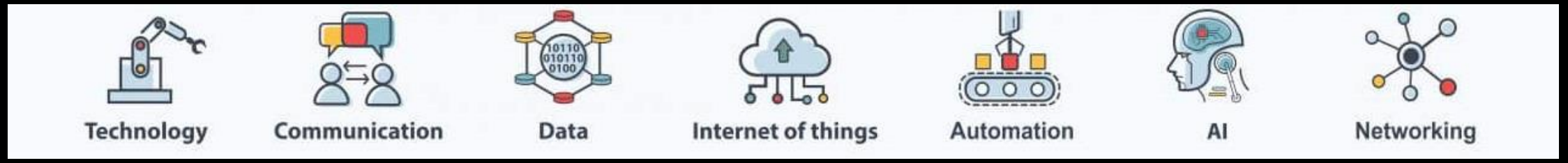
Data Resilience and Security in the Digital-First era

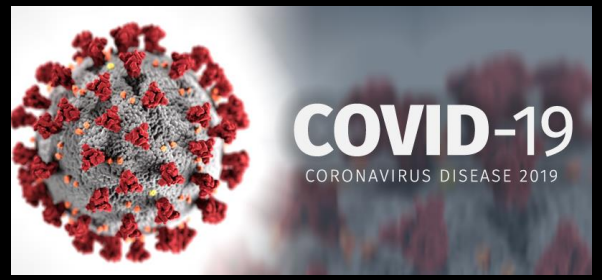
Manos Kokolakis MSc
Customer Success Manager
mkokolakis@inttrust.gr

Digital Transformation



"…reimagining of business in the digital age".

The process of using digital technologies to create new - or modify existing - business processes, culture, and customer experiences to meet changing business and market requirements (analog to digital).



Digital-First the next step

“*The world is moving from DX (as we know it) to Digital-First.*

DX started with transformation from analog to digital. With contextualization, digital-first becomes the next evolution in DX. ”

Digital-first applies to any entity (company, government, consumer, patient, constituent) that is always asking: “Is there some digital-based capability/enhancement that could improve our lives and desired outcomes?”

and it is not limited to business and economic performance.

A digital-first economy is therefore one where industries, business ecosystems and organizations are influenced by digital in the way they innovate and create/deliver their products/services, empower their employees, engage/serve their customers, collaborate with their partners as well as contribute to the broader society. In this economy, all industries will be driven and shaped by Future Enterprises. “

ICT Awards: The Digital-First world is the Era of the Future Enterprise

InT Trust
Information Technology Trust

Platinum Business Partner IBM

Technology building blocks (IDC)

Organizations, private or public, large or small, will need to leverage technologies in an accelerated fashion to thrive. The digital-first building blocks set the new benchmarks for enterprises to become truly digital-first.

- Customer facing-first.
- Cross ecosystem-first.
- Hybrid work-first.
- Unified security-first.
- Remote operations-first.
- Business value-first.
- Edge data-first.
- Pervasive wireless-first
- Augmented personalization-first.

By 2022, more than half the global economy is based on or influenced by digital. By 2023, 90% of organizations globally will be prioritizing investments in digital tools to augment physical spaces and assets and by 2024, 55% of all ICT investment will be linked to digital transformation (DX).

ICT Awards: The Digital-First world is the Era of the Future Enterprise

DX Tech aspects of today

- Hybrid ecosystem
- Scalable environment
- Automation & Orchestration
- Data Security
- Data Resilience

Secure,
Scalable,
Hybrid ecosystem,
for Automation & Orchestration

InT Trust
Information Technology Trust

OPENSHIFT

Platinum
Business
Partner
IBM

Introducing Power10 Scale-Out servers

Enhanced Performance & Scale

- Six new 1 and 2-socket, 2U and 4U height server models
- Up to 48 cores and 8TB memory footprints
- Up to 50% performance per price increase and 1.4X more system performance vs. Power9*
- Expanded Dynamic Capacity consumption features with CUoD and PEP 2.0
- Value-driven solutions and higher technical standards

AIX IBM i Linux OPENSHIFT

IBM Platform for digital transformation

- Reduced application migration and modernization costs by 34%
- Serverless-like system with flexible consumption options to support multiple workloads, from core to edge applications
- 2X more density of compute and memory fits right into client datacenters

More uptime for apps & downtime for people

- Leading industry uptime with up to 28x (yes, 2700%!) less downtime vs. x86 server vendors
- A platform that let clients innovate and collaborate anytime, all the time
- Seamless hybrid cloud integration so clients can skyrocket their resources

Security that protects client data anywhere

- The average total cost of a data breach increased by nearly 10% yea-over-year
- Protect data with platform integrity from the processor to the cloud as part of a zero-trust architecture

