



**June 13-15, 2023**

**DoubleTree by Hilton San Jose**

**SmartNICsSummit.com**

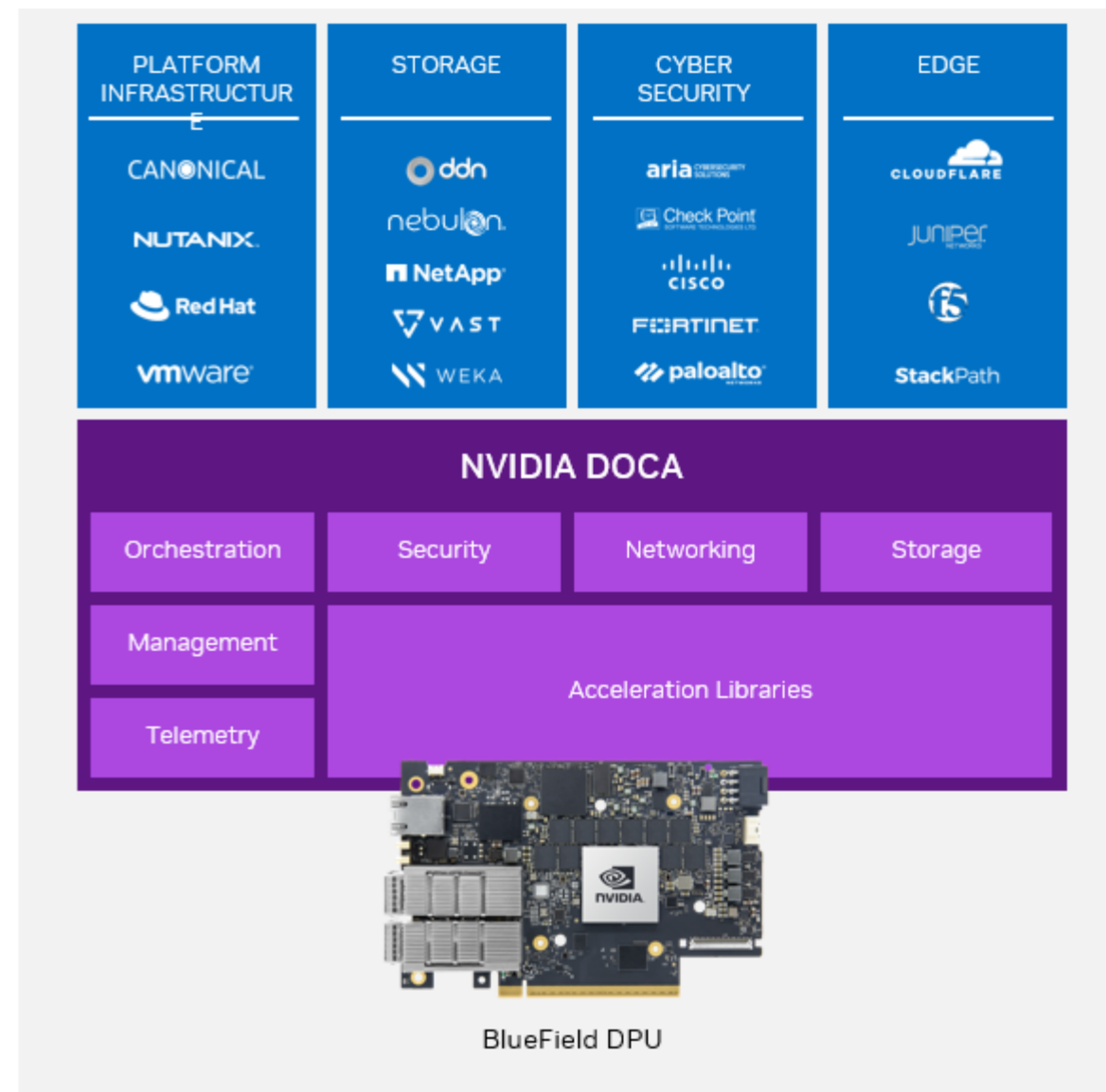
## **Protecting the Crown Jewels of Your Data: SmartNICs and AI for High-Speed Storage Protection**

Shai Tsur – Global Networking Lead for Startups, NVIDIA

Michael Brew – Technical Specialist, Bloombase

# NVIDIA DOCA 2.0

- Software framework for BlueField DPUs
  - Offload, accelerate, and isolate infrastructure processing
- Support for hyperscale, enterprise, supercomputing and hyperconverged infrastructure
- Software compatibility for generations of BlueField DPUs
- Rich partner ecosystem



