

# Constraints

## Constraints

Settings IPAM Admin Data Import Users API Scheduler Log Approvals Constraints Exit Admin Search...

Constraints Configuration Settings

### Configuration Add constraint

Constraints

Registered constraints 6

Filter by Type: none Search...

0 items selected.

<input type="checkbox"/>	ID	Name	Compare	Updated	Options
<input type="checkbox"/>	11966	colors	Enumeration	03/30/2021 19:36:10	Delete Edit Test
<input type="checkbox"/>	11967	Resource Holder Entries	Section Entry	03/30/2021 19:21:51	Delete Edit Test

The Constraints system allows Admin users to configure custom field validation and limitations into IPAM fields. Many constraint types are available, such as mathematical comparison operators, length, enumeration, pre-set lists, RegEx, IPv4/IPv6, Phone, email, hostname, FQDN, Mac Address, and URL.

The **Constraints** Tab has one sub-tab - **Configuration** - where new constraints may be created and managed.

**i** Currently, **Constraints** is available only for **IPAM** related actions, while we gather feedback and use cases to inform possible future updates. If you are interested in providing feedback, a use case, or requests for future additions to the Constraints system, please contact [feedback@6connect.com](mailto:feedback@6connect.com).

- Constraints
- Constraints Tab - Overview
- Available Constraint Types
- Add a Constraint
- Test Constraint
- Edit Constraint
- Delete Constraint
- Working with Constraints in IPAM Manage
- Example: Adding an Enumeration / Constraint Containing Children
  - Create the Parent Constraint
  - Open the Parent Constraint
  - Add Child Items
  - Using the Enumeration
- Additional Information

## Constraints Tab - Overview

The Constraints Tab, available to Admin users, allows for custom field validation and field restrictions to be applied to IPAM fields. The applied constraint may be anything from a numerical comparison operation, a check against a pre-determined text string, ensuring selections from a pre-set list, or forcing entries into a specific format, such as IPv4/IPv6, phone number, or RegEx.

These constraints can be applied to the following IPAM fields:

- ASN
- Custom Generic Field
- Notes
- Metadata 1-10, if enabled for the instance

Depending on the type of constraint applied, the constraint may be a simple single-value comparison needing only one constraint to be created, such as "Equals to" or "Length Max". Some other constraint types, however, may have two or more levels deep of constraint types and value checks. One example of this is "Enumeration", which requires the user to first set up an "Enumeration" constraint, and then a second level list of sub-constraint types or a list of values. For a detailed constraint tree, it may be worth

## Available Constraint Types

The following constraint types are currently available:

Type	Description
<b>Enumeration</b>	Create a list of child enum items. Note: Set binding / control type for parent constraint (enumeration) only, do not provide for child items.  <u>Children type</u> : Valid child enum types are: =, !=, , , =, regex, allow, oneof, allof, ip, ipv4, ipv6, email, url, hostname, fqdn, mac, phone, lenmax, lenmin, section_entry
<b>Section Entry</b>	Creates an enumeration based on all entries that belong to a given section.
<b>Equals to</b>	Checks to ensure a value is exactly equal to a provided value, e.g. (X == Y) is true
<b>Not Equal to</b>	Checks to ensure a value is not equal to a provided value, e.g. (X != Y) is true
<b>Greater Than</b>	Checks if the input value (left operand) is greater than a given value (right operand). e.g. (X > Y) is true
<b>Less Than</b>	Checks if the input value (left operand) is less than a given value (right operand). e.g. (X < Y) is true
<b>Greater Than or Equal to</b>	Checks if the input value (left operand) is greater than or equals to a given value (right operand). e.g. (X >= Y) is true
<b>Less Than or Equal to</b>	Checks if the input value (left operand) is less than or equals to a given value (right operand). e.g. (X <= Y) is true
<b>One of</b>	Create a list of child constraint items. It will be true if one of child constraints is true. Its children must be previously configured.  Note: Set binding / control type for parent constraint (enumeration) only, do not provide for child items.
<b>All of</b>	Create a list of child constraint items. It will be true if all of the child constraints are true. Its children must be previously configured.  Note: Set binding / control type for parent constraint (enumeration) only, do not provide for child items.
<b>Length Max</b>	Checks to ensure a string has, at most, the specified number of characters
<b>Length Min</b>	Checks to ensure a string has, at minimum, the specified number of characters
<b>Regular Expression</b>	Compares the input format to a provided Regular Expression
<b>IPv4</b>	Sets the required format for the input to an IPv4 address
<b>IPv6</b>	Sets the required format for the input to an IPv6 address
<b>Email</b>	Sets the required format for the input to an email address (uses an "@" symbol)