Data Fabrics Instead of Data Silos

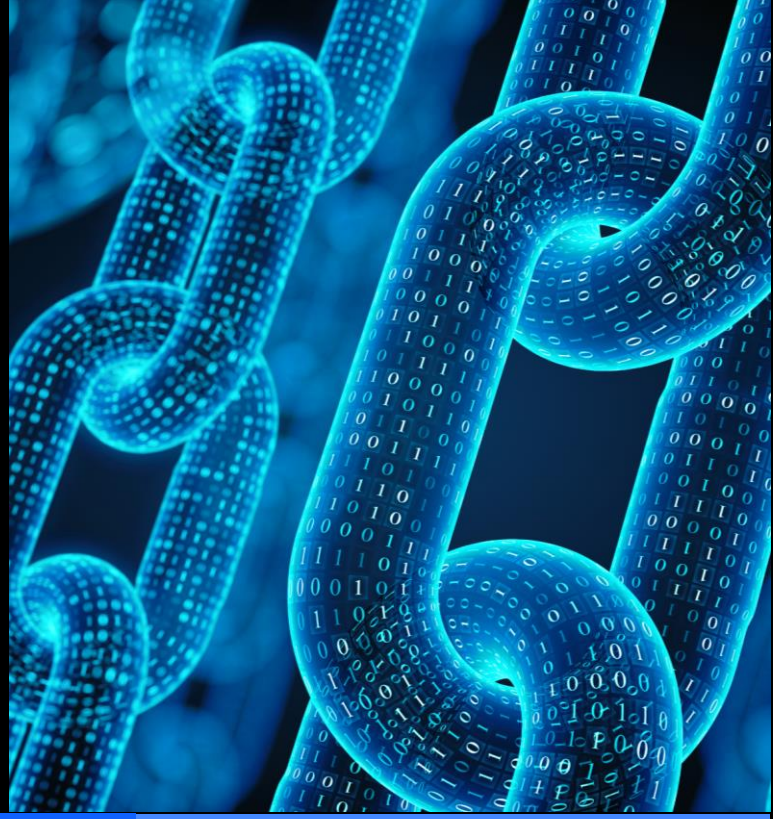
- Make data more accessible for enterprise analytics and AI so client teams can make smarter, faster decisions
- Leverage IBMs new built-in inference engine that brings AI closer to the data to reduce cost and complexity

IBM Power **Security**

Design, architecture, and integration

Security is architected into Power for all types of threats: traditional, new, and emerging

- Processor
- Firmware
- Hypervisors
- Management
- Network
- Operating systems
- Containers
- Applications
- Middleware
- AI



Base Platform Security & Integrity

Continuously protect platform integrity across main processor, service processor and peripherals

End to End Hybrid Cloud Security

Offer all platform capabilities with the highest level of security from enterprise through Cloud

Workload Security Enablement

Provide features to secure client workloads: HW, firmware, and OS support for isolation, integrity, encryption, event monitoring, …

Simplified Security Management

Automated security management to simplify security operations and compliance: patching, integrity monitoring, health checking, …

System level security

Workloads, VMs, and containers

OS security

Hardware and firmware security

Isolation

Integrity

Secure VMs/Containers

Signed images and files

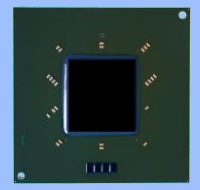
Runtime verification of workload files

AIX for Business Linux OPENSHIFT

OS, LPAR, container isolation

Runtime verification of OS files

Firmware, Hypervisor, Ultravisor



Power processors: Hardware isolation, root of trust, crypto acceleration

Boot time Integrity

InT Trust
Information Technology Trust

Platinum Business Partner IBM

End to end **Security** with full stack encryption

Stay ahead of current and future threats with support for:

- **Quantum-safe cryptography**
- **Fully homomorphic encryption**

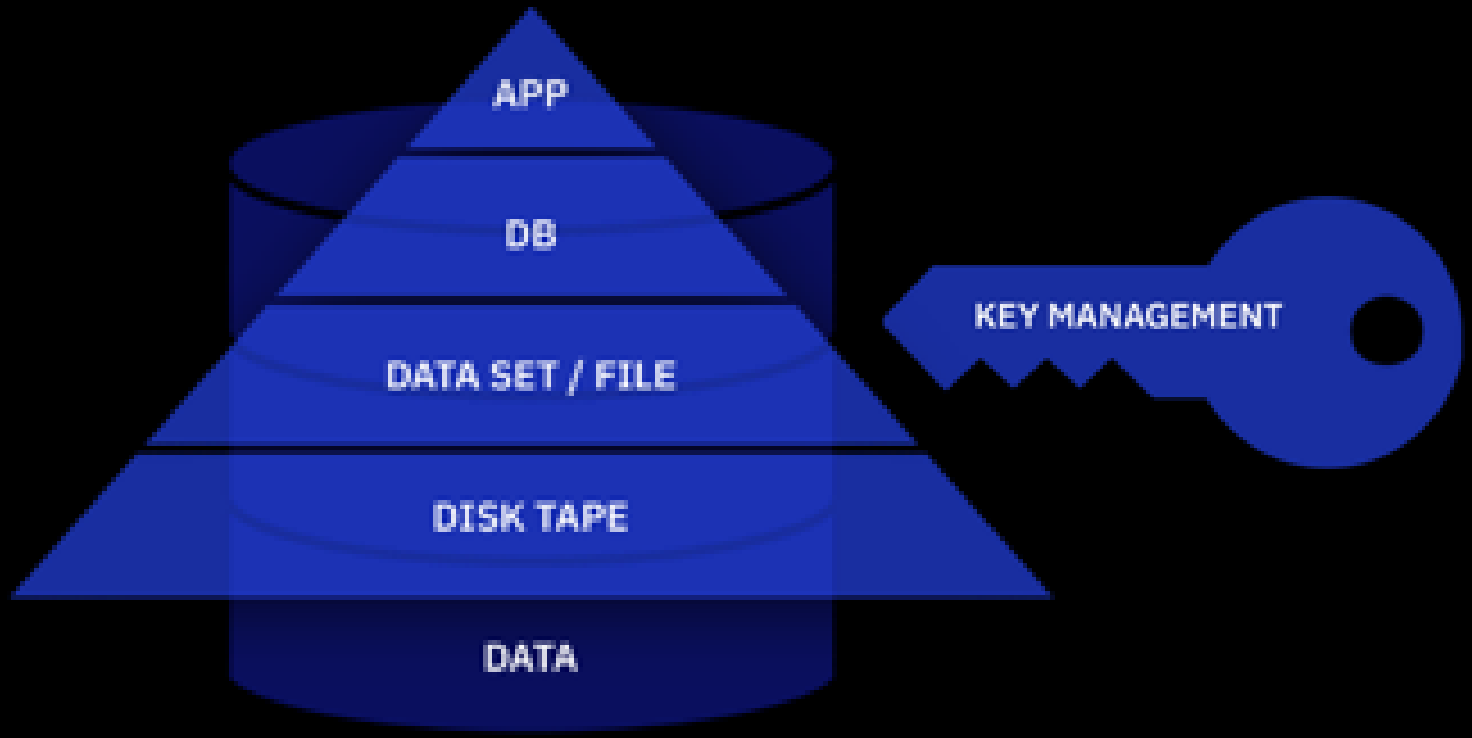
Applications
Hyper-sensitive data

Databases
Sensitive in-use, in-flight and at-rest data

File and data sets (AIX EFS)
Sensitive data tied to access control for in-transit and at-rest data

Memory encryption
All data in memory

Full disk and tape
(AIX LV encryption, IBM i ASP encryption)
Protect at-rest data



Transparent memory encryption with:

- No additional management setup
- No performance impact

Blazing fast hardware-accelerated encryption

- 4x crypto engines in every core

InT Trust
Information Technology Trust

Platinum Business Partner IBM

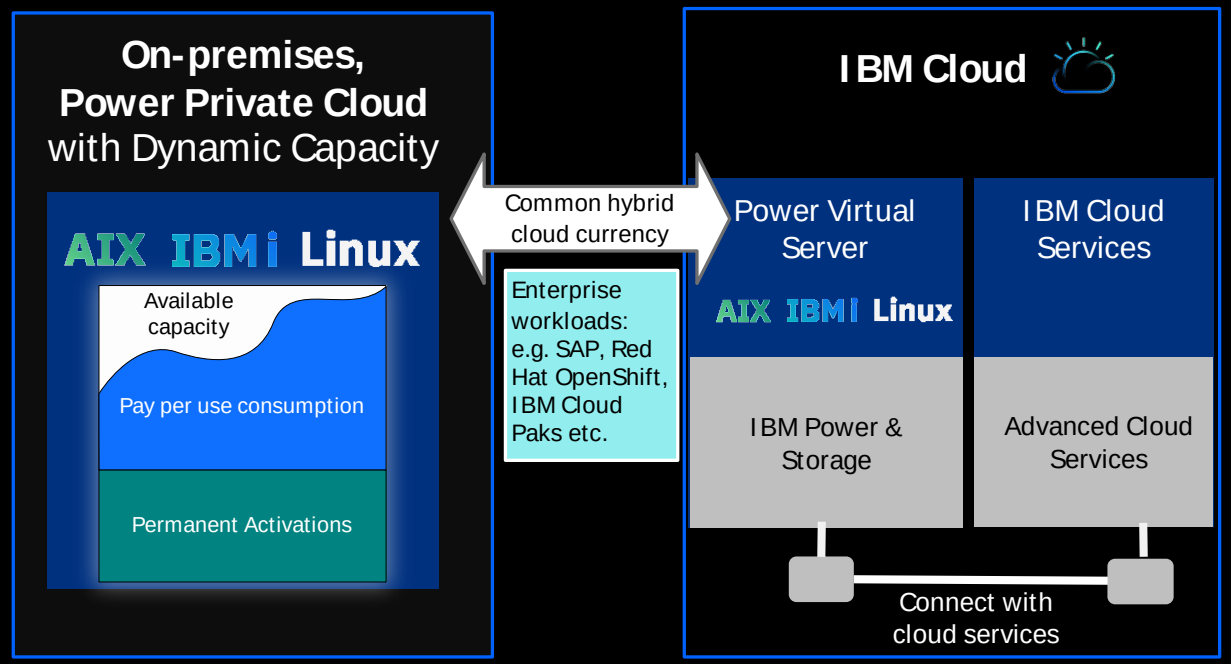
IBM Power **Hybrid ecosystem** - *deploy where needed*

From current infrastructure	to hybrid infrastructure	to consumption as a service
		

Power10 Servers Core business apps and data	**Power Private Cloud with Dynamic Capacity** Pay for only what is used	**Power in IBM Cloud** Extend to public cloud
▪ Performance and scale leadership ▪ Class-leading availability ▪ End-to-end security from the processor to virtualization and operating system	▪ Flexible consumption options with built-in cost optimization ▪ Cloud-based monitoring, metering by the minute for Power and Red Hat Enterprise Linux and OpenShift ▪ Power10 and Power9 can co-exist in the same pool	▪ Consistent architecture to on-prem infrastructure ▪ Run AIX, IBM i, and Linux ▪ VM-as-a-Service for Dev/Test, HA/DR, modernization ▪ Global footprint with access to IBM Cloud services

