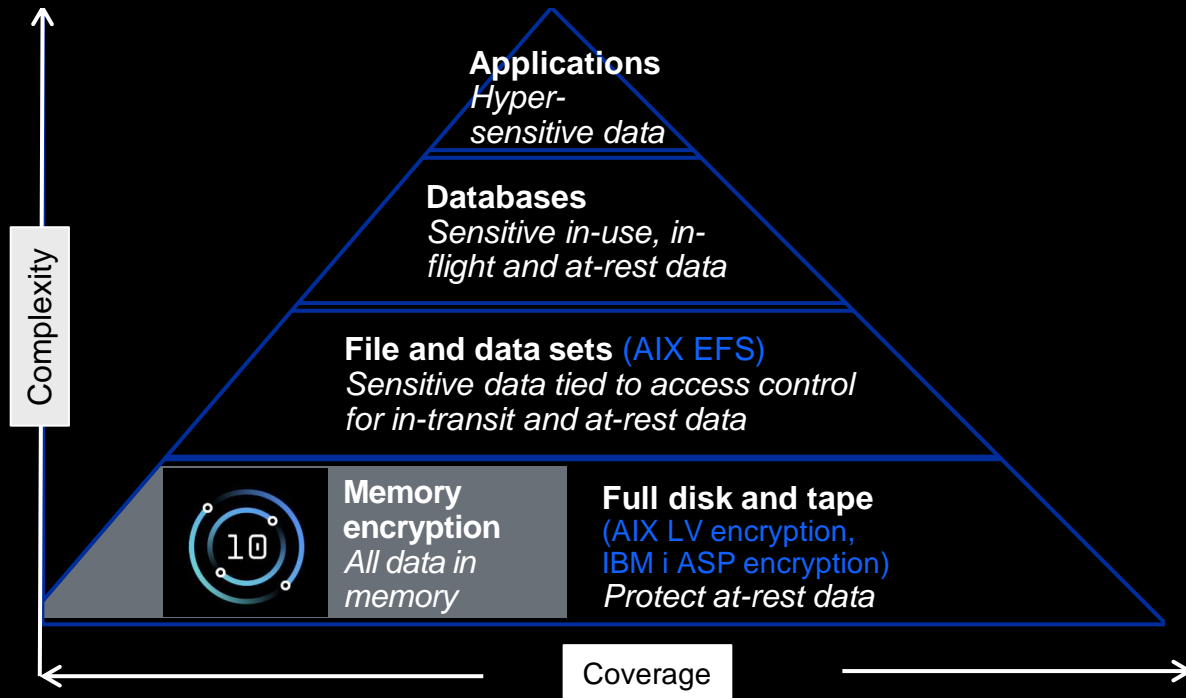
Avg. cost of a data breach or loss

\$ 4.4M

Avg. cost of a "mal/ransom"ware attack

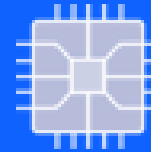
# Protect Data: Simplified Encryption

Protect data in memory with  
transparent memory encryption



Blazing fast hardware-accelerated encryption

- 4X crypto engines in every core



Encrypt all data with:

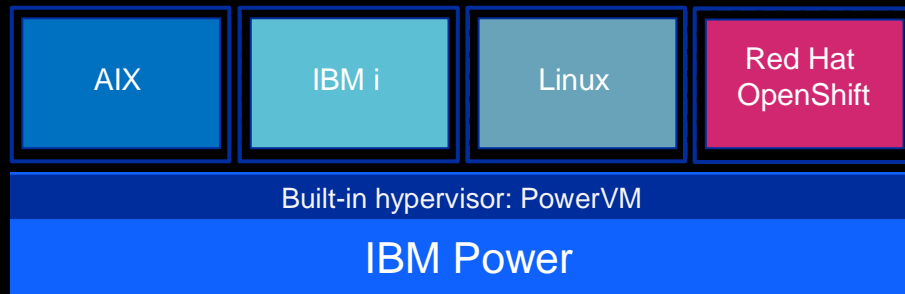
- Minimal management setup
- Minimal performance impact
- Transparent exploitation

