

Customer Deliverable Documentation Revision v1.0, July 15, 2014 Patton Electronics, Co. 7622 Rickenbacker Drive Gaithersburg, MD 20879 Tel: +1 301.975.1000 Fax: +1 301.869.9293

Trinity Wizard Programmers Guide

Abstract

The WEB Wizard is a standard functionality within the Trinity Operating system. Regardless of which Trinity-Device is being used, the WEB wizard is a helpful tool to reduce time for installs and it helps to simplify the configuration efforts for deployments.

On the following Link, more information about Patton devices running Trinity can be found.

• Trinity Patton Products



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1 Introduction

The Patton Trinity WEB Wizard is the perfect tool for integrators, technicians and network engineers who would like to create their own WEB interface for Trinity products.

Wherever an application specific setup is required, where only a few parameters differ from one customer installation to another, the WEB wizard will help to significantly reduce the installation time.

Trinity WEB Wizards are simple text files that contain a template configuration and an XML description of the Graphical User interface that is presented to the installer.

The Template configuration contains all the application specific settings which are static while the WEB GUI gives simple access to settings which are customer or installation specific.

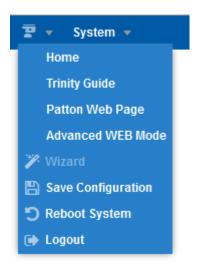
This document describes how you can create, install and use WEB Wizards on Patton Trinity products.

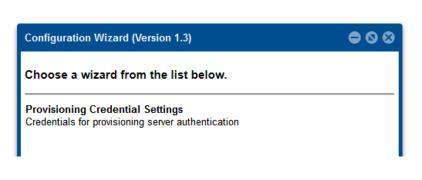


2 Wizard handling

2.1 Accessing the WEB Wizard

There are one or more WEB Wizards on every unit running Trinity. These WEB wizards can be found under the Menu or by clicking on the magic wand in the top right corner of the Trinity GUI.





Clicking on the Wizard Menu item will open a window containing all the pre-loaded wizards.

In the example above, just the Digest Authentication Wizard for HTTPs provisioning is visible "Provisioning Credential Settings".

2.2 Executing a WEB Wizard

Execute a Wizard simply by clicking on an entry in the list. The Wizard will open in a new window.

There the user will have to enter the configuration parameters based on the available fields. A wizard may have multiple pages which are accessible by clicking on the "next" button at the bottom of the Wizard window.

Once all parameters are set, the user can

- 1) Verify the generated CLI config, by hitting the "Preview" button
- 2) Apply the generated config to the unit by hitting the "Save & Reboot" button.

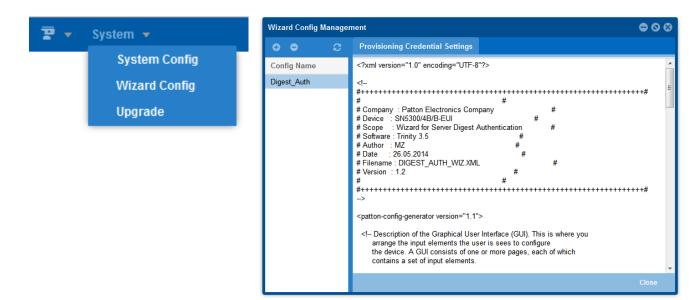
Note: a reboot of the device will be executed in order for the config to become active.



2.3 Adding new WEB Wizard files

Under the System Menu, the Wizard config can be accessed. Here new Wizards can be imported or existing ones can be deleted.

All the Wizard files are XML files which must have a filename ending with .xml



In order to add a new Wizard file, just click on the "+" button, select your .xml wizard file and hit OK.

A preview of the uploaded Wizard file can be seen on the right section of the Wizard Config Management window.

2.4 Structure of Wizard files

A Wizard XML file consists of 3 sections.

- 1) WEB Wizard GUI elements description using XML
- 2) The config-snippet element defines conditional variables that can be included inside the final system configuration file.controlled by item 1)
- The config element defines the actual system configuration file that will be uploaded to the device

In the following Chapters, a detailed overview is given on how a WEB Wizard can be created. It includes a description of the GUI fields available and how they turn in to CLI config values, by generating a config file.

