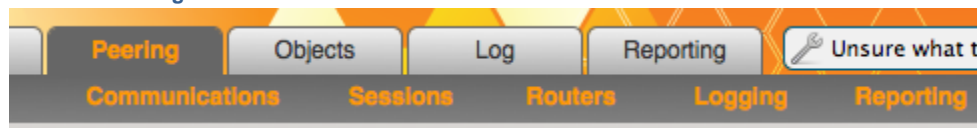


1. 6connect Peering	2
1.1 Communication Manager	2
1.2 Peering Session Manager	2
1.3 Router Administration	3
2. 6connect ProVision	3
2.1 Installation & System Requirements	4
2.1.1 Backup and Redundancy	5
2.2 Getting Started	5
2.2.1 Working with Resources	5
2.2.1.1 Customizing Resource Types	7
2.2.1.2 Customizing Fields	8
2.2.1.3 Gadgets	9
2.2.1.3.1 XML Specifications	11
2.2.2 Admin Preferences	12
2.2.3 Authentication Options	14
2.2.3.1 LDAP Authentication	14
2.2.3.2 RADIUS Authentication	16
2.2.4 Permissions Overview	17
2.2.4.1 Global Permissions	17
2.2.4.2 Resource Permissions	18
2.2.4.3 Users and Groups	19
2.2.4.4 Verifying Permissions	21
2.2.5 IPAM Administration	22
2.2.5.1 Working with IP Blocks	22
2.2.5.2 IPAM Parameters	22
2.2.5.3 Holding Tank Management	24
2.2.5.4 LIR Management and Use	25
2.2.5.4.1 ARIN LIR Setup and Use	25
2.2.5.4.2 RIPE LIR Setup and Use	27
2.2.6 DNS Administration	28
2.2.6.1 Working with DNS Zones	33
2.2.6.2 Configuring ISC BIND Support	33
2.2.6.3 Configuring DynECT Support	33
2.2.6.4 Configuring PowerDNS Support	33
2.2.6.5 Configuring Secure64 Support	33
2.2.6.6 Configuring Split Horizon/Views	33
2.2.6.7 Configuring DNS Templates	33
2.2.7 DHCP Administration	33
2.2.7.1 Configuring ISC dhcpd Support	35
2.2.8 Importing Your Data	37
2.2.8.1 Import Aggregate Blocks	38
2.2.9 Feedback and Feature Requests	39

6connect Peering

6connect Peering



The Peering Tab consists of three functional areas:

[Communication Manager](#)

[Peering Session Manager](#)

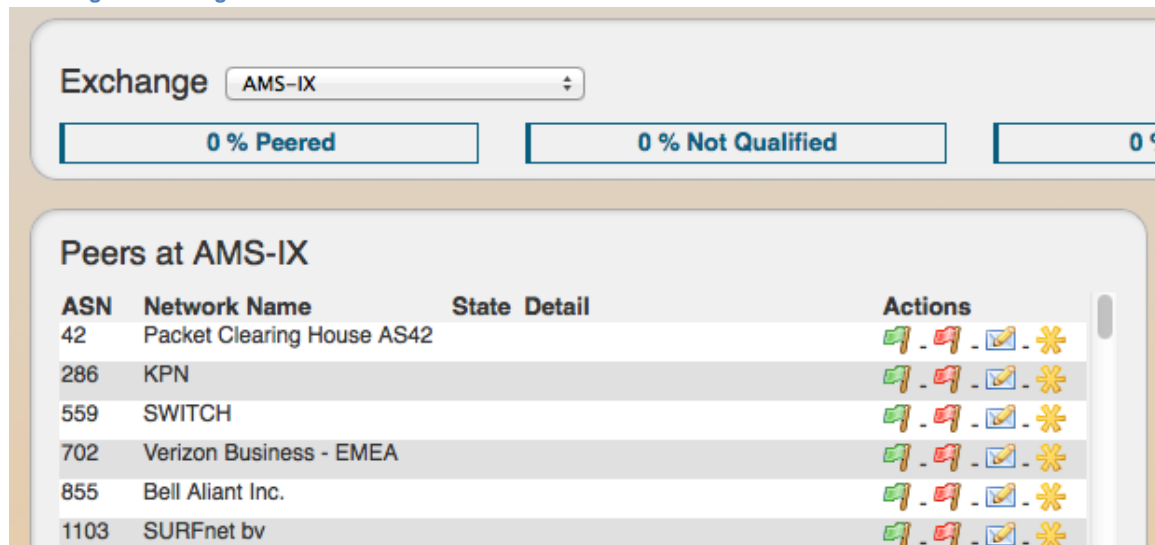
[Router Administration](#)

Communication Manager

How it Works

The Communication Manager allows you track communications per exchange. You can mark peering status and even send out peering requests from the interface.

Selecting an Exchange



This is where you are able to select the Peering Exchange (per peeringdb entry) that you want to manage.

Setting Peer Status

Peer Status can be tracked easily from the Communication Manager. The Manager gives you three options for status tracking:

- **Existing Peer:** Marks a peer as an existing one and removes the Email icon.
- **Not Qualified to Peer:** Marks peer as "not qualified" and removes the Email icon.
- **Reset Peering Request:** Resets the status of the peer so you can select Existing or Not Qualified or Email icons.

Sending and Tracking Communications

- **Email Peer:** Brings up a screen to email the peering coordinator. The email template pre-populates data based on peeringdb data (To address, Subject line and Peering exchange information). You have the chance to edit the email prior to sending.

Peering Session Manager

Managing Peers

Filter Menu:

Filter: Peers Only | Down Sessions | IPv6 Only | IPv4 Only | List Unique Peers

The links serve as active filters for isolating relevant peering entries.

[Peers only](#) will filter the sessions to only show you existing peers that you have sessions with.

[Down Sessions](#) will filter the sessions to show only the entries that are currently down or inactive.

[IPv6 Only](#) will filter the sessions to show only the entries with an IPv6 address.

[IPv4 Only](#) will filter the sessions to show only the entries with an IPv4 address.

[List Unique Peers](#) will filter out duplicate entries of peering sessions from the same ASN then provide you a single list of unique ASNs that you are peering with.

Header Menu:

ASN	Company Name	Location (update)	IP Address	Router	Type	Prefixes	PeeringDB	State
-----	--------------	-------------------	------------	--------	------	----------	-----------	-------

[ASN](#) is the ASN assigned to the Company listed. This field is sortable. If you click on the ASN link, the list will sort in ascending order (this is the default view of the tool).

NOTE: If you click on the ASN number, the session data will automatically be filtered to just the entries tied to that particular ASN. At the bottom of the screen, you will then have a list of the specific sessions present in peeringDB along with their status. If you so NOT have an active peering session for a connection, it will appear in **RED** and you can press the ["Add Session"](#) button.

[Company Name](#) is the Company Name assigned to the ASN. This field is sortable. If you click on the Company Name link, the list will sort in ascending order.

[Location](#) is based off the Exchange Names that are entered/updated from the Admin screen. This field is sortable. If you click on the Location link, the list will sort in ascending order.

NOTE: If you click on the Location, the session data will automatically be filtered to just the entries tied to that particular Location.

[IP Address](#) is the IP Address (IPv4/IPv6) of the session. This field is sortable. If you click on the IP Address link, the list will sort in ascending order.

[Router](#) is the Router assigned to the session. This field is sortable. If you click on the Router link, the list will sort in ascending order.

[Type](#) is the Type of session as defined by the user. When entering a new peering session, the user can specify the type of session (Peer, Peer-PNI, Customer, Upstream, Unknown). This field is sortable. If you click on the Type link, the list will sort in ascending order.

[Prefixes](#) are the number of prefixes learned from public exchanges or private peering connections. This field is sortable. If you click on the Prefixes link, the list will sort in ascending order.

[PeeringDB](#) is a direct link to the ASN's entry in PeeringDB. It will open up the link in a new browser window.

[State](#) displays the state of the listed peering session (prefixes receiving, Active, Down, Admin, etc.). This field is sortable. If you click on the State link, the list will sort in ascending order.

Actions:



Mouse over any icon and it will describe its function, clicking on the icon will perform the action. From left to right:

"**Stop Sign**" deletes the peering sessions from the assigned peer.

"**Paper with Pencil**" brings you to a dedicated editing screen to modify the peering session from its initial values. The editable fields will appear below the current peering session entry. Press the ["Update"](#) button to apply your edits to the session data.

"**Gear with Pencil**" allows you to configure the parameters of the peering session. This will bring up the current router configuration in a text frame for review. Below this frame is the new configuration text that will be pushed to the router. If the configuration is correct, click the ["Push the config"](#) link to send the configuration to the router. You will receive a confirmation message when the process is complete.

"**Unplugged**" de-peers the sessions from the assigned peer.

"**Closed Door**" shuts down the session with the assigned peer.

"**Open Door**" doesn't shut down the session with the assigned peer.

Router Administration

Managing Exchange Routers

Exchange routers are updated from your peeringdb entry.

The ["Edit Router"](#) link will allow you edit relevant router information including Router Type and v4/v6 Peer groups.

Once the Routers have been added, you will see a more details on the right side table.

This Management screen also lets you [Delete](#) your ASN specific sessions from the tool, [Delete](#) "Unknown" peers from the tool, [Create State Script](#) once all routers are entered, and [Update](#) UNKNOWN Company names from whois data.

6connect ProVision

6connect - ProVision

Table of contents

- [Installation & System Requirements](#)
- [Getting Started](#)
- [Tutorials](#)
- [FAQ](#)

- [Previous Versions](#)

Installation & System Requirements

6connect Cloud Hosted Instance

6connect makes every effort to maintain broad compatibility across browser vendors and versions.

Web Browsers Supported:

- Firefox 6+
- Safari 4+
- Chrome 11+
- Internet Explorer 9+(IE 8 works, but there may be some display issues)

6connect Virtual Machine

The Virtual Machine has a console with additional information to assist with initial setup.

Host Environment:

The optimum resource mix will be based on page views/refreshes. A larger concurrent user base with constant editing may benefit from additional RAM.

The minimum recommended virtual environment is:

- Two processor cores
- 2GB RAM (4GB Recommended)
- 20GB Local storage (local SAS/SSD or iSCSI/FC LUN optional)
- VM format support for VMDK, OVF, OVA (Support for vSphere 5.x)

Software Environment:

Operating System: FreeBSD

Port Requirements:

Open outbound ports 443 and port 80

- cloud.6connect.com is used for license check
- checkip.dyndns.org validates the IP address of the machine to communicate with the licensing server

6connect Locally Hosted Instance

Initial application installation is included with the purchase of a license from 6connect. If modifications need to be made, we recommend contacting 6connect prior to any changes to ensure there is no negative impact to production systems or product functionality.

Hardware Requirements:

The optimum resource mix will be based on page views/refreshes. A larger concurrent user base with constant editing may benefit from additional RAM.