Stay ahead of current and future threats with:

- Quantum-safe cryptography
- Fully homomorphic encryption

# Protect Apps: Secure Isolation

Most secure multi-tenant cloud environment with orders of magnitude lower CVEs vs x86 hypervisors



Enhanced defense against Return-Oriented-Programming attacks

Enhanced CPU isolation from service processors

Secure and trusted boot for host and guest LPARs; with additional core root of trust hardening

# IBM Power E1080



Follow-on to E980  
enterprise system

Modular design  
Scale up to four 5U  
node drawers + one  
2U control unit

Max of 240 Power10  
SMT8 cores (10, 12, 15  
core offerings,  
SCM package)

New 32Gb SMP  
Cables (low latency)  
with Concurrent  
Maintenance capability

Secure and Trusted  
Boot with Redundant  
TPM modules

2U System Control  
Unit Drawer

Up to 64TB total  
memory (16TB  
per drawer)

New OMI DDIMMs that  
provide increased  
memory bandwidth of  
409 GB/s per socket

Main Memory Encryption  
for added Security

Ports available for future  
support of Memory  
Inception/Clustering

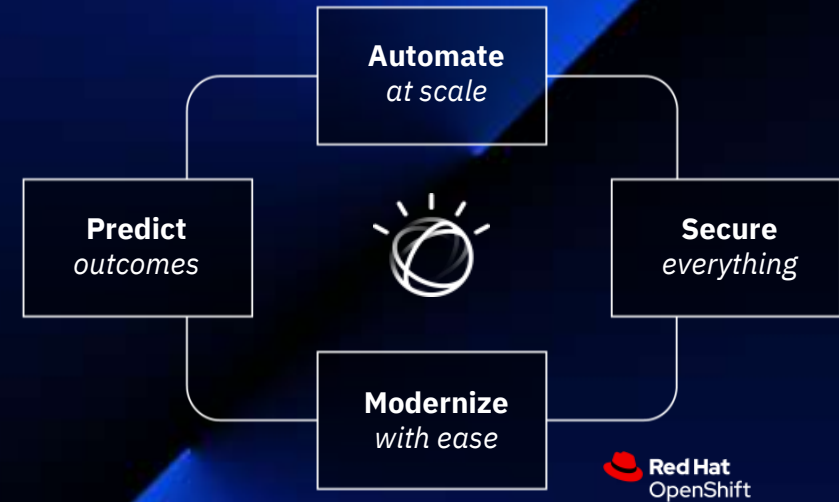
Eight PCIe slots per  
drawer that are  
Blindswap with GEN5  
support for future I/O

Internal Storage - 4  
NVMe Flash 7mm U.2  
Bays per drawer

Up to 16 I/O Expansion  
Drawers (4 Drawers per  
CEC Drawer)

# Back Up - Narratives

- *Hybrid Cloud Software*
- *Modernize*
- *Predict*
- *Automate*
- *Secure*



# HYBRID CLOUD SOFTWARE

## Build a Smarter Business with Hybrid Cloud Software

Every business must become a smarter, more responsive business that can intelligently operate and engage the world, resiliently respond to market changes and flexibly optimize costs to innovate.

Leading businesses believe:

- Unlocking data with AI is critical as 90% of potentially value data is not effectively used to fuel digital transformations
- Automation is inevitable to reclaim over 120 billion hours a year that is spent on low-value work
- IT must be decentralized, open and secure as 80% plan to work in hybrid cloud environments

By unlocking the intelligence of AI and the agility of hybrid cloud, we partner with our clients to weave multiple threads of their organization into a tailored, smarter business that is:

- **Modern:** accelerate, integrate and manage agile IT landscapes from the data center to the edge
- **Predictive:** seamlessly collects, organizes and analyzes data applying AI to shape future outcomes
- **Automated:** improves productivity with AI workflows that help people discover, decide, act and optimize
- **Secure:** pro-actively aligns, protects and manages threats to digital assets, users and data

Only IBM hybrid cloud software, and our open 3rd party ecosystem, can bring together and simplify everything an organization need to achieve the intelligence, resiliency and flexibility to thrive in today's digital business environment.

