

VYATTA, INC.

| **Vyatta System**

IP Services

REFERENCE GUIDE

SSH
Telnet
DHCP
DNS
Web Caching



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Table of Contents

Quick Reference to Commands	vii
Quick List of Examples	x
Preface	xii
Intended Audience	xiii
Organization of This Guide	xiii
Document Conventions	xiv
Advisory Paragraphs	xiv
Typographic Conventions	xiv
Vyatta Publications	xvi
Chapter 1 SSH	1
SSH Configuration	2
SSH Commands	3
service ssh	4
service ssh allow-root	5
service ssh disable-password-authentication	6
service ssh port <port>	7
service ssh protocol-version <version>	8
Chapter 2 Telnet	9
Telnet Configuration	10
Telnet Commands	11
service telnet	12
service telnet allow-root	13
service telnet port <port>	14
telnet <address>	15

Chapter 3 DHCP	16
DHCP Overview	17
DHCP Configuration	18
Enabling the DHCP Server	18
Configuring DHCP Address Pools	18
Creating a Static Mapping	22
Setting up DHCP Servers for Failover	23
Setting up DHCP Relay	27
Setting Additional DHCP Configuration Parameters	28
DHCP Commands	32
clear dhcp lease ip <ipv4>	36
clear dhcp leases	37
release dhcp interface <interface>	38
renew dhcp interface <interface>	39
service dhcp-relay	40
service dhcp-relay interface <interface>	41
service dhcp-relay relay-options	43
service dhcp-relay server <ipv4>	46
service dhcp-server	47
service dhcp-server disabled <state>	48
service dhcp-server dynamic-dns-update enable <state>	49
service dhcp-server global-parameters <params>	50
service dhcp-server shared-network-name <name>	52
service dhcp-server shared-network-name <name> authoritative <state>	53
service dhcp-server shared-network-name <name> description <desc>	55
service dhcp-server shared-network-name <name> disable	56
service dhcp-server shared-network-name <name> shared-network-parameters <params>	57
service dhcp-server shared-network-name <name> subnet <ipv4net>	59
service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-name <bootfile>	61
service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-sever <addr>	63
service dhcp-server shared-network-name <name> subnet <ipv4net> client-prefix-length <prefix>	65
service dhcp-server shared-network-name <name> subnet <ipv4net> default-router <ipv4>	67
service dhcp-server shared-network-name <name> subnet <ipv4net> dns-server <ipv4>	69
service dhcp-server shared-network-name <name> subnet <ipv4net> domain-name <domain-name>	71
service dhcp-server shared-network-name <name> subnet <ipv4net> exclude <ipv4>	73
service dhcp-server shared-network-name <name> subnet <ipv4net> failover	75
service dhcp-server shared-network-name <name> subnet <ipv4net> failover local-address <ipv4>	77
service dhcp-server shared-network-name <name> subnet <ipv4net> failover name <peer-name>	79
service dhcp-server shared-network-name <name> subnet <ipv4net> failover peer-address <ipv4>	81
service dhcp-server shared-network-name <name> subnet <ipv4net> failover status <status>	83
service dhcp-server shared-network-name <name> subnet <ipv4net> ip-forwarding enable <state>	85
service dhcp-server shared-network-name <name> subnet <ipv4net> lease <seconds>	87
service dhcp-server shared-network-name <name> subnet <ipv4net> ntp-server <ipv4>	89