<b>Hostname</b>	Sets the required format for the input to a hostname. Hostnames may not have underscore or dash characters.
<b>FQDN</b>	Sets the required format for the input to a FQDN
<b>MAC Address</b>	Sets the required format for the input to a MAC address
<b>URL</b>	Sets the required format for the input to a url
<b>Phone Number</b>	Sets the required format for the input to a phone number

## Add a Constraint

To add a new Constraint, click "Add Constraint"

The screenshot shows the 'Configuration' page for constraints. At the top, there are tabs for 'Constraints' and 'Configuration', and a 'Settings' button. The main heading is 'Configuration' with an 'Add constraint' button circled in red. Below this is a 'Constraints' section with a blue header 'Registered constraints 4'. There is a 'Filter by Type' dropdown set to 'none' and a search box. Below the filter, it says '0 items selected.' A table lists the registered constraints:

<input type="checkbox"/>	ID	Name	Compare	Updated	Options
<input type="checkbox"/>	15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete Edit Test

In the "Add Constraint" screen, select (at minimum, depending on the selected constraint type):

- The constraint type (here, "Length Min")
- The name for the constraint
- The attribute (IPAM Field) on which to apply the constraint
- Constraint specific comparison values, here as "Length"
- Select whether to allow empty values in the attribute field

If desired, you may enter a custom error message, customize the UI binding (although it is automatically filled in if you select a standard IPAM Attribute), or add an event hook setting.

# Add constraint

Constraints / Add new

## Common settings

### Constraint type

Length Min

Allows strings with more than "lenmin" characters. (string.length > X) is true

### Name

Length Min 3

The title of this constraint.

### Attribute name

Metadata8

Attribute that will be evaluated.

### Length

3

Minimum string length

Allow empty values

### Error message

custom description...

Include a custom message when the constraints fails. Messages can be formatted using the available template variables. E.g.: "The constraint {name} has failed on {attribute} caused by: {error}"

## UI Binding

### Control Type

Input Field

Indicate the kind of control that the UI element represents

### Element id

meta8

The object's property in which you want to apply a constraint. Most of the times, the element\_id will correspond to the attribute name but something the UI could use a different id.

## Hook settings

### Type

No hook

Choose the type of hook to register.

Add constraint

Cancel

When done, click "Add Constraint" to save.

## Test Constraint

To test a Constraint, click "Test".

Registered constraints 5

Filter by Type: none Search...

0 items selected.

<input type="checkbox"/>	ID	Name	Compare	Updated	Options
<input type="checkbox"/>	15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete Edit Test
<input type="checkbox"/>	15368	ConstB	Greater than	07/27/2020 15:54:30	Delete Edit Test
<input type="checkbox"/>	15530	One of List	One of	08/10/2020 13:30:25	Delete Edit Test
<input type="checkbox"/>	15532	Enumeration Metadata 9	Enumeration	08/10/2020 13:50:08	Delete Edit Test
<input type="checkbox"/>	15535	Length Min 3	Length Min	08/10/2020 15:30:00	Delete Edit Test

Displaying 1 to 5 of 5 items

The test constraint form will appear - enter a test value, and you can check whether the constraint returns an appropriate invalid or valid response:

Invalid result, for "Length Min 3":

**Test Constraint**

Try 'Length Min 3' constraint by entering a value in the input below:

**Enter Value**

ab

Constraint Length Min 3 condition has not been met.

