

Fully Scalable Networking with MidoNet



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Agenda: Introduction to MidoNet

1. MidoNet Advantages
2. Open vSwitch vs MidoNet
3. Understanding MidoNet
4. MidoNet Community

MidoNet Advantages

Introduction

Distributed Networking Services

- Logical Switching
- Logical Routing
- Logical Firewall
- Logical Layer 4 Load Balancer
- MidoNet (RESTful) API

Distributed Controller

- **Resiliency: No Single Point of Failure (SPOF)**
- **Scalability: Fully Distributed Architecture**
- **Performance: Single Virtual Hop**

Distributed Architecture

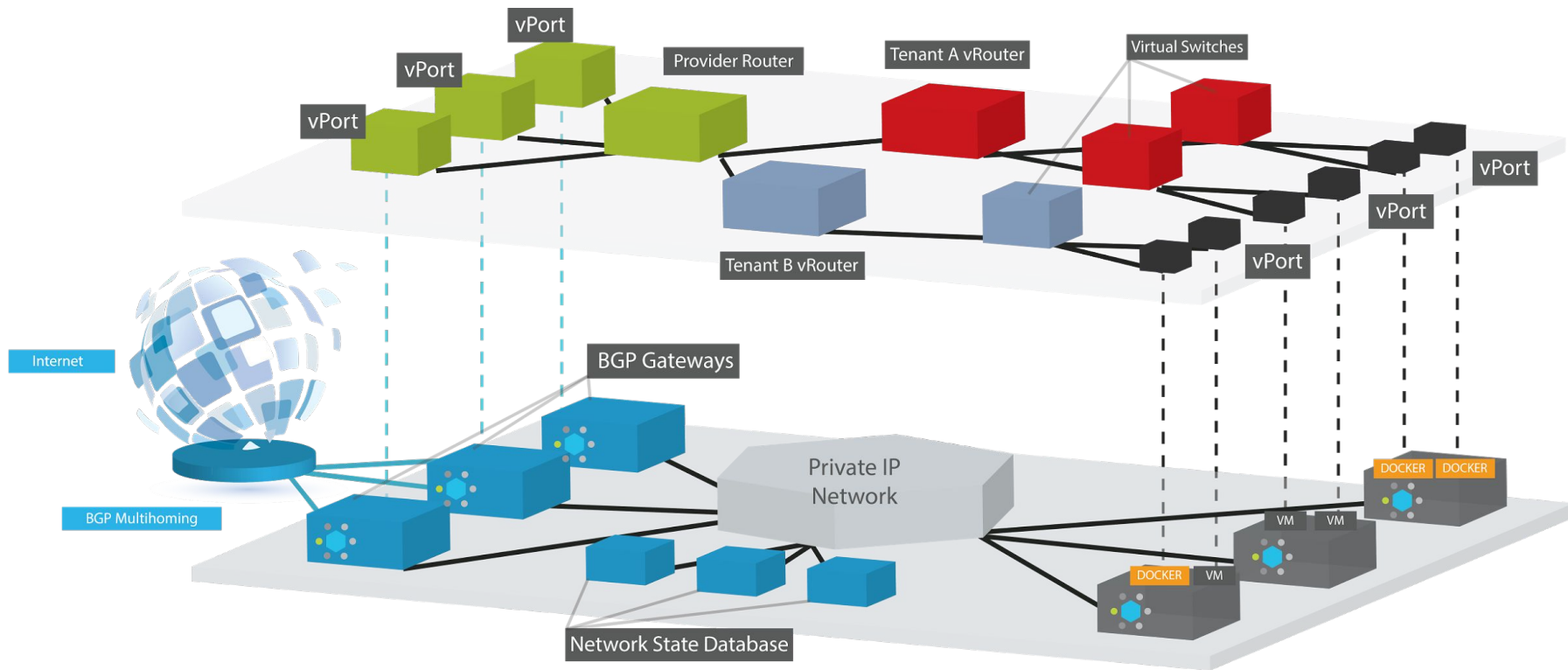
- SDN intelligence at edges
- Resource usage at edge
- Grows with the cloud
- Fully Distributed Gateways
 - L3 GW: Multiple BGP Border Nodes
 - L2 GW: Multiple HW VXLAN Tunnel End-Points (VTEP)

Additional Features (I)

- Agnostic of underlay
- Only just L3 connectivity required
- Floating IPs
- Firewall bound to each vPort
- Stateful & Stateless NAT
- FWaaS
- Port Mirroring

Additional Features (II)

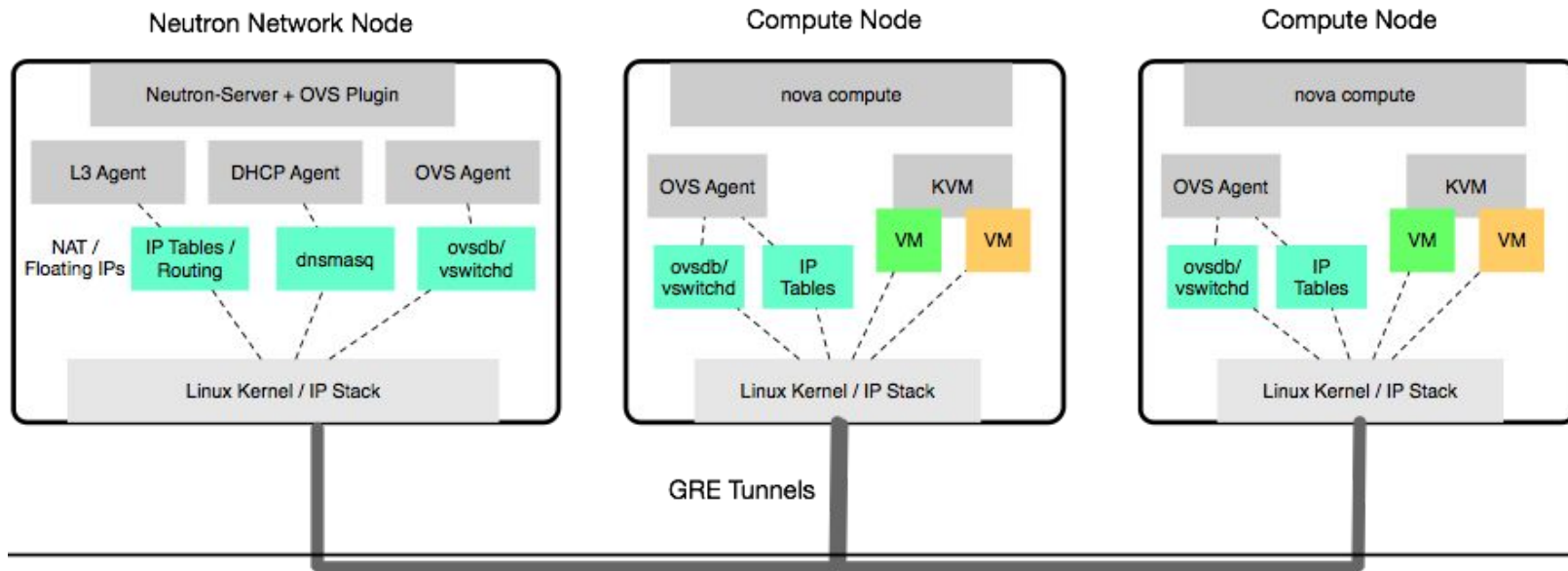
- Supports Docker in OpenStack (nova-docker)
- Docker Networking (libnetwork)
- Puppet Modules (others upcoming)
- Apache License (ASLv2)
- many many more...



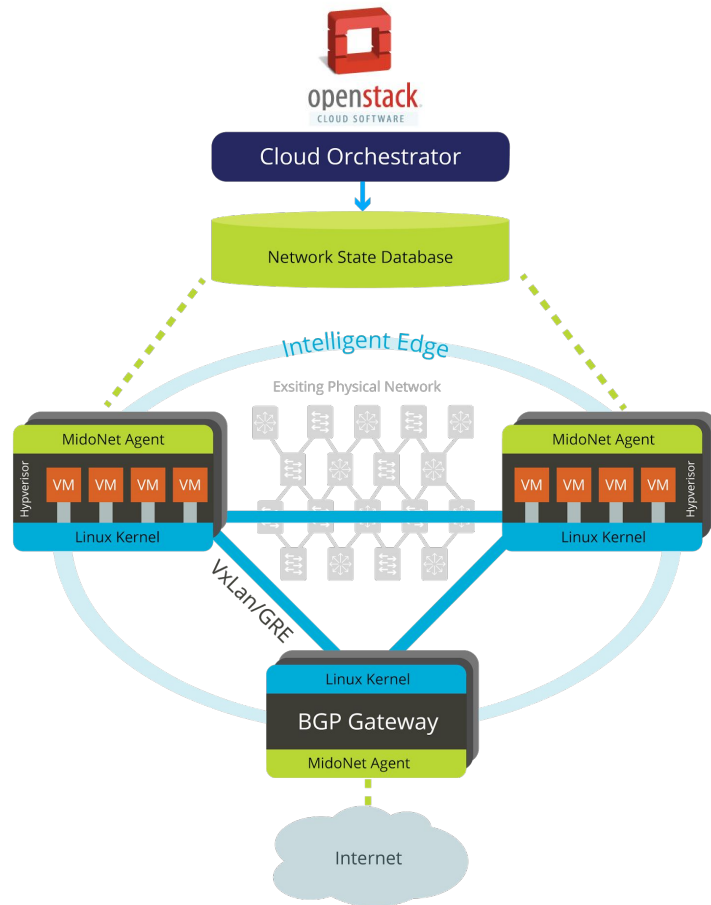
MidoNet Topology

Open vSwitch vs MidoNet

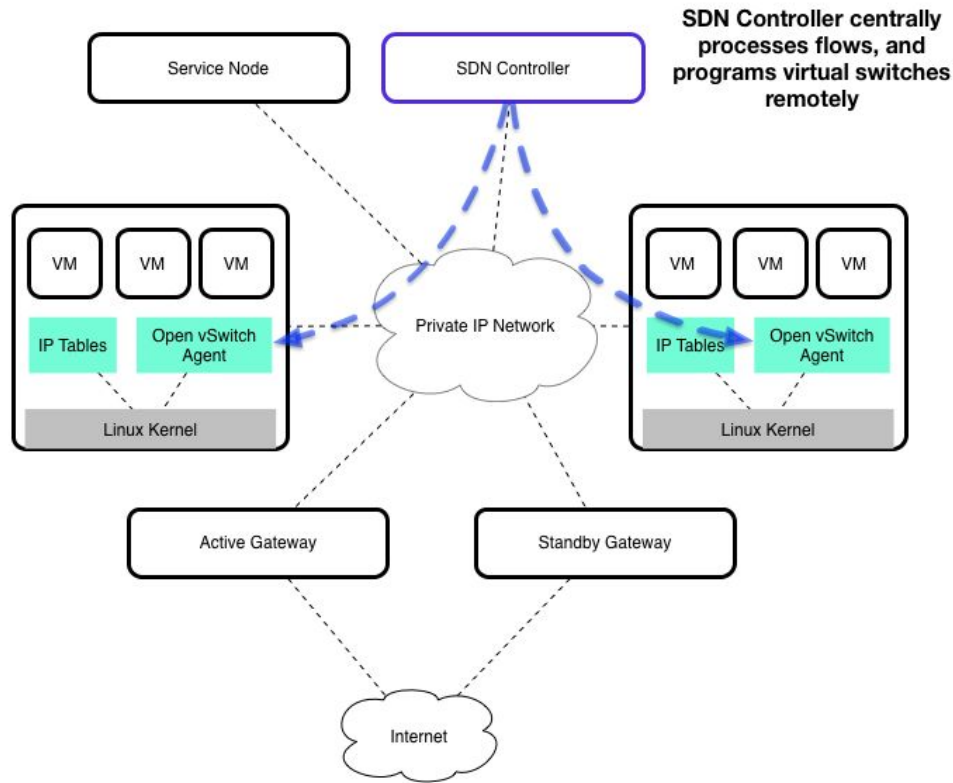
Neutron Plugin Comparison



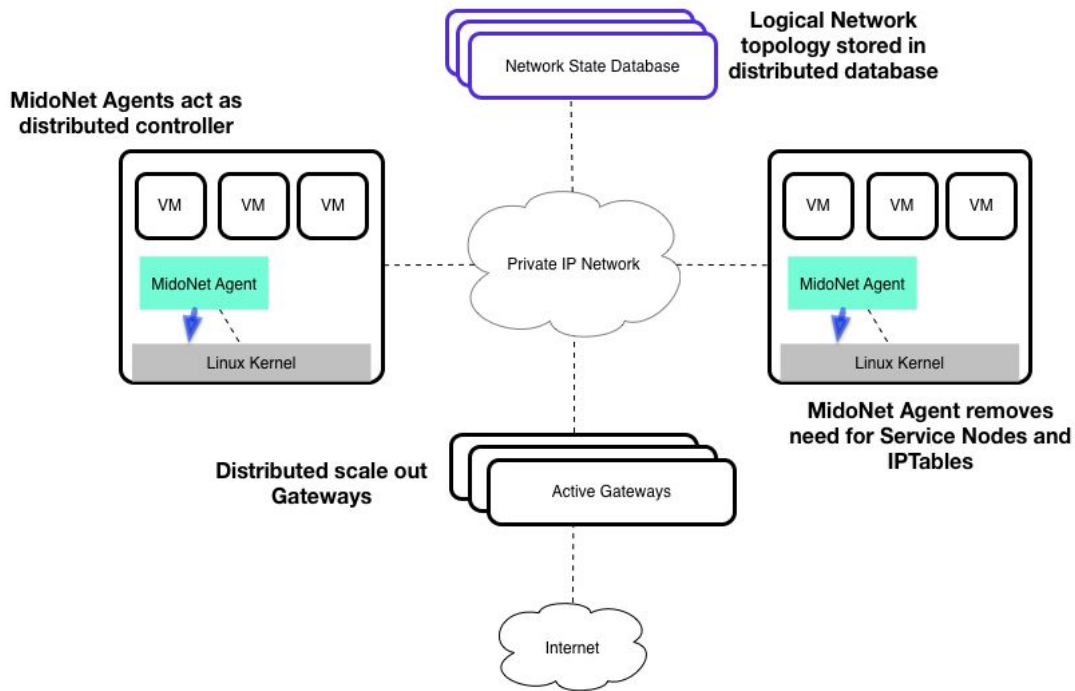
Neutron Open vSwitch (OVS) Plugin Architecture