The minimum recommended hardware is:

- Dual-core Xeon class processor or equivalent (Quad-core Xeon Recommended)
- 2GB RAM (4GB Recommended)
- Local SATA storage (local SAS/SSD or iSCSI/FC LUN optional)
- Rack mount server chassis with redundant power supplies

*Virtual instances are also acceptable. We have confirmed functionality with Citrix Xen Essentials, VMware, KVM, etc.

Software Requirements:

Operating System: Linux/BSD/OSX

Base Software Needed:

- Apache 2.x: <http://httpd.apache.org/>
- php 5.3.x: <http://php.net/downloads.php>
 - Plugin: Download Source Guardian extension from <http://www.sourceguardian.com/ixeds/> and install to php extensions directory.
- MySQL 5.1.x: <http://www.mysql.com/downloads/>

Port Requirements:

Open outbound ports 443 and port 80

- cloud.6connect.com is used for license check
- checkip.dyndns.org validates the IP address of the machine to communicate with the licensing server

Backup and Redundancy

Backup and Redundancy

You have several options for backup and redundancy depending on your implementation of your 6connect platform.

6connect Hosted Instance

Backup Schedule

6connect backs up your data every hour with a 1 month retention policy. Backups are replicated post transaction flush to a local secondary server.

Restoration

Is a phone call or email away. We can spin up a new instance with your preferred data set.

Local/VM Instance

Backup Schedule

6connect backs up your local data to our cloud server every 48 hours with a 1 month retention policy. The backend of the application is MySQL, so it can be replicated to another server/instance or even tied into your own backup storage infrastructure.

Restoration

Is a phone or email away. We can spin up a new instance with your preferred data set, or send you a link to download your database. Optionally, we can even help you set it up and import your data to your new instance or assist with redundant configuration options depending on your RPO/RTO guidelines.

Getting Started

Getting Started



You have got 6connect ProVision and now it's time to set it up! For setup assistance or additional information, you can contact our [Support](#) team at support@6connect.com.

We have broken down our [Getting Started](#) documents into the following steps and will have video tutorials where possible. You can also browse the Tutorials on the [Tutorials](#) page.

[Step 1 - Resources Overview](#)

[Step 2 - Admin Preferences](#)

[Step 3 - User & Group Permissions](#)

[Step 4 - IPAM Administration](#)

[Step 5 - DNS Administration](#)

[Step 6 - DHCP Administration](#)

[Step 7 - Importing Data](#)

Working with Resources

What is a Resource?

The "Resource" system is tied to the Permissions structure. What this means is that you get granular control on a resource level and can create groups around a single resource or even groups of resources. Since Resources can inherit permissions from others - it can be an easy way to categorize generic objects.

How to Work with Resources?

The Resource is an entity that users can assign Network Resources to (IP blocks, hosts, DNS zones, etc.). You can also create hierarchies between resources which allows you to leverage permissions to control who can view and interact with any given resource and its assigned elements. Please note that you can also have Resources that do NOT have anything assigned to them regarding Network Resources. The result of this flexible architecture is that you can work with Resources in three ways:

- **Resource Entries:** These are the actual Resource names. When you click the "Add Entry" button you can customize various elements of the entry and assign the Parent Resource, Type and Category from their respective dropdown menus. This will pull up the field set for the Type and allow you to enter the data for the given Entry.

Resources / Entries / Add Entry

Fundamentals

Name (required)
Some Resource

Parent
TLR

Type
Resource Holder

- Contact
- Firewall
- LIR
- Migrated Asset Data
- Migrated Device Data
- Physical Interface
- Rack
- Resource Holder
- Router
- Scanlet Result
- Server

- **Resource Types:** These can be anything from "customers" to "firewalls" to "cross-connects". Since you can customize the fields for these elements, and assign them to a Parent Type, you have flexibility in organizing the data. Check out [Customizing Resource Types](#) and [Customizing Fields](#) for more details on how to fit these elements to your business.

Resources / Type

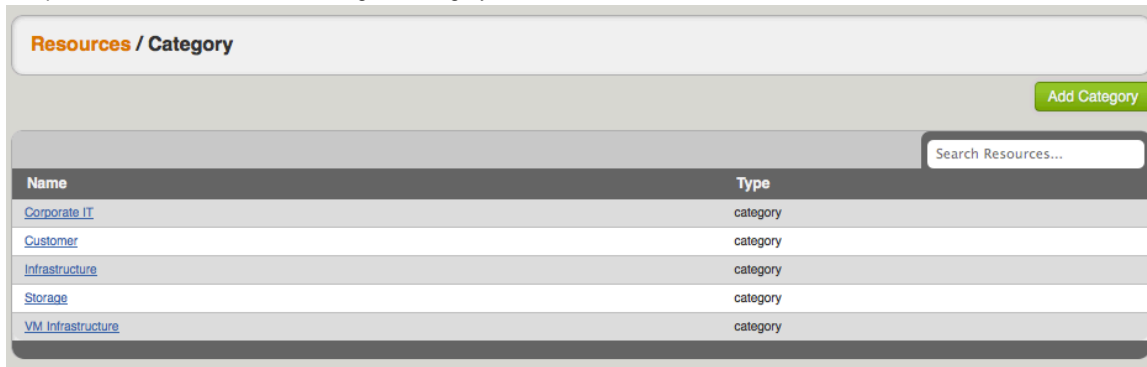
Add Type

Search Resources...

Name	Entries	Category
Contact	81	Uncategorized
Firewall	2	Uncategorized
LIR	4	Uncategorized
Physical Interface	0	Uncategorized
Rack	2	Uncategorized
Resource Holder	831	Customer
Router	3	Uncategorized
Scanlet Result	0	Uncategorized
Server	7	Uncategorized
Storage Array	2	Storage
Storage Controller	2	Storage
Switch	1	Uncategorized
Virtual Interface	0	Uncategorized
Virtual Machine	3	Uncategorized

- **Resource Categories:** Categories can be used to create some filtered views for given Resources and Types. For example, you can create a Resource of Type "Resource Holder" and then assign a Category "Customer". Then you can view a list of Resources that have

been assigned to Category "Customer". In the same way, you could also assign a Resource of Type "Router" under the Parent Resource "Corporate Datacenter" and then assign a Category "Infrastructure".



The screenshot shows a web interface titled "Resources / Category". At the top right is a green "Add Category" button. Below it is a search bar labeled "Search Resources...". The main content is a table with two columns: "Name" and "Type".

Name	Type
Corporate IT	category
Customer	category
Infrastructure	category
Storage	category
VM Infrastructure	category

Want customize Resource Types? Check out [Customizing Resource Types](#) and [Customizing Fields](#) for more details!

Some examples:

- 1) Service Provider
- 2) Managed Service Provider
- 3) Datacenter/Colocation Provider
- 4) Enterprise

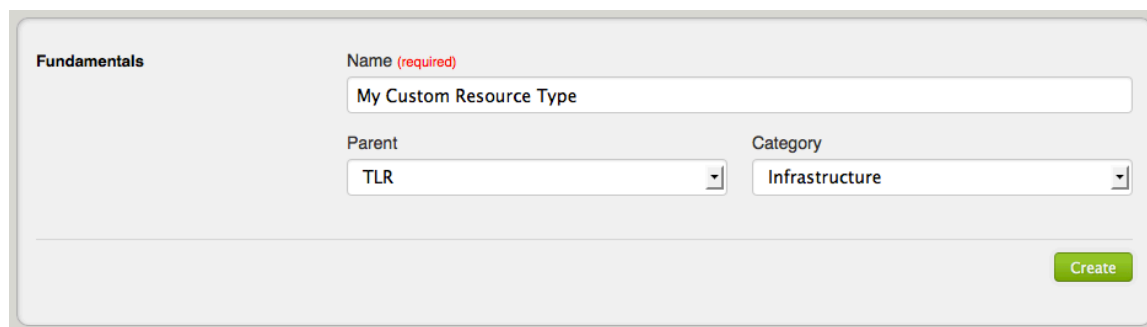
Customizing Resource Types

video overview

Yes! You can create as many Resource Types as you wish (Firewall, Server, VM, Virtual Interface, etc.) and customize the fields that you care about for each Type. For example, you may not need to track the console port for your virtual firewall, so you would simply not use that field for the "Virtual Firewall" Resource Type. This way you can still track the console port for your physical firewalls like normal.

Step 1:

Create a new **Resource Type** from the **Types** sub-tab under the **Resources** Tab



The screenshot shows the "Fundamentals" section of a form for creating a new Resource Type. It includes a "Name (required)" field with the value "My Custom Resource Type", a "Parent" dropdown menu with "TLR" selected, and a "Category" dropdown menu with "Infrastructure" selected. A green "Create" button is at the bottom right.

Step 2:

Customize the [Customizing Fields](#) for your **Resource Type**. Now you can add New [Customizing Fields](#) of different types (text, dropdown, text area) and also use any existing fields that are available. See the [Customizing Fields](#) page for more details.

Fundamentals

Name (required) Slug

Parent Category

Fields
Click to expand or collapse a field.
Double click to expand or collapse all fields.

Add Fields
Create a new field or add an existing one

Existing Fields Add field

New Field Add field

Manage Gadgets
Gadgets are mini applications that can add extra features to your resources.

Gadgets Add

Delete View Save

Step 3:

You will notice on this customization screen, you also have an area for "Gadgets". Gadgets are areas of additional functionality that can be added to the UI of a given Resource. See the [XML Specifications](#) page for more details.

Manage Gadgets
Gadgets are mini applications that can add extra features to your resources.

Delete

Gadgets Add

Save

Customizing Fields

Creating Fields

To add a Field to a Resource Type, simple select the Field Type from the dropdown menu and click on the "Add Field" button.

Add Fields
Create a new field or add an existing one

Existing Fields Add field

New Field Add field

Save

Text and Textarea Fields: When you select to add them, the UI will prompt you to provide a Name/label for the new field.

Untitled Field text Remove field

Name (required)

Choicebox Fields: When you select a Choicebox field, you will prompted to enter the Options that should appear in the dropdown menu. You can continue adding options using the "Add Option" button.

Untitled Field
choicebox
Remove field

Name (required)

ChoiceBox Options

Add Option

Editing/Removing Fields

Once fields are added to a Resource Type, you can use the "Edit" and "Remove" links for each field to make any additional changes to the fields.

Fields
Click to expand or collapse a field.
Double click to expand or collapse all fields.

Serial Number text	Edit Remove
Asset Tag text	Edit Remove
Make choicebox	Edit Remove
Model choicebox	Edit Remove
Hostname text	Edit Remove
Console Server text	Edit Remove
Console Port number	Edit Remove
ACL Path List text	Edit Remove
Operation Notes textarea	Edit Remove
Firewall ACL Source choicebox	Edit Remove

Add Fields
Create a new field or add an existing one

Existing Fields
Add field

New Field
Text
Add field

Gadgets

Gadgets

- [What are Gadgets](#)
- [Available Gadgets](#)
 - [Resource View](#)
 - [Contact Info](#)
 - [Tech Info](#)
 - [IPAM](#)
 - [DNS](#)

What are Gadgets

Our gadget system is similar to the Atlassian Gadget system (and Google Gadgets). When creating or editing a Resource type, gadgets can be added to the type in a similar way as you would add or remove a field. Gadgets are best described as self contained webapps; w idgets but with more power. Gadgets can have their own fields, HTML templates, and even accompanying scripts and stylesheets. They can interface with the API to display simple information such as the Type of the Resource, or they can perform much more complex functions as demonstrated with the IPAM gadget in the following section.