IBM Power for frictionless **Hybrid Cloud**

Consistent experience for elastic computing across the IT environment

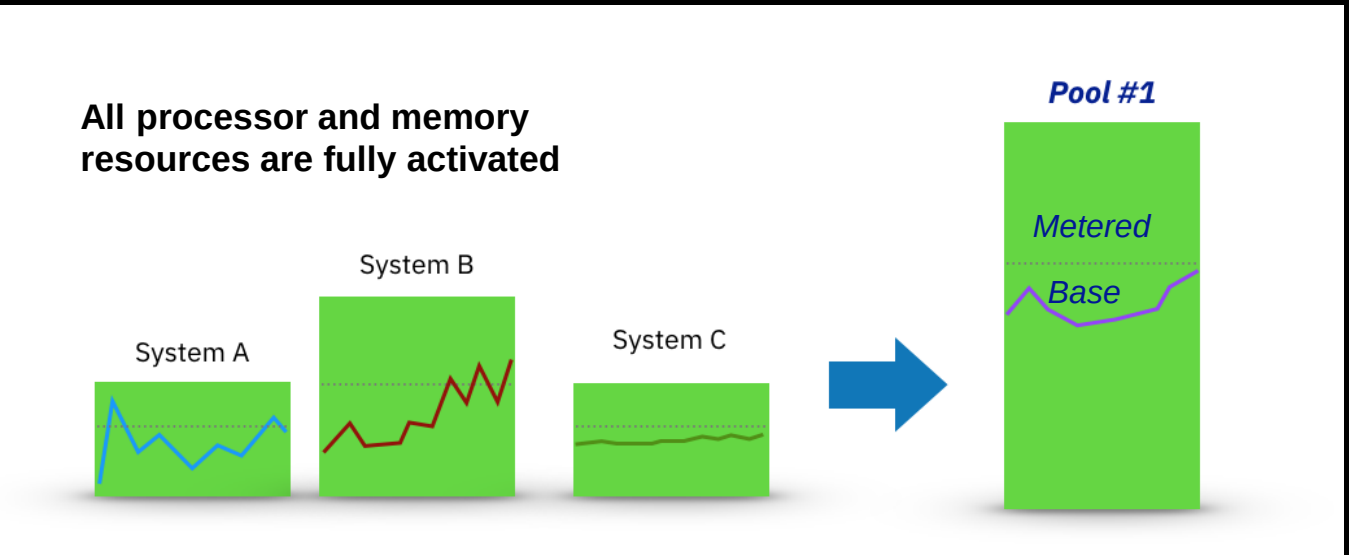


- Consistent and compatible IT architecture – no additional middleware or application refactoring required
- Extend workloads across on-premises and Power Virtual Server
- Common hybrid cloud currency for pay-per-use consumption

Power private cloud with **shared utility capacity**

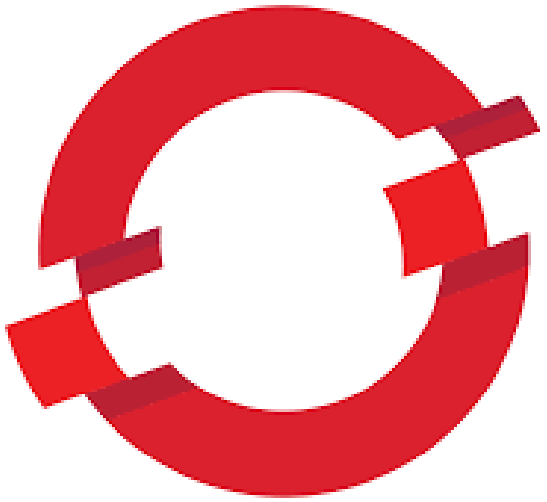
Deploy shared utility capacity across a pool of Power E1080/E980 systems, Power E950 systems or S922/S924 systems

IBM Cloud Management Console with HMC automatically meters any resource use that exceeds the pool's base capacity, and debits minutes real-time against capacity credits on account



Respond faster to business demands

- 4.1X more containerized throughput per core than x86[2] running Red Hat OpenShift
- 2.5X per core vs x86 SPECint_rate[3]
- 50% more capacity, same energy consumption[4]
- World record 8-socket two-tier SAP SD standard application benchmark[1]
- Instant scaling with pay per use consumption



OPENSHIFT

Gain performance and TCO advantages by co-locating Linux, AIX, IBM i and Red Hat OpenShift environments

InT Trust
Information Technology Trust

Platinum Business Partner IBM

Data Resilience

Data Security

InT Trust
Information Technology Trust

Platinum
Business
Partner
IBM

Data Resilience is the Most Critical Function of Primary Storage

Ransomware attacks accelerating to every **11 seconds** with an average cost of $4.4M

It takes an average of **23 days** to recover from a Ransomware attack

Accelerating recovery time requires the ability to test applications in a secure environment before resuming production

Separation of Duties

Prevent non-privileged users and hosts from compromising production data

Dual authentication to control access

Protected Copies of Data

Automated copies of immutable data

Logical air-gap to prevent copies from being accessed

Speed of Recovery

Ability to restore data in minutes or hours vs. days or weeks

Support for bare metal, virtual, container or cloud workloads

vmware IBM Microsoft Azure aws Red Hat OpenShift

InT Trust Information Technology Trust

Steps to IBM FlashSystem Cyber Vault

1

Make Immutable Copies of Data

Safeguarded Copy

CSM to automate creation and restore of data copies

2

Test Copies of Data

Isolated infrastructure to test data copies

Ensure copies are not corrupted/infected using application tools

Test infrastructure can be logically or physically isolated

Blueprint for testing and recovery process

3

Automate Process

Automation of taking copies and testing

Automation of test & restore process

IBM Safeguarded Copy for IBM FlashSystem and SVC

Speed recovery from cyber attacks

IBM Spectrum Virtualize

IBM Copy Services Manager

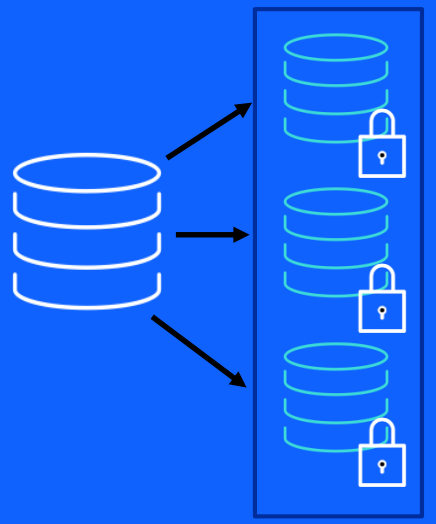
Automatic
creation of regular backup copies

