ProCurve Stack Management

Contents

Overview

This chapter describes how to use your network to stack switches without the need for any specialized cabling. For an overview of stacking features, refer to the table on page 8-4.

For general information on how to use the switch's built-in interfaces, see:

■ Chapter 3, "Using the Menu Interface"

■ Chapter 4, "Using the Command Line Interface (CLI)"

■ Chapter 5, "Using the Web Browser Interface

■ Chapter 6, "Switch Memory and Configuration"

Operation

Stacking Features

Feature	Default	Menu	CLI	Web
view stack status				
view status of a single switch	n/a	page 8-27 thru page 8-29	page 8-32	page 8-46
view candidate status	n/a		page 8-32	
view status of commander and its stack	n/a		page 8-33	
view status of all stacking-enabled switches in the ip subnet	n/a		page 8-33	
configure stacking				
enable/disable candidate Auto-Join	enabled/Yes	page 8-16	page 8-38	
"push" a candidate into a stack	n/a	page 8-16	page 8-38	
configure a switch to be a commander	n/a	page 8-14	page 8-34	
"push" a member into another stack	n/a	page 8-25	page 8-40	
remove a member from a stack	n/a	page 8-22	page 8-41 or page 8-42	
"pull" a candidate into a stack	n/a	page 8-18	page 8-37	
"pull" a member from another stack	n/a	page 8-20	page 8-39	
convert a commander or member to a member of another stack	n/a	page 8-25	page 8-40	
access member switches for configuration and traffic monitoring	n/a	page 8-24	page 8-43	
disable stacking	enabled	page 8-16	page 8-45	
transmission interval	60 seconds	page 8-14	page 8-45	

ProCurve Stack Management (termed *stacking*) enables you to use a single IP address and standard network cabling to manage a group of up to 16 total switches in the same IP subnet (broadcast domain). Using stacking, you can:

■   Reduce the number of IP addresses needed in your network.

- Simplify management of small workgroups or wiring closets while scaling your network to handle increased bandwidth demand.

- Eliminate any specialized cables for stacking connectivity and remove the distance barriers that typically limit your topology options when using other stacking technologies.

- Add switches to your network without having to first perform IP addressing tasks.

Which Devices Support Stacking?

As of May, 2003, the following ProCurve devices support stacking:

■ ProCurve Switch 6108	■ ProCurve Switch 2524
■ ProCurve Switch 4104GL	■ ProCurve Switch 8000M*
■ ProCurve Switch 4108GL	■ ProCurve Switch 4000M*
■ ProCurve Switch 2650	■ ProCurve Switch 2424M*
■ ProCurve Switch 2626	■ ProCurve Switch 2400M*
■ ProCurve Switch 2512	■ ProCurve Switch 1600M*

*Requires software release C.08.03 or later, which is included with the 8000M, 4000M, 2424M, and 1600M models as of July, 2000. Release C.08.03 or a later version is also available on the ProCurve website at **www.procurve.com**. (Click on **software**.)

Components of ProCurve Stack Management

Table 8-1. Stacking Definitions

Stack	Consists of a Commander switch and any Member switches belonging to that Commander's stack.
Commander	A switch that has been manually configured as the controlling device for a stack. When this occurs, the switch's stacking configuration appears as **Commander**.
Candidate	A switch that is ready to join (become a Member of) a stack through either automatic or manual methods. A switch configured as a Candidate is not in a stack.
Member	A switch that has joined a stack and is accessible from the stack Commander.
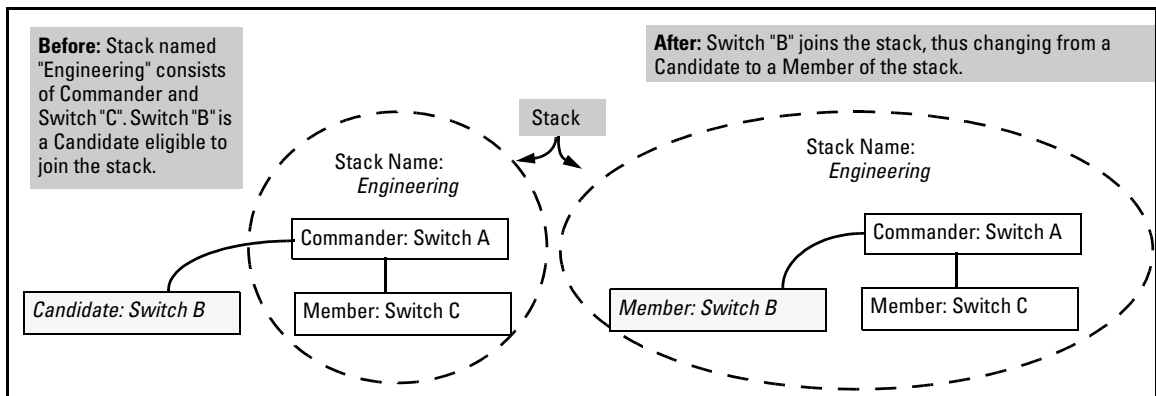
Figure 8-1. Illustration of a Switch Moving from Candidate to Member

General Stacking Operation

After you configure one switch to operate as the Commander of a stack, additional switches can join the stack by either automatic or manual methods. After a switch becomes a Member, you can work through the Commander switch to further configure the Member switch as necessary for all of the additional software features available in the switch.

The Commander switch serves as the in-band entry point for access to the Member switches. For example, the Commander's IP address becomes the path to all stack Members and the Commander's Manager password controls access to all stack Members.
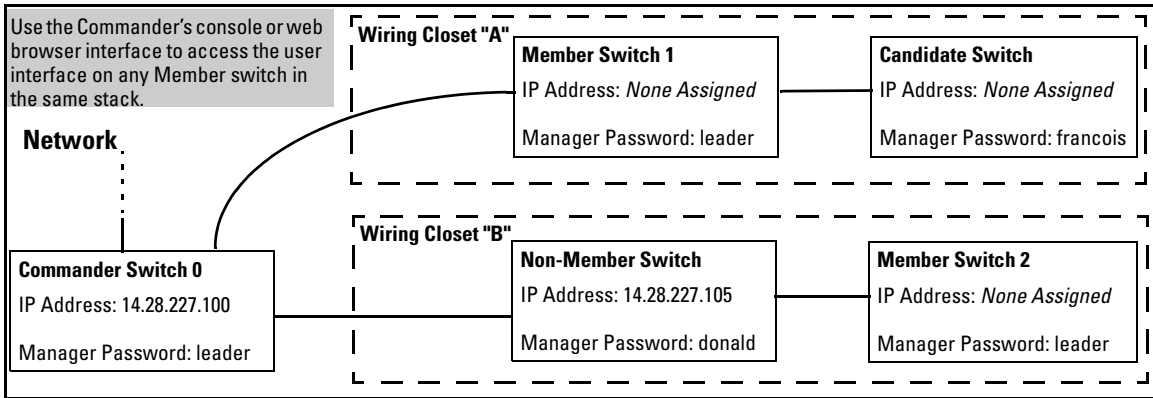
Figure 8-2. Example of Stacking with One Commander Controlling Access to Wiring Closet Switches

Interface Options. You can configure stacking through the switch's menu interface, CLI, or the web browser interface. For information on how to use the web browser interface to configure stacking, see the online Help for the web browser interface.

Web Browser Interface Window for Commander Switches. The web browser interface window for a Commander switch differs in appearance from the same window for non-commander switches. See figure 8-38 on page 8-46.

Operating Rules for Stacking

General Rules

■ Stacking is an optional feature (enabled in the default configuration) and can easily be disabled. Stacking has no effect on the normal operation of the switch in your network.

■ A stack requires one Commander switch. (Only one Commander allowed per stack.)

■ All switches in a particular stack must be in the same IP subnet (broadcast domain). A stack cannot cross a router.

■ A stack accepts up to 16 switches (numbered 0-15), including the Commander (always numbered 0).

■ There is no limit on the number of stacks in the same IP subnet (broadcast domain), however a switch can belong to only one stack.

■ If multiple VLANs are configured, stacking uses only the primary VLAN on any switch. In the factory-default configuration, the DEFAULT_VLAN is the primary VLAN. (See "Stacking Operation with Multiple VLANs Configured" on page 8-45 and "The Primary VLAN" on page 2-6.)

■ Stacking allows intermediate devices that do not support stacking. This enables you to include switches that are distant from the Commander.

Commander Switch	Switch with Stacking Disabled or Not Available	Candidate Switch
		Member Switch

Figure 8-3. Example of a Non-Stacking Device Used in a Stacking Environment

Specific Rules

Table 8-2. Specific Rules for Commander, Candidate, and Member Switch

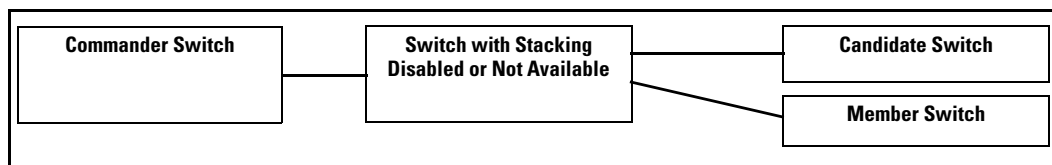|	IP Addressing and Stack Name	Number Allowed Per Stack	Passwords	SNMP Communities
Commander	**IP Addr:** Requires an assigned IP address and mask for access via the network. **Stack Name:** Required	Only one Commander switch is allowed per stack.	The Commander's Manager and Operator passwords are assigned to any switch becoming a Member of the stack. If you change the Commander's passwords, the Commander propagates the new passwords to all stack Members.	Standard SNMP community operation. The Commander also operates as an SNMP proxy to Members for all SNMP communities configured in the Commander.
Candidate	**IP Addr:** Optional. Configuring an IP address allows access via Telnet or web browser interface while the switch is not a stack member. In the factory default configuration the switch automatically acquires an IP address if your network includes DHCP service. **Stack Name:** N/A	n/a	Passwords optional. If the Candidate becomes a stack Member, it assumes the Commander's Manager and Operator passwords. If a candidate has a password, it cannot be automatically added to a stack. In this case, if you want the Candidate in a stack, you must manually add it to the stack.	Uses standard SNMP community operation if the Candidate has its own IP addressing.
Member	**IP Addr:** Optional. Configuring an IP address allows access via Telnet or web browser interface without going through the Commander switch. This is useful, for example, if the stack Commander fails and you need to convert a Member switch to operate as a replacement Commander. **Stack Name:** N/A	Up to 15 Members per stack.	When the switch joins the stack, it automatically assumes the Commander's Manager and Operator passwords and discards any passwords it may have had while a Candidate. **Note:** If a Member leaves a stack for any reason, it retains the passwords assigned to the stack Commander at the time of departure from the stack.	Belongs to the same SNMP communities as the Commander (which serves as an SNMP proxy to the Member for communities to which the Commander belongs). To join other communities that *exclude* the Commander, the Member must have its own IP address. Loss of stack membership means loss of membership in any community that is configured only in the Commander. See "SNMP Community Operation in a Stack" on page 8-44.