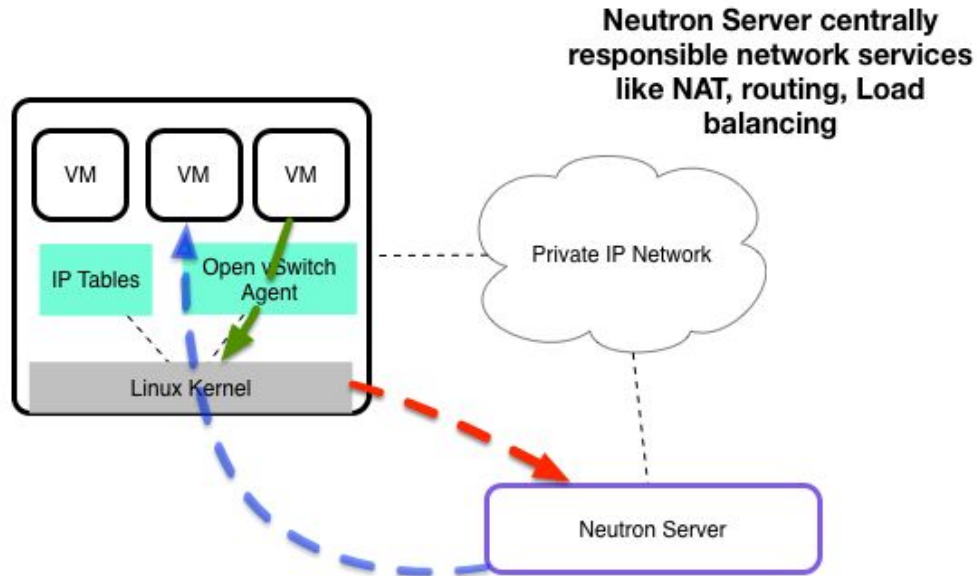


MidoNet (MN) Architecture



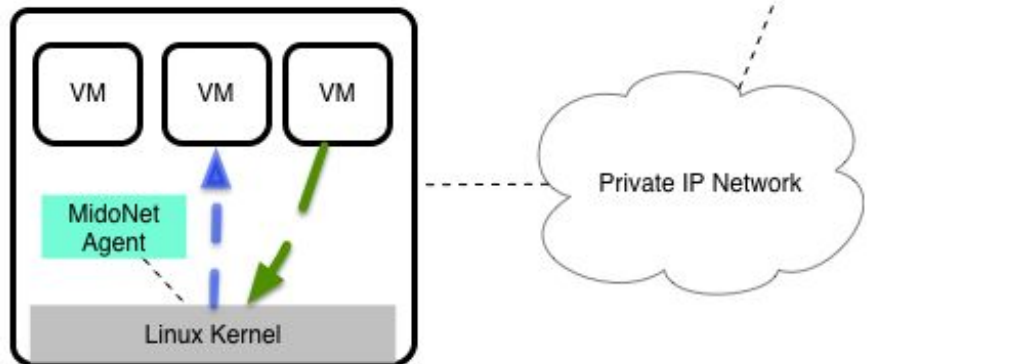
OVS: Centralized Controller Model (I)



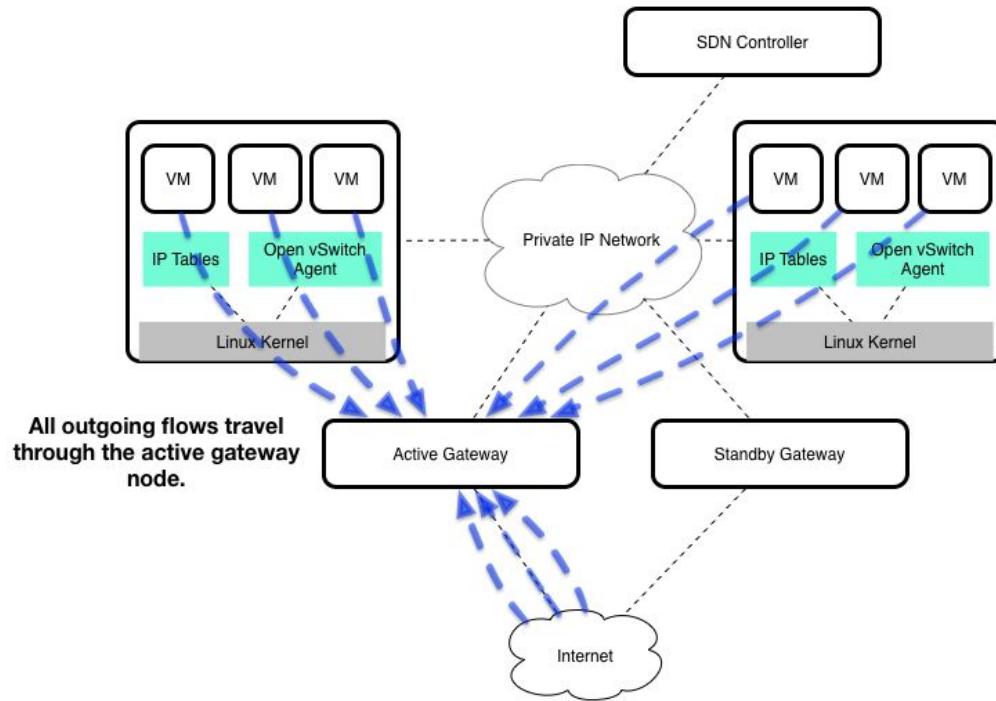


OVS: Centralized Controller Model (II)

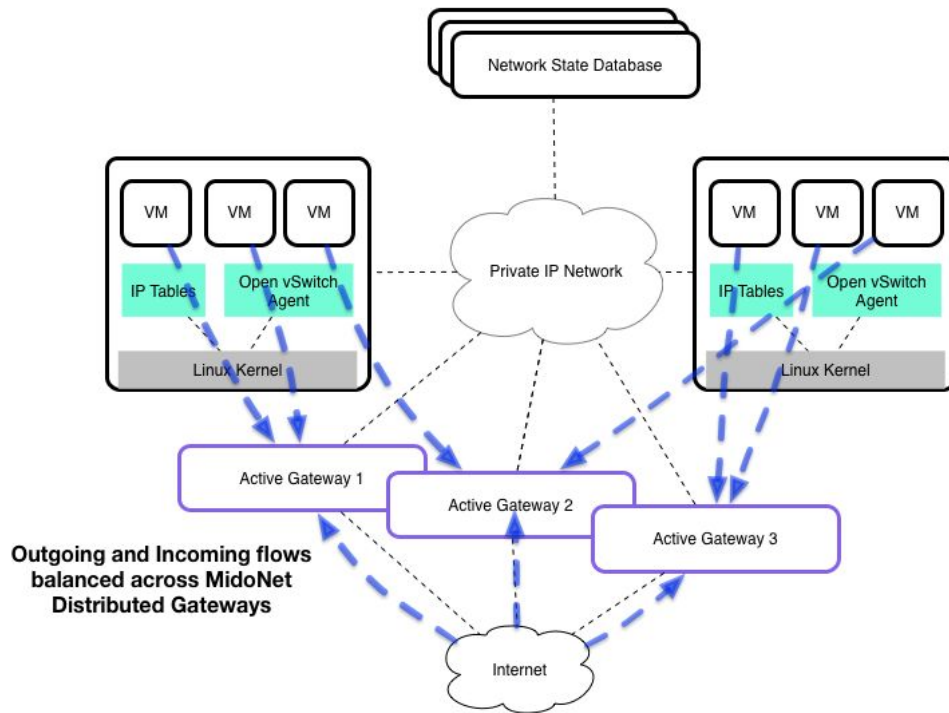
**MidoNet Agent programs the
Kernel to provide services like
security groups, routing, load
balancing, and floating IPs**