500+  
DOCA  
APIs

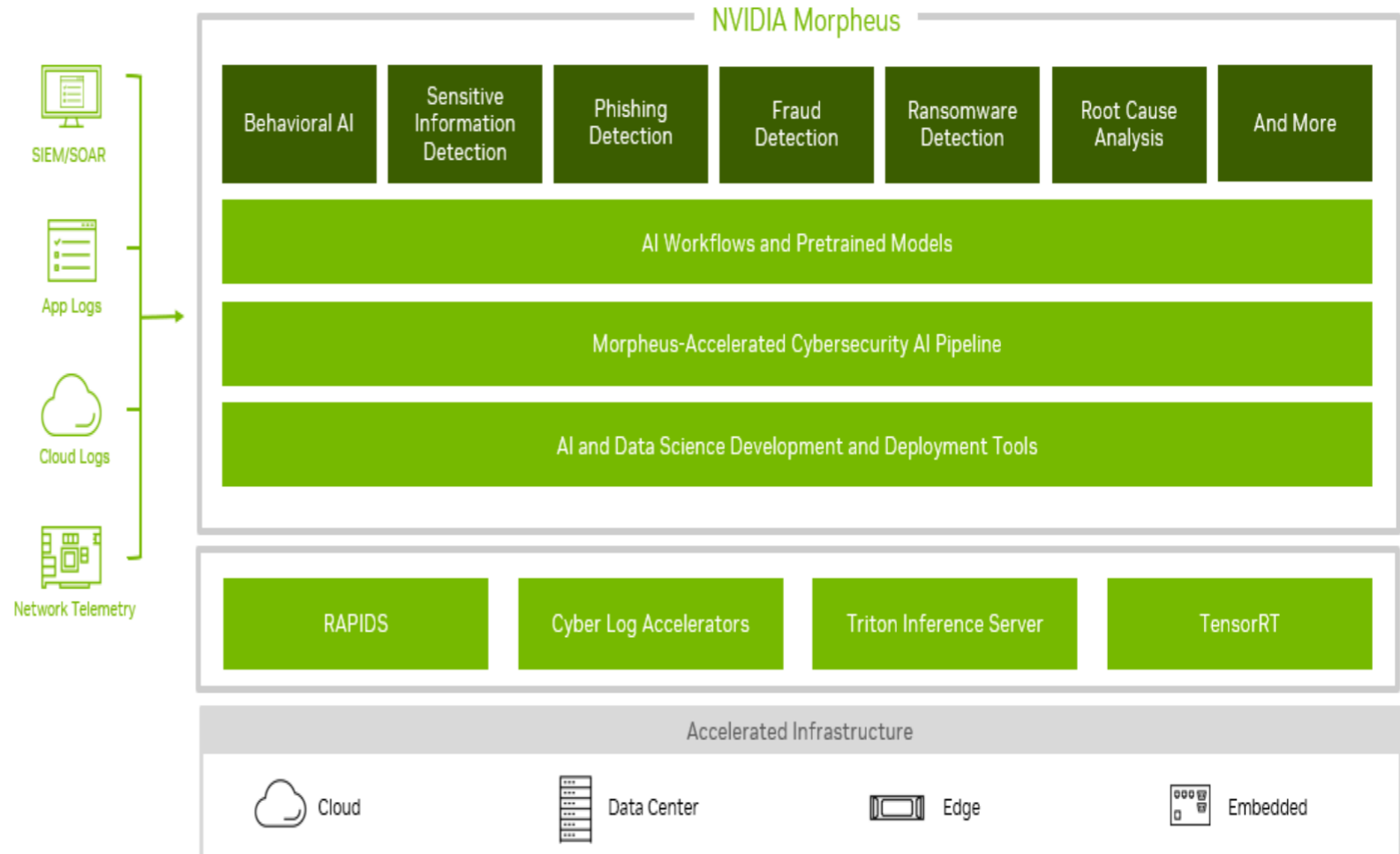
4700+  
DOCA  
Developers



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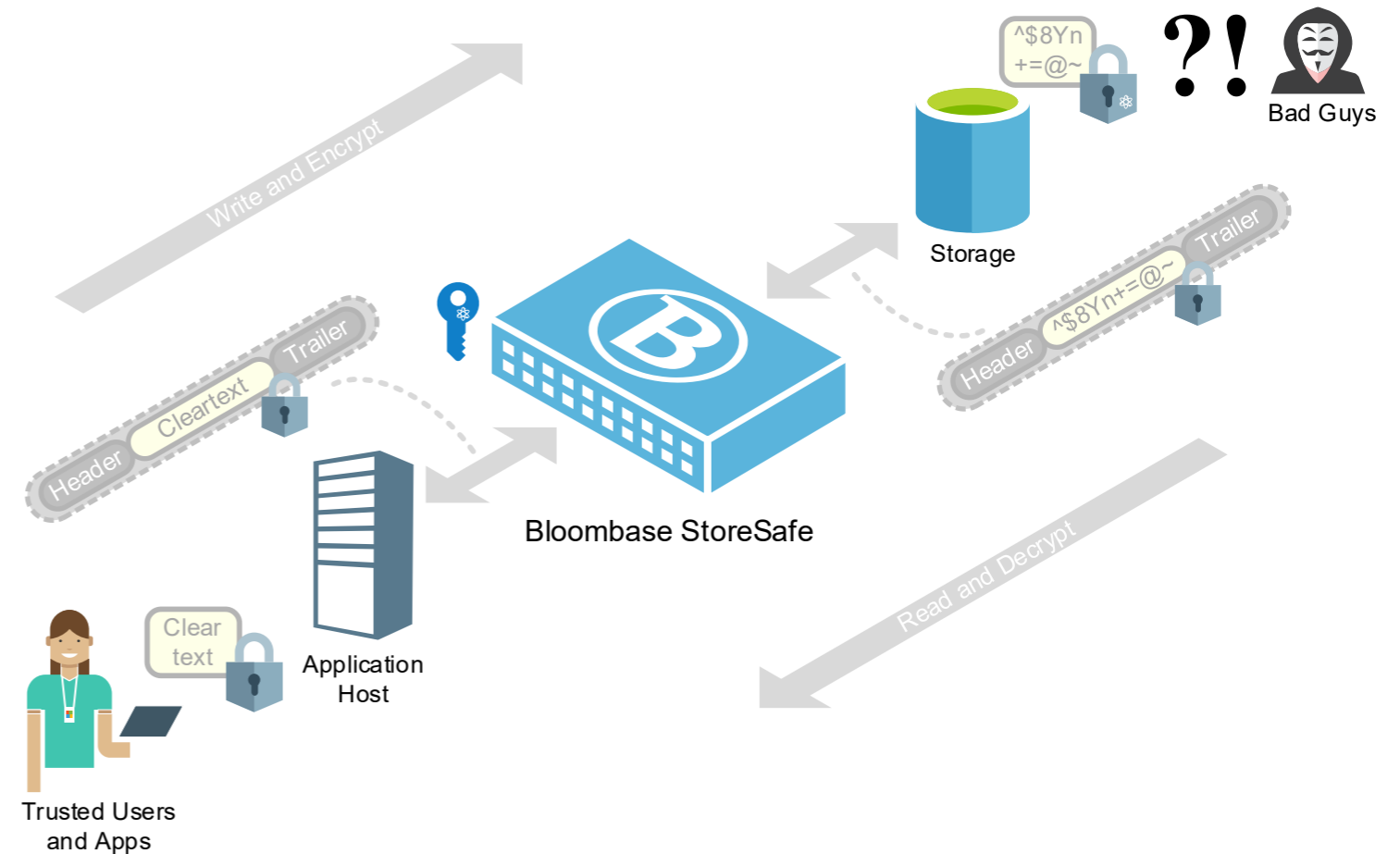
# NVIDIA Morpheus AI Cybersecurity Platform

