



# CHAPTER 13

## Using Configuration Building Blocks

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Note

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In ANM 1.1, configuration building blocks were called *configuration templates*. The name has been changed in ANM 1.2 to more closely reflect the functionality that they provide and how they can be used.

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Building blocks allow authorized users to create and design reusable configuration attributes which can then be applied to virtual contexts. The ANM also allows you to extract the configuration of an existing virtual context and tag it as a building block.

In many cases, the same configuration settings can be used in several virtual contexts (for example, it can offer the same service bundle to many customers). To avoid repeating virtual context configuration and testing each time you create a virtual context, you can create a building block of many configuration attributes that can be applied to virtual contexts as appropriate or as needed.

With building blocks, you can also create a variety of configurations that address customers' differing needs. The ability to customize configurations to customer needs also allows you to use network resources most efficiently.

Benefits of configuration building blocks include:

- You can establish baseline versions of working configurations.
- Users can make real-time changes to configurations and roll back to a previously working configuration, if needed.
- Building blocks can be extracted from proven, working configurations.
- Building blocks can be placed under version control, with tagged versions that cannot be modified.

[Table 13-1](#) lists the configuration options that are available for each building block type and provides links to related topics. For descriptive information about the menu options, see [Configuring Virtual Contexts, page 3-5](#).

Table 13-1 Building Block Configuration Options

Menu Option	Building Block Type				Related Topic
	ACE 1.0	ACE 2.0	ACE 4710 Running Image A1(8)	ACE 4710 Running Image A3(1.0)	
<b>System</b>					
Primary Attributes	X	X	X	X	<a href="#">Configuring Building Block Primary Attributes, page 13-7</a>
Static Routes					
Syslog	X	X	X	X	<a href="#">Configuring Virtual Context Syslog Settings, page 3-12</a>
SNMP	X	X	X	X	<a href="#">Configuring SNMP for Virtual Contexts, page 3-19</a>
Global Policy	X	X	X	X	<a href="#">Configuring Virtual Context Global Traffic Policies, page 3-26</a>
Licenses					
Application Acceleration and Optimization					
Resource Classes					
<b>Load Balancing</b>					
Virtual Servers					
Real Servers	X	X	X	X	<a href="#">Configuring Real Servers, page 5-4</a>
Server Farms	X	X	X	X	<a href="#">Configuring Server Farms, page 5-12</a>
Health Monitoring	X	X	X	X	<a href="#">Configuring Health Monitoring for Real Servers, page 5-25</a>
Stickiness	X	X	X	X	<a href="#">Configuring Sticky Groups, page 6-7</a>
HTTP Parameter Map	X	X	X	X	<a href="#">Configuring HTTP Parameter Maps, page 7-8</a>
Connection Parameter Map	X	X	X	X	<a href="#">Configuring Connection Parameter Maps, page 7-2</a>
Optimization Parameter Map			X	X	<a href="#">Configuring Optimization Parameter Maps, page 7-10</a>
Generic Parameter Map		X			<a href="#">Configuring Generic Parameter Maps, page 7-7</a>
RTSP Parameter Map		X			<a href="#">Configuring RTSP Parameter Maps, page 7-17</a>
SIP Parameter Map		X			<a href="#">Configuring SIP Parameter Maps, page 7-18</a>
Skinny Parameter Map		X			<a href="#">Configuring Skinny Parameter Maps, page 7-20</a>
<b>SSL</b>					
Certificates					
Keys	X	X	X	X	<a href="#">Using SSL Keys, page 8-8</a>
Parameter Map	X	X	X	X	<a href="#">Configuring SSL Parameter Maps, page 8-15</a>

Table 13-1 Building Block Configuration Options (continued)

