

Example - How to Configure DHCP with Dynamic DNS

https://campus.barracuda.com/doc/29856/

The DHCP service can be used as both a stand-alone service and in conjunction with DNS. If you just want to assign IP addresses automatically to clients, you only need to configure the DHCP service.

However, if you want to keep track of your clients based on their individual FQDNs and their IP addresses, these names must be updated in the DNS database with their corresponding IP addresses. To do so, you must additionally configure the Dynamic DNS service so that changes in the DHCP database are synchronized with the DNS database.

This article contains a description of an example DHCP with Dynamic DNS configuration.

Note that you must adapt the configuration (interfaces, network addresses, IP addresses) for your individual requirements.

Use Case-Related Requirements and Constraints

- This article describes how to configure an internal domain mydomain.intern that is managed by your internal DNS server for the clients on your LAN.
- The DNS server will accept DNS queries from clients in the network 10.0.7.0/24 that will connect to the DNS server on the interface with the IP address 10.0.7.1.
- The DHCP server will provide DHCP IP addresses from the range of 10.0.7.40 to 10.0.7.60 to the clients.
- Dynamic DNS must be configured to contain all the required information for the associated DNS zone. This information will ensure that the DHCP and DNS databases are in sync with their associated data categories.
- The configuration will only cover IPv4 addresses.

Before You Begin

Ensure that...

- You have configured a network where you want your DNS to serve requests for client queries (in this case: 10.0.7.0/24).
- You have configured a Shared IP for the DNS listening service, e.g., 10.0.7.1.
- You have an FQDN that relates to your domain and to the clients within that domain. In this article, the name mydomain.intern will be used as an example internal domain.
- Each client device in the network has a unique hostname.



Configure the DNS Server Host Zone

Create a Primary Zone for Your Domain

For more information, see <u>How to Configure a Zone</u>.

Use the following configuration data:

- Hosted Zone Primary
- Zone Status Enabled
- Domain Name mydomain.intern
- TTL 86400
- Authoritative Name Server nsl.mydomain.intern
- **Responsible Person Email** office@mydomain.biz
- Generate NS Record Select the check box

Hosted Zone Type	Primary 🗸
Enabled	
Domain Name	omp.intern
Description	
π	86400
Serial Number Offset	0
Authoritative Name Server	ns1.omp.intern
Responsible Person Email	office@omp.biz
Generate NS Record	
Zone Transfers	No 🗸
Zone Transfer ACL	$+ \times$

When required, enter the following data for the **A** record:

• Type - A



- TTL 86400
- **IP Address** 10.0.7.1
- Listener Name INTERNAL
- Health Probe NONE

Description	Automatically generated		
	Automatically generated		
Create Reverse Record			
ord Data			
Name/Owner	ns1		
-	3600		
IP Address			× 🖉 -
	IP Address	Listener Name	Health Probe
	10.0.7.1	INTERNAL	NONE

The following image provides an overview of the configured values:

✓ omp.intem (Primary)	Enabled			86400	office@omp.biz		
		NS	@	3600		ns1.omp.intem	Automatically generated
		А	ns1	3600		10.0.7.1	Automatically generated

Create a Reverse DNS Zone for Your Domain

For more information, see <u>How to Configure a Zone</u>, Option 3: Configure a Reverse Zone.

Use the following configuration data:

- Hosted Zone Type Reverse.
- Enabled Select the check box.
- **Domain Name** This field will be generated automatically when entering data into the field **Network** (see below).
- TTL 86400
- Authoritative Name Server ns1.mydomain.intern. (You must include the trailing '.'!).
- Responsible Person Email office@mydomain.biz
- **Network** 10.0.7.0/24

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Hosted Zone Type	Reverse 🗸
Enabled	S
Domain Name	7.0.10.in-addr.arpa
Description	
ΠL	86400
Serial Number Offset	0
Authoritative Name Server	ns1.omp.intern.
Responsible Person Email	office@omp.biz
Generate NS Record	
Zone Transfers	No 🗸
Zone Transfer ACL	$+ \times$
Network	10.0.7.0/24

Create an NS Record for the Reverse Zone

For more information, see <u>How to Create a DNS Resource Record</u>.

Enter the following data:

- Type NS
- Name/Owner @
- TTL 3600
- Record Data ns1.mydomain.intern.

Create a PTR Record for the Reverse Zone

For more information, see <u>How to Create a DNS Resource Record</u>.

Enter the following data:

- Type PTR
- Name/Owner 2
- TTL 3600
- Record Data ns1.mydomain.intern.

Barracuda CloudGen Firewall



▲ 7.0.10.in-addr.arpa (Reverse)	Enabled			86400	office@omp.biz		
		NS	@	3600		ns1.omp.intem.	
		PTR	2	3600		ns1.omp.intem.	

Configure a DNS Listener

For more information, see <u>How to Configure a DNS Listener</u>.