MN: Distributed Edge Model

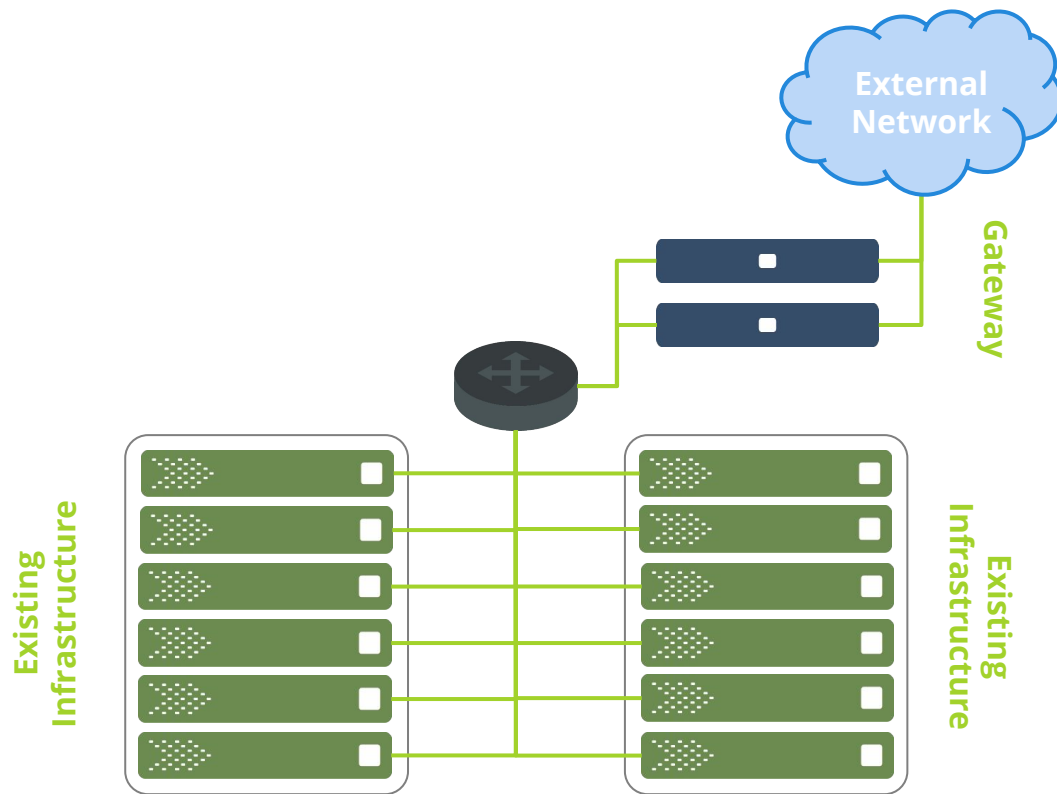


OVS: Active / Standby Gateway Model

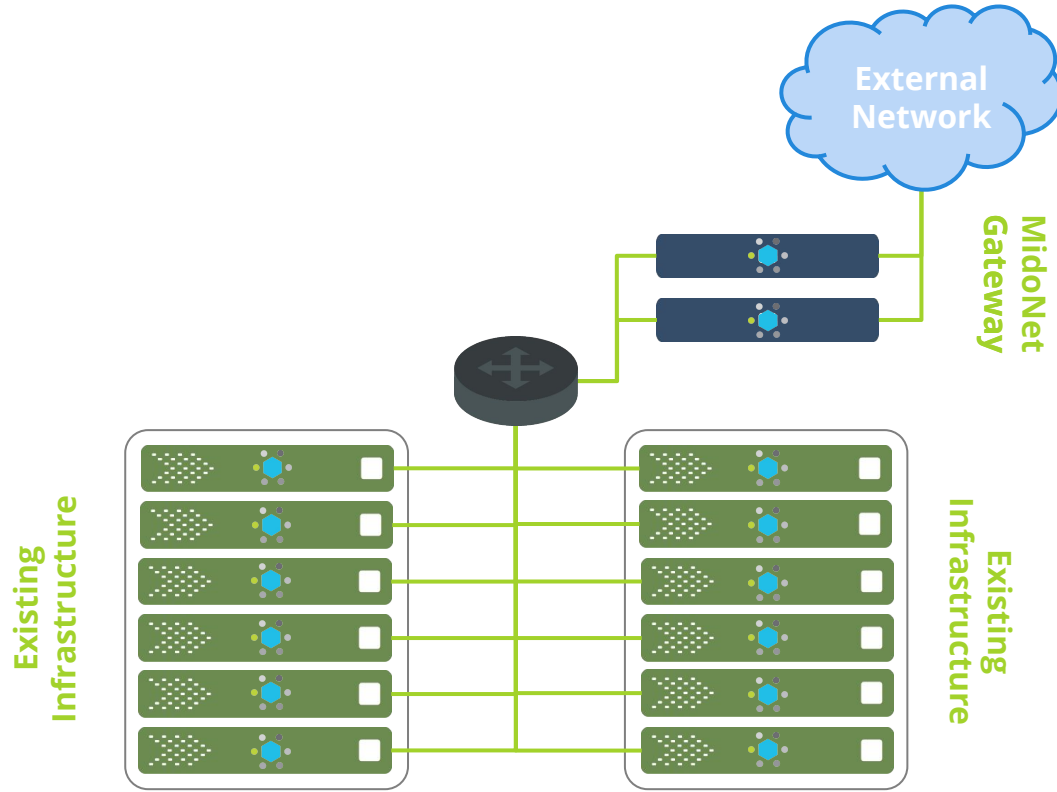


Understanding MidoNet

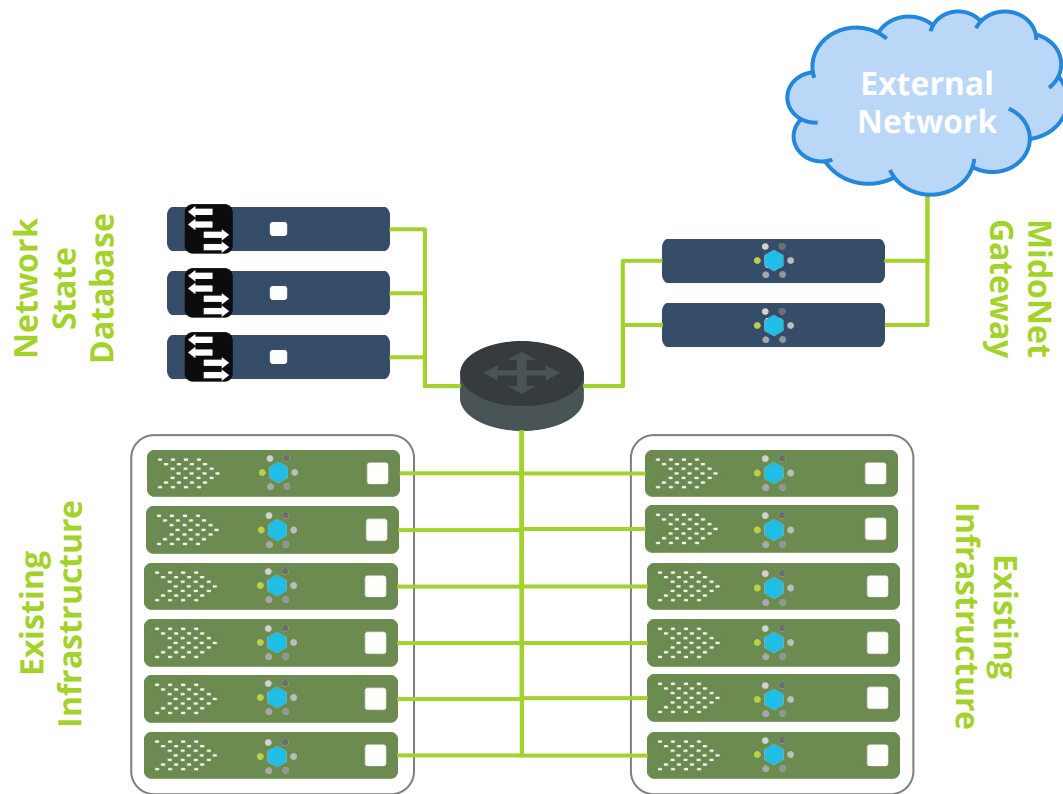
MidoNet 101



Physical Topology (Underlay)

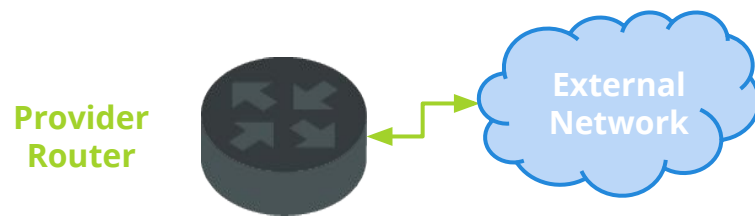


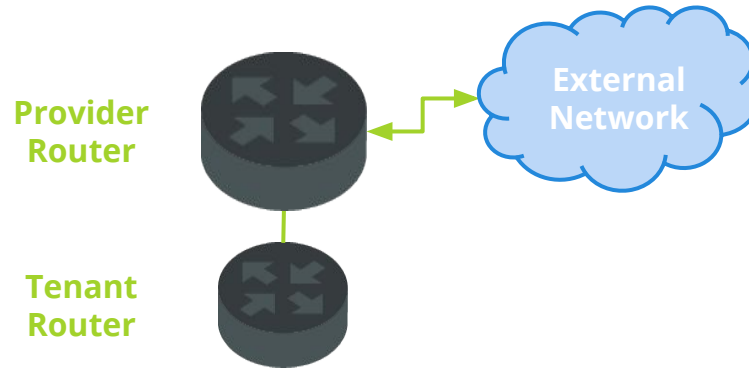
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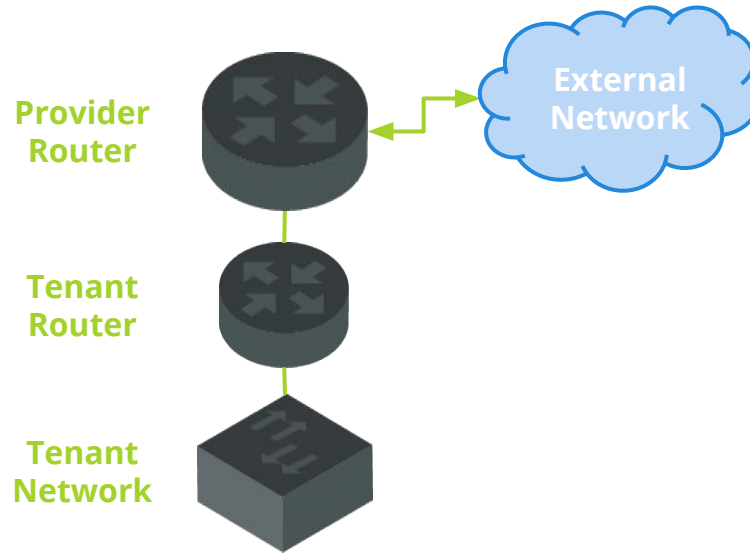


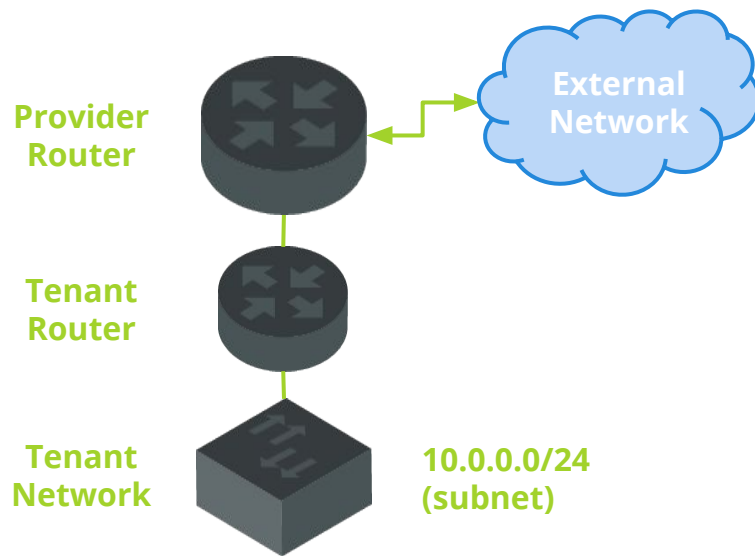
Physical Topology (Underlay)