2.5 Examples

For example files of WEB Wizards refer to the following sources:

- Any Patton Trinity device contains at least one Wizard files you may use as an example
- The Knowledge Base on support.patton.com
- Contact us: support@patton.com

2.6 Wizard Programming Services

If you would like Patton to program a Wizard for your application contact our sales team we will give you a professional services offer based on your requirement specification.

Contact us for a Quote



3 Trinity WEB Wizard Creation

This chapter describes the format of the Wizard XML Configuration file. Each wizard configuration consists of three main sections. The series of images below progress through each section of the config file. The first provides an overview of the whole config file.

3.1 Sections overview

qui

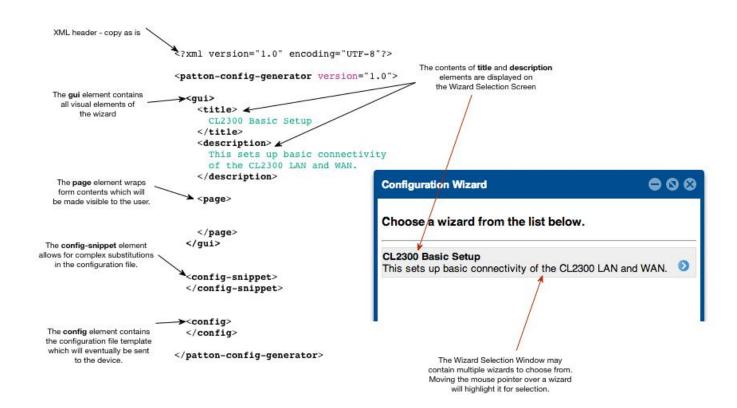
The gui element wraps the form definition for the user.

config-snippet

The **config-snippet** element defines conditional variables that can be included inside the final system configuration file.

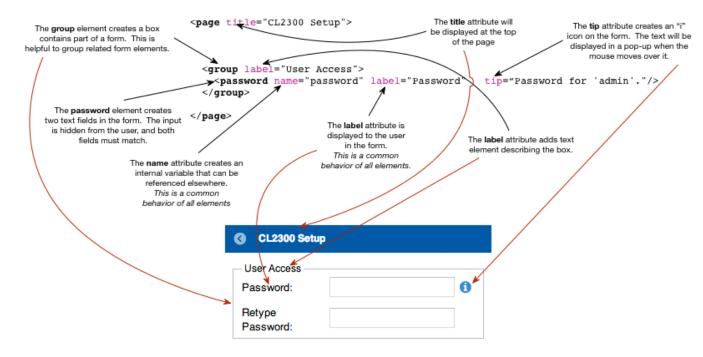
config

The config element defines the actual system configuration file that will be uploaded to the device.



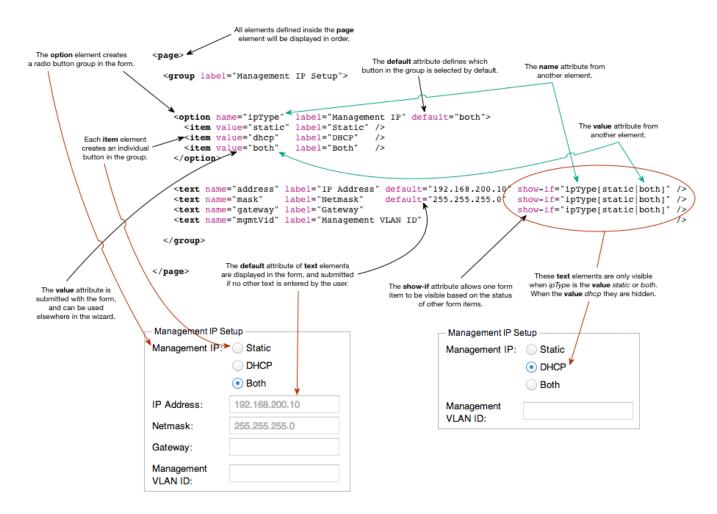


This image describes the page, group, and password elements.