service dhcp-server shared-network-name <name> subnet <ipv4net> pop-server <ipv4>	91
service dhcp-server shared-network-name <name> subnet <ipv4net> server-identifier <ipv4>	93
service dhcp-server shared-network-name <name> subnet <ipv4net> smtp-server <ipv4>	95
service dhcp-server shared-network-name <name> subnet <ipv4net> start <ipv4> stop <ipv4>	97
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>	99
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> disable	101
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> ip-address <ipv4> 103	
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> mac-address <mac> 105	
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> static-mapping-parameters <params>	107
service dhcp-server shared-network-name <name> subnet <ipv4net> static-route destination-subnet <ipv4net> .	109
service dhcp-server shared-network-name <name> subnet <ipv4net> static-route router <ipv4>	111
service dhcp-server shared-network-name <name> subnet <ipv4net> subnet-parameters <params>	113
service dhcp-server shared-network-name <name> subnet <ipv4net> tftp-server-name <servername>	115
service dhcp-server shared-network-name <name> subnet <ipv4net> time-offset <seconds>	117
service dhcp-server shared-network-name <name> subnet <ipv4net> time-server <ipv4>	119
service dhcp-server shared-network-name <name> subnet <ipv4net> wins-server <ipv4>	121
service dhcp-server shared-network-name <name> subnet <ipv4net> wpad-url <url>	123
show dhcp client leases	125
show dhcp leases	126
show dhcp statistics	127
Chapter 4 DNS	128
DNS Configuration	129
DNS Overview	129
System DNS	129
Dynamic DNS	129
DNS Forwarding	130
DNS Configuration Examples	130
Configuring Access to a Name Server	131
Configuring Dynamic DNS	131
Configuring DNS Forwarding	134
Statically Configured Entries and DNS Forwarding	137
DNS Commands	139
clear dns forwarding all	141
clear dns forwarding cache	142
service dns dynamic interface <interface>	143
service dns dynamic interface <interface> service <service>	144
service dns dynamic interface <interface> service <service> host-name <hostname>	146

service dns dynamic interface <interface> service <service> login <service-login>	148
service dns dynamic interface <interface> service <service> password <service-password>	150
service dns dynamic interface <interface> service <service> server <addr>	152
service dns forwarding cache-size <size>	154
service dns forwarding dhcp <interface>	155
service dns forwarding listen-on <interface>	157
service dns forwarding name-server <ipv4>	159
service dns forwarding system	161
show dns dynamic status	163
show dns forwarding nameservers	164
show dns forwarding statistics	165
update dns dynamic interface <interface>	166
Chapter 5 Web Caching	167
Web Caching Configuration	168
Web Caching Overview	168
Web Caching Configuration Example	168
Configuring Web Caching	169
Web Caching Commands	170
service webproxy append-domain <domain>	171
service webproxy cache-size <size>	172
service webproxy default-port <port>	173
service webproxy disable-access-log	174
service webproxy domain-noncache <domain>	175
service webproxy listen-address <ipv4>	176
service webproxy listen-address <ipv4> disable-transparent	178
service webproxy listen-address <ipv4> port <port>	180
Glossary of Acronyms	181

Quick Reference to Commands

Use this section to help you quickly locate a command.

Quick List of Examples

Use this list to help you locate examples you'd like to try or look at.

Example 1-1	Enabling SSH access	2
Example 2-1	Enabling Telnet access	10
Example 2-2	"telnet 192.168.1.77": Displaying the Telnet session being established	15
Example 3-1	Enabling the DHCP service	18
Example 3-2	Configuring DHCP address pools	20
Example 3-3	Creating a static mapping	22
Example 3-4	Setting up DHCP failover on R1	24
Example 3-5	Setting up DHCP failover on R2	25
Example 3-6	Setting up DHCP relay	28
Example 3-7	Setting up DHCP server with additional parameters	30
Example 3-8	"show dhcp client leases"	125
Example 3-9	"show dhcp leases"	126
Example 3-10	"show dhcp statistics"	127
Example 4-1	Configuring static access to a DNS name server	131
Example 4-2	Setting up dynamic DNS.	133
Example 4-3	Setting up DNS forwarding	136
Example 4-4	Setting up static entries	137
Example 4-5	Displaying information for hosts configured for DDNS	163
Example 4-6	Displaying DNS forwarding name server information	164
Example 4-7	Displaying DNS forwarding statistics	165
Example 5-1	Setting up web caching	169

Preface

This guide explains how to deploy IP services on the Vyatta system. It describes the available commands and provides configuration examples.