- Cybersecurity is a data problem
- GPU Accelerated SDK
  - Build on core AI technology
  - Enables developers to tackle complex workflows
- Mini modules create pipelines for specific workflows and use cases



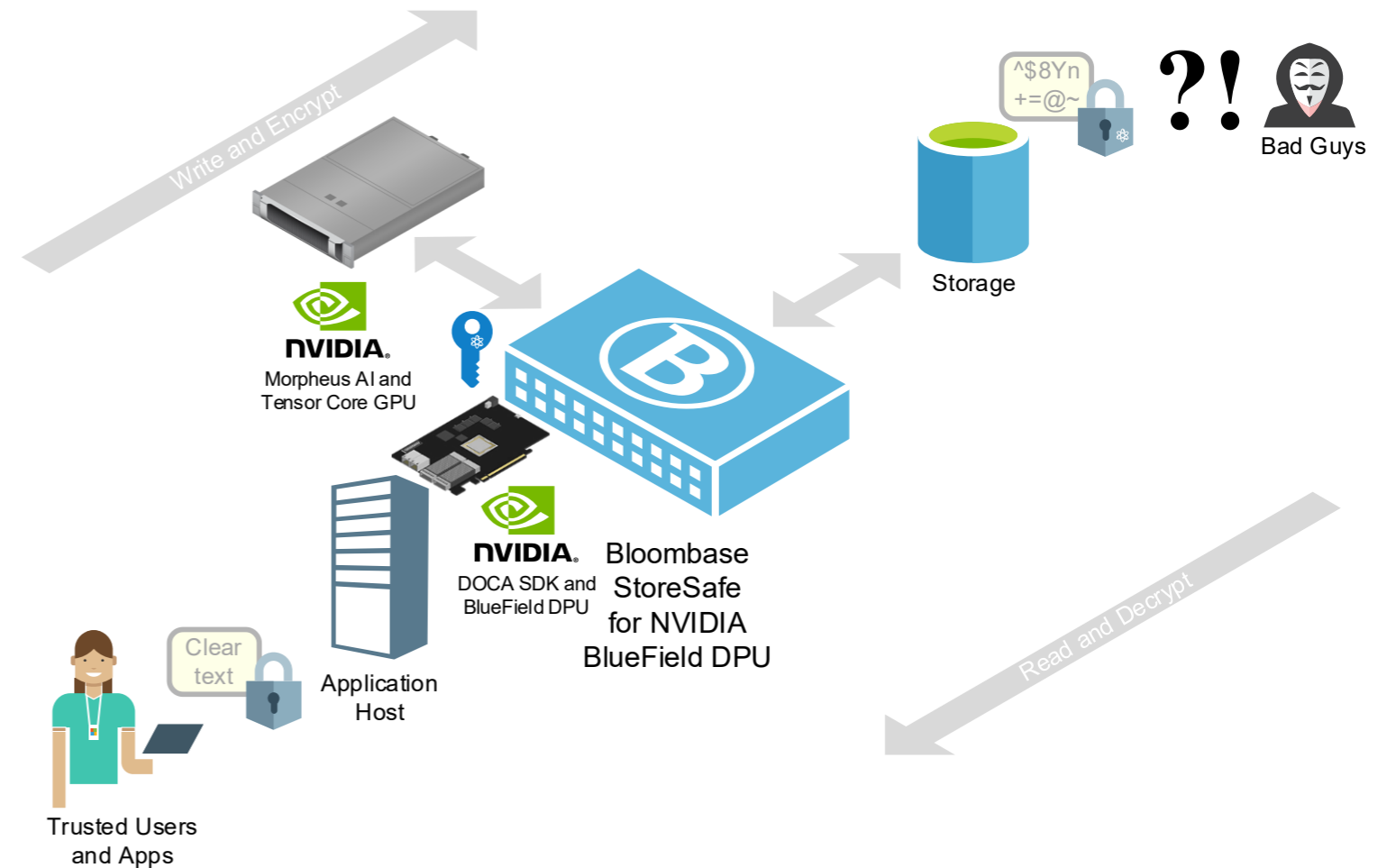
# Bloombase StoreSafe Intelligent Storage Firewall

- Application transparent, Agentless, On-the-fly data-at-rest encryption
- Bump-in-the-wire encryption over multiple network storage protocols: NVMe-oF (NVMe/RoCE, NVMe/TCP, NVMe/FC), FCP, iSCSI, NFS, SMB, CIFS, S3, REST, etc
- NIST FIPS 140-2 validated cryptographic module
- IEEE 1619 compliant: XTS-AES
- Post-quantum cryptography (PQC): CRYSTALS-Dilithium, CRYSTALS-Kyber, FALCON, SPHINCS+
- Exotic ciphers: Camellia (Japan), SEED and ARIA (Korea), Kalyna (Ukraine), GOST (CIS), SM4 (China), ECDSA, etc
- External centralized key management: PKCS#11 HSMs, OASIS KMIP, AWS CloudHSM, Azure Key Vault, GCP KMS, etc
- Zero operational impact to software applications and end clients
- No costly hardware retrofitting required at storage backend