Menu Option	Building Block Type				Related Topic
	ACE 1.0	ACE 2.0	ACE 4710 Running Image A1(8)	ACE 4710 Running Image A3(1.0)	
Chain Group Parameters					
CSR Parameters	X	X	X	X	<a href="#">Configuring SSL CSR Parameters, page 8-19</a>
Proxy Service					
Auth Group Parameters		X		X	<a href="#">Configuring SSL Authentication Groups, page 8-24</a>
Certificate Revocation List		X		X	<a href="#">Configuring CRLs for Client Authentication, page 8-25</a>
<b>Security</b>					
ACLs	X	X	X	X	<a href="#">Creating ACLs, page 3-44</a>
Object Groups		X		X	<a href="#">Configuring Object Groups, page 3-52</a>
<b>Network</b>					
Port Channel					
Gigabit Ethernet Interfaces					
VLAN Interfaces	X	X	X	X	<a href="#">Configuring VLAN Interfaces, page 9-2</a>
BVI Interfaces	X	X	X	X	<a href="#">Configuring Virtual Context BVI Interfaces, page 9-12</a>
Static Routes	X	X	X	X	<a href="#">Configuring Virtual Context Static Routes, page 9-14</a>
Global IP DHCP	X	X	X	X	<a href="#">Configuring Global IP DHCP, page 9-16</a>
Static NAT Overwrite		X			<a href="#">Configuring Static VLANs for Over 8 K Static NAT Configurations, page 9-16</a>
<b>High Availability</b>					
Setup					
<b>HA Tracking and Failure Detection</b>					
Interfaces					
Hosts					
HSRP Groups					
<b>Role-Based Access Control</b>					
Users	X	X	X	X	<a href="#">Configuring Device RBAC Users, page 2-40</a>
Roles	X	X	X	X	<a href="#">Configuring Device RBAC Roles, page 2-43</a>
Domains	X	X	X	X	<a href="#">Configuring Device RBAC Domains, page 2-48</a>
<b>Expert</b>					
Class Map	X	X	X	X	<a href="#">Configuring Virtual Context Class Maps, page 11-6</a>
Policy Map	X	X	X	X	<a href="#">Configuring Virtual Context Policy Maps, page 11-30</a>

Table 13-1 Building Block Configuration Options (continued)

Menu Option	Building Block Type				Related Topic
	ACE 1.0	ACE 2.0	ACE 4710 Running Image A1(8)	ACE 4710 Running Image A3(1.0)	
Action List		X	X	X	<a href="#">Configuring Action Lists for Application Acceleration and Optimization, page 12-3</a>
Building Block Audit					

**Related Topics**

- [Building Block Versions and Tagging, page 13-4](#)
- [Creating Building Blocks, page 13-5](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Applying Building Blocks, page 13-8](#)
- [Tagging Building Blocks, page 13-7](#)
- [Viewing Building Block Use, page 13-9](#)

## Building Block Versions and Tagging

The ANM maintains version history for the building blocks that you create, design, and tag. You can tag a working building block version at any point during design or configuration, and reuse any tagged version of a building block.

A building block is not available for deployment until it has been *tagged*. When you tag a building block, the ANM publishes it with a version tag, such as 1.0 or 1.1.

You cannot edit tagged versions of a building block. After a building block is tagged, it is “frozen” and can no longer be modified in any way. When you open a tagged building block for editing, the ANM does not modify the tagged version, but instead creates a new working copy of the building block for you to work in. Any changes you make to the working copy are not available for deployment until you tag the building block under a new version tag.

**Related Topics**

- [Using Configuration Building Blocks, page 13-1](#)
- [Creating Building Blocks, page 13-5](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Applying Building Blocks, page 13-8](#)
- [Tagging Building Blocks, page 13-7](#)
- [Viewing Building Block Use, page 13-9](#)

## Creating Building Blocks

Use this procedure to create a building block without using an existing configuration.

To create a building block from an existing virtual context, see [Extracting Building Blocks from Virtual Contexts, page 13-5](#).

