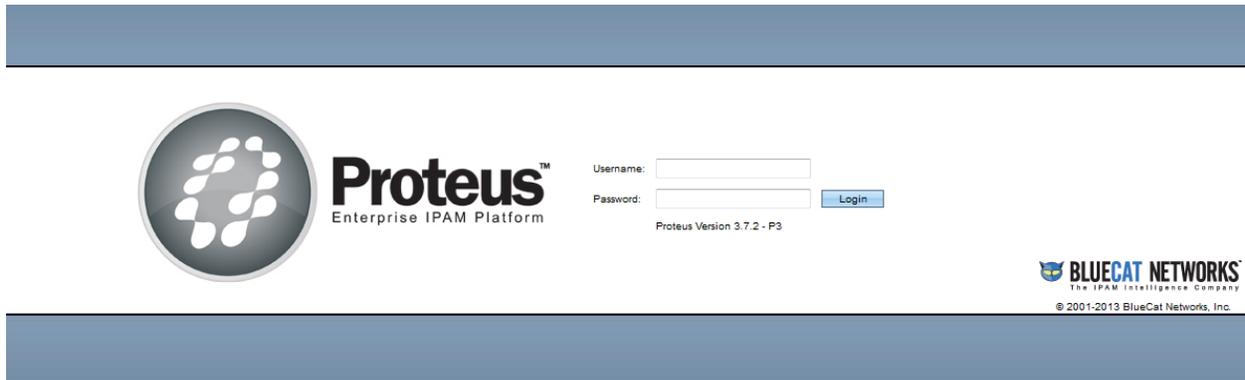


## DNS Management with Blue Cat Networks at PSU

Network and System Administrators at Penn State can make their own DNS changes, live, using the Blue Cat Proteus web-based interface. Proteus will be used by the administrators to add and remove resource records (A, AAAA, CNAME, MX etc.) and to create subdomains.

To access Proteus, go to <https://proteus.psu.edu/>. Log in using your Access Account and password.



To access the custom scripts for permissions assignments and requests in the psu.edu zone, visit the following links. Documentation for these functions are below.

- ✚ Permissions Management: <https://ipam.psu.edu/triton/Flows/DelegateUserPermissions>
- ✚ Request CNAME in psu.edu: [https://ipam.psu.edu/triton/Flows/add\\_cname](https://ipam.psu.edu/triton/Flows/add_cname)
- ✚ Request Subzone in psu.edu: [https://ipam.psu.edu/triton/Flows/add\\_subzone](https://ipam.psu.edu/triton/Flows/add_subzone)
- ✚ Add User to Proteus: [https://ipam.psu.edu/triton/Flows/Add\\_User](https://ipam.psu.edu/triton/Flows/Add_User)

Important things to note:

- ⚠ This guide is not meant to be complete documentation for Proteus. The sections below are quick guides. For more complete documentation, go to the help within the Blue Cat product. To get to the vendor's documentation, select the  icon in the upper right of the screen.
- ⚠ You will only have access to make changes to Networks and Zones that have been assigned to you.
- ⚠ DNS changes are deployed to the servers every 10 minutes (on the 10's). When you make DNS changes, they will not go live until after the next deployment.
- ⚠ **Be careful making your changes. You can mess up your DNS configuration and cause yourself problems.**

## Adding an alias (CNAME) record

### To add a CNAME record:

1. Find the zone where you want to add the CNAME. The easiest way to accomplish this is to type the zone name into the search box on the upper right part of the screen and hit return. If your search term was a unique zone name, it will go directly to the zone; otherwise, a list of search results will come up. If you get the search results, choose your zone to go to the zone.
2. Click on the **Resource Records** tab to ensure that it is selected.
3. Under **Resource Records**, click **New** and select **Alias Record (CNAME)**. The CNAME page opens
  - Under **General**, set the following parameters:
    - **Name**—enter the name for the alias record.
    - **Host**—select a host record from the drop-down menu. To specify an external host, enter the name of the host and select External Host.
4. Click **Add** or **Add Next** to add another CNAME Record.