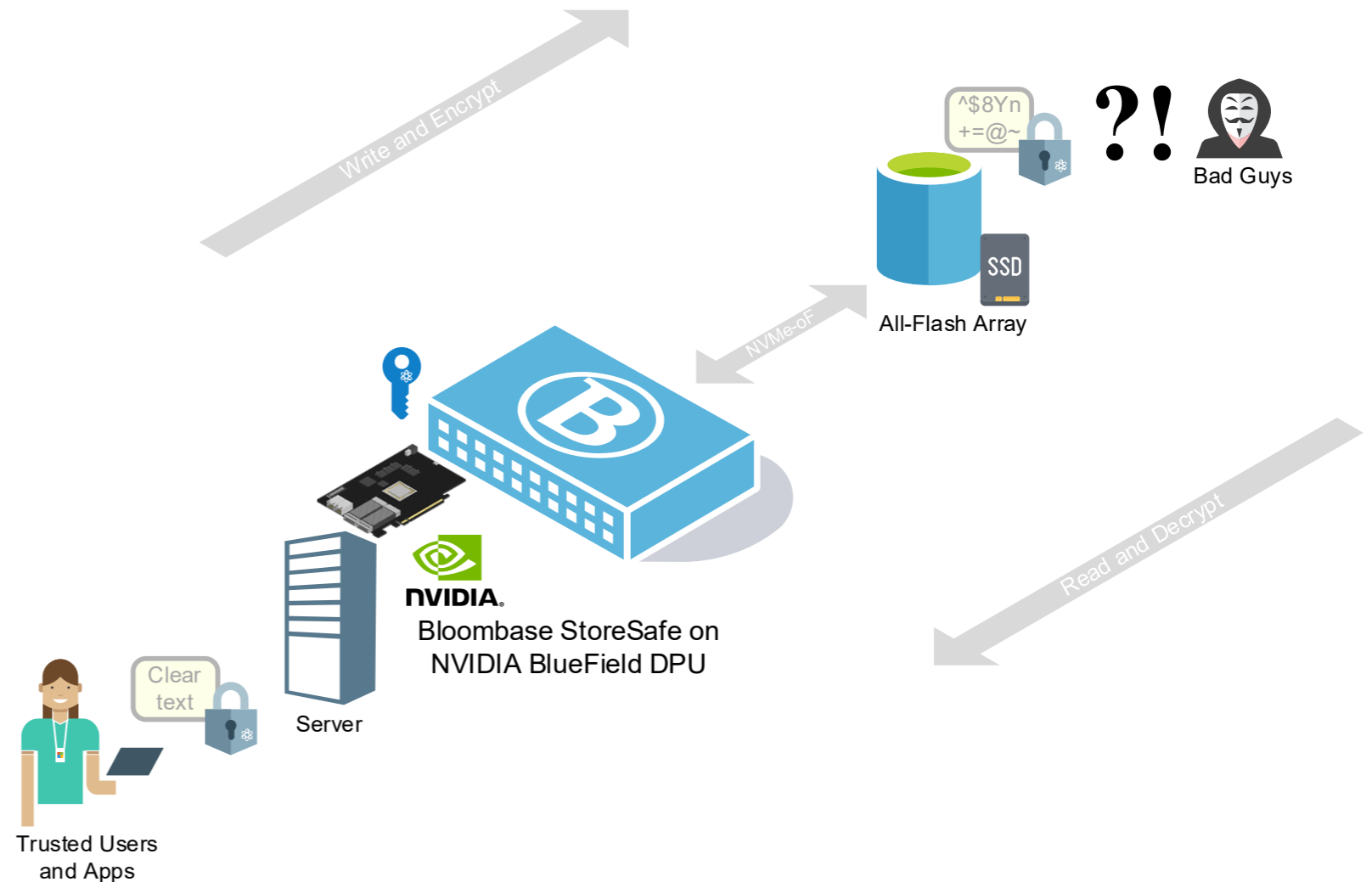
# Bloombase StoreSafe for NVIDIA BlueField DPU

- Bloombase StoreSafe with DOCA SDK and BlueField DPU for high bandwidth, low latency encryption for all-flash arrays (AFAs)
- Bloombase StoreSafe with Morpheus AI and GPU for sensitive data detection and automated protection

