Managing IPv4 and IPv6 Addresses

Grid Manager uses IP addresses as the entry point to the data set containing Infoblox host, DNS, DHCP, and other information related to that address. You can view the data, modify it, assign extensible attributes to the objects associated with the address, and convert DHCP lease types, such as changing a currently active dynamic lease to a fixed address or host record.

You can view and manage IPv4 address data in the IP Map panel, and view and manage IPv4 and IPv6 data in the IP List panel. You can do the following for IPv4 and IPv6 data from the IP List panel:

- Convert objects to other object types. For information, see Converting Objects Associated with IP Addresses.
- Reclaim IP addresses. For information, see Reclaiming Objects Associated with IPv4 and IPv6 Addresses.
- Ping IP addresses. For information, see Pinging IP Addresses.
- Clear DHCP leases. For information, see Clearing Active DHCP Leases.

You can also print and export in CSV format the information displayed in any panel that supports these functions.

Converting Objects Associated with IP Addresses

The NIOS appliance provides a simple mechanism for converting unmanaged IP addresses to resource records, such as host records and A or AAAA records. You can also convert the active lease of a dynamically assigned IPv4 or IPv6 address to a fixed address or host, and convert an IPv4 lease to an IPv4 reservation. Using the conversion mechanism, you can keep the existing information of a network device during the conversion.

The appliance supports the following conversions for IPv4 objects:

- DHCP leases to fixed addresses, reservations, or host records
- Fixed addresses to reservations or host records
- Unmanaged addresses to host records, A records, PTR records, or fixed addresses
- A records to host records
- PTR records to host records

The appliance supports the following conversions for IPv6 objects:

- DHCP leases to fixed addresses or host records
- Fixed addresses to host records
- AAAA records to host records
- IPv6 PTR records to host records

**Note**

You cannot convert unmanaged IP addresses or leases served by Microsoft DHCP servers to host records.

Converting DHCP Leases

To create a fixed address, you bind an IPv4 address to a MAC address or an IPv6 address to a DUID. You can make that binding by converting an active dynamically leased address to a fixed address. The lease conversion transforms the temporary binding between the IPv4 address and MAC address or the IPv6 address and DUID in the dynamic lease to a persistent one. The lease must be active so that the NIOS appliance has an IPv4-to-MAC address or IPv6-to-DUID binding to convert into a fixed address.

The appliance uses the following rules when converting a DHCP lease:

- If an IPv4 DHCP lease is converted to a fixed address, the appliance copies the client identifier to the fixed address, based on information in the lease. If the appliance finds the client identifier in the lease information, the appliance includes it when it creates the host. If it finds the MAC address, the appliance includes it when it creates the host. If it finds both, the appliance includes only the MAC address (default) when it creates the host.
- If an IPv6 DHCP lease is converted to a fixed address, the appliance copies the DUID to the fixed address.
- If you try to convert an IPv4 DHCP lease or a fixed address with a client identifier, not a MAC address, to a host, the appliance displays an error message in the host editor. This ensures that you do not attempt this operation and lose the data.
- You cannot create two IPv4 fixed addresses with the same client identifier or MAC address in the same network. You cannot create two IPv6 fixed addresses with the same DUID in the same network.
- If the appliance receives a second IPv4 DHCP request with the same client identifier, it provides the same fixed IP address if the lease is still binding.

Figure 13.10 illustrates converting a dynamic IPv4 lease to a fixed lease.

Figure 13.10 Converting a Dynamic IPv4 Lease to a Fixed Lease.
An advantage of converting an active dynamic lease is that you do not need to learn the MAC address or DUID of the device to which you want to assign an IP address and manually enter it in the fixed address configuration. An IPv4 reservation is an address that you exclude from DHCP use because you intend to configure that address manually on a device, such as a firewall, router, or printer. You can also convert an IPv4 fixed address or a dynamic address with an active lease to a reservation. When you convert an address in a DHCP range to a reservation, you reduce the total number of dynamically assignable addresses in that range by one. Correspondingly, this reduces the number of allocated addresses needed to exceed a high or low watermark threshold for that range.

**Note**

To return an IP address to its place in a DHCP range after converting it from an active dynamic lease to a fixed address, reservation, or Infoblox host, delete the fixed address, reservation, or host to which you previously converted the IP address. The IP address then becomes part of the DHCP range to which it first belonged.

You can convert IPv4 fixed addresses to reservations, as shown in Figure 13.11.

