



## 2.2 Our Four Ceph Storage Clusters

Micron21 - 2025-03-18 - Section 2: Storage

### Key Features Common Across All Clusters

#### 3N Replication Strategy

- **Triple Data Copies:** Every piece of data is stored on three independent storage nodes.
- **Immediate Consistency:** Data is confirmed only after it's written to all three nodes, ensuring consistency.
- **Fault Tolerance:** Capable of withstanding multiple node failures without data loss.
- **Automatic Recovery:** Ceph's self-healing mechanism redistributes data in the event of a node failure.

#### Dedicated Ceph Nodes

- **Resource Isolation:** Storage operations are isolated from compute tasks, eliminating resource contention.
- **Optimized Hardware:** Each node is configured to maximize the performance of its specific storage media.
- **Scalability:** Nodes can be added to clusters without service disruption, allowing your storage to grow with your needs.

#### Advanced Networking

- **High-Speed Connectivity:** Utilizing dedicated 100 Gbps Cisco network for all clusters.
- **Redundant Paths:** Ensuring no single point of failure in the network.
- **Low Latency:** Critical for performance-sensitive applications.

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### Our Four Ceph Storage Clusters

#### Cluster 1: High-Performance NVMe Cluster - mSAN Performance NVMe

- **Location:** Micron21 Kilsyth Primary Data Centre

- **Storage Media:** Enterprise NVMe SSDs
- **Purpose:** Designed for workloads requiring the fastest possible performance.

### Technical Details

- **Dedicated Ceph Nodes:** Equipped with enterprise-grade NVMe SSDs, dual Intel Xeon Gold CPUs, and abundant RAM.
- **100 Gbps Networking:** Nodes interconnected via a dedicated Cisco VXLAN Leaf and Spine network for ultra-low latency.
- **3N Replication:** Data is replicated across three independent nodes within the cluster.

### Use Cases

- High-Frequency Trading Platforms
- Real-Time Analytics and Big Data Processing
- Virtual Desktop Infrastructure (VDI)
- AI and Machine Learning Workloads

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## Cluster 2: Cost-Effective Enterprise SAS 10k Cluster - mSAN Standard Hybrid

- **Location:** Micron21 Kilsyth Primary Data Centre
- **Storage Media:** Enterprise SAS 10,000 RPM HDDs
- **Purpose:** Enterprise storage where speed is important but not critical.

### Technical Details

- **Dedicated Ceph Nodes:** Configured with enterprise-grade 10k SAS HDDs, robust CPUs, and ample memory.
- **Optimized Networking:** Connected via high-speed networking to balance performance and cost.
- **3N Replication:** Ensures data durability and availability.

### Use Cases

- Web Hosting and Content Management Systems
- Enterprise Applications (CRM, ERP)
- Email and Collaboration Platforms

- Development and Testing Environments

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### Cluster 3: Bulk Storage SAS 7.5k Cluster - mSAN Bulk SAS

- **Location:** Micron21 Kilsyth Primary Data Centre
- **Storage Media:** Enterprise SAS 7,500 RPM HDDs
- **Purpose:** Bulk storage prioritizing capacity over speed.

#### Technical Details

- **Dedicated Ceph Nodes:** Equipped with high-capacity 7.5k SAS HDDs.
- **Efficient Networking:** Designed to provide reliable data transfer rates.
- **3N Replication:** Maintains data redundancy and protection.

#### Use Cases

- Data Archiving and Backup
- Media Storage (Video, Audio, Images)
- Big Data Repositories
- Compliance and Regulatory Data Retention

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### Cluster 4: Geographically Redundant NVMe Cluster - mSAN Geo Diverse NVMe

- **Location:** Spanning Three Data Centres (Kilsyth, Melbourne CBD, Port Melbourne)
- **Storage Media:** Enterprise NVMe SSDs
- **Purpose:** Mission-critical applications requiring high performance and geographic redundancy.

#### Technical Details

- **Distributed Ceph Nodes:** NVMe-equipped nodes across three data centres.
- **Synchronous Replication:** Data is written simultaneously to all three locations.
- **High-Speed Interconnects:** Low-latency fiber connections between sites.
- **3N Replication Across Data Centres:** Ultimate protection against site-level failures.

#### Use Cases

- Financial Services
  - Healthcare Systems
  - E-Commerce Platforms
  - Critical Infrastructure Monitoring
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### Why Choose Micron21's Ceph Storage Solutions?

- **Tailored Storage Options:** Choose the storage cluster that best fits your performance and budget needs.
  - **Enterprise-Grade Reliability:** With 3N replication and dedicated infrastructure, we provide secure and resilient storage solutions.
  - **Optimized Performance:** Our clusters are engineered to maximize storage efficiency and scalability.
  - **Flexible and Scalable:** Adjust storage capacity and performance levels as your business evolves.
  - **Expert Support:** Our team of storage engineers ensures that your infrastructure operates at peak performance.
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### Get Started with Micron21

Experience high-performance, reliable, and scalable storage with Micron21's Ceph storage solutions. Contact us today to find the best storage cluster for your needs.

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### Contact Information

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### Learn More About Our Storage Clusters

For more details about Micron21's Ceph storage clusters and how they can enhance your cloud environment, visit our dedicated landing page:

[Learn More About Our Storage Clusters](#) (Please replace the # with the actual link to the landing page)