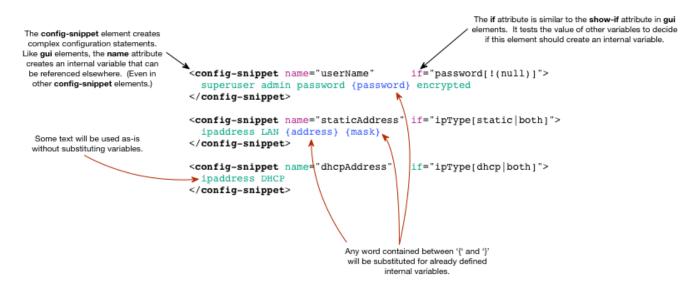




This image describes how elements inside the page can be hidden based on form input.

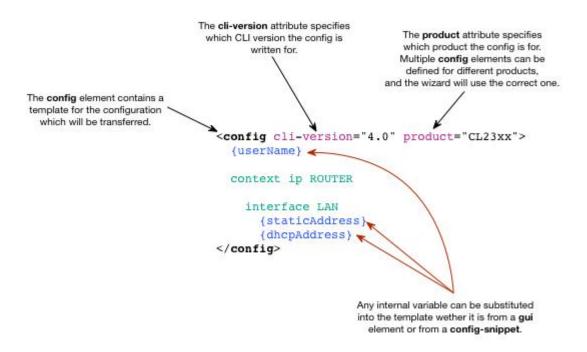


This image describes how complex System Config Snippets can be created for substitution in the main configuration.





This final image shows the main configuration file.



3.2 XML Schema Reference

3.2.1 Config-Generator

Each Wizard Config starts and ends with a config-generator element. This identifies a wizard configuration to the system, and what version of the interface is supported.

```
<?xml version="1.0" encoding="UTF-8"?>
<config-generator version="1.1">
  <!-- gui, config-snippet, and config elements go here -->
</config-generator>
```

Attribute	Status	Default	Version	Description	
version	required		1.0	Specifies the version of Wizard engine that will support this. The current supported versions are 1.0, 1.1 and 1.3 (latest version 1.4)	

3.2.2 Overview of available Elements

- Title: Is being displayed on the Wizard Selection Screen
- Option: Creates a radio button group in the form
- Select: Creates drop-down list on the form
- Text: Creates a normal text input on the form
- Password: Creates two password input boxes on the form



- Number: Creates a text input on the form which will be evaluated as a number
- Check: Creates a check-box on the form
- Display: Creates a static display element on the form
- List: Creates grid inside the form that will allow a group of variables to be repeated
- Value: This defines a row that will be added to the list when the wizard is loaded

3.2.3 Gui

A single gui element MUST exist inside the Wizard Config. This has the sole purpose of defining the visible information that the user will see. The sub-elements title and description are important because this information is displayed on the "Wizard Selection Screen".

Attribute	Status	Default	Version	Description
web-if-type	optional	""	1.1	This allows access to the wizard to be restricted to some user type.
reboot	optional	"true"	1.2	This allows a wizard to not automatically reboot the device.
action-label	optional	"Save & Reboot / Apply"	1.3	This allows a wizard to customize the text of the apply button. Its default value is dependent on reboot tag
action-tip	optional	"Save configuration and reboot device / / Save configuration without rebooting"	1.3	This allows a wizard to customize the help text which is shown when hovering over the apply button. Its default value is dependent on reboot tag.
page-type	optional	"sequential"	1.3	This allows the wizard to be displayed in a sequential or tab layout.

Notes for the web-if-type attribute:

When configured, this may cause a wizard to not appear in the "Wizard Selection Window" for some users. The only value currently supported is basic-only. When user is defined with the terminal-type http web-basic-only restriction logs in, they can only access wizards with this option set.

Notes for the page-type attribute:

Valid values are "sequential" and "tab".

3.2.3.1 Title

The title element has no attributes. The text between the start and end tags is displayed on the "Wizard Selection Screen".