Cancel

Valid result, for "Length Min 3":

**Test Constraint**

Try 'Length Min 3' constraint by entering a value in the input below:

**Enter Value**

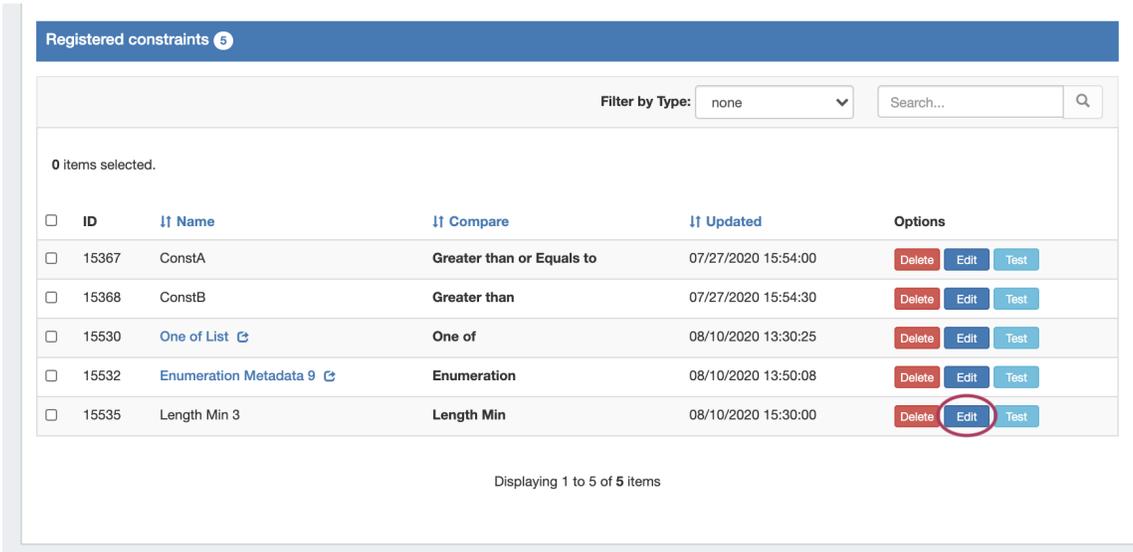
abcd

Valid input

Cancel

# Edit Constraint

To edit a Constraint, click "Edit". The constraint details will open, matching the "Add Constraint" form.



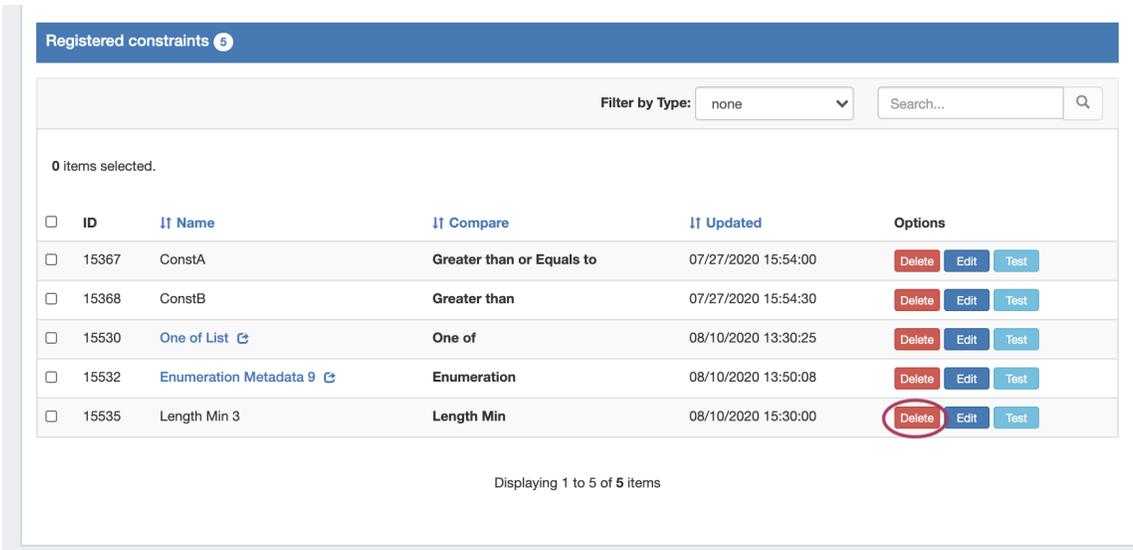
The screenshot shows a table titled "Registered constraints" with 5 items. The table has columns for ID, Name, Compare, Updated, and Options. The "Options" column contains "Delete", "Edit", and "Test" buttons. The "Edit" button for the constraint with ID 15535 is circled in red.