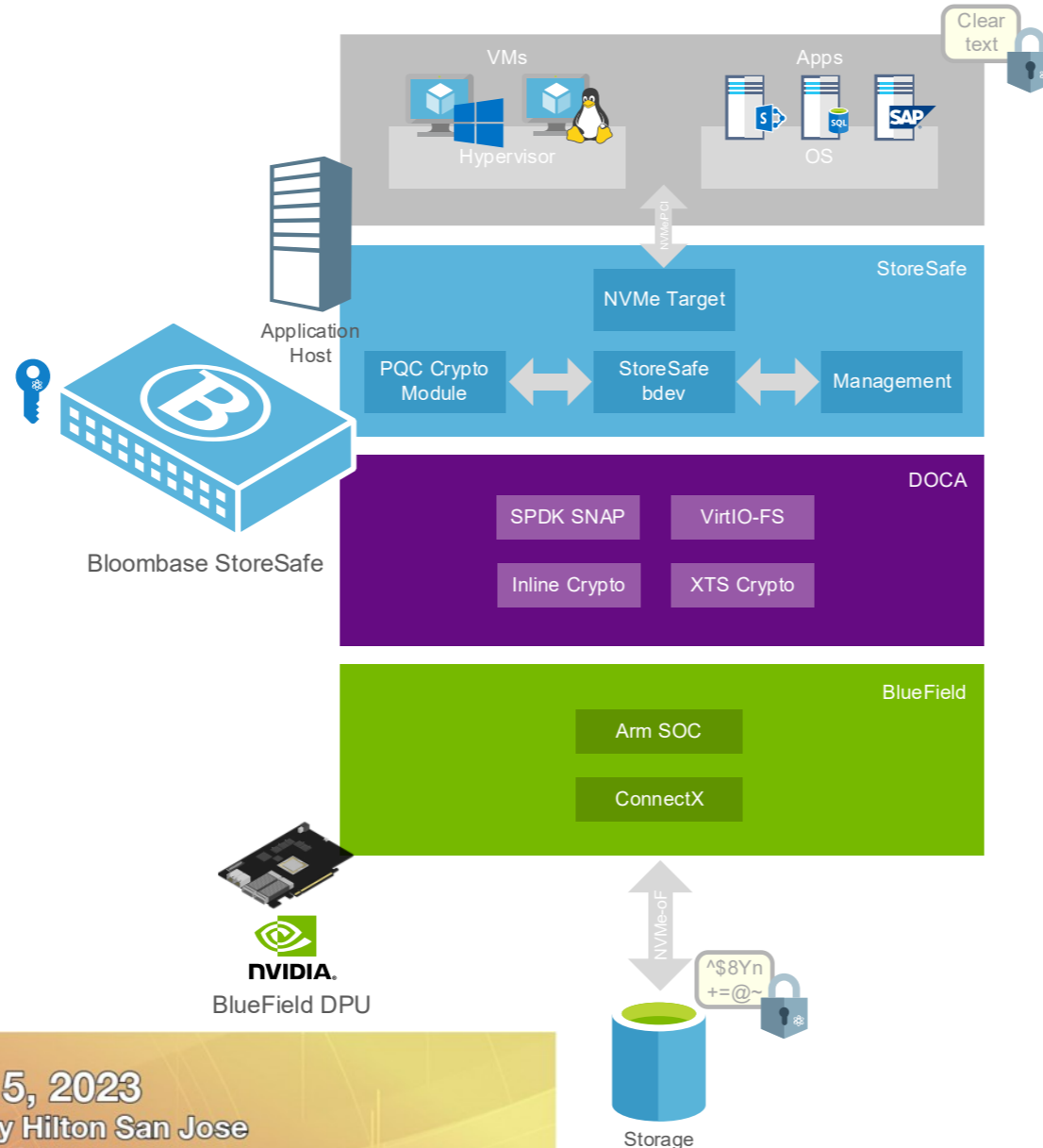


# Bloombase StoreSafe with NVIDIA BlueField DPU

- Low latency encryption for high-speed all-flash arrays (AFA) and storage services
- Ciphertext storage backend over NVMe-oF is presented as virtual-plaintext local storage resource over NVMe/PCIe for server's access
- AES hardware cryptographic offloading to BlueField DPU