3.2.3.2 Description

The description element has no attributes. The text between the start and end tags is displayed on the "Wizard Selection Screen".



```
<gui>
  <title>
    CL2300 Basic Setup
  </title>
  <description>
    This sets up basic connectivity of the CL2300 LAN and WAN.
  </description>
  <!-- Content Omitted -->
  </gui>
```

3.2.3.3 Page

At least one page element is required, however multiple elements are allowed. Each page element contains form definition elements between the start and end tags. When multiple page elements are defined, the wizard interface will cycle through the visual representation with next/previous buttons.

Attribute	Status	Default	Version	Description	
title	required		1.0	This text value will be displayed at the top of the window, and is intended as a description of what the current page represents.	

3.2.4 Common Page Element Attributes

Attribute	Description						
name	This attribute creates an internal variable that will be evaluated in the wizard.						
label	The text from this attribute will be displayed at the left of a form input element.						
tip	The text from this attribute will be displayed to the user when hovering over the icon to the right of a form input element.						
show-if	This attribute allows a form input element to visible based on the current value of option , select , or check elements.						
product	This attribute allows any element to be present only on certain products.						

Notes for the name attribute:

The value for this attribute **MUST** be unique for each element defined in the Wizard Configuration. This attribute is used three ways by the Wizard. It first may be referenced by the <code>show-if</code> attribute to control what form elements are currently visible to the user. In this case form elements will appear and disappear immediately as the user makes changes on the form. When the form is submitted, an internal variable will be created with the current value of input field. Any occurrences of the variable name between '{' and '}' will be substituted for the value inside the text content of <code>config-snippet</code> or <code>config</code> elements. (See example below.)

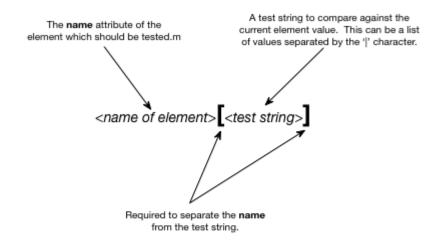
```
<text name='test'>
<config>
{test}
</config>
```

Notes for the show-if attribute:



This attribute is used to control which form elements are visible based on the current value of one other form element. The image below shows a breakdown of the attribute contents. You must supply the name of the element being tested, and a test string inside square brackets. The test string provides one or more desired values of the parent element. If there are multiple values, they must be separated by the '|' (pipe) character.

- No spaces are allowed in the attribute contents.
- The value of only one element can be tested.
- The check element has the value "true" when checked and "false" when unchecked.
- An element will always be made not visible if the element name listed in show-if not visible.
- If an element is NOT visible, it will not be submitted with the form. (Even if it has a default value.)



Notes for the product attribute:

This attribute value will be compared against the **Model** string viewable with the CLI command "show system info". A list of possible values can be present separated by the '|' (pipe) character. The **Model** string only needs to START with the product string. Ie.. If product is "OS330"; it will match "OS3301", "OS3302", and "OS3304". While if product is "OS3302|OS3304"; it will only match "OS3302" and "OS3304".

3.2.4.1 Group

The group element creates visible box around multiple form elements, which provides a way to organize sections of the form.

NOTE: It is not required to use a group element. Any form element can be created directly inside a page.

```
<group label="Management IP Setup">
  <!-- Content Omitted -->
</group>
```



3.2.4.2 Option

The option element creates a radio button group in the form. At least one item element is required between the start and stop tags. When evaluating the form submission, the value attribute from the selected radio button will be used. When the name attribute is referenced in a show-if test string, the value attribute from the selected radio button will be used.

Attribute	Status	Default	Version	Description	
name	required		1.0	See <u>Common Attributes</u> .	
label	required		1.0	See Common Attributes.	
default	optional	""	1.0	The value attribute of item which will be selected by default. If omitted (or invalid), the first item will be selected.	
tip	optional	1111	1.0	See <u>Common Attributes</u> .	
show-if	optional	""	1.0	See <u>Common Attributes</u> .	

3.2.4.3 Item

Each item element defines one radio button in the radio group.