ID	Name	Compare	Updated	Options
15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete Edit Test
15368	ConstB	Greater than	07/27/2020 15:54:30	Delete Edit Test
15530	One of List	One of	08/10/2020 13:30:25	Delete Edit Test
15532	Enumeration Metadata 9	Enumeration	08/10/2020 13:50:08	Delete Edit Test
15535	Length Min 3	Length Min	08/10/2020 15:30:00	Delete Edit Test

Adjust values or settings as desired, and then click "Update Constraint".

# Delete Constraint

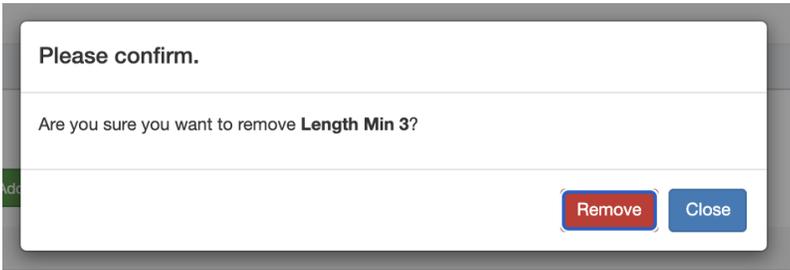
To delete a Constraint, click "Delete".



The screenshot shows the same "Registered constraints" table as above. The "Delete" button for the constraint with ID 15535 is circled in red.

ID	Name	Compare	Updated	Options
15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete Edit Test
15368	ConstB	Greater than	07/27/2020 15:54:30	Delete Edit Test
15530	One of List	One of	08/10/2020 13:30:25	Delete Edit Test
15532	Enumeration Metadata 9	Enumeration	08/10/2020 13:50:08	Delete Edit Test
15535	Length Min 3	Length Min	08/10/2020 15:30:00	Delete Edit Test

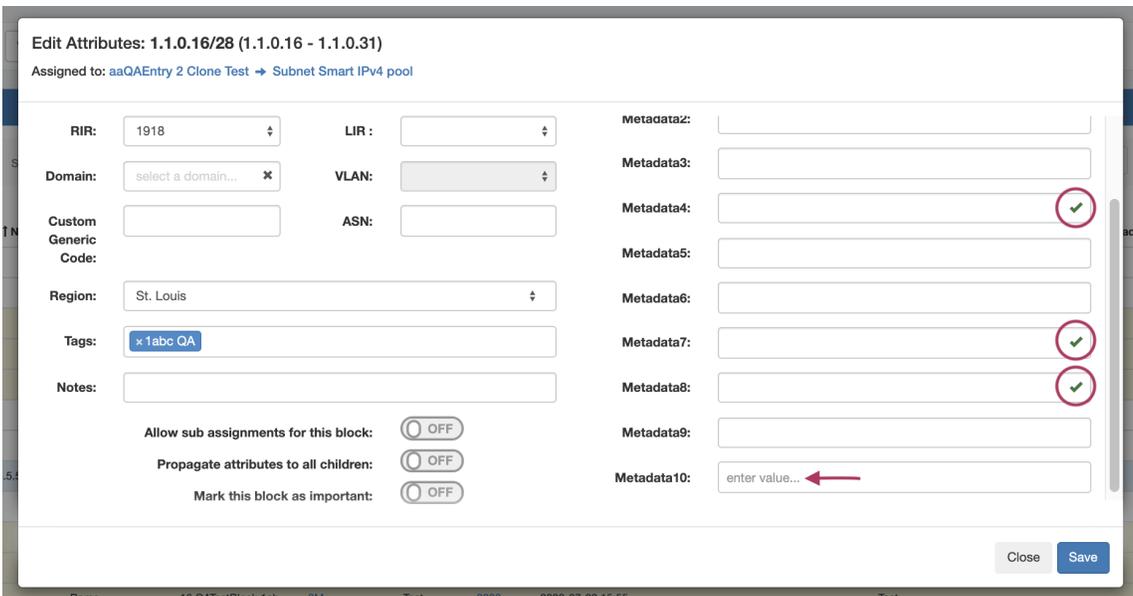
A Confirmation box will appear - confirm whether to delete the constraint, or click "Close" to exit without deletion.