Enter the following data:

- Listener Name Intern
- Listener IP 10.0.7.1
- Classification INTERNAL
- Recursive Lookup Select the check box.

For your DNS forwarder, configure your preferred DNS server(s) to send queries to if the local DNS service cannot resolve the query.

This example uses the IP address 8.8.8.8 for the DNS forwarder.

DNS Listeners Classification						$\times \mathbb{A}^+$
	Listener Nam	e	Listener IP	Classification		Recur
	Intern		10.0.7.1	INTERNAL		yes
ADNS Health Probing	No	\sim				
Haalth Drohad						57 A L
Health Probes	News	late for a s	Second ID	Trac	Taurat	×/+
	Name	Interface	Source IP	Type	Target	
DNS Forwarders						\pm \vee
	8.8.8.8					
Forward Source IP	Explicit	\sim				



Configure the DHCP Service

To make DHCP work with Dynamic DNS, you must configure an advanced pool for the IP addresses that are going to be leased by the client appliances.

Perform the following steps:

Step 1. Enable Advanced Pool Configuration

- 1. Go to CONFIGURATION > Configuration Tree > Box > Assigned Services > DHCP Enterprise Configuration.
- 2. Click Lock.
- Ensure that the Advanced Configuration Mode is activated. You can check this by clicking Configuration Mode at the bottom of the left navigation bar. If the sub-entry shows Switch to Advanced, click to do so.
- 4. In the left navigation column, click **Operational Setup IPv4** unless this menu entry is not already selected.
- 5. For Enable DHCPv4, select yes to enable DHCP.
- 6. For **Interface Usage**, select **Shared IPs** from the menu list.
- 7. For Use Advanced Pool Configuration, select yes.

Address Pool Configuration					
Enable DHCPv4	yes			\sim	Ē
Interface Usage	Shared IPs			\sim	Ē
Use Advanced Pool Configuration	yes			\sim	Ē
Enable DHCPv4 Authentication	no			\sim	Ē
Subnets			💉 🕂 🗙 🗗		Ē
	Name	Enable Subnet	Used Subnet		
				_	

8. The navigation column on the left side displays a red bullet with a white 'x' indicating that you must configure the IP address pool on the advanced level.

Barracuda CloudGen Firewall



	✓ Configuration		
	🥏 Operational Setup IPv4		
	Operational Setup IPv6 Operational Setup		
	😣 Address Pools		
	Known Clients DHCP Option Templates Parameter Templates Classes Dynamic DNS GUI as Text Text Based Configuration		
	Switch to Basic View		
9.	A notification wind	low is displayed:	
	🔊 Barracuda Firewall Adm	n 9.0 - Configuration	×
	Attention! Enabling "Use Advanced P the "Address Pool Configu	ool Configuration", disables configured "Subnets" within ation" section.	

- 10. Click **Ok**.
- 11. The menu entry **Address Pools** in the left navigation column is highlighted in bold letters. This indicates that you must do the next configuration here.

Ok

Cancel

Step 2. Configure Your DHCP Address Pool for Leasing IP Addresses to Requesting Clients

- 1. Go to CONFIGURATION > Configuration Tree > Box > Assigned Services > DHCP Enterprise Configuration > Address Pools.
- 2. Click the green '+' to add a subnet.
- 3. The **Advanced Subnets** dialog window is displayed requesting you to enter the name for the address pool.

🙆 Advanc	ed Subnets		\times
Name /	DVA01		
	ОК	Cancel	

- 4. Enter the name of your subnet.
- 5. Click **OK...** .
- 6. The **Advanced Subnets** configuration window is displayed.
- 7. For **Description**, enter the name of your subnet.
- 8. For **Used Subnet**, select the network that the address pool for DHCP leasing addresses will be in.
- 9. Select the values for the following configuration fields:
 - 1. Server is Authoritative yes
 - 2. **Perform DDNS Updates yes**. This is the parameter that will enable the communication between DHCP and DDNS.
 - 3. **DNS Zone** -mydomain
- 10. Click the green '+' for **Address Pools**.



- 11. The Address Pools window is displayed.
- 12. Enter the name of your new leasing IP address pool.
- 13. Click **OK...** .
- 14. Enter a name for the **Description** to give your new address pool a name.
- 15. In the section **Pool Properties**, enter the following values:
 - 1. **IP Begin** Enter 10.0.7.40 for the beginning of your IP address pool.
 - 2. **IP End** Enter 10.0.7.60 for the end of your IP address pool.