## Adding a Host (A or AAAA) Record

1. Find the zone you where want to add the Host record. The easiest way to accomplish this is to type the zone name into the search box on the upper right part of the screen and hit return. If your search term was a unique zone name, it will go directly to the zone; otherwise, a list of search results will come up. If you get the search results, choose your zone from the list.
2. Click on the **Resource Records** tab to ensure that it is selected.
3. Under **Resource Records**, click New and select **Host Record**. The Host page opens.
  - Under **General**, set the following parameters:
    - **Name**—to specify a name for the host record, select this option and enter a name.
    - **Same as Zone**—to use the zone name for the name of the host record, select this option.
    - **Address**—enter an IPv4 or IPv6 address for the host record. To add multiple addresses, click **Add Another** after typing each address.
    - **Reverse Record**—select to create a PTR record for the host record.
4. If you would like you can also add CNAME (alias) records at the same time. If you'd like to do this, add the following information.
  - Under **Aliases**
    - **Add Aliases**—select to add one or more aliases. Once selected, the **Absolute Name** check box is automatically selected.
    - Enter a fully qualified domain name (FQDN) for the alias in the text field. To add another alias, click **Add Another**.
5. Click **Add** or **Add Next** to add another Host Record.

## Adding an MX Record

1. Find the zone you where want to add the MX Record. The easiest way to accomplish this is to type the zone name into the search box on the upper right part of the screen and hit return. If your search term was a unique zone name, it will go directly to the zone; otherwise, a list of search results will come up. If you get the search results, choose your zone to go to the zone.
2. Click on the **Resource Records** tab to ensure that it is selected.
3. Under **Resource Records**, click New and select **Mail Exchanger Record (MX)**. The MX page opens.
  - Under **General**, set the following parameters:
    - **Name**—to specify a name for the MX record, select this option and enter a name.
    - **Same as Zone**—to use the zone name for the name of the host record, select this option.
    - **Priorities** — enter a value to indicate mail server's priority. If you do not provide a value, 0 (zero) is automatically set as the priority.
    - **Host**—select a host record from the drop-down menu. To specify an external host, enter the name of the host and select External Host
4. Click **Add** or **Add Next** to add another Host Record.

