SONiC in Microsoft Azure: Enabling Mission Critical Applications

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Microsoft

Microsoft Azure

SONiC in Microsoft Azure
Enabling Mission Critical Applications

Mission Critical Applications in Azure

Goal: unlock the market for mission critical workloads that cannot yet run on Azure natively

A Mission Critical Application: Azure HSM

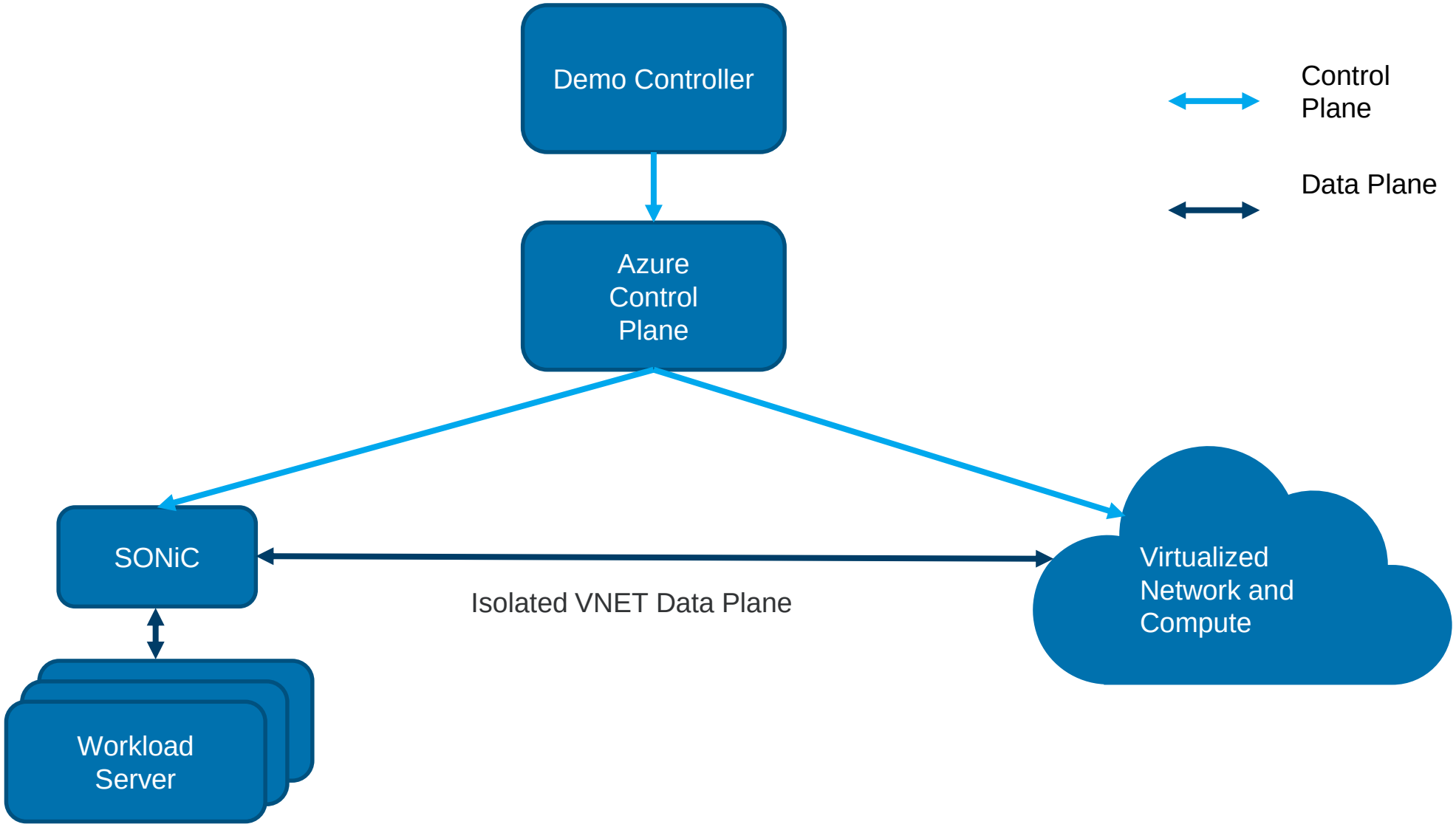
- Azure service providing cryptographic key storage
  - Dedicated server: customer has full administrative and cryptographic control
  - Provisioned into a customer's private IP address space (VNET)
  - Typical customer deployment:
    2 HSMs per regions for high availability
    2 in an alternate region for disaster recovery