### Procedure

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- Step 1** Select **Config > Global > All Building Blocks**. The All Building Blocks table appears.
- Step 2** Click **Add**. The New Building Block screen appears.
- Step 3** In the Name field, enter a unique name for this building block.
- Step 4** In the Type field, select the type of building block to create:
- ACE 1.0—For use with virtual contexts on ACE 1.0 modules.
  - ACE 2.0—For use with virtual contexts on ACE 2.0 modules.
  - ACE 4710—For use with virtual contexts on ACE appliances.
- See [Table 13-1](#) for a list of the available configuration options for each building block type.
- Step 5** In the Description field, enter a brief description for this building block.
- Step 6** Click:
- **Save** to save your entries and to continue with building block configuration. The Primary Attributes configuration screen appears.
  - **Cancel** to exit this procedure without saving your entries and to return to the All Building Blocks table.
  - **Tag** to save your entries and tag the building block. After you tag a building block, the screen refreshes and provides fields for applying the building block. For more information, see [Applying Building Blocks, page 13-8](#).
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### Related Topics

- [Using Configuration Building Blocks, page 13-1](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Building Block Versions and Tagging, page 13-4](#)
- [Applying Building Blocks, page 13-8](#)
- [Tagging Building Blocks, page 13-7](#)
- [Viewing Building Block Use, page 13-9](#)

## Extracting Building Blocks from Virtual Contexts

An alternative to creating a new configuration building block and configuring each attribute individually is to extract a configuration building block from an existing virtual context. By extracting a building block from a virtual context, you can reduce the time you spend configuring and testing the configuration.

Use this procedure to create a working building block from a virtual context configuration.

**Procedure**

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- Step 1** Select **Config > Devices**. The device tree appears.
- Step 2** Select the ACE with the virtual context whose configuration you want to use as a building block. The Virtual Contexts table appears.
- Step 3** Select the context with the configuration you want to extract, then click **Extract Building Block**. A window appears, asking for a building block name.
- Step 4** In the Name field, enter a name for this building block, then click **OK**. The screen refreshes with the Primary Attributes screen for the newly created building block (**Config > Global > *building\_block***).
- Step 5** Modify the building block as desired using the information in [Table 13-1](#), or tag and deploy it as described in [Tagging Building Blocks, page 13-7](#) and [Applying Building Blocks, page 13-8](#).
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**Related Topics**

- [Applying Building Blocks, page 13-8](#)
- [Tagging Building Blocks, page 13-7](#)
- [Viewing Building Block Use, page 13-9](#)

## Configuring Building Blocks

Use this procedure to modify a working version of a configuration building block.



**Note** You can modify only working versions of building blocks; you cannot modify tagged versions of building blocks. If you select a tagged building block version, and then select a configuration option (such as **Load Balancing > Health Monitoring**), you can view the entries for that tagged version, but you cannot modify them.

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**Procedure**

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- Step 1** Select **Config > Global > All Building Blocks**. The All Building Blocks table appears.
- Step 2** Select the working version of the building block that you want to modify, then select the attributes you want to configure. For information on building block configuration options, see [Table 13-1](#).



**Note** While it is possible to configure VLAN and BVI interfaces in a building block, we recommend that you do not do so. Applying a building block with these attributes configured to a virtual context with different settings can disrupt network traffic.

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- Step 3** To apply this building block, tag it, then deploy it as described in [Tagging Building Blocks, page 13-7](#) and [Applying Building Blocks, page 13-8](#).
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**Related Topics**

- [Using Configuration Building Blocks, page 13-1](#)

- [Building Block Versions and Tagging, page 13-4](#)
- [Creating Building Blocks, page 13-5](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Tagging Building Blocks, page 13-7](#)
- [Viewing Building Block Use, page 13-9](#)

## Configuring Building Block Primary Attributes

Use this procedure to change the description of a configuration building block.

### Procedure

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- Step 1** Select **Config > Global > All Building Blocks**. The All Building Blocks table appears.
- Step 2** Select the building block that you want to modify, then select **System > Primary Attributes**. The Primary Attributes screen appears.
- Step 3** In the Description field, modify the description as desired.
- Step 4** Click:
- **Save** to save your entries. The screen refreshes with the saved information.
  - **Tag** to tag the building block. To deploy the tagged building block, see [Applying Building Blocks, page 13-8](#).
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### Related Topics

- [Creating Building Blocks, page 13-5](#)
- [Configuring Building Blocks, page 13-6](#)
- [Tagging Building Blocks, page 13-7](#)

## Tagging Building Blocks

After creating a building block, you must tag it before you can apply it to virtual contexts.

Use this procedure to tag a working copy of a building block.