The only gadgets currently available are the ones provided with Provision, but it is our hope to provide a simple way for you to create and add your own gadgets in the future.

Available Gadgets

Resource View

This visual element is used on the Resource Holder record Type.

Some Customer (cust1)
Type: **Resource Holder**
Category: **Customer**

Contact Info

This visual element is used on the Resource Holder record Type.

Contact Info [edit](#)

Phone:	Fax:
Mailing Address 123 Fake St. Santa Clara, CA 95053 US	Billing Address 423 Really Fake St. Suite 120 San Jose, CA 95001 US

Tech Info

This visual element is used on the Resource Holder record Type.

Tech Info [edit](#)
DNS Servers
ns1: ns1.domain.com ns2: ns2.domain.com
ns3: ns3.domain.com ns4: ns4.domain.com
ns5: ns5.domain.com ns6: ns6.domain.com
ARIN Info

Org ID:	ARIN-ORGNAME	Org POC:	ARIN-POC1
Net POC:	ARIN-POC2	Abuse POC:	
Origin AS:	23456		

Residential Customer Privacy: **Disabled**

IPAM

This visual element is used on the Resource Holder record Type.

IPAM

IPv4

IPv6

Assign Block:

Browse To Assign

List available blocks: +

Direct Assign

x.x.x.x/yy +

Smart Assign

RIR

Region

Size

Tags...

+

Filter:

Notes/CIDR...

RIR

Region

Size

Some Customer

Tags...

Filter

Clear

Address	Hosts	RIR/LIR	Region	Notes	Tags	Assigned	Updated
10.0.1.0/29	8	1918	CHI		Customer	2013-08-05 01:01:02	2013-08-05 01:01:02

DNS

This visual element is used on the Resource Holder record Type.

DNS

New DNS Zone

Create Zone

Zone Delegation

Delegated Zone

Slave IP

Customer

Zone name

IPv4 or IPv6

84

Add Slave

Zone Records

Tags

Entries

test-domain.com

5

XML Specifications

XML Specifications

- XML Specification
 - Implemented Tags
 - Example

XML Specification

The XML gadget specification is based on the Atlassian Gadgets.
Implemented Tags

The implemented tags and corresponding attributes are:

- ModulePrefs
 - title
 - width - "full" or "half" are the only options for now
- Description
- Content
 - type - "file" uses the file given in src, "html" uses the content in the tag (eg. <Content type="html">This is the content</Content>)
 - src - relative filename or url
- Sources
- Source
 - type - "css" or "javascript"
 - src - relative filename or url
- Fields - If the gadget uses fields, you can optionally add the field here to hide it from the main list. All viewing and editing of the field will have to be done through the gadget.
- Field
 - slug

Example

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
  <ModulePrefs title="Contact Info" width="half" />
  <Description>This gadget adds a field editor for fields related to contact info
(phone, address, ect).</Description>
  <Content type="file" src="template.html" />
  <Sources>
    <Source type="javascript" src="script.js" />
  </Sources>
  <Fields>
    <Field slug="6c-resourceholder-phone-main" />
    <Field slug="6c-resourceholder-phone-fax" />
  </Fields>
</Module>
```

Admin Preferences

Overview



Details

License Info

This section provides basic information on your 6connect license including the option to view the *EULA* and check your license status.

Application Settings

Time Zone: Supported Time zones are listed here: <http://www.php.net/manual/en/timezones.php>. Default value is ('America/Los_Angeles') and can be modified at any time via the drop down menu

Company Name: Enter the preferred name for your company to be used.

Generic Name: This "short" name is used in abbreviated location for the "Customer" tab label, "Customer" and "Site" are common entries.

IPAM Configuration

Available ID : This is the ID Label that owns all unassigned IP resources. This is not user changeable.

Reverse ID: This is the ID Label that owns all assigned IP resources and zones not owned by a specific alternate ID. This is not user changeable.

Holding Tank ID: This is the ID Label that the Holding Tank. Upon reclaiming an IP block, the block will be assigned to the "Holding Tank ID" user for X(holding_days) time. This is not user changeable.

Holding Tank Days: This is the number of days that a block will be held in "Holding" status before being available to be moved to the Available pool, and thus ready to be assigned. By default this is initially set to 30 days.

IPv4 Block Scanner Enable: This is a beta feature that allows a user to scan a block of IPv4 space and show host counts of responding addresses.

Regions Enable: Check the box to enable "Region" tags for IP blocks. This will add an additional column to the default IPAM screen. It is treated similarly to a standard tag. You can set the values from the "Edit Tags" function and modify the values list in the IPAM Admin screen "Edit Regions".

Generic Code Per Block Enable: Check this box to enable this function. This will enable an additional field per IP Block.

Generic Code Per Block Display: Check this box to display this field.

Generic Code Per Block Name: This is the label for the Generic Code to be displayed.

Enable VLAN per Block: This toggle allows users to specify VLANs via the "Edit Tag" function. With this feature enabled, you can filter by VLAN tag in the primary IPAM interface.

Peering Parameters

ASN : Enter the ASN that will be used

Backup Parameters (local install only)

Enable mysql offsite backup : This is enabled by default. Go to the [Backup](#) section for details on this feature.

Location of mysqldump: This is the location of the mysqldump directory.

Logging Options

Log table size: This is the maximum number of records to store in the log table. Default value is 50,000,000.

Rows to remove at limit: When the value for log_table_max is reached, the number of rows to be cut from the table is the number assigned to this variable. Default value is 10,000 rows.

Local Syslog Enable: Check the box to enable syslog functionality or for local logging to the database only

Remote Log IP: Target IP address that we will send log information to

Remote Log Port: Port number for the syslog server you will send log information to

Remote Log Method: Select TCP, UDP, SSL from the dropdown for the log delivery method

Remote Log Backup IP: Target IP address for the Backup syslog server you will send log information to

Remote Log Backup Port: Port number for the Backup syslog server you will send log information to

Remote Log Backup Method: Select TCP, UDP, SSL from the dropdown for the log delivery method

Remote Log Type: Select SysLog format or JSON output

Remote Log Facility: Select the Facility - applies to syslog only

DNS Configuration

Default TTL: in seconds, default value is 3600

Default Refresh: in seconds, default value is 14400

Default Retry: in seconds, default value is 3600

Default Expire: in seconds, default value is 604800

Default Minimum: in seconds, default value is 3600

Default SOA: Server Of Authority and hostmaster contact. E.g. ns1.domain.com. hostmaster.domain.com.

Master nameservers: Set to IP Address(es) of master DNS server(s) to be added as masters {} in named.conf (IPv4 or IPv6) or Mix of IPv4 and IPv6 addresses.

\$GENERATE IPv4 by default: Set to '1' to generate reverse IPv4 DNS hostnames for non specific PTRs. This is similar to \$GENERATE in standard bind.

\$GENERATE IPv4 Suffix: Set to forward suffix to append to PTR for \$GENERATE Example: .available.domain.com.

DNS Server for DNSSEC validation: required to be a non-authoritative name server.

Authentication Options

Maximum Session Idle: This setting (minutes) controls how long a session can stay idle before being forced to log in again.

RADIUS authentication options (local install only) - for implementation details, [go here](#)

Radius Enable: Check this box to enable RADIUS functionality.

Radius Server Address: Set to the IP address of your radius server. If this is specified, it will force authentication over radius.

Radius Authentication Port: Set to the port for authentication. Default port is 1812

Radius Accounting Port: Set to the port for radius accounting. Default port is 1813

Radius Key: Set to the shared key of your radius server

LDAP authentication - for implementation details, [go here](#)

LDAP Enable: check the box to enable LDAP functionality.

LDAP Server Address: Set the IP address of your LDAP server.

LDAP Port: Set the port for your LDAP server

LDAP Security: Select the security method of your LDAP server - SSL, TLS or None

LDAP Auth DN/Fetch DN: These strings are used to first authentication the 6connect user and then to retrieve their permissions. The string '%LOGIN%' should be inserted in place of the user's common name both strings. (ex: cn=%LOGIN%,ou=people,dc=6connect,dc=com)

Mapping Permissions to 6connect schema: To integrate 6connect permissions with your existing directory structure then you will need the 6connect schema. It should snap in with any existing LDAP structure and allow you to assign 6connect permissions to your existing users. You can download a copy of the schema from this section.

Templates

This is where you can edit outgoing email templates for IP block assignments

Authentication Options



Depending on the authentication method chosen by your organization, there may be a separate authentication to login or logout of the application via the drop down menu.

By default, credentials are managed via the local authentication mechanism provided by 6connect. See the [Permissions Overview](#) section for more detail on the local authentication configuration.

- [LDAP Authentication](#)
- [RADIUS Authentication](#)

LDAP Authentication

[LDAP Authentication](#)

Starting in 3.6, ProVision supports LDAP authentication. To an LDAP server for authentication, you must perform the following three procedures:

- [Configure the LDAP Server](#)
- [Test the LDAP Server](#)
- [Configure ProVision for LDAP Authentication](#)

Configure the LDAP Server

SSH into your openLDAP server and create a new 'ldif' file. Example:

```
dn: cn=JoeSmith,ou=people,dc=6connect,dc=com
cn: JoeSmith
sn: JoeSmith
objectclass: top
objectclass: person
objectclass: sixConnectPermissionsV2
sixConnGroup: "Global Admins"
sixConnGroup: "bonk"
sixConnGroup: "poof"
sixConnGroup: "groom"
userPassword: testpass
```

To create a new user, make a new ldif file and change all instances of "JoeSmith" to whatever username you wish to create and update the password. Keep all of the object class definitions as listed above. Add a sixConnGroup declaration for each ProVision user group a user is in.

After the file is created, run the following command to add the new user to LDAP server:

```
ldapadd -h [SERVER] -x -f [LDIF FILE] -D [ROOTDN] -w [ROOT PW] -v
```

Example:

```
ldapadd -h localhost -x -f 6connect.ldif -D "cn=Manager,dc=6connect,dc=com" -w secret -v
```

The user will now be active in openLDAP and can be used to login to ProVision.

[Test the LDAP Server](#)

To query the LDAP server, run the following command on any server which has openLDAP enabled:

```
ldapssearch -h [IPADDRESS] -D [DOMAIN] -w [PASSWORD] [USER]
```

Note: We have not been able to use a v6 address at with this tool, even though multiple sources say it should work.

At the end of the command where [USER] is specified, user or groups can be used (in LDAP format) to query.

Example:

```
ldapssearch -h 50.240.195.129 -D "cn=JoeSmith,ou=people,dc=6connect,dc=com" -w testpass "cn=JoeSmith"
```

Configure ProVision for LDAP Authentication

To configure the use of LDAP authentication with ProVision, follow the steps below.

- Log into 6connect ProVision
- Go to Admin -> General Settings -> Authentication
- Click the LDAP Enable checkbox.
- Fill in the hostname or ip address, authentication port, LDAP Security, Auth DN, and Fetch DN. An example is below:

LDAP Server Address: 52.240.195.12

LDAP Port: 389 (or SSL/TLS port is 636)

LDAP Security: None

LDAP Auth DN: cn=%LOGIN%,ou=people,dc=6connect,dc=com

LDAP Fetch DN: cn=%LOGIN%

RADIUS Authentication

RADIUS Authentication

- [Add the 6connect VSA to the Radius Installation](#)
- [Configure Radius Accounts](#)
- [Test Radius Accounts](#)
- [Configure ProVision for Radius Authentication](#)

Starting in 3.0, ProVision supports 6connect vendor-specific attributes (VSAs) for use with RADIUS authentication. To use these attributes, you must perform the following three procedures:

- Add the 6connect VSA to the Radius installation
- Configure Radius accounts
- Test the Radius account
- Configure ProVision for Radius Authentication

Add the 6connect VSA to the Radius Installation

To use the 6connect VSA, the attributes must be defined on the RADIUS server. Add the following RADIUS dictionary file to your RADIUS server and name it dictionary.6connect:

Important Note: Between version 3.9.3 and 4.0, the permissions structure for ProVision was significantly changed. Make sure you following the version specific instructions below.

ProVision 3.9.3 and prior: http://cloud.6connect.com/Download/Radius/3.9.3/6connect_VSA.txt

ProVision 4.0 and greater: http://cloud.6connect.com/Download/Radius/4.0/6connect_VSA.txt

Make sure to add the following to the primary dictionary file: \$INCLUDE dictionary.6connect

Configure Radius Accounts

On the Radius server, configure the user accounts that will have access to the ProVision system.

An example of a ProVision account configuration for the user file on a Freeradius system for version 3.9.3 and prior: <http://cloud.6connect.com/Download/Radius/3.9.3/Freeradius-users-example.txt>

An example of a ProVision account configuration for the user file on a Freeradius system for version 4.0 and greater: <http://cloud.6connect.com/Download/Radius/4.0/Freeradius-users-example.txt>

Test Radius Accounts

For 3.9.3 and prior, test and response should look like the following:

```
#>radtest test test 50.23.215.162 6connect
Sending Access-Request of id 179 to 50.23.215.162 port 1812
User-Name = "test"
User-Password = "test"
NAS-IP-Address = 10.124.47.6
NAS-Port = 0
Message-Authenticator = 0x00000000000000000000000000000000
rad_recv: Access-Accept packet from host 50.23.215.162 port 1812, id=179, length=68
priv_admin = 1
priv_ipam_c = 1
priv_ipam_m = 1
priv_ipam_d = 1
```

For 4.0 and higher, test and response should look like the following:

<insert example>

Configure ProVision for Radius Authentication

To configure the use of Radius authentication with ProVision, follow the steps below.

- Log into 6connect ProVision
- Go to Admin -> General Settings -> Authentication
- Ensure that Radius functions are marked as available. Radius functions are always available on 6connect cloud instances. Radius functions are available on VM Images and Local Installations only if the relevant PHP Pear Radius Libraries have been installed.
- Click the Radius Enable checkbox.
- Fill in the hostname or ip address, authentication ports, accounting port, and shared Radius key as specified.

Permissions Overview

Overview

The Permissions structure in ProVision is designed to give you as much flexibility as you need to accommodate most use cases. When mapping out the permissions structure for your organization, keep in mind who you want to access to application:

- Internal Users and Roles (Admins, Read Only, etc.)
- Partners related to multiple specific Resources/Accounts
- Customers/Departments with limited view to only their respective Resources/Accounts



Permission Levels

Global Permissions

When you see a reference to a "TLR" - that is a "Top Level Resource". This Is the primary Resource under which all other resources fall under. ProVision currently only allows a single level of administrator permissions: Global Administrator.

Users with "Admin" access can assign/modify permissions for other users.

See [Global Permissions](#) for more details on configuring these elements.

Resource Permissions

An administrator can also set respective permissions for a given Resource (single or multiple). These permissions fall under Groups. So a Group is configured for the given group of Resource permissions, and then the User account is added.

See [Users and Groups](#) to learn how Resource Permissions are assigned.

See [Resource Permissions](#) for more details on configuring these elements.

Global Permissions

Global Permissions apply to the "TLR" or "Top Level Resource" within ProVision.

Administration of these permissions require Administrative privileges. As an Admin, the user can then assign global permissions to groups and users. Depending on the requirement, the user can also have Resource specific permissions depending on how their group is configured.

Global Permission Details

Group Information

Name

Enabled
☒

Group Users

Resource Permissions [\(Hide Details\)](#)

Resource	IPAM				DNS				Peer				Resource				User				SWIP	Admin	
	C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D			
Some Customer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Top-Level (Global Access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

[Add More Group Permissions](#)

Global Permission	Description
Create	Ability to create records of a certain type
Read	Ability to read records of a certain type
Update	Ability to update existing records of a certain type
Delete	Ability to delete records of a certain type

Functional Area	Description
IPAM	IP Address Management functionality - this covers the IPAM Tab in addition to the IPAM "Gadget" that can be present in Resources.
DNS	DNS Zone/Zone Record Management functionality - this covers the DNS Tab in addition to the DNS "Gadget" that can be present in Resources.
Peering	Peering functionality - covers the Peering Tab, both the Communication Manager and the Session Manager.
Resources	Resource functionality - this controls access for Resources depending on either the TLR or the individual Resource.
User	User/Group management - this controls access for User and Group functions within the administrative area for ProVision.
SWIP*	This affects the SWIP/RPSL integration for ARIN/RIPE. This way a user can either be enabled to have this capability or not.
Admin*	This controls whether a user is a administrator for the global ProVision application.

*
SWIP and Admin functions are only visible when [Show Details](#) is selected

Resource Permissions

Resource Permissions apply to designated Resources within ProVision.

Administration of these permissions require Administrative privileges. As an Admin, the user can then assign resource permissions to groups and users.

Resource Permission Details

Group Information

Name

Enabled
☒

Group Users

Resource Permissions [\(Hide Details\)](#)

Resource	IPAM				DNS				Peer				Resource				User				SWIP	Admin	
	C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D			
Some Customer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Top-Level (Global Access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

[Add More Group Permissions](#)

Resource Permission	Description
Create	Ability to create records of a certain type
Read	Ability to read records of a certain type
Update	Ability to update existing records of a certain type
Delete	Ability to delete records of a certain type

Functional Area	Description
IPAM	IP Address Management functionality - this covers the IPAM Tab in addition to the IPAM "Gadget" that can be present in Resources.
DNS	DNS Zone/Zone Record Management functionality - this covers the DNS Tab in addition to the DNS "Gadget" that can be present in Resources.
Peering	Peering functionality - covers the Peering Tab, both the Communication Manager and the Session Manager.
Resources	Resource functionality - this controls access for Resources depending on either the TLR or the individual Resource.
User	User/Group management - this controls access for User and Group functions within the administrative area for ProVision.
SWIP*	This affects the SWIP/RPSL integration for ARIN/RIPE. This way a user can either be enabled to have this capability or not.
Admin*	This controls whether a user is a administrator for the global ProVision application.



















*
SWIP and Admin functions are only visible when [Show Details](#) is selected

Users and Groups

User Accounts

A User is defined as a single login account that accesses ProVision.

New Users can be created from the "Manage Users" Tab under the Admin area by clicking the green "Add User" button.

Username	Name	Groups	
admin	Admin User	Global Admins	  
alina@6connect.com	Alina Fry	AAA Group	  
annac@6connect.com	Anna Claiborne	Global Admins	  
brenner@6connect.com	Bill Renner	Global Read-Only	  
colin@6connect.com	Colin Robinson	Global Read-Only	  
fu@6connect.com	Fu Chen	AAA Group	  

[Add User](#)

Creating/Editing Accounts

When creating or editing User accounts, you will be presented with the following options. Note that membership in multiple permission groups is allowed.

Username

test@6connect.com

First Name

test

Last Name

mcTest

☒ Disable help bubbles?

Groups

☐ AAA Group
☐ test resource
☐ PJ Test
☒ test group 1

Save

Setting/Resetting User Passwords

When you click on the padlock icon, you will be presented with options to set a new password and/or send a password reset email to the intended user account.

Yes
4
✕

Reset Password

New Password:

Send email? ☒

From:

To:

Subject:

Message:


Dear test mcTest,

6connect Support <ops@6connect.com> has requested your credentials be reset for 6connect IPAM at <https://ops.6connect.com/qa-4.0>.

Your username is: test@6connect.com
Your new password is: xSEXiHVu

Login at: <https://ops.6connect.com/qa-4.0>
Go to the "gear" icon in the upper right to reset your password at any time after you have logged in successfully.

Regards,
6connect Automated Admin



User Groups

ProVision administrators can also create permission groups to assign users to. This allows more control over user roles. The two default groups are:

- Global Admin
- Global Read-Only

New Groups can be created by ProVision administrators by pressing the green "Add Group" button.

Groups		
Name	Enabled	Users
Global Admins	Yes	6
Global Read-Only	Yes	5 
Global Group 2	Yes	3 
Global Group 3	Yes	4 
Global Group 4	Yes	1 
Global Group 5	Yes	3 
Add Group		



Overlapping group and user permissions

Permissions are inherited based on the hierarchy of the objects, unless you specify a different permission!

Verifying Permissions

To verify the permissions of a certain user who is a member of a group, simply select their user account from the dropdown menu and click on the green "Query" button. The resulting output will display the Resources the user has access to along with the specific permissions for each one.

Check User Permissions

User: test@6connect.com

Resource: Some Customer

Query

IPAM				DNS				Peer				Resource				User					
C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D	C	R	U	D	SWIP	Admin
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Groups effecting this user on this resource: test group 1

IPAM Administration

Overview

Intro Video

IPAM Lists Management:

- [Edit IPAM Tags](#)
- [Edit IPAM Regions](#)
- [Edit Contact Roles](#)
- [Edit IPv4 Subnets Dropdown](#)
- [Edit IPv6 Subnets Dropdown](#)
- [Edit RIR List](#)
- [Edit IPv4 Exact Filter](#)
- [Edit IPv6 Exact Filter](#)

Holding Tank Management:

- [Process Holding Tank now \(Set to 60 days\)](#)

DHCP Management:

- [DHCP Admin Home](#)

LIR Management:

- [Add/Edit/Update LIRs](#)

IPAM Parameters

These links are to the respective [IPAM Parameters](#) that are available for customization. Everything from Tags to RIRs - this is where to start. Go to the [IPAM Parameters](#) page for more details and examples for customization.

Holding Tank Management

When IPv4/IPv6 resources are reclaimed, they are placed into the "Holding Tank". This feature allows for a block to stay out of the available address pools until the administrator approves it. Go to the [Holding Tank Management](#) page for more details.

LIR Management and Use

ProVision supports multiple LIRs from the UI. This allows users to select from various LIRs when they want to update SWIP/RPSL information for a subnet allocation. Go to the [LIR Management and Use](#) page for more details.

Working with IP Blocks

IPAM Parameters

Overview

The elements

IPAM Lists Management:

- [Edit IPAM Tags](#)
- [Edit IPAM Regions](#)
- [Edit Contact Roles](#)
- [Edit IPv4 Subnets Dropdown](#)
- [Edit IPv6 Subnets Dropdown](#)
- [Edit RIR List](#)
- [Edit IPv4 Exact Filter](#)
- [Edit IPv6 Exact Filter](#)

Editing Tags

When you are applying properties to IP blocks, you have the option to edit tags. Tags are used in a number of ways and can be edited from this screen. You can specify tag values along with sorting options to make it simpler to use. Regions are used by the [IPAM Gadget](#) and the IPAM Management UI).

Editing Regions

If enabled, Regions can function as a way to further define your network segments (regional tie-downs, etc.). This simply gives you flexibility for allocations and assignments beyond simply using Tags. Regions are used by the [IPAM Gadget](#) and the IPAM Management UI).

Editing Subnet Dropdowns (used by the IPAM Gadget)


When assigning blocks using the "Smart Assign" function in the [IPAM Gadget](#), the user has an option to assign an IP resource by allocation size. ProVision supports assignments down to a single host level (/32 for IPv4, /128 for IPv6).

**Note on Editing the Subnet Dropdown**


Keep in mind that this is a global edit. If the values in the dropdown are changed, it will affect ALL users of the ProVision application

Edit RIR List (used by the IPAM Gadget and the IPAM Management UI)

When working with IP aggregates, an editable element is "RIR". The RIR can be assigned on an aggregate level, via the Bulk Editing function, or when editing via the standard "Edit Details" menu.

**Tracking Overlapping IP Space**

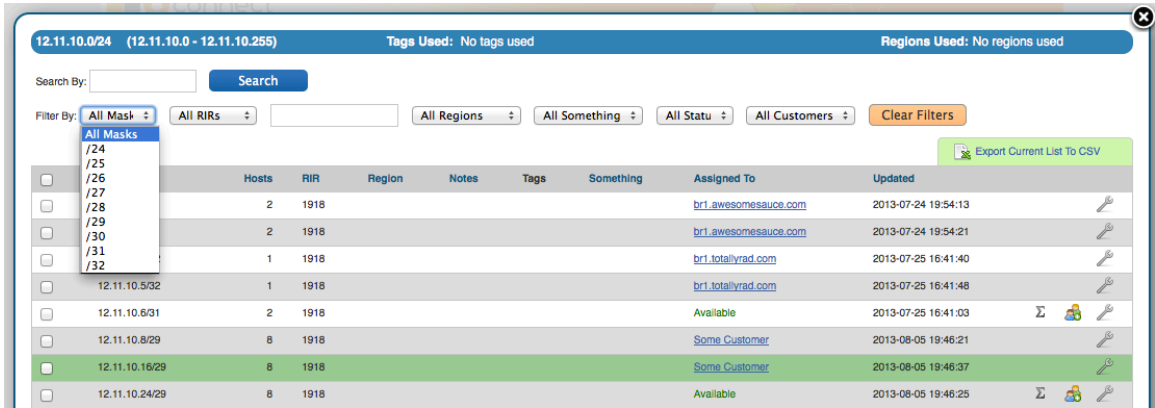
This can be used to better track overlapping IP blocks (VRFs, IP space from a merger or acquisition, etc.). For example, you could have an RIR entry of "1918-Corp HQ" and "1918-Company-X". This would allow for an overlapping /8 of IP space, but allocation and assignment tracking would function normally.

**RIR and SWIP/RPSL functions**

ProVision uses the RIR associated with an IP block for SWIP/RPSL functions. As long as the RIR entry starts with "ARIN" - ProVision will know to use the ARIN SWIP functions for those blocks. The same for RIPE blocks. As other RIR API support is added, they will function the same way.

Edit Exact Filter Dropdowns for Filter by Netmask

On the IPAM Manage screen, you have an option to Filter the view by selected Subnet Mask (dropdown).



The screenshot shows the IPAM Manage interface. At the top, there's a search bar and filters for 'Tags Used' and 'Regions Used'. Below this is a 'Filter By' dropdown menu that is open, showing a list of subnet masks: /24, /25, /26, /27, /28, /29, /30, /31, and /32. The main table displays IP blocks with columns for Hosts, RIR, Region, Notes, Tags, Something, Assigned To, and Updated. The table is filtered by the selected subnet mask.

Hosts	RIR	Region	Notes	Tags	Something	Assigned To	Updated
12.11.10.0/24	2	1918				bri_awesome sauce.com	2013-07-24 19:54:13
12.11.10.0/25	2	1918				bri_awesome sauce.com	2013-07-24 19:54:21
12.11.10.0/26	1	1918				bri_totallyrad.com	2013-07-25 16:41:40
12.11.10.0/27	1	1918				bri_totallyrad.com	2013-07-25 16:41:48
12.11.10.0/28	2	1918				Available	2013-07-25 16:41:03
12.11.10.0/29	8	1918				Some Customer	2013-08-05 19:46:21
12.11.10.0/30	8	1918				Some Customer	2013-08-05 19:46:37
12.11.10.0/31	8	1918				Available	2013-08-05 19:46:25
12.11.10.0/32							

With the Filter By view enabled, the user then gets a simpler view. The user can then click on the red block, and view the additional assignments/allocations underneath it.

12.11.10.0/24 (12.11.10.0 - 12.11.10.255) Tags Used: No tags used Regions Used: No regions used									
Search By: <input type="text"/> Search Filter By: /29 All RIRs All Regions All Something All Status All Customers Clear Filters									
Export Current List To CSV									
<input type="checkbox"/>	Address	Hosts	RIR	Region	Notes	Tags	Something	Assigned To	Updated
<input type="checkbox"/>	12.11.10.0/29	8	1918					Has Children	2013-07-24 16:22:35
<input type="checkbox"/>	12.11.10.8/29	8	1918					Some Customer	2013-08-05 19:46:21
<input type="checkbox"/>	12.11.10.16/29	8	1918					Some Customer	2013-08-05 19:46:37
<input type="checkbox"/>	12.11.10.24/29	8	1918					Available	2013-08-05 19:46:25
<input type="checkbox"/>	12.11.10.48/29	8	1918					Available	2013-07-25 16:41:58
<input type="checkbox"/>	12.11.10.56/29	8	1918					Has Children	2013-07-25 16:41:58

Here is the view after clicking on the block. The user can also see the SWIP/RPSL status for a given allocation/assignment if applicable.

12.11.10.0/24 (12.11.10.0 - 12.11.10.255) Tags Used: No tags used Regions Used: No regions used									
Search By: <input type="text"/> Search Filter By: /29 All RIRs All Regions All Something All Status All Customers Clear Filters									
Export Current List To CSV									
<input type="checkbox"/>	Address	Hosts	RIR	Region	Notes	Tags	Something	Assigned To	Updated
<input type="checkbox"/>	12.11.10.0/29	8	1918					Has Children	2013-07-24 16:22:35
12.11.10.0/30 12.11.10.0/31 - Assigned to br1.awesomesauce.com 12.11.10.2/31 - Assigned to br1.awesomesauce.com 12.11.10.4/30 12.11.10.4/31 12.11.10.4/32 - Assigned to br1.totalityrad.com 12.11.10.5/32 - Assigned to br1.totalityrad.com 12.11.10.6/31									
<input type="checkbox"/>	12.11.10.8/29	8	1918					Some Customer	2013-08-05 19:46:21
<input type="checkbox"/>	12.11.10.16/29	8	1918					Some Customer	2013-08-05 19:46:37
<input type="checkbox"/>	12.11.10.24/29	8	1918					Available	2013-08-05 19:46:25
<input type="checkbox"/>	12.11.10.48/29	8	1918					Available	2013-07-25 16:41:58
<input type="checkbox"/>	12.11.10.56/29	8	1918					Has Children	2013-07-25 16:41:58

Holding Tank Management

How it Works

The **"Process Holding Tank now"** link will move any block assigned to "Holding" to its relevant "Available" pool. This command will process **ALL** addresses assigned to "Holding" depending on their age. The default time for release to "Available" is 30 days. If a block has not been in the holding tank for that specified length of time, it will not be released using this feature (it can be released manually per record at any time) . The threshold for the number of days in the Holding Tank is set in the main [Admin Preferences](#) page and is customizable.

Process Holding Tank

38 IPv4 blocks to process.
 1 IPv6 blocks to process.
 Processed 36 IP blocks total.
 Assigned all blocks to 81

[Back to IPAM Admin](#)

When an administrator elects to process the Holding Tank, it will show the information above.



Pro-Tip!

If you need to do a bulk "empty" of the holding tank. Set the time for release to "0" days. This will allow you to process the holding tank for all blocks that are in the Holding Tank.

LIR Management and Use

Overview

ProVision supports multiple LIRs (Local Internet Registries) in a single instance. This means that you have the ability to update SWIP/RPSL functions for a given allocation with the LIR information that you wish. When you select the "SWIP" function for a given IP block, you will be presented with a menu where you can select the data that you want to use to update the block.

Intro video

LIR Setup and Use

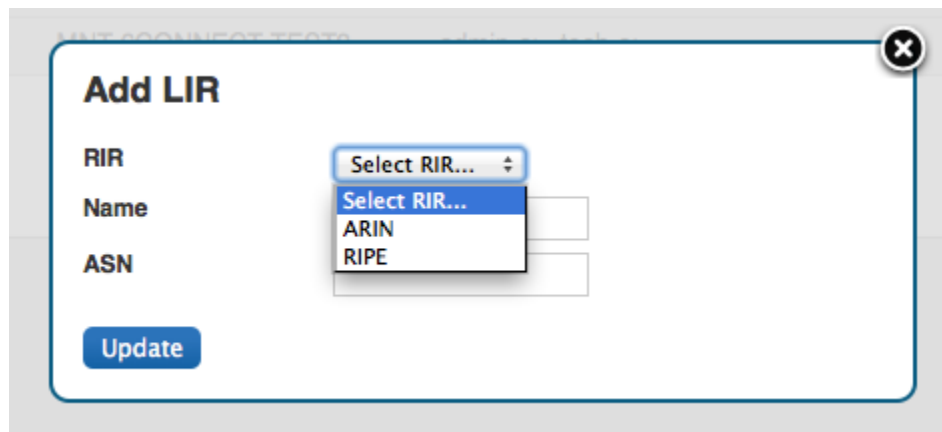
ARIN

RIPE

ARIN LIR Setup and Use

Step 1: Setup the LIR information via the LIR Manager

You will be prompted to select the RIR



Add in the requisite Org and POC information

Add LIR

RIR

ARIN

Name

ASN

Org Handle

Delete

Admin POC

Tech POC

Abuse POC

NET Name Prefix

API Key

Add Org

Update



Multiple Org Support

Note that we support multiple Org Handles per ARIN entry. Simply click on the [Add Org](#) link at the bottom of the Add LIR dialog box.

Step 2: Assign an IP block to a Resource using the [IPAM Gadget](#) or the Assign function from the IPAM Manage screen.

Step 3: Update SWIP information

Functions supported:

ARIN Integration: 64.72.65.0/30 (64.72.65.0 - 64.72.65.3)

ARIN Default LIR

Org Handle	Admin POC	Net POC	Abuse POC	Net Name Prefix	API Key
CONNE-81		MDB65-ARIN		LTF	API-FC26-EC34-4EAB-ADE0

Simple Reassign

Detailed Reassign

Reallocate

Cancel

Simple Re-assign

sdfd


Detailed Re-assign

sdfd

Re-allocate

dfsdf

64.72.66.200/29
(NET-64-72-66-200-1) SWIPed to
C02901248

196/30	<u>4</u>	ARIN
200/29	<u>8</u>	ARIN 

Step 1: Setup the LIR information via the LIR Manager

Add LIR

RIR
Name
ASN

Select RIR...
Select RIR...
ARIN
RIPE

Update

Add LIR

RIR

RIPE

Name

ASN

Maintainer

Password

Admin Contact

Tech Contact

Delete

+

 Add Maintainer

Update



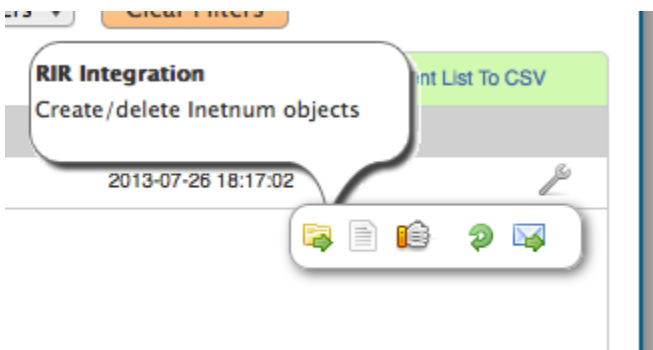
Multiple Maintainer Object Support

Note that we support multiple maintainer objects per LIR entry. Simply click on the [Add Maintainer](#) link at the bottom of the Add LIR dialog box.

Step 2: Assign an IP block to a Resource using the [IPAM Gadget](#) or the [Assign](#) function from the [IPAM Manage](#) screen.

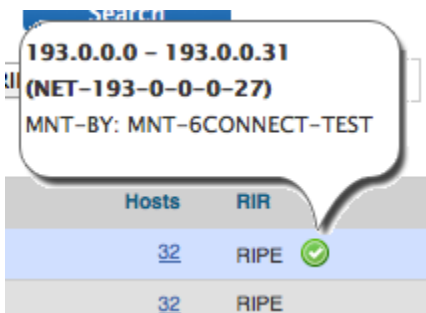
Step 3: Update RPSL information

When a block is assigned, the user (if they have permissions) can then update the block's maintainer object.



Identify which LIR data you want to use for the netnum update:

Once the RPSL update is complete, a green checkmark badge will appear next to the RIR field. When you hover over it, you will get a detailed update of the block status.



DNS Administration

DNS Admin

The DNS Admin tab contains 5 different functional areas: managing DNS server, performing bulk zone assignments to a resource, performing bulk record changes over all zones, managing default name server, transferring zones, and a collection of links for other useful DNS functions.

DNS Functions

Edit DNS Record Types

- The "Edit DNS Record Types" will allow you to manage what types of DNS records can be added in the system. The default values are:

- A, AAAA, MX, PTR, CNAME, NS, DIRECTIVE, DNAME, DNSKEY, DS, INCLUDE, IPSECKEY, COMMENT, TXT, KEY, SOA, and SRV
- The complete list of valid record types can be found the RFCs. Wikipedia provides a nice reference: http://en.wikipedia.org/wiki/List_of_DNS_record_types

Edit DNS Delegations

Generate all DS records for DNSSEC

- This link will generate and output all DS records in the database. This is provided to easily bulk upload all DS keys to your domain registrar.

Generate zip file of all zones

- This link generates a single .zip file containing all zones for download. Once a zip file has been generated, a quick link is provided at the bottom of this section with datestamp to be downloaded later if needed.

Increment All Serials

- Increment all zone serial numbers by one. All zone serials are automatically incremented on a zone push, but if there is ever any other requirement for an increment, it can be performed here.

DynECT Zone Import

- Imports and syncs ALL zones on the system with those in your DnyECT instance. This means any zones in ProVision not present in your DynECT instance will be removed and any changes lost.

PowerDNS Zone Import

Coming soon! Import zones from a PowerDNS MySQL database.

DNS View ACL Mangement

DNS Zone Transfers

This section lists every server configured in the platform, along with how many zones are assigned to the server.

How to transfer zones:

- Check the boxes and click the Push the button to transfer zones to the target server.

DNS Zone Transfers:

trace.bind.com	0 Zones	<input type="checkbox"/>
bind.com	1 Zones	<input type="checkbox"/>
ops.6connect.com	0 Zones	<input type="checkbox"/>
208.39.106.169	9 Zones	<input type="checkbox"/>
herpderp.	0 Zones	<input type="checkbox"/>
Legolas	0 Zones	<input type="checkbox"/>
blah.com	6 Zones	<input type="checkbox"/>

Push Zones to Checked Servers:

Manage DNS Servers

This is where you configure DNS servers to transfer zones to from the ProVision platform. ProVision currently supports the following DNS

server types: BIND, PowerDNS (using a bind backend), DynECT, and Secure64. The fields available for configuring servers are as follows:

- Server - The FQDN or ip address of the DNS server.
- Default - Specify if the server should be added to new zones by default or not.
- Transfer Type - SCP, Secure64, Secure64 Signer, and DynECT. Note that the SCP method should be used for PowerDNS with a Bind backend.
- Server Type - Specify if the server is a master or slave. Different configuration files are created master vs. slave on the Bind, PowerDNS/Bind, and Secure64 platforms.
- SOA - Start of Authority, should be in the format "SRI-NIC.ARPA. HOSTMASTER.SRI-NIC.ARPA.". For more information, see the RFC: <http://tools.ietf.org/html/rfc1033>
- Username - Login/username for the target DNS server. The specified account needs to be valid, and have write permission to the remote directory and execute permission for any pre/post commands.
- Password - Password for the target account. All passwords are stored encrypted in the database.
- Port - Port to contact the target server on. This is port used for SSH on Bind and Secure64 server types.
- Remote Directory - The target directory to transfer zone files to on the DNS system.
- Named Conf Path - The path to other zones on the Bind systems.
- Pre Command - Any valid system command on the target DNS system. This command will be run before any files are transferred.
- Post Command - Any valid system command on the target DNS system. This command will be run after any files are transferred. For example, on a Bind system you would need to run "rndc reload" to reload the zones.

The "Test Config" button will attempt to login to the target system and write to the target directory. If any failures are encountered, an error will be written with some detail. If the test is successful, the word "Success!" will show verifying that files can be transferred. This does not test if the user can execute pre/post commands. This needs to be checked manually.

Manage DNS Servers

Server:

Default:

Transfer Type:

Username:

Password:

Port:

Remote Directory:

Named Conf Path:

Pre Command:

Post Command:

Views

Enable Views - Select Yes to enable views on a particular server. You must click "Update Server" to show the view options.

To enable your Bind server to use zones transferred from 6connect, you must add the following to your named.conf.