N o t e   In the default stack configuration, the Candidate **Auto Join** parameter is enabled, but the Commander **Auto Grab** parameter is disabled. This prevents Candidates from automatically joining a stack prematurely or joining the wrong stack (if more than one stack Commander is configured in a subnet or broadcast domain). If you plan to install more than one stack in a subnet, ProCurve recommends that you leave **Auto Grab** disabled on all Commander switches and manually add Members to their stacks. Similarly, if you plan to install a stack in a subnet (broadcast domain) where stacking-capable switches are not intended for stack membership, you should set the **Stack State** parameter (in the Stack Configuration screen) to **Disabled** on those particular switches.

Configuring Stack Management

Overview of Configuring and Bringing Up a Stack

This process assumes that:

- All switches you want to include in a stack are connected to the same subnet (broadcast domain).

- If VLANs are enabled on the switches you want to include in the stack, then the ports linking the stacked switches must be on the primary VLAN in each switch (which, in the default configuration, is the default VLAN). If the primary VLAN is tagged, then each switch in the stack must use the same VLAN ID (VID) for the primary VLAN. (Refer to "The Primary VLAN" on page 2-6, and "Stacking Operation with Multiple VLANs Configured" on page 8-45.)

- *If you are including an ProCurve Switch 8000M, 4000M, 2424M, 2400M, or 1600M in a stack, you must first update all such devices to software version C.08.03 or later.* (You can get a copy of the latest software version from the ProCurve Networking website and/or copy it from one switch to another. For downloading instructions, see appendix A, "File Transfers", in the *Management and Configuration Guide* for these switch models.)

Options for Configuring a Commander and Candidates. Depending on how Commander and Candidate switches are configured, Candidates can join a stack either automatically or by a Commander manually adding ("pulling") them into the stack. In the default configuration, a Candidate joins only when *manually* pulled by a Commander. You can reconfigure a Commander to *automatically* pull in Candidates that are in the default stacking configuration. You can also reconfigure a Candidate switch to either "push" itself into a particular Commander's stack, convert the Candidate to a Commander (for a stack that does not already have a Commander), or to operate as a standalone switch without stacking. The following table shows your control options for adding Members to a stack.

Table 8-3. Stacking Configuration Guide

Join Method[1]	Commander (IP Addressing Required)	Candidate (IP Addressing Optional)	
	Auto Grab	Auto Join	Passwords
Automatically add Candidate to Stack (Causes the first 15 eligible, discovered switches in the subnet to automatically join a stack.)	**Yes**	**Yes** *(default)*	No *(default)*[*]
Manually add Candidate to Stack (Prevent automatic joining of switches you don't want in the stack)	**No** *(default)*	**Yes** *(default)*	Optional[*]
	Yes	**No**	Optional[*]
	Yes	**Yes** *(default)* or **No**	Configured
Prevent a switch from being a Candidate	**N/A**	**Disabled**	Optional

[*]The Commander's Manager and Operator passwords propagate to the candidate when it joins the stack.

The easiest way to *automatically* create a stack is to:

1. Configure a switch as a Commander.

2. Configure IP addressing and a stack name on the Commander.

3. Set the Commander's **Auto Grab** parameter to **Yes**.

4. Connect Candidate switches (in their factory default configuration) to the network.

This approach automatically creates a stack of up to 16 switches (including the Commander). However this replaces manual control with an automatic process that may bring switches into the stack that you did not intend to include. With the Commander's **Auto Grab** parameter set to **Yes**, *any switch* conforming to all four of the following factors automatically becomes a stack Member:

■ Default stacking configuration (**Stack State** set to **Candidate**, and **Auto Join** set to **Yes**)

■ Same subnet (broadcast domain) and default VLAN as the Commander (If VLANs are used in the stack environment, see "Stacking Operation with a Tagged VLAN" on page 8-45.)

■ No Manager password

■ 14 or fewer stack members at the moment

General Steps for Creating a Stack

This section describes the general stack creation process. For the detailed configuration processes, see pages 8-14 through 8-37 for the menu interface and pages 8-30 through 8-42 for the CLI.

1. Determine the naming conventions for the stack. You will need a stack name. Also, to help distinguish one switch from another in the stack, you can configure a unique system name for each switch. Otherwise, the system name for a switch appearing in the Stacking Status screen appears as the stack name plus an automatically assigned switch number. For example:

```
                            Pacific Ocean
==========================- CONSOLE - MANAGER MODE -============================
                    Stacking - Stacking Status (All)

     Stack Name            MAC Address      System Name          Status
   -------------------   -------------   ----------------   --------------------
   Big Waters             0060b0-880a80   Pacific Ocean      Commander Up
                          0060b0-df1a00   Coral Sea          Member Up

   Online                 0060b0-df7680   online-0           Commander Up
                          001083-3c7480   online-1           Member Up
                          0060b0-312f00   online-2           Member Up
                          001083-3c09c0   online-3           Member Up


   Actions->   Back     Next page     Prev page     Help

 Return to previous screen.
 Use up/down arrow keys to scroll to other entries, left/right arrow keys to
 change action selection, and <Enter> to execute action.
```

For status descriptions, see the table on page 8-47.

Stack with unique system name for each switch.

Stack named "Online" with no previously configured system names assigned to individual switches.

Figure 8-4. Using the System Name to Help Identify Individual Switches

2. Configure the Commander switch. Doing this first helps to establish consistency in your stack configuration, which can help prevent startup problems.

   - A stack requires one Commander switch. If you plan to implement more than one stack in a subnet (broadcast domain), the easiest way to avoid unintentionally adding a Candidate to the wrong stack is to manually control the joining process by leaving the Commander's **Auto Grab** parameter set to **No** (the default).

   - The Commander assigns its Manager and Operator passwords to any Candidate switch that joins the stack.

   - The Commander's SNMP community names apply to members.

3. For automatically or manually pulling Candidate switches into a stack, you can leave such switches in their default stacking configuration. If you need to access Candidate switches through your network before they join the stack, assign IP addresses to these devices. Otherwise, IP addressing is optional for Candidates and Members. (Note that once a Candidate becomes a member, you can access it through the Commander to assign IP addressing or make other configuration changes.)

4. Make a record of any Manager passwords assigned to the switches (intended for your stack) that are not currently members. (You will use these passwords to enable the protected switches to join the stack.)

5. If you are using VLANs in the stacking environment, you must use the default VLAN for stacking links. For more information, see "Stacking Operation with a Tagged VLAN" on page 8-45.

6. Ensure that all switches intended for the stack are connected to the same subnet (broadcast domain). As soon as you connect the Commander, it will begin discovering the available Candidates in the subnet.

   - If you configured the Commander to automatically add Members (**Auto Grab** = **Yes**), the first fifteen discovered Candidates meeting both of the following criteria will automatically join the stack:

     – **Auto Join** parameter set to **Yes** (the default)

     – Manager password not configured

   - If you configured the Commander to manually add Members (**Auto Grab** set to **No**—the default), you can begin the process of selecting and adding the desired Candidates.

7. Ensure that all switches intended for the stack have joined.

8. If you need to do specific configuration or monitoring tasks on a Member, use the console interface on the Commander to access the Member.

Using the Menu Interface To View Stack Status and Configure Stacking

Using the Menu Interface To View and Configure a Commander Switch

1. Configure an IP address and subnet mask on the Commander switch. (See the chapter on IP addressing in the *Management and Configuration Guide.*)

2. Display the Stacking Menu by selecting **Stacking** in the Main Menu.

```
                              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                              Stacking Menu

     1. Stacking Status (This Switch)
     2. Stacking Status (All)
     3. Stack Configuration
     0. Return to Main Menu...



Shows the status of Stack.
To select menu item, press item number, or highlight item and press <Enter>.
```

Figure 8-5. The Default Stacking Menu

3. Display the Stack Configuration menu by pressing **[3]** to select **Stack Configuration**.

```
                              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                       Stacking - Stack Configuration

   Stack State : Candidate
   Auto Join [Yes] : Yes
   Transmission Interval [60] : 60



   Actions->   Cancel     Edit     Save     Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 8-6. The Default Stack Configuration Screen

4.   Move the cursor to the Stack State field by pressing **[E]** (for **Edit**). Then use the Space bar to select the **Commander** option.

5.   Press the downarrow key to display the Commander configuration fields in the Stack Configuration screen.

