

## Configuration Guide

# Configuring an n-Command MSP Server Cluster

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This configuration guide outlines the steps necessary to configure multiple n-Command MSP servers in a cluster to share resources for managing AOS network elements. The guide includes an overview of clustering, an outline of the steps necessary to configure an n-Command MSP server as a master server and steps for joining a cluster and removing a cluster once configured.

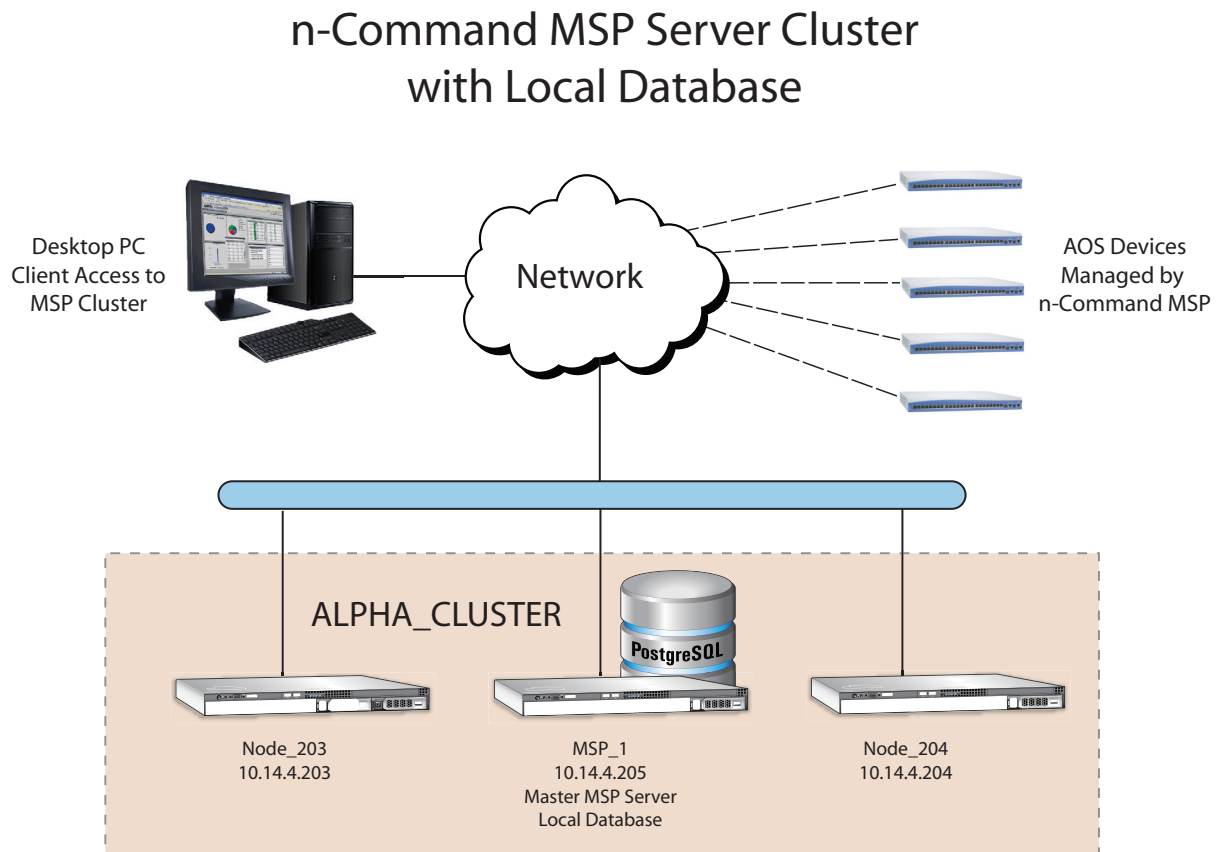
This guide consists of the following sections:

- *MSP Server Clustering Overview on page 2*
- *Hardware and Software Requirements and Limitations on page 3*
- *Configuring a Cluster Environment on page 3*
- *Removing a Cluster Environment on page 8*
- *Additional Resources on page 10*

## MSP Server Clustering Overview

Creating a cluster environment with multiple n-Command MSP servers allows resource sharing across multiple servers and provides management redundancy. In a clustering scenario with multiple n-Command MSP servers, only one server is configured as the master server, while the others are configured as nodes. The master server allows other nodes to connect to it and provide the same management of network elements as if there were only one n-Command MSP server administering the network. As network elements check in at their various intervals, they can contact any server in the cluster. All the information about each element is stored in a centralized database that can reside either locally on the master server or remotely on another server.