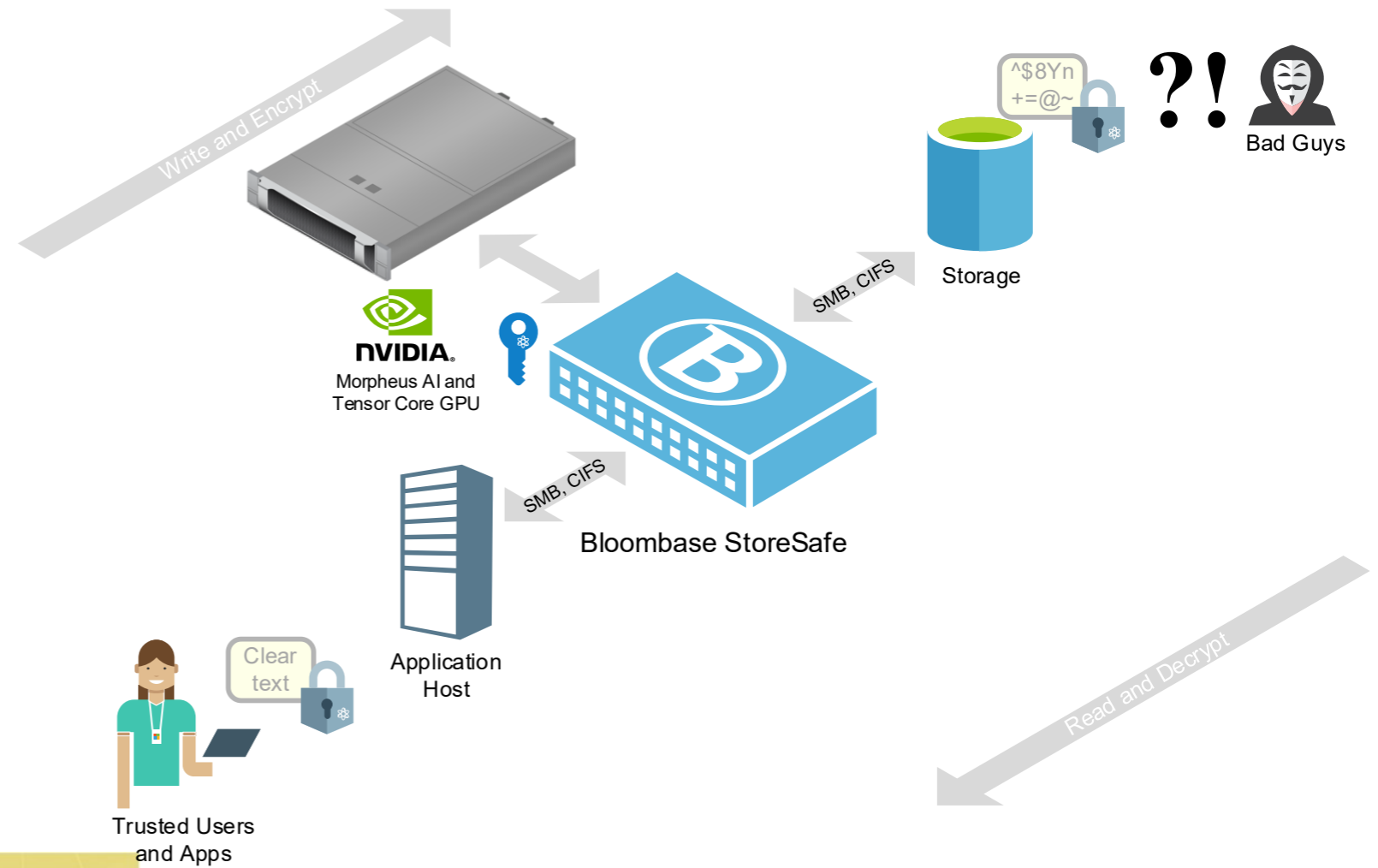


# Bloombase StoreSafe with NVIDIA BlueField DPU



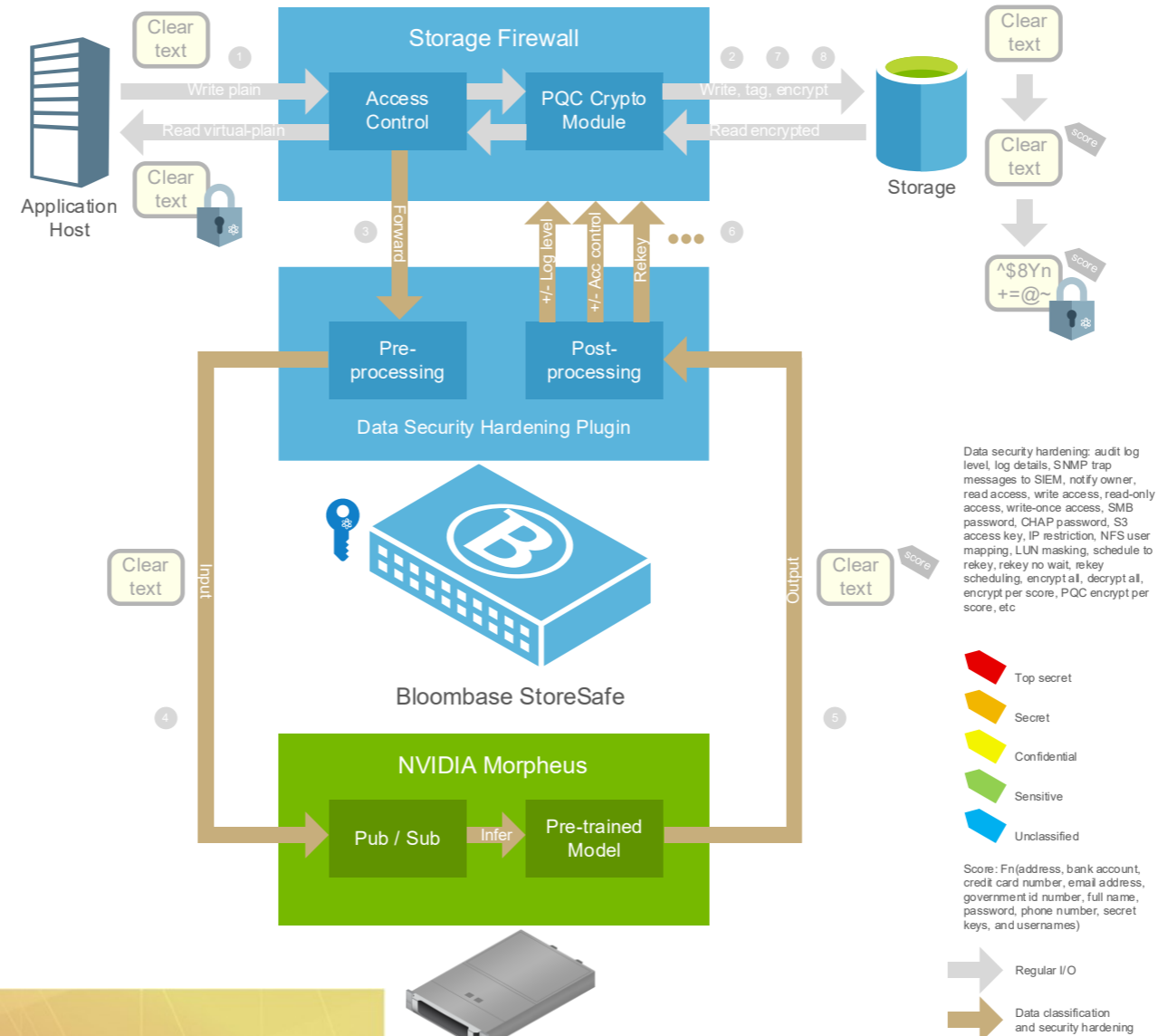
# Sensitive Data Detection with NVIDIA Morpheus AI and GPU

- Sensitive information classification using Morpheus AI pre-trained model powered by Tensor Core GPU
- Lifecycle data protection: automatic data rekey



