Configure intercluster LIFs

ONTAP 9

NetApp
March 09, 2023

Table of Contents

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Configure intercluster LIFs on shared data ports

You can configure intercluster LIFs on ports shared with the data network. Doing so reduces the number of ports you need for intercluster networking.

Steps

1. List the ports in the cluster:

   `network port show`

   For complete command syntax, see the man page.

   The following example shows the network ports in `cluster01`:

```
cluster01::> network port show
                                                                  Speed
(Mbps)
Node   Port      IPspace      Broadcast Domain Link   MTU    Admin/Oper
------ --------- ------------ ---------------- ----- -------
------------
cluster01-01
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
cluster01-02
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
```

2. Create intercluster LIFs on the system SVM:

Option	Description
In ONTAP 9.6 and later:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-service -policy default-intercluster -home -node` *`node`* `-home-port port -address` *`port_IP`* `-netmask` *`netmask`*

Option	Description
In ONTAP 9.5 and earlier:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-role intercluster -home-node` *`node`* `-home -port` *`port`* `-address` *`port_IP`* `-netmask` *`netmask`*

For complete command syntax, see the man page.

The following example creates intercluster LIFs `cluster01_icl01` and `cluster01_icl02`:

```
cluster01::> network interface create -vserver cluster01 -lif
cluster01_icl01 -service-
policy default-intercluster -home-node cluster01-01 -home-port e0c
-address 192.168.1.201
-netmask 255.255.255.0

cluster01::> network interface create -vserver cluster01 -lif
cluster01_icl02 -service-
policy default-intercluster -home-node cluster01-02 -home-port e0c
-address 192.168.1.202
-netmask 255.255.255.0
```

3. Verify that the intercluster LIFs were created:

Option	Description
In ONTAP 9.6 and later:	`network interface show -service-policy default-intercluster`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster`

For complete command syntax, see the man page.

```
cluster01::> network interface show -service-policy default-intercluster
            Logical    Status     Network            Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port
Home
----------- ---------- ---------- ------------------ -------------
------- ----
cluster01
            cluster01_icl01
                       up/up      192.168.1.201/24   cluster01-01  e0c
true
            cluster01_icl02
                       up/up      192.168.1.202/24   cluster01-02  e0c
true
```

4. Verify that the intercluster LIFs are redundant:

Option	Description
In ONTAP 9.6 and later:	`network interface show –service-policy default-intercluster -failover`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster -failover`

For complete command syntax, see the man page.

The following example shows that the intercluster LIFs `cluster01_icl01` and `cluster01_icl02` on the `e0c` port will fail over to the `e0d` port.

```
cluster01::> network interface show -service-policy default-intercluster
–failover
         Logical         Home                  Failover        Failover
Vserver  Interface       Node:Port             Policy          Group
-------- --------------- --------------------- --------------- --------
cluster01
         cluster01_icl01 cluster01-01:e0c   local-only
192.168.1.201/24
                            Failover Targets: cluster01-01:e0c,
                                              cluster01-01:e0d
         cluster01_icl02 cluster01-02:e0c   local-only
192.168.1.201/24
                            Failover Targets: cluster01-02:e0c,
                                              cluster01-02:e0d
```

Configure intercluster LIFs on dedicated ports

You can configure intercluster LIFs on dedicated ports. Doing so typically increases the available bandwidth for replication traffic.

Steps

1. List the ports in the cluster:

   `network port show`

   For complete command syntax, see the man page.

   The following example shows the network ports in `cluster01`:

```
cluster01::> network port show
                                                                  Speed
(Mbps)
Node   Port      IPspace      Broadcast Domain Link   MTU    Admin/Oper
------ --------- ------------ ---------------- ----- -------
------------
cluster01-01
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
       e0e       Default      Default          up     1500   auto/1000
       e0f       Default      Default          up     1500   auto/1000
cluster01-02
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
       e0e       Default      Default          up     1500   auto/1000
       e0f       Default      Default          up     1500   auto/1000
```

2. Determine which ports are available to dedicate to intercluster communication:

   `network interface show -fields home-port,curr-port`

   For complete command syntax, see the man page.