This preface provides information about using this guide. The following topics are covered:

- Intended Audience
- Organization of This Guide
- Document Conventions
- Vyatta Publications

Intended Audience

This guide is intended for experienced system and network administrators. Depending on the functionality to be used, readers should have specific knowledge in the following areas:

- Networking and data communications
- TCP/IP protocols
- General router configuration
- Routing protocols
- Network administration
- Network security

Organization of This Guide

This guide has the following aid to help you find the information you are looking for:

- **Quick Reference to Commands**

Use this section to help you quickly locate a command.

- **Quick List of Examples**

Use this list to help you locate examples you'd like to try or look at.

This guide has the following chapters and appendixes:

Chapter	Description	Page
Chapter 1: SSH	This chapter explains how to set up Secure Shell (SSH) access on the Vyatta system.	1
Chapter 2: Telnet	This chapter explains how to set up Telnet access on the Vyatta system.	9
Chapter 3: DHCP	This chapter describes how to implement DHCP on the Vyatta system.	16
Chapter 4: DNS	This chapter explains how to use Domain Name System (DNS) on the Vyatta system.	128
Chapter 5: Web Caching	This chapter explains how to set up web caching on the Vyatta system.	167
Glossary of Acronyms		181

Document Conventions

This guide contains advisory paragraphs and uses typographic conventions.

Advisory Paragraphs

This guide uses the following advisory paragraphs:

Warnings alert you to situations that may pose a threat to personal safety, as in the following example:



WARNING *Switch off power at the main breaker before attempting to connect the remote cable to the service power at the utility box.*

Cautions alert you to situations that might cause harm to your system or damage to equipment, or that may affect service, as in the following example:



CAUTION *Restarting a running system will interrupt service.*

Notes provide information you might need to avoid problems or configuration errors:

NOTE *You must create and configure network interfaces before enabling them for routing protocols.*

Typographic Conventions

This document uses the following typographic conventions:

Monospace	Examples, command-line output, and representations of configuration nodes.
bold Monospace	Your input: something you type at a command line.
bold	Commands, keywords, and file names, when mentioned inline. Objects in the user interface, such as tabs, buttons, screens, and panes.
<i>italics</i>	An argument or variable where you supply a value.
<key>	A key on your keyboard, such as <Enter>. Combinations of keys are joined by plus signs (“+”), as in <Ctrl>+c.
[<i>arg1</i> <i>arg2</i>]	Enumerated options for completing a syntax. An example is [enable disable].
<i>num1–numN</i>	A inclusive range of numbers. An example is 1–65535, which means 1 through 65535, inclusive.
<i>arg1..argN</i>	A range of enumerated values. An example is eth0..eth3, which means eth0, eth1, eth2, or eth3.
<i>arg</i> [<i>arg...</i>] <i>arg</i> [, <i>arg...</i>]	A value that can optionally represent a list of elements (a space-separated list in the first case and a comma-separated list in the second case).

Vyatta Publications

More information about the Vyatta system is available in the Vyatta technical library, and on www.vyatta.com and www.vyatta.org.

Full product documentation is provided in the Vyatta technical library. To see what documentation is available for your release, see the *Guide to Vyatta Documentation*. This guide is posted with every release of Vyatta software and provides a great starting point for finding the information you need.

Chapter 1: SSH

This chapter explains how to set up Secure Shell (SSH) access on the Vyatta system.

This chapter presents the following topics:

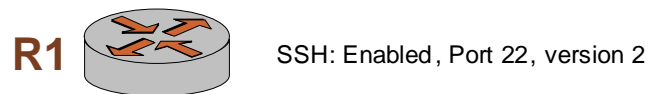
- SSH Configuration
- SSH Commands

SSH Configuration

Secure Shell (SSH) provides a secure mechanism to log on to the Vyatta system and access the Command Line Interface (CLI). Configuring SSH is optional, but is recommended to provide secure remote access to the Vyatta system. In addition to the standard password authentication provided by SSH, shared public key authentication is also available.