Mission Critical Applications

The application must be provisioned into a customer's private IP address space (VNET)

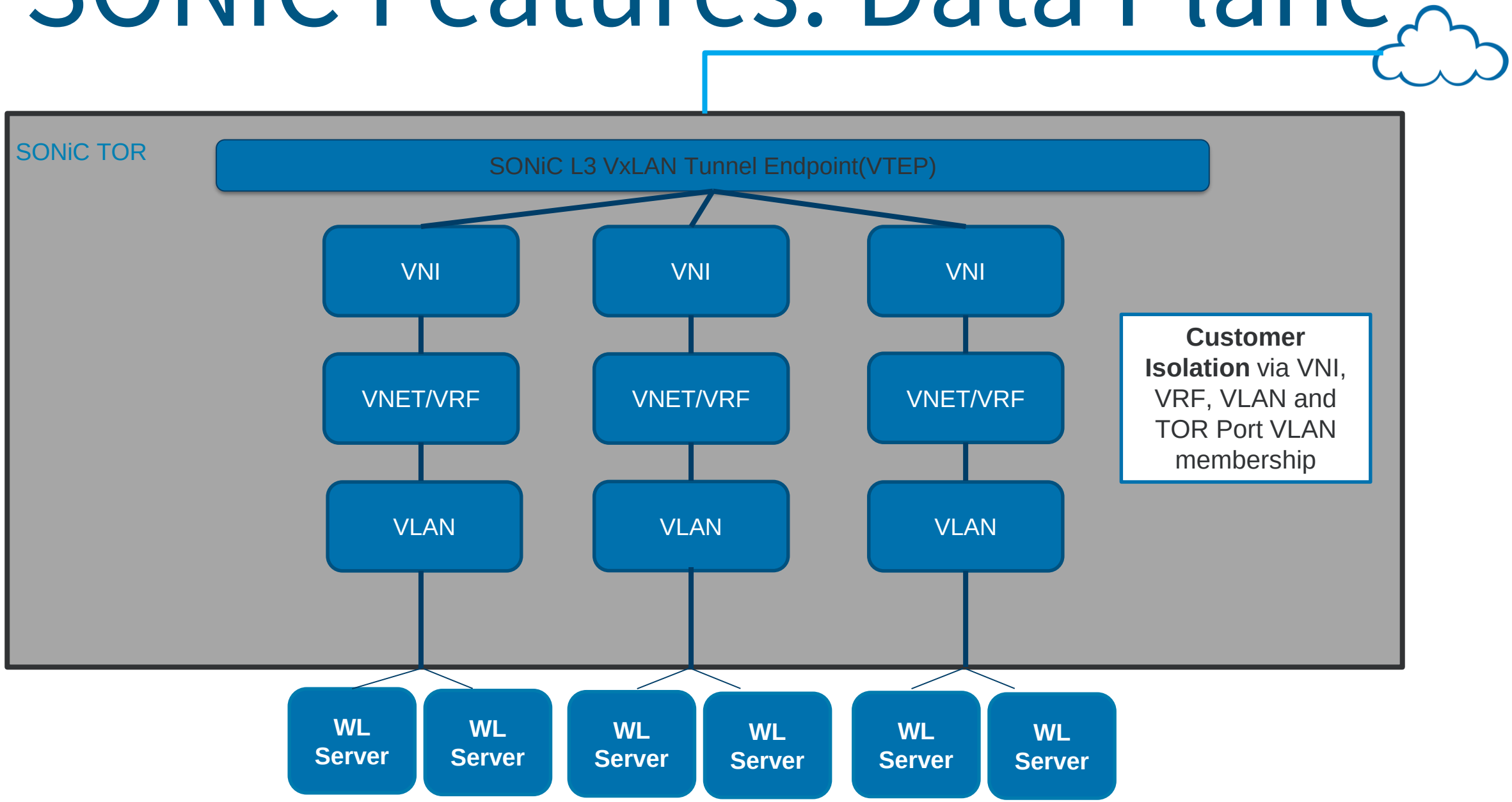
- Challenges:
  - Workloads are not virtualized
  - Hardware form factor

