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vGarethLewis

LONDON VMUG
VMWARE USER GROUP

London VMUG – 13th July 2023

Migrate from VMware NSX-V to NSX-T via the Migration Coordinator

Gareth Lewis
Technical Architect

@LonVMUG
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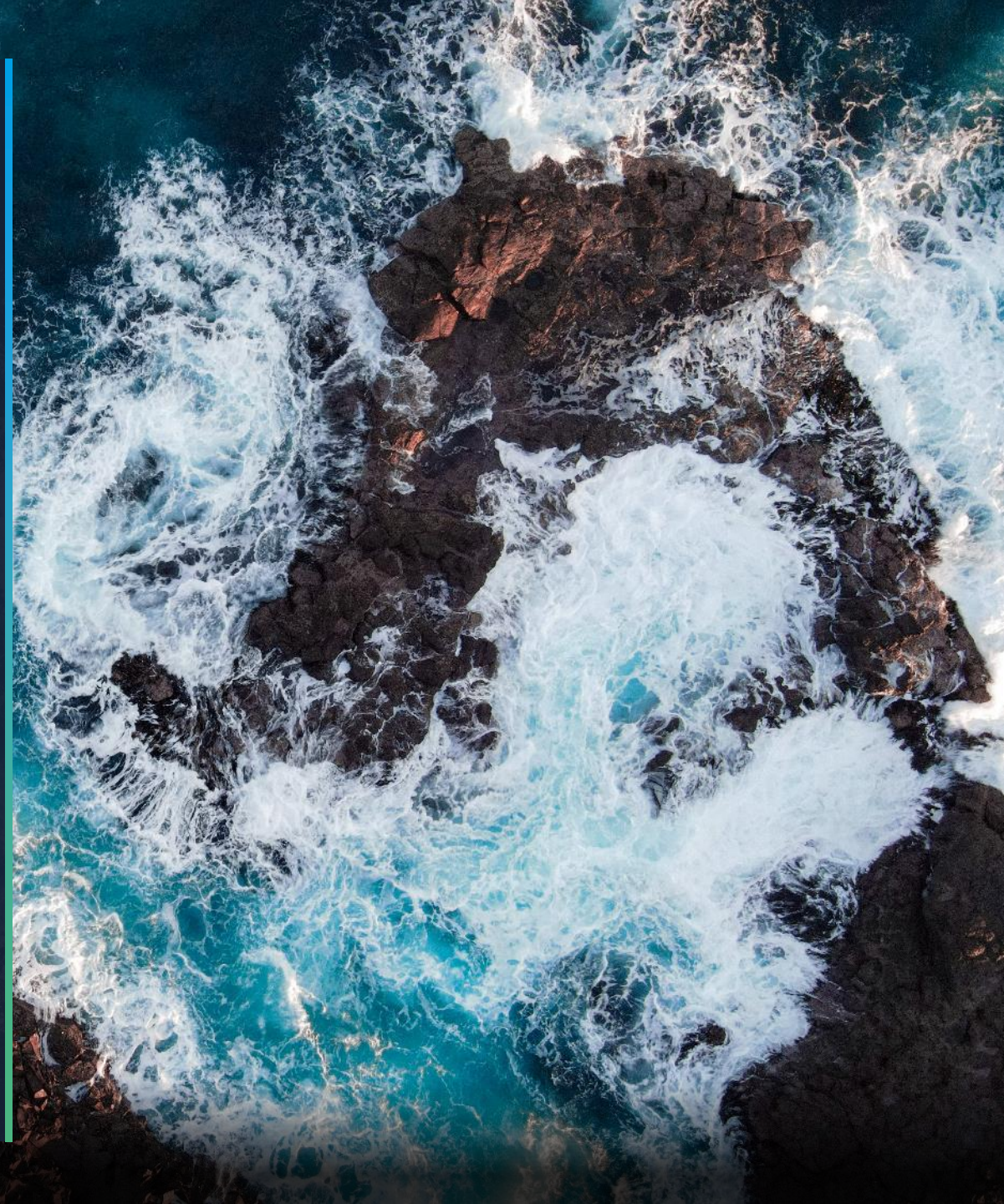

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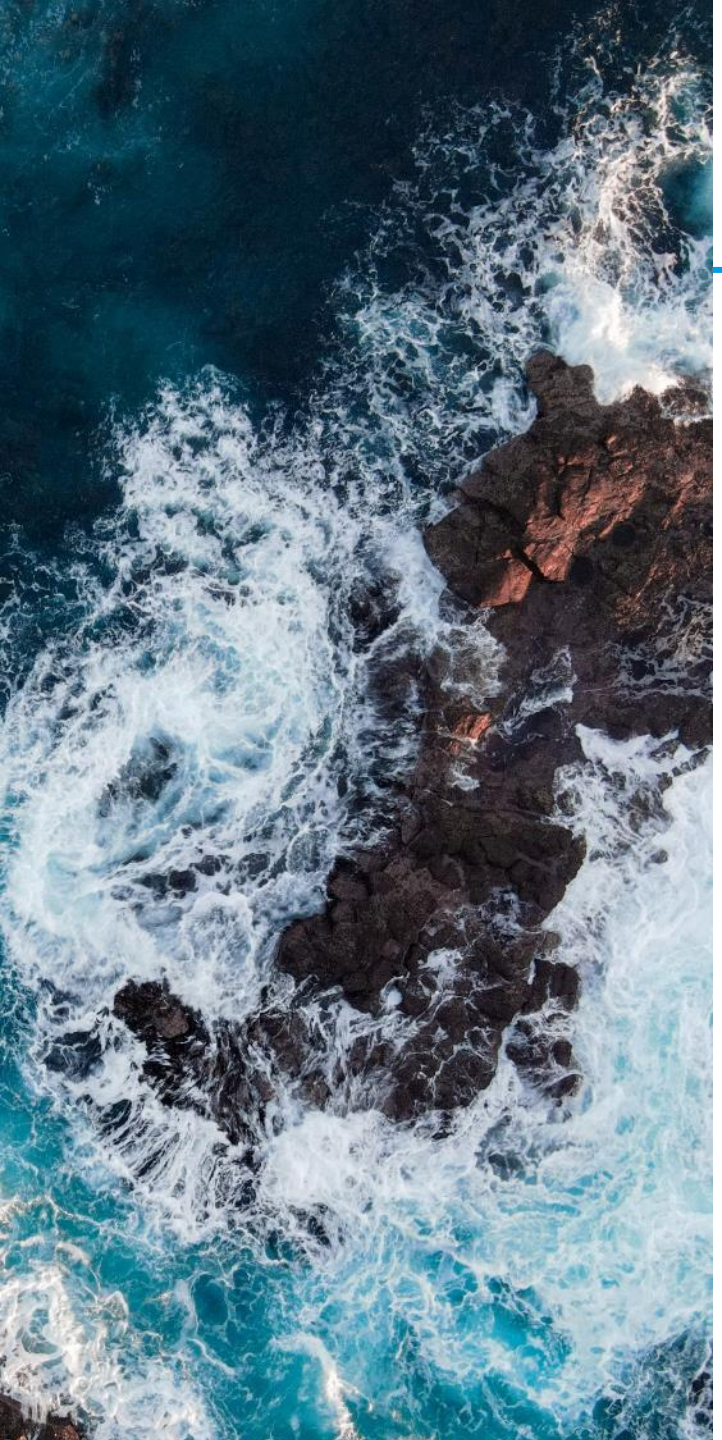
About Me

- Technical Architect, Xtravirt, 4yrs
- 10+yrs of VMware NSX
- VMware Certified Implementation Expert (VCIX)
- Blogger at vGarethLewis.com
- Veeam Certified Architect
- vExpert x6 (2018 – 2023)
- VMware Influencer 100 Club



Agenda

1. VMware NSX: A Quick Recap
2. Migration Modes & Options
3. An Introduction to the User Defined Topology
4. User Defined Workflow
5. The Migration Coordinator in Action

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VMware NSX

A Quick Recap

A Quick Recap

Firstly – How Many Names Does NSX Need?

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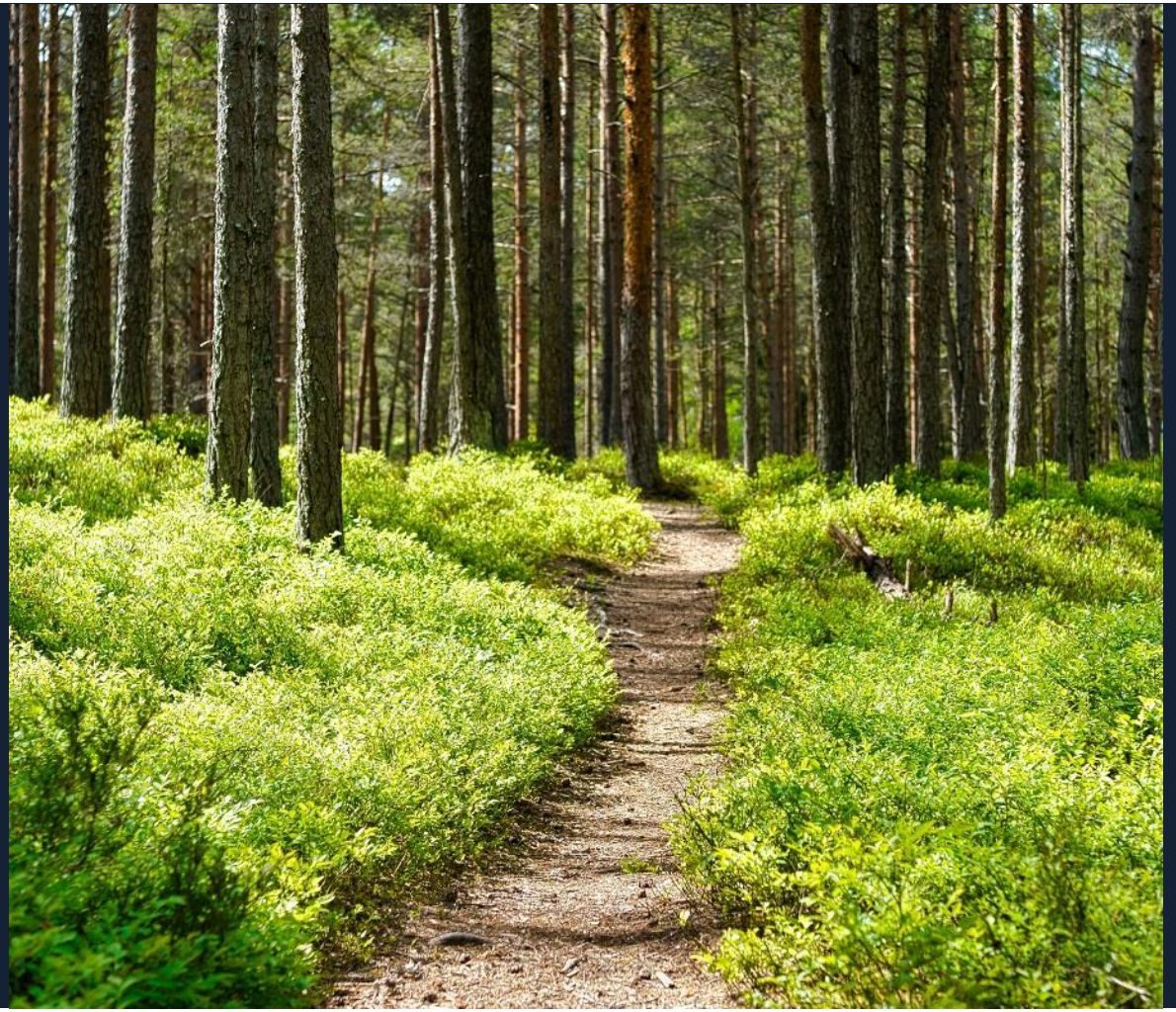
1. VMware NSX Data Center for vSphere
2. VMware NSX-V
3. VMware NSX-T
4. VMware NSX-T Data Center
5. VMware NSX

A Quick Recap – NSX for vSphere

- NSX for vSphere 6.0
  - Released October 2013
  - Name Changes
    - NSX Data Center for vSphere (2018)
    - Still referred to as NSX-V
  - Introduced/Continued:
    - Distributed Firewalling
    - Software-Defined Logical Routing
    - NAT
    - VPN
    - Load Balancing
    - Etc.



A Quick Recap

Rest in Peace NSX for vSphere

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- NSX for vSphere 6.x
  - End of Life January 2022

A Quick Recap

Welcome VMware NSX-T

- NSX-V Replaced by VMware NSX-T 1.0
  - Released October 2016
  - Name Changes
    - VMware NSX-T Data Center (2018)
    - VMware NSX (2022)
  - Superior Functionality
    - vSphere Not-Required
    - Hypervisor Agnostic (ESXi, KVM*)
    - Distributed Firewall**
    - Logical Routing*
    - IDS/IPS
    - Multi-Site/Multi-Location *
    - Load Balancing*
    - VPN*
  - Flagship Network and Security offering

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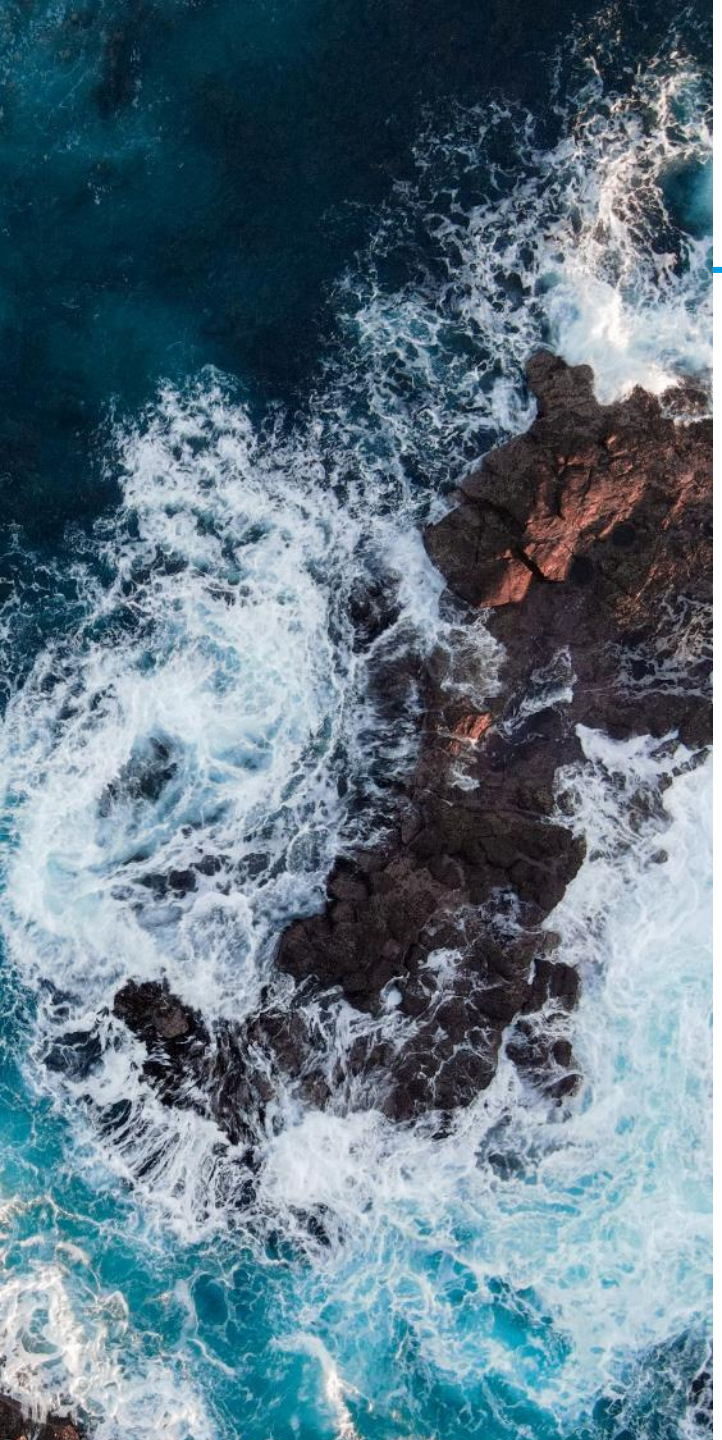
VMware NSX-V to NSX-T

Migration Options



Migration Options

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- **In-Parallel – Greenfield**
  - New/Reused Hardware, Deploy New, Skill Up, Migrate at your leisure via vMotion and NSX L2 Bridge or VPN, VMware HCX, etc.

- **In-Place – NSX Migration Coordinator**
  - Standard Migration Modes
    - NSX for vSphere
      - Fixed Topology (Limited to Supported Topologies)
      - User Defined Topology
        - Complete Migration (E2E)
        - Configuration Migration (L&S)
        - Configuration and Edge Migration (L&S)
        - Cross-vCenter to NSX Federation
      - vSphere Networking (VDS 6.5.0 and 6.6.0 to N-VDS)
      - NSX for vSphere with vRealize Automation
  - Advanced Migration Modes
    - Edge Cutover
    - Distributed Firewall
    - Distributed Firewall, Host and Workload

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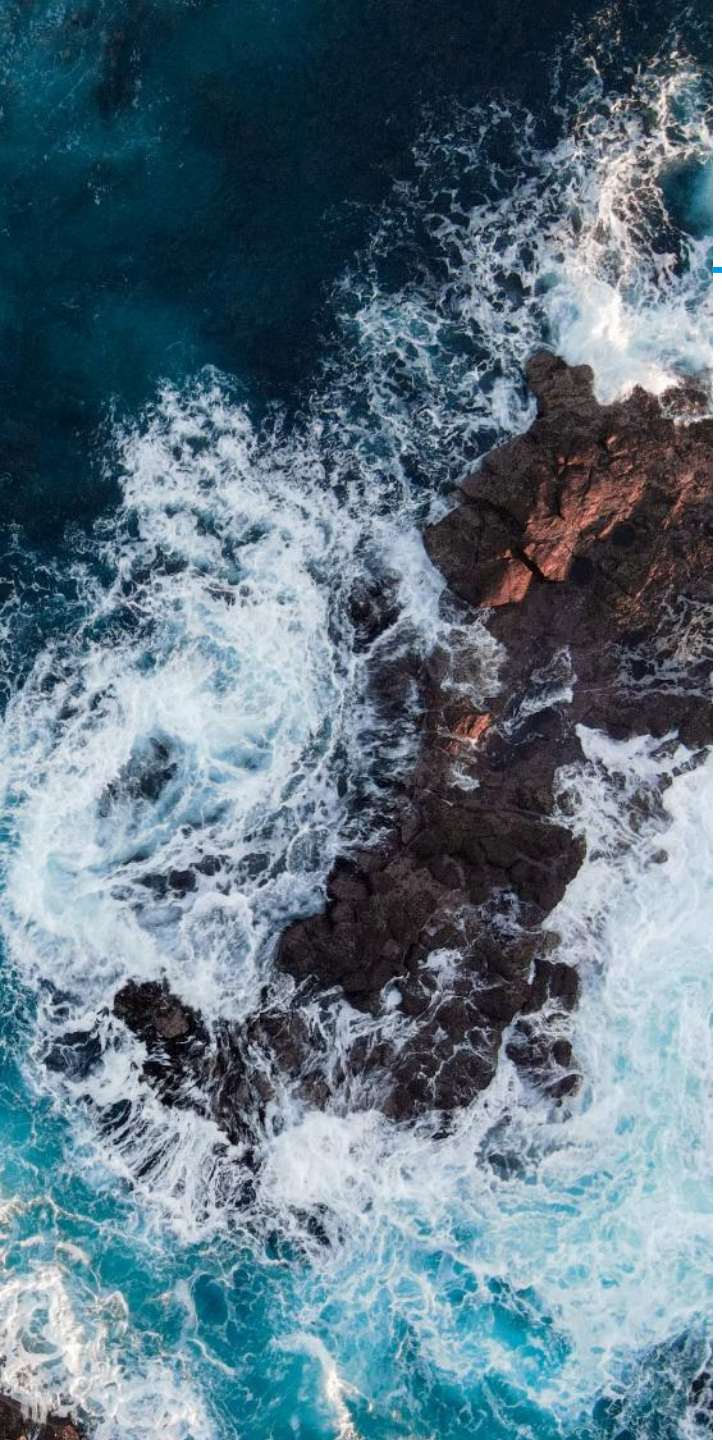
VMware NSX-V to NSX-T

User Defined Complete Migration via the NSX Migration Coordinator



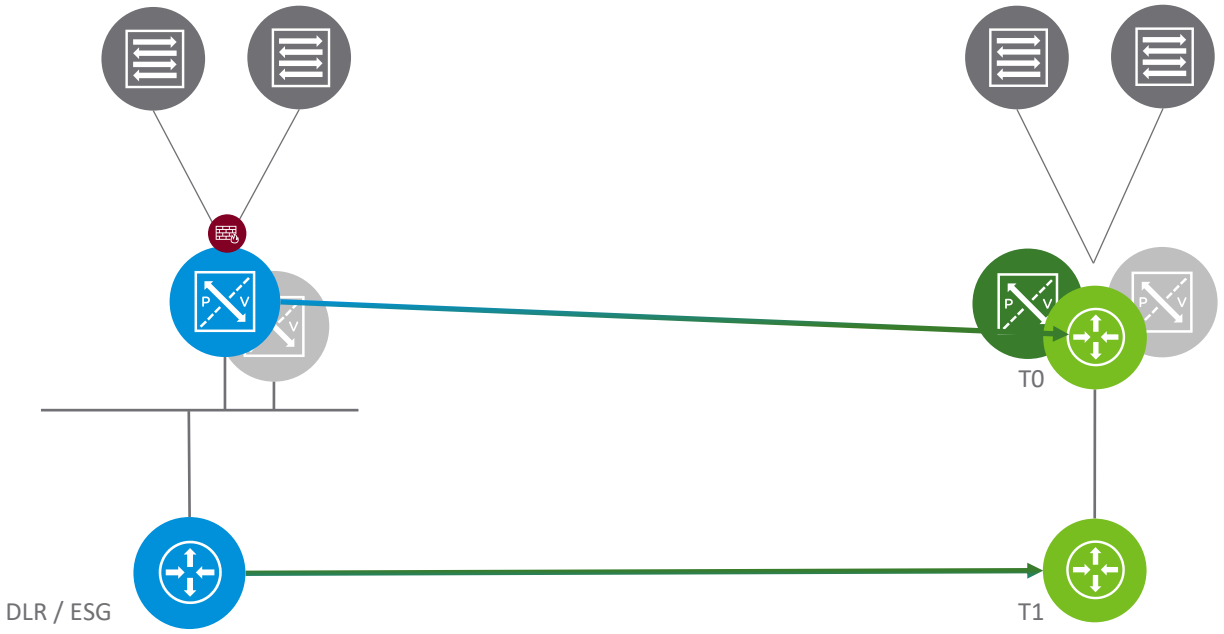
User Defined Topology

What is moved...