### Procedure

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- Step 1** Select **Config > Global > All Building Blocks**. The All Building Blocks table appears.
- Step 2** Select the working copy of the building block that you want to tag, then click **Tag**. The All Building Blocks table refreshes with the newly tagged building block identified by its version, such as 1.2 or 1.3. A working copy of the building block remains available so that you can use it for future building block versions.

To apply the tagged building block to virtual contexts on your network, see [Applying Building Blocks, page 13-8](#).

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#### Related Topics

- [Using Configuration Building Blocks, page 13-1](#)
- [Building Block Versions and Tagging, page 13-4](#)
- [Creating Building Blocks, page 13-5](#)
- [Applying Building Blocks, page 13-8](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Viewing Building Block Use, page 13-9](#)

## Applying Building Blocks

You can apply building blocks in two ways:

- By selecting a virtual context, then applying the building block. See [Applying a Building Block to a Single Virtual Context, page 13-8](#).
- By selecting the tagged building block, then applying it to one or more virtual contexts. See [Applying a Building Block to Multiple Virtual Contexts, page 13-9](#).

## Applying a Building Block to a Single Virtual Context

Use this procedure to apply a tagged building block to a virtual context using virtual context configuration screens.



#### Note

Before applying a building block to a virtual context, confirm that the VLAN and BVI interfaces are defined correctly for the virtual context. If needed, remove VLAN and BVI interface configuration information from the building block and then apply it.

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#### Procedure

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- Step 1** Select **Config > Devices > All Devices**. The device tree appears.
  - Step 2** Select the virtual context you want to apply a building block to, then select **System > Primary Attributes**. The Primary Attributes screen appears.
  - Step 3** In the Tagged Building Block to Apply field, select the building block you want to apply to the virtual context.
  - Step 4** Click **Deploy Now**.
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#### Related Topics

- [Applying a Building Block to Multiple Virtual Contexts, page 13-9](#)
- [Using Configuration Building Blocks, page 13-1](#)

- [Building Block Versions and Tagging, page 13-4](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Tagging Building Blocks, page 13-7](#)

## Applying a Building Block to Multiple Virtual Contexts

Use this procedure to apply a tagged building block to one or more contexts by using the building block configuration screens.



### Note

Before applying a building block to a virtual context, confirm that the VLAN and BVI interfaces are defined correctly for the virtual context. If needed, remove VLAN and BVI interface configuration information from the building block and then apply it.

### Procedure

- Step 1** Select **Config > Global > All Building Blocks**. The All Building Blocks table appears.
- Step 2** Select the tagged building block that you want to apply to one or more virtual contexts.
- Step 3** Select **System > Primary Attributes**. The Primary Attributes configuration screen appears.
- Step 4** In the Push Building Block to VCs field, select the contexts that you want to apply the building block to in the Available Items list, then click **Add**. They appear in the Selected Items list.  
To remove contexts that you do not want to apply the building block to, select them in the Selected Items list, then click **Remove**. They items appear in the Available Items list.
- Step 5** Click **Save**. A progress bar reports status and the screen refreshes when the operation is complete.

### Related Topics

- [Applying a Building Block to a Single Virtual Context, page 13-8](#)
- [Using Configuration Building Blocks, page 13-1](#)
- [Building Block Versions and Tagging, page 13-4](#)
- [Creating Building Blocks, page 13-5](#)

## Viewing Building Block Use

Use this procedure to identify the virtual contexts using a building block.

### Procedure

- Step 1** Select **Config > Devices**. The device tree appears.
- Step 2** Select **All VC**. The Virtual Contexts table appears.

- Step 3** View the building blocks being used by one of the following methods:
- For a small number of contexts, scan the Building Block column to see which building blocks are in use on virtual contexts.
  - For a large number of contexts, click **Filter**. The screen refreshes so that you can enter search criteria. In the field beneath the Building Block column heading, enter a building block name or search string, then click **Go**. The table refreshes with entries that match the search criteria.
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**Related Topics**

- [Using Configuration Building Blocks, page 13-1](#)
- [Building Block Versions and Tagging, page 13-4](#)
- [Creating Building Blocks, page 13-5](#)
- [Extracting Building Blocks from Virtual Contexts, page 13-5](#)
- [Tagging Building Blocks, page 13-7](#)