Architecture

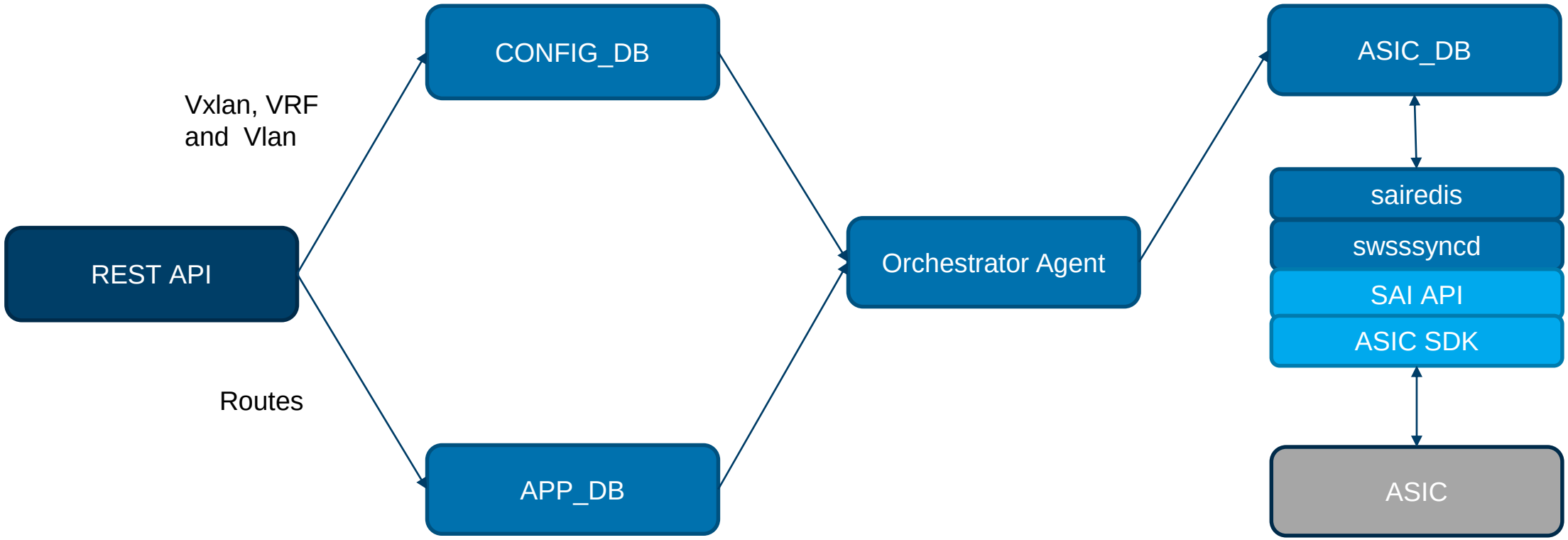


- Ease of Operations:
  - Homogeneity with respect to management and control plane
  - Hardware independence
- Customizable and Extensible:
  - Custom features for Azure integration
  - Cherry pick feature set
- Agility:
  - Fast turnaround time for fixes
  - Leverage open-source contributions