- Logical Networking
- Security Configurations
- Edges
- Hosts
- Workload VMs

User Defined Topology

What it CAN do…



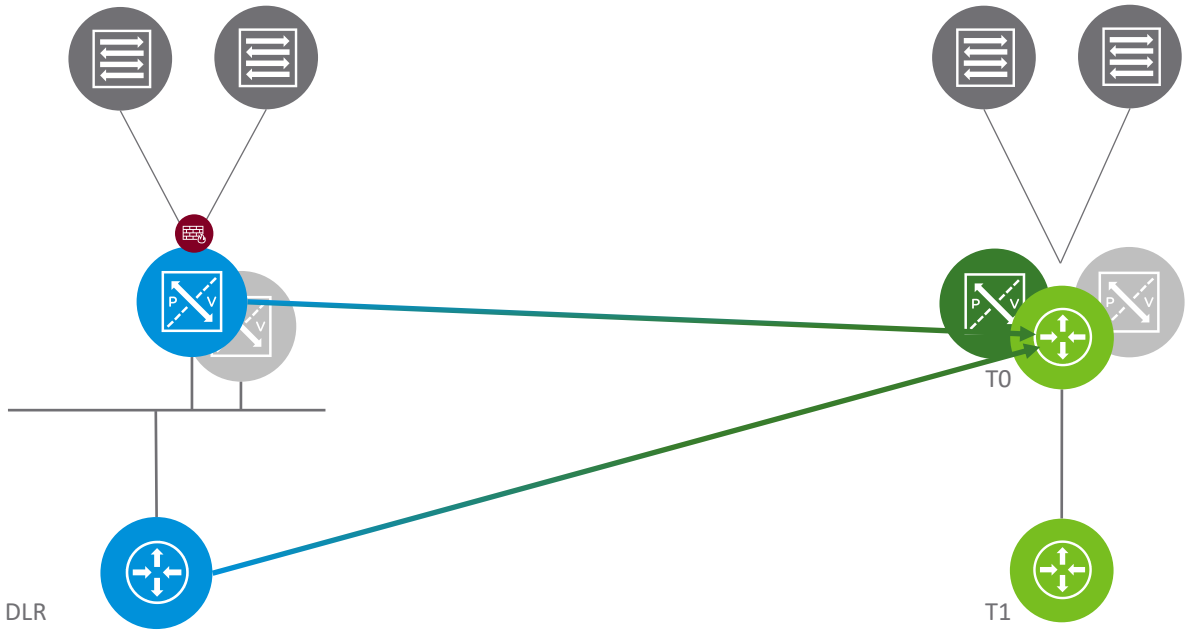
1. Deploy new NSX-T Manager
2. Deploy Edges
3. Configure T0/T1 as needed
4. Provide the mapping during the Migration Coordinator ‘User Defined Topology’ mode of migration

Existing NSX-V Topology

New User Defined Topology in NSX-T

User Defined Topology

What it CAN do…



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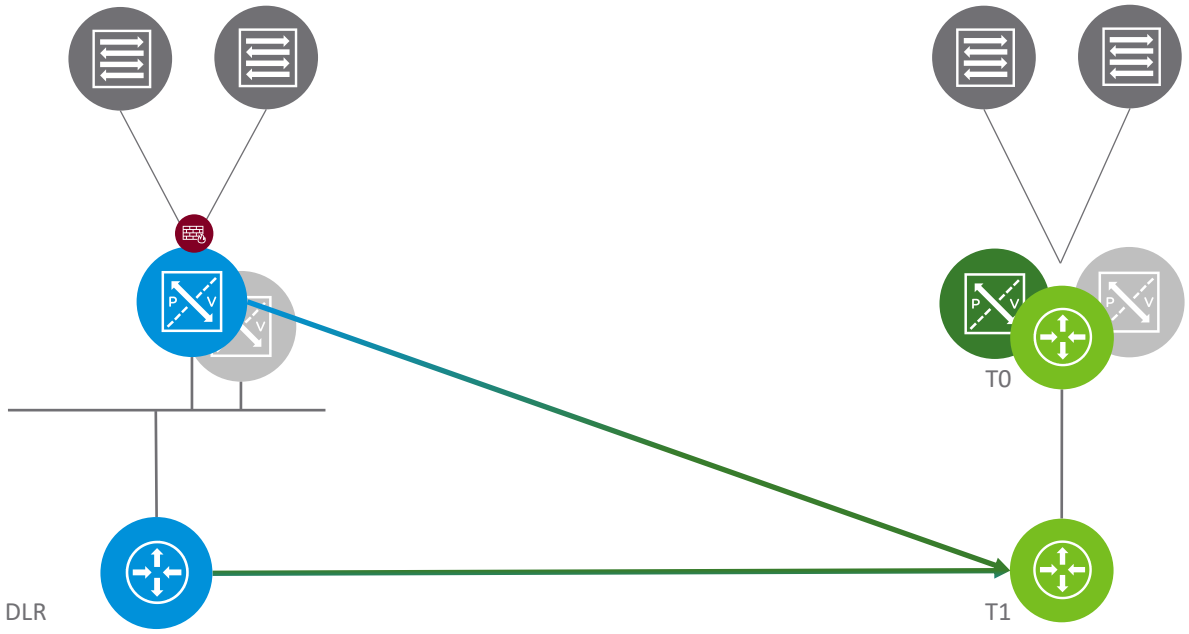
Existing NSX-V Topology

New User Defined Topology in NSX-T

User Defined Topology

What it CAN do…



1. Deploy new NSX-T Manager
2. Deploy Edges
3. Configure T0/T1 as needed
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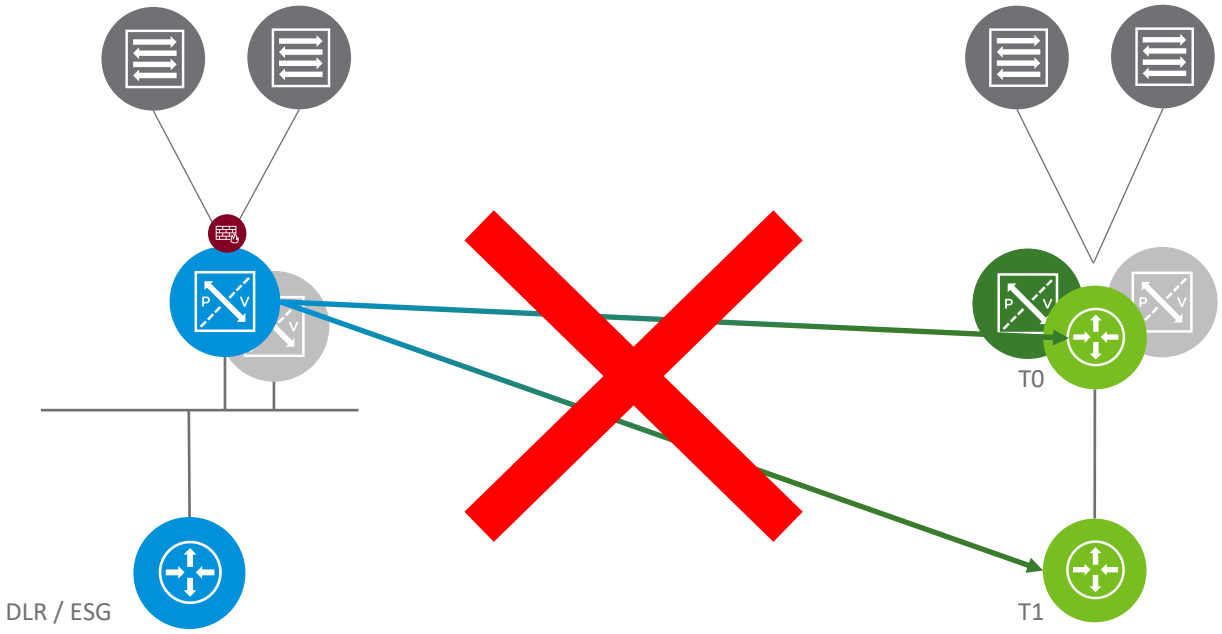
Existing NSX-V Topology

New User Defined Topology in NSX-T

What it CAN'T do...



1. Deploy new NSX-T Manager
2. Deploy Edges
3. Configure T0/T1 as needed
4. Provide the mapping during the Migration Coordinator 'User Defined Topology' mode of migration

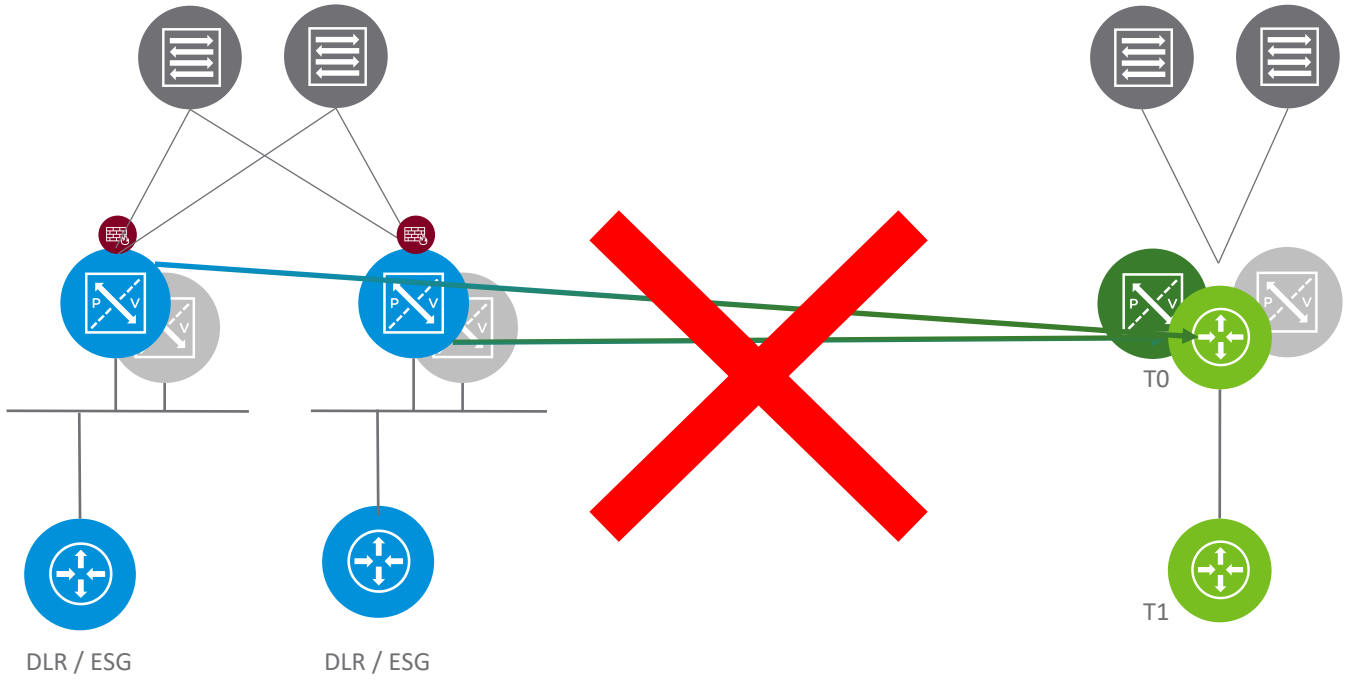
User Defined Topology will not allow:

1. Separating Functions

Existing NSX-V Topology

New User Defined Topology in NSX-T

What it CAN'T do...



1. Deploy new NSX-T Manager
2. Deploy Edges
3. Configure T0/T1 as needed
4. Provide the mapping during the Migration Coordinator 'User Defined Topology' mode of migration

User Defined Topology will not allow:

1. Separating Functions
2. Consolidating

Existing NSX-V Topology

New User Defined Topology in NSX-T

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User Defined Topology

Workflow

User Defined Topology

Workflow

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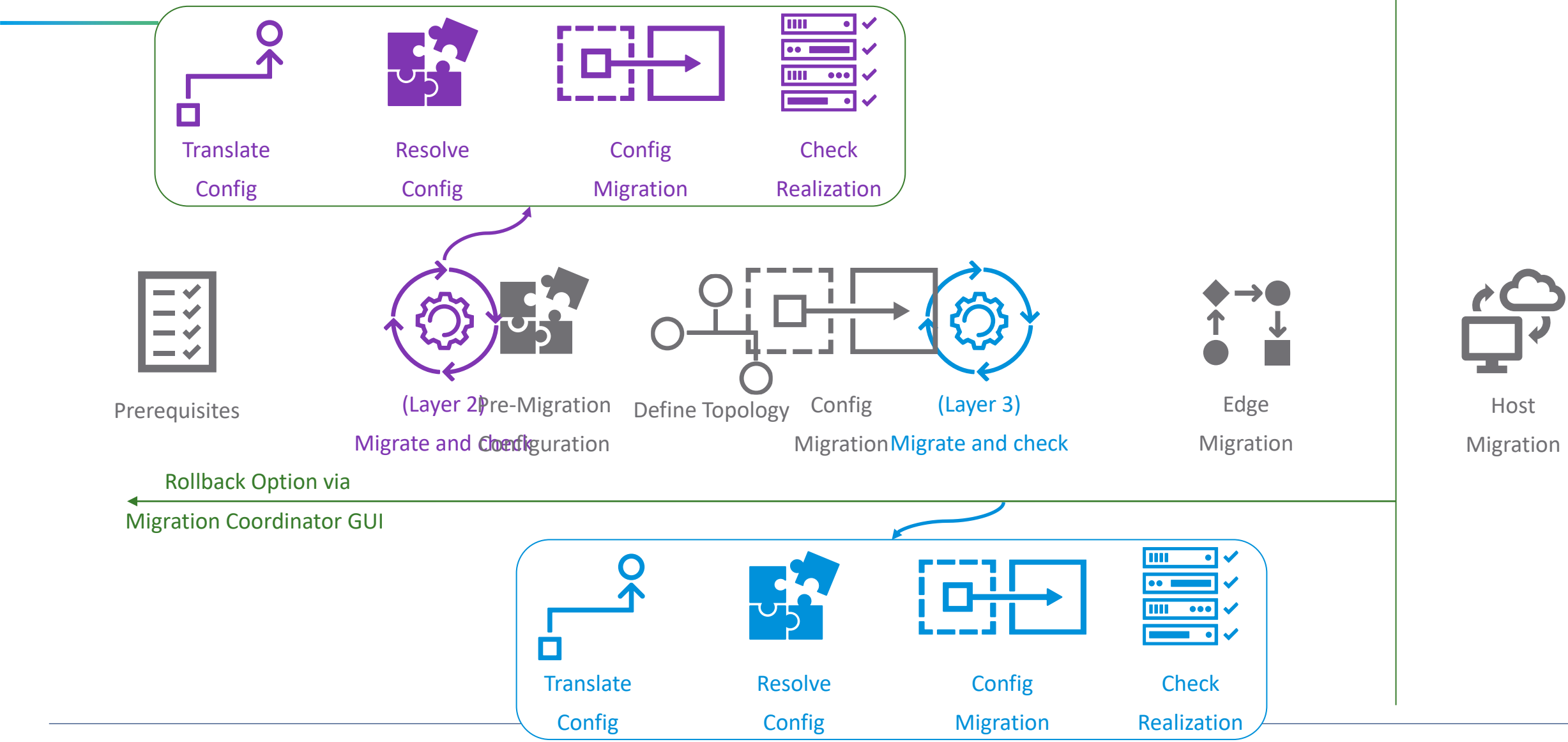

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User Defined Topology

In Action

Prerequisites

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vSphere

- Stable environment
- No pending host reboots
- NSX-T compatible (7.0+)
- VDS 7.0 or higher
- Ability to put hosts into maintenance mode

NSX for vSphere

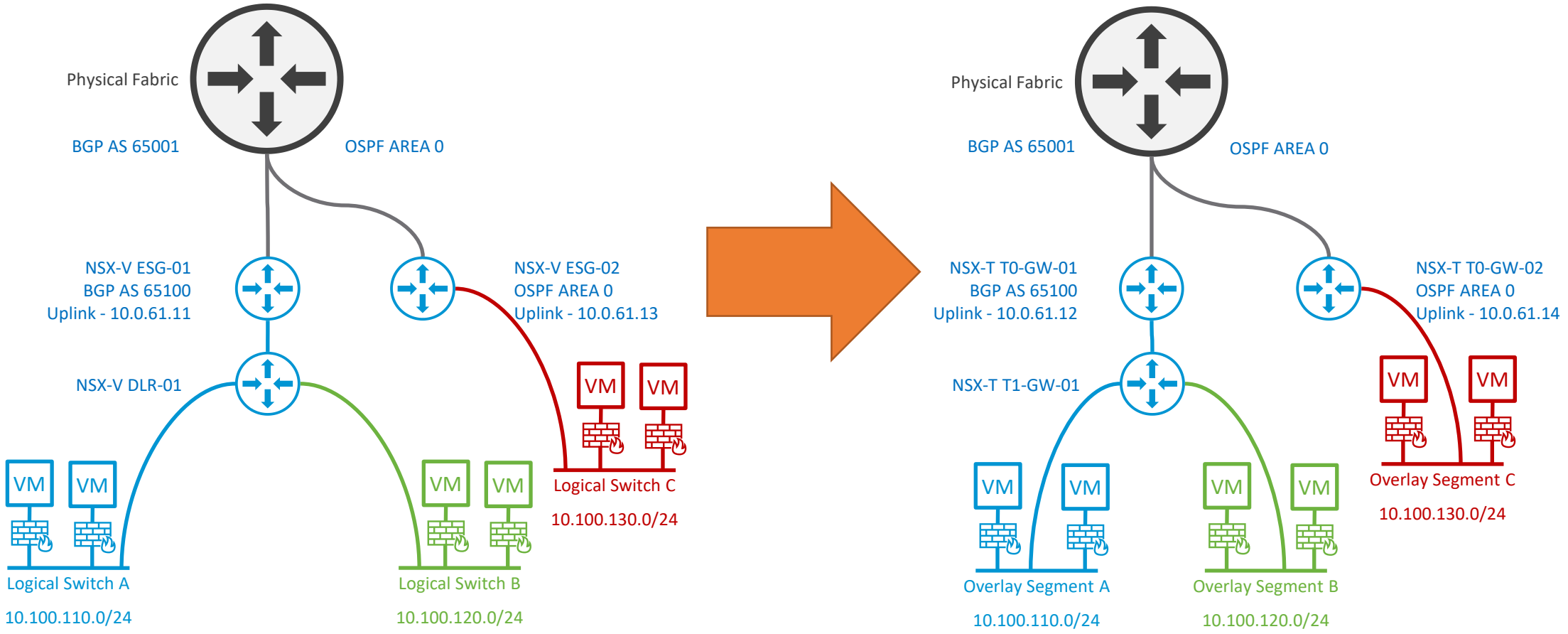
- Stable environment
- Healthy backups
- NSX-V latest
- No DFW unpublished changes