   The following example shows that ports `e0e` and `e0f` have not been assigned LIFs:

```
cluster01::> network interface show -fields home-port,curr-port
vserver lif                  home-port curr-port
------- -------------------- --------- ---------
Cluster cluster01-01_clus1   e0a       e0a
Cluster cluster01-01_clus2   e0b       e0b
Cluster cluster01-02_clus1   e0a       e0a
Cluster cluster01-02_clus2   e0b       e0b
cluster01
        cluster_mgmt         e0c       e0c
cluster01
        cluster01-01_mgmt1   e0c       e0c
cluster01
        cluster01-02_mgmt1   e0c       e0c
```

3. Create a failover group for the dedicated ports:

   `network interface failover-groups create -vserver` *`system_SVM`* `-failover-group` *`failover_group`* `-targets` *`physical _or_logical_ports`*

   The following example assigns ports `e0e` and `e0f` to the failover group `intercluster01` on the system SVM `cluster01`:

```
cluster01::> network interface failover-groups create -vserver cluster01
-failover-group
intercluster01 -targets
cluster01-01:e0e,cluster01-01:e0f,cluster01-02:e0e,cluster01-02:e0f
```

4. Verify that the failover group was created:

   `network interface failover-groups show`

   For complete command syntax, see the man page.

```
cluster01::> network interface failover-groups show
                                  Failover
Vserver          Group            Targets
---------------- ----------------
-----------------------------------------
Cluster
                 Cluster
                                  cluster01-01:e0a, cluster01-01:e0b,
                                  cluster01-02:e0a, cluster01-02:e0b
cluster01
                 Default
                                  cluster01-01:e0c, cluster01-01:e0d,
                                  cluster01-02:e0c, cluster01-02:e0d,
                                  cluster01-01:e0e, cluster01-01:e0f
                                  cluster01-02:e0e, cluster01-02:e0f
                 intercluster01
                                  cluster01-01:e0e, cluster01-01:e0f
                                  cluster01-02:e0e, cluster01-02:e0f
```

5. Create intercluster LIFs on the system SVM and assign them to the failover group.

Option	Description
In ONTAP 9.6 and later:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-service -policy default-intercluster -home -node` *`node`* `-home- port` *`port`* `-address` *`port_IP`* `-netmask` *`netmask`* `-failover -group` *`failover_group`*
In ONTAP 9.5 and earlier:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-role intercluster -home-node` *`node`* `-home -port` *`port`* `-address` *`port_IP`* `-netmask` *`netmask`* `-failover-group` *`failover_group`*

For complete command syntax, see the man page.

The following example creates intercluster LIFs `cluster01_icl01` and `cluster01_icl02` in the failover group `intercluster01`:

```
cluster01::> network interface create -vserver cluster01 -lif
cluster01_icl01 -service-
policy default-intercluster -home-node cluster01-01 -home-port e0e
-address 192.168.1.201
-netmask 255.255.255.0 -failover-group intercluster01

cluster01::> network interface create -vserver cluster01 -lif
cluster01_icl02 -service-
policy default-intercluster -home-node cluster01-02 -home-port e0e
-address 192.168.1.202
-netmask 255.255.255.0 -failover-group intercluster01
```

6. Verify that the intercluster LIFs were created:

Option	Description
In ONTAP 9.6 and later:	`network interface show -service-policy default-intercluster`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster`

For complete command syntax, see the man page.

```
cluster01::> network interface show -service-policy default-intercluster
            Logical    Status     Network            Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port
Home
----------- ---------- ---------- ------------------ -------------
------- ----
cluster01
            cluster01_icl01
                       up/up      192.168.1.201/24   cluster01-01  e0e
true
            cluster01_icl02
                       up/up      192.168.1.202/24   cluster01-02  e0f
true
```

7. Verify that the intercluster LIFs are redundant:

Option	Description
In ONTAP 9.6 and later:	`network interface show -service-policy default-intercluster -failover`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster -failover`

For complete command syntax, see the man page.

The following example shows that the intercluster LIFs `cluster01_icl01` and `cluster01_icl02` on the SVM`e0e` port will fail over to the `e0f` port.

```
cluster01::> network interface show -service-policy default-intercluster
-failover
         Logical         Home                  Failover        Failover
Vserver  Interface       Node:Port             Policy          Group
-------- --------------- --------------------- --------------- --------
cluster01
         cluster01_icl01 cluster01-01:e0e   local-only
intercluster01
                            Failover Targets:  cluster01-01:e0e,
                                               cluster01-01:e0f
         cluster01_icl02 cluster01-02:e0e   local-only
intercluster01
                            Failover Targets:  cluster01-02:e0e,
                                               cluster01-02:e0f
```

Configure intercluster LIFs in custom IPspaces

You can configure intercluster LIFs in custom IPspaces. Doing so allows you to isolate replication traffic in multitenant environments.