Example 1-1 enables SSH for password authentication on the default port (port 22), as shown in Figure 1-1. By default, only SSH version 2 is enabled.

Figure 1-1 Enabling SSH access



To enable the SSH service on the Vyatta system, perform the following steps in configuration mode:

Example 1-1 Enabling SSH access

Step	Command
Create the configuration node for the SSH service.	vyatta@R1# set service ssh [edit]
Commit the information	vyatta@R1# commit Restarting OpenBSD Secure Shell server: sshd. [edit]
Show the configuration.	vyatta@R1# show service ssh { } [edit]

SSH Commands

This chapter contains the following commands.

Configuration Commands

service ssh	Enables SSH as an access protocol on the Vyatta system.
service ssh allow-root	Specifies that root logins are to be allowed on SSH connections.
service ssh disable-password-authentication	Specifies that SSH users are not to be authenticated using passwords.
service ssh port <port>	Specifies the port the system will use for the SSH service.
service ssh protocol-version <version>	Specifies which versions of SSH are enabled.

Operational Commands

None

service ssh

Enables SSH as an access protocol on the Vyatta system.

Syntax

```
set service ssh
delete service ssh
show service ssh
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  ssh {
  }
}
```

Parameters

None.

Default

None.

Usage Guidelines

Use this command to configure the system to allow SSH requests from remote systems to the local system.

Creating the SSH configuration node enables SSH as an access protocol. By default, the router uses port 22 for the SSH service, and SSH version 2 alone is used.

Use the **set** form of this command to create the SSH configuration.

Use the **delete** form of this command to remove the SSH configuration. If you delete the SSH configuration node you will disable SSH access to the system.

Use the **show** form of this command to view the SSH configuration.

service ssh allow-root

Specifies that root logins are to be allowed on SSH connections.

Syntax

```
set service ssh allow-root
delete service ssh allow-root
show service ssh
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  ssh {
    allow-root
  }
}
```

Parameters

None

Default

Root logins are not allowed on SSH connections.

Usage Guidelines

Use this command to specify that root logins are to be allowed on SSH connections.

NOTE The **root** account is often the target of external attacks so its use is discouraged. The **vyatta** account provides sufficient privileges to administer the system.

Use the **set** form of this command to specify that root logins are to be allowed on SSH connections.

Use the **delete** form of this command to restore the default allow-root configuration.

Use the **show** form of this command to view the configuration.

service ssh disable-password-authentication

Specifies that SSH users are not to be authenticated using passwords.

Syntax

```
set service ssh disable-password-authentication
delete service ssh disable-password-authentication
show service ssh
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  ssh {
    disable-password-authentication
  }
}
```

Parameters

None

Default

Users are authenticated using passwords.

Usage Guidelines

Use this command to specify that SSH users are not to be authenticated using passwords. This is typically done in order for SSH users to be authenticated using shared public keys instead. Shared public key authentication is less susceptible to brute force guessing of common passwords. If password authentication is disabled then shared public keys must be configured for user authentication. For information on configuring public keys for user authentication see the *Vyatta Basic System Reference Guide*.

Use the **set** form of this command to specify that users are not to be authenticated by using passwords.

Use the **delete** form of this command to restore the default configuration and allow authentication by passwords.

Use the **show** form of this command to view the configuration.

service ssh port <port>

Specifies the port the system will use for the SSH service.

Syntax

```
set service ssh port port
delete service ssh port
show service ssh port
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  ssh {
    port 1-65534
  }
}
```

Parameters

<i>port</i>	The port the system will use for the SSH service. The range is 1 to 65534. The default is 22
-------------	--

Default

The SSH service runs on port 22.

