Configure intercluster LIFs
ONTAP 9

NetApp
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Configure intercluster LIFs

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

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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ONTAP 9.6 and later:</td>
<td></td>
</tr>
<tr>
<td>network interface create -vserver</td>
<td></td>
</tr>
<tr>
<td>system_SVM -lif LIF_name -service</td>
<td></td>
</tr>
<tr>
<td>-policy default-intercluster -home</td>
<td></td>
</tr>
<tr>
<td>-node node -home-port port -address</td>
<td></td>
</tr>
<tr>
<td>port_IP -netmask netmask</td>
<td></td>
</tr>
</tbody>
</table>
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.
4. Verify that the intercluster LIFs are redundant:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In ONTAP 9.6 and later:</strong></td>
<td>network interface show -service-policy default-intercluster -failover</td>
</tr>
<tr>
<td><strong>In ONTAP 9.5 and earlier:</strong></td>
<td>network interface show -role intercluster -failover</td>
</tr>
</tbody>
</table>

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.
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:

   
<table>
<thead>
<tr>
<th>Node</th>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Admin/Oper</th>
</tr>
</thead>
<tbody>
<tr>
<td>e0a</td>
<td>Cluster</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
<tr>
<td>e0b</td>
<td>Cluster</td>
<td>Cluster</td>
<td>Cluster</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
<tr>
<td>e0c</td>
<td>Default</td>
<td>Default</td>
<td>Default</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
<tr>
<td>e0d</td>
<td>Default</td>
<td>Default</td>
<td>Default</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
<tr>
<td>e0e</td>
<td>Default</td>
<td>Default</td>
<td>Default</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
<tr>
<td>e0f</td>
<td>Default</td>
<td>Default</td>
<td>Default</td>
<td>up</td>
<td>1500</td>
<td>auto/1000</td>
</tr>
</tbody>
</table>

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:
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

<table>
<thead>
<tr>
<th>Vserver</th>
<th>Group</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td>Cluster</td>
<td>cluster01-01:e0a, cluster01-01:e0b, cluster01-02:e0a, cluster01-02:e0b</td>
</tr>
<tr>
<td>cluster01</td>
<td>Default</td>
<td>cluster01-01:e0c, cluster01-01:e0d, cluster01-02:e0c, cluster01-02:e0d,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cluster01-01:e0e, cluster01-01:e0f, cluster01-02:e0e, cluster01-02:e0f</td>
</tr>
<tr>
<td>intercluster01</td>
<td></td>
<td>cluster01-01:e0e, cluster01-01:e0f, cluster01-02:e0e, cluster01-02:e0f</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In ONTAP 9.6 and later:</strong></td>
<td>network interface create -vserver system_SVM -lif LIF_name -service</td>
</tr>
<tr>
<td></td>
<td>-policy default-intercluster -home -node node -home -port port -address</td>
</tr>
<tr>
<td></td>
<td>port_IP -netmask netmask -failover -group failover_group</td>
</tr>
<tr>
<td><strong>In ONTAP 9.5 and earlier:</strong></td>
<td>network interface create -vserver system_SVM -lif LIF_name -role intercluster</td>
</tr>
<tr>
<td></td>
<td>-home-node node -home -port port -address port_IP -netmask netmask -failover</td>
</tr>
<tr>
<td></td>
<td>-group failover-group failover_group</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ONTAP 9.6 and later:</td>
<td>network interface show -service-policy default-intercluster</td>
</tr>
<tr>
<td>In ONTAP 9.5 and earlier:</td>
<td>network interface show -role intercluster</td>
</tr>
</tbody>
</table>

For complete command syntax, see the man page.

cluster01::> network interface show -service-policy default-intercluster

<table>
<thead>
<tr>
<th>Logical</th>
<th>Status</th>
<th>Network</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>cluster01</td>
<td>cluster01_icl01</td>
<td>up/up 192.168.1.201/24</td>
<td>true</td>
</tr>
<tr>
<td>cluster01</td>
<td>cluster01_icl02</td>
<td>up/up 192.168.1.202/24</td>
<td>true</td>
</tr>
</tbody>
</table>

7. Verify that the intercluster LIFs are redundant:
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ONTAP 9.6 and later:</td>
<td>network interface show -service-policy default-intercluster -failover</td>
</tr>
<tr>
<td>In ONTAP 9.5 and earlier:</td>
<td>network interface show -role intercluster -failover</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Node</th>
<th>Port</th>
<th>IPspace</th>
<th>Broadcast Domain</th>
<th>Link</th>
<th>MTU</th>
<th>Admin/Oper</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

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

```
network port broadcast-domain remove-ports -broadcast-domain Default -ports e0e,e0f
```

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:
6. Create a broadcast domain in the custom IPspace:

```bash
cluster01::> 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`:

```bash
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:

```bash
network port broadcast-domain show
```

For complete command syntax, see the man page.
8. Create intercluster LIFs on the system SVM and assign them to the broadcast domain:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In ONTAP 9.6 and later:</strong></td>
<td>network interface create -vserver system_SVM -lif LIF_name -service -policy default-intercluster -home -node node -home-port port -address port_IP -netmask netmask</td>
</tr>
<tr>
<td><strong>In ONTAP 9.5 and earlier:</strong></td>
<td>network interface create -vserver system_SVM -lif LIF_name -role intercluster -home-node node -home -port port -address port_IP -netmask netmask</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In ONTAP 9.6 and later:</strong></td>
<td>network interface show -service-policy default-intercluster</td>
</tr>
<tr>
<td><strong>In ONTAP 9.5 and earlier:</strong></td>
<td>network interface show -role intercluster</td>
</tr>
</tbody>
</table>

For complete command syntax, see the man page.

```
cluster01::> network interface show -service-policy default-intercluster

Logical    Status     Network            Current Is
Current Is  Vserver     Interface  Admin/Oper Address/Mask       Node          Port
Home        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:
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In ONTAP 9.6 and later:</td>
<td><code>network interface show -service-policy default-intercluster -failover</code></td>
</tr>
<tr>
<td>In ONTAP 9.5 and earlier:</td>
<td><code>network interface show -role intercluster -failover</code></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Logical Vserver</th>
<th>Interface</th>
<th>Home Node:Port</th>
<th>Failover Policy</th>
<th>Failover Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipspace-IC1</td>
<td>cluster01_icl01</td>
<td>cluster01-01:e0e</td>
<td>local-only</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Failover Targets: cluster01-01:e0e, cluster01-01:e0f</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cluster01_icl02</td>
<td>cluster01-02:e0e</td>
<td>local-only</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Failover Targets: cluster01-02:e0e, cluster01-02:e0f</td>
<td></td>
</tr>
</tbody>
</table>
```