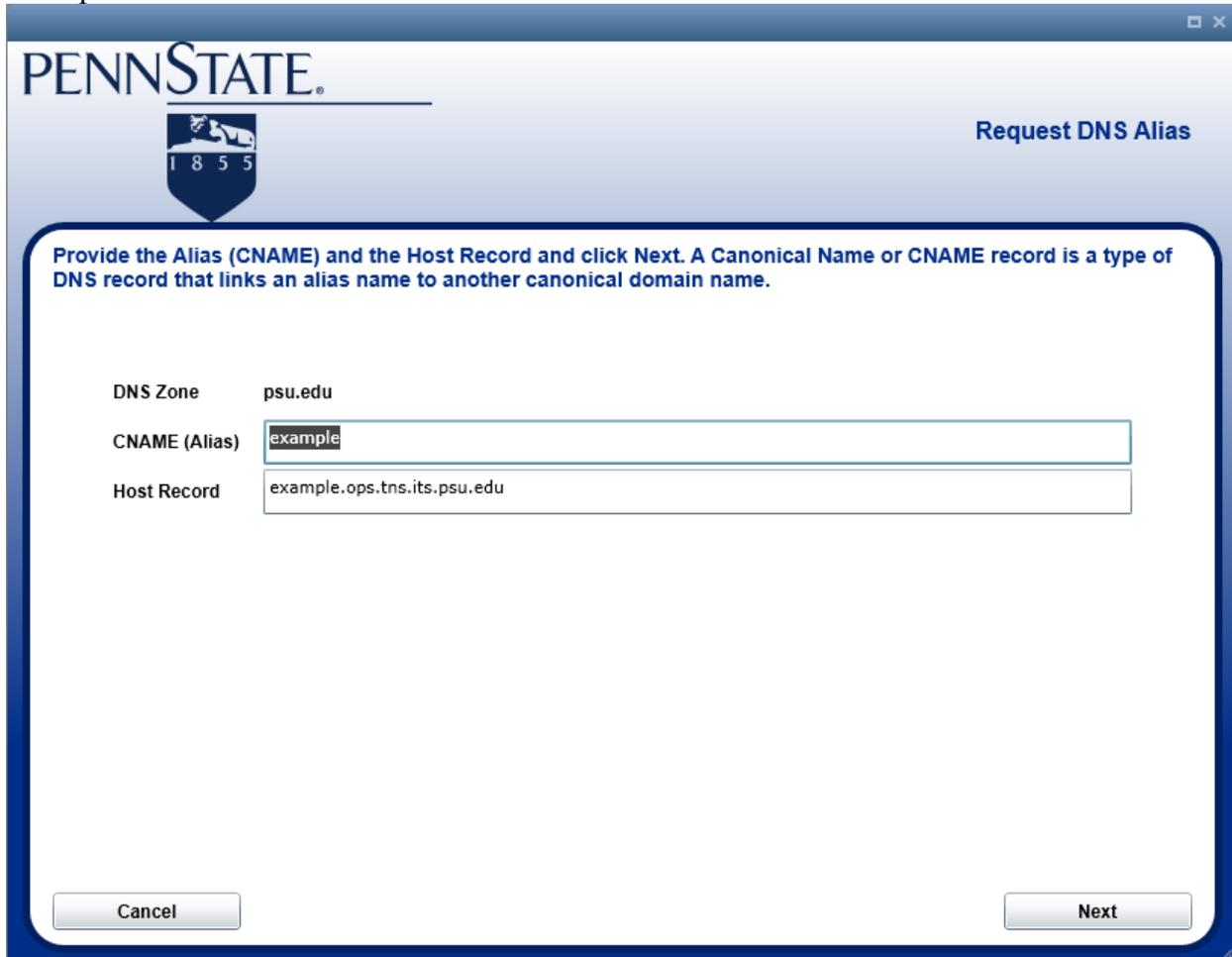
## Add a CNAME to the PSU Zone

This custom script is used to allow administrators to request a CNAME in the top level psu.edu zone. Note: This is not being done real-time. When you submit the request it enters a workflow process that allows TNS to verify that the request meets PSU Policies (<http://www.tns.its.psu.edu/GeneralInfo/Policies/DNSPolicy.html>) before the entry is added.

To request the CNAME:

- Go to the script at: [https://ipam.psu.edu/triton/Flows/add\\_cname](https://ipam.psu.edu/triton/Flows/add_cname)
- The Data Entry screen will appear. On this screen, fill in the information and hit the Next button.

Example:



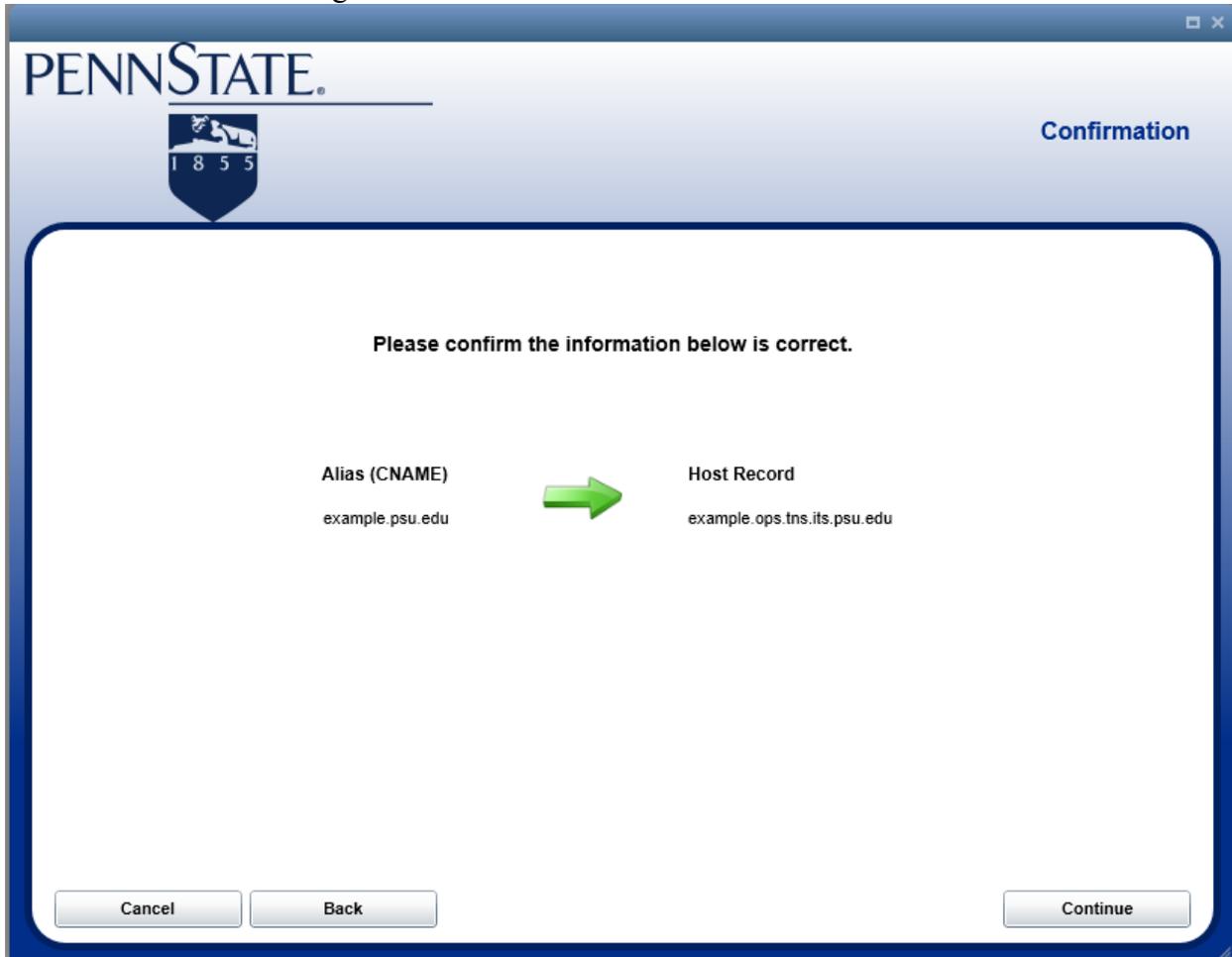
**PENNSSTATE.**

**Request DNS Alias**

Provide the Alias (CNAME) and the Host Record and click Next. A Canonical Name or CNAME record is a type of DNS record that links an alias name to another canonical domain name.

DNS Zone	psu.edu
CNAME (Alias)	<input type="text" value="example"/>
Host Record	<input type="text" value="example.ops.tns.its.psu.edu"/>

- Then you will get a confirmation screen that verifies what you are trying to do. This screen shows you exactly what the alias record will be. There are a few cases that can occur here.
  1. As in the example, you chose a host record for which you have permission. In this case there will be no problems with approval if the name is appropriate and meets policies.
  2. You chose a host record in a zone that you don't have permission. If this is the case, we highly recommend that you cancel, and contact one of the admins for the zone and request that they give you permission on the zone or the individual host record and then you retry it. If you continue, it will delay your request as we will have to identify the owners and negotiate the permissions.
  3. You chose a record that does not exist in Proteus. In this case it is an external record that we will have to create. This is the case if you are trying to point to a host record that is in a zone that has been delegated or outside of TNS control.



- When you submit your request, you will get a confirmation screen and it will generate and send you an email with the details of your request.
- Finally, when your request has been processed, you will get an email letting you know that your request has been processed and has either been entered, or if it is rejected you will be notified as to why.

## Add a New Subzone to the PSU Zone

This custom script is used to allow administrators to request a new zone in the top level psu.edu zone. Note: This is not being done real-time. When you submit the request, it enters a workflow process that allows TNS to verify that the request meets PSU Policies (<http://www.tns.its.psu.edu/GeneralInfo/Policies/DNSPolicy.html>) before the entry is added.

To request the new zone:

- Go to the script at: [https://ipam.psu.edu/triton/Flows/add\\_subzone](https://ipam.psu.edu/triton/Flows/add_subzone)
- The Data Entry screen will appear. On this screen fill in the information and hit the Next button.

Example:

**PENNSSTATE** Add Subzone

1855

Requested Subzone

**Add Zone Administrators**

Zone Administrators will be given full control over the new zone. Permissions can be fine tuned using the Delegate Permissions tool.