```
                                    DEFAULT_CONFIG


==========================- CONSOLE - MANAGER MODE -==============================
                        Stacking - Stack Configuration

  Stack State : Commander
  Stack Name :
  Auto Grab [No] : No
  Transmission Interval [60] : 60



  Actions->    Cancel     Edit      Save      Help



Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

Figure 8-7. The Default Commander Configuration in the Stack Configuration Screen

6.   Enter a unique stack name (up to 15 characters; no spaces) and press the downarrow key.

7.   Ensure that the Commander has the desired **Auto Grab** setting, then press the downarrow key:

   •   **No** (the default) prevents automatic joining of Candidates that have their **Auto Join** set to **Yes**.

   •   **Yes** enables the Commander to automatically take a Candidate into the stack as a Member if the Candidate has **Auto Join** set to **Yes** (the default Candidate setting) and does not have a previously configured password.

8.   Accept or change the transmission interval (default: 60 seconds), then press **[Enter]** to return the cursor to the **Actions** line.

9.   Press **[S]** (for **Save**) to save your configuration changes and return to the Stacking menu.

Your Commander switch should now be ready to automatically or manually acquire Member switches from the list of discovered Candidates, depending on your configuration choices.

Using the Menu To Manage a Candidate Switch

Using the menu interface, you can perform these actions on a Candidate switch:

- Add ("push") the Candidate into an existing stack
- Modify the Candidate's stacking configuration (**Auto Join** and **Transmission Interval**)
- Convert the Candidate to a Commander
- Disable stacking on the Candidate so that it operates as a standalone switch

In its default stacking configuration, a Candidate switch can either automatically join a stack or be manually added ("pulled") into a stack by a Commander, depending on the Commander's **Auto Grab** setting. The following table lists the Candidate's configuration options:

Table 8-4. Candidate Configuration Options in the Menu Interface

Parameter	Default Setting	Other Settings
Stack State	Candidate	Commander, Member, or Disabled
Auto Join	Yes	No
Transmission Interval	60 Seconds	Range: 1 to 300 seconds

Using the Menu To "Push" a Switch Into a Stack, Modify the Switch's Configuration, or Disable Stacking on the Switch. Use Telnet or the web browser interface to access the Candidate if it has an IP address. Otherwise, use a direct connection from a terminal device to the switch's console port. (For information on how to use the web browser interface, see the online Help provided for the browser.)

1. Display the Stacking Menu by selecting **Stacking** in the console Main Menu.

2. Display the Stack Configuration menu by pressing **[3]** to select **Stack Configuration**.

```
                           DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                    Stacking - Stack Configuration

  Stack State : Candidate
  Auto Join [Yes] : Yes
  Transmission Interval [60] : 60



  Actions->    Cancel      Edit      Save      Help

 Cancel changes and return to previous screen.
 Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 8-8. The Default Stack Configuration Screen

3.   Move the cursor to the Stack State field by pressing **[E]** (for **Edit**).

4.   Do one of the following:

   •   To disable stacking on the Candidate, use the Space bar to select
       the **Disabled** option, then go to step 5.

       Note: Using the menu interface to disable stacking on a Candidate
       removes the Candidate from all stacking menus.

   •   To insert the Candidate into a specific Commander's stack:

       i.   Use the space bar to select Member.

       ii.   Press **[Tab]** once to display the **Commander MAC Address** param-
             eter, then enter the MAC address of the desired Commander.

   •   To change **Auto Join** or **Transmission Interval**, use **[Tab]** to select the
       desired parameter, and:

       –   To change **Auto Join**, use the Space bar.

       –   To change **Transmission Interval**, type in the new value in the
            range of 1 to 300 seconds.
            Note: All switches in the stack must be set to the same transmis-
            sion interval to help ensure proper stacking operation. ProCurve
            recommends that you leave this parameter set to the default 60
            seconds.

   Then go to step 5.

5. press **[Enter]** to return the cursor to the **Actions** line.

6. Press **[S]** (for **Save**) to save your configuration changes and return to the Stacking menu.

Using the Commander To Manage The Stack

The Commander normally operates as your stack manager and point of entry into other switches in the stack. This typically includes:

■ Adding new stack members

■ Moving members between stacks

■ Removing members from a stack

■ Accessing stack members for individual configuration changes and traffic monitoring

The Commander also imposes its passwords on all stack members and provides SNMP community membership to the stack. (See "SNMP Community Operation in a Stack" on page 8-44.)

Using the Commander's Menu To Manually Add a Candidate to a Stack. In the default configuration, you must manually add stack Members from the Candidate pool. Reasons for a switch remaining a Candidate instead of becoming a Member include any of the following:

■ **Auto Grab** in the Commander is set to **No** (the default).

■ **Auto Join** in the Candidate is set to **No**.

   Note: When a switch leaves a stack and returns to Candidate status, its **Auto Join** parameter resets to **No** so that it will not immediately rejoin a stack from which it has just departed.

■ A Manager password is set in the Candidate.

■ The stack is full.

Unless the stack is already full, you can use the Stack Management screen to manually convert a Candidate to a Member. If the Candidate has a Manager password, you will need to use it to make the Candidate a Member of the stack.

1. To add a Member, start at the Main Menu and select:

   9. Stacking...

      4. Stack Management

   You will then see the Stack Management screen:

For status descriptions, see the table on page 8-47.

```
                          Pacific Ocean

==========================- CONSOLE - MANAGER MODE -=============================
                    Stacking - Stack Management

 SN    MAC Address      System Name       Device Type          Status
 --    -------------    ----------------  -----------      -------------------
 1    0060b0-df1a00   Coral Sea          HP 8000M       Member Up
 2    080009-8c5080   North Atlantic     HP 8000M       Member Up



 Actions->    Back      Add      Edit      Delete      Help

Return to previous screen.
Use up/down arrow keys to change record selection, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

Figure 8-9. Example of the Stack Management Screen

2. Press [**A**] (for **Add**) to add a Candidate. You will then see this screen listing the available Candidates:

```
                          Pacific Ocean
==========================- CONSOLE - MANAGER MODE -=============================
                    Stacking - Stack Management

 Switch Number : 3
 MAC Address :
 Candidate Password :

 Candidate MAC     System Name      Device Type
 -------------    ----------------  -----------
 0060b0-e94300    DEFAULT_CONFIG     HP 8000M
 080009-918f80    DEFAULT_CONFIG     HP 4000M


 Actions->   Cancel     Edit     Save     Help


Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

The Commander automatically selects an available switch number (SN). You have the option of assigning any other available number.

Candidate List

Figure 8-10. Example of Candidate List in Stack Management Screen

3. Either accept the displayed switch number or enter another available number. (The range is 0 - 15, with 0 reserved for the Commander.)

4. Use the downarrow key to move the cursor to the MAC Address field, then type the MAC address of the desired Candidate from the Candidate list in the lower part of the screen.

5. Do one of the following:

   • If the desired Candidate has a Manager password, press the
     downarrow key to move the cursor to the Candidate Password
     field, then type the password.

   • If the desired Candidate does not have a password, go to step 6.

6. Press **[Enter]** to return to the Actions line, then press **[S]** (for **Save**) to
   complete the Add process for the selected Candidate. You will then see
   a screen similar to the one in figure 8-11, below, with the newly added
   Member listed.

   Note: If the message **Unable to add stack member: Invalid Password** appears
   in the console menu's Help line, then you either omitted the Candidate's
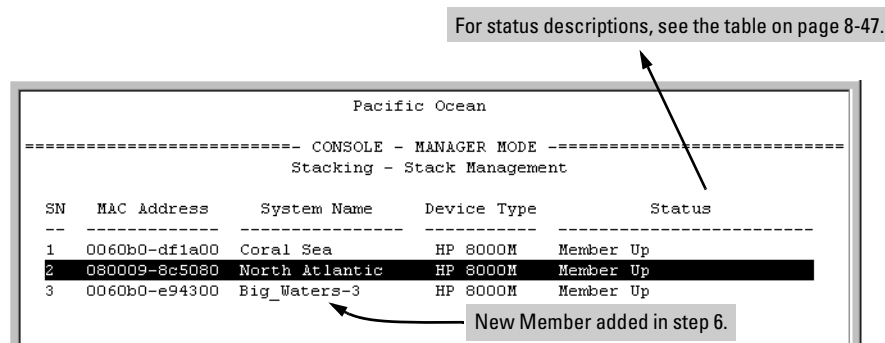   Manager password or incorrectly entered the Manager password.

For status descriptions, see the table on page 8-47.

```
                          Pacific Ocean

===========================- CONSOLE - MANAGER MODE -=============================
                    Stacking - Stack Management

 SN    MAC Address     System Name     Device Type          Status
 --   -------------   --------------   -----------   --------------------------
  1   0060b0-df1a00   Coral Sea        HP 8000M      Member Up
  2   080009-8c5080   North Atlantic   HP 8000M      Member Up
  3   0060b0-e94300   Big_Waters-3     HP 8000M      Member Up
```

New Member added in step 6.

Figure 8-11. Example of Stack Management Screen After New Member Added

**Using the Commander's Menu To Move a Member From One Stack to
Another.** Where two or more stacks exist in the same subnet (broadcast
domain), you can easily move a Member of one stack to another stack if the
destination stack is not full. (If you are using VLANs in your stack environ-
ment, see "Stacking Operation with a Tagged VLAN" on page 8-45.) This
procedure is nearly identical to manually adding a Candidate to a stack (page
8-18). (If the stack from which you want to move the Member has a Manager
password, you will need to know the password to make the move.)

1. To move a Member from one stack to another, go to the Main Menu of
   the Commander in the destination stack and display the Stacking Menu
   by selecting

        9. Stacking...

2. To learn or verify the MAC address of the Member you want to move,
   display a listing of all Commanders, Members, and Candidates in the
   subnet by selecting:

2. Stacking Status (All)

You will then see the Stacking Status (All) screen:

For status descriptions, see the table on page 8-47.