NSX-T

- NSX-T 3.2 or higher
- NSX Management Cluster and Edge nodes deployed to vSphere
- No user-defined DFW rules
- Edge TEP IP Pool
- N/S configured (T0 and/or T1 topology) and T0 configured with dynamic routing

User Defined Topology

Topology

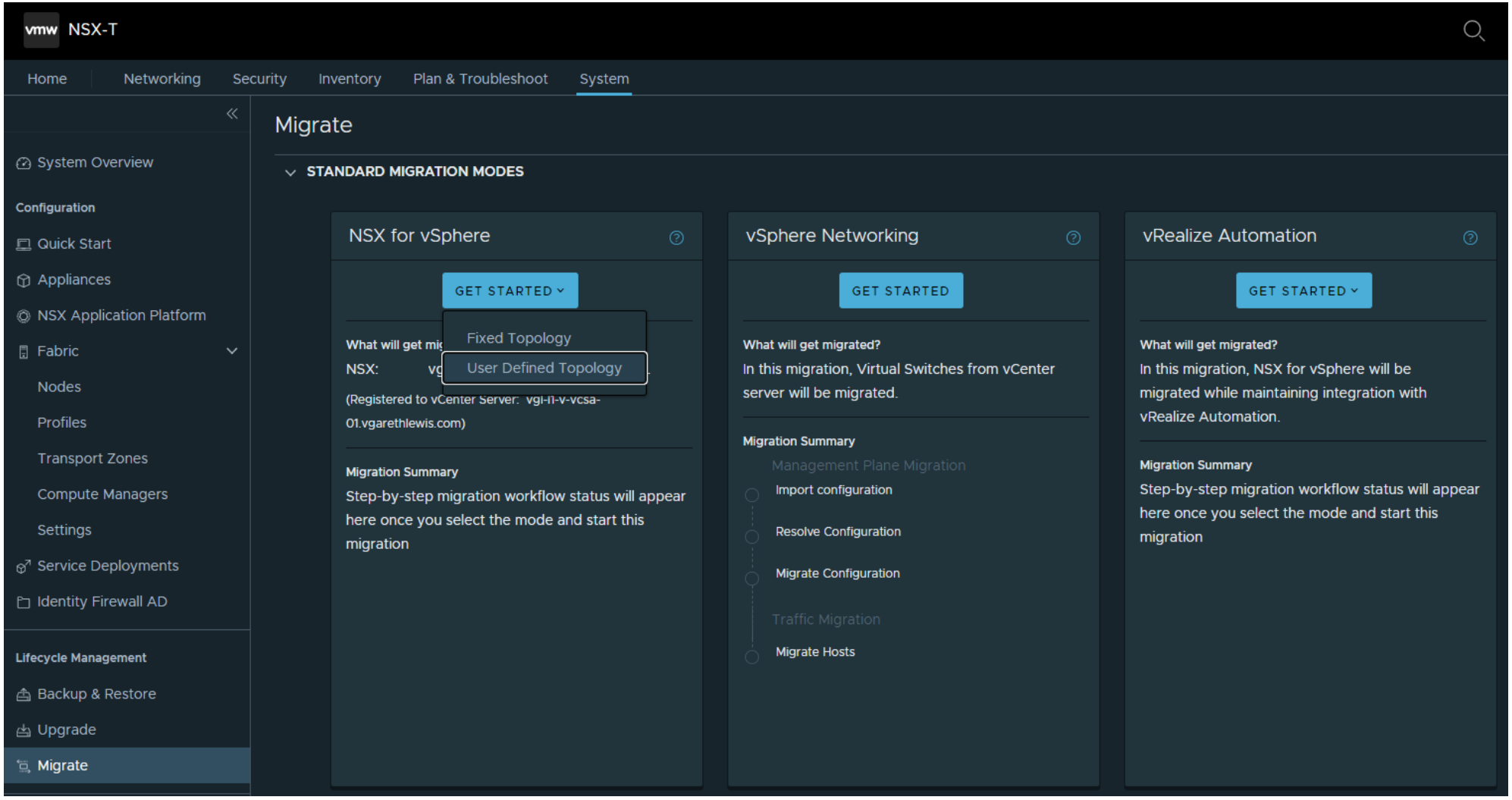


Existing NSX-V Topology

New User Defined Topology in NSX-T

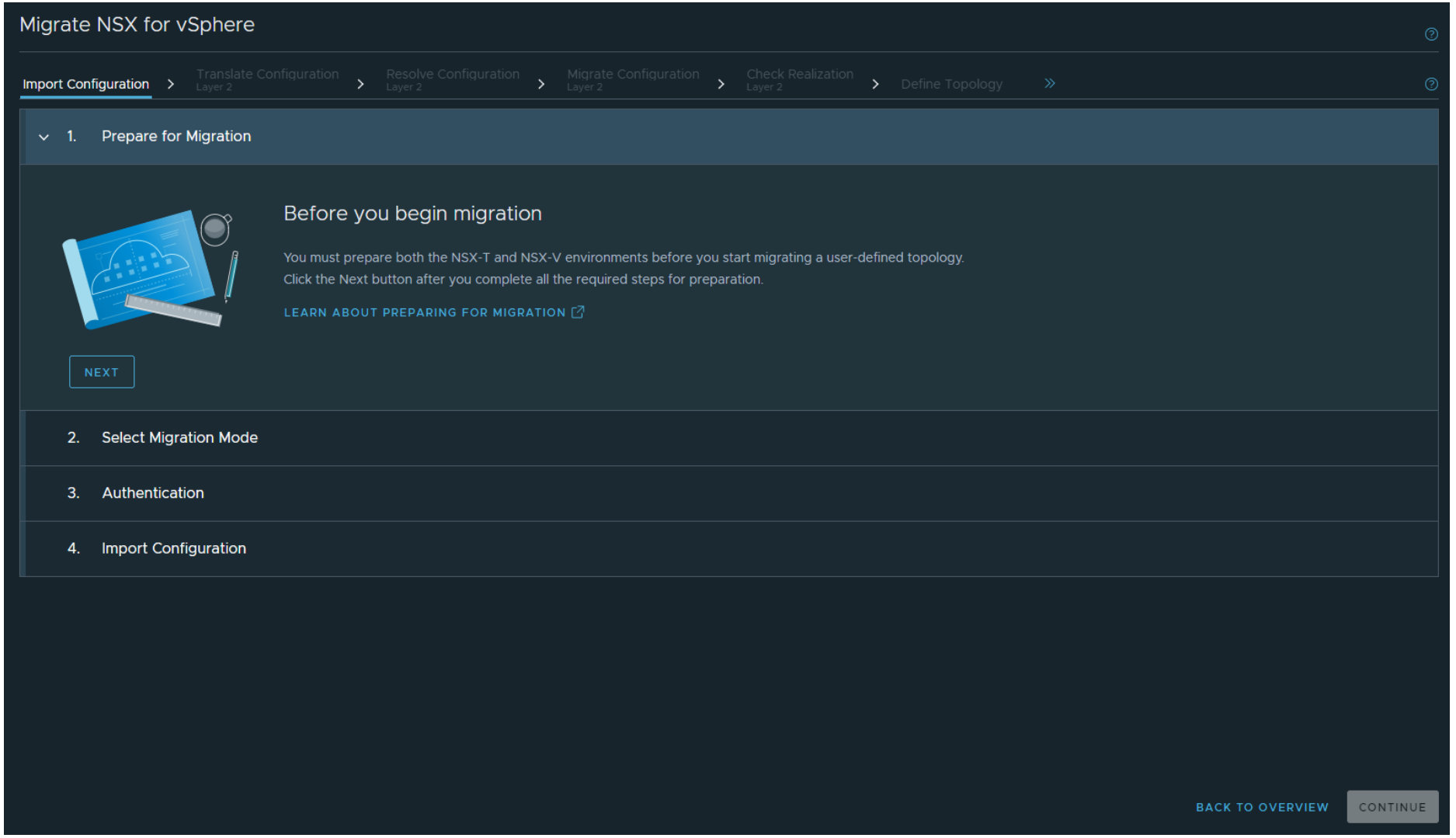
User Defined Topology

Get Started



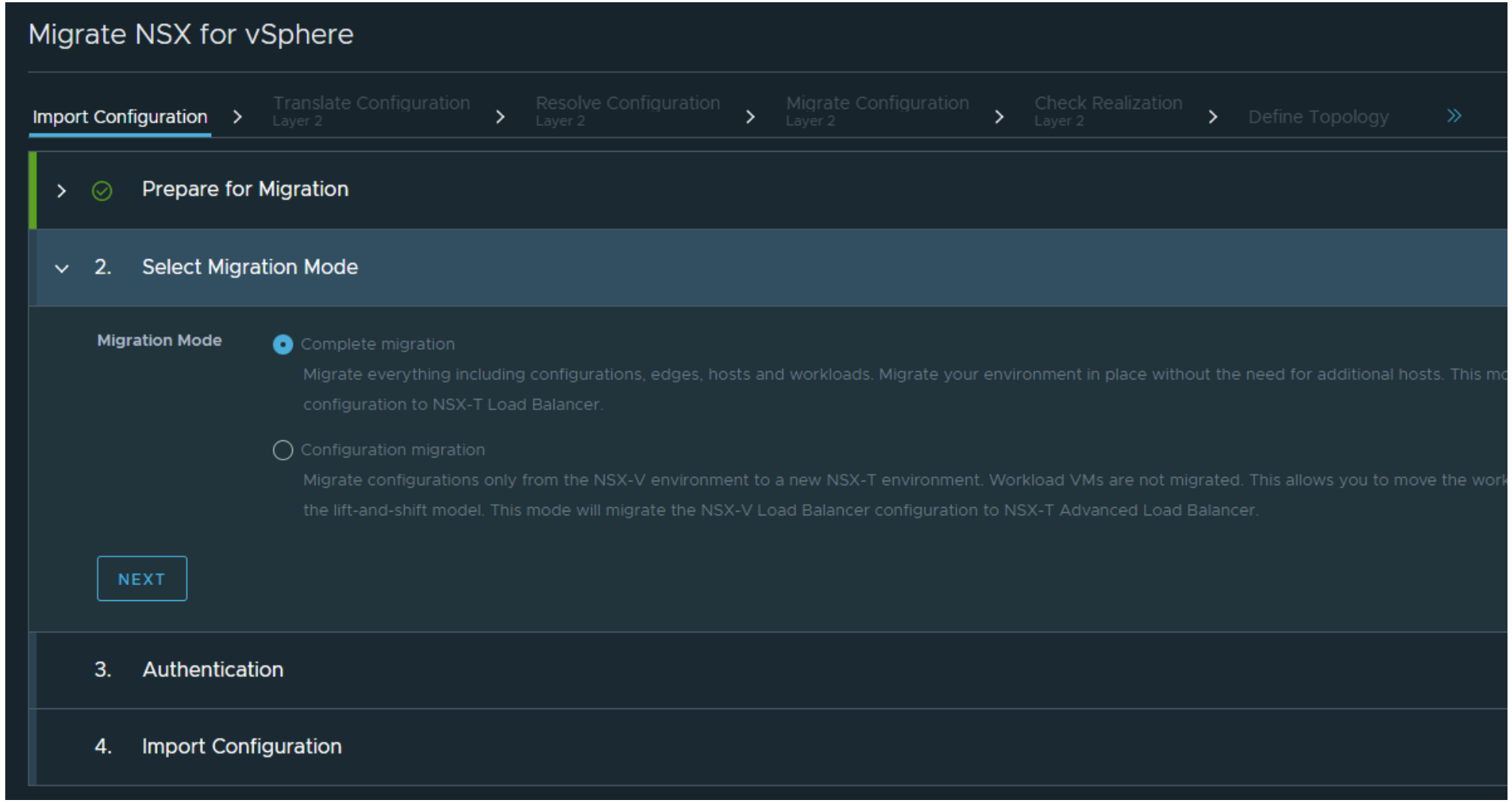
User Defined Topology

Prepare for Migration

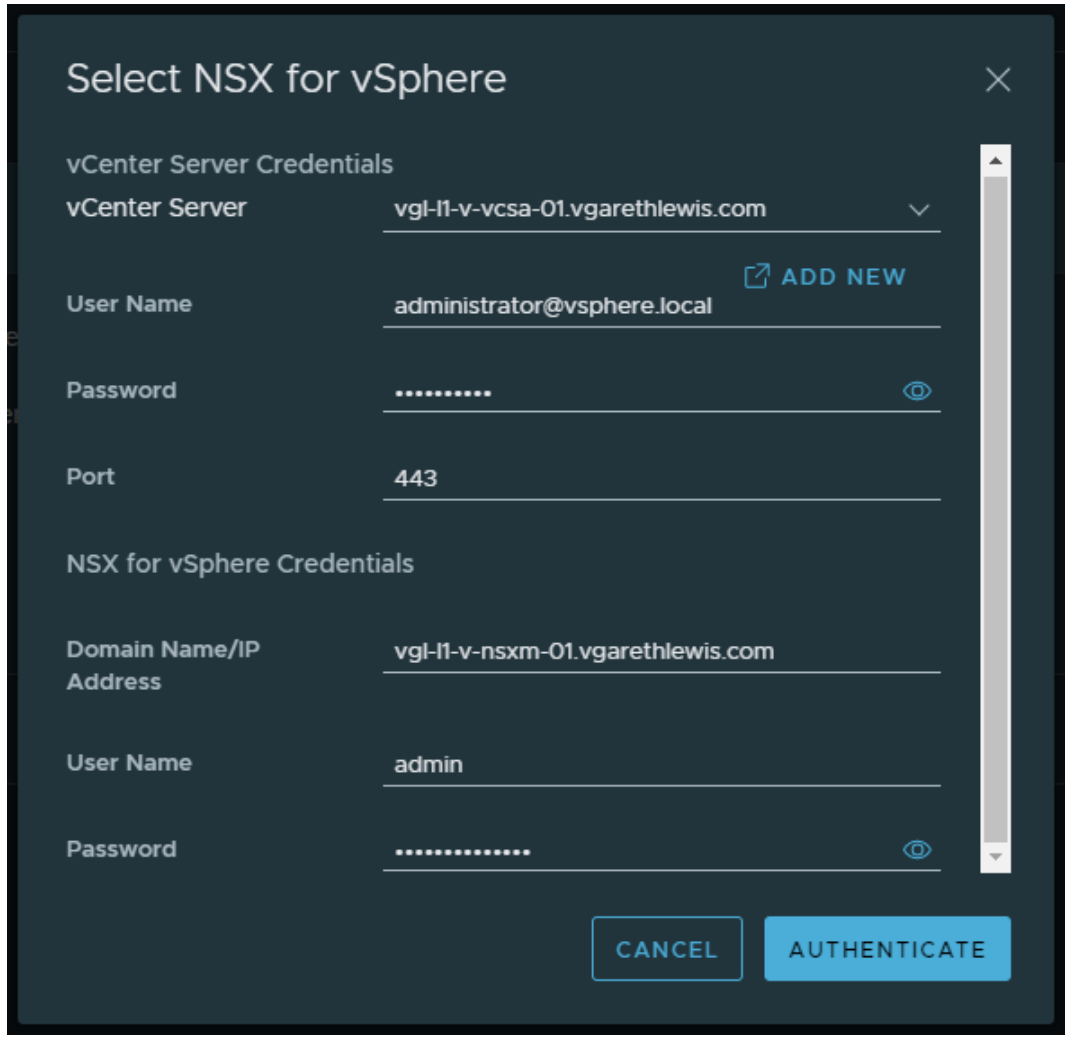


User Defined Topology

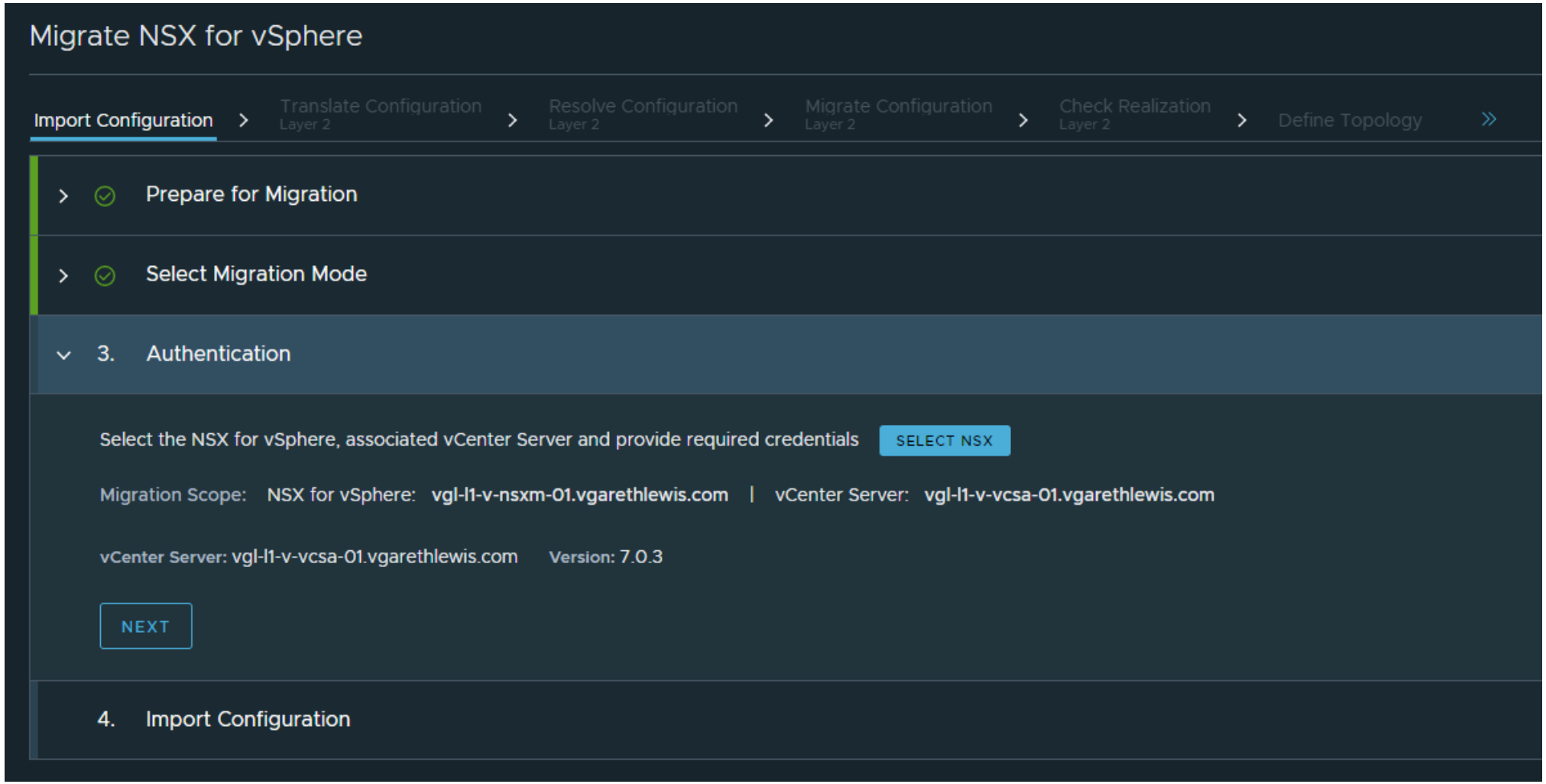
Select Migration Mode



Select NSX for vSphere and vSphere

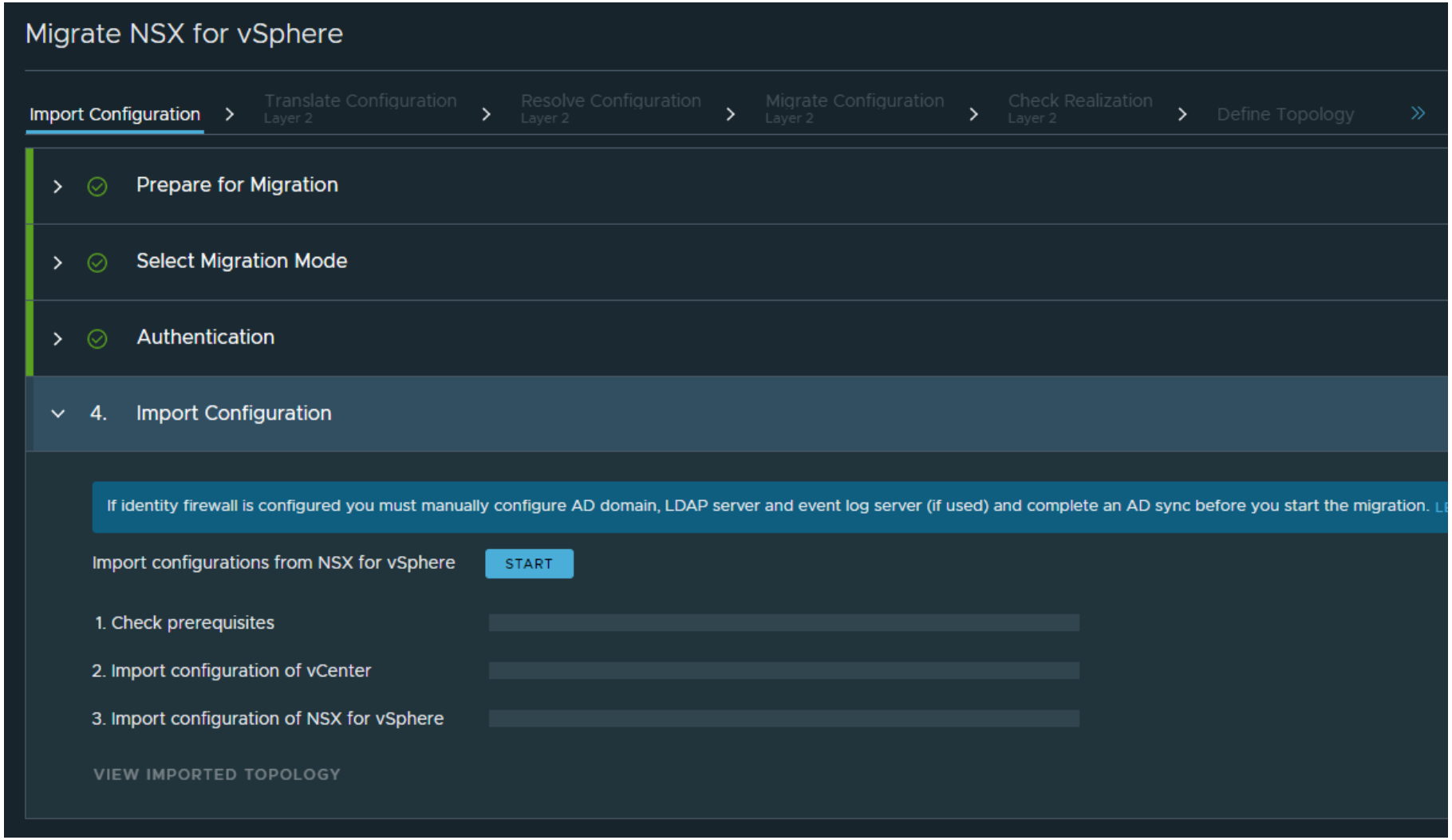


Authenticate



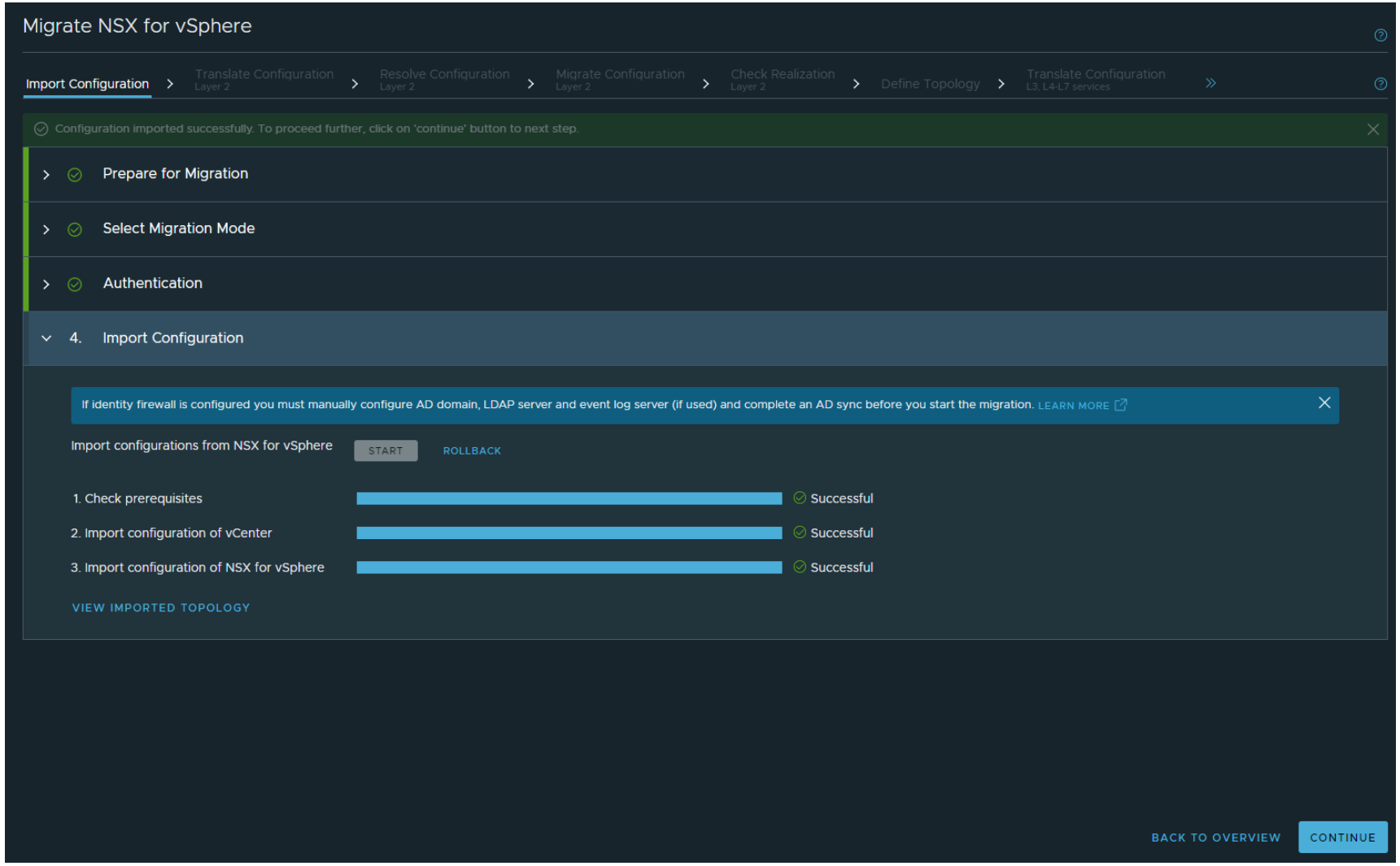
User Defined Topology

Import Configuration



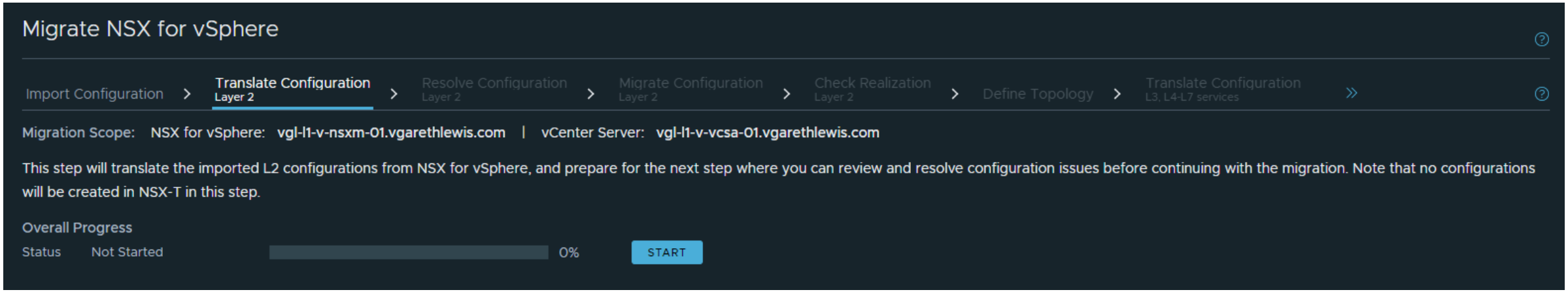
User Defined Topology

Import Configuration – Successful



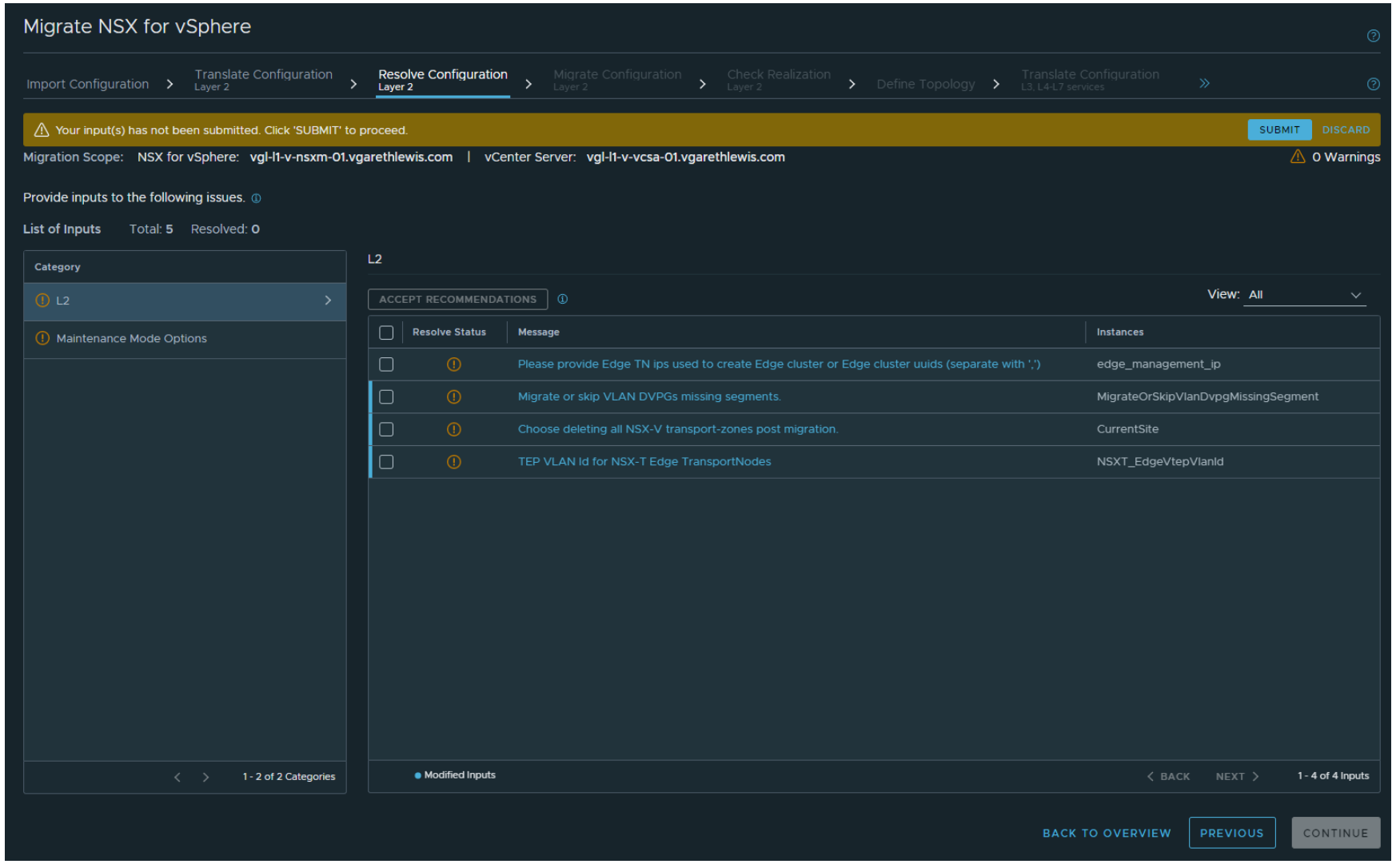
User Defined Topology

Translate Configuration – Layer 2



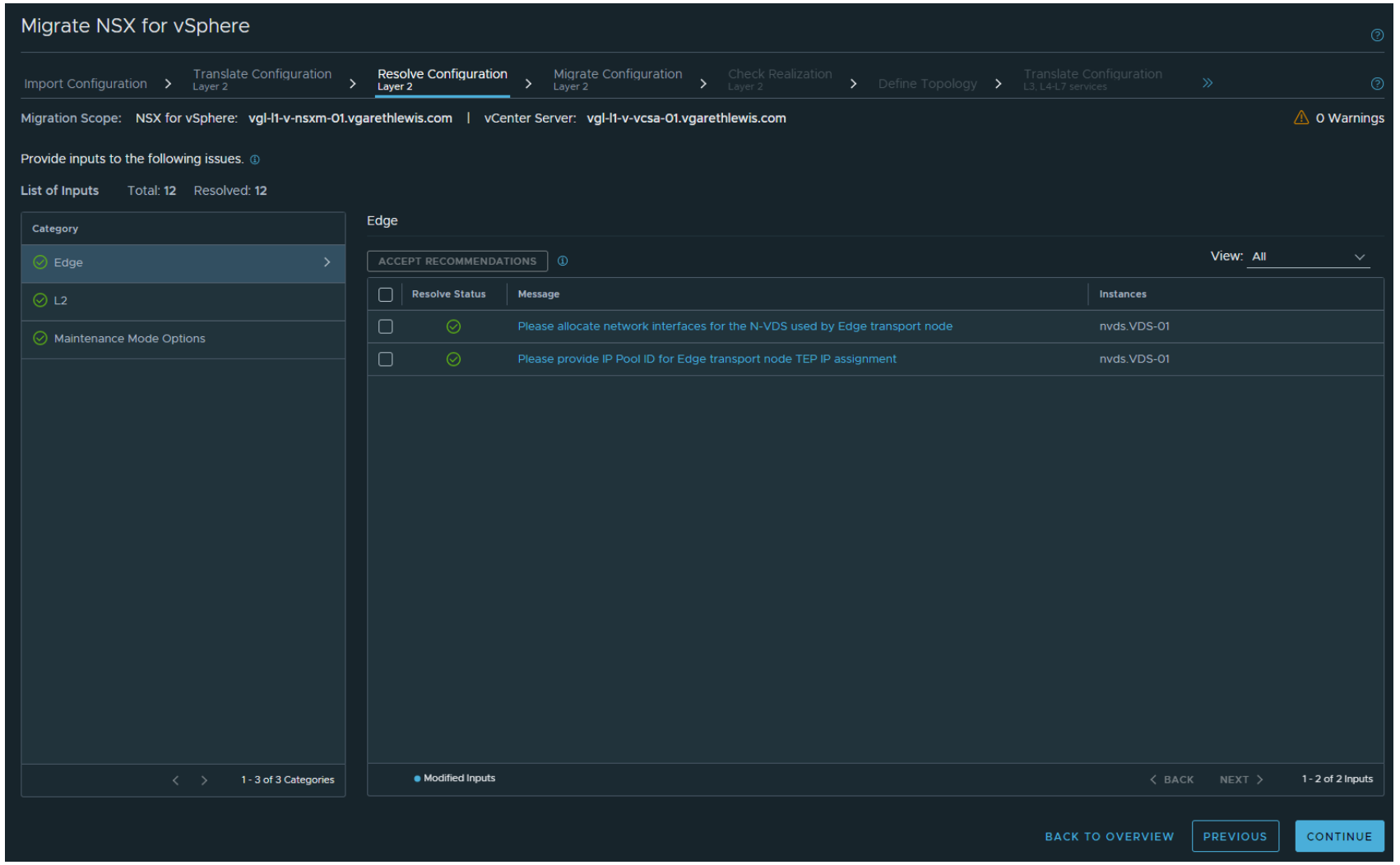
User Defined Topology

Resolve Configuration – Layer 2



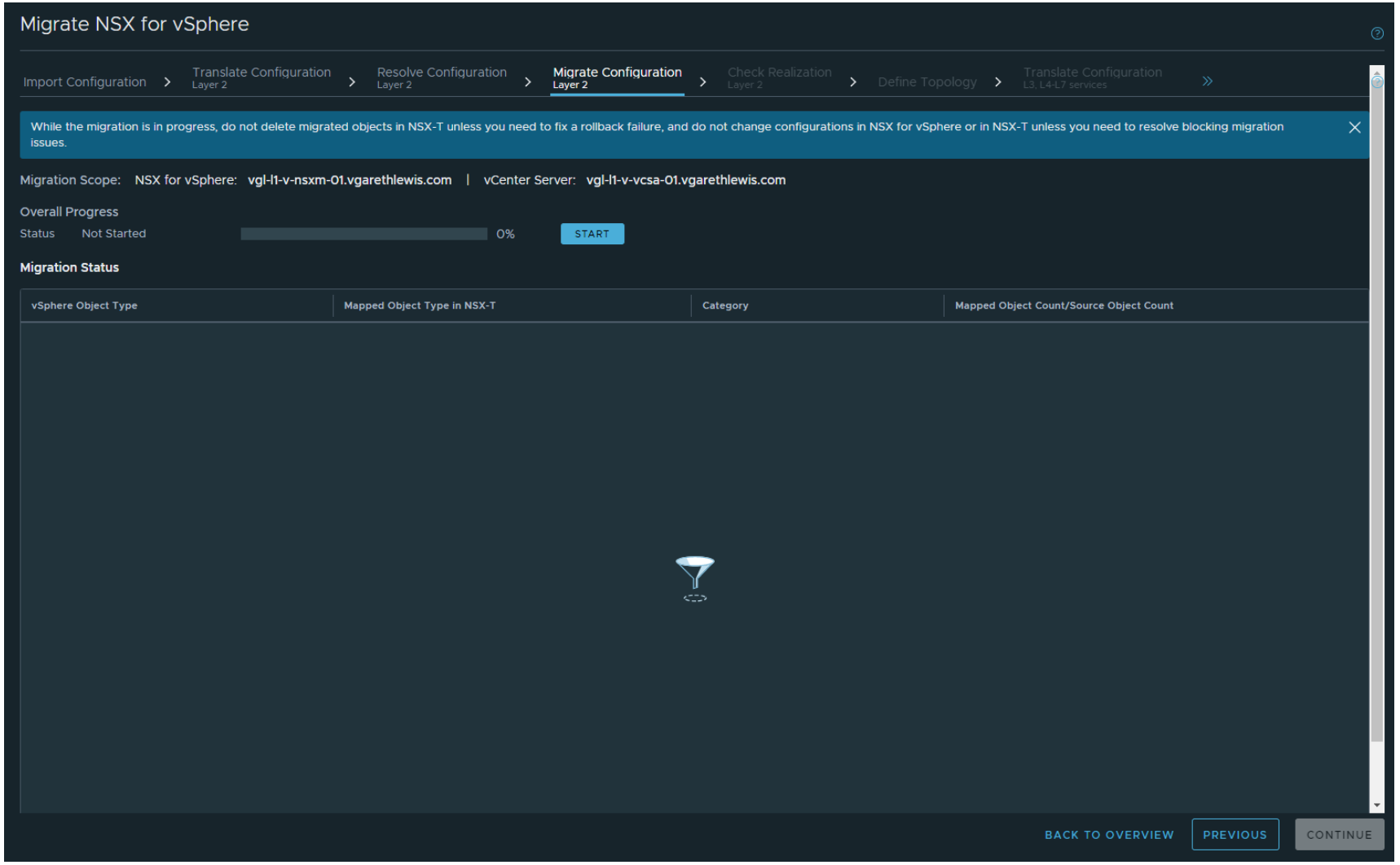
User Defined Topology

Resolve Configuration – Layer 2



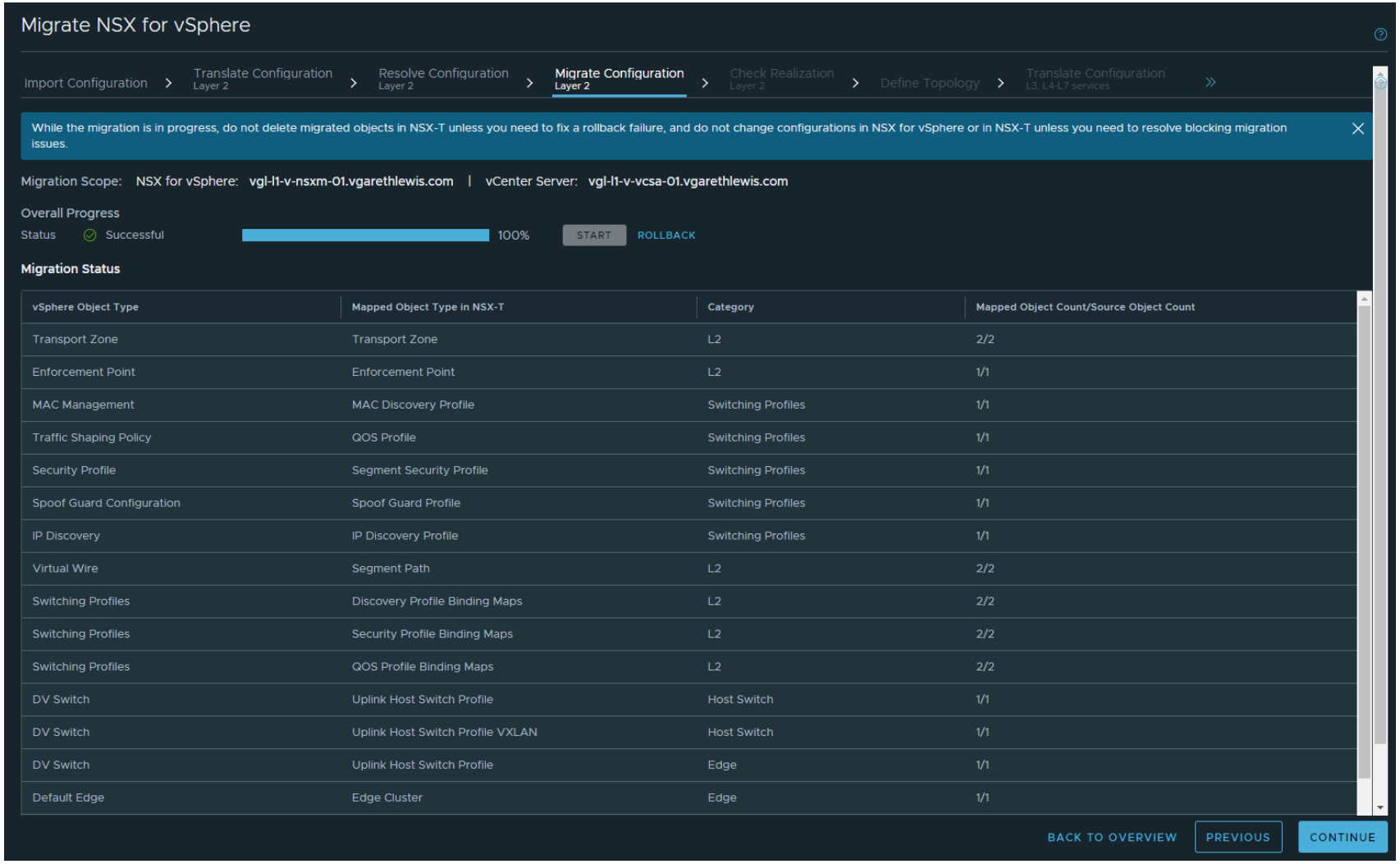
User Defined Topology

Migrate Configuration – Layer 2

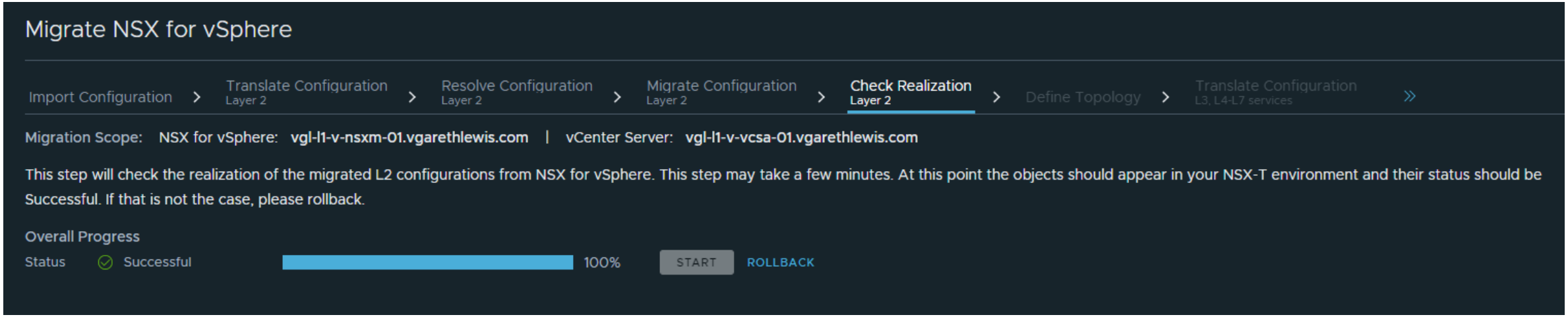


User Defined Topology

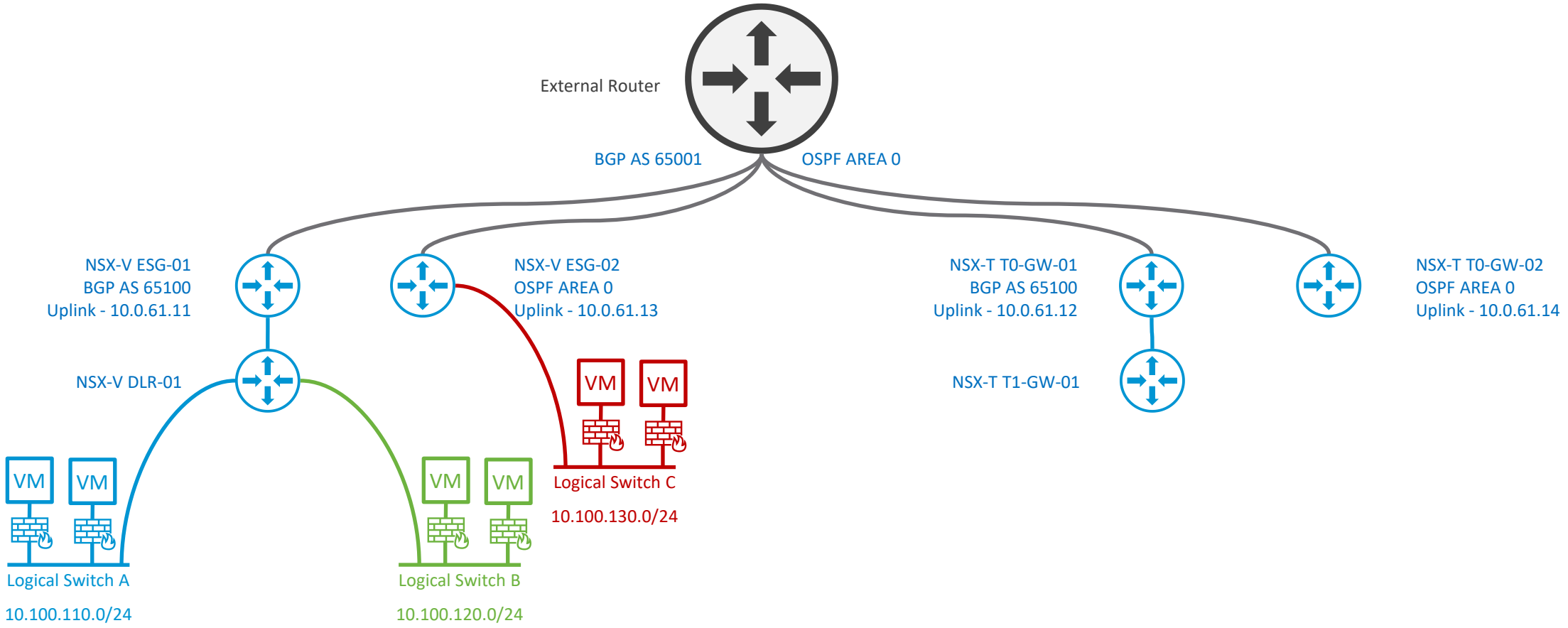
Migrate Configuration – Layer 2



Check Realization – Layer 2



