Flash: The IDEAL Cloud Solution

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The Hybrid Multicloud World

85% of companies operate a

Hybrid multicloud environment

91% of public cloud adopters use **internal private cloud**

Companies average

5

Private and Public clouds

80% of

companies moved applications or data from Public Cloud in 2018

IDC Survey

Migrate from public cloud

Security, Performance, Cost, Control

IDC Survey

98% of

companies will use **Hybrid Multiclouds in three years**

THE Data-Driven Hybrid Multicloud Enterprise
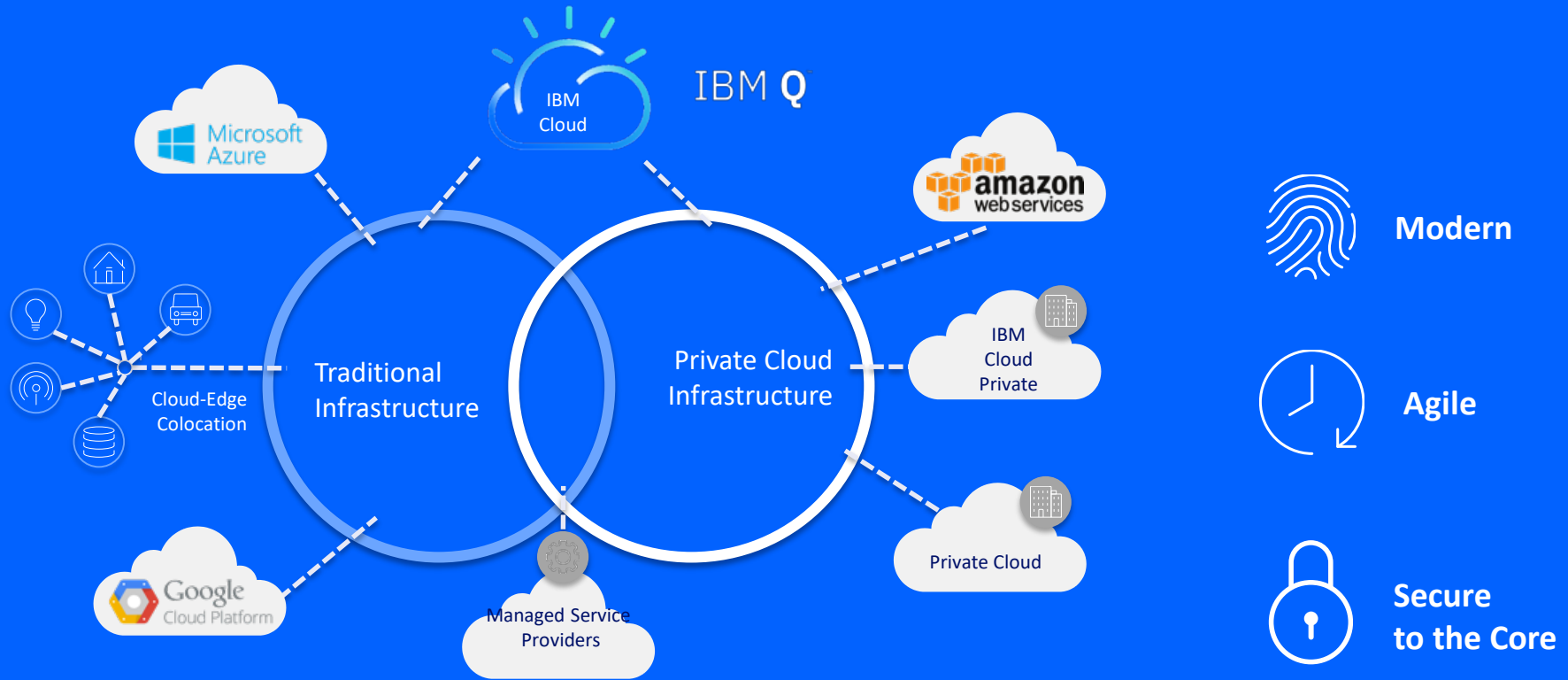
Storage challenges

Old

65% Cut infrastructure costs

59% Avoid vendor lock-in…

…Avoid data stored with different vendors' technologies in silos across the enterprise.

59% Improve latency

New

Storage connectivity in the hybrid multicloud era matters. Storage must connect to a hybrid multicloud world

Storage location in hybrid multicloud matters depending on data security, regulatory environments, performance, and availability requirements.