Access Id

name
wjrl4
wcs131
gbg3

- Requested Subzone – Enter the fully qualified name of the zone being requested
- Next Add Zone Administrators – All names entered here will be given full access to the zone and allowed to make changes. To add names, type the Access ID into the field, and click the **Add** button. You will be required to have at least 2 administrators.
- When you've added the correct information, click the **Next** Button

- On the next screen, you will be required to select one of the administrators previously entered as the Audit Contact for this zone. The person selected here will be the person who is ultimately responsible for the zone, and will be responsible for auditing the network when requested to verify that the correct persons have access to the zone. Choose one of the IDs and select **Next**.

The screenshot shows a web browser window with the Penn State logo and the text "Select Audit Contact". Below the logo is a blue box containing the instruction: "Select an Audit Contact for the new zone example.psu.edu. The Audit Contact is ultimately responsible for this zone and will be contacted for auditing purposes." There are three radio button options: "wjr14" (selected), "wcs131", and "gbg3". At the bottom of the window are three buttons: "Back", "Cancel", and "Next".

- Next a Confirmation Screen will be displayed. Verify that the information is correct, and select **Confirm**

The screenshot shows a web browser window with the Penn State logo and the text "Confirm New". Below the logo is a blue box containing the instruction: "Please confirm the following Details about your request." The details listed are: "Zone FQDN: example.psu.edu", "Audit Contact: wjr14", and "Zone Admins: wjr14 wcs131 gbg3". At the bottom of the window are three buttons: "Cancel", "Back", and "Confirm".

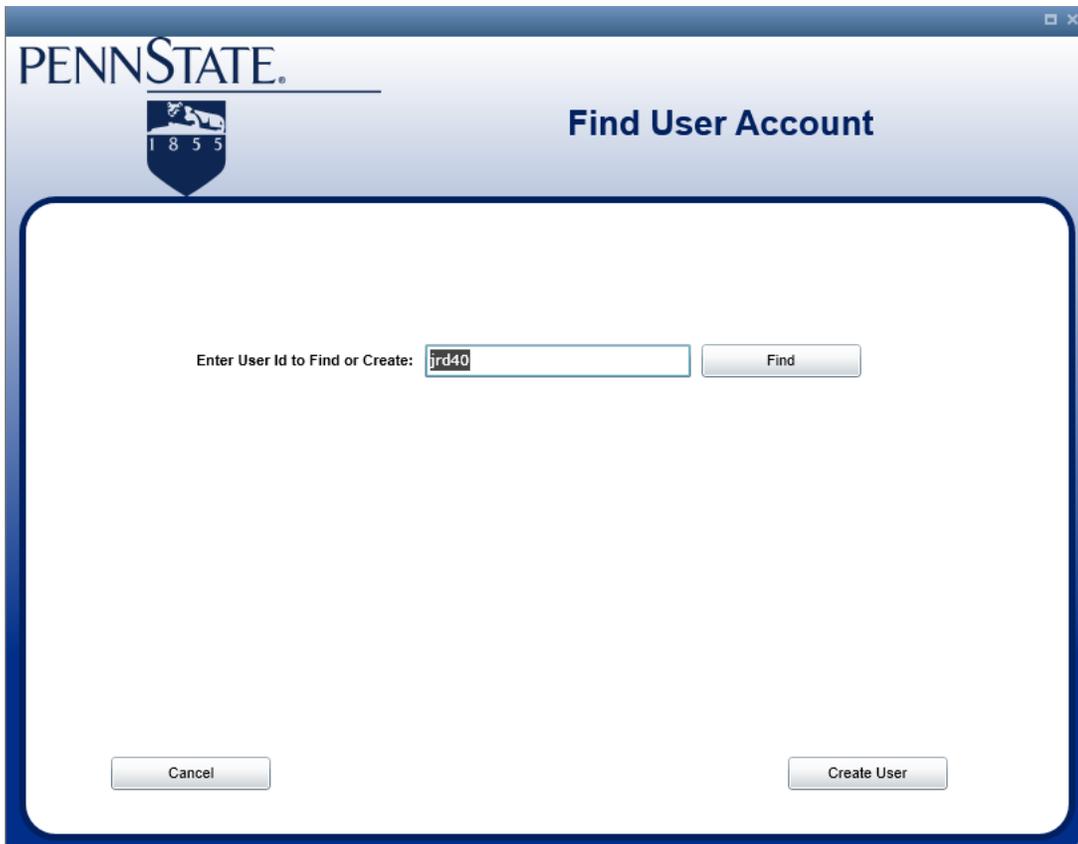
- When you submit your request, you will get a confirmation screen and it will generate and send you an email with the details of your request.
- Finally, when your request has been processed, you will get an email letting you know that your request has been processed and has either been entered, or if it is rejected you will be notified as to why.