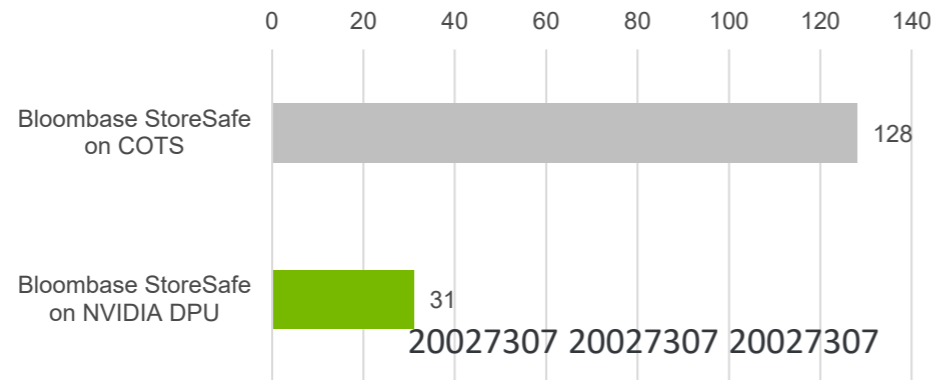


# Sensitive Data Detection with NVIDIA Morpheus AI and GPU

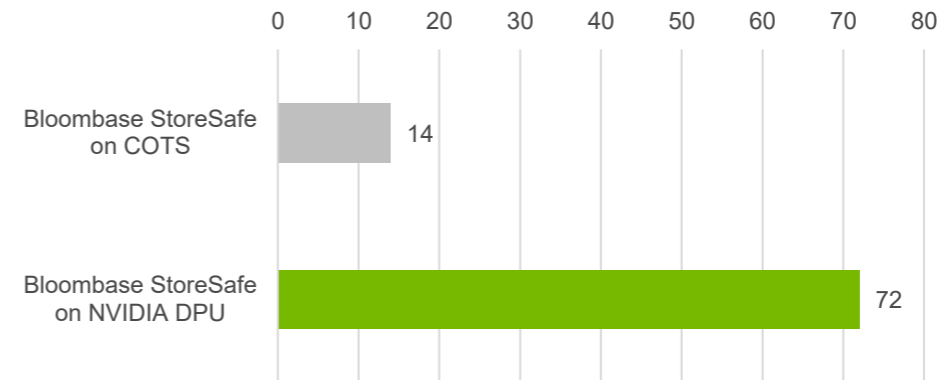


# Performance Benefits

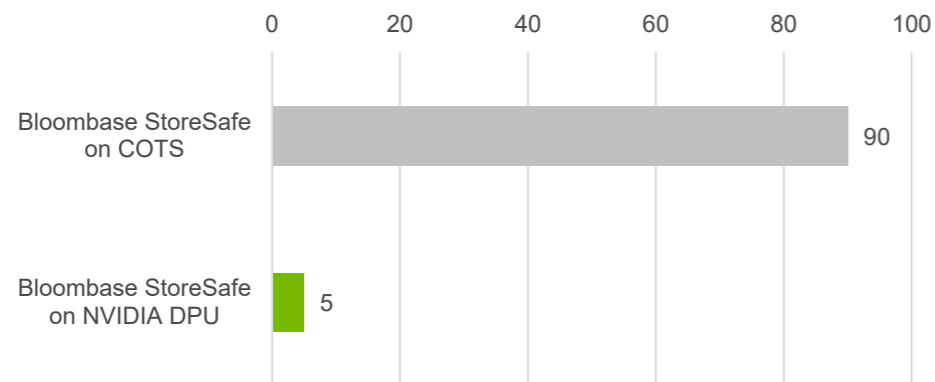
I/O Latency with PQC Encryption (us)



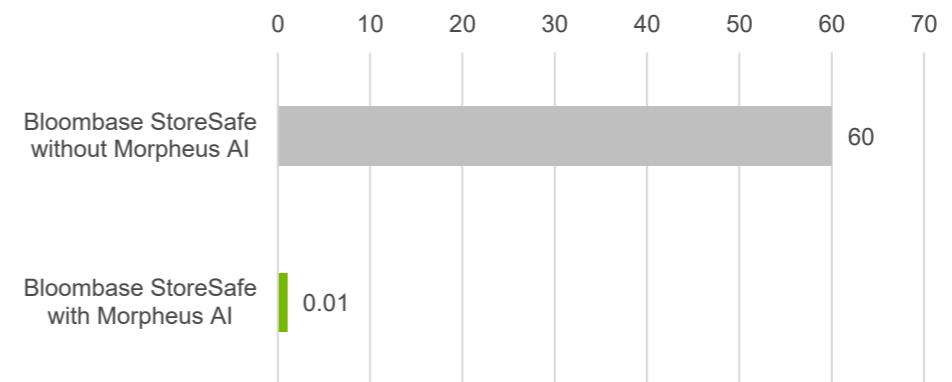
I/O Throughput with PQC Encryption (Gbps)



