



# **NAS path failover workflow (ONTAP 9.7 and earlier)**

ONTAP 9

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# NAS path failover workflow (ONTAP 9.7 and earlier)

## Set up NAS path failover (ONTAP 9.7 and earlier)

This workflow guides you through the networking configuration steps to set up NAS path failover for ONTAP 9.0 - 9.7. This workflow assumes the following:

- You want to use NAS path failover best practices that simplify network configuration.
- You want to use the CLI, not System Manager.
- You are configuring networking on a new system running ONTAP 9.0 to 9.7.

If you are running an ONTAP release later than 9.7, you should use the NAS path failover procedure for ONTAP 9.8 or later:

- [ONTAP 9.8 and later NAS path failover workflow](#)

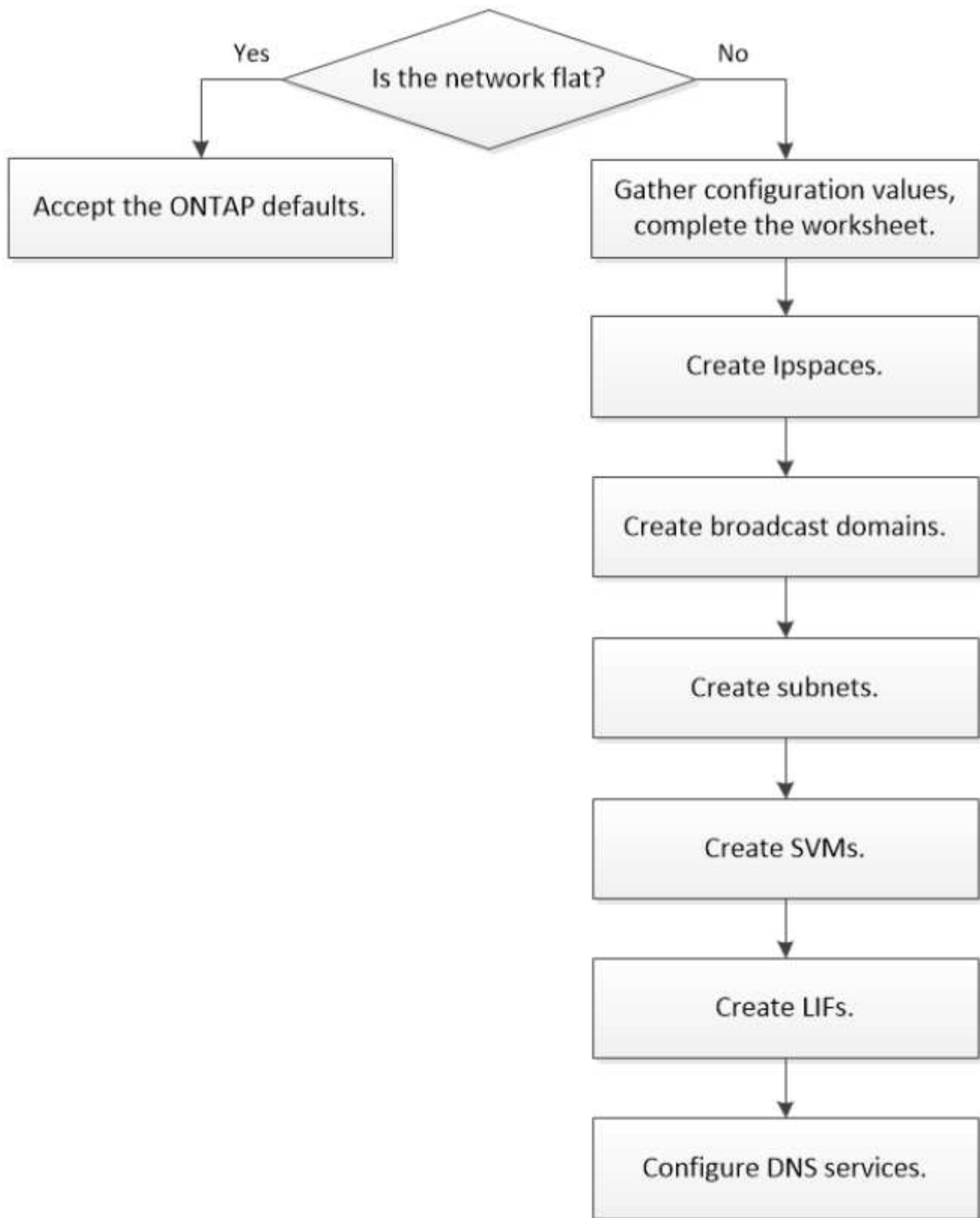
If you want details about network components and management, you should use the network management reference material:

- [Network management overview](#)

## Workflow (ONTAP 9.7 and earlier)

If you are already familiar with basic networking concepts, you might be able to save time setting up your network by reviewing this "hands on" workflow for NAS path failover configuration.