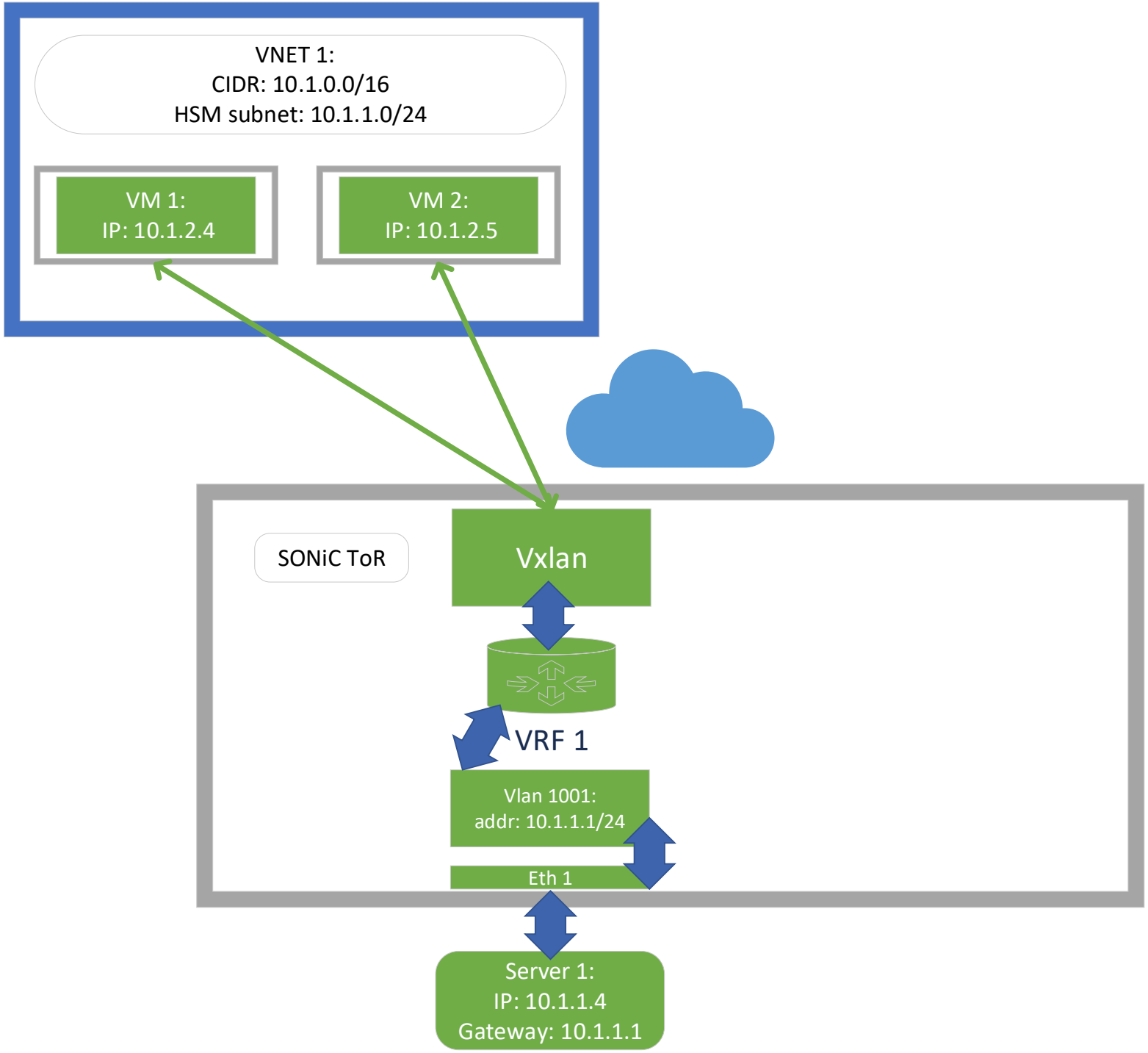
SONiC Features: Data Plane



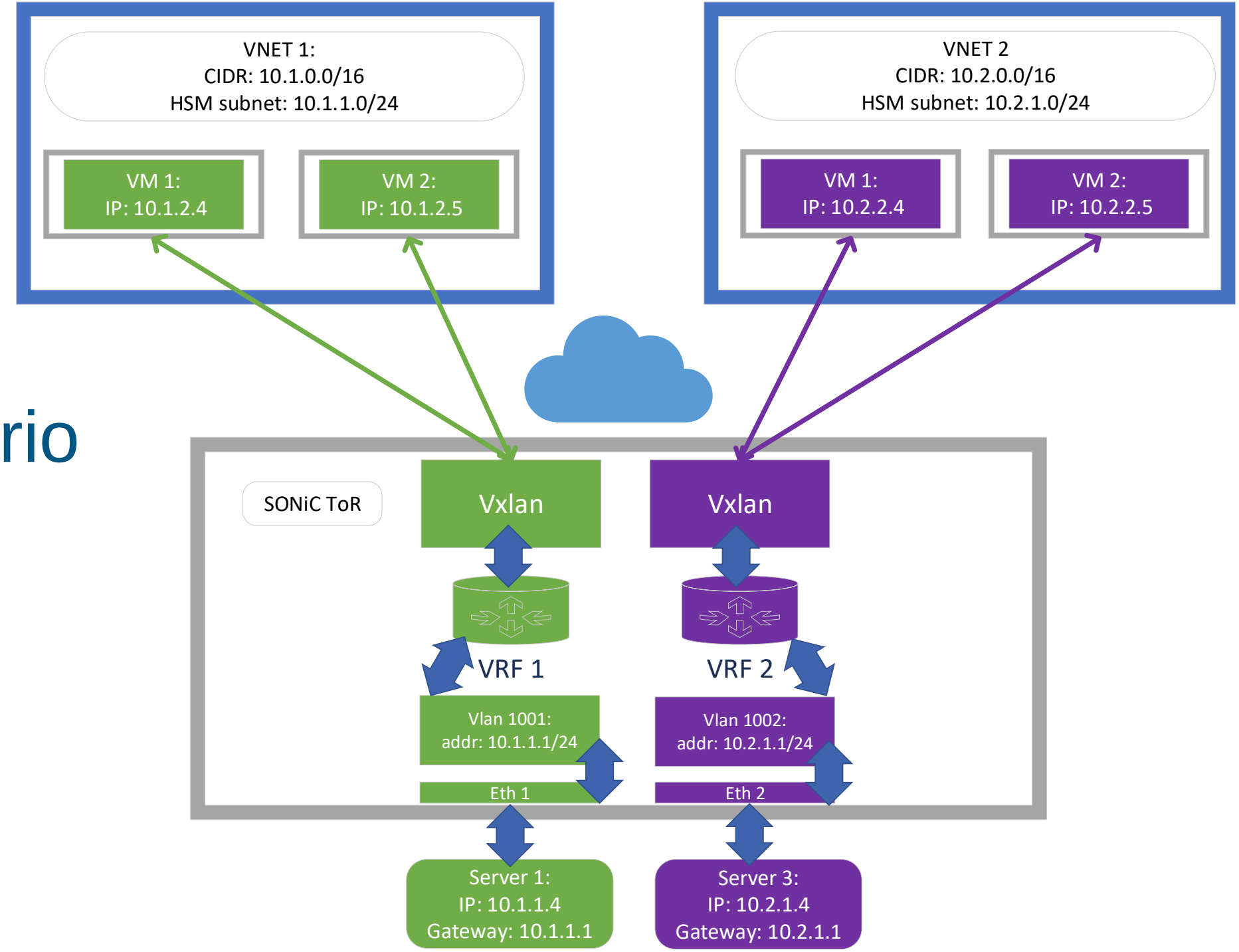
SONiC Features: Control Plane



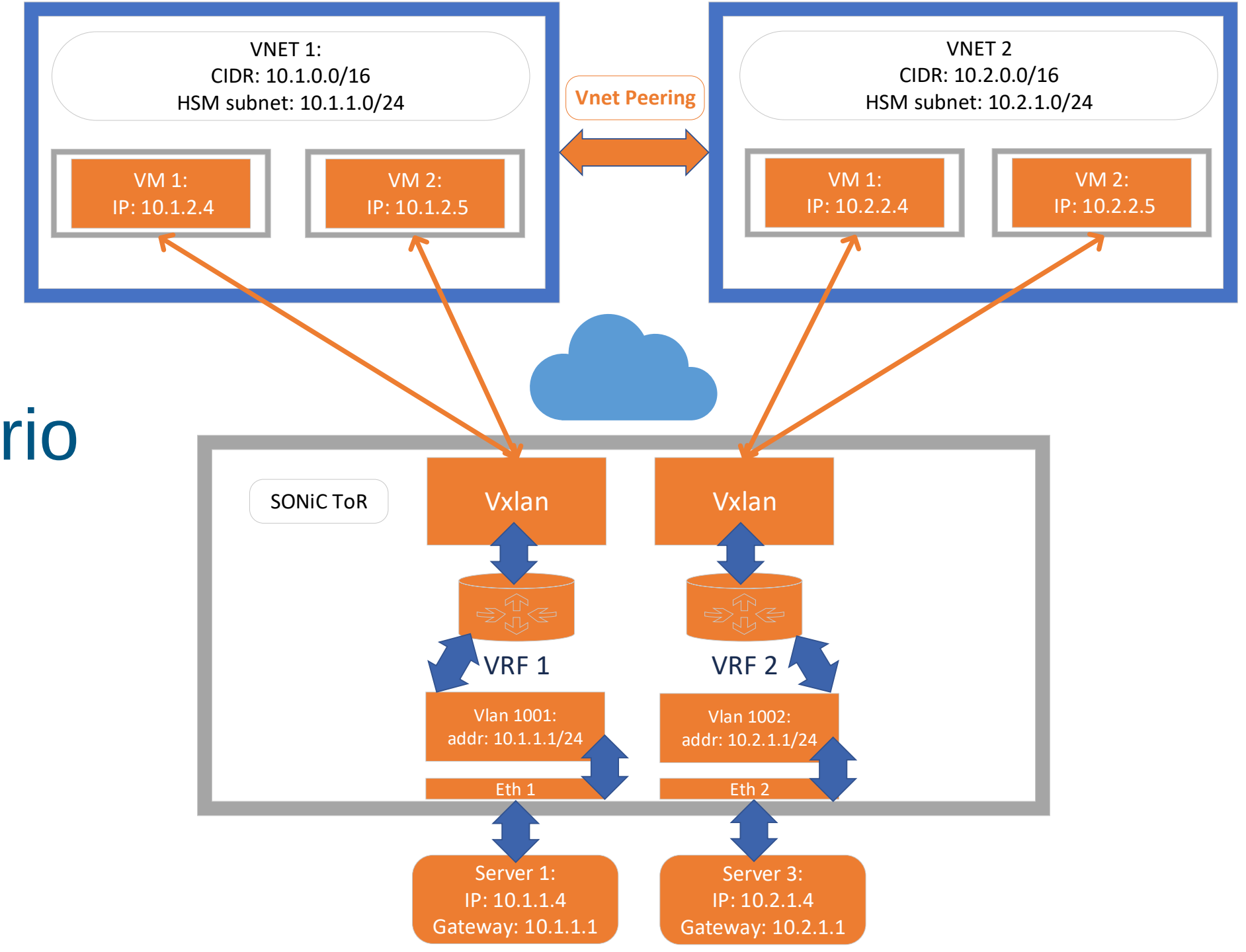
Demo Scenario 1/3