## Working with Constraints in IPAM Manage

When a field is viewed in IPAM Manage that has a constraint applied, a "check" icon will display next to the field input for simple input constraint checks, if empty values are allowed.

If the constraint is of a type that has been set up with a dropdown box, then the dropdown box and placeholder text will be applied:



In this example, constraint validation checks have been applied to Metadata4, Metadata7, and Metadata8, with a dropdown "One Of" constraint applied to Metadata 10.

Metadata8 has been associated with our previous constraint example, "Length Min 3", so if we enter less than three characters into that field, we should get an error, and see the "X" for the input not meeting the constraint settings:

Edit Attributes: 1.0.0.0/16 (1.0.0.0 - 1.0.255.255)  
Assigned to: 3M

RIR:	<input type="text" value="1918"/>	LIR:	<input type="text"/>	Metadata3:	<input type="text"/>
Domain:	<input type="text" value="select a domain..."/>	VLAN:	<input type="text"/>	Metadata4:	<input type="text" value=""/>
Custom Generic Code:	<input type="text"/>	ASN:	<input type="text"/>	Metadata5:	<input type="text" value=""/>
Region:	<input type="text"/>			Metadata6:	<input type="text" value=""/>
Tags:	<input type="text" value="Select tags..."/>			Metadata7:	<input type="text" value=""/>
Notes:	<input type="text"/>			Metadata8:	<input type="text" value="ab"/>
				Metadata9:	<input type="text" value=""/>
				Metadata10:	<input type="text" value="enter value..."/>

Allow sub assignments for this block: OFF  
 Propagate attributes to all children: OFF  
 Mark this block as important: OFF

Close Save

On the other hand, a valid input will return to displaying the "valid" success checkmark:

Edit Attributes: 1.0.0.0/16 (1.0.0.0 - 1.0.255.255)  
Assigned to: 3M

RIR:	<input type="text" value="1918"/>	LIR:	<input type="text"/>	Metadata3:	<input type="text"/>
Domain:	<input type="text" value="select a domain..."/>	VLAN:	<input type="text"/>	Metadata4:	<input type="text" value=""/>
Custom Generic Code:	<input type="text"/>	ASN:	<input type="text"/>	Metadata5:	<input type="text" value=""/>
Region:	<input type="text"/>			Metadata6:	<input type="text" value=""/>
Tags:	<input type="text" value="Select tags..."/>			Metadata7:	<input type="text" value=""/>
Notes:	<input type="text"/>			Metadata8:	<input type="text" value="abc"/>
				Metadata9:	<input type="text" value=""/>
				Metadata10:	<input type="text" value="enter value..."/>

Allow sub assignments for this block: OFF  
 Propagate attributes to all children: OFF  
 Mark this block as important: OFF

Close Save

## Example: Adding an Enumeration / Constraint Containing Children

This example shows how to add a two-level constraint, such as Enumeration, All of, or One of - all of which are set up having a "parent" constraint at the top level list, and "child" items or constraints on a sub-level. Here, we will be using Enumeration as the example constraint, although All of and One of may be created similarly - just using the "add constraint" button to create children instead of the "add item" button.

### Create the Parent Constraint

From the Constraints "Configuration" page, click "Add Constraint".

Constraints Configuration Settings

## Configuration Add constraint

Constraints

Registered constraints **4**

Filter by Type: none Search...

0 items selected.

<input type="checkbox"/>	ID	Name	Compare	Updated	Options
<input type="checkbox"/>	15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete Edit Test

Select "Enumeration" for the constraint type, and enter a name, attribute binding, and select the Control type - here, we will be using a dropdown control.