Attribute	Status	Default	Version	Description	
label	required		1.0	See <u>Common Attributes</u> .	
value	required		1.0	This can be any text value, but should be unique among the other items in this group. The value of the selected radio button will be submitted with the form and used for <code>show-if</code> tests.	

3.2.4.4 Select

The select element creates drop-down list on the form. At least one item element is required between the *start* and *stop* tags. When evaluating the form submission, the value attribute from the selected radio button will be used. When the name attribute is referenced in a show-if test string, the value attribute from the selected radio button will be used.

Attribute	Status	Default	Version	Description	
name	required		1.0	See <u>Common Attributes</u> .	
label	required		1.0	See Common Attributes.	
default	optional	""	1.0	The value attribute of item which will be selected by default. If omitted (or invalid), the first item will be selected.	
tip	optional	""	1.0	See <u>Common Attributes</u> .	



-1	""		
show-11 optional		1.0	See <u>Common Attributes</u> .

3.2.4.5 Item

Each item element defines one option in the list.

Attribute	Status	Default	Version	Description	
label	required		1.0	See <u>Common Attributes</u> .	
value	required		1.0	This can be any text value, but should be unique among the other items in this list. The value of the selected item will be submitted with the form and used for show-if tests.	
product	optional		1.2	See <u>Common Attributes</u> .	

3.2.4.6 Text

The text element creates a normal text input on the form. Any text entered will be submitted with the form.

Attribute	Status	Default	Version	Description	
name	required		1.0	See <u>Common Attributes</u> .	
label	required		1.0	See Common Attributes.	
allow- blank	optional	"true"	1.2	This attribute identifies if an empty value is permitted.	
default	optional	""	1.0	This attribute allows a default value to be specified. It will be displayed in the text input as slightly grayed out. When the text area is selected for input, the default value will disappear. If no text is entered into the input box, this value will be submitted with the form.	
tip	optional	1111	1.0	See <u>Common Attributes</u> .	

3.2.4.7 Password

The password element creates two password input boxes on the form. Text enter into either box will be masked out. The first box will use the label field as usual, however the second box will have "Retype" prepended to the label.

As text is entered into either box it will be verified against the other box. When the text does not match, the "Retype" box will be highlighted red, a pop-up error message will appear when moving the mouse over, and the submit buttons will be disabled.

When the form is submitted, the password will be encrypted by the device. The encrypted password will be used when "{name}" is used in config-snippet or config elements. A '_' character can be appended to name if the plain text password is required for substitution.

NOTE: The password will be sent to the device as clear readable text during the encryption process. For added security, use HTTPS to access the WEB interface.

NOTE: This provides only the encrypted password. Some CLI commands may require an extra keyword to identify it as encrypted. The the following user name example.

```
# Encrypted version
superuser admin password {password} encrypted
# Unencrypted version
superuser admin password {password_}
```



Attribute	Status	Default	Version	Description
name	required		1.0	See <u>Common Attributes</u> .
label	required		1.0	See <u>Common Attributes</u> .
allow-blank	optional	"true"	1.2	This attribute identifies if an empty value is permitted.
label-prefix	optional	"Retype"	1.2	This attribute allows the prefix applied label for the second text input to be set.
tip	optional	""	1.0	See <u>Common Attributes</u> .

3.2.4.8 Number

The **number** element creates a text input on the form which will be evaluated as a number. Any text entered will be submitted with the form.

Attribute	Status	Default	Version	Description	
name	required		1.0	See Common Attributes.	
label	required		1.0	See Common Attributes.	
allow- blank	optional	"true"	1.2	This attribute identifies if an empty value is permitted.	
default	optional	""	1.0	This attribute allows a default value to be specified. It will be displayed in the text input as slightly grayed out. When the text area is selected for input, the default value will disappear. If no text is entered into the input box, this value will be submitted with the form.	
tip	optional	""	1.0	See Common Attributes.	

3.2.4.9 Check

The **check** element creates a check-box on the form. The element has a value of "*true*" when checked and "*false*" when unchecked, which will be submitted with the form and used for **show-if** tests.