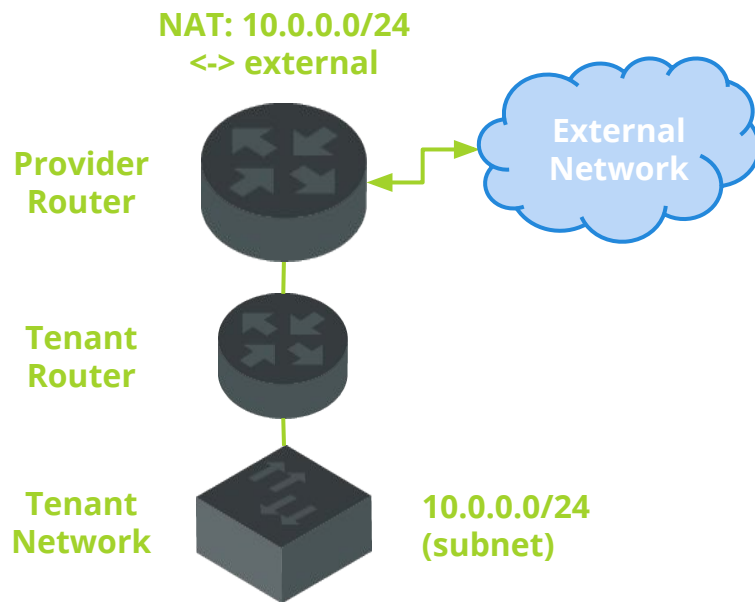




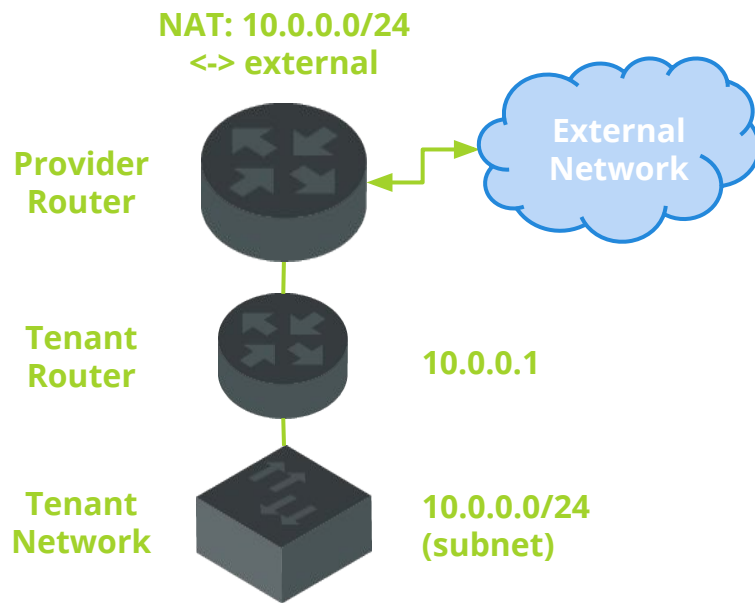


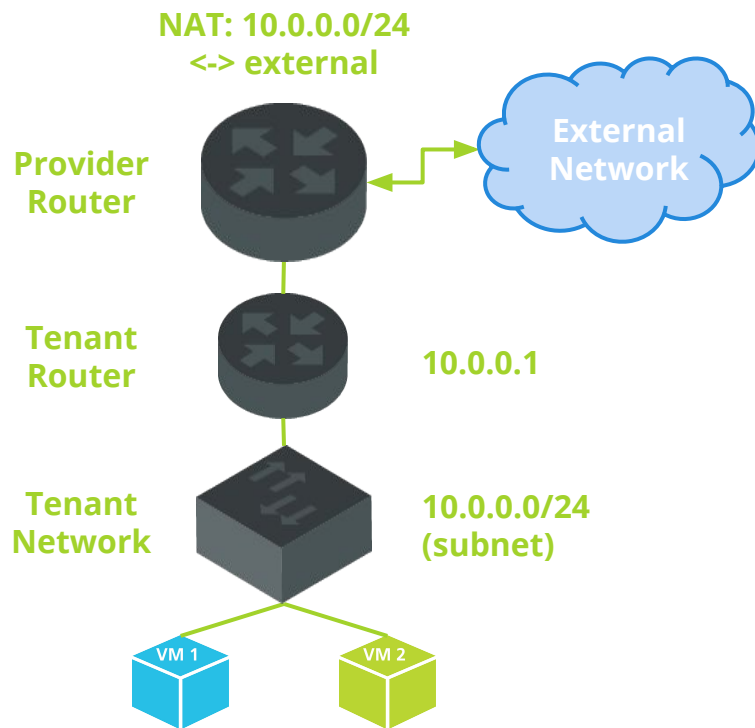


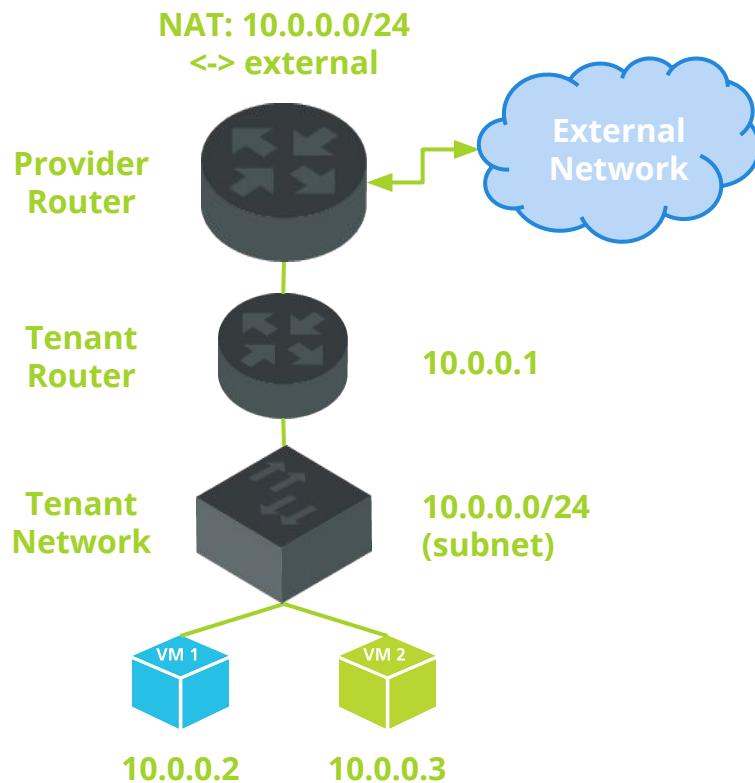




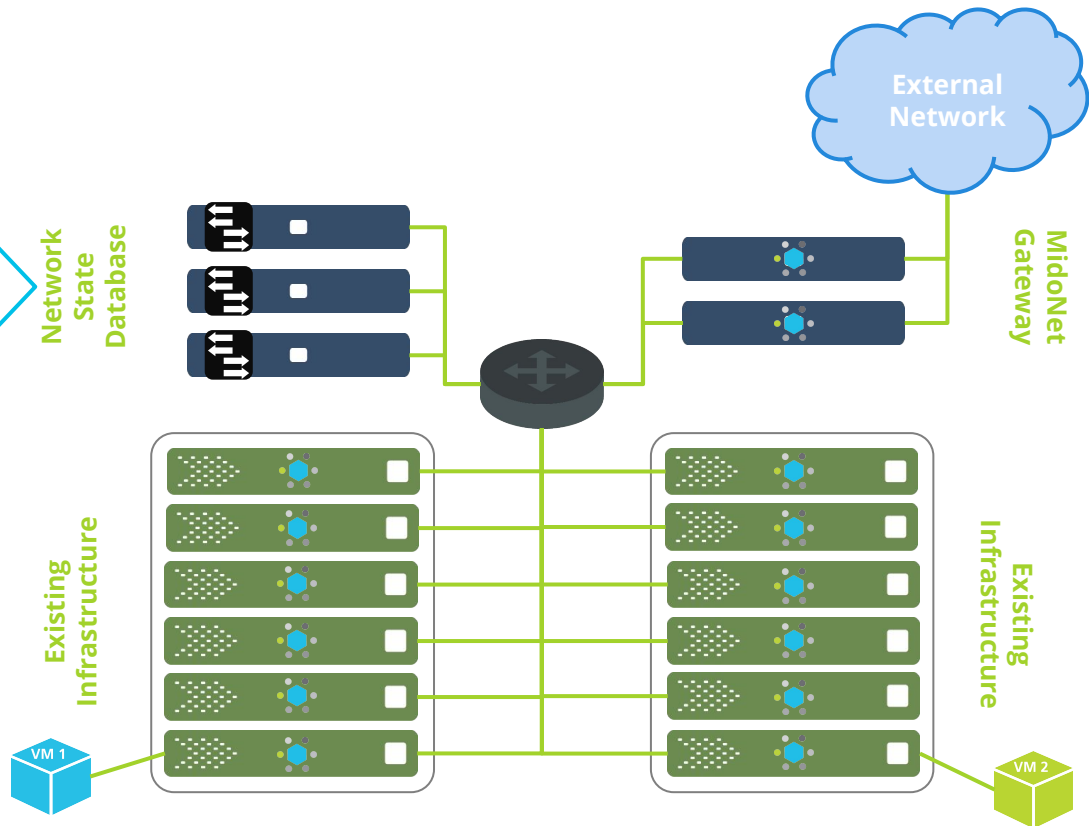
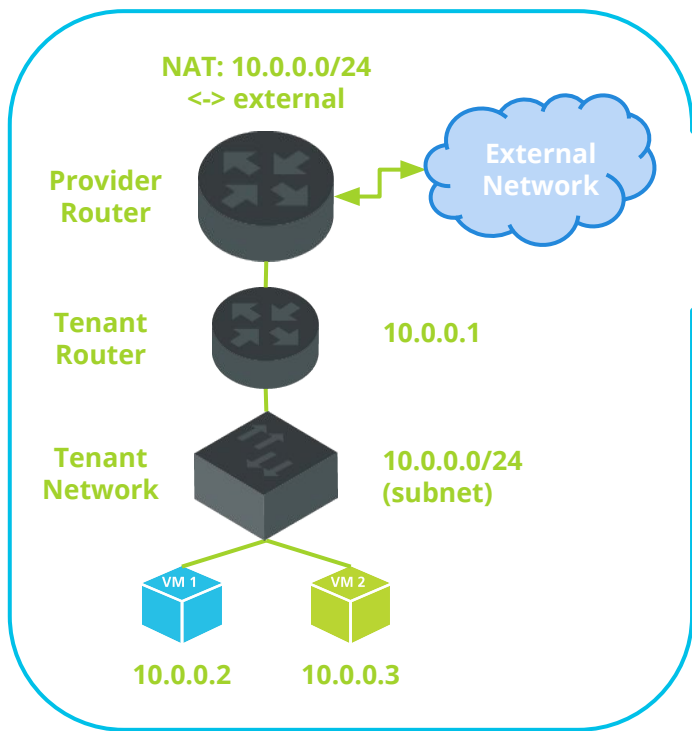
Virtual Topology (Overlay)



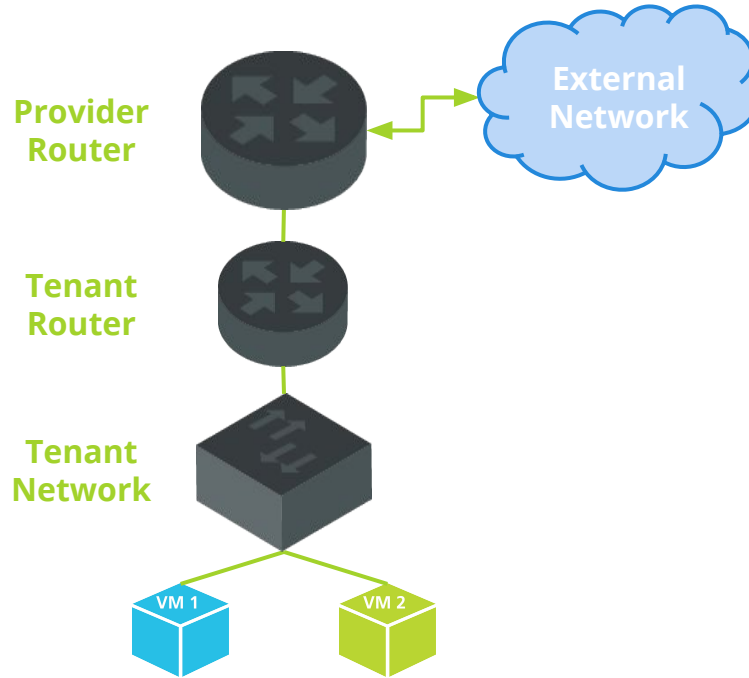




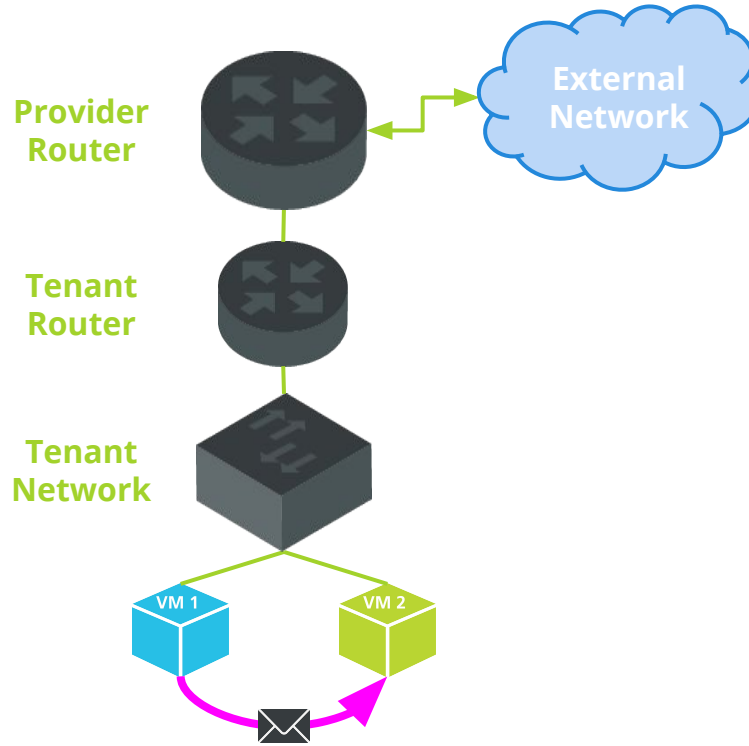
Virtual Topology (Overlay)



