1.1 Physical Networking Hardware Powering mCloud

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Ultra-Fast Networking: Dedicated 100 Gbps Cisco VXLAN Leaf and Spine Redundant Fabric

At Micron21, we recognize that the network infrastructure is as critical as the storage hardware itself when it comes to delivering exceptional performance and reliability. To ensure our Ceph storage platform operates at its peak, we have invested in building a dedicated Cisco VXLAN Leaf and Spine network architecture utilizing Cisco Nexus 9000 Series (9k) hardware. This network is exclusively dedicated to Ceph storage traffic and is completely separate from our transit and management networks.

Isolated Network Architecture for Maximum Performance and Reliability

Our infrastructure is designed with complete network isolation in mind, comprising three entirely separate networks:

Ceph Storage Network: Dedicated solely to Ceph storage traffic, this network ensures that storage operations are not impacted by any other activities. By isolating storage traffic, we eliminate any potential bottlenecks or interference from other network operations.

Transit Network: Handles all general data traffic between compute nodes and external networks. This network is also based on a Cisco VXLAN Leaf and Spine architecture but operates independently of the storage network to prevent any cross-traffic interference.

Management Network: Used exclusively for administrative tasks, monitoring, and management of the infrastructure. Isolating the management network enhances security and ensures that management operations do not affect storage or transit performance.

By segregating these networks, we guarantee that an issue within one network cannot impact the others. This architecture enhances security, performance, and reliability across the entire platform.

State-of-the-Art Cisco VXLAN Leaf and Spine Networking

Our choice to implement a Cisco VXLAN Leaf and Spine architecture provides numerous advantages:

High Scalability: The Leaf and Spine topology allows for seamless scalability. As demand grows, additional leaf or spine switches can be added without significant reconfiguration, accommodating expansion in storage and compute resources.

Enhanced Performance: The architecture provides multiple equal-cost paths between any two points in the network. This means data can take the most efficient route, reducing latency and increasing throughput.

VXLAN Technology: By utilizing Virtual Extensible LAN (VXLAN), we create a flexible, scalable network overlay. VXLAN enables us to segment network traffic efficiently, supporting a vast number of isolated Layer 2 networks over a shared Layer 3 infrastructure.

Leveraging Cisco Nexus 9000 Series Hardware

The Cisco Nexus 9000 Series switches are industry-leading hardware designed for modern data centers requiring high performance and low latency:

100 Gbps Connectivity: Our network employs the latest 100 Gbps technology, providing ultra-high-speed connections between storage nodes and compute resources. This ensures rapid data access and minimal latency.

Low Latency Switching: The Nexus 9k switches are optimized for environments where every microsecond counts, providing sub-millisecond performance crucial for high-speed storage operations.

Advanced Features: These switches support advanced buffering and congestion management techniques, ensuring consistent performance even under heavy load conditions.

Investment in World-Class Networking for Unmatched Storage Performance

By investing in the latest Cisco technology, we ensure that our Ceph storage network delivers:

High Throughput: The dedicated 100 Gbps network fabric supports massive data transfer rates, essential for applications requiring quick access to large volumes of data.

Low Latency: Sub-millisecond latency is achieved through optimized networking and hardware choices, critical for real-time data processing applications.

Redundancy and Reliability: The Leaf and Spine architecture inherently provides multiple pathways for data. In case of any component failure, traffic is automatically rerouted, ensuring continuous availability and eliminating single points of failure.

Complete Isolation for Enhanced Security and Stability

Our dedicated networks mean that:

Ceph Storage Traffic is Isolated: Storage operations are unaffected by transit traffic or management activities, ensuring consistent performance and eliminating the risk of congestion from other network operations.

Management Network is Secure: Administrative tasks are conducted over a separate network, enhancing security and preventing any potential interference with storage or compute functions.

Transit Network is Independent: General data traffic is kept separate, so any issues or high traffic volumes on the transit network do not impact storage performance.

Why This Matters for Your Business

Predictable Performance: With dedicated networks and state-of-the-art hardware, you can trust that your storage operations will perform consistently, meeting the demands of your applications.

Scalability: Our network infrastructure is designed to grow with your business. As your storage needs increase, our platform can scale seamlessly without compromising performance.

Reliability: The combination of redundant network paths and isolation of network functions ensures maximum uptime and availability of your data.

Security: Network isolation adds an extra layer of security, reducing the attack surface and preventing unauthorized access between different network segments.

Conclusion

Micron21’s commitment to excellence is evident in our investment in a dedicated Cisco VXLAN Leaf and Spine network using the latest Cisco Nexus 9000 Series hardware. By completely isolating the Ceph storage, transit, and management networks, we provide a storage environment that is not only ultra-fast and reliable but also secure and scalable.

Our dedicated 100 Gbps network fabric ensures that your data moves swiftly and securely, with sub-millisecond latency and high throughput. This

infrastructure is critical for businesses that rely on real-time data access and processing.

By choosing Micron21’s mCloud platform, you’re partnering with a provider that prioritizes performance, reliability, and security at every layer of the infrastructure. Our Ceph storage network is engineered to deliver the best possible performance, ensuring your applications run smoothly and efficiently, now and into the future.

Experience the difference of a storage network that’s built without compromise. Contact us today to learn how Micron21’s high-performance Ceph storage can power your business to new heights.