## Add a New User

This custom script is used to allow administrators to add a new user into the system so that they can add them to the permissions set for subnets / zones. This action is being done real-time, so newly added users will be available immediately. In order to add the user, they must have a valid Access Account.

To request the new user:

- Go to the script at: [https://ipam.psu.edu/triton/Flows/Add\\_User](https://ipam.psu.edu/triton/Flows/Add_User)
- On the “Find User Account” screen, enter the access user ID of the person you want to add, and hit the **Find** button. This will look them up in LDAP.



The screenshot shows a web browser window titled "PENNSSTATE." with the "Find User Account" page. The page features the Penn State logo (a shield with a lion and the year 1855) and the text "Find User Account". Below the logo, there is a text input field labeled "Enter User Id to Find or Create:" containing the text "jrd40". To the right of the input field is a "Find" button. At the bottom of the page, there are two buttons: "Cancel" on the left and "Create User" on the right.

- The next screen will show the information for the Access ID that you entered. Confirm that this is the correct person that you are attempting to add. If it is, hit the **Create User** button. The user will be created.

The screenshot shows a web browser window with the Penn State logo and the title "Find User Account". The main content area contains a search form with the following elements:

- Input field: "Enter User Id to Find or Create: jrd40" with a "Find" button to its right.
- Output text: "Selected User Id: jrd40"
- Output text: "First Name: John R"
- Output text: "Last Name: Doe"
- Output text: "E-mail: jrd40@psu.edu"
- Output text: "Phone: +1 814 865 0000"
- Output text: "Directory Entry: [View User Directory Entry](#)"
- Buttons: "Cancel" and "Create User" at the bottom.

## Delegate Permissions

This custom script is used to allow administrators to assign permissions for other users. This will allow you to give users permissions up to that which you have on any zones or subnets that you have access. This script is changing permissions in real-time, so users will be able to access objects immediately after you make changes..

To add/modify permissions

- Go to the script at: <https://ipam.psu.edu/triton/Flows/DelegateUserPermissions>
- The “Find User Account” screen will appear. This screen is used to look up the user to which you want to adjust permissions. Enter the access ID of the user, and click the find button.
  - If the user does not exist in the Proteus system, you can click the **continue** button to go to the next screen that will give you the option to create the account. To create the account, select the **Create** button. The user will be created in the system and then you can add permissions for the user. Note: The user must have an access account and exist in LDAP.



PENNSSTATE

1855

### Search or Create User Account

Enter User Id to Search or Create:

Select User Id From List of Matching Ids (Found 0 User Ids):

Username	Firstname	LastName	Email	UserType
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- If the user exists or after it has been created in the IPAM system, the user data will appear on the screen. In this case, select the continue button to begin assigning permissions. When you get this screen (shown below), it will show you all of the permissions that the user currently has that you have permission to change. If you wish to modify an existing permission, select it and choose **Modify** or **Delete**. To add a new permission for the user select **Add Object(s)**.

**PENN STATE**

**Select Objects**

User Name: wcs131      First: William      Email: wcs131@psu.edu  
Last: Simon      Phone:

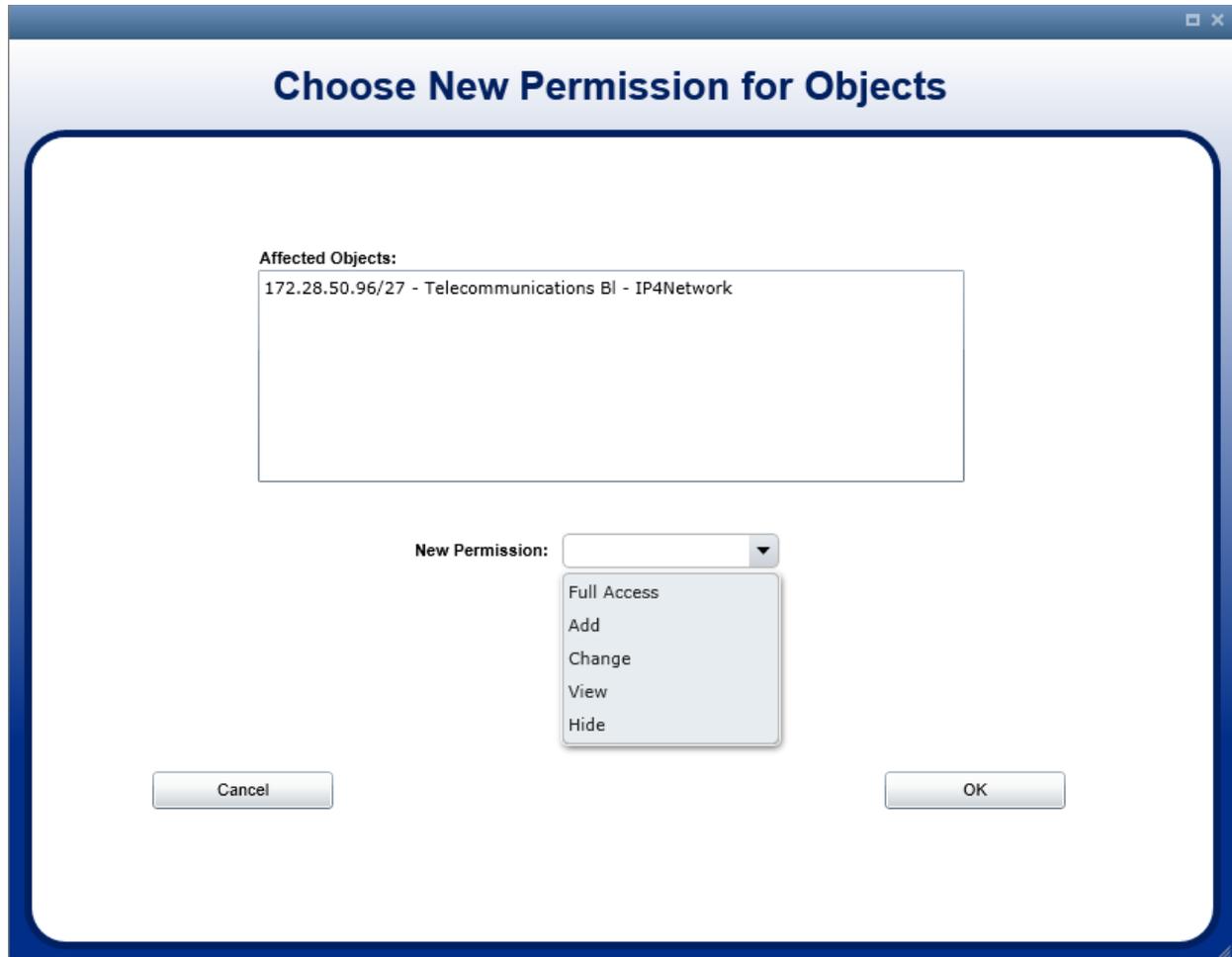
Target User's Explicit Access Rights:

<input type="checkbox"/>	Name	Type	New Rights
<input checked="" type="checkbox"/>	172.28.50.96/27 - Telecommunications Bl	IP4Network	FULL
<input type="checkbox"/>	chuck.psu.edu	HostRecord	FULL
<input type="checkbox"/>	ops.tns.its.psu.edu	Zone	FULL

- On the “Your Network Objects” screen you will get a list of the objects you have permission to assign to the user. Choose an object and select **OK**. This will give the user Full control of the object you chose.

- If you want to give the user less than full control, after you add it to the user, you can select that object and select **Modify**. On this screen you can select the New Permission and select **OK**.



- Once you have completed the changes, you need to click the **Submit** button for the changes to be active. Note: No changes are made until after the **Submit** button is pressed.