When you create a custom IPspace, the system creates a system storage virtual machine (SVM) to serve as a container for the system objects in that IPspace. You can use the new SVM as the container for any intercluster LIFs in the new IPspace. The new SVM has the same name as the custom IPspace.

Steps

1. List the ports in the cluster:

   `network port show`

   For complete command syntax, see the man page.

   The following example shows the network ports in `cluster01`:

```
cluster01::> network port show
                                                                  Speed
(Mbps)
Node   Port      IPspace      Broadcast Domain Link   MTU    Admin/Oper
------ --------- ------------ ---------------- ----- -------
------------
cluster01-01
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
       e0e       Default      Default          up     1500   auto/1000
       e0f       Default      Default          up     1500   auto/1000
cluster01-02
       e0a       Cluster      Cluster          up     1500   auto/1000
       e0b       Cluster      Cluster          up     1500   auto/1000
       e0c       Default      Default          up     1500   auto/1000
       e0d       Default      Default          up     1500   auto/1000
       e0e       Default      Default          up     1500   auto/1000
       e0f       Default      Default          up     1500   auto/1000
```

2. Create custom IPspaces on the cluster:

   `network ipspace create -ipspace` *`ipspace`*

   The following example creates the custom IPspace `ipspace-IC1`:

   ```
   cluster01::> network ipspace create -ipspace ipspace-IC1
   ```

3. Determine which ports are available to dedicate to intercluster communication:

   `network interface show -fields home-port,curr-port`

   For complete command syntax, see the man page.

   The following example shows that ports `e0e` and `e0f` have not been assigned LIFs:

```
cluster01::> network interface show -fields home-port,curr-port
vserver lif                  home-port curr-port
------- -------------------- --------- ---------
Cluster cluster01_clus1   e0a       e0a
Cluster cluster01_clus2   e0b       e0b
Cluster cluster02_clus1   e0a       e0a
Cluster cluster02_clus2   e0b       e0b
cluster01
        cluster_mgmt         e0c       e0c
cluster01
        cluster01-01_mgmt1   e0c       e0c
cluster01
        cluster01-02_mgmt1   e0c       e0c
```

4. Remove the available ports from the default broadcast domain:

   `network port broadcast-domain remove-ports -broadcast-domain Default -ports ports`

   A port cannot be in more than one broadcast domain at a time. For complete command syntax, see the man page.

   The following example removes ports `e0e` and `e0f` from the default broadcast domain:

   ```
   cluster01::> network port broadcast-domain remove-ports -broadcast
   -domain Default -ports
   cluster01-01:e0e,cluster01-01:e0f,cluster01-02:e0e,cluster01-02:e0f
   ```

5. Verify that the ports have been removed from the default broadcast domain:

   `network port show`

   For complete command syntax, see the man page.

   The following example shows that ports `e0e` and `e0f` have been removed from the default broadcast domain:

```
cluster01::> network port show
                                                          Speed (Mbps)
Node   Port    IPspace   Broadcast Domain Link   MTU    Admin/Oper
------ ------- --------- --------------- ----- ------- ------------
cluster01-01
       e0a     Cluster    Cluster          up    9000  auto/1000
       e0b     Cluster    Cluster          up    9000  auto/1000
       e0c     Default    Default          up    1500  auto/1000
       e0d     Default    Default          up    1500  auto/1000
       e0e     Default    -                up    1500  auto/1000
       e0f     Default    -                up    1500  auto/1000
       e0g     Default    Default          up    1500  auto/1000
cluster01-02
       e0a     Cluster    Cluster          up    9000  auto/1000
       e0b     Cluster    Cluster          up    9000  auto/1000
       e0c     Default    Default          up    1500  auto/1000
       e0d     Default    Default          up    1500  auto/1000
       e0e     Default    -                up    1500  auto/1000
       e0f     Default    -                up    1500  auto/1000
       e0g     Default    Default          up    1500  auto/1000
```

6. Create a broadcast domain in the custom IPspace:

   `network port broadcast-domain create -ipspace` *`ipspace`* `-broadcast-domain` *`broadcast_domain`* `-mtu` *`MTU`* `-ports` *`ports`*

