



## Efficient Image Upgrade

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## Efficient Image Upgrade

Efficient Image upgrade is an optimized method of predownloading images to FlexConnect APs. For each Site Tag with FlexConnect APs joined, one AP per model in that Site Tag is selected as the primary AP, and downloads its image from the controller through the WAN link. Once the primary AP has the downloaded image, the APs in that Site Tag start downloading the image from the primary AP, via TFTP. At most three subordinate APs can download simultaneously from the primary. This reduces load on the WAN link.



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**Note** Make sure that all APs joined via a Site Tag are at the same location, before enabling this feature.

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## Enable Pre-Download (GUI)

### Procedure

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- Step 1** Choose **Configuration** > **Wireless** > **Access Points**.
  - Step 2** In the **Access Points** page, expand the **All Access Points** section and click the name of the AP to edit.
  - Step 3** In the **Edit AP** page, click the **Advanced** tab and from the **AP Image Management** section, click **Predownload**.
  - Step 4** Click **Update & Apply to Device**.
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## Enable Pre-Download (CLI)

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters the global configuration mode.
<b>Step 2</b>	<b>wireless profile flex</b> <i>flex-profile</i> <b>Example:</b> Device(config)# wireless profile flex rr-xyz-flex-profile	Configures a flex profile and enters the flex profile configuration mode.
<b>Step 3</b>	<b>predownload</b> <b>Example:</b> Device(config-wireless-flex-profile)# predownload	Enables predownload of the image.
<b>Step 4</b>	<b>end</b> <b>Example:</b> Device(config-wireless-flex-profile)# end	Exits the configuration mode and returns to privileged EXEC mode.

## Configuring a Site Tag (CLI)

Follow the procedure given below to configure a site tag:

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>wireless tag site</b> <i>site-name</i> <b>Example:</b> Device(config)# wireless tag site rr-xyz-site	Configures a site tag and enters site tag configuration mode.
<b>Step 3</b>	<b>flex-profile</b> <i>flex-profile-name</i> <b>Example:</b>	Configures a flex profile.

	Command or Action	Purpose
	Device(config-site-tag) # flex-profile rr-xyz-flex-profile	<p><b>Note</b> You cannot remove the flex profile configuration from a site tag if local site is configured on the site tag.</p> <p><b>Note</b> The <b>no local-site</b> command needs to be used to configure the Site Tag as Flexconnect, otherwise the Flex profile config does not take effect.</p>
<b>Step 4</b>	<b>description</b> <i>site-tag-name</i>  <b>Example:</b> Device(config-site-tag) # description "default site tag"	Adds a description for the site tag.
<b>Step 5</b>	<b>end</b>  <b>Example:</b> Device(config-site-tag) # end	Saves the configuration and exits configuration mode and returns to privileged EXEC mode.
<b>Step 6</b>	<b>show wireless tag site summary</b>  <b>Example:</b> Device# show wireless tag site summary	<p>(Optional) Displays the number of site tags.</p> <p><b>Note</b> To view detailed information about a site, use the <b>show wireless tag site detailed</b> <i>site-tag-name</i> command.</p> <p><b>Note</b> The output of the <b>show wireless loadbalance tag affinity wncd</b> <i>wncd-instance-number</i> command displays default tag (site-tag) type, if both site tag and policy tag are not configured.</p>

## Attaching Policy Tag and Site Tag to an AP (CLI)

Follow the procedure given below to attach a policy tag and a site tag to an AP:

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> Device# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
<b>Step 2</b>	<b>ap</b> <i>mac-address</i> <b>Example:</b> Device(config)# ap F866.F267.7DFB	Configures a Cisco AP and enters AP profile configuration mode.  <b>Note</b> The <i>mac-address</i> should be a wired mac address.
<b>Step 3</b>	<b>policy-tag</b> <i>policy-tag-name</i> <b>Example:</b> Device(config-ap-tag)# policy-tag rr-xyz-policy-tag	Maps a policy tag to the AP.
<b>Step 4</b>	<b>site-tag</b> <i>site-tag-name</i> <b>Example:</b> Device(config-ap-tag)# site-tag rr-xyz-site	Maps a site tag to the AP.
<b>Step 5</b>	<b>rf-tag</b> <i>rf-tag-name</i> <b>Example:</b> Device(config-ap-tag)# rf-tag rf-tag1	Associates the RF tag.
<b>Step 6</b>	<b>end</b> <b>Example:</b> Device(config-ap-tag)# end	Saves the configuration, exits configuration mode, and returns to privileged EXEC mode.
<b>Step 7</b>	<b>show ap tag summary</b> <b>Example:</b> Device# show ap tag summary	(Optional) Displays AP details and the tags associated to it.
<b>Step 8</b>	<b>show ap name</b> <i>&lt;ap-name&gt;</i> <b>tag info</b> <b>Example:</b> Device# show ap name <i>ap-name</i> tag info	(Optional) Displays the AP name with tag information.
<b>Step 9</b>	<b>show ap name</b> <i>&lt;ap-name&gt;</i> <b>tag detail</b> <b>Example:</b> Device# show ap name <i>ap-name</i> tag detail	(Optional) Displays the AP name with tag details.