Configure Edges and Gateways



Existing NSX-V Topology

New User Defined Topology in NSX-T

User Defined Topology

Dynamic Routing

BGP

NSX-V .11

NSX-T .12

OSPF

NSX-V .13

NSX-T .14

```
vyos@vgl-in-a-tor-01:~$ sho bgp summ

IPv4 Unicast Summary:
BGP router identifier 172.16.10.11, local AS number 65001 vrf-id 0
BGP table version 61
RIB entries 31, using 5952 bytes of memory
Peers 8, using 170 KiB of memory

Neighbor        V         AS   MsgRcvd   MsgSent   TblVer  InQ OutQ  Up/Down State/PfxRcd   PfxSnt
10.0.61.11      4      65100       207       192        0    0    0 02:56:23            5       16
10.0.61.12      4      65100         0         0        0    0    0    never       Active        0
10.0.61.13      4      65100         0         0        0    0    0    never       Active        0
10.0.61.31      4      65300         0         0        0    0    0    never       Active        0
10.0.61.32      4      65300         0         0        0    0    0    never       Active        0
10.0.61.41      4      65400         0         0        0    0    0    never       Active        0
10.0.61.42      4      65400         0         0        0    0    0    never       Active        0
172.16.10.1     4      65000       243       252        0    0    0 03:45:32            1       17

Total number of neighbors 8
vyos@vgl-in-a-tor-01:~$ sho bgp summ

IPv4 Unicast Summary:
BGP router identifier 172.16.10.11, local AS number 65001 vrf-id 0
BGP table version 61