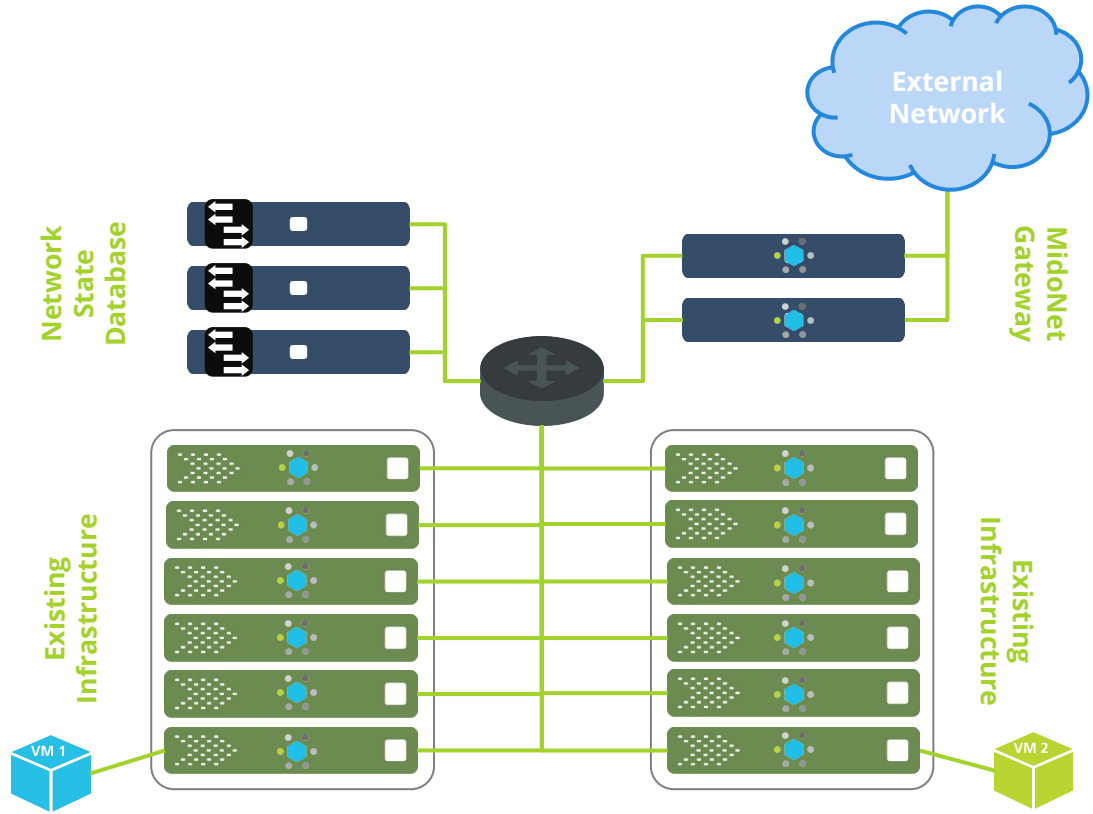
Virtual Topology Stored in NSDB



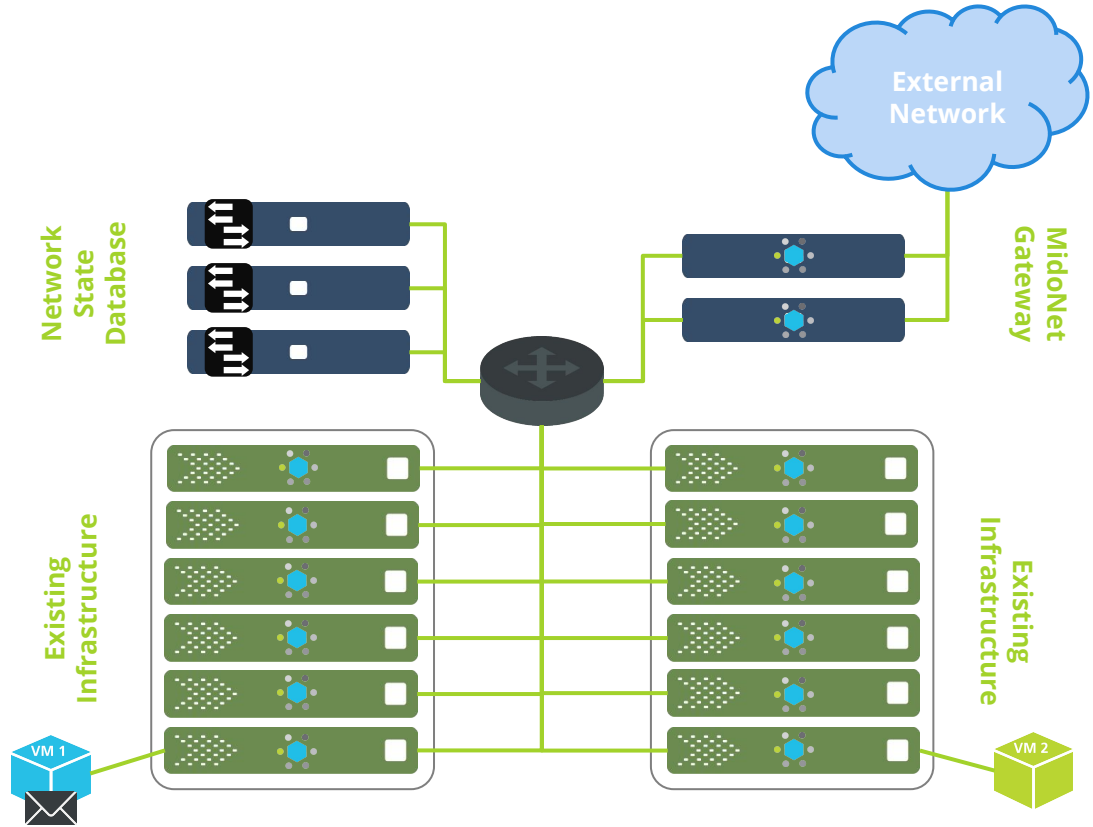
Let's send a package from VM1 to VM2



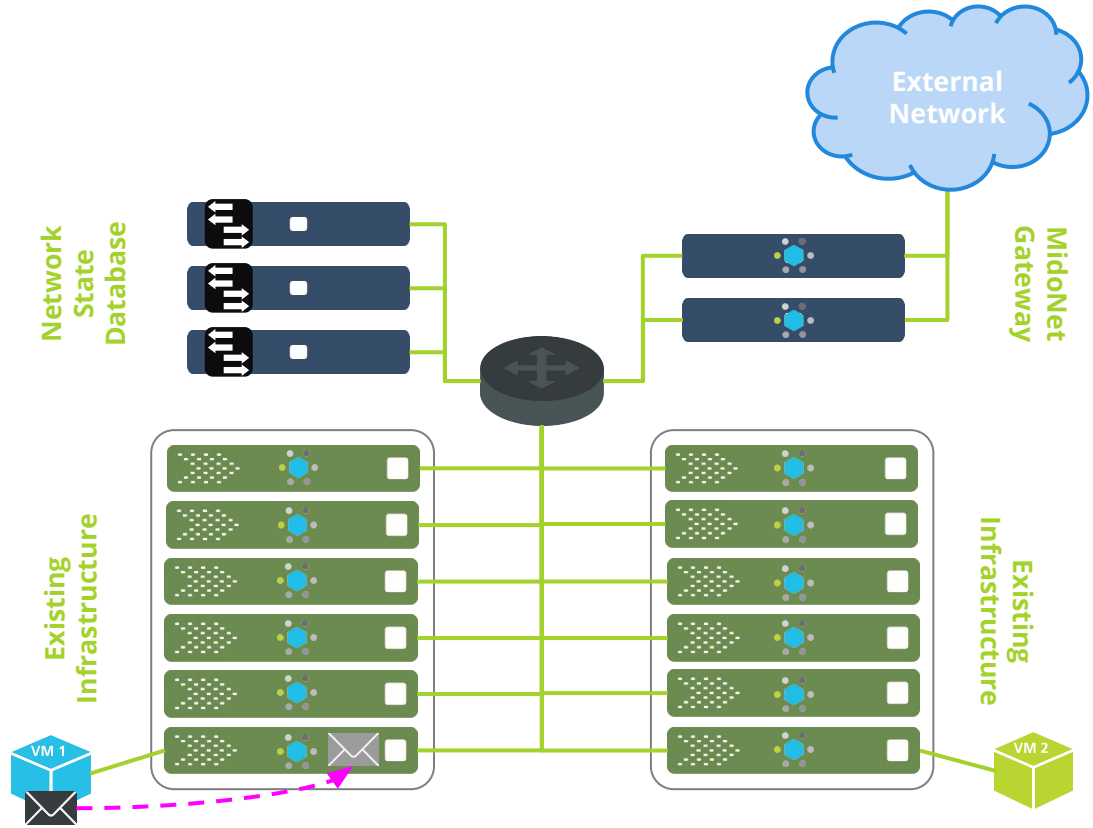
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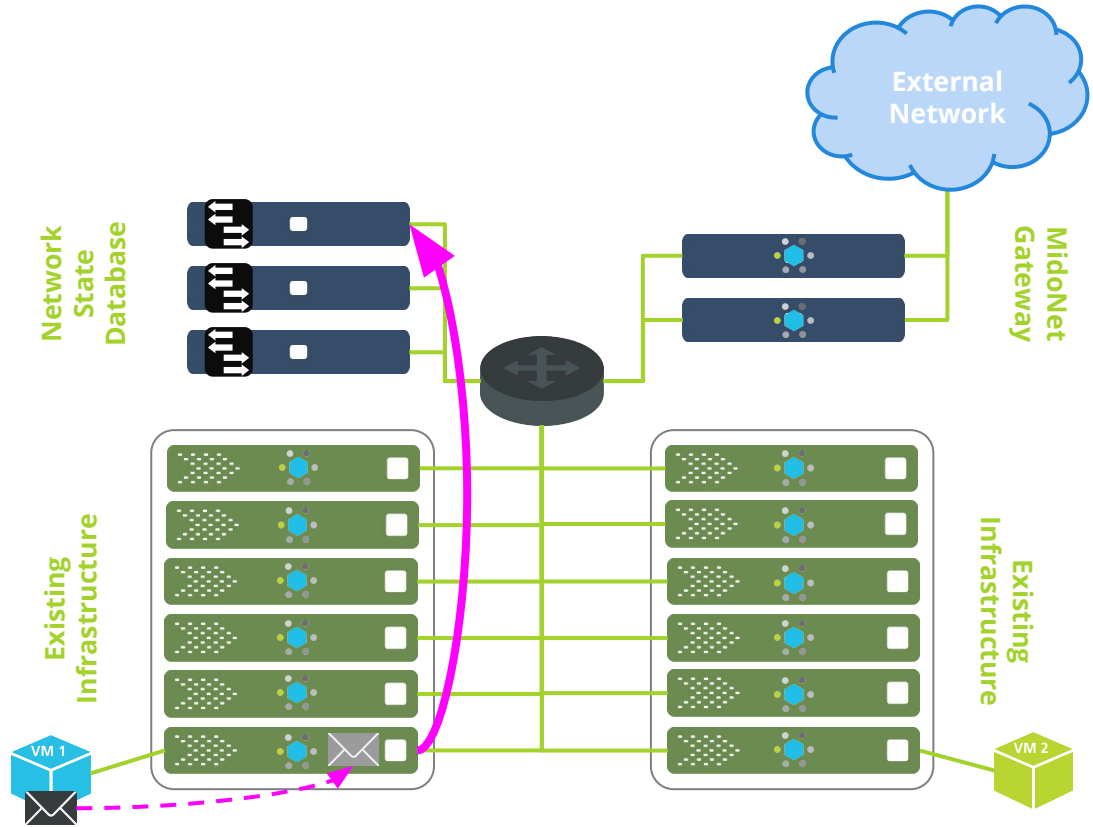
Query Topology, Simulate Data Flow