Attribute	Status	Default	Version	Description	
name	required		1.0	See <u>Common Attributes</u> .	
label	required		1.0	See <u>Common Attributes</u> .	
default	optional	"false"	1.0	The valid values are "true" or "false". This will make the box start "checked" or "unchecked" in the form.	
tip	optional	""	1.0	See <u>Common Attributes</u> .	
show-if	optional	""	1.0	See <u>Common Attributes</u> .	

3.2.4.10 Display

The display element creates a static display element on the form. (This is really only useful inside the list element.)

Attribute	Status	Default	Version	Description
name	required		1.4	See Common Attributes.
label	required		1.4	See Common Attributes.



3.2.4.11 List

The list element creates grid inside the form that will allow a group of variables to be repeated. At least one GUI element is required between the *start* and *stop* tags. The GUI elements will be displayed in the grid and inside a popup window. The popup window will be shown when pressing the '+' button or double-clicking on a grid row.

Attribute	Status	Default	Version	Description	
name	required		1.3	See <u>Common Attributes</u> .	
title	required		1.3	A title displayed at the top of the grid.	
sort- field	optional	""	1.3	The name of a gui element used to sort the grid. As of version 1.4 this will also enforce a unique row.	
allow-new	optional	"true"	1.4	Show the '+' button, and allow new entries.	
allow-del	optional	"true"	1.4	Show the '-' button, and allow deleting entries.	
height	optional	200	1.4	4 Set the grid height.	

Notes for the name attribute:

Unlike other GUI elements, this cannot be used directly in **config** or **config-snippet** contents. It can only be used in the **for** attribute of a **config-snippet**.

3.2.4.12 Value

Each **value** element defines a row that will be added to the list when the wizard is loaded. The data for the row MUST be defined between the *start* and *stop* tags of the **value** element. The data for each field MUST be included in a tag which uses the field **name**. See the example below.

NOTE: A row added with the value element can be deleted if the allow-del attribute is not set.

Attribute	Status	Default	Version	Description
if	optional		1.4	Add or remove row based on the status of another row.

Notes for the if attribute:

This attribute is used to control if the **value** is added to the list based on the current status of other list items. This attribute requires a test string with a similar format as **show-if**. The **if** attribute allows multiple variables to be tested by adding a '+' character between each test. There is an added reference to the specific row to be tested (indexed by the **sort-field**). le.. Here is a sample test string: "0/0{service[2-wire|4-wire]}+0/2{service[2-wire]}".

- No spaces are allowed in the attribute contents.
- The value of multiple variables can be tested.
- If a variable does not exist, it will be evaluated as "(null)"



```
<list name="lines" title="Lines" allow-new="false" allow-del="false"</pre>
sort-field="line" height="1200">
 <display name="line" label="Line"/>
 <text name="useProfile" label="Profile Name"/>
 <check name="enabled" label="Enable" default="true"/>
  <select name="service" label="Service Mode">
   <item value="2-wire"</pre>
                         label="2-wire" />
   <item value="4-wire"</pre>
                         label="4-wire" />
   <item value="8-wire" label="8-wire" />
  </select>
 <!-- This is always present -->
  <value>
   line
              >0/0<
                        /line>
   <useProfile>DEFAULT</useProfile>
   <enabled >true< /enabled>
   <service
              >2-wire< /service>
  </value>
 <!-- This is only present when 0/0 is 2-wire -->
  <value if="0/0{service[2-wire]}">
   line
              >0/1<
                       /line>
   <useProfile>DEFAULT</useProfile>
   <enabled >true< /enabled>
   <service
             >2-wire< /service>
  </value>
  <!-- This is only present when 0/0 is 2-wire or 4-wire -->
  <value if="0/0{service[2-wire|4-wire]}">
              >0/2<
                       /line>
   <useProfile>DEFAULT</useProfile>
   <enabled >true< /enabled>
   <service >2-wire< /service>
 </value>
 <!-- This is only present when 0/0 is 2-wire or 4-wire and 0/2 is 2-
wire -->
 <value if="0/0{service[2-wire|4-wire]}+0/2{service[2-wire]}">
              >0/3<
                       /line>
   ine
   <useProfile>DEFAULT</useProfile>
   <enabled >true< /enabled>
             >2-wire< /service>
    <service -
 </value>
</list>
```