A NAS LIF automatically migrates to a surviving network port after a link failure on its current port. If your network is flat, you can rely on the ONTAP defaults to manage path failover. Otherwise, you should configure path failover following the steps in this workflow.



A SAN LIF does not migrate (unless you move it manually after the link failure). Instead, multipathing technology on the host diverts traffic to a different LIF. For more information, see [SAN administration](#).

1

### Complete the worksheet

Use the worksheet to plan NAS path failover.

2

### Create IPspaces

Create a distinct IP address space for each SVM in a cluster.

3

### Create broadcast domains

Create broadcast domains.

4

### Create subnets

Create subnets.

5

### Create SVMs

Create SVMs to serve data to clients.

6

### Create LIFs

Create LIFs on the ports you want to use to access data.

7

### Configure DNS services for the SVM

configure DNS services for the SVM before creating an NFS or SMB server.

## Worksheet for NAS path failover configuration (ONTAP 9.7 and earlier)

You should complete all sections of the worksheet before configuring NAS path failover.

### IPspace configuration

You can use an IPspace to create a distinct IP address space for each SVM in a cluster. Doing so enables clients in administratively separate network domains to access cluster data while using overlapping IP addresses from the same IP address subnet range.

Information	Required?	Your values
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<b>IPspace name</b> <ul style="list-style-type: none"> <li>• The name of the IPspace.</li> <li>• The name must be unique in the cluster.</li> </ul>	Yes	
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## Broadcast domain configuration


A broadcast domain groups ports that belong in the same Layer 2 network and sets the MTU for the broadcast domain ports.

Broadcast domains are assigned to an IPspace. An IPspace can contain one or more broadcast domains.



The port to which a LIF fails over must be a member of the failover group for the LIF. When you create a broadcast domain, ONTAP automatically creates a failover group with the same name. The failover group contains all the ports assigned to the broadcast domain.

Information	Required?	Your values
<b>IPspace name</b> <ul style="list-style-type: none"> <li>• The IPspace to which the broadcast domain is assigned.</li> <li>• The IPspace must exist.</li> </ul>	Yes	
<b>Broadcast domain name</b> <ul style="list-style-type: none"> <li>• The name of the broadcast domain.</li> <li>• This name must be unique in the IPspace.</li> </ul>	Yes	

<p><b>MTU</b></p> <ul style="list-style-type: none"> <li>• The MTU of the broadcast domain.</li> <li>• Commonly set to either <b>1500</b> or <b>9000</b>.</li> <li>• The MTU value is applied to all ports in the broadcast domain and to any ports that are later added to the broadcast domain.</li> </ul> <div>  <p>The MTU value should match all the devices connected to that network. Note that the e0M port handling management and service processor traffic should have the MTU set to no more than 1500 bytes.</p> </div>	Yes	
<p><b>Ports</b></p> <ul style="list-style-type: none"> <li>• The network ports to add to the broadcast domain.</li> <li>• The ports assigned to the broadcast domain can be physical ports, VLANs, or interface groups (ifgroups).</li> <li>• If a port is in another broadcast domain, it must be removed before it can be added to the broadcast domain.</li> <li>• Ports are assigned by specifying both the node name and port: for example, node1:e0d.</li> </ul>	Yes	

## Subnet configuration

A subnet contains pools of IP addresses and a default gateway that can be assigned to LIFs used by SVMs residing in the IPspace.

- When creating a LIF on an SVM, you can specify the name of the subnet instead of supplying an IP address and a subnet.
- Since a subnet can be configured with a default gateway, you do not have to create the default gateway in

a separate step when creating an SVM.

- A broadcast domain can contain one or more subnets.  
You can configure SVM LIFs that are on different subnets by associating more than one subnet with the IPspace's broadcast domain.
- Each subnet must contain IP addresses that do not overlap with IP addresses assigned to other subnets in the same IPspace.
- You can assign specific IP addresses to SVM data LIFs and create a default gateway for the SVM instead of using a subnet.