```
                          Pacific Ocean

=========================- CONSOLE - MANAGER MODE -===================
                   Stacking - Stacking Status (All)

      Stack Name          MAC Address      System Name          Status
  ------------------   -------------   ---------------   ------------------
  Big_Waters           0060b0-880a80   Pacific Ocean     Commander Up
                       0060b0-df1a00   Coral Sea         Member Up
                       080009-8c5080   North Atlantic    Member Up
  Newstack             001083-c3fc00   Newstack-0        Commander Up
                       080009-918f80   Newstack-1        Member Up
                       0060b0-df2a00   Newstack-2        Member Up
  Others:              001083-3c09c0   DEFAULT_CONFIG    Candidate
                       0060b0-e94300   DEFAULT_CONFIG    Candidate
                       080009-918f80   DEFAULT_CONFIG    Candidate

  Actions->    Back    Next page    Prev page    Help

Return to previous screen.
Use up/down arrow keys to scroll to other entries, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

This column lists the MAC Addresses for switches discovered (in the local subnet) that are configured for Stacking.

Using the MAC addresses for these Members, you can move them between stacks in the same subnet.

Figure 8-12. Example of How the Stacking Status (All) Screen Helps You Find Member MAC Addresses

3. In the Stacking Status (All) screen, find the Member switch that you want to move and note its MAC address, then press **[B]** (for **Back**) to return to the Stacking Menu.

4. Display the Commander's Stack Management screen by selecting

   ### 4. Stack Management

   (For an example of this screen, see figure 8-9 on page 8-19.)

5. Press **[A]** (for **Add**) to add the Member. You will then see a screen listing any available candidates. (See figure 8-10 on page 8-19.) Note that you will not see the switch you want to add because it is a Member of another stack and not a Candidate.)

6. Either accept the displayed switch number or enter another available number. (The range is 0 - 15, with 0 reserved for the Commander.)

7. Use the downarrow key to move the cursor to the MAC Address field, then type the MAC address of the desired Member you want to move from another stack.

8. Do one of the following:

    - If the stack containing the Member you are moving has a Manager password, press the downarrow key to select the Candidate Password field, then type the password.

    - If the stack containing the Member you want to move does not have a password, go to step 9.

9. Press **[Enter]** to return to the Actions line, then press **[S]** (for **Save**) to complete the Add process for the selected Member. You will then see a screen similar to the one in figure 8-9 on page 8-19, with the newly added Member listed.

N o t e :   If the message **Unable to add stack member: Invalid Password** appears in the console menu's Help line, then you either omitted the Manager password for the stack containing the Member or incorrectly entered the Manager password.

You can "push" a Member from one stack to another by going to the Member's interface and entering the MAC address of the destination stack Commander in the Member's **Commander MAC Address** field. Using this method moves the Member to another stack without a need for knowing the Manager password in that stack, but also blocks access to the Member from the original Commander.

Using the Commander's Menu To Remove a Stack Member. These rules affect removals from a stack:

■   When a Candidate becomes a Member, its **Auto Join** parameter is automatically set to **No**. This prevents the switch from automatically rejoining a stack as soon as you remove it from the stack.

■   When you use the Commander to remove a switch from a stack, the switch rejoins the Candidate pool for your IP subnet (broadcast domain), with **Auto Join** set to **No**.

■   When you remove a Member from a stack, it frees the previously assigned switch number (**SN**), which then becomes available for assignment to another switch that you may subsequently add to the stack. The default switch number used for an add is the lowest unassigned number in the Member range (1 - 15; 0 is reserved for the Commander).

To remove a Member from a stack, use the Stack Management screen.

1. From the Main Menu, select:

   9. Stacking...

       4. Stack Management

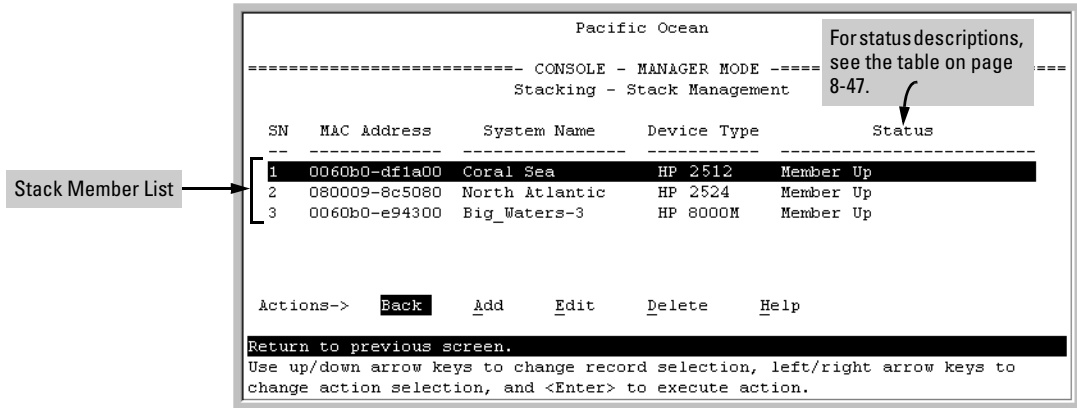   You will then see the Stack Management screen:

Figure 8-13. Example of Stack Management Screen with Stack Members Listed

2. Use the downarrow key to select the Member you want to remove from the stack.
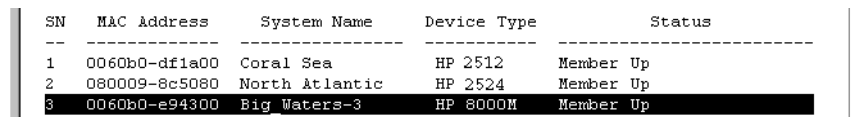

Figure 8-14. Example of Selecting a Member for Removal from the Stack

3. Type **[D]** (for **Delete**) to remove the selected Member from the stack. You will then see the following prompt:
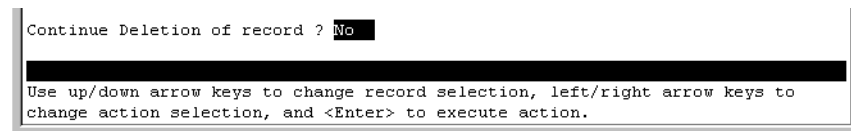

Figure 8-15. The Prompt for Completing the Deletion of a Member from the Stack

4.   To continue deleting the selected Member, press the Space bar once to select **Yes** for the prompt, then press **[Enter]** to complete the deletion. The Stack Management screen updates to show the new stack Member list.

Using the Commander To Access Member Switches for Configuration Changes and Monitoring Traffic

After a Candidate becomes a stack Member, you can use that stack's Commander to access the Member's console interface for the same configuration and monitoring that you would do through a Telnet or direct-connect access.
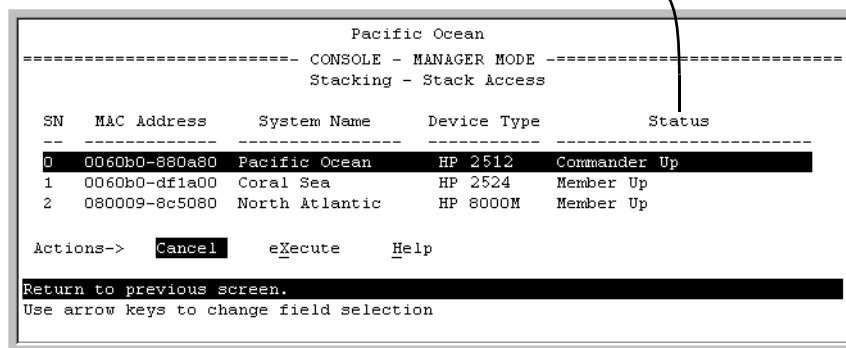
1.   From the Main Menu, select:

9. Stacking...
        5. Stack Access

You will then see the Stack Access screen:

For status descriptions, see the table on page 8-47.

```
                          Pacific Ocean
==========================- CONSOLE - MANAGER MODE -=========================
                      Stacking - Stack Access

   SN    MAC Address      System Name      Device Type         Status
   --   -------------    ---------------   -----------    --------------------------
   0    0060b0-880a80    Pacific Ocean       HP 2512     Commander Up
   1    0060b0-df1a00    Coral Sea           HP 2524     Member Up
   2    080009-8c5080    North Atlantic      HP 8000M    Member Up


   Actions->   Cancel      eXecute     Help

 Return to previous screen.
 Use arrow keys to change field selection
```

Figure 8-16. Example of the Stack Access Screen

Use the downarrow key to select the stack Member you want to access, then press **[X]** (for **eXecute**) to display the console interface for the selected Member. For example, if you selected switch number 1 (system name: **Coral Sea**) in figure 8-16 and then pressed **[X]**, you would see the Main Menu for the switch named Coral Sea.
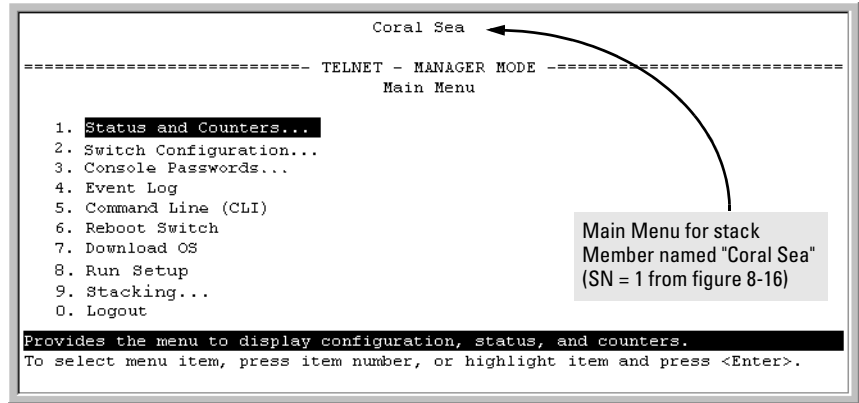
```
                          Coral Sea  ◄───────

==============================- TELNET - MANAGER MODE -==================================
                              Main Menu

    1. Status and Counters...
    2. Switch Configuration...
    3. Console Passwords...
    4. Event Log
    5. Command Line (CLI)
    6. Reboot Switch                              Main Menu for stack
    7. Download OS                                Member named "Coral Sea"
    8. Run Setup                                  (SN = 1 from figure 8-16)
    9. Stacking...
    0. Logout

Provides the menu to display configuration, status, and counters.
To select menu item, press item number, or highlight item and press <Enter>.
```

Figure 8-17. The eXecute Command Displays the Console Main Menu for the Selected Stack Member

2. You can now make configuration changes and/or view status data for the selected Member in the same way that you would if you were directly connected or telnetted into the switch.