RIB entries 31, using 5952 bytes of memory
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Neighbor        V         AS   MsgRcvd   MsgSent   TblVer  InQ OutQ  Up/Down State/PfxRcd   PfxSnt
10.0.61.11      4      65100       211       196        0    0    0 03:00:01            5       16
10.0.61.12      4      65100         4        17        0    0    0 00:01:22            0       16
10.0.61.13      4      65100         0         0        0    0    0    never       Active        0
10.0.61.31      4      65300         0         0        0    0    0    never       Active        0
10.0.61.32      4      65300         0         0        0    0    0    never       Active        0
10.0.61.41      4      65400         0         0        0    0    0    never       Active        0
10.0.61.42      4      65400         0         0        0    0    0    never       Active        0
172.16.10.1     4      65000       247       256        0    0    0 03:49:10            1       17

Total number of neighbors 8
vyos@vgl-in-a-tor-01:~$
```
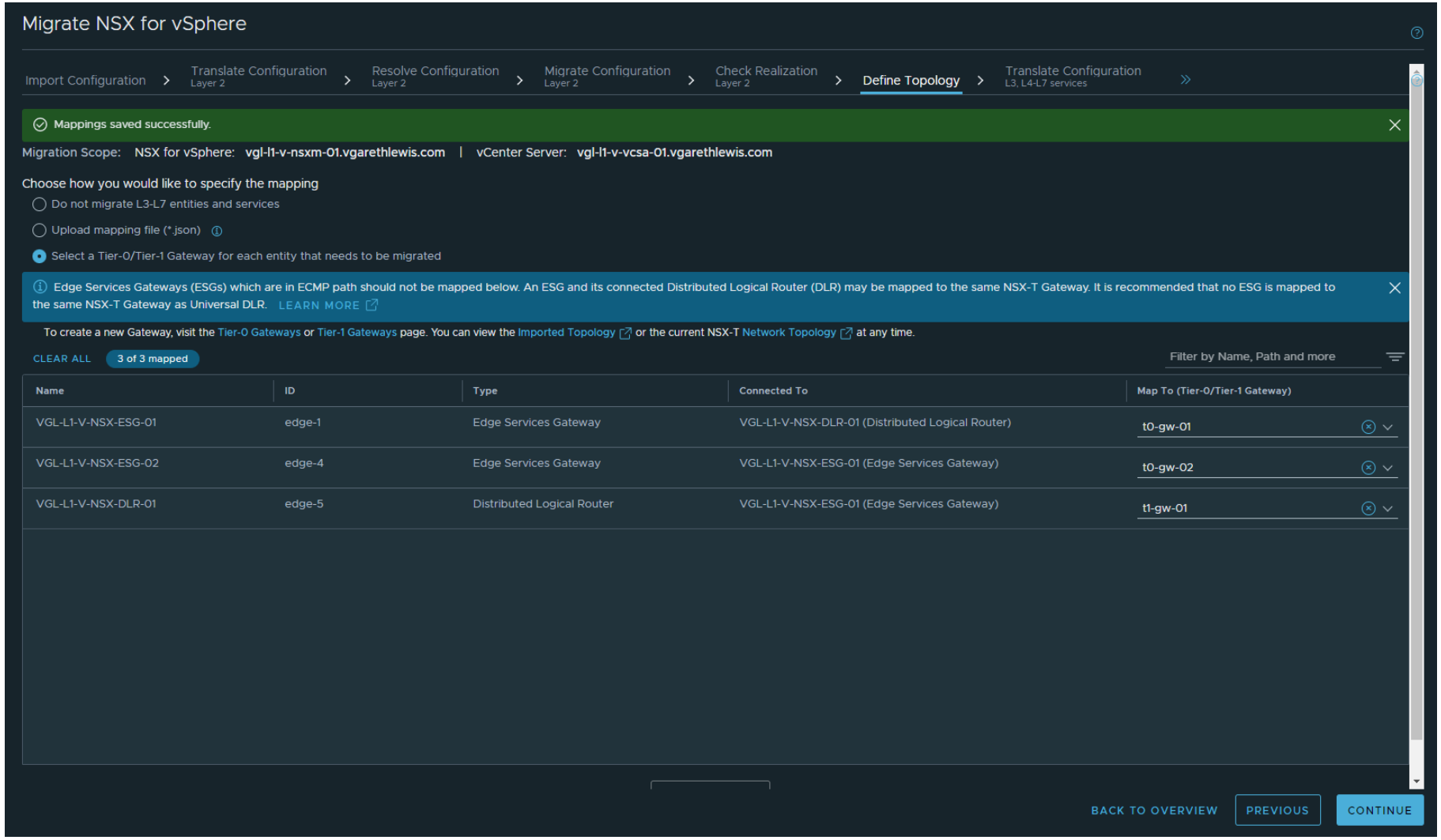

```
vyos@vgl-in-a-tor-01:~$ sho ip ospf neighbor

Neighbor ID     Pri State           Dead Time Address         Interface                        RXmtL RqstL DBsmL
10.0.61.13      128 Full/DR           37.085s 10.0.61.13      eth1.61:10.0.61.1                    0     0     0
10.0.61.14        0 Full/DROther      37.921s 10.0.61.14      eth1.61:10.0.61.1                    3     0     0
```