3.2.5 Config-Snippet

The config-snippet element creates an internal variable AFTER form submission that will be evaluated by the wizard. This allows complex configuration snippets to be created using data entered on the form. The form data can be used two ways:

- 1. For any occurrences of the name attribute of form elements found between '{' and '}' inside the text content; the submitted data will be substituted into the text. In the <u>GUI Elements example</u> above, a <u>text</u> element was created named address and mask. Later in the <u>Config Snippet example</u>, the <u>config-snippet staticAddress</u> is created with the following text: "ipaddress LAN {address} {mask}". The values for address and mask from the form will be used here.
- 2. The value of form elements can be tested to decide if the **config-snippet** should be evaluated. This behavior is very similar to how the **show-if** attribute works for gui elements.



NOTE: The wizard will evaluate **config-snippet** elements in the order they exist in the document. Once evaluated, they can be used by other **config-snippet** elements just like form data.

Attribute	Status	Version	Description	
name	required	1.0	This attribute is used as the internal variable name.	
if	optional	1.0	This allows the element to be evaluated based on the current value of any item submitted in the form or other config-snippet elements.	
product	optional	1.2	See <u>Common Attributes</u> .	
for	optional	1.3	Evaluate the contents for each item in a list.	

Notes for the name attribute:

The value for this attribute **SHOULD** be unique, but it is not required. If the name is not unique, the old value will be replace by the newly evaluated **config-snippet**. There are two cases where it may be desirable to use a non-unique **name**.

- 1. Based on the value of one form element, you want to replace the value of another element.
- 2. Multiple config snippets are created with the same name, and based on the if and/or product tests only one will be evaluated.

Notes for the if attribute:

This attribute is used to control if the element is evaluated based on the current value of other variables. This behaves similar to the <code>show-if</code> attribute used on <code>gui</code> elements, however there is no limitation for which elements are evaluated. This attribute requires a test string with the same format as <code>show-if</code>. The <code>if</code> attribute allows multiple variables to be tested by adding a '+' character between each test. (This is an AND operation, so the test MUST pass for each variable. le.. Here is a sample test string: "ipType[static|both]+mgmtVid[(null)]".

- No spaces are allowed in the attribute contents.
- The value of multiple variables can be tested.
- The check element has the value "true" when checked and "false" when unchecked.
- If a variable does not exist, it will be evaluated as "(null)"

Notes for the for attribute:

The contents will be evaluated for each row in the names list. The the name attribute is referenced the complete expended text will be used.

3.2.6 Config

The config element contains a CLI configuration file template which will be uploaded to the device. Like the config-snippet element, the text content will be evaluated for all the internal variables. The value of internal variables will be substituted into the text for each occurrence of the name found between '{' and '}' characters. At least one config element MUST exist, however it is possible to define multiple elements.

The **config** elements are evaluated in the order they exist in the document. If the wizard decides multiple configuration files will be sent to the device, it is possible that they are attempting to save as the same file name. In this case, the last one submitted will be used by the device.



Attribute	Status	Default	Version	Description
cli- version	required		1.0	The target CLI Version. This adds "cli version XXX' to the generated configuration file.
product	optional		1.2	See <u>Common Attributes</u> .
file	optional	"startup- config"	1.1	The attribute defines the configuration file name on the target.
persist	optional	"true"	1.1	This attribute tells the system to apply the text content to the running-config instead of saving to a file.

Notes for the file attribute:

Any file name can be used here. If the file already exists on the device, the system will automatically back it up with the current date and time in the file name. **NOTE**: The minimal-config cannot be replaced.

Notes for the persist attribute:

This attribute allows any CLI command which the user has access to be applied to the running device. Unless a command to save the configuration is is present, the changes may not be persistent over reboot. **NOTE**: The wizard will still reboot the device unless the **reboot** attribute of the **gui** element is configured as *false*.