Information	Required?	Your values
IPspace name <ul style="list-style-type: none"><li>• The IPspace to which the subnet will be assigned.</li><li>• The IPspace must exist.</li></ul>	Yes	
Subnet name <ul style="list-style-type: none"><li>• The name of the subnet.</li><li>• The name must be unique in the IPspace.</li></ul>	Yes	
Broadcast domain name <ul style="list-style-type: none"><li>• The broadcast domain to which the subnet will be assigned.</li><li>• The broadcast domain must reside in the specified IPspace.</li></ul>	Yes	
Subnet name and mask <ul style="list-style-type: none"><li>• The subnet and mask in which the IP addresses reside.</li></ul>	Yes	
Gateway <ul style="list-style-type: none"><li>• You can specify a default gateway for the subnet.</li><li>• If you do not assign a gateway when you create the subnet, you can assign one to the subnet at any time.</li></ul>	No	



<p>IP address ranges</p> <ul style="list-style-type: none"> <li>You can specify a range of IP addresses or specific IP addresses. For example, you can specify a range such as: 192.168.1.1– 192.168.1.100, 192.168.1.112, 192.168.1.145</li> <li>If you do not specify an IP address range, the entire range of IP addresses in the specified subnet are available to assign to LIFs.</li> </ul>	No	
<p>Force update of LIF associations</p> <ul style="list-style-type: none"> <li>Specifies whether to force the update of existing LIF associations.</li> <li>By default, subnet creation fails if any service processor interfaces or network interfaces are using the IP addresses in the ranges provided.</li> <li>Using this parameter associates any manually addressed interfaces with the subnet and allows the command to succeed.</li> </ul>	No	

## SVM configuration

You use SVMs to serve data to clients and hosts.

The values you record are for creating a default data SVM. If you are creating a MetroCluster source SVM, see the [Install a fabric-attached MetroCluster](#) or the [Install a stretch MetroCluster](#).

Information	Required?	Your values
<p>SVM name</p> <ul style="list-style-type: none"> <li>The name of the SVM.</li> <li>You should use a fully qualified domain name (FQDN) to ensure unique SVM names across cluster leagues.</li> </ul>	Yes	


Root volume name <ul style="list-style-type: none"> <li>The name of the SVM root volume.</li> </ul>	Yes	
Aggregate name <ul style="list-style-type: none"> <li>The name of the aggregate that holds the SVM root volume.</li> <li>This aggregate must exist.</li> </ul>	Yes	
Security style <ul style="list-style-type: none"> <li>The security style for the SVM root volume.</li> <li>Possible values are <b>ntfs</b>, <b>unix</b>, and <b>mixed</b>.</li> </ul>	Yes	
IPspace name <ul style="list-style-type: none"> <li>The IPspace to which the SVM is assigned.</li> <li>This IPspace must exist.</li> </ul>	No	
SVM language setting <ul style="list-style-type: none"> <li>The default language to use for the SVM and its volumes.</li> <li>If you do not specify a default language, the default SVM language is set to <b>C.UTF-8</b>.</li> <li>The SVM language setting determines the character set used to display file names and data for all NAS volumes in the SVM. You can modify The language after the SVM is created.</li> </ul>	No	

## LIF configuration

An SVM serves data to clients and hosts through one or more network logical interfaces (LIFs).

Information	Required?	Your values
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SVM name <ul style="list-style-type: none"> <li>The name of the SVM for the LIF.</li> </ul>	Yes	
LIF name <ul style="list-style-type: none"> <li>The name of the LIF.</li> <li>You can assign multiple data LIFs per node, and you can assign LIFs to any node in the cluster, provided that the node has available data ports.</li> <li>To provide redundancy, you should create at least two data LIFs for each data subnet, and the LIFs assigned to a particular subnet should be assigned home ports on different nodes.</li> </ul> <p><b>Important:</b> If you are configuring a SMB server to host Hyper-V or SQL Server over SMB for nondisruptive operation solutions, the SVM must have at least one data LIF on every node in the cluster.</p>	Yes	
LIF role <ul style="list-style-type: none"> <li>The role of the LIF.</li> <li>Data LIFs are assigned the data role.</li> </ul>	Yes Deprecated from ONTAP 9.6	data
Service policy Service policy for the LIF. <p>The service policy defines which network services can use the LIF. Built-in services and service policies are available for managing data and management traffic on both data and system SVMs.</p>	Yes Beginning with ONTAP 9.6	