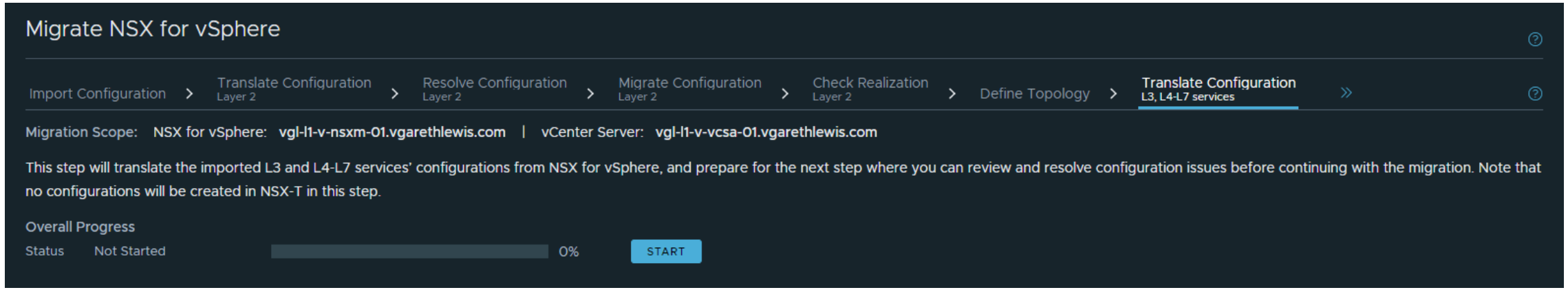
User Defined Topology

Define Topology



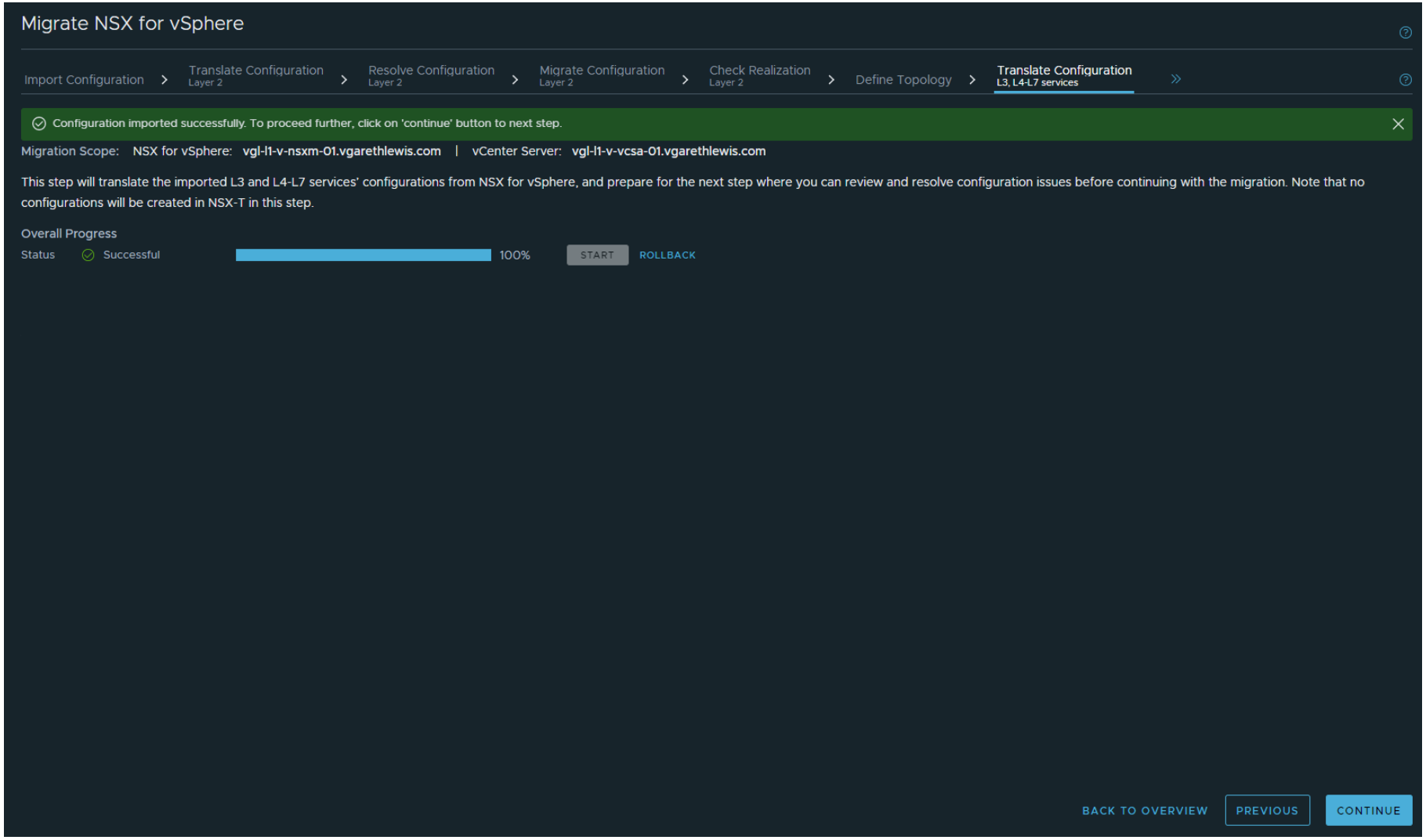
User Defined Topology

Translate Configuration – L3, L4-L7 Services



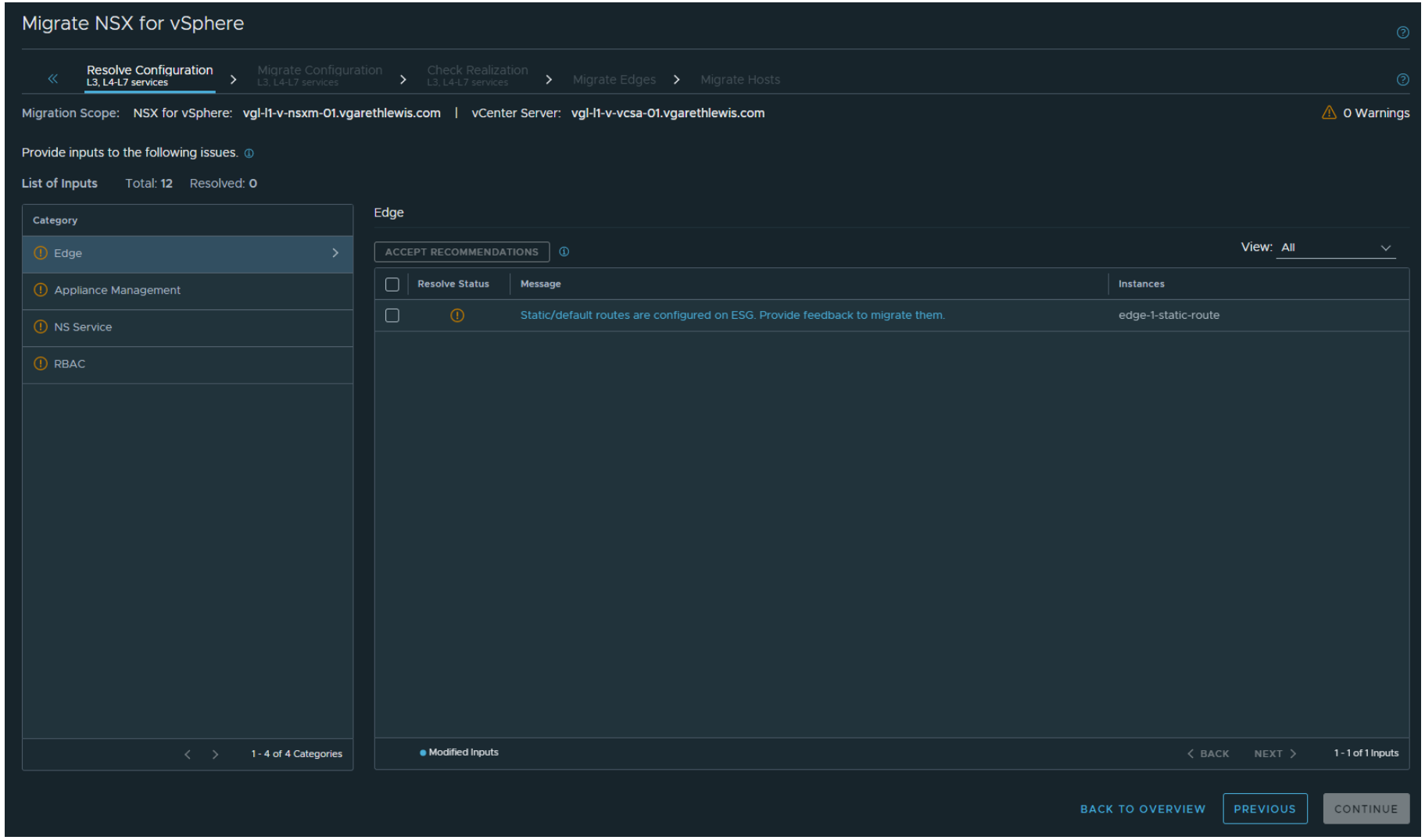
User Defined Topology

Translate Configuration – L3, L4-L7 Services



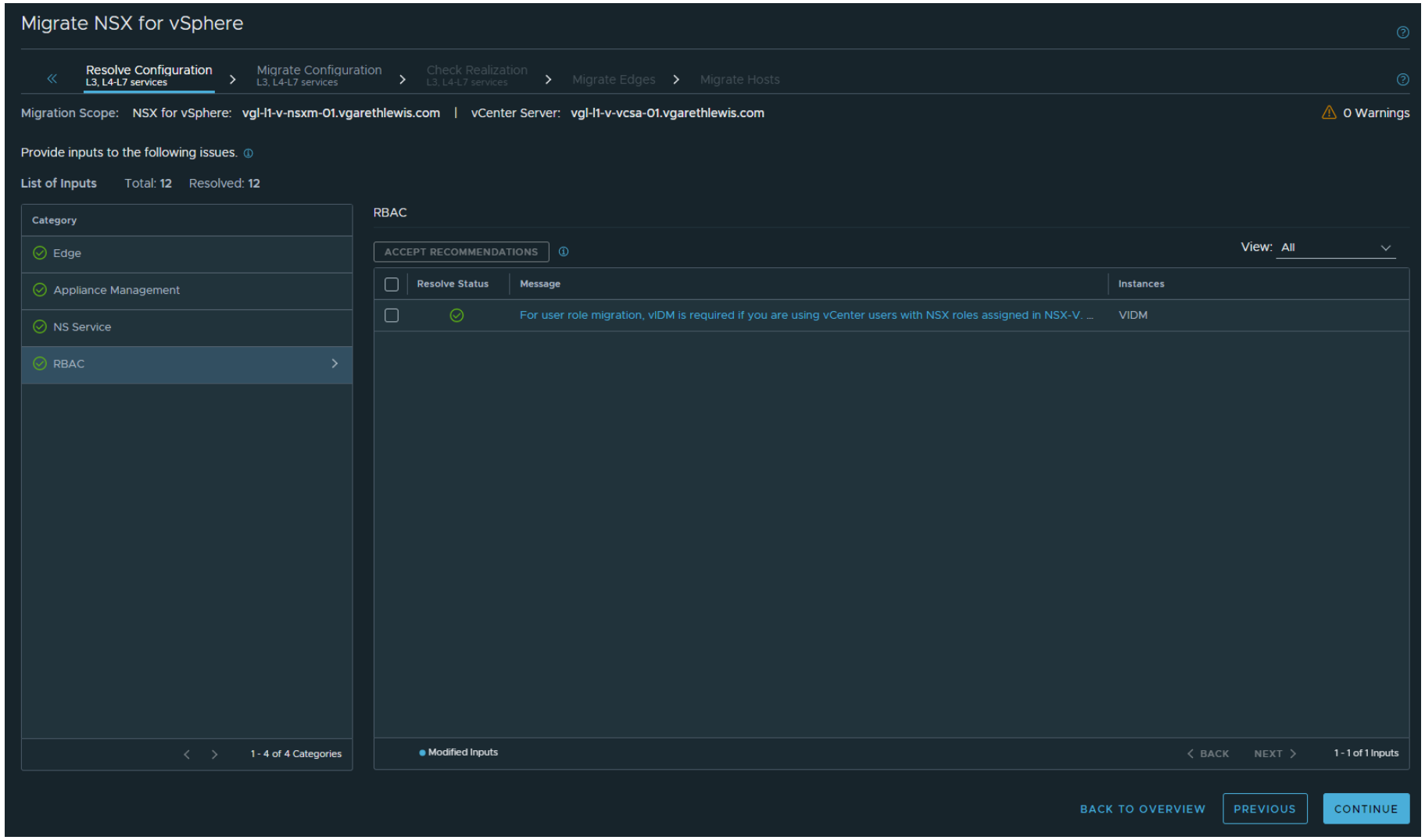
User Defined Topology

Resolve Configuration – L3, L4-L7 Services



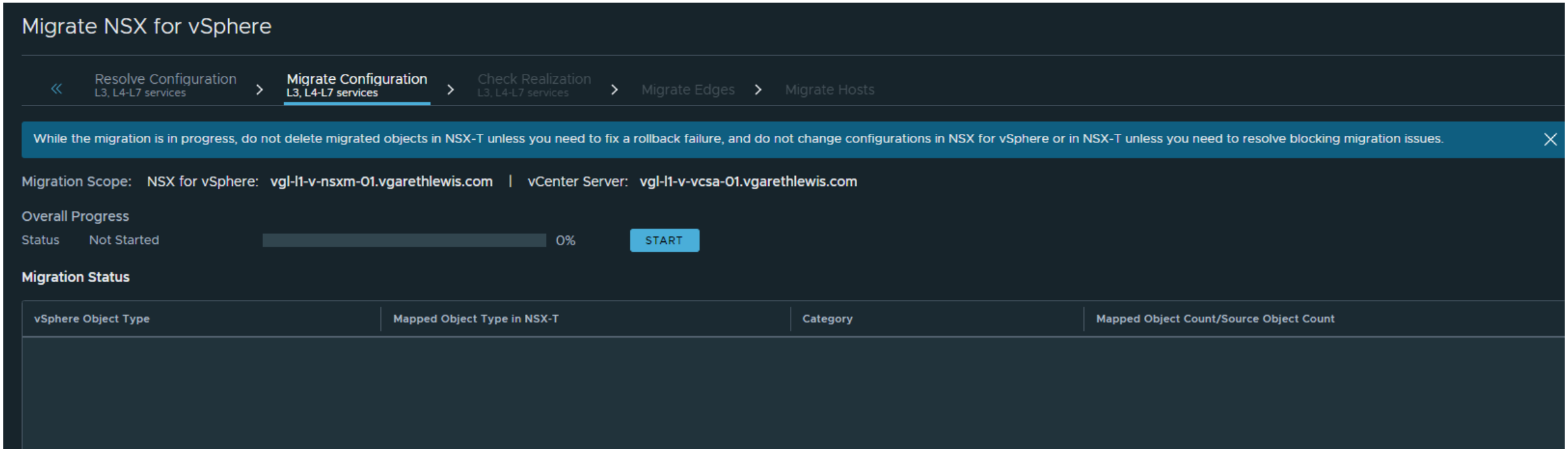
User Defined Topology

Resolve Configuration – L3, L4-L7 Services



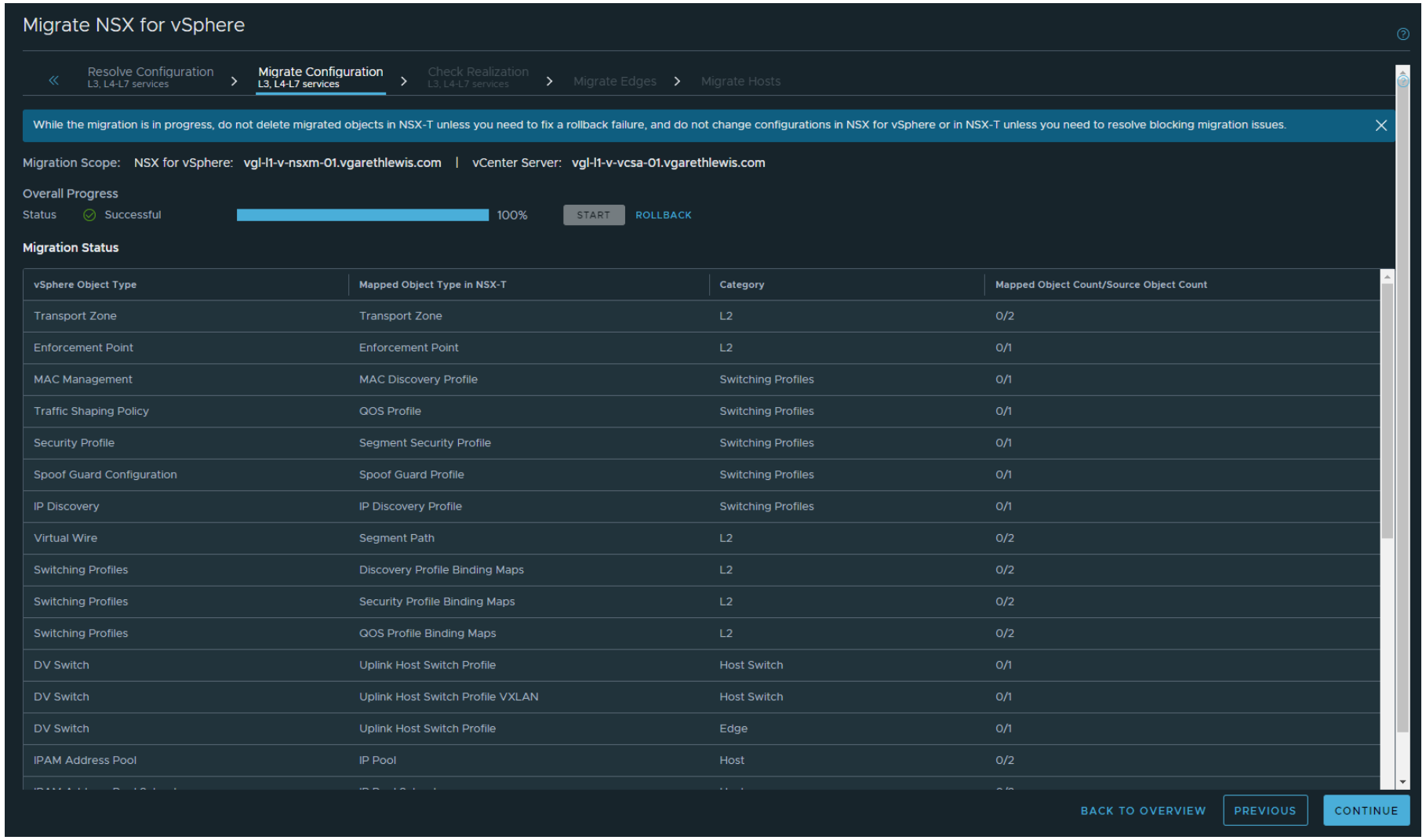
User Defined Topology

Migrate Configuration – L3, L4-L7 Services



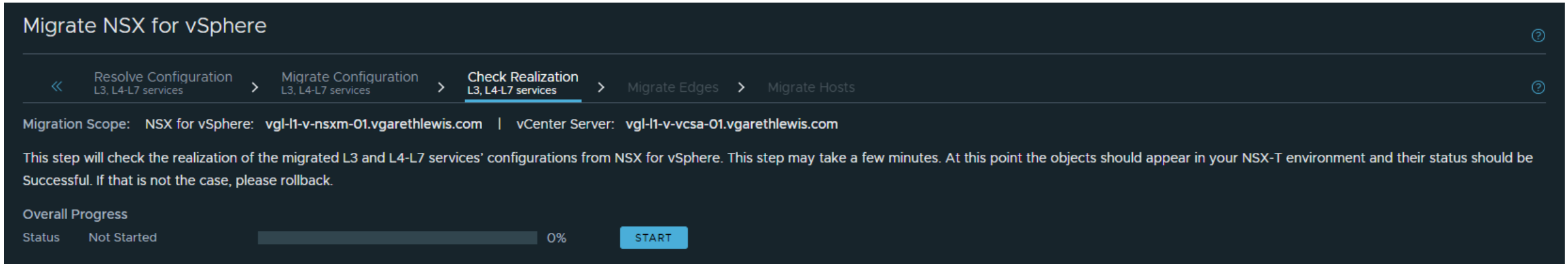
User Defined Topology

Migration Configuration – L3, L4-L7 Services



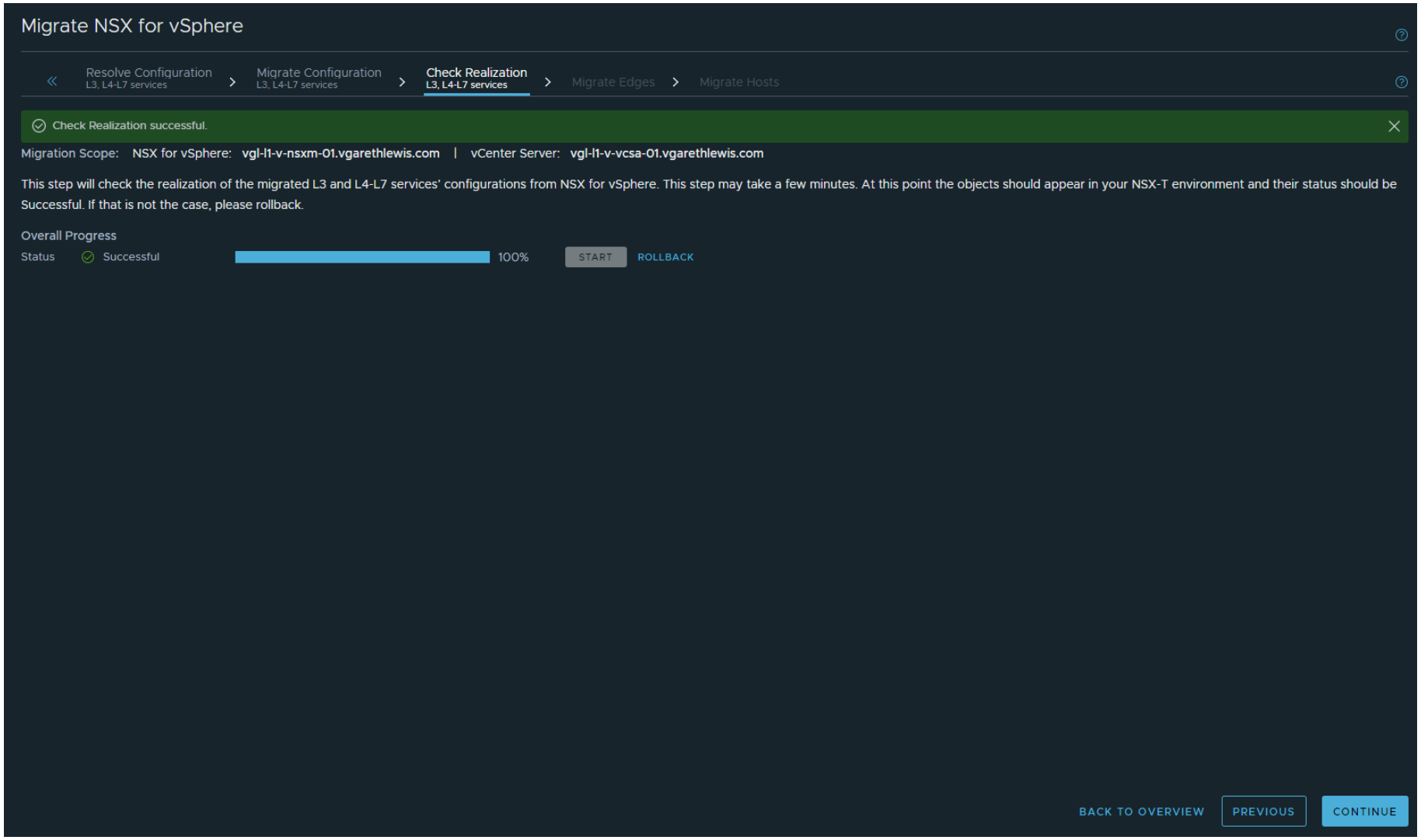
User Defined Topology

Check Realization – L3, L4-L7 Services

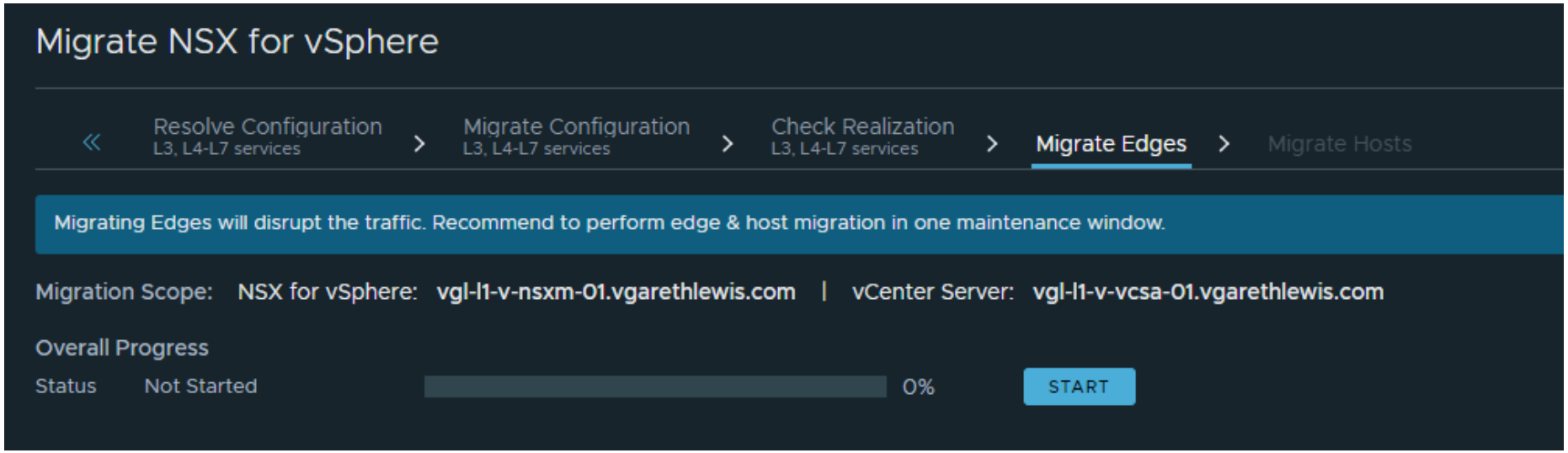


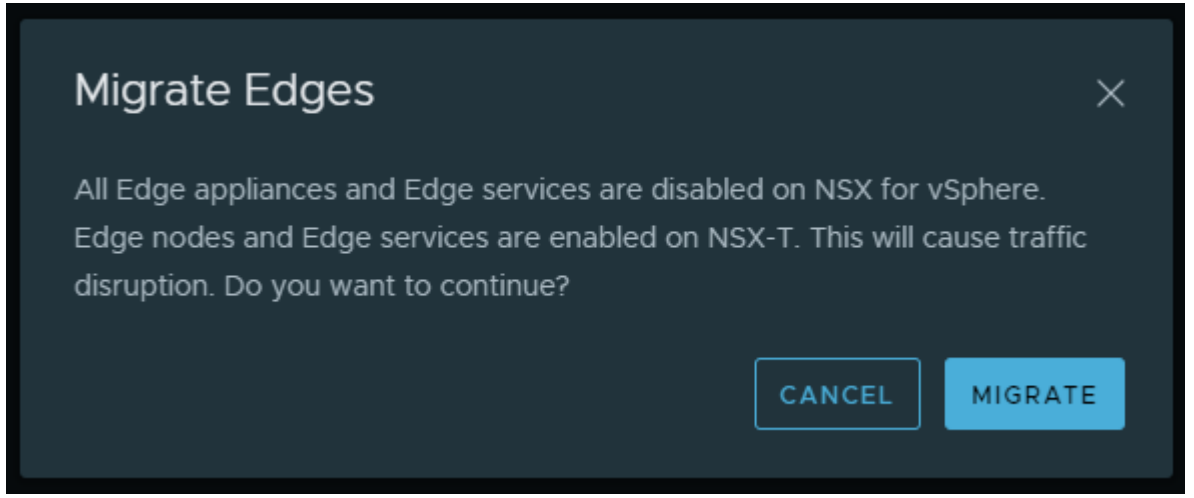
User Defined Topology

Check Realization – L3, L4-L7 Services

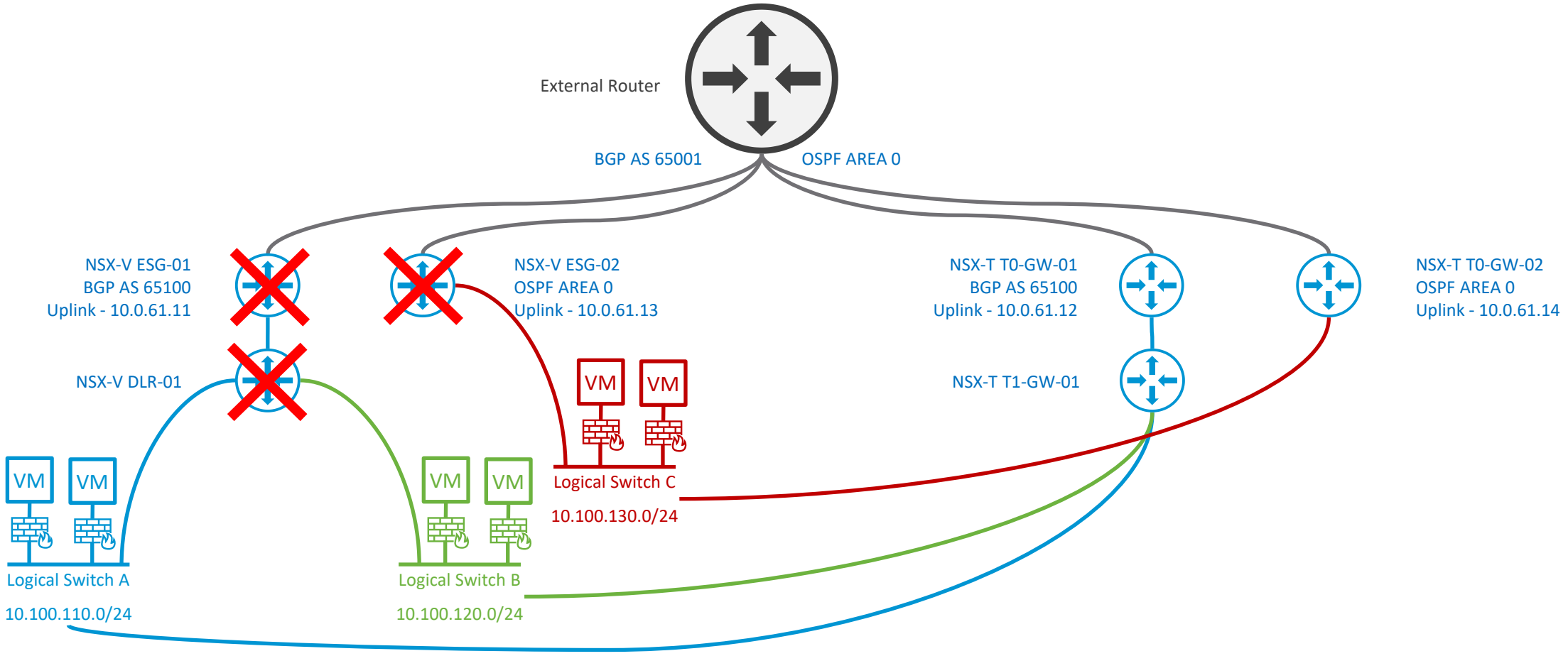


Migrate Edges – Outage Window





Migrate Edges – Outage Window

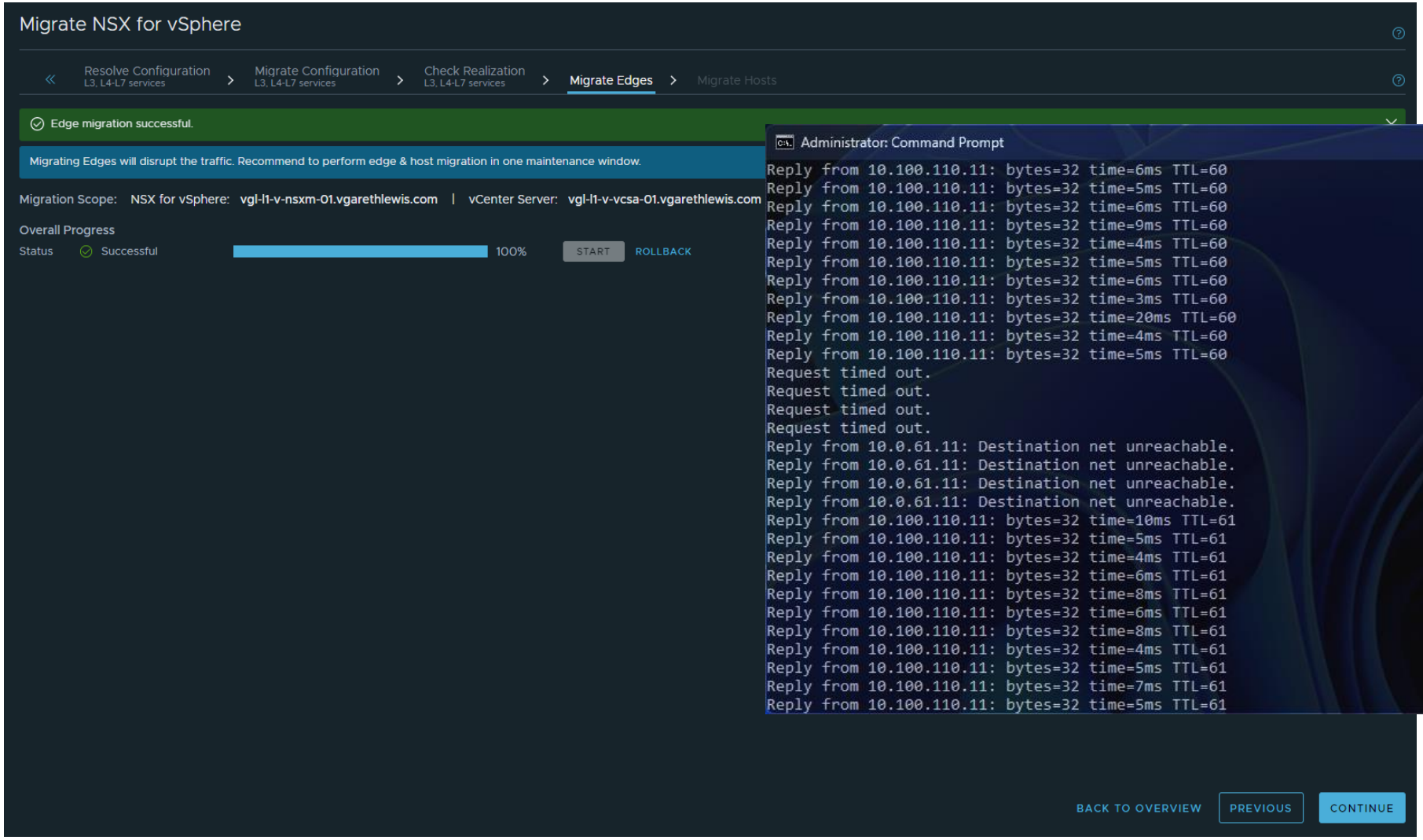


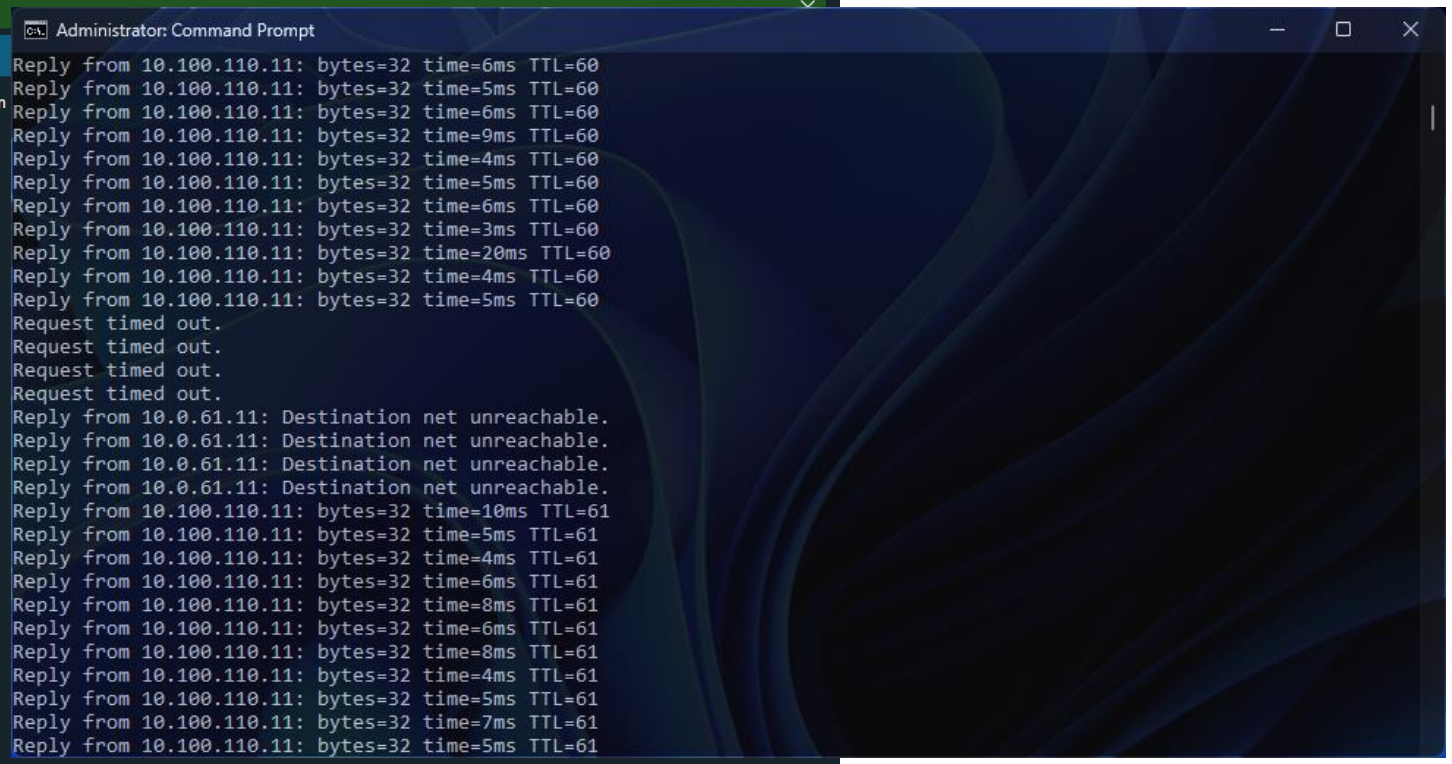
Existing NSX-V Topology

New User Defined Topology in NSX-T

User Defined Topology

Migrate Edges – Monitor Workload Connectivity





Migrate Edges – Monitor Dynamic Routing

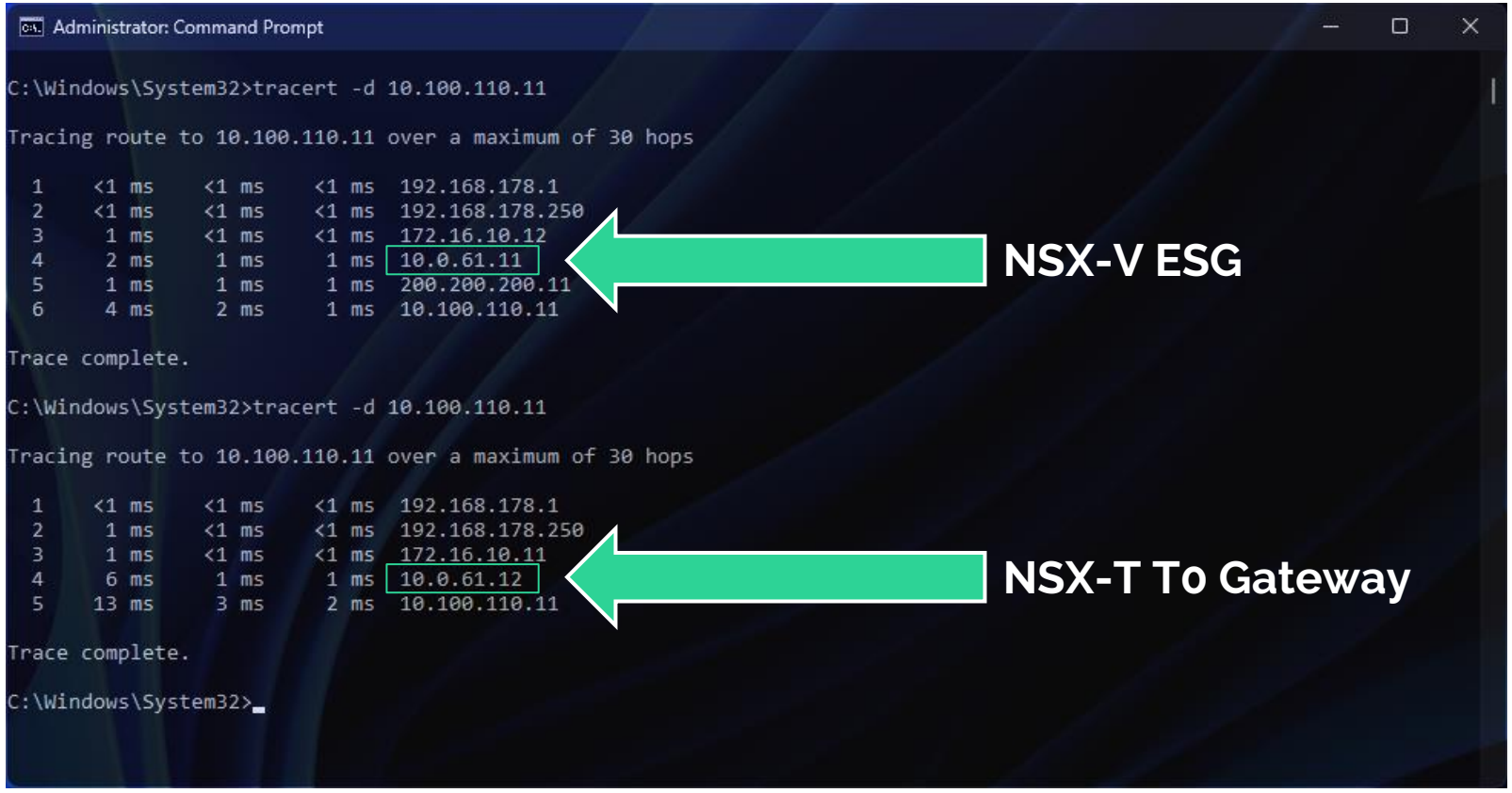
BGP
NSX-V BGP becomes Idle

OSPF
NSX-V OSPF drops

```
vyos@vgl-in-a-tor-01:~$ sho bgp summary

IPv4 Unicast Summary:
BGP router identifier 172.16.10.11, local AS number 65001 vrf-id 0
BGP table version 77
RIB entries 33, using 6336 bytes of memory
Peers 7, using 149 KiB of memory

Neighbor        V         AS   MsgRcvd   MsgSent   TblVer  InQ OutQ  Up/Down State/PfxRcd   PfxSnt
10.0.61.11      4      65100       345       365        0    0    0 03:44:26            5       17
10.0.61.12      4      65100       124       168        0    0    0 00:11:43            1       17
10.0.61.31      4      65300         0         0        0    0    0    never       Active        0
10.0.61.32      4      65300         0         0        0    0    0    never       Active        0