Immutable
point-in-time copies of production data

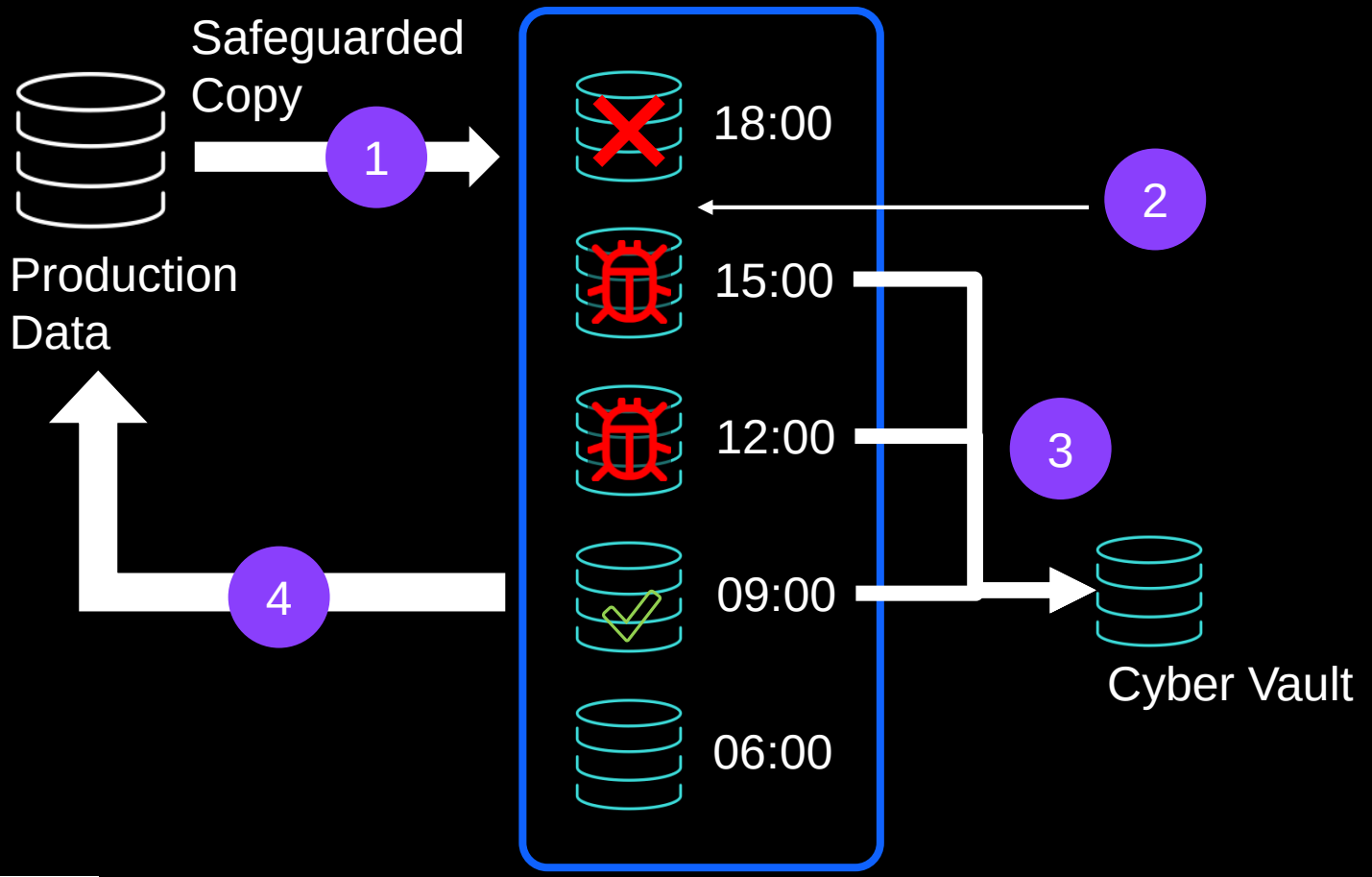
Isolated
logical air-gap offline by design

Fast
restore from copies on primary storage

Prevents modification
or deletion of copies due to user error, malicious destruction, or ransomware attack