**i** For Parent/Child constraint types, you only need to enter the attribute binding and control type for the parent constraint, and do not need to enter these settings for the child items - those settings are inherited by the child items you will create later.

All other fields are optional, and may be skipped if desired.

## Common settings

### Constraint type

Enumeration

Creates an enumeration of items.

### Name

enum1

The title of this constraint.

### Attribute name

Metadata8

Attribute that will be evaluated.

### Children type

value...

The enum type of the children.

## UI Binding

### Control Type

Dropdown Control

Indicate the kind of control that the UI element represents

### Element id

meta8

The object's property in which you want to apply a constraint. Most of the times, the element\_id will correspond to the attribute name but something the UI could use a different id.

### Page size

Items per page

### Placeholder

enter value...

Specifies the placeholder for the control

 Multiple item selection

This option enables multi-select mode.

## Hook settings

### Type

No hook

Choose the type of hook to register.

[Update constraint](#)[Cancel](#)

When done, Click "Update Constraint". You will see the new constraint added to the Constraints List.

## [Open the Parent Constraint](#)

Constraints that have parent/child relations show as a blue link in the constraint list. Click on the constraint name to open the parent constraint to view or add child settings.

Registered constraints 6					
Filter by Type: none					
Search...					
0 items selected.					
ID	Name	Compare	Updated	Options	
15367	ConstA	Greater than or Equals to	07/27/2020 15:54:00	Delete	Edit Test
15368	ConstB	Greater than	07/27/2020 15:54:30	Delete	Edit Test
15530	One of List	One of	08/10/2020 13:30:25	Delete	Edit Test
15532	Enumeration Metadata 9	Enumeration	08/10/2020 13:50:08	Delete	Edit Test
15535	Length Min 3	Length Min	08/10/2020 15:46:52	Delete	Edit Test
15538	enum1	Enumeration	08/13/2020 12:41:45	Delete	Edit Test

Displaying 1 to 6 of 6 items

## Add Child Items

Once you have opened the parent constraint, here: Enumeration, you can add the child values that you wish to have listed as valid options.

For Enumeration, click "Add New Item", If using All of or One of types, then you will need to click "Add Constraint" to add child constraint items.

**i** For Parent/Child constraint types such as "All of" and "One of", you only need to enter the attribute binding and control type for the parent constraint, and do not need to enter these settings for the child items.

### Configuration

Constraints / enum1

#### Enumeration 5

< Back to Parent Add new item + Search...

0 items selected.

Add a new child enum item by entering a title, name/value, and the type. Typically, the type will be "=", for "equals this value".

### Add enum item

**Title**

Element title

**Enum name**

Element value. This value will appears on results

**Type**

Type of enumeration

Clear Update Cancel

When done, click "Update", and repeat for any additional values that you wish to make available in your enumeration dropdown. Here, we have added additional enum items to cover "val1" through "val 5".

## Configuration

Constraints / enum1

**Enumeration 5**

< Back to Parent Add new item + Search...

0 items selected.