Usage Guidelines

Use this command to specify the port the system will use for the SSH service.

Use the **set** form of this command to specify the port the system will use for the SSH service.

Use the **delete** form of this command to restore the default port configuration.

Use the **show** form of this command to view the port configuration.

service ssh protocol-version <version>

Specifies which versions of SSH are enabled.

Syntax

```
set service ssh protocol-version version
delete service ssh protocol-version
show service ssh protocol-version
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  ssh {
    protocol-version [v1|v2|all]
  }
}
```

Parameters

<i>version</i>	Specifies which versions of SSH are enabled. Supported values are as follows: v1 : SSH version 1 alone is enabled. v2 : SSH version 2 alone is enabled. This is the recommended setting as v1 is considered insecure. all : Both SSH version 1 and SSH version 2 are both enabled. The default value is v2 .
----------------	---

Default

SSH version 2 alone is enabled.

Usage Guidelines

Use this command to specify which versions of SSH are enabled.

Use the **set** form of this command to specify which versions of SSH are enabled.

Use the **delete** form of this command to restore the default protocol-version configuration.

Use the **show** form of this command to view the protocol-version configuration.

Chapter 2: Telnet

This chapter explains how to set up Telnet access on the Vyatta system.

This chapter presents the following topics:

- Telnet Configuration
- Telnet Commands

Telnet Configuration

Configuring Telnet is optional, but creating the Telnet service will allow you to access the Vyatta system remotely. Example 2-1 enables Telnet on the default port (port 23), as shown in Figure 2-1.

Figure 2-1 Enabling Telnet access



To enable the Telnet service on the Vyatta system, perform the following steps in configuration mode:

Example 2-1 Enabling Telnet access

Step	Command
Create the configuration node for the Telnet service.	vyatta@R1# set service telnet [edit]
Commit the information.	vyatta@R1# commit OK [edit]
Show the configuration.	vyatta@R1# show service telnet { } [edit]

Telnet Commands

This chapter contains the following commands.

Configuration Commands

service telnet	Configures Telnet as an access protocol on the system.
service telnet allow-root	Specifies that root logins are allowed on Telnet connections.
service telnet port <port>	Specifies the port the system will use for the Telnet service.

Operational Commands

telnet <address>	Creates a terminal session to a Telnet server.
------------------	--

service telnet

Configures Telnet as an access protocol on the system.

Syntax

```
set service telnet
delete service telnet
show service telnet
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  telnet {
  }
}
```

Parameters

None.

Default

None.

Usage Guidelines

Use this command to configure the system to accept Telnet as an access service to the system.

Creating the Telnet configuration node enables Telnet as an access protocol. By default, the system uses port 23 for the Telnet service.

Use the **set** form of this command to create the Telnet configuration.

Use the **delete** form of this command to remove the Telnet configuration. If you delete the Telnet configuration node you will disable Telnet access to the system.

Use the **show** form of this command to view the Telnet configuration.

service telnet allow-root

Specifies that root logins are allowed on Telnet connections.

Syntax

```
set service telnet allow-root
delete service telnet allow-root
show service telnet
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  telnet {
    allow-root
  }
}
```

Parameters

None.

Default

Root logins are not allowed on Telnet connections.

Usage Guidelines

Use this command to specify that root logins are to be allowed on Telnet connections.

Use the **set** form of this command to specify that root logins are to be allowed on Telnet connections.

Use the **delete** form of this command to restore the default allow-root configuration.

Use the **show** form of this command to view the configuration.

service telnet port <port>

Specifies the port the system will use for the Telnet service.

Syntax

```
set service telnet port port
delete service telnet port
show service telnet port
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  telnet {
    port 1-65534
  }
}
```

Parameters

<i>port</i>	The port the system will use for the Telnet service. The range is 1 to 65534.
-------------	---

Default

The default is port 23.

Usage Guidelines

Use this command to specify the port the system will use for the Telnet service.