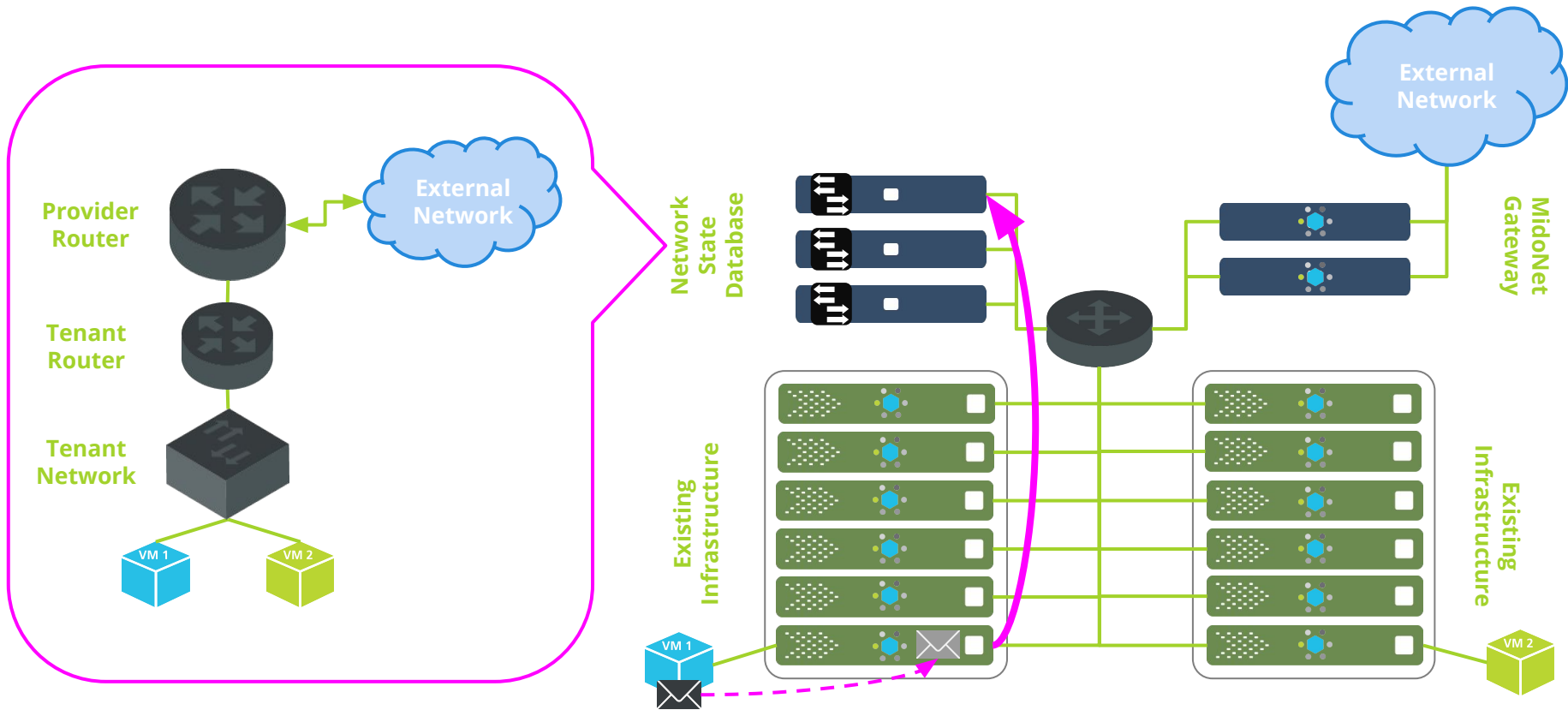
Query Topology, Simulate Data Flow



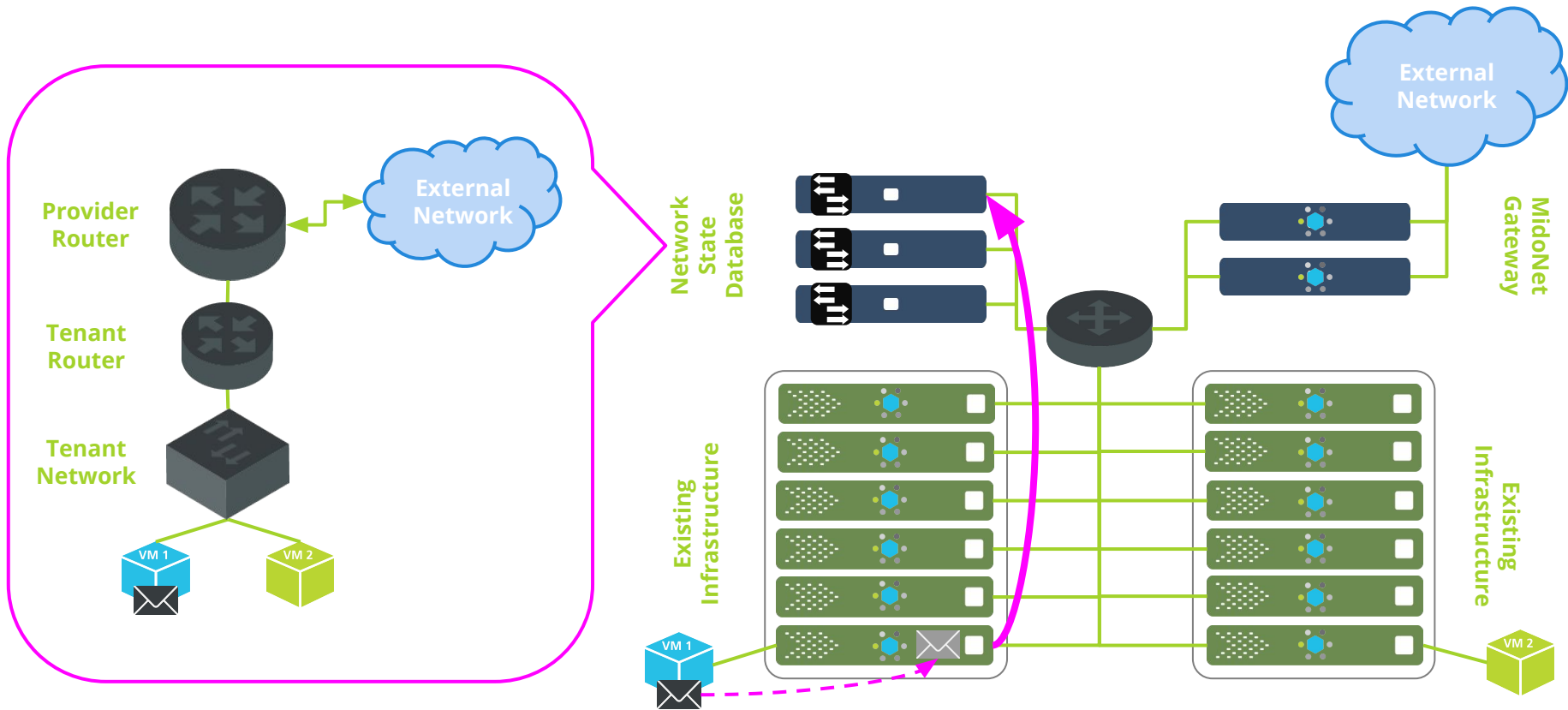
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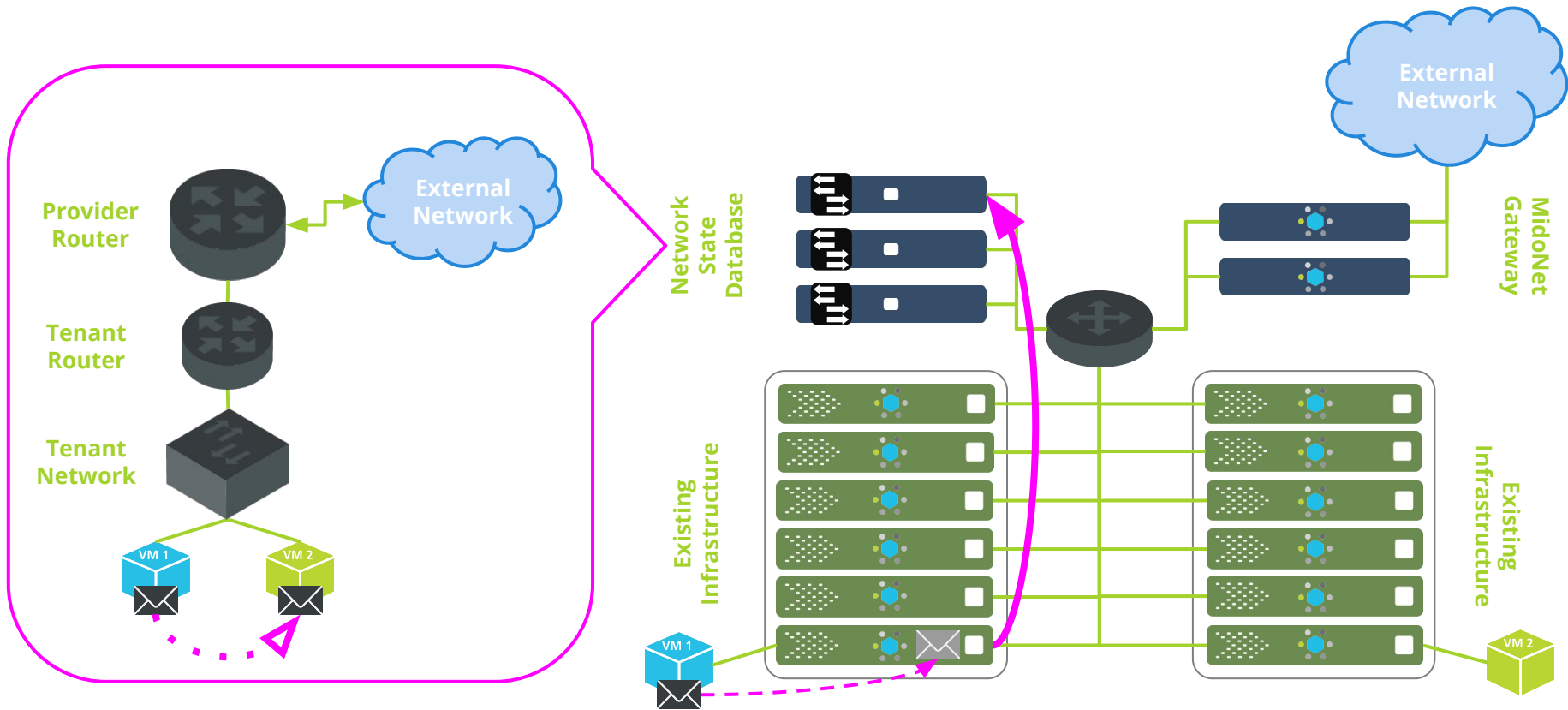
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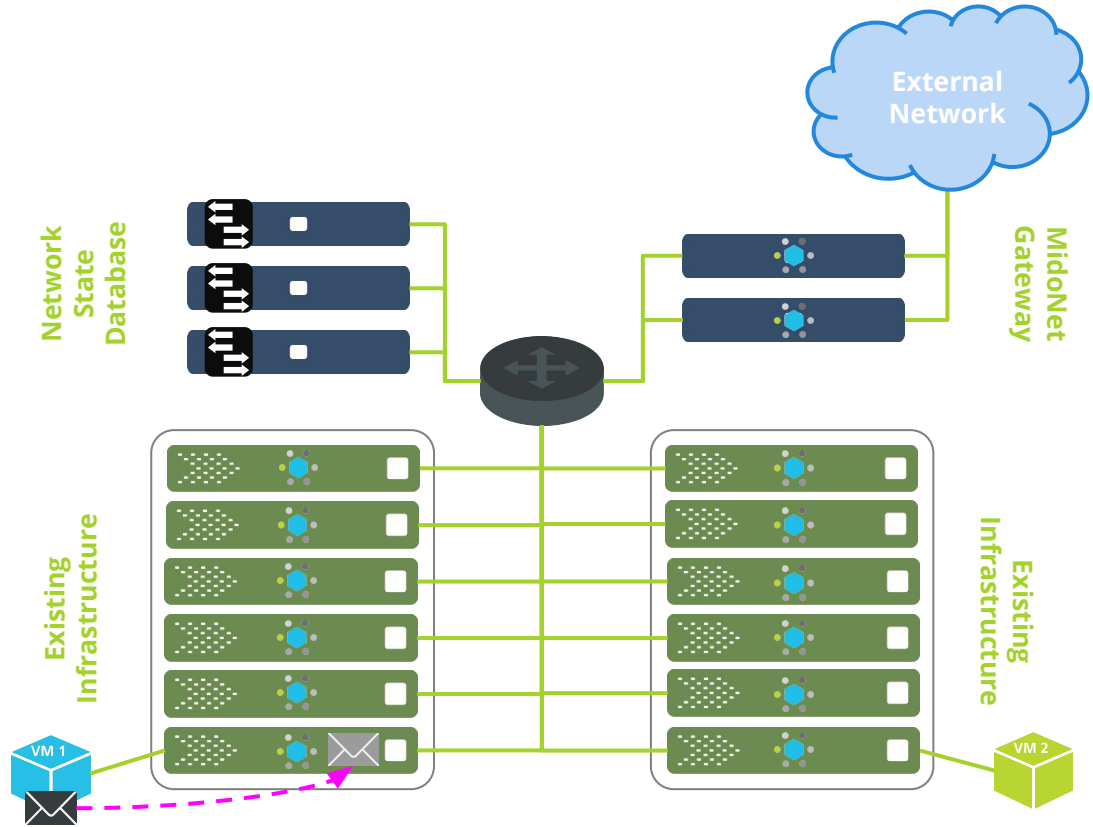
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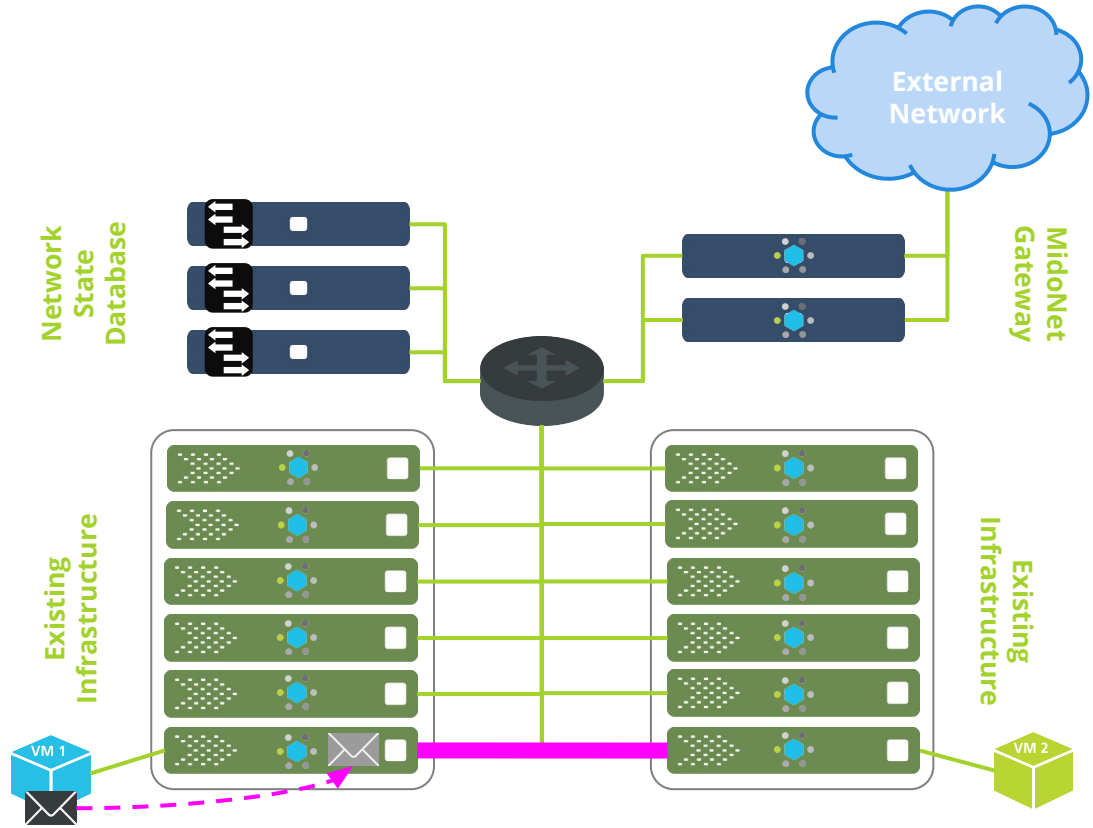
Query Topology, Simulate Data Flow



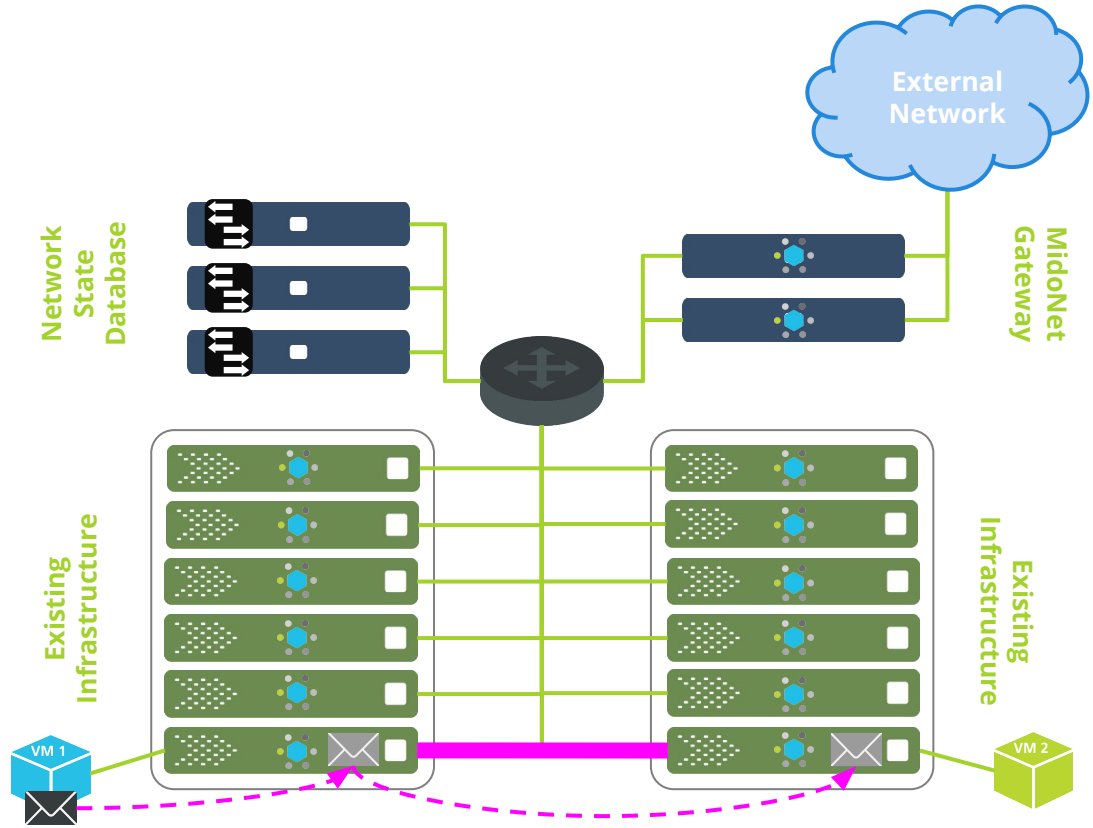
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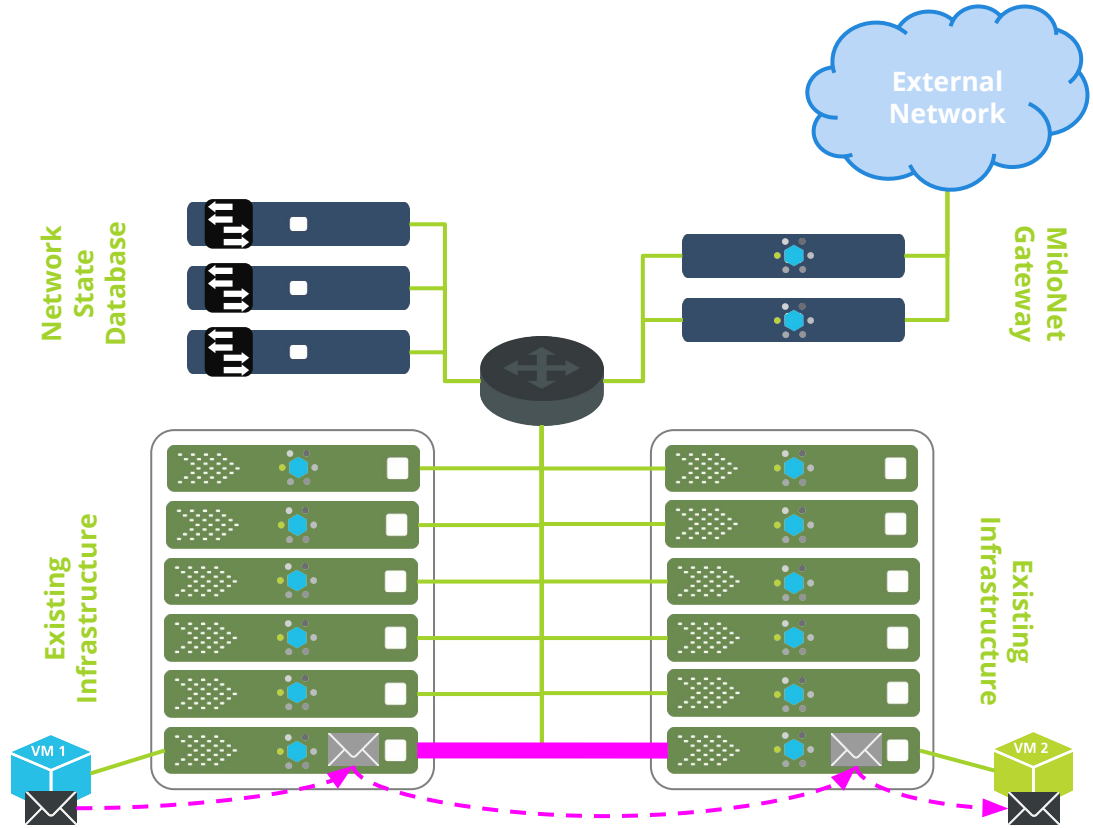
Establish Tunnel & Route Packet