The following figure demonstrates a cluster of n-Command MSP servers providing management to a group of network elements. Once the cluster has been created, the individual AOS devices can contact any node in the cluster. The Auto-link redundancy capabilities (as described in *Configuring Auto-Link in AOS for n-Command MSP*) can be used to allow the AOS devices to contact multiple nodes in the cluster in the event of a failure of one or more services.



### Local versus Remote Database

As AOS devices are discovered on the network, information such as; device type, serial number, IP address, firmware version, system contact information, and other details are recorded in a centralized database. The database resides either locally on the master n-Command MSP server or on a remote database server. n-Command MSP supports using PostgreSQL as the database server.

The decision to use a local or remote database depends on your specific needs and individual experience with configuring a PostgreSQL server. If you are using a remote server, the configuration of the PostgreSQL server is beyond the scope of this document. You will be prompted for the database host name or IP address, port number and user name and password in order to access the remote server during the cluster configuration.

## Hardware and Software Requirements and Limitations

The clustering functionality was introduced with n-Command MSP version 5.1. All nodes in the cluster environment must be running the same version of n-Command MSP, including the master server.

## Configuring a Cluster Environment

To configure a cluster environment for n-Command MSP, use the following steps:

- *Step 1: Configure a Master n-Command MSP Server on page 4*
- *Step 2: Join All Nodes to the Cluster on page 6*

## Accessing the n-Command MSP Administration Dashboard

Each n-Command MSP server has two different dashboards which serve different purposes. The main dashboard provides a graphical user interface (GUI) for managing network devices such as AOS routers and switches. The administration dashboard is used for administering the n-Command MSP server and advanced settings. Both are accessible through a web browser using the Internet Protocol version 4 (IPv4) address of the n-Command MSP server. The administration dashboard requires an additional path of **/msp** at the end of the address. For this guide, we will only be accessing the administration dashboard.

To access the administration dashboard, follow these steps:

1. Open a new web page in your Internet browser.
2. Enter your n-Command MSP server's IPv4 address in the browser's address field in the following format, **http://<ipv4 address>/msp**, for example:

**http://10.10.10.1/msp.**



*If during the unit's setup process you have changed the default IPv4 address (10.10.10.1), use the configured IPv4 address.*