   The following example creates the broadcast domain `ipspace-IC1-bd` in the IPspace `ipspace-IC1`:

```
cluster01::> network port broadcast-domain create -ipspace ipspace-IC1
-broadcast-domain
ipspace-IC1-bd -mtu 1500 -ports cluster01-01:e0e,cluster01-01:e0f,
cluster01-02:e0e,cluster01-02:e0f
```

7. Verify that the broadcast domain was created:

   `network port broadcast-domain show`

   For complete command syntax, see the man page.

```
cluster01::> network port broadcast-domain show
IPspace Broadcast                                       Update
Name    Domain Name    MTU  Port List                   Status Details
------- ----------- ------  ---------------------------- --------------
Cluster Cluster       9000
                            cluster01-01:e0a             complete
                            cluster01-01:e0b             complete
                            cluster01-02:e0a             complete
                            cluster01-02:e0b             complete
Default Default       1500
                            cluster01-01:e0c             complete
                            cluster01-01:e0d             complete
                            cluster01-01:e0f             complete
                            cluster01-01:e0g             complete
                            cluster01-02:e0c             complete
                            cluster01-02:e0d             complete
                            cluster01-02:e0f             complete
                            cluster01-02:e0g             complete
ipspace-IC1
        ipspace-IC1-bd
                      1500
                            cluster01-01:e0e             complete
                            cluster01-01:e0f             complete
                            cluster01-02:e0e             complete
                            cluster01-02:e0f             complete
```

8. Create intercluster LIFs on the system SVM and assign them to the broadcast domain:

Option	Description
In ONTAP 9.6 and later:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-service -policy default-intercluster -home -node` *`node`* `-home-port` *`port`* `-address` *`port_IP`* `-netmask` *`netmask`*
In ONTAP 9.5 and earlier:	`network interface create -vserver` *`system_SVM`* `-lif` *`LIF_name`* `-role intercluster -home-node` *`node`* `-home -port` *`port`* `-address` *`port_IP`* `-netmask` *`netmask`*

The LIF is created in the broadcast domain that the home port is assigned to. The broadcast domain has a default failover group with the same name as the broadcast domain. For complete command syntax, see the man page.

The following example creates intercluster LIFs `cluster01_icl01` and `cluster01_icl02` in the broadcast domain `ipspace-IC1-bd`:

```
cluster01::> network interface create -vserver ipspace-IC1 -lif
cluster01_icl01 -service-
policy default-intercluster -home-node cluster01-01 -home-port e0e
-address 192.168.1.201
-netmask 255.255.255.0

cluster01::> network interface create -vserver ipspace-IC1 -lif
cluster01_icl02 -service-
policy default-intercluster -home-node cluster01-02 -home-port e0e
-address 192.168.1.202
-netmask 255.255.255.0
```

9. Verify that the intercluster LIFs were created:

Option	Description
In ONTAP 9.6 and later:	`network interface show -service-policy default-intercluster`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster`

For complete command syntax, see the man page.

```
cluster01::> network interface show -service-policy default-intercluster
            Logical    Status     Network            Current
Current Is
Vserver     Interface  Admin/Oper Address/Mask       Node          Port
Home
----------- ---------- ---------- ------------------ -------------
------- ----
ipspace-IC1
            cluster01_icl01
                       up/up      192.168.1.201/24   cluster01-01  e0e
true
            cluster01_icl02
                       up/up      192.168.1.202/24   cluster01-02  e0f
true
```

10. Verify that the intercluster LIFs are redundant:

Option	Description
In ONTAP 9.6 and later:	`network interface show -service-policy default-intercluster -failover`
In ONTAP 9.5 and earlier:	`network interface show -role intercluster -failover`

For complete command syntax, see the man page.

The following example shows that the intercluster LIFs `cluster01_icl01` and `cluster01_icl02` on the SVM `e0e` port fail over to the`e0f`port:

```
cluster01::> network interface show -service-policy default-intercluster
-failover
         Logical         Home                  Failover        Failover
Vserver  Interface       Node:Port             Policy          Group
-------- --------------- --------------------- --------------- --------
ipspace-IC1
         cluster01_icl01 cluster01-01:e0e   local-only
intercluster01
                            Failover Targets:  cluster01-01:e0e,
                                               cluster01-01:e0f
         cluster01_icl02 cluster01-02:e0e   local-only
intercluster01
                            Failover Targets:  cluster01-02:e0e,
                                               cluster01-02:e0f
```

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