We are committed to every client's success, delivering software that is:

- Built upon an open, modular services architecture, on any cloud
- Designed to protect and extend existing investments
- Supported by an ecosystem of partners and developers to meet the needs of every business

# MODERNIZE

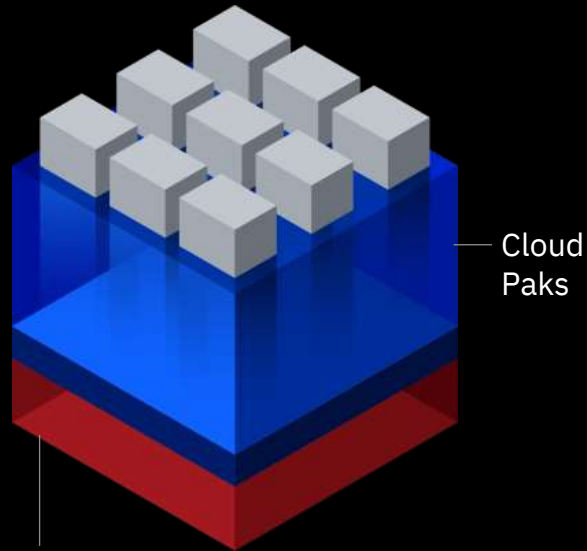
In today's uncertain environment, businesses need to differentiate themselves by creating more innovative, responsive user experiences that are adaptive and continuously available – from the data center all the way out to the edge.

Leaders must modernize their businesses and IT, which span multiple cloud environments, rely on open source, and provide access to data no matter where it resides. This landscape provides greater operational agility and accommodates new kinds of data sources, applications, and workflows as they become available. To modernize, smarter businesses rely on IBM hybrid cloud software, security, and AI.



# MODERNIZE

Our IBM hybrid cloud software—delivered via Cloud Paks running on Red Hat OpenShift — provides an integrated solution that allows you to build once and deploy anywhere.



IBM Cloud Paks can help you:

- **ACCELERATE** innovation and efficiency to unlock immediate value
- **INTEGRATE** and connect applications, data, and services across multiple clouds with
- **MANAGE** and secure data and applications intelligently across your environment
- **RUN ANYWHERE** build once, deploy anywhere on an open, hybrid cloud platform

IBM Cloud Paks are AI-powered software and complete integrated solutions with services for business and IT operations, development, and management

They are delivered as a service with a modular architecture.


They understand the language of business and code, explaining AI outcomes and building trust.

They are built on Red Hat OpenShift, the #1 enterprise container (and Kubernetes) platform with the richest open source ecosystem.

## Clients

- 📄 **Deutsche Bank:** Run > 40% of workloads on 5% of total infrastructure
- 📄 **CVS Health:** transformed IT ecosystem and reduced integration costs by 2/3
- 📄 **BP:** Automation cuts provisioning times from 2-3 weeks to 7 min
- 📄 **UPS:** Reduced dev cycles from 1.5 years to weeks
- 📄 **Paychex:** Increased frequency of deployment by a factor of 4x

[More client stories →](#)

 Hybrid cloud platform





# PREDICT

Now, more than ever, organizations need to be able to intelligently predict what's going to happen in their business so they can respond to change and innovate at speed. This ability to transform, however, is only as good as knowing what to change and how, and the best strategies for that are data driven.

Fueled by this data, AI can reshape how businesses operate and deliver value, while improving efficiencies across the organization. By infusing AI throughout the business, enterprises can better predict and shape future outcomes, empower people to higher value work, create automate decisions and processes and humanize experiences.



# PREDICT

In order to turn AI aspirations into outcomes, IBM has created a prescriptive approach to accelerating to accelerating the journey to AI called the **AI Ladder**.