<p>Allowed protocols</p> <ul style="list-style-type: none"> <li>• The protocols that can use the LIF.</li> <li>• By default, SMB, NFS, and FlexCache are allowed. The FlexCache protocol enables a volume to be used as an origin volume for a FlexCache volume on a system running Data ONTAP operating in 7-Mode.</li> </ul> <div>  <p>The protocols that use the LIF cannot be modified after the LIF is created. You should specify all protocols when you configure the LIF.</p> </div>	No	
<p>Home node</p> <ul style="list-style-type: none"> <li>• The node to which the LIF returns when the LIF is reverted to its home port.</li> <li>• You should record a home node for each data LIF.</li> </ul>	Yes	
<p>Home port or broadcast domain</p> <ul style="list-style-type: none"> <li>• The port to which the logical interface returns when the LIF is reverted to its home port.</li> <li>• You should record a home port for each data LIF.</li> </ul>	Yes	
<p>Subnet name</p> <ul style="list-style-type: none"> <li>• The subnet to assign to the SVM.</li> <li>• All data LIFs used to create continuously available SMB connections to application servers must be on the same subnet.</li> </ul>	Yes (if using a subnet)	

## DNS configuration

You must configure DNS on the SVM before creating an NFS or SMB server.

Information	Required?	Your values
<b>SVM name</b> <ul style="list-style-type: none"><li>• The name of the SVM on which you want to create an NFS or SMB server.</li></ul>	Yes	
<b>DNS domain name</b> <ul style="list-style-type: none"><li>• A list of domain names to append to a host name when performing host- to-IP name resolution.</li><li>• List the local domain first, followed by the domain names for which DNS queries are most often made.</li></ul>	Yes	

<p>IP addresses of the DNS servers</p> <ul style="list-style-type: none"> <li>List of IP addresses for the DNS servers that will provide name resolution for the NFS or SMB server.</li> <li>The listed DNS servers must contain the service location records (SRV) needed to locate the Active Directory LDAP servers and domain controllers for the domain that the SMB server will join. The SRV record is used to map the name of a service to the DNS computer name of a server that offers that service. SMB server creation fails if ONTAP cannot obtain the service location records through local DNS queries. The simplest way to ensure that ONTAP can locate the Active Directory SRV records is to configure Active Directory-integrated DNS servers as the SVM DNS servers. You can use non-Active Directory-integrated DNS servers provided that the DNS administrator has manually added the SRV records to the DNS zone that contains information about the Active Directory domain controllers.</li> <li>For information about the Active Directory-integrated SRV records, see the topic <a href="#">How DNS Support for Active Directory Works on Microsoft TechNet</a>.</li> </ul>	<p>Yes</p>	
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## Dynamic DNS configuration

Before you can use dynamic DNS to automatically add DNS entries to your Active Directory- integrated DNS servers, you must configure dynamic DNS (DDNS) on the SVM.

DNS records are created for every data LIF on the SVM. By creating multiple data LIFS on the SVM, you can load-balance client connections to the assigned data IP addresses. DNS load balances connections that are made using the host name to the assigned IP addresses in a round- robin fashion.

Information	Required?	Your values
<p>SVM name</p> <ul style="list-style-type: none"> <li>• The SVM on which you want to create an NFS or SMB server.</li> </ul>	Yes	
<p>Whether to use DDNS</p> <ul style="list-style-type: none"> <li>• Specifies whether to use DDNS.</li> <li>• The DNS servers configured on the SVM must support DDNS. By default, DDNS is disabled.</li> </ul>	Yes	
<p>Whether to use secure DDNS</p> <ul style="list-style-type: none"> <li>• Secure DDNS is supported only with Active Directory-integrated DNS.</li> <li>• If your Active Directory-integrated DNS allows only secure DDNS updates, the value for this parameter must be true.</li> <li>• By default, secure DDNS is disabled.</li> <li>• Secure DDNS can be enabled only after a SMB server or an Active Directory account has been created for the SVM.</li> </ul>	No	
<p>FQDN of the DNS domain</p> <ul style="list-style-type: none"> <li>• The FQDN of the DNS domain.</li> <li>• You must use the same domain name configured for DNS name services on the SVM.</li> </ul>	No	

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