3. When you are finished accessing the selected Member, do the following to return to the Commander's Stack Access screen:

   a. Return to the Member's Main Menu.

   b. Press **[0]** (for Logout), then **[Y]** (for Yes).

   c. Press **[Return]**.

   You should now see the Commander's Stack Access screen. (For an example, see figure 8-16 on page 8-24.)

Converting a Commander or Member to a Member of Another Stack

When moving a commander, the following procedure returns the stack members to Candidate status (with Auto-Join set to "**No**") and converts the stack Commander to a Member of another stack. When moving a member, the procedure simply pulls a Member out of one stack and pushes it into another.

1. From the Main Menu of the switch you want to move, select

   9. Stacking

2. To determine the MAC address of the destination Commander, select

   2. Stacking Status (All)

3. Press **[B]** (for **B**ack) to return to the Stacking Menu.

4. To display Stack Configuration menu for the switch you are moving, select

   3. Stack Configuration

5. Press **[E]** (for **E**dit) to select the Stack State parameter.

6. Use the Space bar to select **Member**, then press ⬇ to move to the **Commander MAC Address** field.

7. Enter the MAC address of the destination Commander and press **[Enter]**.

8. Press **[S]** (for **S**ave).

Monitoring Stack Status

Using the stacking options in the menu interface for any switch in a stack, you can view stacking data for that switch or for all stacks in the subnet (broadcast domain). (If you are using VLANs in your stack environment, see "Stacking Operation with a Tagged VLAN" on page 8-45.) This can help you in such ways as determining the stacking configuration for individual switches, identifying stack Members and Candidates, and determining the status of individual switches in a stack. See table 8-5 on page 8-26.

Table 8-5. Stack Status Environments

Screen Name	Commander	Member	Candidate

Stack Status (This Switch)	• Commander's stacking configuration
	• Data on stack Members:
	  – Switch Number
	  – MAC Address
	  – System Name
	  – Device Type
	  – Status
		• Member's stacking configuration
		• Member Status
		• Data identifying Member's Commander:
		  – Commander Status
		  – Commander IP Address
		  – Commander MAC Address
			Candidate's stacking configuration

Stack Status (All)	Lists devices by stack name or Candidate status (if device is not a stack Member). Includes: • Stack Name • MAC Address • System Name • Status	Same as for Commander.	Same as for Commander.

Using Any Stacked Switch To View the Status for All Switches with Stacking Enabled. This procedure displays the general status of all switches in the IP subnet (broadcast domain) that have stacking enabled.

1. Go to the console Main Menu for any switch configured for stacking and select:

    9. Stacking ...

    2. Stacking Status (All)

    You will then see a Stacking Status screen similar to the following:

For status descriptions, see the table on page 8-47.

```
                          Pacific Ocean

==========================- CONSOLE - MANAGER MODE -======================-=========
                    Stacking - Stacking Status (All)

        Stack Name           MAC Address      System Name          Status
   --------------------    -------------    ---------------    --------------------
   Big_Waters              0060b0-880a80    Pacific Ocean      Commander Up
                           0060b0-df1a00    Coral Sea          Member Up
                           080009-8c5080    North Atlantic     Member Up
   Newstack                001083-c3fc00    Newstack-0         Commander Up
                           080009-918f80    Newstack-1         Member Up
                           0060b0-df2a00    Newstack-2         Member Up
   Others:                 001083-3c09c0    DEFAULT_CONFIG     Candidate
                           0060b0-e94300    DEFAULT_CONFIG     Candidate
                           080009-918f80    DEFAULT_CONFIG     Candidate



   Actions->    Back     Next page     Prev page     Help
   ----------------------------------------------------------------------
   Return to previous screen.
   Use up/down arrow keys to scroll to other entries, left/right arrow keys to
   change action selection, and <Enter> to execute action.
```

Figure 8-18. Example of Stacking Status for All Detected Switches Configured for Stacking

Viewing Commander Status. This procedure displays the Commander and stack configuration, plus information identifying each stack member.

To display the status for a Commander, go to the console Main Menu for the switch and select:

9. Stacking ...

1. Stacking Status (This Switch)

You will then see the Commander's Stacking Status screen:

```
                           Pacific Ocean

=========================- CONSOLE - MANAGER MODE -=============================
                    Stacking - Stacking Status (This Switch)

    Stack State           : Commander
    Transmission Interval : 60
    Stack Name            : Big_Waters  Number of members        : 2
    Auto Grab             : No          Members unreachable       : 0

    SN    MAC Address      System Name     Device Type          Status
    --   -------------    ---------------  -----------  --------------------------
    0    0060b0-880a80    Pacific Ocean    HP 4108      Commander Up
    1    0060b0-df1a00    Coral Sea        HP 2524      Member Up
    2    080009-8c5080    North Atlantic   HP 8000M     Member Up

    Actions->   Back      Help

   Return to previous screen.
   Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 8-19. Example of the Commander's Stacking Status Screen

Viewing Member Status. This procedure displays the Member's stacking information plus the Commander's status, IP address, and MAC address.

To display the status for a Member:

1. Go to the console Main Menu of the Commander switch and select

   9. Stacking ...

       5. Stack Access

2. Use the downarrow key to select the Member switch whose status you want to view, then press **[X]** (for **eXecute**). You will then see the Main Menu for the selected Member switch.

3. In the Member's Main Menu screen, select

   9. Stacking ...

       1. Stacking Status (This Switch)

   You will then see the Member's Stacking Status screen:

```
                              Coral Sea

===========================- TELNET - MANAGER MODE -=============================
                   Stacking - Stacking Status (This Switch)

    Stack State              : Member
    Transmission Interval    : 60
    Switch Number            : 1
    Stack Name               : Big_Waters
    Member Status            : Joined Successfully
    Commander Status         : Commander Up
    Commander IP Address     : 13.28.227.102
    Commander MAC Address    : 0060b0-880a80


  Actions->   Back     Help

Return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 8-20. Example of a Member's Stacking Status Screen

Viewing Candidate Status. This procedure displays the Candidate's stacking configuration.

To display the status for a Candidate:

1.   Use Telnet (if the Candidate has a valid IP address for your network) or a direct serial port connection to access the menu interface Main Menu for the Candidate switch and select

   9. Stacking ...

      1. Stacking Status (This Switch)

   You will then see the Candidate's Stacking Status screen:

```
                              Coral Sea

===========================- TELNET - MANAGER MODE -=============================
                   Stacking - Stacking Status (This Switch)

    Stack State           : Candidate
    Transmission Interval : 60
    Auto Join             : No


  Actions->   Back     Help

Return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 8-21. Example of a Candidate's Stacking Screen

Using the CLI To View Stack Status and Configure Stacking

The CLI enables you to do all of the stacking tasks available through the menu interface.)

Table 8-6. CLI Commands for Configuring Stacking on a Switch

CLI Command	Operation
show stack **[candidates	view	all]**	**Commander:** Shows Commander's stacking configuration and lists the stack members and their individual status. **Member:** Lists Member's stacking configuration and status, and the status and the IP address and subnet mask of the stack Commander. Options: 　**candidates:** (Commander only) Lists stack Candidates. 　**view:** (Commander only) Lists current stack Members and their individual status. 　**all:** Lists all stack Commanders, Members and Candidates, with their individual status.
[no] stack	**Any Stacking-Capable Switch:** Enables or disables stacking on the switch. **Default:** Stacking Enabled
[no] stack commander *<stack name>*	**Candidate or Commander:** Converts a Candidate to a Commander or changes the stack name of an existing commander. "**No**" form eliminates named stack and returns Commander and stack Members to Candidate status with **Auto Join** set to **No**. "**No**" form prevents the switch from being discovered as a stacking-capable switch. **Default:** Switch Configured as a Candidate
[no] stack auto-grab	**Commander:** Causes Commander to automatically add to its stack any discovered Candidate in the subnet that does not have a Manager password and has **Auto-Join** set to **Yes**. **Default:** Disabled **Note:** If the Commander's stack already has 15 members, the Candidate cannot join until an existing member leaves the stack.

CLI Command	Operation
[no] stack member *<switch-num>* mac-address *<mac-addr>* [password *<password-str>*]	**Commander:** Adds a Candidate to stack membership. "No" form removes a Member from stack membership. To easily determine the MAC address of a Candidate, use the **show stack candidates** command. To determine the MAC address of a Member you want to remove, use the **show stack view** command. The password (*password-str*) is required only when adding a Candidate that has a Manager password.
telnet *<1..15>* *Used In:* Commander Only	**Commander:** Uses the **SN** (switch number— assigned by the stack Commander) to access the console interface (menu interface or CLI) of a stack member. To view the list of **SN** assignments for a stack, execute the **show stack** command in the Commander's CLI.
[no] stack join *<mac-addr>*	**Candidate:** Causes the Candidate to join the stack whose Commander has the indicated MAC address. "No" form is used in a Member to remove it from the stack of the Commander having the specified address. **Member:** "Pushes" the member to another stack whose Commander has the indicated MAC address.
[no] stack auto-join	**Candidate:** Enables Candidate to automatically join the stack of any Commander in the IP subnet that has **Auto Grab** enabled, or disables **Auto-Join** in the candidate. **Default: Auto Join** enabled. **Note:** If the Candidate has a Manager password or if the available stack(s) already have the maximum of 15 Members, the automatic join will not occur.
stack transmission-interval	**All Stack Members:** specifies the interval in seconds for transmitting stacking discovery packets. **Default:** 60 seconds

Using the CLI To View Stack Status

You can list the stack status for an individual switch and for other switches that have been discovered in the same subnet.

Syntax: **show stack [candidates | view | all]**

Viewing the Status of an Individual Switch. The following example illustrates how to use the CLI in a to display the stack status for that switch. In this case, the switch is in the default stacking configuration.

Syntax: **show stack**