# **DNS Glossary**

(Definitions courtesy of [tzodns.com](http://tzodns.com))

## **A record**

An "A Record" (short for "Address Record") is a DNS record type which translates (or "resolves") a hostname or domain name into an IP address.

## **Alias**

In the context of DNS, alias usually means CNAME records which resolve to some other hostname. Alternatively "alias" could also mean a group of hostnames which all resolve to an IP address and do not use CNAMEs, meaning the group of hostnames are "linked" together in your TZO account (when "domain A" is changed to a new A record, "Domain B" and "Domain C" will automatically inherit the same A record value). Both configurations are possible.

In the context of websites, "alias" will mean "A second hostname that a website folder will respond to or serve content for", for example many web hosting setups will be configured for "example.com" but will also alias to "www.example.com".

## **Authoritative Server**

An authoritative nameserver (also referred to as "authoritative-only name server") is a server which only returns answers to DNS queries for specific domains which the server has been configured to resolve.

The authoritative nameserver(s) are specified by the Domain Registration account for that domain, and the domain's WHOIS record will state which nameservers are authoritative.

## **CNAME**

CNAME (also: "Canonical Name") is a DNS term for a type of alias. A CNAME record does not provide the final answer (such as an IP address), but instructs applications to conduct an additional query against this other hostname (specified by the CNAME) and use that result as the answer.

CNAMEs usually work well for web hostnames, FTP, and other services but should not be used for certain email configurations. You can for example, CNAME "webmail.example.com" to "mail.example.com" and this works because it is well supported by web browsers and servers. On the other hand, a CNAME inside an MX record is invalid and will result in email delivery problems (both sending and receiving).

## **Delegation**

The process of specifying which nameservers handle a particular domain zone or hostname.

## **DNS**

Short for Domain Name System.

## **DNS Resolver**

The client-side of the DNS is called a DNS resolver. It is responsible for initiating and sequencing the queries that ultimately lead to a full resolution (translation) of the resource sought, e.g., translation of a domain name into an IP address.

DNS Resolvers typically follow local rules for caching of DNS records and may or may not override cache TTLs set in a DNS record. For example, Internet Explorer may cache a DNS record for 10 minutes, even if the cache time is set less than that.

## **Domain Name System**

The Domain Name System (DNS) is the address system people use on the Internet. DNS is responsible for resolving hostnames into IP addresses (and in the case of 'reverse DNS', resolving IP addresses back into domain names).

## **Hostname**

Hostname (or "host") is the DNS name (address) of a server or network on the Internet. Hostname sometimes implies the "short host" name, such as "www" in "www.example.com". It is more accurate to refer to systems by their Fully Qualified Domain Name (FQDN) such as "www.example.com".

## **IP Address**

IP address represents the numeric address of a computer on a given network, most commonly referring to the Internet IP address (or WAN address, provided by your ISP). Less commonly, IP address can also indicate a computer's Local Area Network (LAN) or "private" IP address. If unsure which context of IP address is needed, it is always useful to provide both the WAN IP and the LAN IP.

## **Mail eXchanger (MX)**

MX is a DNS record type which indicates a domain's mailserver address(es). MX record values are fully-qualified hostname addresses (for which a hostname must actually exist in DNS). For example, the domain zone "tzo.com" contains an MX record whose value is "mail.tzo.com". When mail is sent to someone @ tzo.com, the sending mailserver will first resolve the MX record, then resolve the host A record for that MX, and direct the mail to that network address.

## **Nameserver**

A Nameserver is a type of server configured to answer DNS queries. Nameservers occur as two different types: Authoritative Nameserver, and Caching Nameserver. To avoid ambiguity between the 2 nameserver contexts, the term "nameserver" is rarely used by itself.

## **Subdomain**

A subdomain is a hostname which depends on (belongs with) a domain name. For example, if the Fully Qualified Domain Name (FQDN) is "www.example.com", the domain name really is "example.com", and "www" is the short hostname.

## **TTL**

TTL is an acronym for "Time To Live". TTL specifies how long outside DNS servers should cache this DNS record. TTL is sometimes called "cache time".

## **TXT**

TXT records are record types which are containers for free-form plain text. TXT records are most commonly used as Sender Policy Framework (SPF) or DomainKeys, which are created using special syntax inside the TXT record.