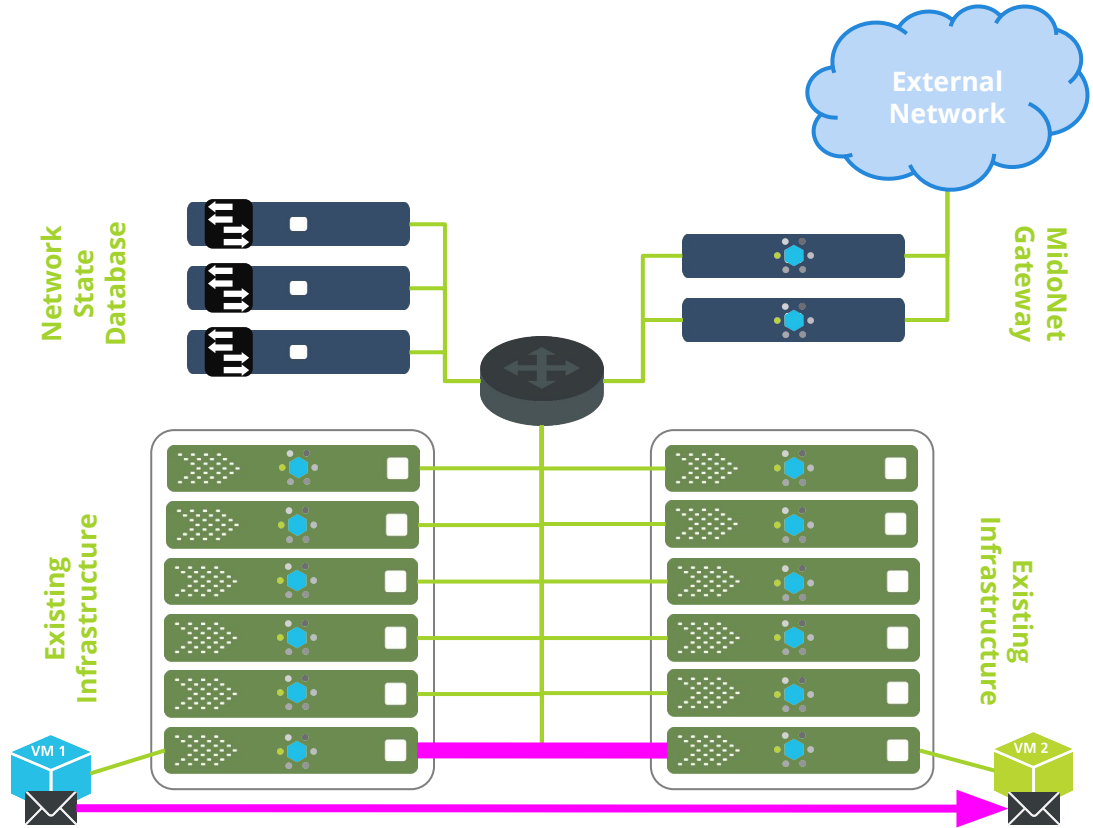
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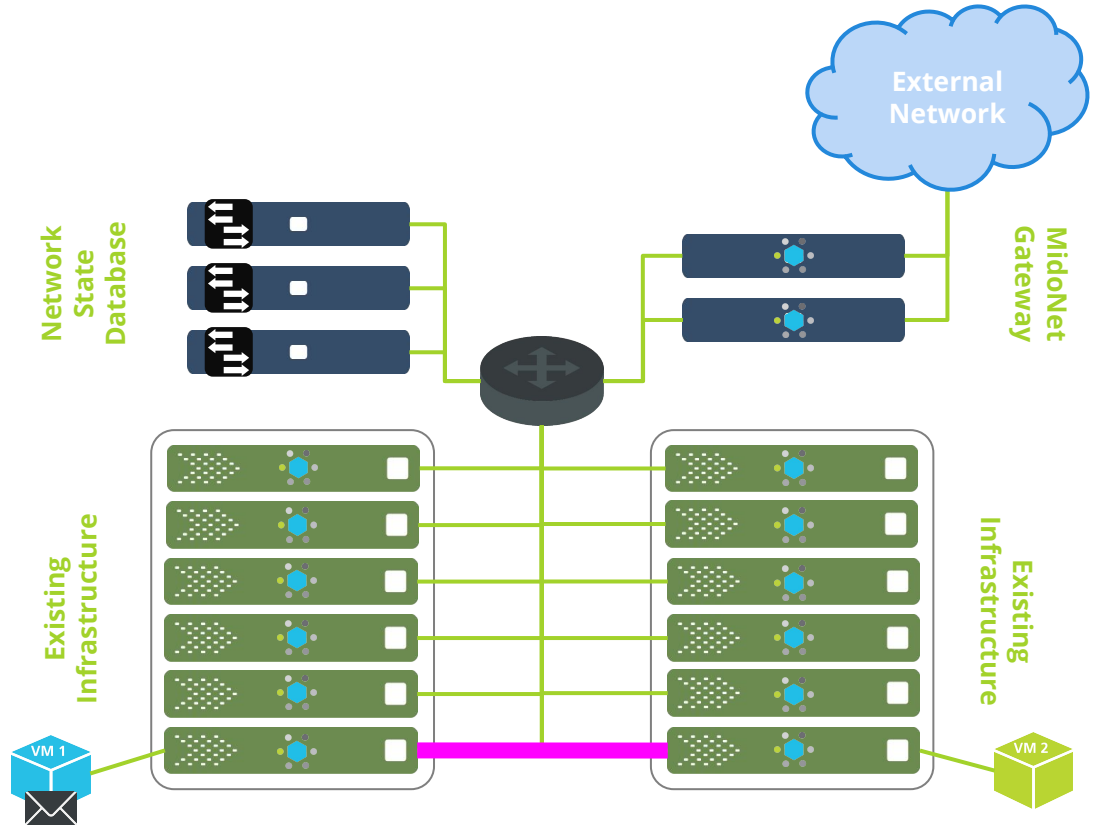
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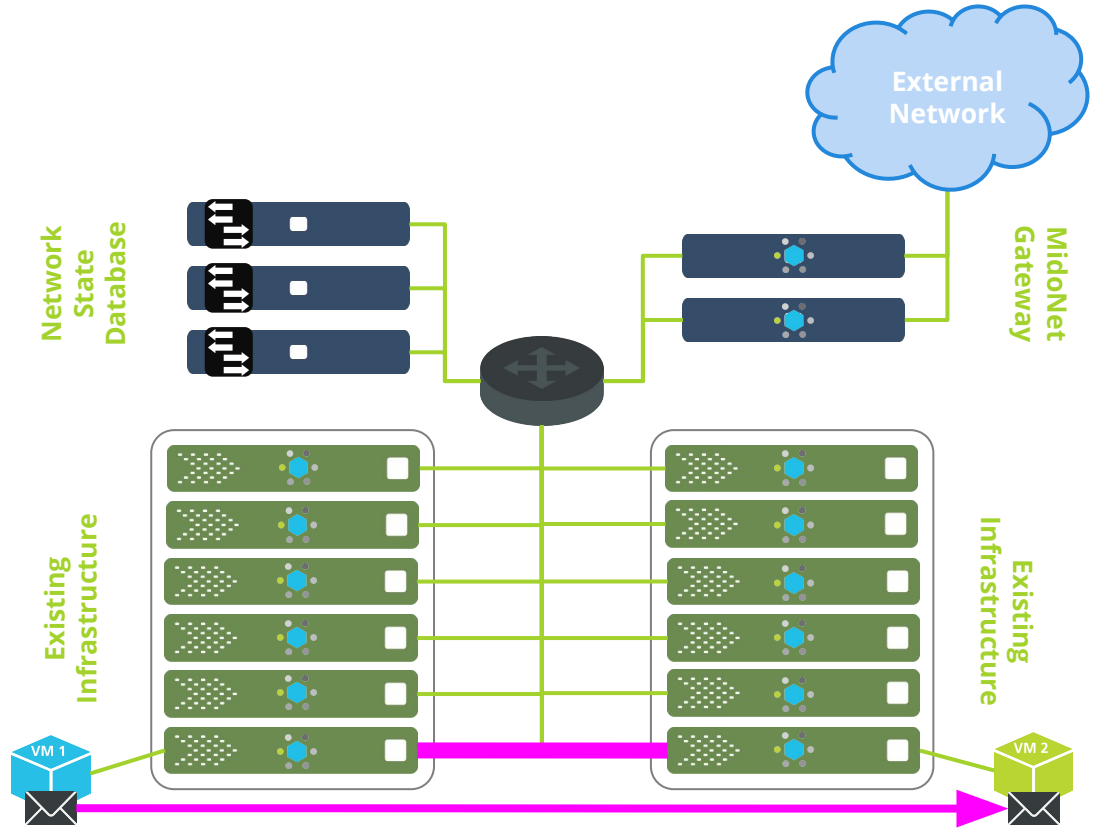
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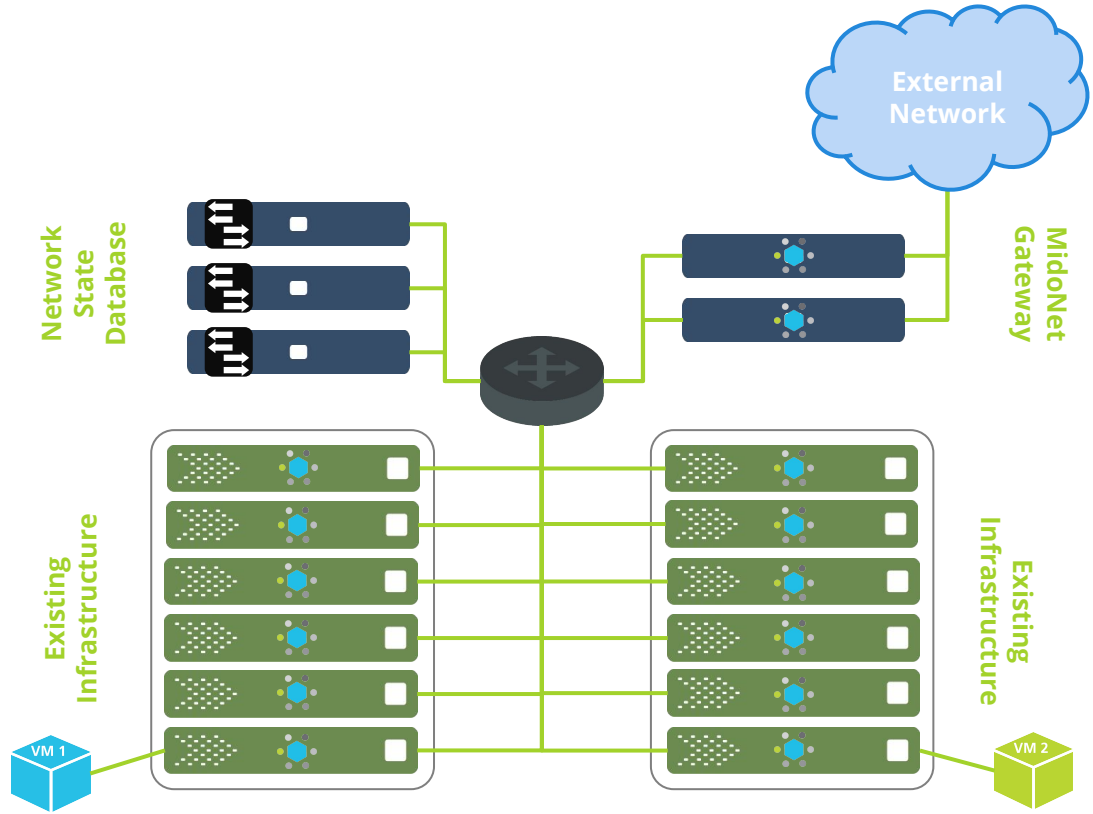
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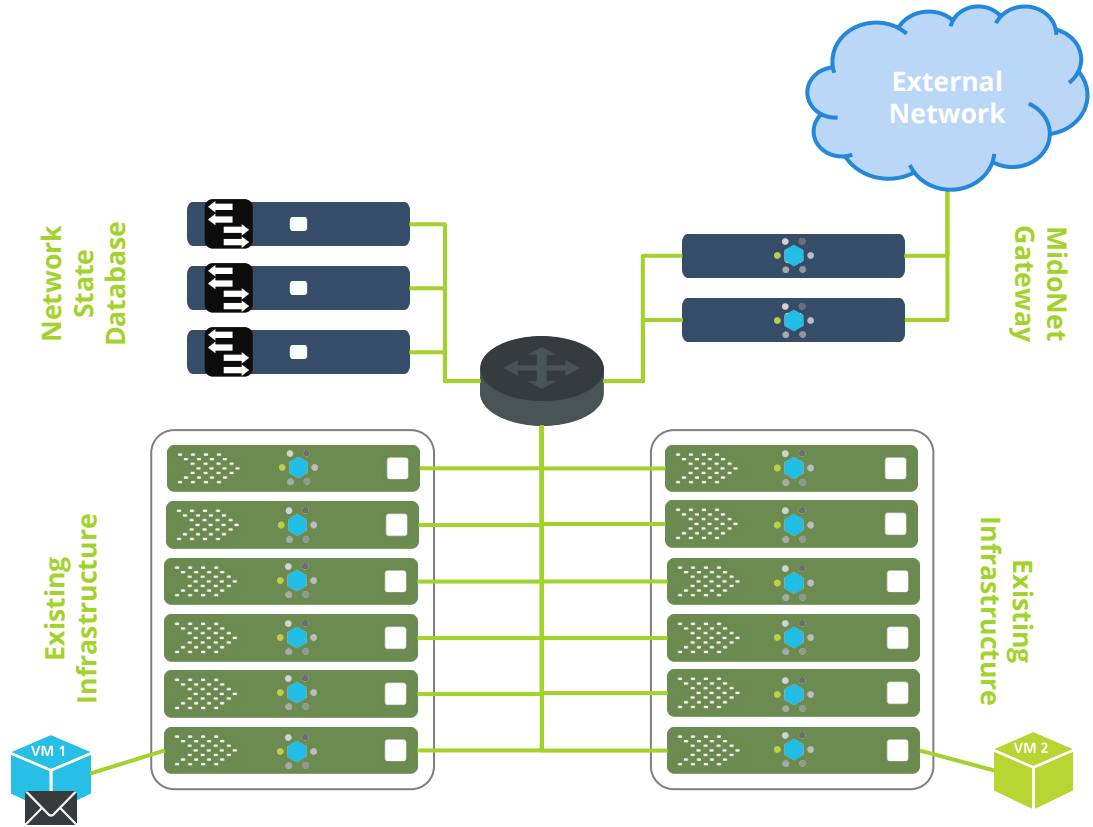
Subsequent Packages Travel Near Line-Speed