The AI Ladder is a proven methodology built from the learnings from thousands of Watson engagements, designed to help clients:

- **MODERNIZE** - deploy a modern information architecture for AI
- **COLLECT** - make data collection simple and accessible

- **ORGANIZE** – create a business-ready analytics foundation
- **ANALYZE** - build and scale AI with trust & transparency
- **INFUSE** - operationalize AI outcomes throughout the business

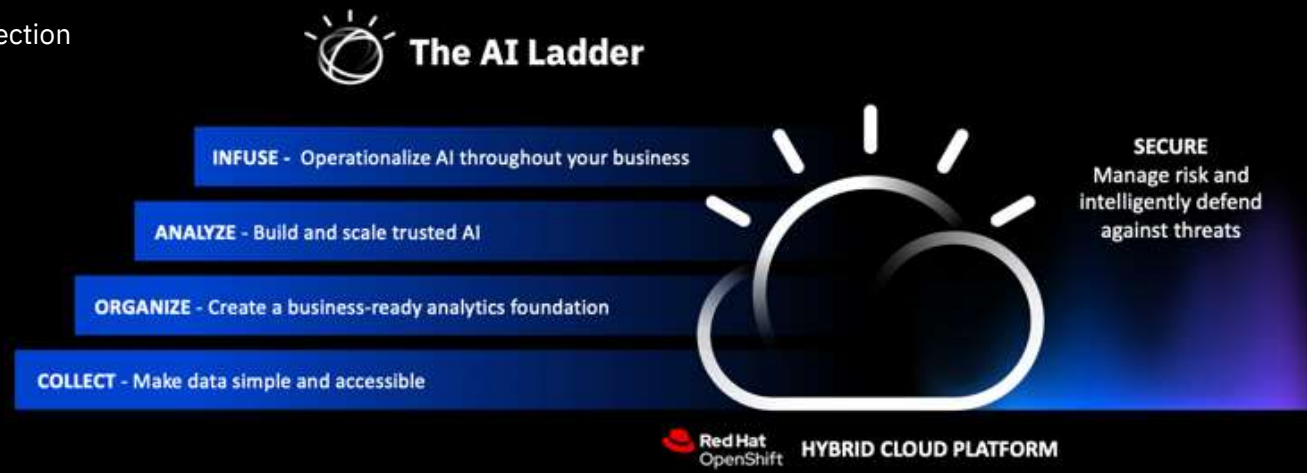
IBM uniquely offers an open and extensible platform, available on any cloud, that provides all the necessary cloud, data and AI services to simplify and automate the AI Ladder.

IBM also provides the expertise you'll need to build the talent and skills required to success in enterprise AI.

## Clients

- **NatWest Group:** Increased NPS by 20%
- **ExxonMobil:** Reduced data prep time by an estimated 40%.
- **New Jersey Courts:** Approx. \$10 million in cost savings through automation
- **KONE:** Connecting over 1 million elevators to the cloud
- **Sprint:** Digest high volumes of data for near, real-time ML/AI analysis