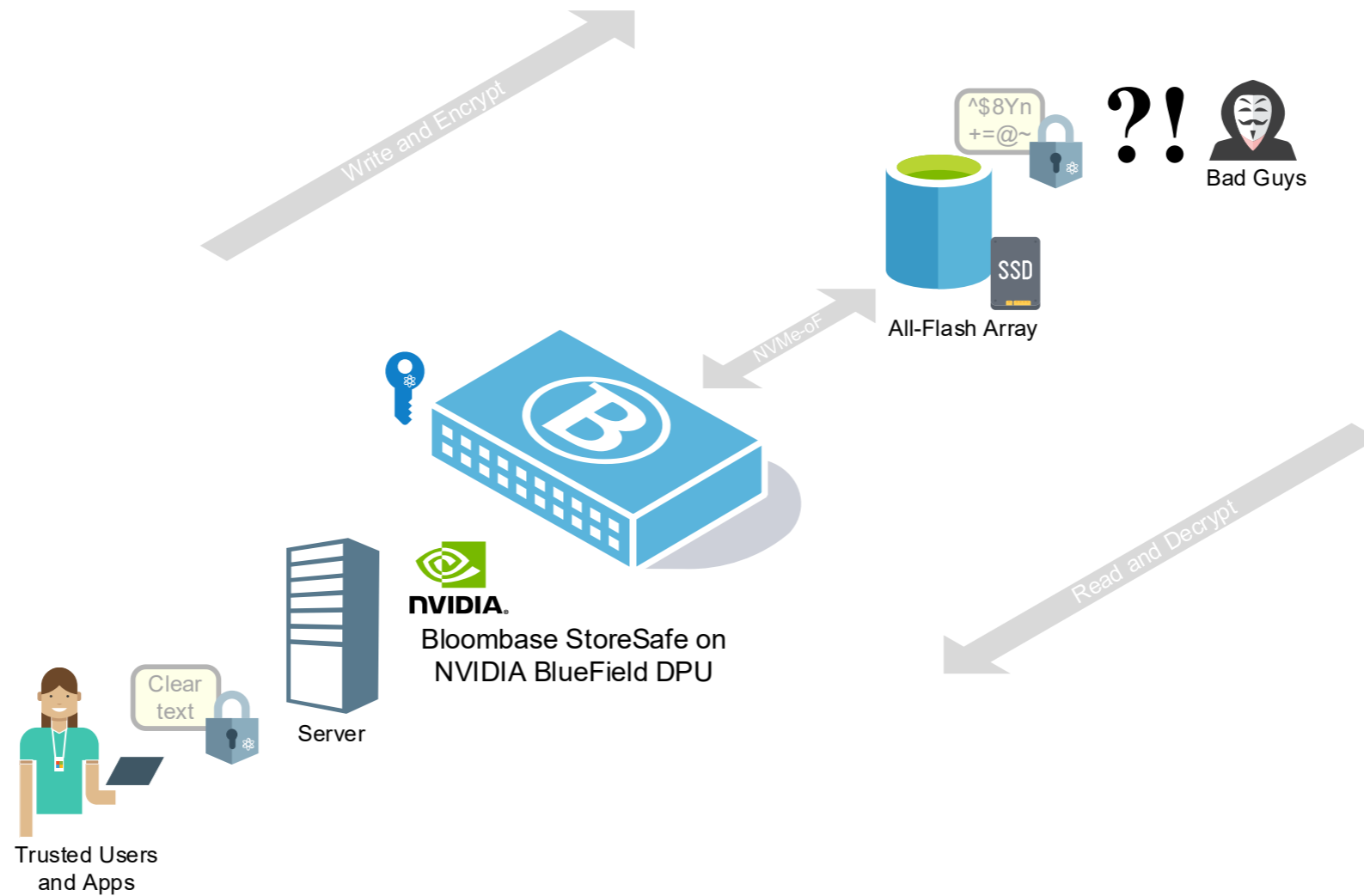
Host CPU Utilization (%)



Mean Time to Detect Sensitive Data (s)



# Demo



# About Bloombase

- Cybersecurity company with specialization in intelligent storage firewall technologies
- HQ in Redwood City, CA with offices in Vancouver, Canada and Frankfurt, Germany
- More than 2,000 installed-base in over 20 countries
- Customers from Global 2000-scale organizations and public sector
- Member of NVIDIA Inception Program since 2022
- For more, check out our demos at <https://bloombase.tv>



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## Solution Overview



### Post-Quantum Security with NVIDIA DPUs and Morpheus

Mitigate data breaches and exfiltration threats in your organization.



"Bloombase and NVIDIA's collaboration unlocks the capability of securing stored data with quantum-safe encryption that boasts unparalleled performance, and accelerating the identification of crown-jewel information that necessitates protection in intricate IT landscapes."

Sean Xiang, CEO, Bloombase

#### Overcoming the Challenges of Storage Security

Unauthorized data exposure is a critical issue for all enterprises, especially with disaggregated infrastructure and off-premises clouds. Agent-based and proprietary encryption tool kits create maintenance challenges, while storage-based encryption often results in vendor lock-in.

With the advent of quantum computing, previously protected information is vulnerable to brute-force attacks. Furthermore, the rapid proliferation of data is making the conventional approach of manual classification impossible.

#### Accelerating Data Encryption and Classification

To combat these data vulnerability challenges, Bloombase StoreSafe Intelligent Storage Firewall leverages NVIDIA BlueField data processing units (DPUs), NVIDIA data center GPUs, and the NVIDIA Morpheus AI framework to help automate and accelerate the full lifecycle protection of the crown-jewel data.

Bloombase StoreSafe is an agentless, turnkey encryption solution packed with post-quantum cryptography (PQC) capability for data-at-rest use cases. It secures on-premises storage systems, virtualized hypervisor data stores, and even off-premises cloud storage services. Software applications gain the benefit of automatic encryption of their data as they write through the Bloombase StoreSafe storage resources. Likewise, by retrieving data from the storage backend via Bloombase StoreSafe, data is automatically decrypted and presented to the trusted clients as virtual plaintext.

#### BLOOMBASE

Bloombase is the intelligent storage firewall company providing application-transparent, high-bandwidth, low-latency data-at-rest encryption security using post-quantum cryptography (PQC) technologies for edge computing, physical and virtual datacenters, through hyper-converged infrastructure (HCI) and composable disaggregated infrastructure (CDI), and to the cloud.

#### Industry

- > Telecommunications
- > Financial Services
- > Public Sector
- > Healthcare IT

#### Challenge

- > Traditional cryptographic methods are becoming obsolete and make encrypted data susceptible to attacks. Encryption is essential for next-generation datacenters but retrofitting with new hardware or implementing agent-based tools have limitations and require radical change in infrastructure.

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# Questions? Comments?



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Thank you!



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