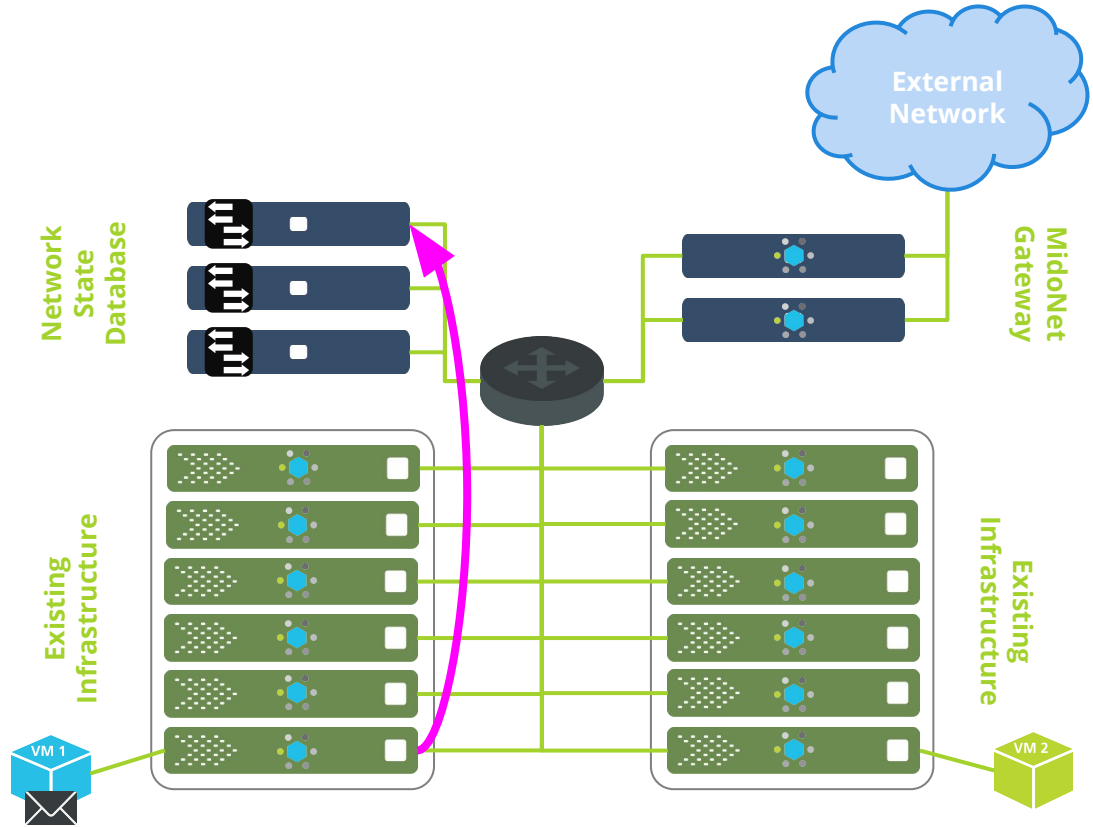
Subsequent Packages Travel Near Line-Speed



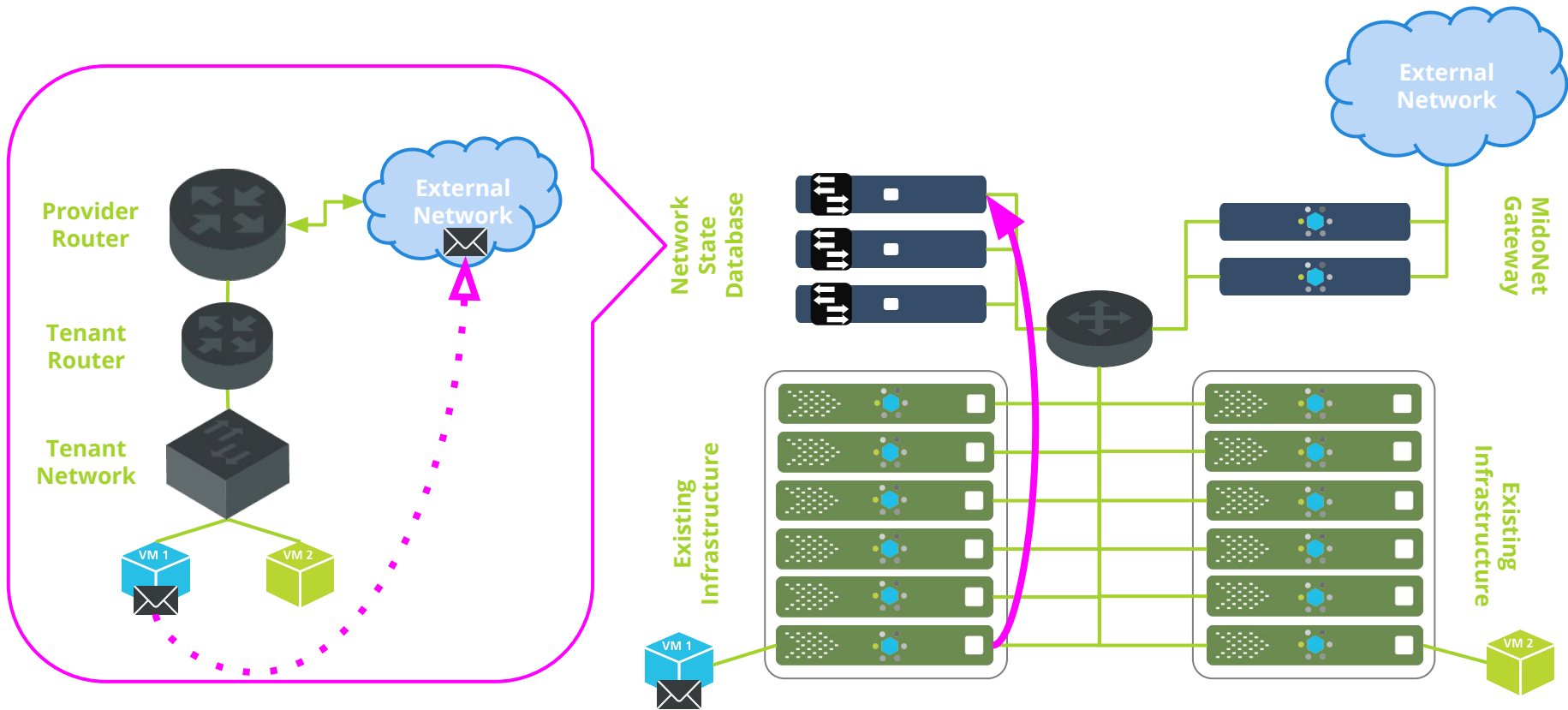
Same for Traffic to/from External Network



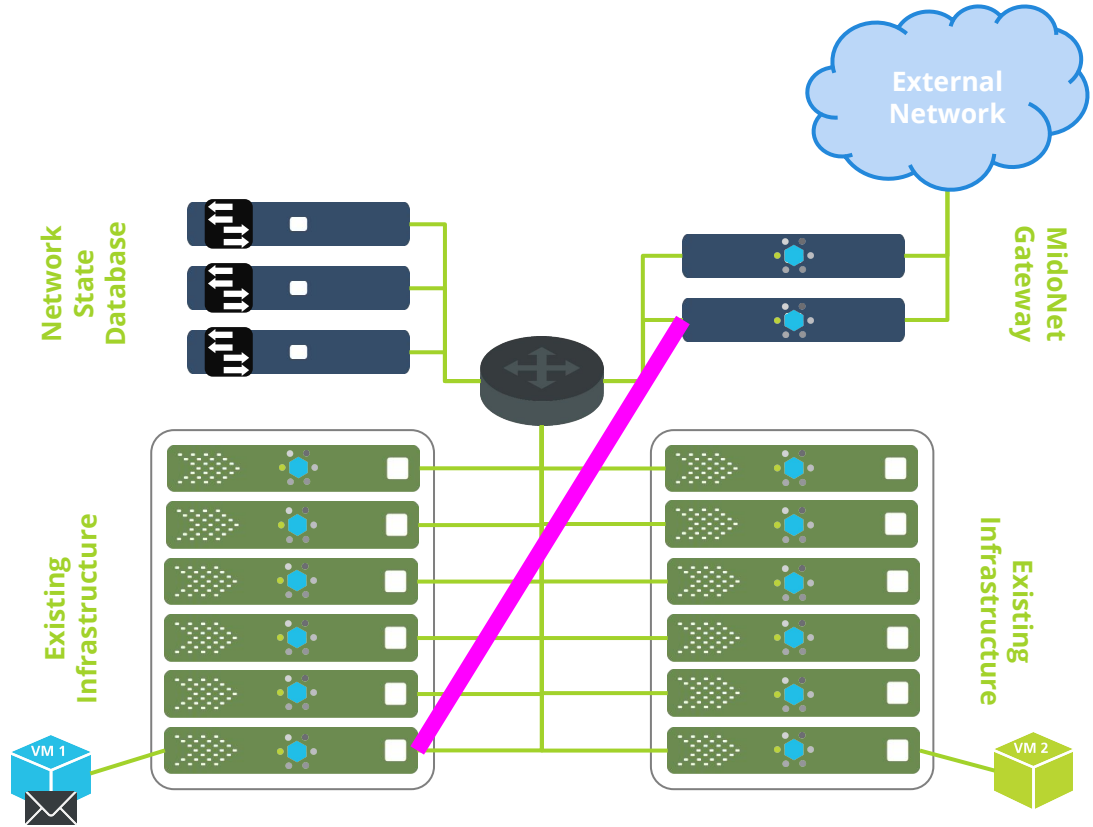
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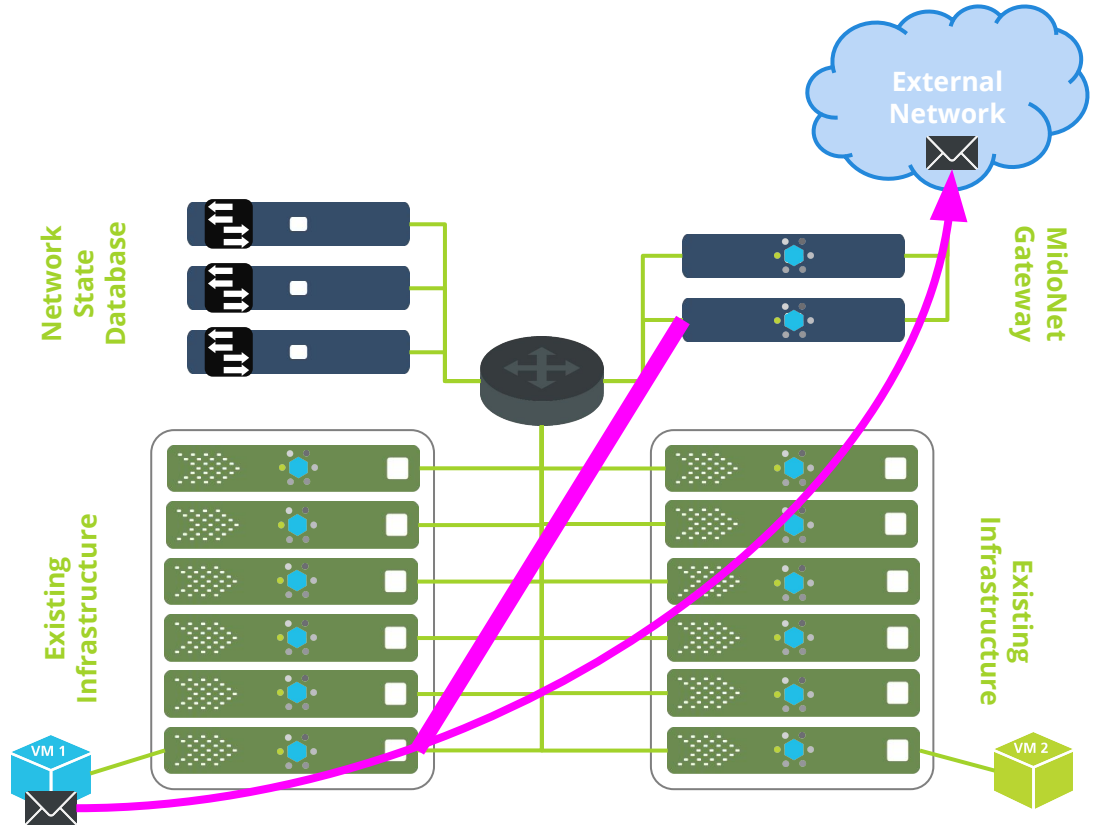
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Same for Traffic to/from External Network



Same for Traffic to/from External Network



Same for Traffic to/from External Network

MidoNet Community

Join us to find out more!

Overview

- In flux: joining OpenStack in 2016
- Landing Page: <https://www.midonet.org/>
 - Blog, Wiki, Docs, etc.
 - Getting Help
 - How to Contribute
 - Downloads
- Twitter: [@midonet](#) / Freenode IRC: #midonet

Quickstart

Executing this command in an Ubuntu 14.04 VM will install the latest MidoNet with OpenStack:

```
curl -sL quickstart.midonet.org | sudo bash
```

Check script before piping it to sudo bash!

Questions?

ask.midonet.org

Thanks!



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