

# Configuring S2D with Switchless Ring Backbone

## Quick Start Guide: 4-node S2D Cluster without ToR Switch

The T6 ASIC based adapters support an integrated eSwitch, capable of up to 2x100Gbps full-duplex switching operations. The T5/T6 integrated eSwitch has a full suite of L2-L7 features including ACL with support for L2 Ethernet switching, L3 routing, NAT, TCP Proxy, and iSCSI proxy.

This document provides quick steps to configure T5/T6 integrated eSwitch to connect a 4-node Storage Spaces Direct (S2D) cluster without using any Ethernet switch. This ring topology connects nodes using Chelsio 10/25/40/50/100Gb Ethernet adapters. Follow the steps mentioned below to install and configure a 4-node S2D cluster using Chelsio ring backbone topology:

### Prerequisites:

Please ensure that the following requirements are met on each machine in the topology before proceeding with the installation:

- There must be an active management network (apart from Chelsio test network) which enables the machines to be accessed to carry out the required configuration.
- PowerShell Remoting should be enabled using the following command:

```
PS C:\Users\Administrator> Enable-PSRemoting -Force
```

- Windows Remote Management (WinRM) should be enabled using the following command:

```
PS C:\Users\Administrator> Set-item wsman:localhost\client\trustedhosts - value *
```

- Firewall should be disabled from Control Panel.
- Hyper-V and Failover cluster roles should be installed.
- All the nodes should have the same user credentials.

### Ring Installation and Configuration:

- Connect the machines in ring backbone. Connect port 1 of one machine to the port 0 of next machine such that a closed ring is formed.
- Download Chelsio Unified Wire v6.0.0.2 for Windows from [Chelsio Download Center](#).
- Install the Unified Wire on all the machines in the ring backbone.

**Note:** Please refer the support documentation provided in the package (*docs* folder).

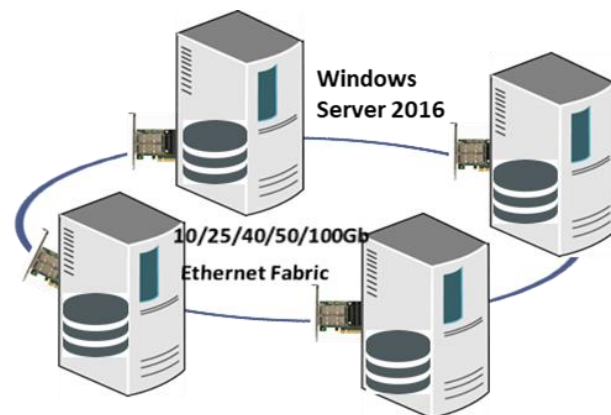


Figure 1 – 4-node S2D Cluster using Switchless Ring Topology

- iv. Open PowerShell and run the *backbone\_cfg.ps1* script on any one of the machines to configure ring backbone

```
PS C:\Users\Administrator> backbone_cfg.ps1 -Servers <host1,host2,host3,host4> -
Username <username> -Password <password> -BaseIpAddress <test_ip>
```

**Example:**

4 nodes N1, N2, N3 and N4 are connected in a ring backbone and configured with network address 102.1.1.0 with netmask 24 (selected by default).

```
PS C:\Users\Administrator> backbone_cfg.ps1 -Servers N1,N2,N3,N4 -Username
administrator -Password windows@123 -BaseIpAddress 102.1.1.0
```

N1 will be assigned with IP 102.1.1.1, N2 with 102.1.1.2, N3 with 102.1.1.3 and N4 with 102.1.1.4 respectively.

**Note:**

- Port 1 should not be configured for any other purpose in the operating system.
  - Only single port (port 0) is available to the user after configuring ring backbone.
- v. Ring Backbone must be reconfigured if a vSwitch is created or any of the driver parameters is changed (driver will be reloaded). Only the affected hosts should be listed in below command:

```
PS C:\Users\Administrator> backbone_cfg.ps1 -Servers <host1,host2> -Username
<username> -Password <password> -Reconfigure
```

**S2D Configuration:**

- i. Before creating the cluster, validate the nodes using the cluster validation tool.

```
PS C:\Users\Administrator>Test-Cluster -Node <host1,host2,host3,host4> -Include
"Storage Spaces Direct",Inventory,Network,"System Configuration"
```

- ii. Create a cluster using the nodes validated in the previous step:

```
PS C:\Users\Administrator>New-Cluster -Name <ClusterName> -Node <
host1,host2,host3,host4> -NoStorage -StaticAddress <static_ip> -Verbose
```

**Note:** Without the *-NoStorage* parameter, the disks may be automatically added to the cluster and you will need to remove them before enabling S2D. Otherwise they will not be included in the Storage Spaces Direct storage pool.

- iii. The disks intended to be used for Storage Spaces Direct need to be empty and without partitions or existing data. If a disk has partitions or existing data, it will not be included in the Storage Spaces Direct system.

**Note:** Storage Spaces Direct does not support disks connected via multiple paths, and the Microsoft Multipath MPIO software stack.

iv. Enable Storage Spaces Direct and create a storage pool.

```
PS C:\Users\Administrator>Enable-ClusterS2D -PoolFriendlyName <pool_name> -  
Verbose
```

v. Create virtual disks on the storage pool created in the previous step.

```
PS C:\Users\Administrator>Get-ClusterNode |% { New-Volume -  
StoragePoolFriendlyName s2d -FriendlyName $_ -FileSystem CSVFS_ReFS -Size 500GB -  
Verbose }  
PS C:\Users\Administrator>New-Volume -StoragePoolFriendlyName s2d -FriendlyName  
Collect -FileSystem CSVFS_ReFS -Size 100GB -Verbose
```

vi. Create or deploy virtual machines. The virtual machine's files should be stored on the virtual disks. You can use utilities like VMFleet to deploy and use multiple virtual machines.