10.0.61.41      4      65400         0         0        0    0    0    never       Active        0
10.0.61.42      4      65400         0         0        0    0    0    never       Active        0
172.16.10.1     4      65000       427       438        0    0    0 06:25:45            1       18

Total number of neighbors 7
vyos@vgl-in-a-tor-01:~$ sho ip ospf neighbor

Neighbor ID     Pri State           Dead Time Address         Interface                        RXmtL RqstL DBsmL
10.0.61.13      128 Full/DR           37.497s 10.0.61.13      eth1.61:10.0.61.1                    0     0     0
10.0.61.14        0 Full/DROther      34.766s 10.0.61.14      eth1.61:10.0.61.1                    0     0     0

vyos@vgl-in-a-tor-01:~$ sho bgp summary

IPv4 Unicast Summary:
BGP router identifier 172.16.10.11, local AS number 65001 vrf-id 0
BGP table version 85
RIB entries 29, using 5568 bytes of memory
Peers 7, using 149 KiB of memory

Neighbor        V         AS   MsgRcvd   MsgSent   TblVer  InQ OutQ  Up/Down State/PfxRcd   PfxSnt
10.0.61.11      4      65100       350       378        0    0    0 00:00:01          Idle        0
10.0.61.12      4      65100       134       182        0    0    0 00:19:17            3       15
10.0.61.31      4      65300         0         0        0    0    0    never       Active        0
10.0.61.32      4      65300         0         0        0    0    0    never       Active        0
10.0.61.41      4      65400         0         0        0    0    0    never       Active        0
10.0.61.42      4      65400         0         0        0    0    0    never       Active        0
172.16.10.1     4      65000       437       452        0    0    0 06:33:19            1       16

Total number of neighbors 7
vyos@vgl-in-a-tor-01:~$ sho ip ospf neighbor

Neighbor ID     Pri State           Dead Time Address         Interface                        RXmtL RqstL DBsmL
10.0.61.14        0 Full/DROther      39.812s 10.0.61.14      eth1.61:10.0.61.1                    0     0     0

vyos@vgl-in-a-tor-01:~$
```

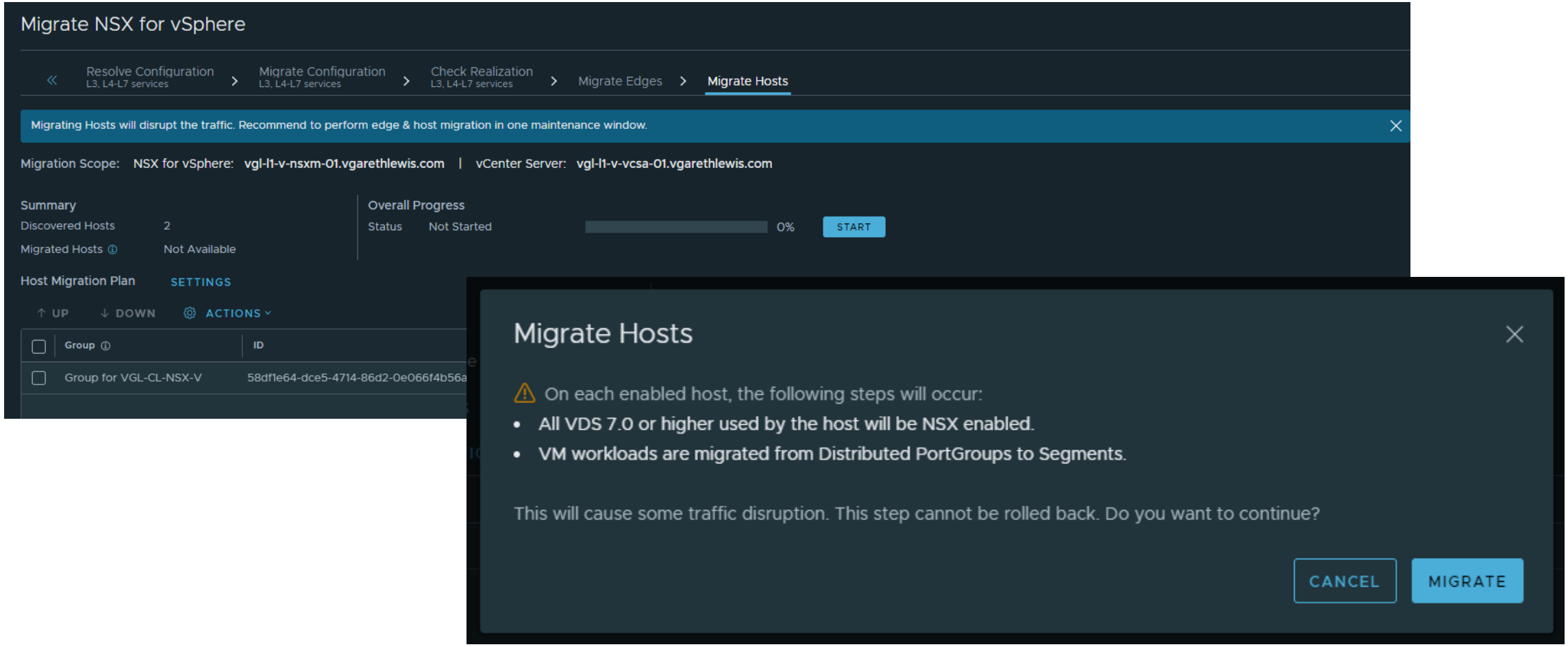
Migrate Edges – Monitor Dynamic Routing

Note, routing to a workload VM is now via the new Tier-0 Gateways.



