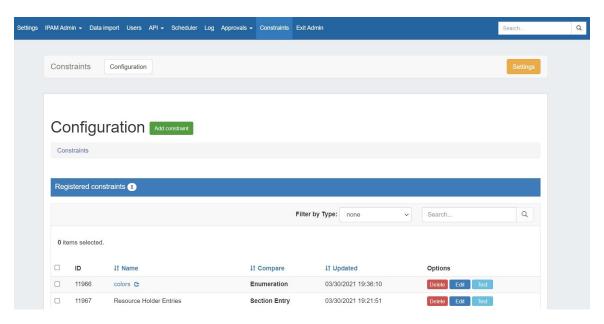
#### **Constraints**

### **Constraints**



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.



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.

- Constraints
- Constraints Tab Overview
- Available Constraint Types
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- Edit Constraint
- Delete Constraint
- Working with Constraints in IPAM Manage
- Example: Adding an Enumeration / Constraint Containing Children
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  - 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**

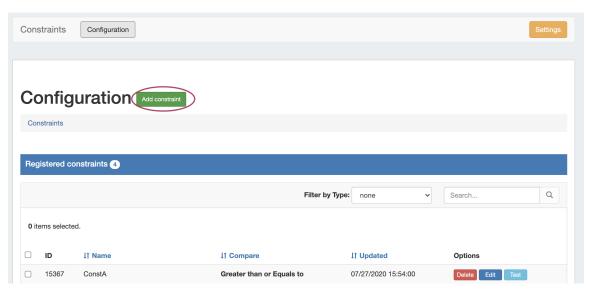
The following constraint types are currently available:

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

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

## **Add a Constraint**

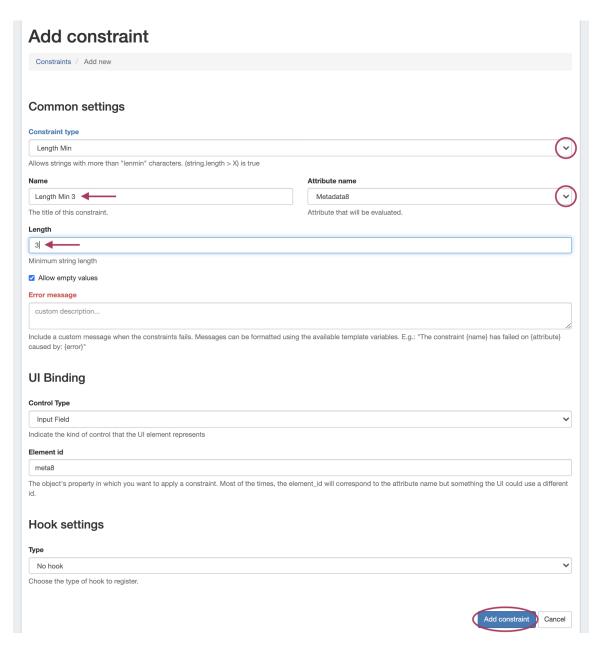
To add a new Constraint, click "Add Constraint"



In the "Add Constraint" screen, select (at mimimum, 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

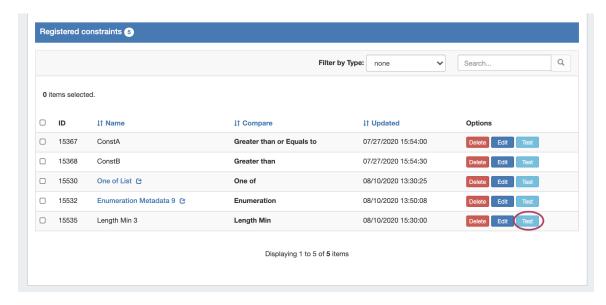
If desired, you may enter a custom error message, customize the UI binding (although it it automatically filled in if you select a standard IPAM Attribute), or add an event hook setting.



When done, click "Add Constraint" to save.

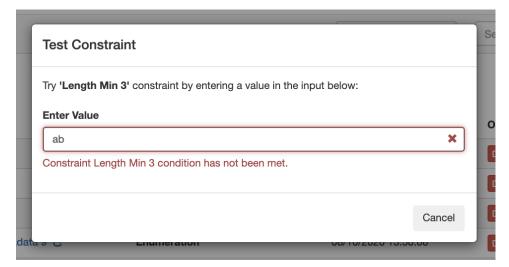
## **Test Constraint**

To test a Constraint, click "Test".