```
ProCurve(config)# show stack
 Stacking - Stacking Status (This Switch)

  Stack State          : Commander
  Transmission Interval : 60
  Stack Name           : Big_Waters      Number of members       : 1
  Auto Grab            : Yes             Members unreachable     : 0

  SN MAC Address    System Name       Device Type Status
  -- -------------  ----------------  ----------- -----------------------
  0  0030c1-7fcc40 HP4108            HP 4108      Commander Up
  1  0030c1-7fec40 piles-1           HP 4108      Member Up
```

Figure 8-22. Example of Using the Show Stack Command To List the Stacking Configuration for an Individual Switch

Viewing the Status of Candidates the Commander Has Detected.

This example illustrates how to list stack candidates the Commander has discovered in the ip subnet (broadcast domain).

Syntax: **show stack candidates**

```
ProCurve(config)# show stack candidates
 Stack Candidates

  Candidate MAC System Name              Device Type
  ------------- ------------------------ -----------
  0060b0-889e00 DEFAULT_CONFIG           HP 4000M
```

Figure 8-23. Example of Using the Show Stack Candidates Command To List Candidates

Viewing the Status of all Stack-Enabled Switches Discovered in the IP Subnet. The next example lists all the stack-configured switches discovered in the IP subnet. Because the switch on which the **show stack all** command was executed is a candidate, it is included in the "Others" category.

Syntax: **show stack all**

```
ProCurve (config)# show stack all

 Stacking - Stacking Status (All)

  Stack Name       MAC Address    System Name                  Status
  --------------   -------------  -------------------------    -------------
  Big_Waters       0030c1-7fcc40 HP4108:                       Commander Up
                   0030c1-7fec40 Big_Waters-1                  Member Up
  Others:          0060b0-889e00 DEFAULT_CONFIG                Candidate
```

Figure 8-24. Result of Using the Show Stack All Command To List Discovered Switches in the IP Subnet

Viewing the Status of the Commander and Current Members of the Commander's Stack. The next example lists all switches in the stack of the selected switch.

Syntax: **show stack view**

```
ProCurve(config)# show stack view
 Stack Members

  SN MAC Address    System Name       Device Type Status
  -- -------------  ----------------  ----------- -------------
  0  0030c1-7fcc40 HP4108             HP 4108     Commander Up
  1  0030c1-7fec40 Big_Waters-1       HP 4108     Member Up
```

Figure 8-25. Example of the Show Stack View Command To List the Stack Assigned to the Selected Commander

Using the CLI To Configure a Commander Switch

You can configure any stacking-enabled switch to be a Commander as long as the intended stack name does not already exist on the broadcast domain. (When you configure a Commander, you automatically create a corresponding stack.)

Before you begin configuring stacking parameters:

1. Configure IP addressing on the switch intended for stack commander and, if not already configured, on the primary VLAN. (For more on configuring IP addressing, see the chapter on IP addressing in the *Management and Configuration Guide*.)

N o t e   The primary VLAN must have an IP address in order for stacking to operate properly. For more on the primary VLAN, see "The Primary VLAN" on page 2-6.

2. Configure a Manager password on the switch intended for commander. (The Commander's Manager password controls access to stack Members.) For more on passwords, see the local manager and operator password information in the *Access Security Guide* for your switch.

Configure the Stack Commander.   Assigning a stack name to a switch makes it a Commander and automatically creates a stack.

Syntax: stack commander *< name-str >*

This example creates a Commander switch with a stack name of **Big_Waters**. (Note that if stacking was previously disabled on the switch, this command also enables stacking.)

```
ProCurve(config)# stack commander Big_Waters
```

As the following **show stack** display shows, the Commander switch is now ready to add members to the stack.

```
ProCurve(config)# show stack
 Stacking - Stacking Status (This Switch)
  Stack State            : Commander
  Transmission Interval : 60
  Stack Name             : Big_Waters      Number of members        : 0
  Auto Grab              : No              Members unreachable      : 0

  SN MAC Address    System Name      Device Type Status
  -- ------------- ---------------- ----------- -------------------------
  0  0030c1-b24ac0 ProCurve 4108    ProCurve 4108 Commander Up
```

The **stack commander** command configures the Commander and names the stack.

The Commander appears in the stack as Switch Number (SN) 0.

Figure 8-26. Example of the Commander's Show Stack Screen with Only the Commander Discovered

Using a Member's CLI to Convert the Member to the Commander of a New Stack. This procedure requires that you first remove the Member from its current stack, then create the new stack. If you do not know the MAC address for the Commander of the current stack, use **show stack** to list it.

Syntax: no stack
              stack commander *< stack name >*

Suppose, for example, that a ProCurve switch named "Bering Sea" is a Member of a stack named "Big_Waters". To use the switch's CLI to convert it from a stack Member to the Commander of a new stack named "Lakes", you would use the following commands:

The output from this command tells you the MAC address of the current stack Commander.

```
Bering Sea(config)# show stack
 Stacking - Stacking Status (This Switch)

    Stack State                  : Member
    Transmission Interval        : 60
    Switch Number                : 1
    Stack Commander              : Big_Waters
    Member Status                : Joined Successfully
    Commander Status             : Commander Up
    Commander IP Address         : 10.28.227.104
    Commander MAC Address        : 0030c1-7fc700

Bering Sea(config)# no stack join 0030c1-7fc700
Bering Sea(config)# stack name Lakes
```

Removes the Member from the "Big_Waters" stack.

Converts the former Member to the Commander of the new "Lakes" stack.

Figure 8-27. Example of Using a Member's CLI To Convert the Member to the Commander of a New Stack

Adding to a Stack or Moving Switches Between Stacks

You can add switches to a stack by adding discovered Candidates or by moving switches from other stacks that may exist in the same subnet. (You cannot add a Candidate that the Commander has not discovered.)

In its default configuration, the Commander's **Auto-Grab** parameter is set to **No** to give you manual control over which switches join the stack and when they join. This prevents the Commander from automatically trying to add every Candidate it finds that has **Auto Join** set to **Yes** (the default for the Candidate).

(If you want any eligible Candidate to automatically join the stack when the Commander discovers it, configure **Auto Grab** in the Commander to **Yes**. When you do so, *any* Candidate discovered with **Auto Join** set to **Yes** (the default) and no Manager password will join the stack, up to the limit of 15 Members.)

Using the Commander's CLI To Manually Add a Candidate to the Stack. To manually add a candidate, you will use:

■ A switch number (**SN**) to assign to the new member. Member SNs range from 1 to 15. To see which SNs are already assigned to Members, use **show stack view**. You can use any SN not included in the listing. (SNs are viewable only on a Commander switch.)

■ The MAC address of the discovered Candidate you are adding to the stack. To see this data, use the **show stack candidates** listing.

For example:

```
ProCurve (config)# show stack view
 Stack Members

 SN MAC Address    System Name       Device Type   Status
 -- -------------  ----------------  -----------   ------------------------
 0  0030c1-7fec40  ProCurve 4108     ProCurve 4108 Commander Up
 1  0060b0-880a80  Indian Ocean      ProCurve 8000M Member Up
```

In this stack, the only SNs in use are 0 and 1, so you can use any SN number from 2 through 15 for new Members. (The SN of "0" is always reserved for the stack Commander.)

Note: When manually adding a switch, you must assign an SN. However, if the Commander automatically adds a new Member, it assigns an SN from the available pool of unused SNs.

Figure 8-28. Example of How To Determine Available Switch Numbers (SNs)

To display all discovered Candidates with their MAC addresses, execute **show stack candidates** from the Commander's CLI. For example, to list the discovered candidates for the above Commander:

```
                    ProCurve (config)# show stack candidates
                     Stack Candidates
                       Candidate MAC System Name         Device Type
                       ------------- --------------------  -----------
                       0030c1-b24ac0 North Sea            ProCurve 4108
                       0060b0-df1a00 DEFAULT_CONFIG       ProCurve 8000M
```

MAC addresses of discovered Candidates.

Figure 8-29. Example of How To Determine MAC Addresses of Discovered Candidates

Knowing the available switch numbers (**SN**s) and Candidate MAC addresses, you can proceed to manually assign a Candidate to be a Member of the stack:

Syntax: stack member < *switch-number* > mac-address < *mac-addr* >
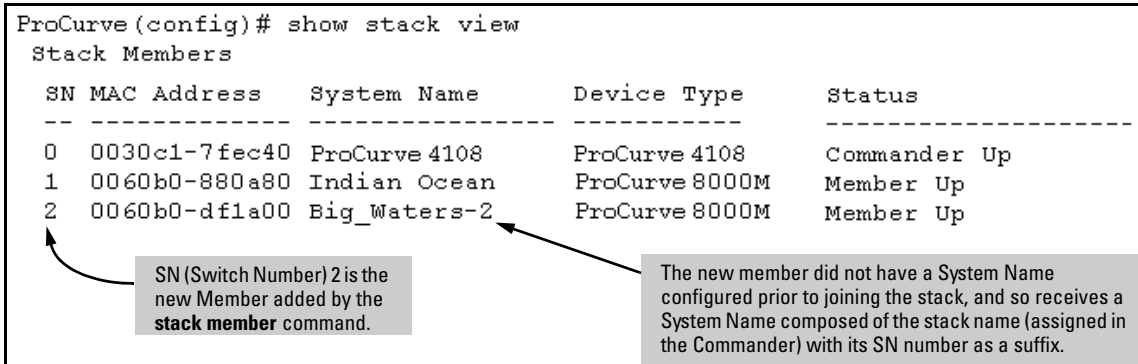[password < *password-str* >]

For example, if the HP 8000M in the above listing did not have a Manager password and you wanted to make it a stack Member with an **SN** of **2**, you would execute the following command:

```
ProCurve(config)# stack member 2 mac-address 0060b0-
df1a00
```

The **show stack view** command then lists the Member added by the above command:

```
ProCurve(config)# show stack view
 Stack Members

 SN MAC Address    System Name       Device Type    Status
 -- -------------  ----------------  -----------    --------------------
 0  0030c1-7fec40  ProCurve 4108     ProCurve 4108  Commander Up
 1  0060b0-880a80  Indian Ocean      ProCurve 8000M Member Up
 2  0060b0-df1a00  Big_Waters-2      ProCurve 8000M Member Up
```

SN (Switch Number) 2 is the new Member added by the **stack member** command.

The new member did not have a System Name configured prior to joining the stack, and so receives a System Name composed of the stack name (assigned in the Commander) with its SN number as a suffix.

Figure 8-30. Example Showing the Stack After Adding a New Member

Using Auto Join on a Candidate. In the default configuration, a Candidate's Auto Join parameter is set to "Yes", meaning that it will automatically join a stack if the stack's Commander detects the Candidate and the Commander's Auto Grab parameter is set to "Yes". You can disable Auto Join on a Candidate if you want to prevent automatic joining in this case. There is also the instance where a Candidate's Auto Join is disabled, for example, when a Commander leaves a stack and its members automatically return to Candidate status, or if you manually remove a Member from a stack. In this case, you may want to reset Auto Join to "Yes".

Status: **[no] stack auto-join**

```
ProCurve(config)# no stack auto-join
```
                    Disables Auto Join on a Candidate.

```
ProCurve(config)# stack auto-join
```
                    Enables Auto Join on a Candidate.

Using a Candidate CLI To Manually "Push" the Candidate Into a Stack . Use this method if any of the following apply:

■ The Candidate's **Auto Join** is set to **Yes** (and you do not want to enable **Auto Grab** on the Commander) or the Candidate's **Auto Join** is set to **No**.

■ Either you know the MAC address of the Commander for the stack into which you want to insert the Candidate, or the Candidate has a valid IP address and is operating in your network.

Syntax: stack join < *mac-addr* >

*where: < **mac-addr** >* is the MAC address of the Commander in the destination stack.

Use Telnet (if the Candidate has an IP address valid for your network) or a direct serial port connection to access the CLI for the Candidate switch. For example, suppose that a Candidate named "North Sea" with **Auto Join** off and a valid IP address of 10.28.227.104 is running on a network. You could Telnet to the Candidate, use **show stack all** to determine the Commander's MAC address, and then "push" the Candidate into the desired stack.

Figure 8-31. Example of "Pushing" a Candidate Into a Stack

To verify that the Candidate successfully joined the stack, execute **show stack all** again to view the stacking status.

Using the Destination Commander CLI To "Pull" a Member from Another Stack. This method uses the Commander in the destination stack to "pull" the Member from the source stack.

Syntax: stack member < *switch-number* >
mac-address < *mac-addr* >
[password < *password-str* >]

In the destination Commander, use **show stack all** to find the MAC address of the Member you want to pull into the destination stack. For example, suppose you created a new Commander with a stack name of "Cold_Waters" and you wanted to move a switch named "Bering Sea" into the new stack:

```
ProCurve(config)# show stack all
 Stacking - Stacking Status (All)
  Stack Name       MAC Address    System Name                    Status
  ---------------  -------------  -------------------------      -------------
  Big_Waters       0030c1-7fec40  ProCurve 4108                  Commander Up
                   0060b0-880a80  Indian Ocean                   Member Up
                   0060b0-df1a00  Bering Sea  ◄                  Member Up
  Cold_Waters      0030c1-7fc700  ProCurve 4108                  Commander Up
```
Move this switch into the "Cold Waters" stack.

Figure 8-32. Example of Stack Listing with Two Stacks in the Subnet

You would then execute the following command to pull the desired switch into the new stack:

```
ProCurve(config)# stack member 1 mac-address 0060b0-
df1a00
```

Where **1** is an unused switch number (**SN**).

Since a password is not set on the Candidate, a password is not needed in this example.

You could then use **show stack all** again to verify that the move took place.

Using a Member CLI To "Push" the Member into Another Stack. You can use the Member's CLI to "push" a stack Member into a destination stack if you know the MAC address of the destination Commander.

Syntax: **stack join <mac-addr>**

where: **< mac-addr >** is the MAC address of the Commander for the destination stack.

Converting a Commander to a Member of Another Stack. Removing the Commander from a stack eliminates the stack and returns its Members to the Candidate pool with **Auto Join** disabled.

Syntax: no stack name *< stack name>*
             stack join *< mac-address >*

If you don't know the MAC address of the destination Commander, you can use **show stack all** to identify it.

For example, suppose you have a switch operating as the Commander for a temporary stack named "Test". When it is time to eliminate the temporary "Test" stack and convert the switch into a member of an existing stack named "Big_Waters", you would execute the following commands in the switch's CLI:

Figure 8-33. Example of Command Sequence for Converting a Commander to a Member

Using the CLI To Remove a Member from a Stack

You can remove a Member from a stack using the CLI of either the Commander or the Member.

N o t e   When you remove a Member from a stack, the Member's **Auto Join** parameter is set to **No**.

Using the Commander CLI To Remove a Stack Member. This option requires the switch number (SN) and the MAC address of the switch to remove. (Because the Commander propagates its Manager password to all stack members, knowing the Manager password is necessary only for gaining access to the Commander.)

Syntax: **[no] stack member *<switch-num>* mac-address *<mac-addr>***

Use **show stack view** to list the stack Members. For example, suppose that you wanted to use the Commander to remove the "North Sea" Member from the following stack:

```
                  ProCurve (config)# show stack view
                   Stack Members

                   SN MAC Address     System Name    Device Type      Status
                   -- -------------  ------------   -----------      -------------
                   0  0030c1-7fec40  ProCurve 4108  ProCurve 4108    Commander Up
Remove this Member 1  0060b0-880a80  Indian Ocean   ProCurve 8000M   Member Up
from the stack.    2  0060b0-df1a00  Bering Sea     ProCurve 8000M   Member Up
                   3  0030c1-7fc700  North Sea      ProCurve 4108    Member Up
```

Figure 8-34. Example of a Commander and Three Switches in a Stack

You would then execute this command to remove the "North Sea" switch from the stack:

```
ProCurve(config)# no stack member 3 mac-address 0030c1-
7fc700
```

where:

- **3** is the "North Sea" Member's switch number (**SN**)
- **0030c1-7fc700** is the "North Sea" Member's MAC address

Using the Member's CLI To Remove the Member from a Stack.

Syntax: **no stack join** *<mac-addr>*

To use this method, you need the Commander's MAC address, which is available using the show stack command in the Member's CLI. For example:

```
CLI for "North Sea"  North Sea(config)# show stack
Stack Member          Stacking - Stacking Status (This Switch)
                       Stack State                 : Member
                       Transmission Interval       : 10
                       Switch Number               : 3
                       Stack Name                  : Big_Waters
MAC Address of the     Member Status               : Joined Successfully
Commander for the      Commander Status            : Commander Up
Stack to Which         Commander IP Address        : 11.28.227.103
the"North Sea"         Commander MAC Address       : 0030c1-7fec40
Switch Belongs
```

Figure 8-35. Example of How To Identify the Commander's MAC Address from a Member Switch

You would then execute this command in the "North Sea" switch's CLI to remove the switch from the stack:

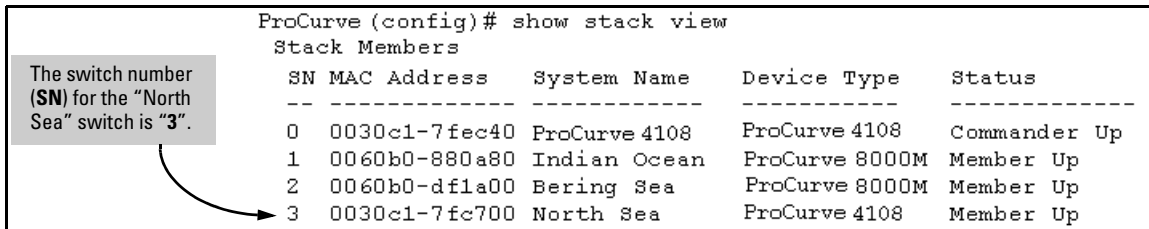North Sea(config)# no stack join 0030c1-7fec40

Using the CLI To Access Member Switches for Configuration Changes and Traffic Monitoring

After a Candidate becomes a Member, you can use the telnet command from the Commander to access the Member's CLI or console interface for the same configuration and monitoring that you would do through a Telnet or direct-connect access from a terminal.

Syntax: **telnet** *<switch-number>*

> *where:* unsigned integer is the switch number (**SN**) assigned by the Commander to each member (range: **1** - **15**).

To find the switch number for the Member you want to access, execute the **show stack view** command in the Commander's CLI. For example, suppose that you wanted to configure a port trunk on the switch named "North Sea" in the stack named "Big_Waters". Do do so you would go to the CLI for the "Big_Waters" Commander and execute show stack view to find the switch number for the "North Sea" switch:

The switch number (**SN**) for the "North Sea" switch is "**3**".