*Figure 13.11 Converting an IPv4 Dynamic Lease or Fixed Address to a Reservation
DHCP Client and Server Statically Configured Device and DHCP Server*
To convert an object:

1. From the IP Map, select an IPv4 address or from the IP List panel, select an IPv4 or IPv6 address.
2. In the Related Objects tab, select the check box of the object, and then click Convert from the Toolbar or navigation bar.
3. Select the object type to which you want to convert the object. Grid Manager displays the corresponding editor for the object type.
4. For all IPv4 conversions, Grid Manager populates the discovered information in the corresponding editor. Depending on the type of conversion, do one of the following:
   - For host record conversions, see About Host Records.
   - For IPv4 reservation conversions, see Modifying IPv4 Reservations.
   - For fixed address conversions, see Modifying IPv4 Fixed Addresses.
   - For A record conversions, see Modifying A Records.
   - For PTR record conversions, see Modifying PTR Records.

**Note**

When you select an object for conversion, Grid Manager displays only the available conversion types for the object. You must save the changes in the editor for the conversion to take place.

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**Reclaiming Objects Associated with IPv4 and IPv6 Addresses**

You can use the reclaim IP function to delete all objects, except the active DHCP lease, that are associated with a selected IP address. To delete a DHCP lease, use the clear lease function as described in Clearing Active DHCP Leases. When you reclaim an IP address, Grid Manager deletes the associated objects and puts them in the Recycle Bin, if enabled. You can reclaim any used and unmanaged IP addresses. You can also select multiple IP addresses for this function. After you reclaim an IP address, the address status changes to Unused. You can then reassign the IP address to other objects. For example, when you reclaim a fixed address, Grid Manager deletes the fixed address object and puts it in the Recycle Bin. When you reclaim an IP address that is associated with a host record and the address is the only address in the host, Grid Manager deletes the host record.

Grid Manager deletes all the objects that are associated with the selected IP addresses and puts them in the recycle bin, with the following exceptions:

- When you reclaim IP addresses that are in a DHCP range, all the objects that are associated with the IP addresses are deleted and the IP addresses remain in the DHCP range.
- When you reclaim an IP address that is part of a host record, only the selected IP address is deleted from the host. However, if the selected address is the only address in the host, Grid Manager deletes the host record.

Grid Manager does not reclaim the following:

- Unused IP addresses
• Bulk hosts

To reclaim an IP address:

1. From the IP Map or List panel, select the IP address you want to reclaim, and then click **Reclaim** from the Toolbar. You can select multiple IP addresses.
2. In the **Delete Confirmation** dialog box, click **Yes**.

Grid Manager puts the deleted objects in the Recycle Bin, if enabled.

**Pinging IP Addresses**

You can find out whether an IP address is accessible and active by pinging the address. Grid Manager sends a packet to the selected IP address and waits for a reply when you ping the address. You can ping individual IP addresses from the IP Map and IP List panels. You can ping all IP addresses from the IP Map panel and all IP addresses on the selected page from the IP List panel.

To ping an IPv4 or IPv6 address:

• From the IP Map or IP List panel, select the IP address that you want to ping, and then click **Ping** from the Toolbar.

To ping all IPv4 addresses:

• From the IP Map panel, click **Multi-ping** from the Toolbar. Grid Manager pings all IP addresses displayed in the IP Map panel and displays the ping status in the panel. When the ping or multi-ping is complete, the status bar displays the number of active IP addresses detected through the ping. To close the ping status bar, click the Close icon.
• From the IP List panel, click **Multi-ping** from the Toolbar. Grid Manager pings all IP addresses visible on the selected page. When the ping or multi-ping is complete, the status bar displays the number of active IP addresses detected on the selected page. To close the ping status bar, click the Close icon.

**Clearing Active DHCP Leases**

A DHCP lease specifies the amount of time that the DHCP server grants to a network device the permission to use a particular IP address. You may sometimes need to terminate an active lease. The following are some of the reasons for clearing active DHCP leases:

• When a network device is moved to another network.
• Reset a DHCP lease to fix other problems.

In Grid Manager, you can select multiple IP addresses and clear their active DHCP leases.

To clear an active lease:

1. From the IP Map or List panel, select the IP address for which you want to clear a DHCP lease, and then click **Clear -> Clear Lease** from the Toolbar. You can select multiple IP addresses.
2. In the **Clear DHCP Lease Confirmation** dialog box, click **Yes**.