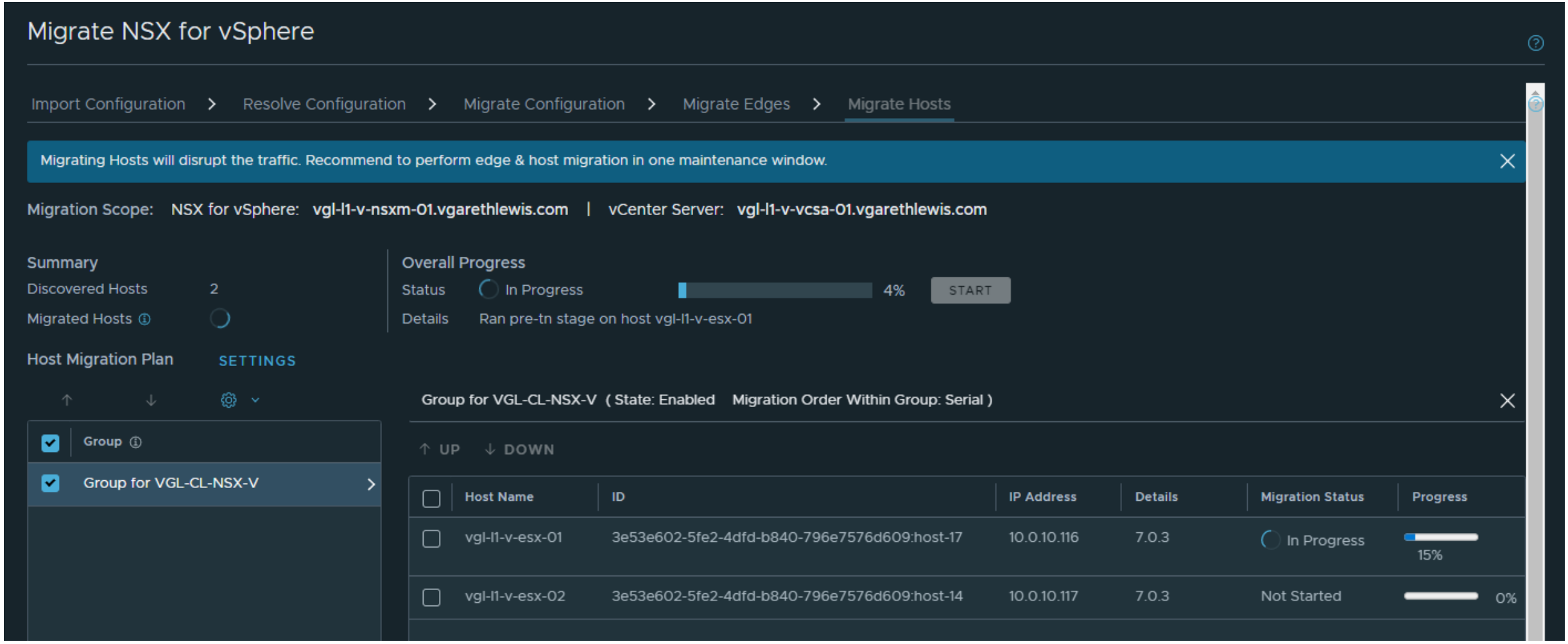
User Defined Topology

Migrate Hosts



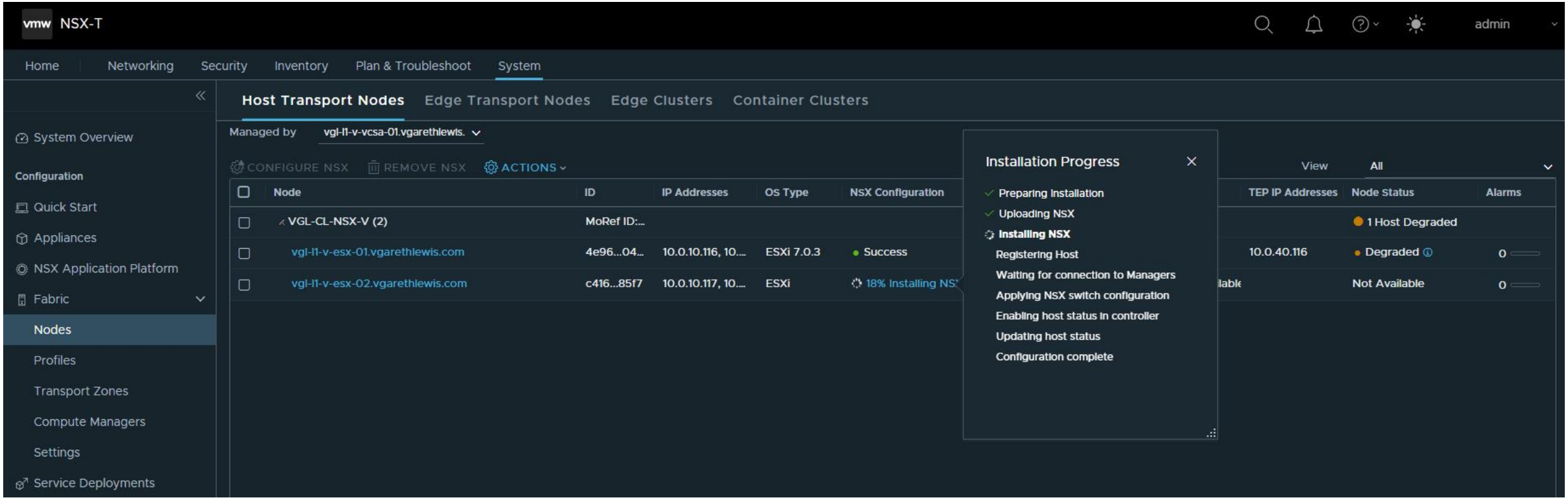
User Defined Topology

Migrate Hosts – Monitor Progress



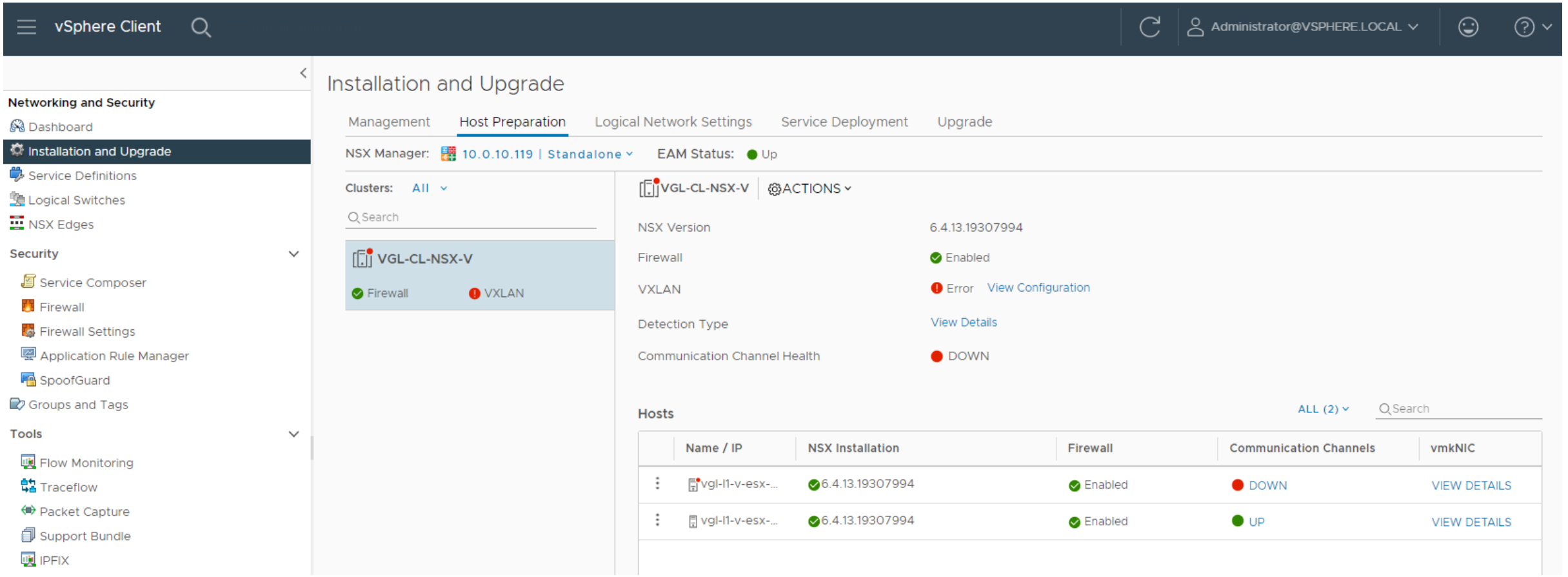
User Defined Topology

Migrate Hosts – Monitor Progress in NSX-T



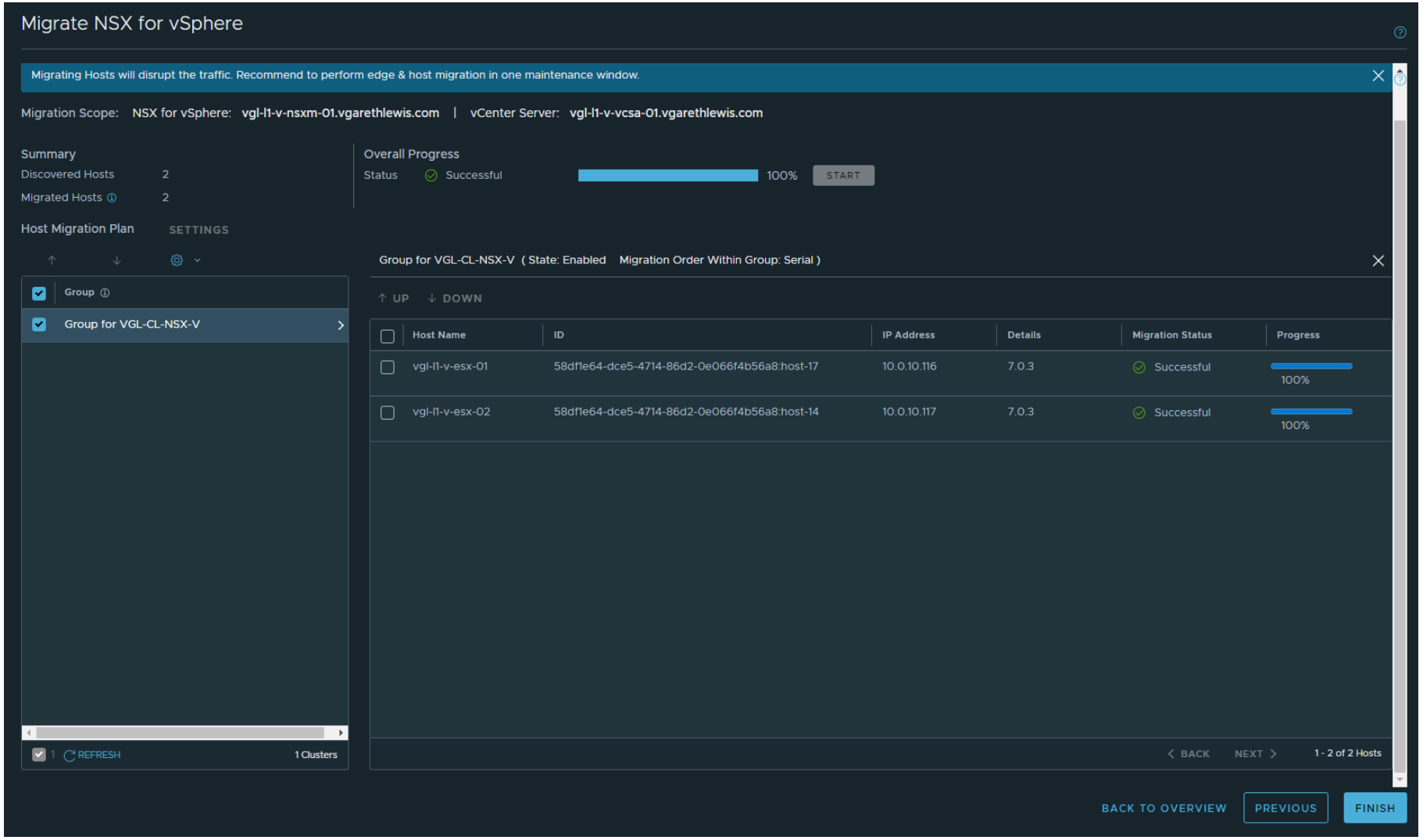
User Defined Topology

Migrate Hosts – Monitor Progress in NSX-V

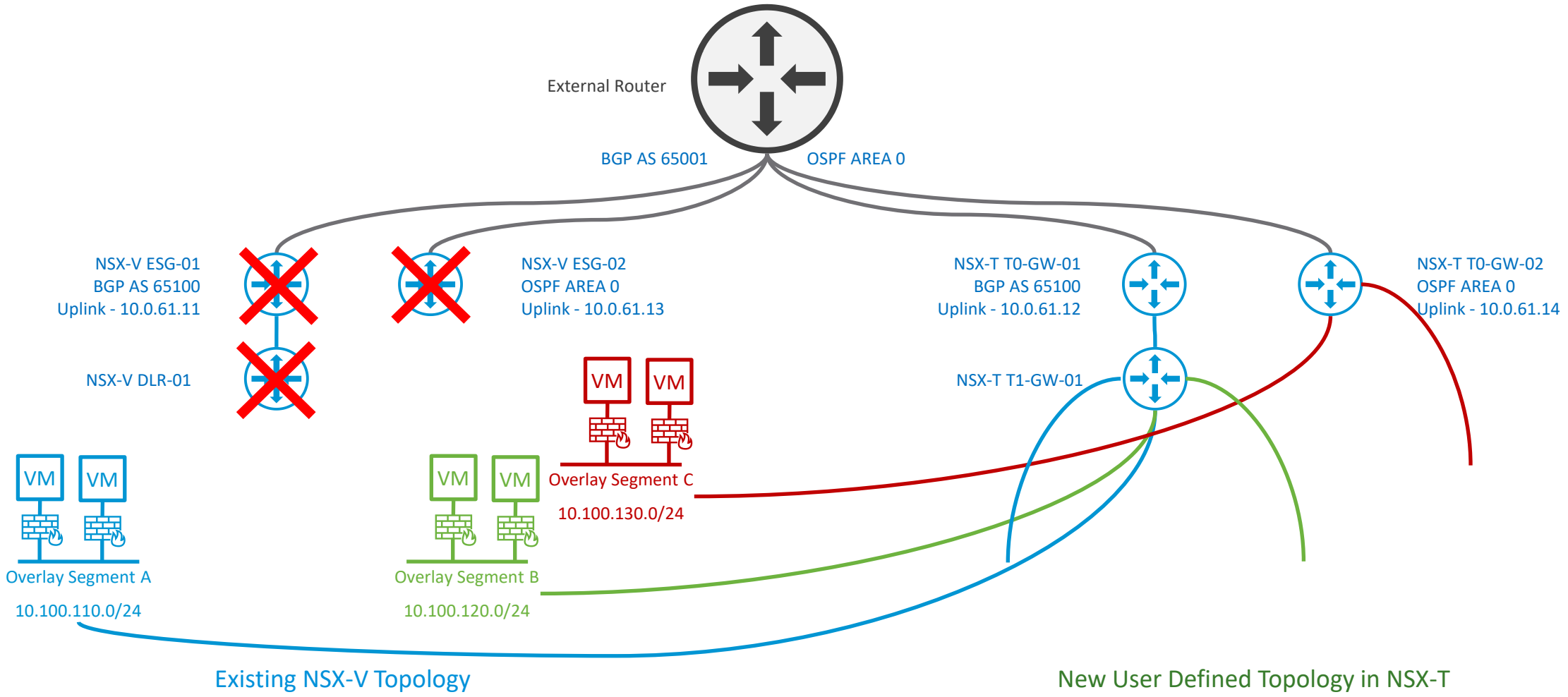


User Defined Topology

Migrate Hosts – Success



Host Migration – Overview



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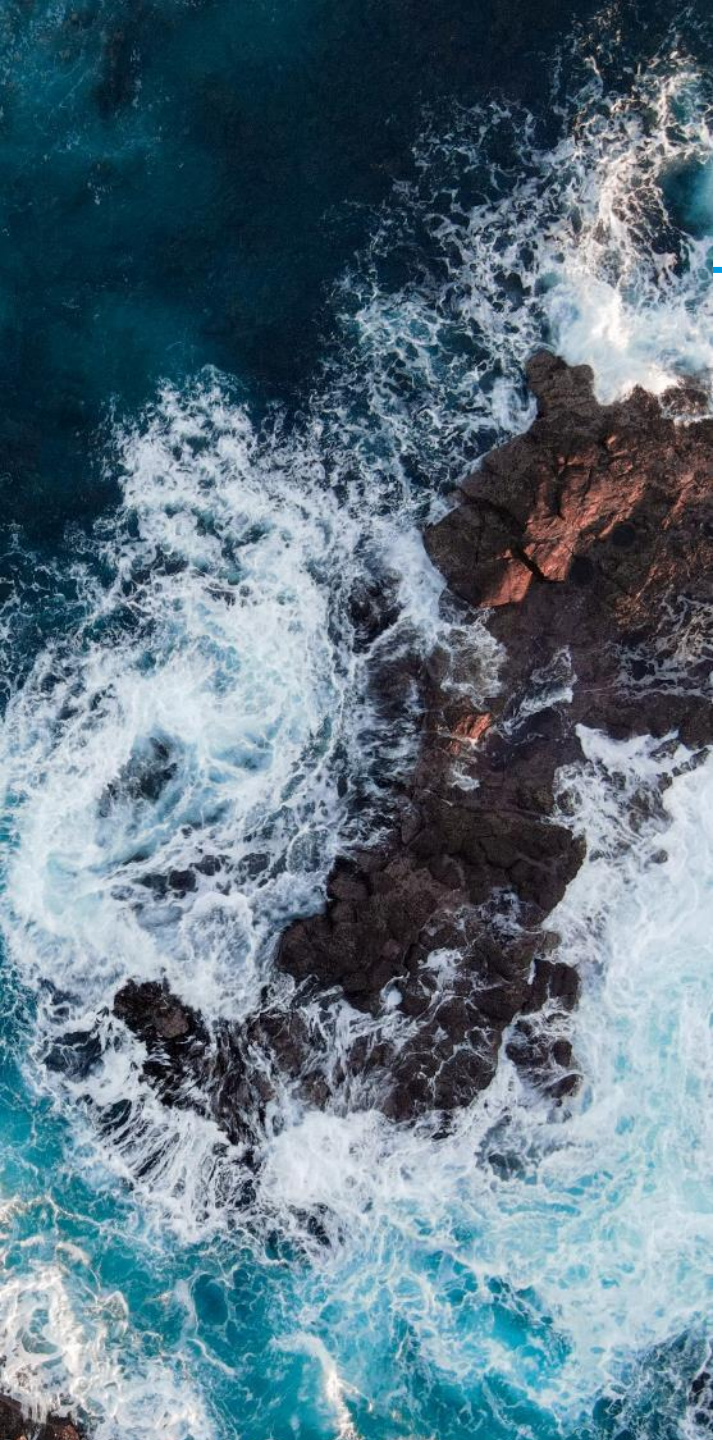
User Defined Topology

In Summary



In Summary

1. Prerequisites

2. Physical Fabric and Dynamic Routing

3. Migrate Edges and Hosts in a single Maintenance Window
    1. Edge cutover (and workload connectivity is dependent on BGP convergence
    2. Hosts are simply placed in Maintenance Mode. They aren't restarted

4. Run the Migration Coordinator up to Migrate Edges at any time…and multiple times.

Don't forget your post-migration tasks…

1. Backups

2. Uninstall NSX-V

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London VMUG – 13th July 2023

Next Steps

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Learn More

- VMware NSX for vSphere to NSX-T Migration - End-to-End User Defined Topology - https://bit.ly/NSXV2TUserDefined

- VMware NSX for vSphere to NSX-T Migration – End-to-End Fixed Topology - https://bit.ly/NSXV2TFixedTopology

Reach Out

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- Blog - www.vgarethlewis.com
- Twitter - @vGarethLewis
- LinkedIn - www.linkedin.com/in/vGarethLewis
- Xtravirt - www.Xtravirt.com

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Thank you

Any questions?

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