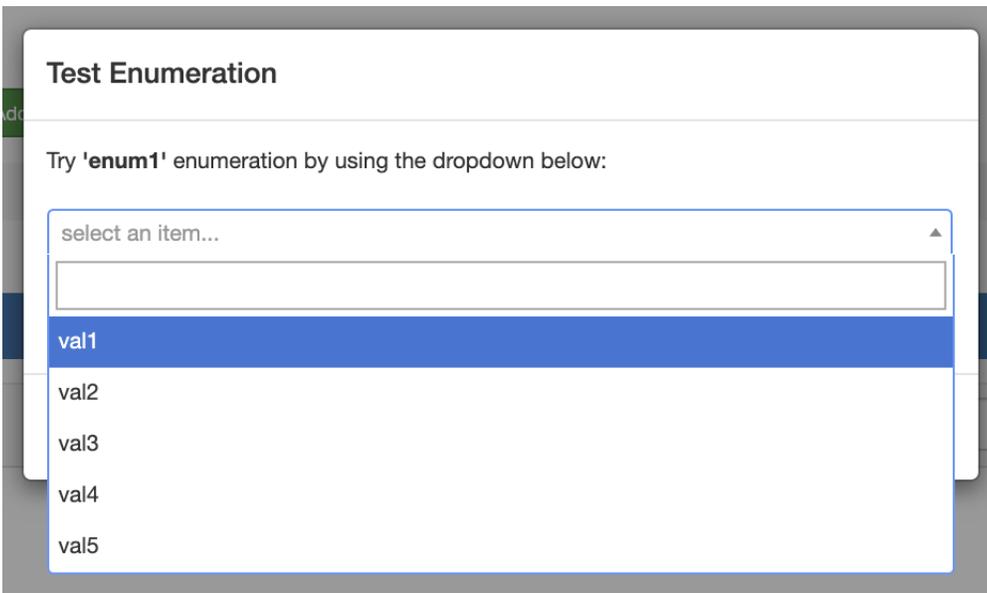
<input type="checkbox"/>	ID	Name	Enum Name	Type	Options
<input type="checkbox"/>	15539	val1	val1	=	remove edit test
<input type="checkbox"/>	15540	val2	val2	=	remove edit test
<input type="checkbox"/>	15541	val3	val3	=	remove edit test
<input type="checkbox"/>	15542	val4	val4	=	remove edit test
<input type="checkbox"/>	15543	val5	val5	=	remove edit test

Displaying 1 to 5 of 5 items

From here, navigate back up to the parent constraint list that displays "enum1", and click "Test" (test will not work on individual child constraint items)

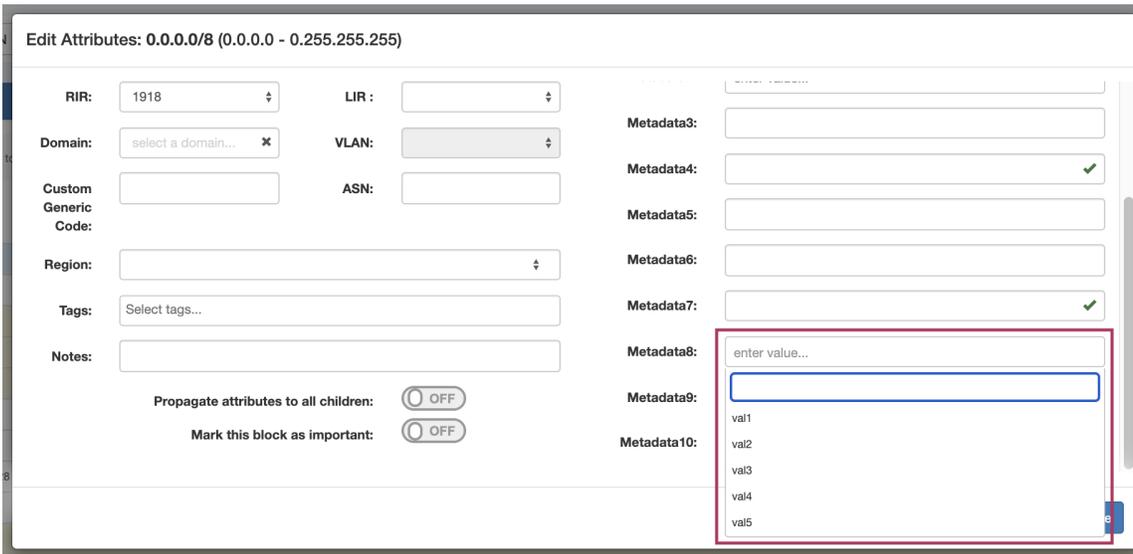
<input type="checkbox"/>	15538	enum1	Enumeration	08/13/2020 12:41:45	Delete Edit <b>Test</b>
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A display dropdown box will appear, click inside of it to confirm your child items show as selectable options.



## Using the Enumeration

To see the constraint in action in IPAM Manage, navigate to a block and open Edit Block mode. Select the field that you applied the "enum1" element binding to (metadata 8, here), to view/select constraint items from the dropdown



## Additional Information

For additional information on working with IPAM Manage or IPAM Blocks, see

- [IPAM Tab](#)
- [IPAM Administration](#)