```
ProCurve(config)# show stack view
 Stack Members

 SN MAC Address     System Name     Device Type    Status
 -- -------------   ------------    -----------    -------------
 0  0030c1-7fec40   ProCurve 4108   ProCurve 4108   Commander Up
 1  0060b0-880a80   Indian Ocean    ProCurve 8000M  Member Up
 2  0060b0-df1a00   Bering Sea      ProCurve 8000M  Member Up
 3  0030c1-7fc700   North Sea       ProCurve 4108   Member Up
```

Figure 8-36. Example of a Stack Showing Switch Number (SN) Assignments

To access the "North Sea" console, you would then execute the following **telnet** command:

```
ProCurve(config)# telnet 3
```

You would then see the CLI prompt for the "North Sea" switch, allowing you to configure or monitor the switch as if you were directly connected to the console.

SNMP Community Operation in a Stack

Community Membership

In the default stacking configuration, when a Candidate joins a stack, it automatically becomes a Member of any SNMP community to which the Commander belongs, even though any community names configured in the Commander are not propagated to the Member's SNMP Communities listing. However, if a Member has its own (optional) IP addressing, it can belong to SNMP communities to which other switches in the stack, including the Commander, do not belong. For example:
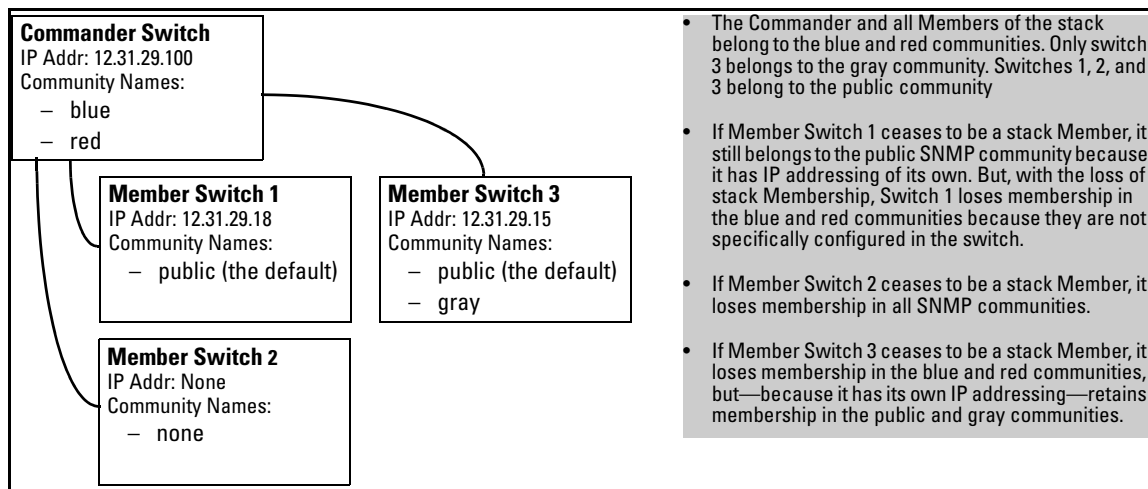
Commander Switch
IP Addr: 12.31.29.100
Community Names:
– blue
– red

Member Switch 1
IP Addr: 12.31.29.18
Community Names:
– public (the default)

Member Switch 3
IP Addr: 12.31.29.15
Community Names:
– public (the default)
– gray

Member Switch 2
IP Addr: None
Community Names:
– none

- The Commander and all Members of the stack belong to the blue and red communities. Only switch 3 belongs to the gray community. Switches 1, 2, and 3 belong to the public community

- If Member Switch 1 ceases to be a stack Member, it still belongs to the public SNMP community because it has IP addressing of its own. But, with the loss of stack Membership, Switch 1 loses membership in the blue and red communities because they are not specifically configured in the switch.

- If Member Switch 2 ceases to be a stack Member, it loses membership in all SNMP communities.

- If Member Switch 3 ceases to be a stack Member, it loses membership in the blue and red communities, but—because it has its own IP addressing—retains membership in the public and gray communities.

Figure 8-37. Example of SNMP Community Operation with Stacking

SNMP Management Station Access to Members Via the Commander.

To use a management station for SNMP Get or Set access through the Commander's IP address to a Member, you must append **@sw<switch number>** to the community name. For example, in figure 8-37, you would use the following command in your management station to access Switch 1's MIB using the blue community:

```
snmpget < MIB variable > 10.31.29.100 blue@sw1
```

Note that because the gray community is only on switch 3, you could not use the Commander IP address for gray community access from the management station. Instead, you would access switch 3 directly using the switch's own IP address. For example:

```
snmpget  < MIB variable > 10.31.29.15 gray
```

Note that in the above example (figure 8-37) you cannot use the public community through the Commander to access any of the Member switches. For example, you can use the public community to access the MIB in switches 1 and 3 by using their unique IP addresses. However, you must use the red or blue community to access the MIB for switch 2.

```
snmpget < MIB variable > 10.31.29.100 blue@sw2
```

Using the CLI To Disable or Re-Enable Stacking

In the default configuration, stacking is enabled on the switch. You can use the CLI to disable stacking on the switch at any time. Disabling stacking has the following effects:

- **Disabling a Commander:** Eliminates the stack, returns the stack Members to Candidates with **Auto Join** disabled, and changes the Commander to a stand-alone (nonstacking) switch. You must re-enable stacking on the switch before it can become a Candidate, Member, or Commander.

- **Disabling a Member:** Removes the Member from the stack and changes it to a stand-alone (nonstacking) switch. You must re-enable stacking on the switch before it can become a Candidate, Member, or Commander.

- **Disabling a Candidate:** Changes the Candidate to a stand-alone (nonstacking) switch.

Syntax: no stack   (*Disables stacking on the switch.*)
             stack   (*Enables stacking on the switch.*)

Transmission Interval

All switches in the stack must be set to the same transmission interval to help ensure proper stacking operation. ProCurve recommends that you leave this parameter set to the default 60 seconds.

Syntax: stack transmission-interval < *seconds* >

Stacking Operation with Multiple VLANs Configured

Stacking uses the primary VLAN in a switch. In the factory-default configuration, the DEFAULT_VLAN is the primary VLAN. However, you can designate any VLAN configured in the switch as the primary VLAN. (See "The Primary VLAN" on page 2-6.)

When using stacking in a multiple-VLAN environment, the following criteria applies:

- ■ Stacking uses only the primary VLAN on each switch in a stack.

- ■ The primary VLAN can be tagged or untagged as needed in the stacking path from switch to switch.

- ■ The same VLAN ID (VID) must be assigned to the primary VLAN in each stacked switch.

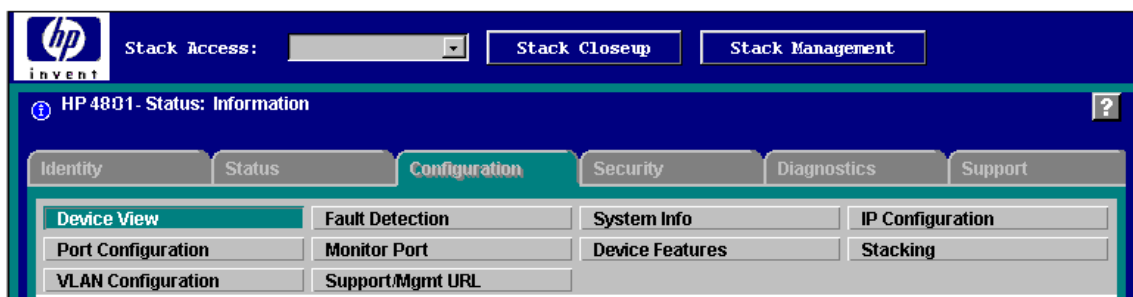## Web: Viewing and Configuring Stacking

Figure 8-38. Example of the Web Browser Interface for a Commander

The web browser interface for a Commander appears as shown above. The interface for Members and Candidates appears the same as for a non-stacking switches.

To view or configure stacking on the web browser interface:

1. Click on the **Configuration** tab.

2. Click on **Stacking** to display the stacking configuration for an individual switch, and make any configuration changes you want for that switch.

3. Click on **Apply Changes** to save any configuration changes for the individual switch.

4. If the switch is a Commander, use the **Stack Closeup** and **Stack Management** buttons for viewing and using stack features.

To access the web-based Help provided for the switch, click on **[?]** in the web browser screen.

Status Messages

Stacking screens and listings display these status messages:

Message	Condition	Action or Remedy
Candidate Auto-join	Indicates a switch configured with Stack State set to **Candidate, Auto Join** set to **Yes** (the default), and no Manager password.	None required
Candidate	Candidate cannot automatically join the stack because one or both of the following conditions apply: • Candidate has **Auto Join** set to **No**. • Candidate has a Manager password.	Manually add the candidate to the stack.
Commander Down	Member has lost connectivity to its Commander.	Check connectivity between the Commander and the Member.
Commander Up	The Member has stacking connectivity with the Commander.	None required.
Mismatch	This may be a temporary condition while a Candidate is trying to join a stack. If the Candidate does not join, then stack configuration is inconsistent.	Initially, wait for an update. If condition persists, reconfigure the Commander or the Member.
Member Down	A Member has become detached from the stack. A possible cause is an interruption to the link between the Member and the Commander.	Check the connectivity between the Commander and the Member.
Member Up	The Commander has stacking connectivity to the Member.	None required.
Rejected	The Candidate has failed to be added to the stack.	The candidate may have a password. In this case, manually add the candidate. Otherwise, the stack may already be full. A stack can hold up to 15 Members (plus the Commander).

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