## Trigger Predownload to a Site Tag

Follow the procedure given below to trigger image download to the APs:

**Procedure**

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device> configure terminal	Enters the privileged EXEC mode.
<b>Step 2</b>	<b>ap image predownload site-tag <i>site-tag</i> start</b> <b>Example:</b> Device# ap image predownload site-tag rr-xyz-site start	Instructs the primary APs to start image predownload.
<b>Step 3</b>	<b>show ap master list</b> <b>Example:</b> Device# show ap master list	Displays the list of primary APs per AP model per site tag.
<b>Step 4</b>	<b>show ap image</b> <b>Example:</b> Device# show ap image	Displays the predownloading state of primary and subordinate APs .  <b>Note</b> To check if Flexefficient image upgrade is enabled in the AP, use the <b>show capwap client rcb</b> command on the AP console.

The following sample outputs display the functioning of the Efficient Image Upgrade feature:

The following output displays the primary AP.

```
Device# show ap master list
AP Name                               WTP Mac           AP Model           Site Tag
-----
AP0896.AD9D.3124                       f80b.cb20.2460    AIR-AP2802I-D-K9 ST1
```

The following output shows that the primary AP has started predownloading the image.

```
Device# show ap image
Total number of APs: 6

AP Name           Primary Image   Backup Image   Predownload Status   Predownload Version
Next Retry Time   Retry Count
-----
APE00E.DA99.687A  16.6.230.37    0.0.0.0       None                  0.0.0.0
N/A               0
AP188B.4500.4208  16.6.230.37    8.4.100.0     None                  0.0.0.0
N/A               0
AP188B.4500.4480  16.6.230.37    0.0.0.0       None                  0.0.0.0
N/A               0
AP188B.4500.5E28  16.6.230.37    16.4.230.35  None                  0.0.0.0
N/A               0
AP0896.AD9D.3124 16.6.230.37    8.4.100.0    Predownloading    16.6.230.36
0
AP2C33.1185.C4D0  16.6.230.37    8.4.100.0     None                  0.0.0.0
N/A               0
```

The following output shows that the primary AP has completed predownload and the predownload has been initiated in the subordinate AP.

Device# **show ap image**

Total number of APs: 6

AP Name Next Retry Time	Primary Image Retry Count	Backup Image	Predownload Status	Predownload Version
APE00E.DA99.687A N/A	16.6.230.37 0	0.0.0.0	Initiated	16.6.230.36
AP188B.4500.4208 N/A	16.6.230.37 0	8.4.100.0	None	0.0.0.0
AP188B.4500.4480 N/A	16.6.230.37 0	0.0.0.0	None	0.0.0.0
AP188B.4500.5E28 N/A	16.6.230.37 0	16.4.230.35	None	0.0.0.0
AP0896.AD9D.3124 0	16.6.230.37 0	8.4.100.0	Complete	16.6.230.36
<b>AP2C33.1185.C4D0</b> <b>0</b>	<b>16.6.230.37</b> <b>0</b>	<b>8.4.100.0</b>	<b>Initiated</b>	<b>16.6.230.36</b>

The following output shows image status of a particular AP.

Device# **show ap name APe4aa.5dd1.99b0 image**

AP Name : APe4aa.5dd1.99b0  
 Primary Image : 16.6.230.46  
 Backup Image : 3.0.51.0  
 Predownload Status : None  
 Predownload Version : 000.000.000.000  
 Next Retry Time : N/A  
 Retry Count : 0

The following output shows predownload completion on all APs.

Device# **show ap image**

Total number of APs: 6

Number of APs

Initiated : 0  
 Predownloading : 0  
 Completed predownloading : 3  
 Not Supported : 0  
 Failed to Predownload : 0

AP Name Next Retry Time	Primary Image Retry Count	Backup Image	Predownload Status	Predownload Version
APE00E.DA99.687A N/A	16.6.230.37 0	16.6.230.36	Complete	16.6.230.36
AP188B.4500.4208 N/A	16.6.230.37 0	8.4.100.0	None	0.0.0.0
AP188B.4500.4480 N/A	16.6.230.37 0	0.0.0.0	None	0.0.0.0
AP188B.4500.5E28 N/A	16.6.230.37 0	16.4.230.35	None	0.0.0.0
AP0896.AD9D.3124 0	16.6.230.37 0	16.6.230.36	Complete	16.6.230.36
<b>AP2C33.1185.C4D0</b> <b>0</b>	<b>16.6.230.37</b> <b>0</b>	<b>16.6.230.36</b>	<b>Complete</b>	<b>16.6.230.36</b>