3. At the prompt, enter your user name and password. Select **Login**.

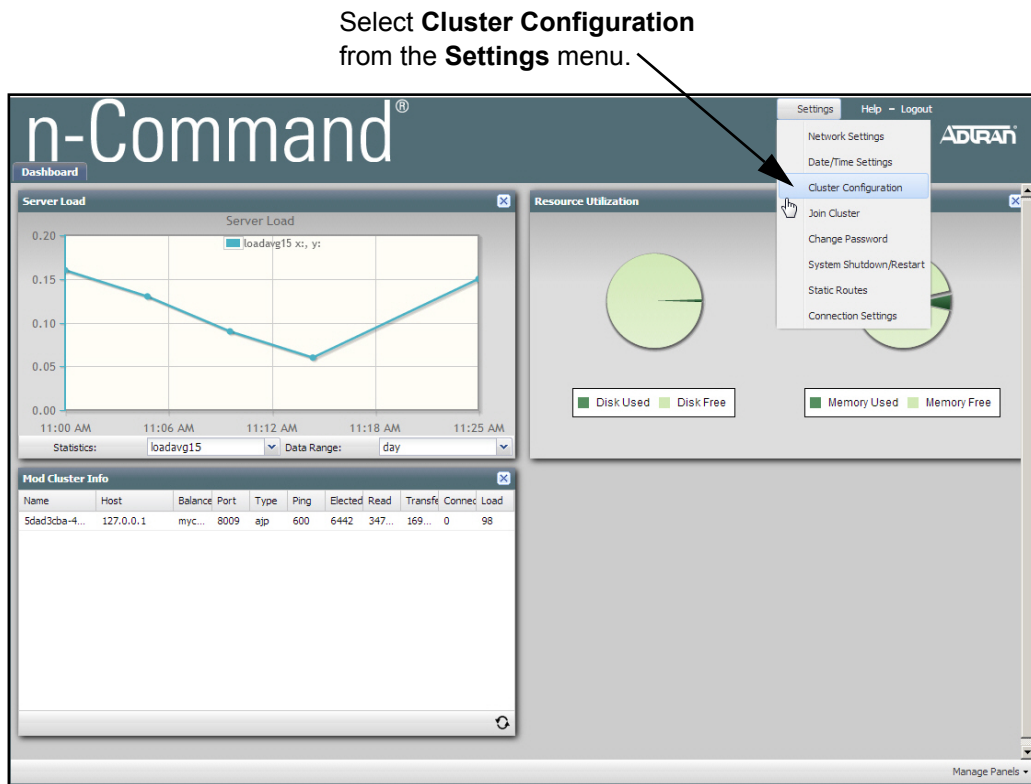


*The n-Command MSP server administration dashboard user name and password is independent of the main dashboard user name and password. The default administration dashboard user name is **admin** and the default password is the serial number of the unit for physical appliances and **None** for virtual machine (VM) installations.*

## Step 1: Configure a Master n-Command MSP Server

The first step for configuring an n-Command MSP cluster environment is to designate one of the servers as the master server. This server allows any other n-Command MSP servers configured as cluster nodes to associate with it. Once you have configured the master server, continue to the [Step 2: Join All Nodes to the Cluster on page 6](#) to associate all secondary n-Command MSP servers with the master.

1. Log into the master n-Command MSP server using the instructions in [Accessing the n-Command MSP Administration Dashboard on page 3](#).
2. Navigate to **Settings > Cluster Configuration**.

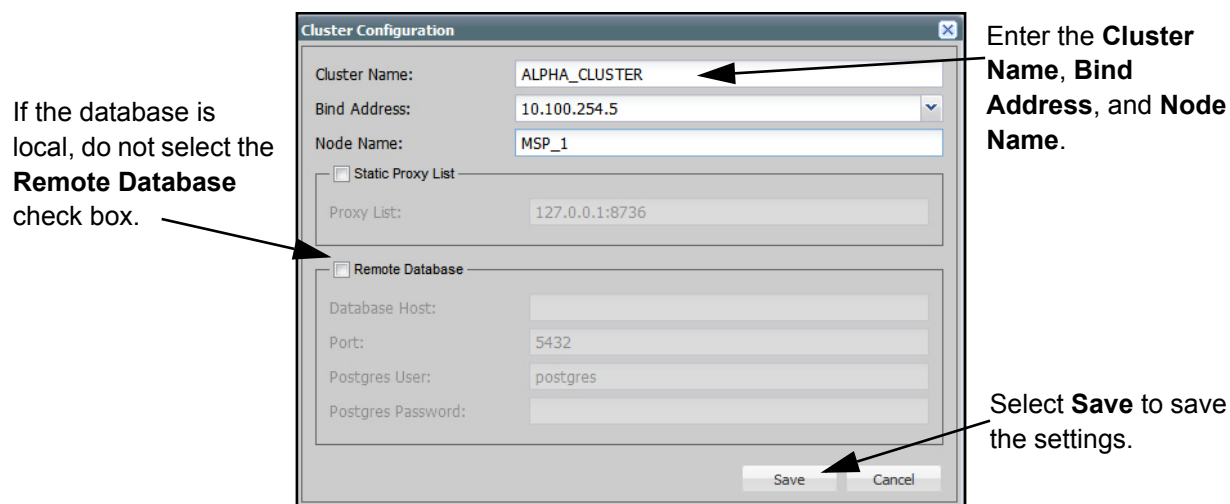


**Figure 1. Administrative Dashboard - Master Server**

3. Enter the **Cluster Name**, **Bind Address**, and **Node Name** for the master server in the appropriate fields. If the database will reside on the local server (this master server), do not select the **Remote Database** check box, and skip to [Step 5](#). If the database will reside at a remote location, select the **Remote Database** check box to configure the remote location, and continue to [Step 4](#).