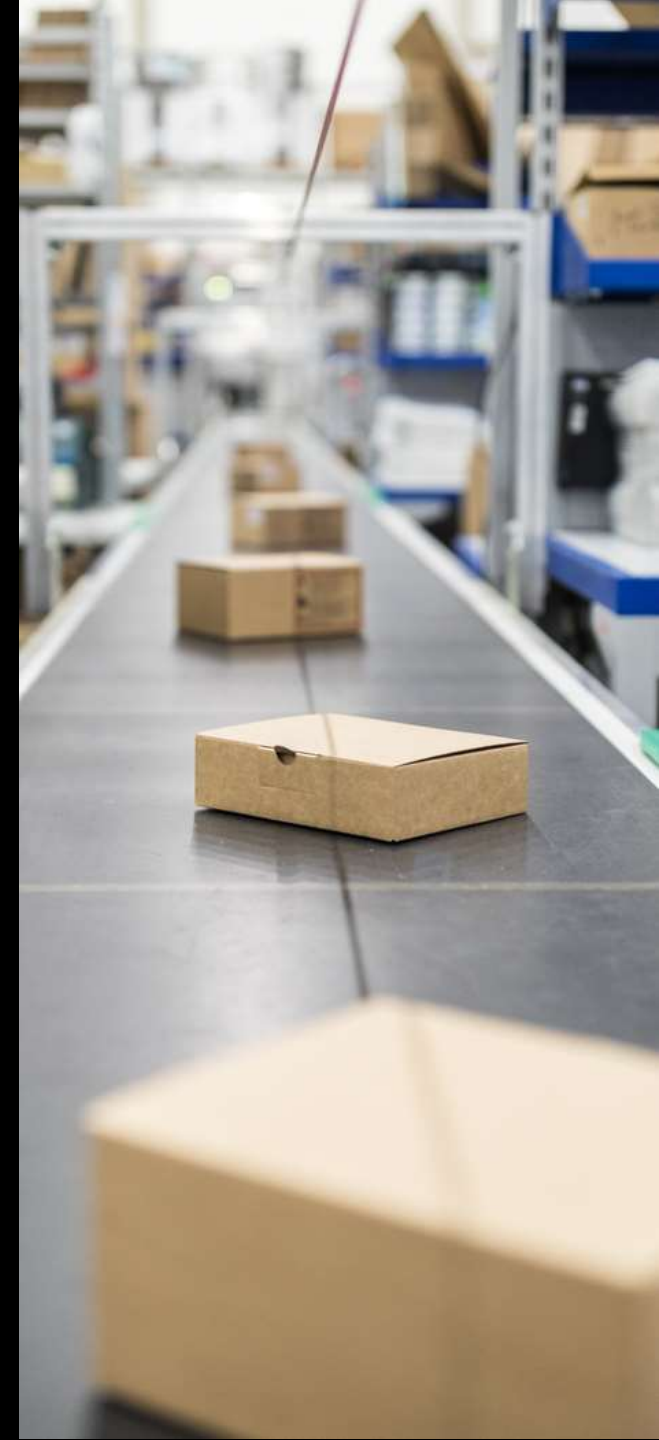
## [More client stories](#)



# AUTOMATE

Today, organizations face a contradictory balance: innovate while keeping the lights on; reduce costs without compromising security or customer engagement. Smarter businesses dial up and down to change how work gets done to balance competing priorities. These businesses look to automation and AI to empower their employees to focus on higher-value work.

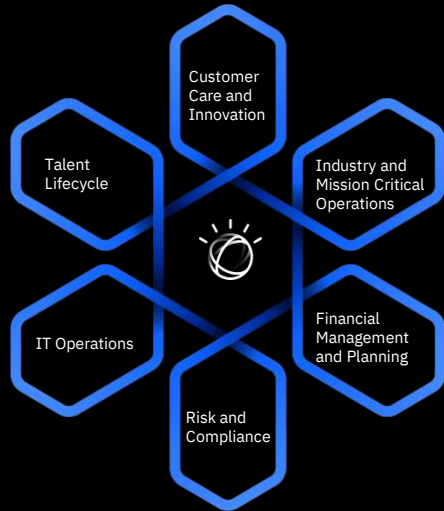
Automation gives people the gift of time. It improves experiences, productivity, and operational efficiency. It underpins and spans workflows across organizational boundaries to improve outcomes. And it allows you to automate more types of work faster and at lower cost.



# AUTOMATE

IBM helps you digitize and automate all types of work faster, apply AI to improve decision making and manage risk and augment your workforce.

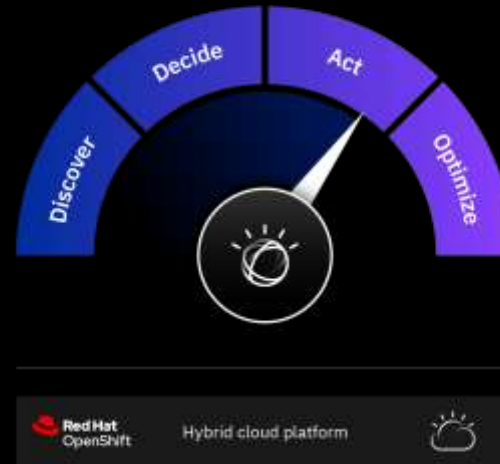
We identified six key business domains to apply AI-powered software and applications, along with Watson. They are:



With IBM you can:

- **DISCOVER** – collect, organize, and classify vast amounts of data
- **DECIDE** – identify and prioritize where automation can boost performance
- **ACT** – empower employees with the intelligence to achieve desired outcomes
- **OPTIMIZE** – capitalize on insights to continuously improve workflows

IBM brings automation to life with a set of software and applications, tailored for key industries. Hybrid and portable, you can connect and deploy where teams work, leveraging both domain-specific and cross domain machine learning (ML) correlation models leading to better predictions, decisions and actions.



With over 14k automation practitioners, 5k automation clients and ~4k bots and runtime scripts deployed, IBM has a strong foundation and history in helping organizations achieve operational excellence.

## Clients

- **Suncor:** 66K+ hours saved
- **Banco Popular:** 90% decrease in process completion times
- **Amica Mutual Insurance:** 25-50% productivity gains with process automation
- **PNC Bank:** Automated 80% of loan processing, allowing underwriters to focus on true exceptions
- **Regions Bank:** Yielded \$5.2 million in benefits over 3 years and 331,000 calls handled

[More client stories →](#)

# SECURE

The world is rapidly becoming more digital, forcing businesses to become more transparent while remaining always-on. As your software environment expands to address this digital landscape, your risk expands with it.

To help shield your organization in this world of complexity, you need to design, build, and manage a secure, governed strategy. One that enables you to protect your data wherever it resides, provide advanced identity and access management, and manage risks and detect threats with AI so you can confidently align, protect and manage threats to your business.





# SECURE

IBM can help you quickly integrate your existing security capabilities with our prescriptive approach to drive security into the fabric of your business.

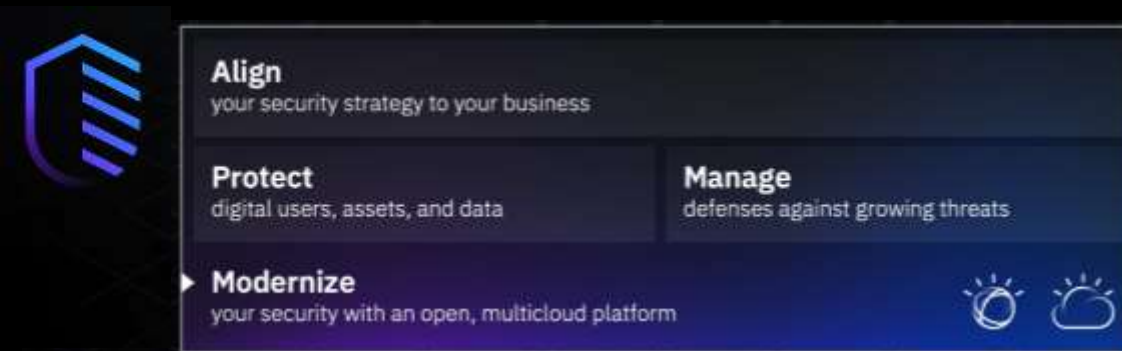
We provide the platform and expertise you need to more quickly integrate your existing security tools to generate deeper insights and quickly search for threats, orchestrate actions and automate responses—all while leaving your data where it is.

IBM Security can help you with our prescriptive approach to:

- **ALIGN** – your security strategy with our business
- **PROTECT** – your digital assets, users and data

- **MANAGE** – your defenses against growing threats
- **MODERNIZE** – with an open, multicloud platform

We are ready to stand with you to help protect your business, even on your worst day. Together, we can shield your business by driving security into the fabric of your business, helping you to thrive in the face of uncertainty.



## Clients

- **Anthem**: Reduced their cyber risk for 40 million members.
- **CyFIR**: Achieved a 90% reduction in threat detection costs.
- **US State agency**: Reduced administrative demands by 80%.
- **Sogeti**: Investigate threats 50x faster and find 10x more actionable threats.

[More client stories →](#)