```
include "/var/named/zones/6connect_named.conf";
```

When views are enabled on a server, all zones/records attached to a server are immediately put into the default view 6connectGeneric that contains a match any rule. For example, here is a sample of the named.conf include generated by ProVision:

```
view "6connectGeneric" in {  
    match-clients { any; };  
    zone ...
```

```
zone ...  
  
};
```

All views attached to a server are displayed under the "Views" label. **When you enable views on a Bind server, you must wrap all other zones in named.conf or any includes in view statements.** The include line for the 6connect conf file should also be move above any other view statements. An example is below:

```
include "/var/named/zones/6connect_named.conf";  
  
view "hints" {  
  
    match-clients { any; };  
  
    zone "." {type hint; file "named.root";};  
  
};  
  
view "zones-outside-of-6connect" {  
  
    match-clients { some-acl; };  
  
    zone ....  
  
};
```

Adding a View

To add a view just type in the view name, and a description (for reference only). The config files transferred to the server will automatically be built according to the server type.

<insert image>

Adding Options to a View

Adding ACLs to Views

You can select an existing [link to ip list creation](#) IP List to create a view ACL. For a Bind server, this creates a corresponding line in the config: *match-clients { 6connect_Internal; };* The 6connect_ is prefixed to all IP lists inserted by ProVision.

Bulk Zone Assignments

The Bulk Zone Assignment function allows you to assign multiple zones to a resource in one step. The system will perform a wild card style match for any text in the search box and return all matching zones and display them in a list. You can then assign all the zones found to a resource as either a master or slave.

Bulk DNS Changes

The Bulk DNS Editor allows an Admin to perform "find and replace" functions across all DNS zones. It will match the host and/or record type and/or record value across the entire zone database. Unless the "Strict Comparison" box is checked, it will use wildcard style matches for the host and record values.

Bulk DNS changes

WARNING. This is a power user tool.

Record Host: Record Type: Record Value: ☒ Strict Comparison

Zone Name	Host	Type	Value
stacy.net	www2	A	2.2.2.2
gtt.com	www2	A	1.2.3.9
gravy.com	www2	A	8.0.16.1
google.com	www2	A	1.2.3.10
mark.com	www2	A	4.3.2.1
foop.com	www2	A	1.2.5.1
one.com	www2	A	2.3.4.5
jamien.com	www2	A	1.2.3.5
jamien.com	www2	A	1.2.3.6
bind.com	www2	A	1.2.3.5

Update ALL of the above with new data:

Record Host: Record Type: Record Value:

Nameserver Management

This function controls the list of DNS servers used for pre populating DNS records with NS records.

Nameserver Management

Server	Default	Uses	
▼ corp.goomba.com	<input type="checkbox"/>	0	⊖
▲ ▼ ns2.dns.6connect.net	<input checked="" type="checkbox"/>	45	
▲ ▼ ns3.dns.6connect.net	<input checked="" type="checkbox"/>	45	
▲ ▼ ns1.dns.6connect.net	<input type="checkbox"/>	33	
▲ ▼ ns4.dns.6connect.net	<input checked="" type="checkbox"/>	12	
▲ ▼ 1.2.3.4	<input type="checkbox"/>	0	⊖
▲ ns1.dns.6connect.com	<input type="checkbox"/>	0	⊖

Newly-created zones are automatically added to Default Nameservers.

Add a New Nameserver

Notes

General DNS configuration information is located under the main Admin tab in the DNS section. That is where you can set defaults for other SOA options, generated reverse DNS information, and a DNSSEC validation server.

System Information for Local Installations

Zones are stored in the 6connect web root under /zones.

DS keys are stored in the 6connect web root under /keys.

Working with DNS Zones

jhgjhg

Configuring ISC BIND Support

Getting Started

You will need a user who can log in to the DNS server and make changes to the directory in which the zones are being stored. Additionally, it is often useful for this user to have the ability to restart the DNS server. The login and password for this user will be required to configure this server on the DNS Admin page.

6connect Zone files are written out in the following format:

/path/to/zone/directory/viewName/zoneFirstLetter/zonefile.zone

If no views are configured, or if views are expressly disabled, then the default viewName "6connectGeneric" is used. The zoneFirstLetter is the first letter of the zone name, so the subdirectory 'microsoft.com.zone' is placed in would be /m/.

All 6connect-managed Zones are managed by a dedicated 6connect configuration file named 6connect_named.conf. This file is created to act a supplementary conf file to work in concert with any existing named.conf which might exist. To include the 6connect configuration file, edit named.conf and append the following line:

```
include "/path/to/conf/directory/6connect_named.conf";
```

You must remember to include the 6connect configuration file or none of the changes managed by 6connect ProVision will take effect!

It is also important to note that if your existing named.conf file contains zones within Split Horizon views, then the 6connect-managed zones must also be view-enabled. Likewise, if existing zones are not grouped into views, then views must be disabled on ProVision.

Configuring DynECT Support

To use ProVision with DynECT support, first enter your Dyn username, password, and customer name into the New Server dialogue on the DNS Admin page.

Additionally, if you are deploying any DNSSEC-enabled zones, you will also need to provide a valid DynECT DNSSEC contact. See Dyn documentation for details on DNSSEC contacts.

Once ProVision begins managing DynECT zones, only the ProVision tool should be used to make and manage changes to zones. If zone changes are made to DynECT directly they will be overwritten the next time ProVision syncs, causing errors. Only edit zones using ProVision.

Configuring PowerDNS Support

Coming Soon!

Configuring Secure64 Support

Configuring Split Horizon/Views

video

step by step w/ screenshots

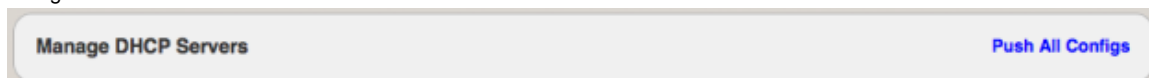
Configuring DNS Templates

DHCP Administration

DHCP Admin

Managing Server Configurations

You have the ability to store and manage multiple DHCP server configurations from this interface. The "Push All Configs" link will push out configurations for all DHCP servers.



Managing DHCP Servers

This section allows you to manage the specific configuration for each DHCP server specified. We support standard commands as specified by the

Server Type dropdown. To save the configuration, you need to press the "Add Server" button.

The screenshot shows a web-based configuration interface for a DHCP server. The title is "dhcp2.6connect.com". The form is divided into two columns. The left column contains fields for "Server" (dhcp2.6connect.com), "Username" (anotheradmin), "Server Type" (ISC), "Server Config Path" (/usr/bin/dhcpd/config), "Server Stop Command" (dhcpd stop), "Max Lease Time" (2678400), "Domain Names" (6connect.net), and "Authoritative" (checked). The right column contains fields for "SSH Port" (22), "New Password" (empty), "Server Start Command" (dhcpd start), "Default Lease Time" (28800), "Name Servers" (dns2.6connect.com, dns3.6connect.c), and "Log Facility" (empty). There is a "Test Login" button below the "New Password" field. At the bottom right, there are two buttons: "Use Config File" and "Save Changes".

Managing DHCP Configurations

Once the DHCP server is saved, you now have options for configuration. We provide a standard "**config builder**" as well as a "**config file**" option.

1) The "**config builder**" builds the ISC configuration file based on the parameters you select - namely the subnets and hosts to be managed by the given DHCP server.

The subnet configuration screen allows for the following parameters:

The screenshot shows a web-based configuration interface for subnets. The title is "Subnets on Server" with a green plus icon. The form contains four input fields: "Address:", "Netmask:", "Range Start:", and "Range End:". There is an "Add" button to the right of the "Range End" field.

The host configuration screen allows for the following parameters:

The screenshot shows a web-based configuration interface for hosts. The title is "Hosts on Server" with a green plus icon. The form contains three input fields: "Hostname:", "MAC Address:", and "Fixed Address:". There is an "Add" button to the right of the "Fixed Address" field.

Example configuration

dhcp2.6connect.com Push

Server: dhcp2.6connect.com	SSH Port: 22
Username: anotheradmin	New Password: <input type="password"/>
Server Type: ISC	<input type="button" value="Test Login"/>
Server Config Path: /usr/bin/dhcpd/config	Server Start Command: dhcpd start
Server Stop Command: dhcpd stop	Default Lease Time: 28800
Max Lease Time: 2678400	Name Servers: dns2.6connect.com, dns3.6connect.c
Domain Names: 6connect.net	Log Facility: <input type="text"/>
Authoritative: <input checked="" type="checkbox"/>	<input type="button" value="Use Config File"/> <input type="button" value="Save Changes"/>

Subnets on Server

192.168.1.0 / 24
255 IPs Assigned, 1% of Total Available
Options:
range 192.168.1.0 192.168.1.255

192.168.2.0 / 24
255 IPs Assigned, 1% of Total Available
Options:
range 192.168.2.0 192.168.2.255

Hosts on Server

server1.6connect.com
Options:
hardware ethernet 00-AE-32-EE-43-56-FC
fixed-address 192.168.1.145

email.6connect.com
Options:
hardware ethernet 00-AE-32-AE-33-57-FC
fixed-address 192.168.1.146

2) The "config file" option allows you to paste a completely customized DHCP configuration file.

- Please note that the "config file" option will override all entered server information, including subnets and hosts, for the designated server.*

example config

dhcp.6connect.com Push

Server: dhcp.6connect.com	SSH Port: 22
Username: 6connectadmin	New Password: <input type="password"/>
Server Type: ISC	<input type="button" value="Test Login"/>
Server Config Path: /dhcpd/config	Server Start Command: dhcpd start
Server Stop Command: dhcp stop	Default Lease Time: <input type="text"/>
Max Lease Time: <input type="text"/>	Name Servers: dns1.6connect.com
Domain Names: dhcp.6connect.com	Log Facility: <input type="text"/>
Authoritative: <input checked="" type="checkbox"/>	<input type="button" value="Use Config Builder"/> <input type="button" value="Save Changes"/>

Using a DHCP Config text config file will override all entered server information, including subnets and hosts, for this server.

```
# 02-Feb-2012 09:02:17

server-name "dhcp.6connect.com";
option option-252 code 252 = text; option option-252 "http://dhcp.6connect.com/wpadmin.datn";
option domain-name "6connect.com";
authoritative ;#;
option netbios-name-servers 132.220.21.9, 132.220.21.17;
option space LWAPP ; option LWAPP.controller code 241 = string;
use-host-decl-names off;
boot-unknown-clients on;
default-lease-time 28800;
max-lease-time 2678400;
ddns-update-style interim;
deny client-updates;
ddns-hostname = pick-first-value(config-option host-name, binary-to-ascii(16, 16, "", leased-address));
update-static-leases off;
option option-128 code 128 = text;
```

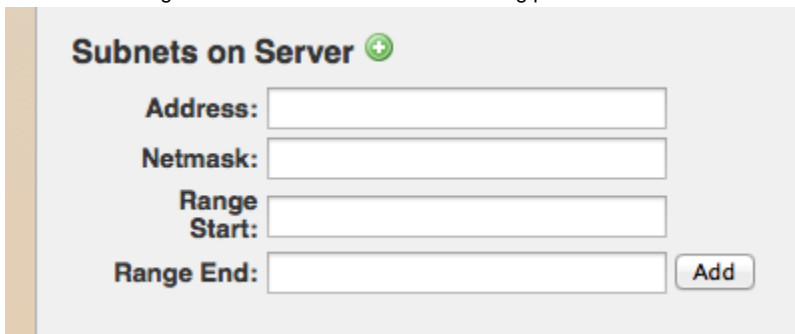
Configuring ISC dhcpd Support


Managing DHCP Configuration - ISC dhcpd

Once a DHCP server is saved, you now have options for configuration. We provide a standard "**config builder**" as well as a "**config file**" option.

1) The "**config builder**" builds the ISC configuration file based on the parameters you select - namely the subnets and hosts to be managed by the given DHCP server.

The subnet configuration screen allows for the following parameters:



Subnets on Server 

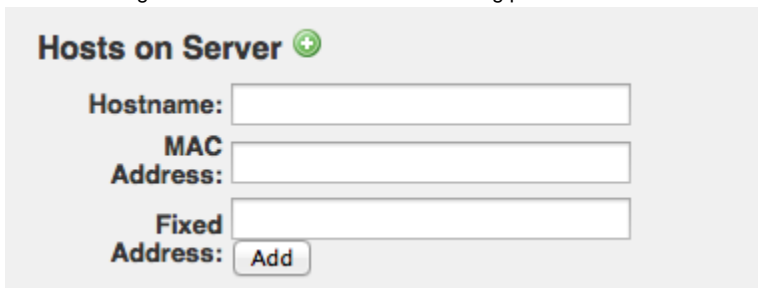
Address:


Netmask:

Range Start:

Range End:

The host configuration screen allows for the following parameters:



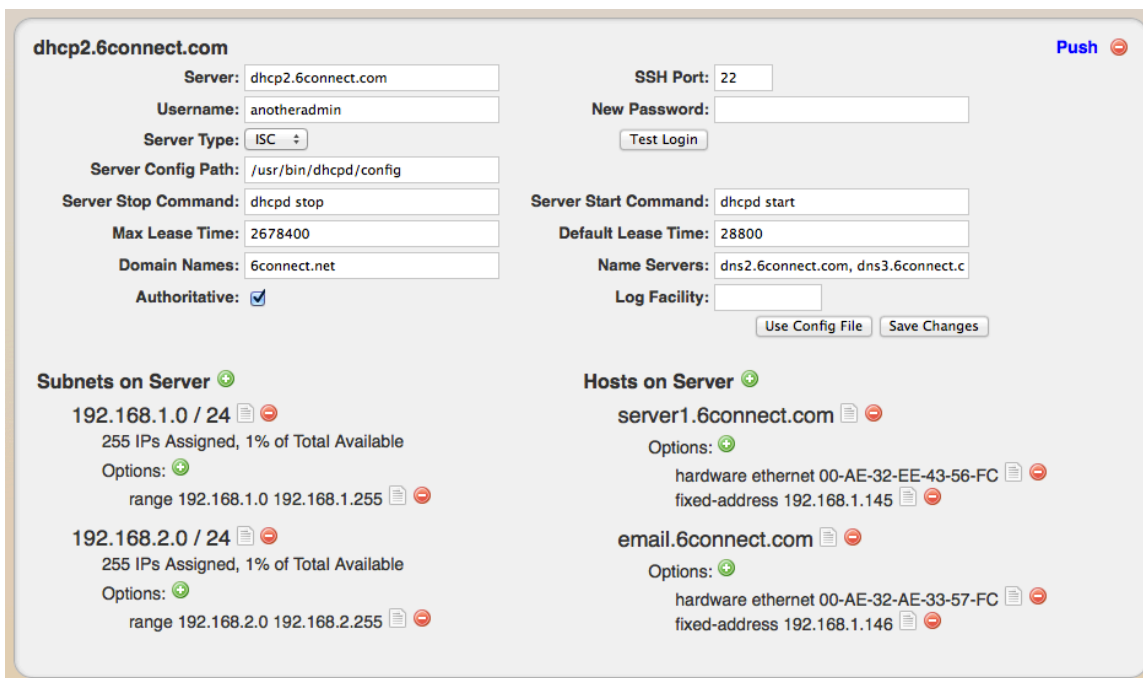
Hosts on Server 


Hostname:

MAC Address:

Fixed Address:

Example configuration:



dhcp2.6connect.com 

Server:

Username:

Server Type:

Server Config Path:

Server Stop Command:

Max Lease Time:

Domain Names:

Authoritative: ☒

SSH Port:


New Password:






Server Start Command:






Default Lease Time:


Name Servers:








Log Facility:








Subnets on Server 

192.168.1.0 / 24  
255 IPs Assigned, 1% of Total Available
Options: 
range 192.168.1.0 192.168.1.255  

192.168.2.0 / 24  
255 IPs Assigned, 1% of Total Available
Options: 
range 192.168.2.0 192.168.2.255  

Hosts on Server 

server1.6connect.com  
Options: 
hardware ethernet 00-AE-32-EE-43-56-FC  
fixed-address 192.168.1.145  

email.6connect.com  
Options: 
hardware ethernet 00-AE-32-AE-33-57-FC  
fixed-address 192.168.1.146  

2) The "**config file**" option allows you to paste a completely customized DHCP configuration file.



Pro-Tip!

Please note that the "**config file**" option will override **ALL** entered configuration information, including subnets and hosts, for the designated server.

Example configuration:

dhcp.6connect.comPush

Server:
Username:
Server Type:
Server Config Path:
Server Stop Command:
Max Lease Time:
Domain Names:
Authoritative: ☒

SSH Port:
New Password:

Server Start Command:
Default Lease Time:
Name Servers:
Log Facility:

Using a DHCP Config text config file will override all entered server information, including subnets and hosts, for this server.