*Spaces are not permitted when entering data in the Cluster Configuration dialog box fields shown in [Figure 2 on page 5](#).*



**Figure 2. Cluster Configuration Menu**

**Table 1. Configuring Cluster Master Server Settings**

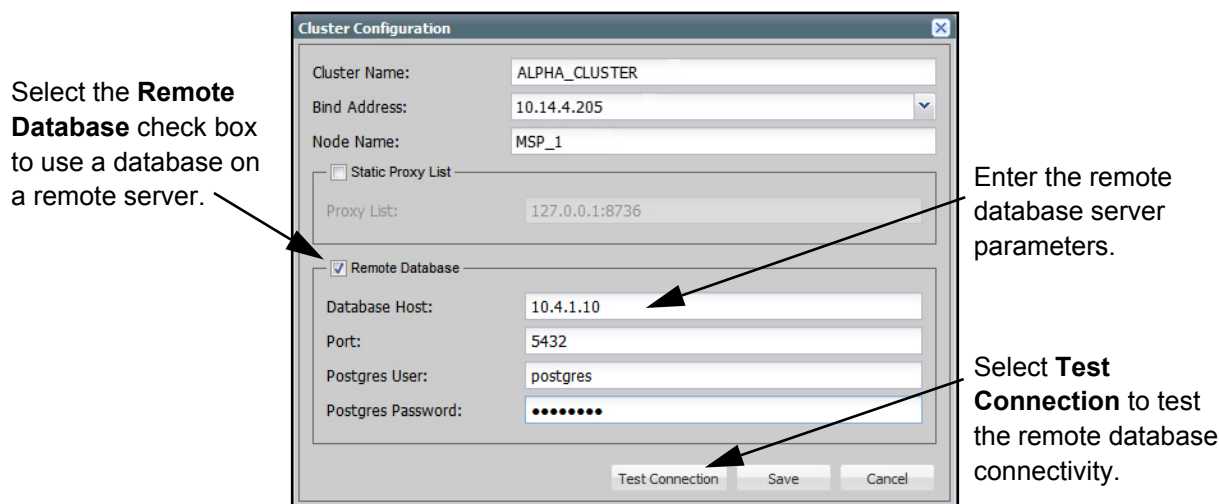
Field Name	Description
Cluster Name	A descriptive name for the cluster.
Bind Address	The IPv4 address of the node you are configuring.
Node Name	A descriptive name for the node.
Static Proxy List	Defines a comma delimited list of proxies with which this node will communicate for load balancing. ADTRAN does not recommend changing this setting.
Remote Database	Optional. Settings for accessing the remote database. Only for use if the database exists on a separate server from the master n-Command MSP server.

- Optional. To configure a remote database, use the expanded menu that displays when you select the **Remote Database** check box. Enter the **Database Host, Port, Postgres User, and Postgres Password** credentials for your remote PostgreSQL database.

You can test connectivity to the remote database by selecting **Test Connection**. By testing the availability of the remote server, you are also testing the authentication as well. Upon selecting **Save**, you will be prompted to initialize the database schema. Upon confirmation, the database will be initialized and the service will restart.



*In order to use a remote database, the remote database server must be configured prior to configuring the n-Command MSP master server.*



**Figure 3. Configuring a Remote Database**

**Table 2. Configuring Remote Database Settings**

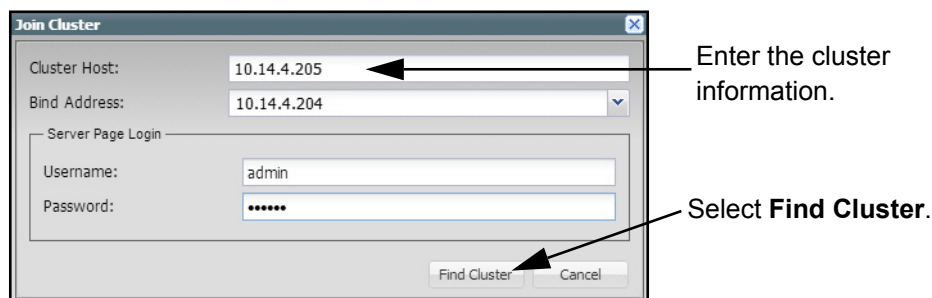
Field Name	Description
Database Host	The address of the remote database server. Specify as either an IPv4 address or host name.
Port	The port on which the database server is listening. The default port for PostgreSQL is <b>5432</b> .
Postgres User	The user name used to log into the database. The default user name is <b>postgres</b> .
Postgres Password	The password for the Postgres user.

5. Select **Save** to save these settings. The nCommandMSP service will restart and may take a few minutes to complete. Once finished, you will be returned to the Administration Dashboard.