Speed of adoption matters. NVMe, storage class memory (SCM), software-defined storage (SDS)

Flash Storage - Your Cloud foundation

- **Flash performance**
  - Latency
  - IOPS
  - Bandwidth
- **Resiliency**
  - Wear leveling
  - Lower failure rate than HDD
  - Media guarantees on longevity

- **Advanced technology architectures and innovation**
  - NVMe integration: across fabics and in arrays
  - Continual Flash advancements: EG. 3D QLC
  - Integration with other technologies: persistent memories
- **Availability**
  - Storage systems at Seven 9's and greater
  - Storage software: replication, modern data protection, snap shot, tiering

Storage Software - Your Cloud foundation

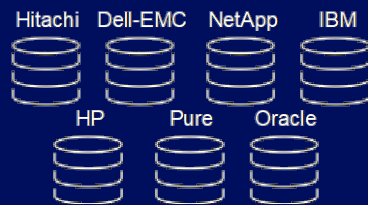| Agility	Bridge	Cloud	Data reduction	Encryption
Transparent Data movement without system downtime	From traditional to new technologies - Containers and Kubernetes	Storage solutions that can be deployed across Hybrid Multicloud	Store more data on the storage you already own	Cyber resiliency by encrypting data at rest and inflight for cloud tiering

IBM Spectrum Virtualize
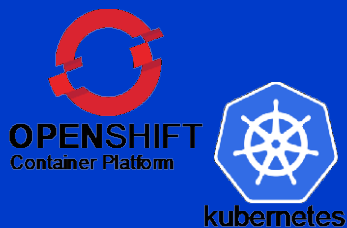
Agility	**Bridge**	**Cloud**	**Data reduction** (guaranteed)	**Encryption**
Hitachi Dell-EMC NetApp IBM HP Pure Oracle	OPENSHIFT Container Platform kubernetes	IBM Cloud amazon web services		
Transparent Data movement without system downtime	From traditional to new technologies	Storage solutions deployed across hybrid multicloud environments	Reduction up to 5:1 Highest performance 2:1 with IBM FlashCore	Encryption – at rest and inflight - regardless of vendor FIPS 140-2 with IBM FlashCore

Storage cloud use cases

Business Continuity
leveraging public cloud resources

DevOps Analytics
Temporary data copies from on-prem to cloud

Workload migration
Transparent data migration to cloud

Hybrid multicloud
Operating infrastructure both on-prem and in public cloud

Infrastructure-independent storage for hybrid multicloud

Private Cloud		Public Cloud
	APIs and Orchestration	
IBM Storage Insights	AI-infused Storage Management	IBM Storage Insights
IBM Storage Utility	Storage as a Service	Cloud storage
IBM Spectrum Virtualize	Data storage and mobility	IBM Spectrum Virtualize

CLOUD TEMPLE — Innovative by design

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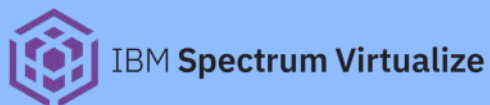
Protects clients' mission-critical applications and data in a multi-tenant private cloud

Frees 3 FTEs from software development and maintenance tasks

Saves 2 FTEs in backup operations, enable staff to focus on value-add opportunities

7,500 VMs will be protected across complex, multi-tenant private cloud

Solution Components:
IBM FlashSystem 9110
IBM Spectrum Virtualize
IBM Spectrum Protect Plus
Storwize V5000

Embracing flash storage to enhance data-driven municipal services

Up to 50% shorter application response times, helping Fosen IKT meet stringent SLAs

29% data compression, reducing storage requirements and enabling data growth

Cuts power consumption, delivering operational cost-savings

Solution Components:
IBM FlashSystem 9110
IBM Spectrum Virtualize

IBM Storage Leadership and Flash Memory Summit Awards

Artificial Intelligence

2016 FMS
Cybersecurity demonstration, that included **IBM's FlashSystem 900** and **SparkCognition** cybersecurity software _utilizing IBM Watson AI_, named the recipient for "**Most Innovative Flash Memory Business Application.**"

Unstructured Data

2017 FMS
NVMe over Fabrics demonstration that included **IBM's Spectrum Scale.** This **solution** can deliver **15 million IOPS at a latency of around seven microseconds.**
named the recipient for
Most Innovative Flash Memory Business Application.

Structured Data

2018 FMS
"_Customers demand new levels of performance, data reduction and ROI from their storage investments,_" "_**We are proud to recognize the IBM FlashSystem 9100, which delivers unmatched performance**_ _with 100µs latency, 2.5M IOPS and 34GB/sec bandwidth and up to 5:1 data reduction through block-level deduplication, hardware-based compression technology, SCSI UNMAP support, pattern matching, and thin provisioning_ _**for an impressive cost effective storage solution.**_"
Jay Kramer, Chairman of the Awards Program and President of Network Storage Advisors Inc.