16. For Pool DHCP Options, select default.

Pool Properties		
IP Begin	10.0.7.40	i d
IP End	10.0.7.60	Ē ⊒ Ē~
Pool DHCP Options	default	✓

17. Click **OK**.

Subnet Description	
Description	Ēv

Subnet Configuration					
Used Subnet	10.0.7.0/24 (b	oxnet)		\sim	Ē×
Network Address					Ēv
Interface					Ē,×
DHCP Server Identifier					Ēv
Server Is Authoritative	yes			\sim	Ēv
Perform DDNS Updates	true			\sim	Ēv
DNS Zone	omp			\sim	Ē×
Subnet Parameters	default			\sim	Ēv
Subnet DHCP Options	default			\sim	Ēv
Address Pools			💉 🕂 🗙 ab/	D 🗄	Ē
	Name	Description	IP Begin		
	ADDR01		10.0.7.40		

- 18. Click **OK**.
- 19. Click Send Changes/Activate.



Step 3. Register Known Clients

If there are clients with a fixed IP address in the common network where DHCP IP addresses are dynamically assigned, you must register these appliances here.

- 1. In the left menu column, click Known Clients.
- 2. Click **Lock**.
- 3. In the Known Clients Configuration section, click the green '+'.
- 4. The **Client Groups** window is displayed.
- 5. Click **OK...** .
- 6. Click the green '+' in the **Client Group Members** section.
- 7. The **Clients** window is displayed.
- 8. For **Description**, enter the name of the new client.
- 9. In the **Client Match & Address Assignment** section, enter the MAC address of your client for **MAC Address**.
- 10. If you running an ethernet network, select **ethernet** for **MAC Type**.
- 11. Click on the green '+' for **Fixed IP Addresses** to add an IP address for the configured MAC address.

Ensure that the IP address <u>is not within</u> the configured range of valid IP addresses from the IP address leasing pool!

Client Match & Address Assignment						
DHCP Client Identifier			Ēv			
MAC Address	11:12:48		Ē			
MAC Type	ethemet	~	Ē			
Fixed IP Addresses		\mathbb{E} \rightarrow \times $+$ \mathbb{E}	Ē			
	10.0.7.15					

- 12. Ensure that the following parameters are set as follows:
 - 1. Client DHCP Options default
 - 2. Client Parameters default
 - 3. Always Broadcast Reply not-set
 - 4. Duplicate Policy allow
- 13. Click **OK**.
- 14. Click **OK**.
- 15. Click Send Changes/Activate.

Step 4. Configure DDNS

Finally, you must configure the DDNS to operate in the required mode.

1. In the left menu column, select **Dynamic DNS**.



- 2. Click Lock.
- 3. For the DNS Update Scheme, select interim.
- 4. For **Client Updates**, select **allow**.
- 5. For **DNS Zones**, click the green '+' in the **DNS Authentication** section to add a zone.
- 6. The **DNS Zones** dialog window is displayed requesting you to enter the name for the DynDNS zone to sync with the DHCP service.

🙆 DNS	Zones			\times
Name	DNSZ01			
	ОК	Cancel]	

- 7. Enter the name of the zone (e.g., mydomain).
- 8. Click **OK...** .
- 9. The **DNS Zones** configuration window is displayed.
- 10. For **Zone Type**, select **Both** from the menu list.
- 11. For the **DNS Server IP**, enter 10.0.7.1.
- 12. For **Forward Zone Name**, enter mydomain.intern
- 13. For **Reverse Lookup Net**, enter 10.0.7.0.
- 14. For Reverse Lookup Netmask, select 24-Bit from the menu list.

Client Match & Address Assignment							
DHCP Client Identifier			Ēv				
MAC Address	11:12:48		Ē,				
MAC Type	ethemet	~	Ē				
Fixed IP Addresses		E ≥ + × +	Ēv				
	10.0.7.15						

- 15. Click **Ok**.
- 16. Click Send Changes/Activate.



Figures

- 1. dhcp_dyndns_configuration_values_for_primary_zone.png
- 2. dhcp_dyndns_configuration_values_for_primary_zone_A_record.png
- 3. dhcp_dyndns_configuration_values_for_primary_complete_list.png
- 4. dhcp_dyndns_configuration_values_for_reverse_zone.png
- 5. dhcp_dyndns_configuration_values_for_reverse_zone_complete_list.png
- 6. dhcp dyndns configuration values for DNS listener.png
- 7. dhcp_dyndns_configuration_dhcp_configuration.png
- 8. dhcp_dyndns_configuration_menu_column_for_advanced_pool_config.png
- 9. dhcp_dyndns_configuration_values_for_dhcp_notification_window.png
- 10. dhcp_dyndns_configuration_dialog_window_for_advanced_subnets.png
- 11. dhcp_dyndns_configuration_values_for_dhcp_pool.png
- 12. dhcp_dyndns_dhcp_advanced_pool_configuration_window.png
- 13. dhcp_dyndns_configuration_client_match_address_assignment.png
- 14. dhcp dyndns configuration dialog window for dyn dns zones.png
- 15. dhcp_dyndns_configuration_client_match_address_assignment.png

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