## Step 2: Join All Nodes to the Cluster

Depending on the number of nodes being used in your particular cluster, you will need to repeat the following steps for each node. Perform the following steps for each n-Command MSP server that is joining the cluster as a node.

1. Log into the node using the instructions in *Accessing the n-Command MSP Administration Dashboard on page 3*.
2. Navigate to **Settings > Join Cluster**.
3. Enter the necessary settings for **Cluster Host, Bind Address, Username, and Password** in the resulting dialog box shown *Figure 4 on page 7*. Each setting is explained in *Table 3 on page 7*.

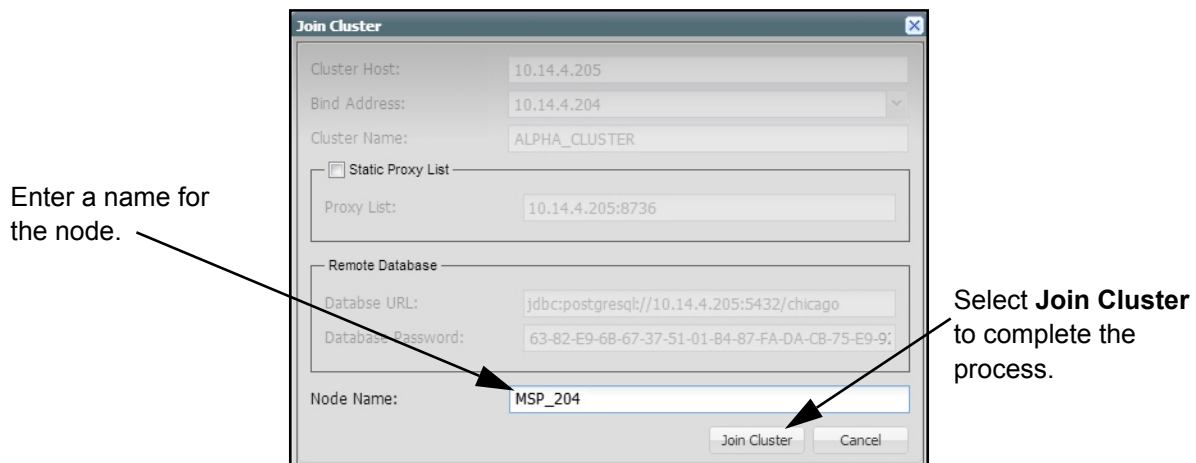


**Figure 4. Join Cluster Menu**

**Table 3. Join Cluster Settings**

Field Name	Description
Cluster Host	The host name or IPv4 address of the master server in the cluster you are joining.
Bind Address	The IPv4 address of the node you are adding to the cluster.
Username	The user name for the master server of the cluster you are joining. The default is <b>admin</b> .
Password	The password for the master server of the cluster you are joining. The default is the serial number of the unit for physical appliances or <b>None</b> for VM installations.
	<i>These credentials are the same as the login information for the administrator dashboard login (<a href="http://&lt;ipv4 address&gt;/msp">http://&lt;ipv4 address&gt;/msp</a>).</i>

- Once the information is entered, select **Find Cluster** to locate the cluster. If the search is successful, the dialog box shown in [Figure 5](#) is displayed. The **Node Name** field will be blank.
- Enter a name for the node you are adding to the cluster. In this example, we used **MSP\_204**. Select **Join Cluster** to save the configuration and restart the service. This process may take a few minutes to complete. Once finished, you will have successfully added the node to the cluster and return to the Administration Dashboard.



**Figure 5. Enter Node Name**

6. Repeat Steps 1 through 5 to add additional nodes to the cluster environment.

## Removing a Cluster Environment

After a cluster environment has been configured, you may need to remove the configuration for various reasons. To remove a cluster, you will first disconnect all nodes from the cluster and then remove the cluster configuration from the master server. This section provides instructions for completing both of these tasks:

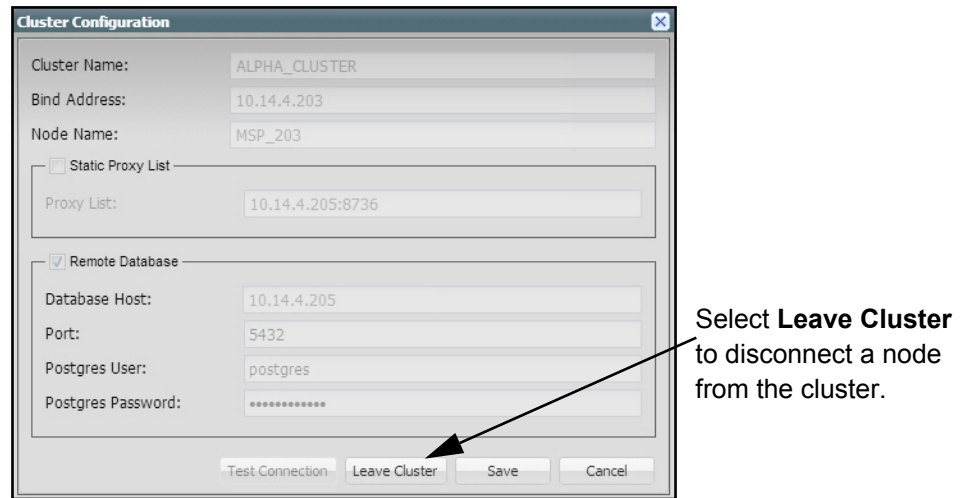
- [Disconnecting a Node from the Cluster on page 8](#)
- [Removing the Cluster Configuration from the Master Server on page 9](#)

### Disconnecting a Node from the Cluster

You can remove a node from the cluster after it has joined the cluster. This process be performed from the administration dashboard of the node you want to remove.

1. Log into the cluster node using the instructions in [Accessing the n-Command MSP Administration Dashboard on page 3](#).
2. Navigate to **Settings > Cluster Configuration**.
3. From the **Cluster Configuration** menu, select **Leave Cluster**. This will take a few minutes to complete and will remove the node from the cluster environment. Once finished, you will be returned to the Administration Dashboard.



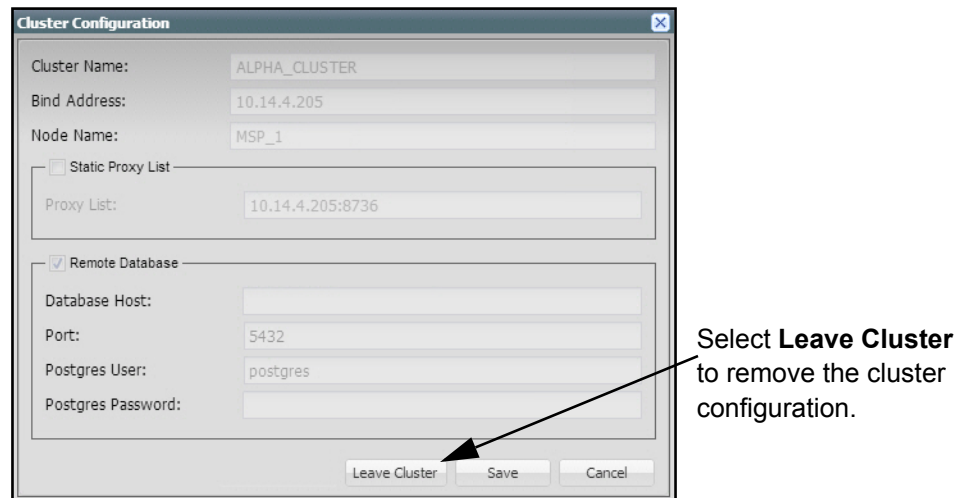


**Figure 6. Disconnect Node from Cluster**

## Removing the Cluster Configuration from the Master Server

You can remove the cluster configuration from a master server in much the same way a node is removed from the cluster. This process must be performed from the administration dashboard of the master server. Be sure to remove all nodes from the cluster first before removing the cluster configuration from the master server.

1. Log into the master server using the instructions in *Accessing the n-Command MSP Administration Dashboard on page 3*.
2. Navigate to **Settings > Cluster Configuration**.
3. From the **Cluster Configuration** menu, select **Leave Cluster**. This will take a few minutes to complete and will remove the cluster configuration settings from the master server. Once finished, you will be returned to the Administration Dashboard.



**Figure 7. Remove Master Server Cluster Configuration**

## Additional Resources

There are additional resources available to aid in configuring your n-Command MSP server. The documents listed below are available online on ADTRAN's Support Forum at <https://supportforums.adtran.com>.

- *n-Command MSP Quick Start Guide*
- *n-Command MSP Online Help*
- *Configuring Auto-Link in AOS for n-Command MSP*