Safeguarded Copy – Immutable data copies

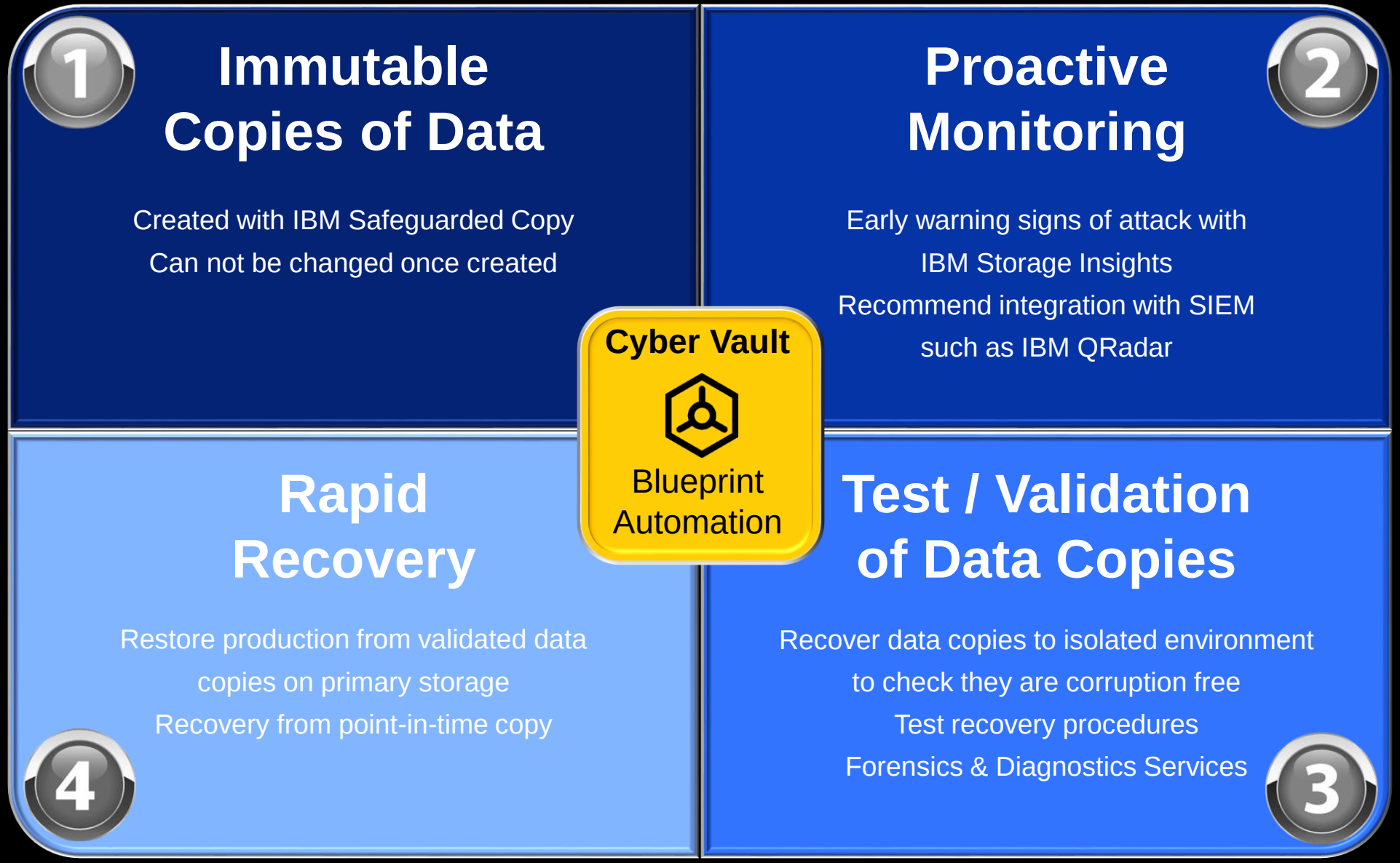


1. Safeguarded immutable copies created throughout the day
2. Attack and/or corruption detected
3. Manually mount and validate Recovery volumes to Cyber Vault
4. Manually identify and restore to production

InT Trust
Information Technology Trust

Platinum Business Partner
IBM

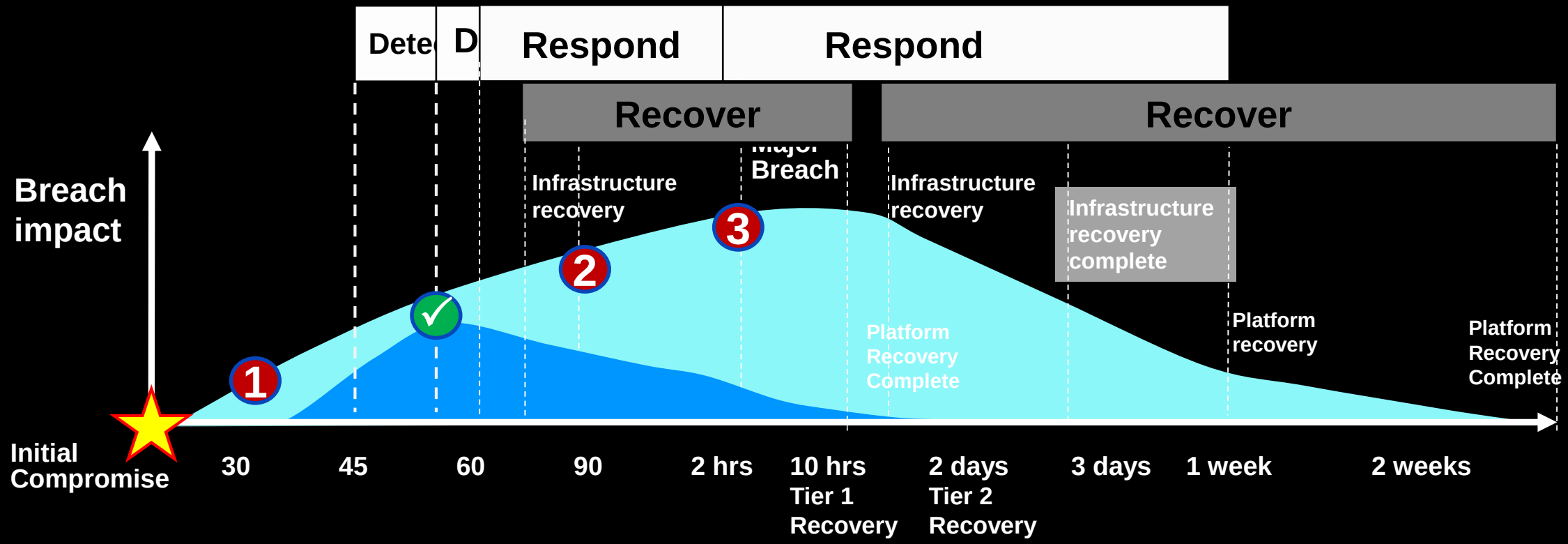
FlashSystem Cyber Vault is as simple as 1, 2, 3, 4