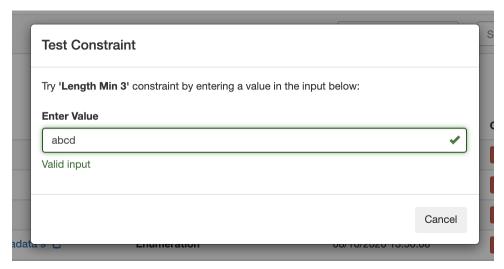


The test constraint form will appear - enter a test value, and you can check whether the constraint returns an appropriate invalid or valid response:

Invalid result, for "Length Min 3":

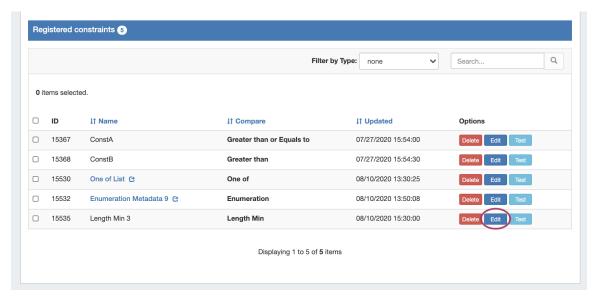


Valid result, for "Length Min 3":



## **Edit Constraint**

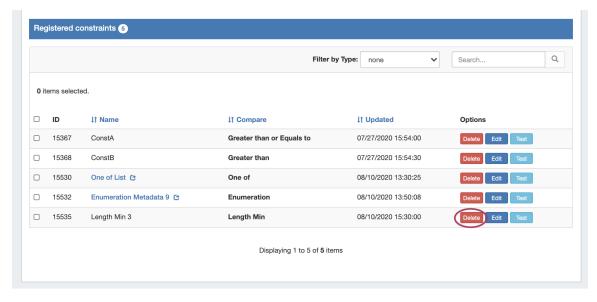
To edit a Constraint, click "Edit". The constraint details will open, matching the "Add Constraint" form.



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

## **Delete Constraint**

To delete a Constraint, click "Delete".



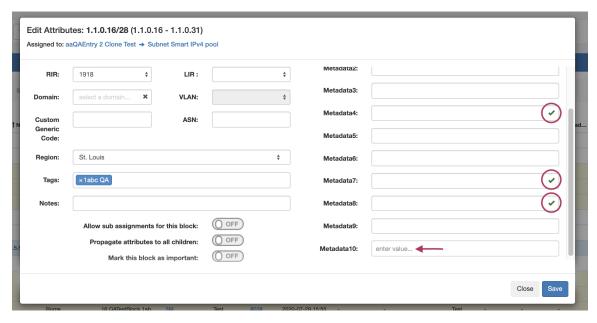
A Confirmation box will appear - confirm whether to delete the constraint, or click "Close" to exit without deletion.



## **Working with Constraints in IPAM Manage**

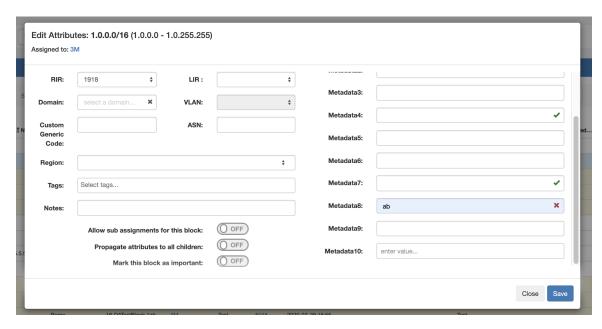
When a field is viewed in IPAM Manage that has a constraint applied, a "check" icon will display next to the field input for simple input constraint checks, if empty values are allowed.

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:

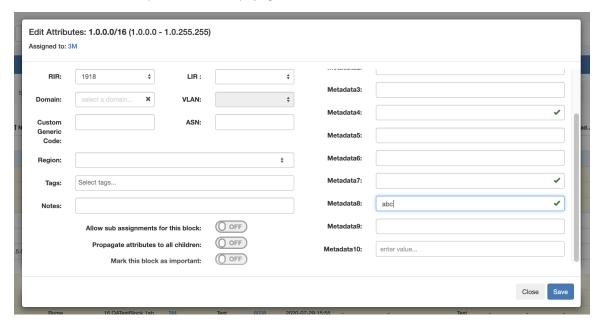


In this example, constraint validation checks have been applied to Metadata4, Metadata7, and Metadata8, with a dropdown "One Of" constraint applied to Metadata 10.

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:



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

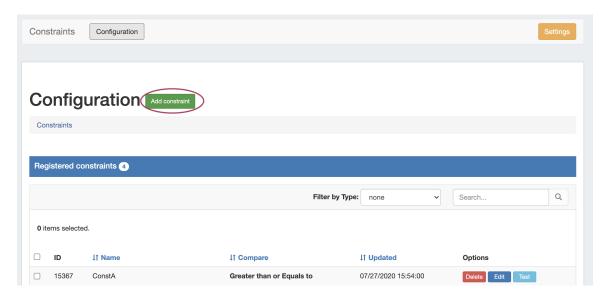


# **Example: Adding an Enumeration / Constraint Containing Children**

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".