```
# 02-Feb-2012 09:02:17

server-name "dhcp.6connect.com";
option option-252 code 252 = text; option option-252 "http://dhcp.6connect.com/wpad.dat\n";
option domain-name "6connect.com";
authoritative ;#;
option netbios-name-servers 132.220.21.9, 132.220.21.17;
option space LWAPP ; option LWAPP.controller code 241 = string;
use-host-decl-names off;
boot-unknown-clients on;
default-lease-time 28800;
max-lease-time 2678400;
ddns-update-style interim;
deny client-updates;
ddns-hostname = pick-first-value(config-option host-name, binary-to-ascii(16, 16, "", leased-address));
update-static-leases off;
option option-128 code 128 = text;
```

Importing Your Data

Import Your Data

Step 1 - Normalize your Data

Prior to importing your data, there is a key step of Data Normalization to ensure that information is accurate. If you need assistance with parsing your data prior to importing, 6connect can help with our Data Analyst service. Email us at support@6connect.com for more information. You can also use off the shelf tools like Microsoft Excel, MySQL, or [Google Refine](#) if you intend to take on the task of data cleanup in house.

Step 2 - Prep your Data

You can download [Data Import](#) templates from the [Dashboard Tab](#) or [Data Import Tab](#). We recommend that you open the CSV import templates and get familiar with the data fields that you can import into the platform.

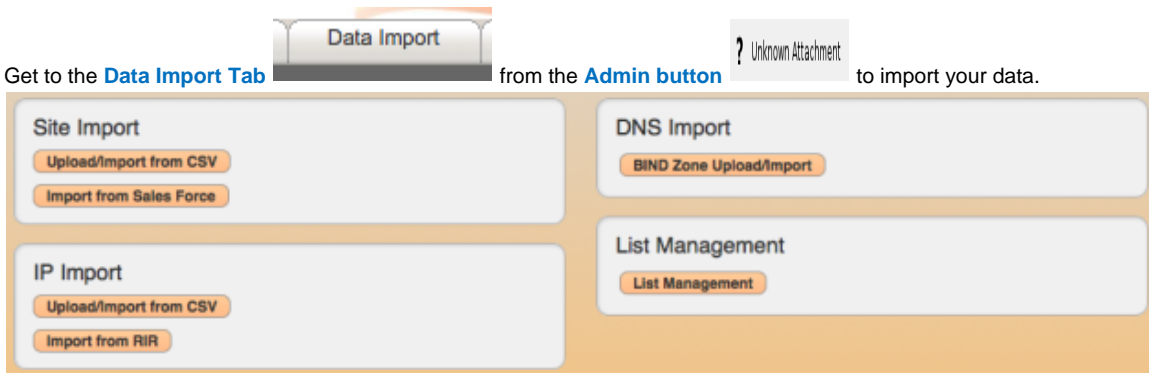
[For Company information](#) you can import relevant data including mailing/billing address information as well as ARIN specific SWIP fields, and specific DNS servers.

[For Contact information](#) you can import contact records assigned to a given **Company**. We support typical fields for this data including Name, multiple email fields, phone numbers as well as Timezone and Role (Roles can be customized from the [IPAM Admin Tab](#)).

[For IPv4 Block information](#) you can import the following fields:

- **ID** - Unique identifier that corresponds with the Unique ID fields for a given "**Company**"
- **IP Block** - standard octets (For example, 10.1.1.5 or 173.169.43.22)
- **Subnet** - the mask of the IP block - we support values of /8 down to /32 (single hosts)
- **Notes** - This open text field is also searchable by our "**Assistant**"
- **RIR** - These values are assigned by you for your particular blocks
- **Region** - These values are assigned by you for your particular blocks
- **Tags** - Use the Tag values that you have already edited via [IPAM Admin](#) to organize your IP blocks by purpose (for example, tag blocks as "Customer" versus "Infrastructure"). You can tag blocks in a variety of ways. **Note:** To assign multiple tags to a block, simply separate the tags with commas.
- **Custom** - you have a custom field per block available - simply use the last entry per line for this data

Step 3 - Import your Data



For larger data import runs, feel free to [\[contact\]](mailto:support@6connect.com?subject=Import) 6connect at any time for assistance at [\[support@6connect.com\]](mailto:support@6connect.com?subject=Import).

BETA FEATURE - Salesforce integration

For Salesforce integration, we have also provided a Beta feature for testing. This Import feature allows you to import Account data from Salesforce by matching to your relevant unique identifier field name.

Import Aggregate Blocks

Import Aggregates

The Welcome tab allows you to lookup and import your aggregate blocks.

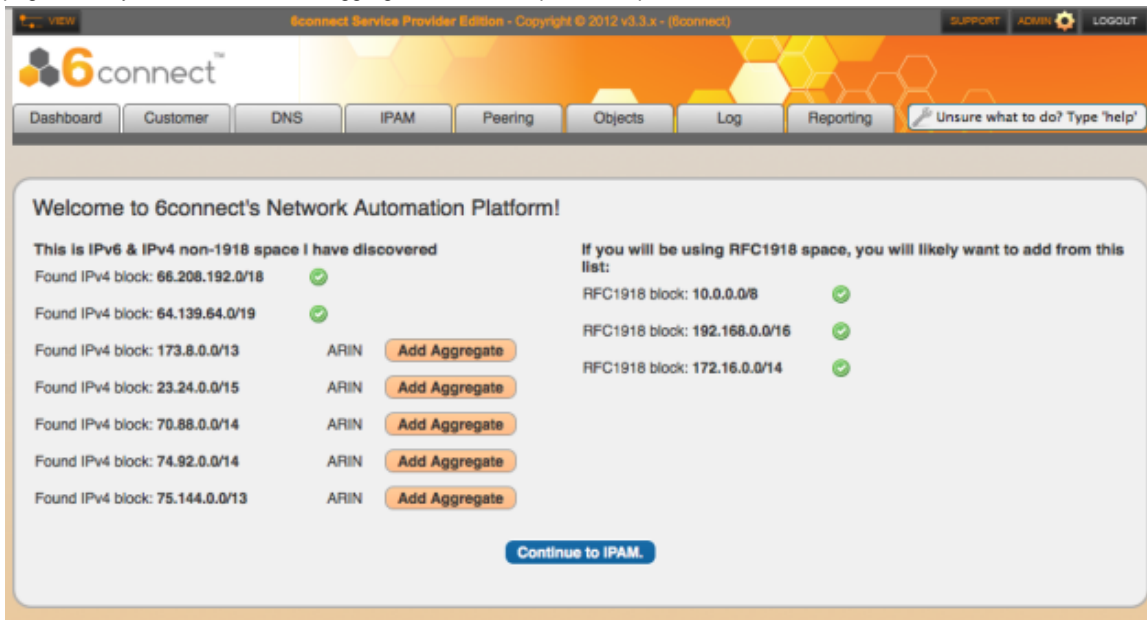
Step 1 - Lookup from Source IP

We automatically lookup your ARIN or RIPE information based on the IP address you are connected to:

If you have another source IP that you would like to use for the lookup function, you can edit the IP and click on the "Inquire Again" button. If the organization name and ORGID are correct, then click on the "Confirm" button to go to the next screen.

Step 2 - Import your aggregate blocks

Once we have identified the blocks assigned to your company, you can import the aggregates by pressing the "[Add Aggregate](#)" buttons. This page allows you to add both 1918 aggregates as well as public IP space from ARIN and RIPE.

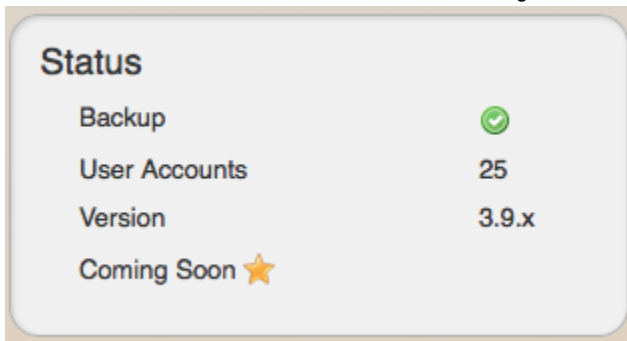


Step 3 - Customizing the Tool

With your aggregates added, you are now ready to customize the tool and import your data! Go to the [Customizing](#) section for details.

Feedback and Feature Requests

For information on future releases, click on the "Coming Soon" link on the Dashboard.



You can also submit product feedback and feature requests to support@6connect.com