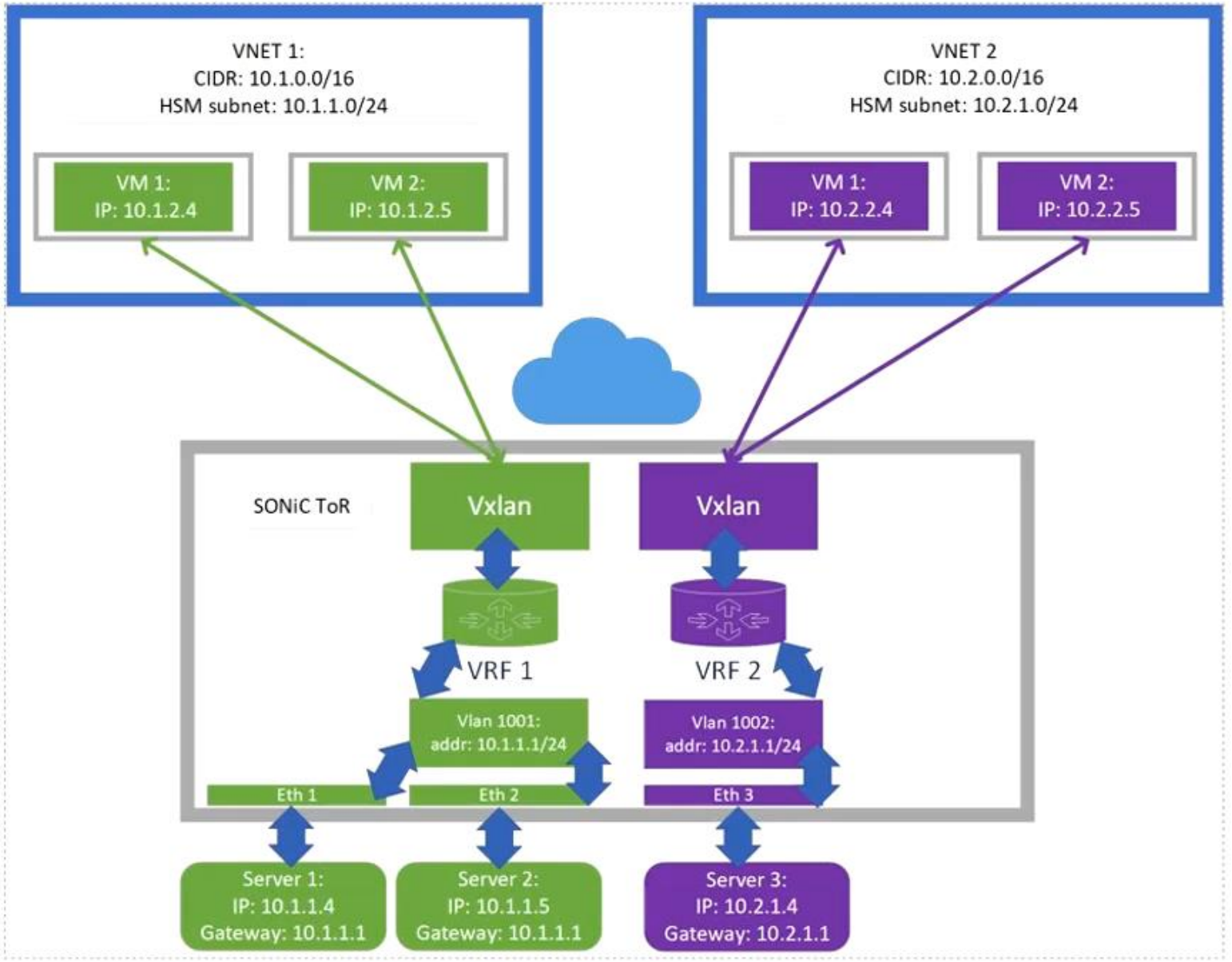
Demo Scenario 2/3



Demo Scenario 3/3



Demo Scenario



Lessons learned / Next steps

- Configuration error handling:
  - No syntactic or semantic validations on configuration set in the config and app DBs
  - No reporting mechanism for errors in enforcing configuration on the hardware (e.g., in the case of resource exhaustion)
  - As a result the configuration entity cannot verify if config is honored in the ASIC
- Route persistence:
  - Dynamically added static routes are not persisted
  - Switch reboot leads to loss of dynamically added static routes

Contributors

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