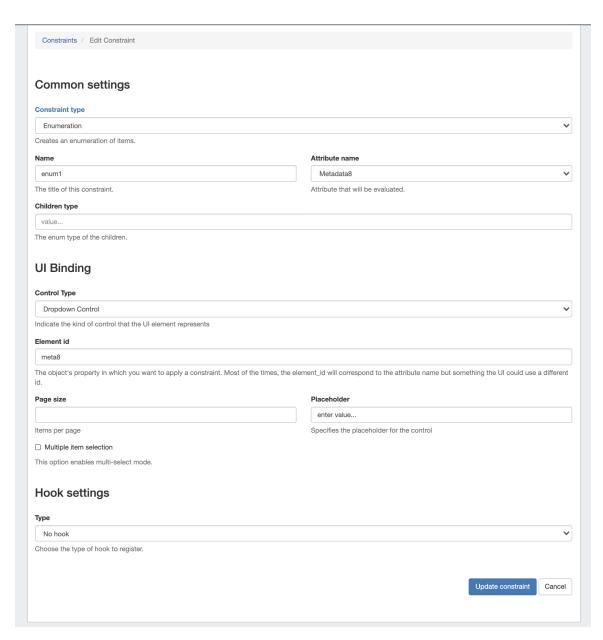


Select "Enumeration" for the constraint type, and enter a name, attribute binding, and select the Control type - here, we will be using a dropdown control



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.

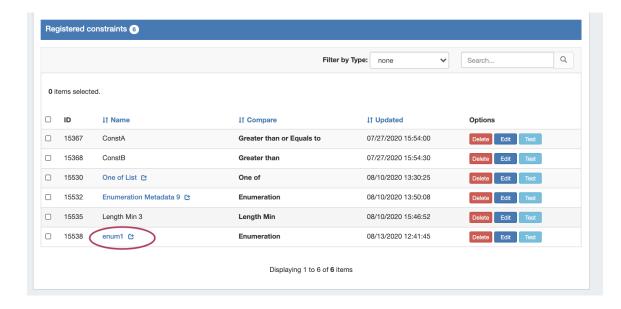
All other fields are optional, and may be skipped if desired.



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.



#### **Add Child Items**

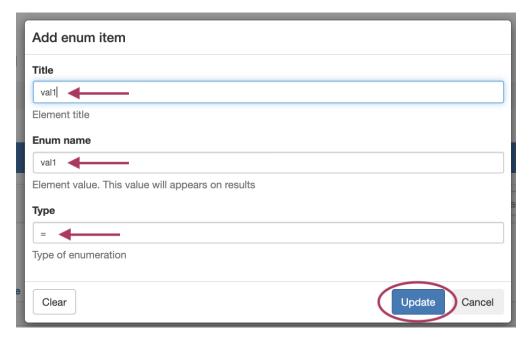
Once you have opened the parent constraint, here: Enumeration, you can add the child values that you wish to have listed as valid options.

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.

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.

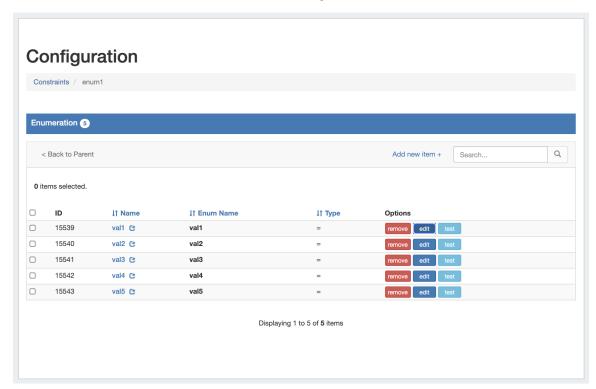


Add a new child enum item by entering a title, name/value, and the type. Typically, the type will be "=", for "equals this value".



When done, click "Update", and repeat for any additional values that you wish to make available in your enumeration dropdown.

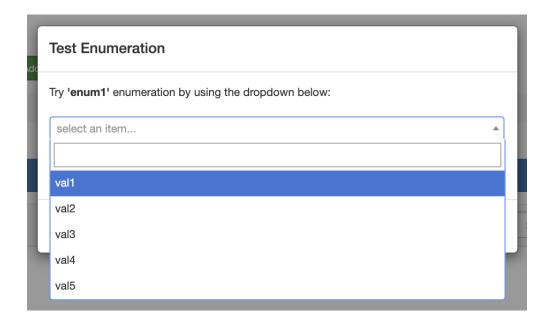
Here, we have added additional enum items to cover "val1" through "val 5".



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)

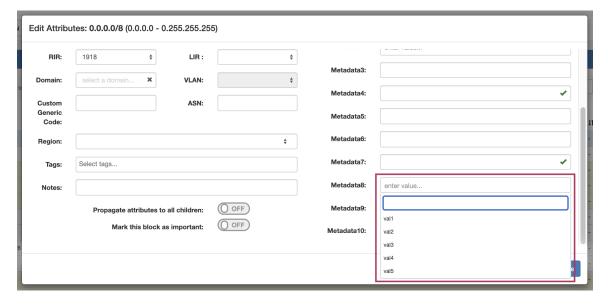


A display dropdown box will appear, click inside of it to confirm your child items show as selectable options.



## **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