InT Trust
Information Technology Trust

Platinum Business Partner
IBM

Cyber attack detection and recovery



1. Corruption of data occurs - but not yet detected
2. Without the IBM Cyber Vault environment corruption is detected much later and has a greater chance to spread
3. It takes even longer to identify all impacted data once the corruption has spread within the enterprise

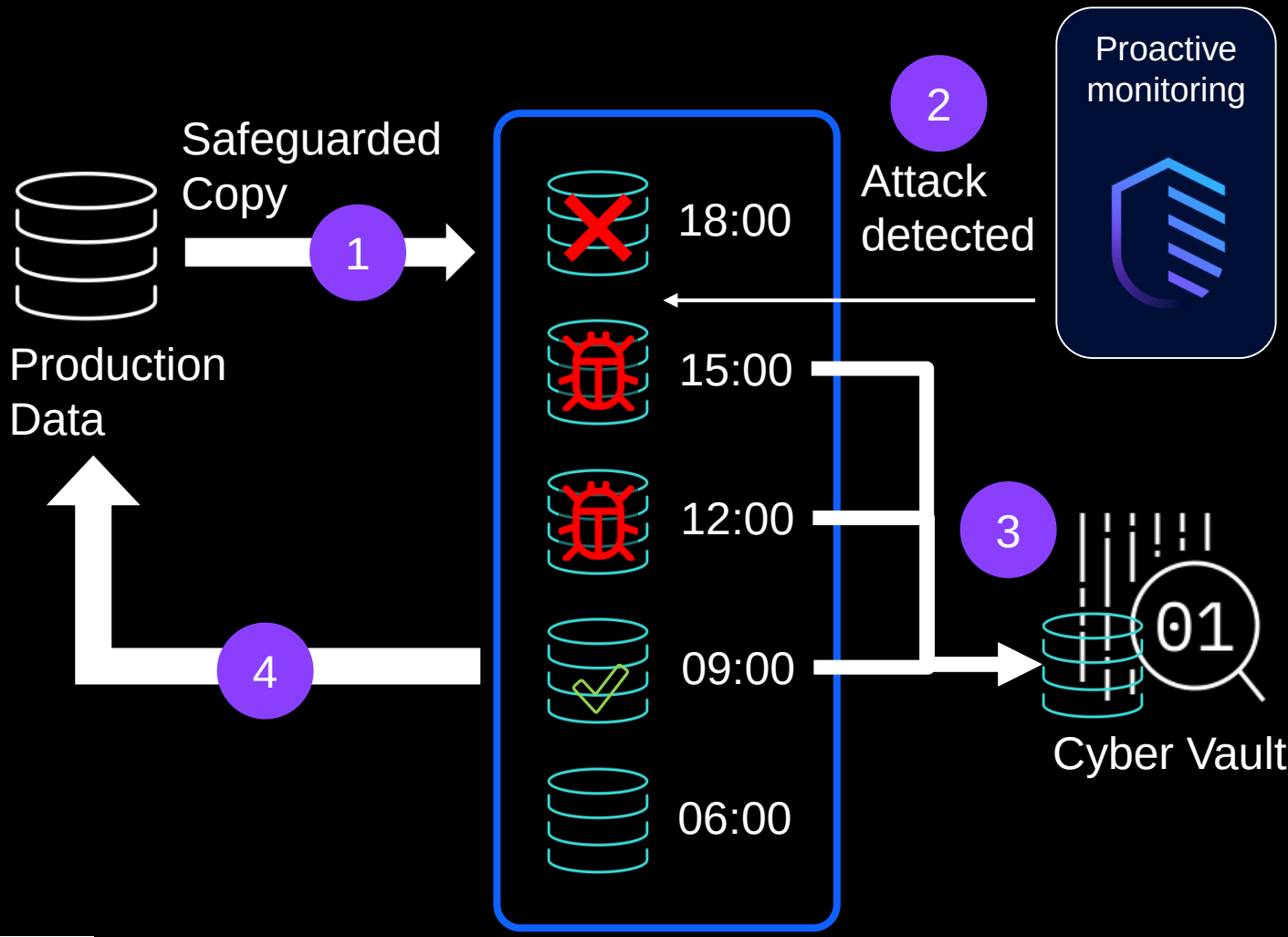
IBM Cyber Vault Effect

Due to the Cyber Vault environment and the use of Safeguarded Copy technology, data is continuously checked and corruption is found and corrected EARLIER and FASTER

InT Trust
Information Technology Trust

Platinum Business Partner IBM

IBM Cyber Vault Workflow – Reactive – After a Cyber Event
Test & Validate data before Recovery



1. Safeguarded immutable copies created throughout the day
2. Attack detected by monitoring software
3. Recovery volumes mounted to Cyber Vault and run tools to validate if data is clean or corrupted
4. Clean copy quickly identified and restored to production

LTO Tape for Air Gap Protection

Isolation - Logical and Physical Separation, tape offers the greatest level of isolation.

Immutability - Ease of Corruption or Destruction, Tape is inherently harder to corrupt due to its greater isolation.

Performance - Speed to meet RTO/RPO in different scenarios. Tape read/write performance makes it a very fast option for traditional backups (non-snapshot).

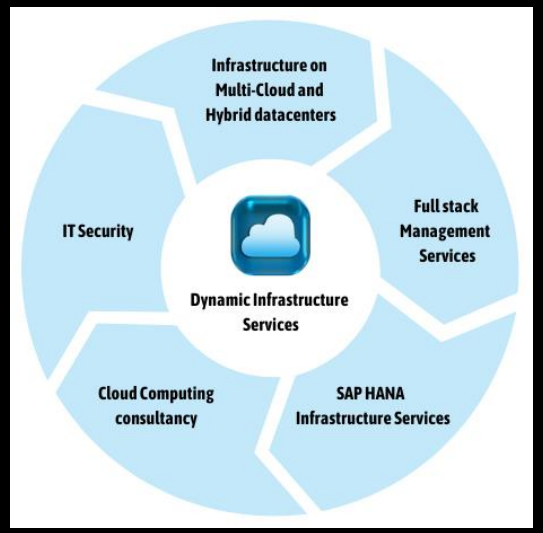
Ease of Reuse - Tape is exclusively used for traditional streaming backups

Cost – Low cost per Terabyte.

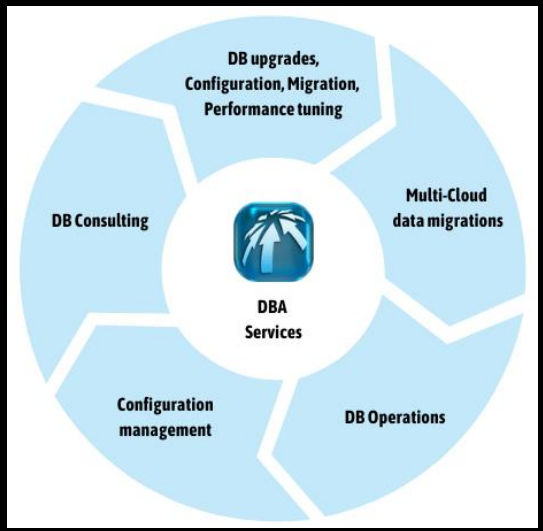
InT Trust
Information Technology Trust

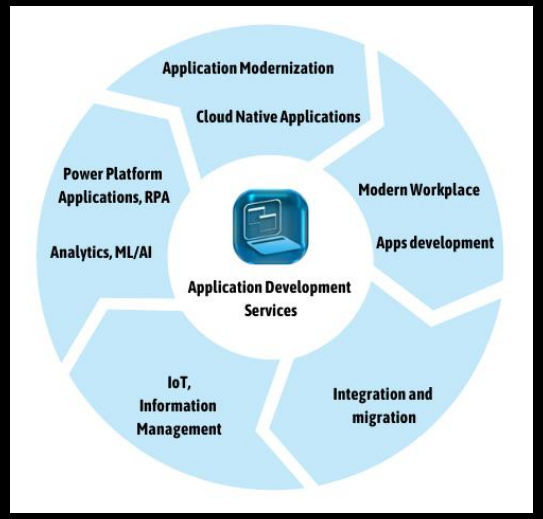
Platinum
Business
Partner
IBM

Information Technology Trust



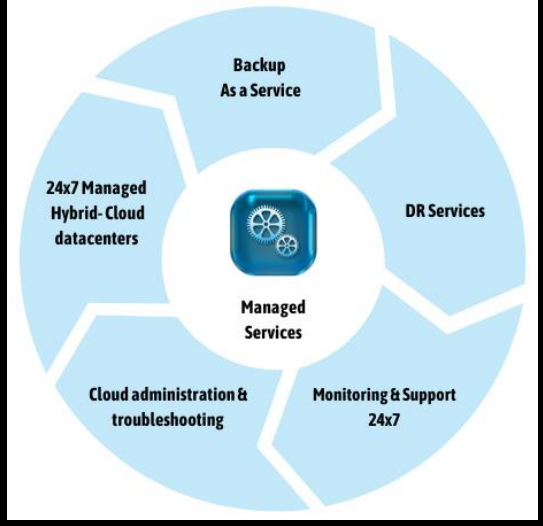
InT Trust
Information Technology Trust





Platinum Business Partner

IBM



InTTrust
Information Technology Trust

Platinum
Business
Partner
IBM

Thank you

Manos Kokolakis MSc
Customer Success Manager

mkokolakis@inttrust.gr

further reading …

- The Total Economic Impact™ Of Optimizing And Managing Your Hybrid Multicloud. A Forrester Total Economic Impact™ Study Commissioned By IBM Services April 2020. Page 2.
- Cost of a Data Breach Report 2021
- **Digital transformation refocused: New goals require new strategies**
- ICT Awards: The Digital-First world is the Era of the Future Enterprise
- COVID-19 digital transformation & technology – McKinsey
- IBM Security: Cost of a Data Breach report
- HBR: Making the leap to a Digital-First Enterprise
- Bloomberg – IBM: How smarter businesses transform in an uncertain world
- IBM FlashSystem Cyber Vault

InT Trust
Information Technology Trust

Platinum Business Partner
IBM