Use the **set** form of this command to specify the port the system will use for the Telnet service.

Use the **delete** form of this command to restore the default port configuration.

Use the **show** form of this command to view the port configuration.

telnet <address>

Creates a terminal session to a Telnet server.

Syntax

telnet *address*

Command Mode

Operational mode.

Parameters

<i>address</i>	Mandatory. The IP address or hostname of the Telnet server to connect to. The system connects through port 23 (the well-known port for the Telnet service).
----------------	---

Default

None

Usage Guidelines

Use this command to create a terminal session to a remote machine running a Telnet service.

Examples

Example 2-2 shows a telnet session being established to 192.168.1.77.

Example 2-2 “telnet 192.168.1.77”: Displaying the Telnet session being established

```
vyatta@R1:~$ telnet 192.168.1.77
```

```
Entering character mode
Escape character is '^]'.

```

```
Welcome to Vyatta
vyatta login:

```

Chapter 3: DHCP

This chapter describes how to implement DHCP on the Vyatta system.

This chapter presents the following topics:

- DHCP Overview
- DHCP Configuration
- DHCP Commands

DHCP Overview

Dynamic Host Configuration Protocol (DHCP) allows dynamic assignment of reusable IP addresses and other configuration information to DHCP clients. This reduces costs, configuration effort, and management burden associated with Internet access. On the other hand, it also increases network and service overhead.

In DHCP, the server assigns an IP address and other configuration parameters to a client for a limited period of time. This period of time is called the *lease*. The lease is valid for the period you configure on the Vyatta system, or until the client explicitly relinquishes the address.

To use the DHCP service, you define a pool of IP addresses for each subnet assigned by the DHCP server. Each DHCP address pool is mapped to a subnet associated with the system. For each address pool, you can specify the length of time an address will be valid (its lease duration). The default lease duration is 24 hours. You can also specify a number of different servers (for example DNS, WINS, SMTP, ...) available to clients on the subnet.

You can statically map an IP address to the MAC address of a device. The DHCP service listens on UDP port 67 for lease requests from DHCP clients. The request packet allows the system to determine which interface the client is located on. It then assigns an IP address from the appropriate pool and binds it to the client.

In addition to providing a DHCP server, individual interfaces on the Vyatta system can be configured as DHCP clients. For details, see the Vyatta documentation for the interface you are interested in configuring as a DHCP client.

The Vyatta system also supports DHCP relay.

A DHCP relay agent receives DHCP packets from DHCP clients and forwards them to a DHCP server. This allows you to place DHCP clients and DHCP servers on different networks; that is, across router interfaces.

The relay agent is configured with addresses of DHCP servers to which they should relay client DHCP message. The relay agent intercepts the broadcast, sets the gateway address (the **giaddr** field of the DHCP packet) and, if configured, inserts the Relay Agent Information option (option 82) in the packet and forwards it to the DHCP server.

The DHCP server echoes the option back verbatim to the relay agent in server-to-client replies, and the relay agent strips the option before forwarding the reply to the client.

DHCP Configuration

This section includes the following examples:

- Enabling the DHCP Server
- Configuring DHCP Address Pools
- Creating a Static Mapping
- Setting up DHCP Servers for Failover
- Setting up DHCP Relay
- Setting Additional DHCP Configuration Parameters

Enabling the DHCP Server

To use the DHCP server on the Vyatta system, you must enable the DHCP service.

To enable the DHCP service, perform the following steps in configuration mode:

Example 3-1 Enabling the DHCP service

Step	Command
Enable DHCP.	vyatta@R1# set service dhcp-server [edit]
Commit the information.	vyatta@R1# commit [edit]
Show the configuration.	vyatta@R1# show service dhcp-server { } [edit]

Configuring DHCP Address Pools

Configure DHCP address pools if you want the system to act as a DHCP server for the network.

Example 3-2 creates three address pools:

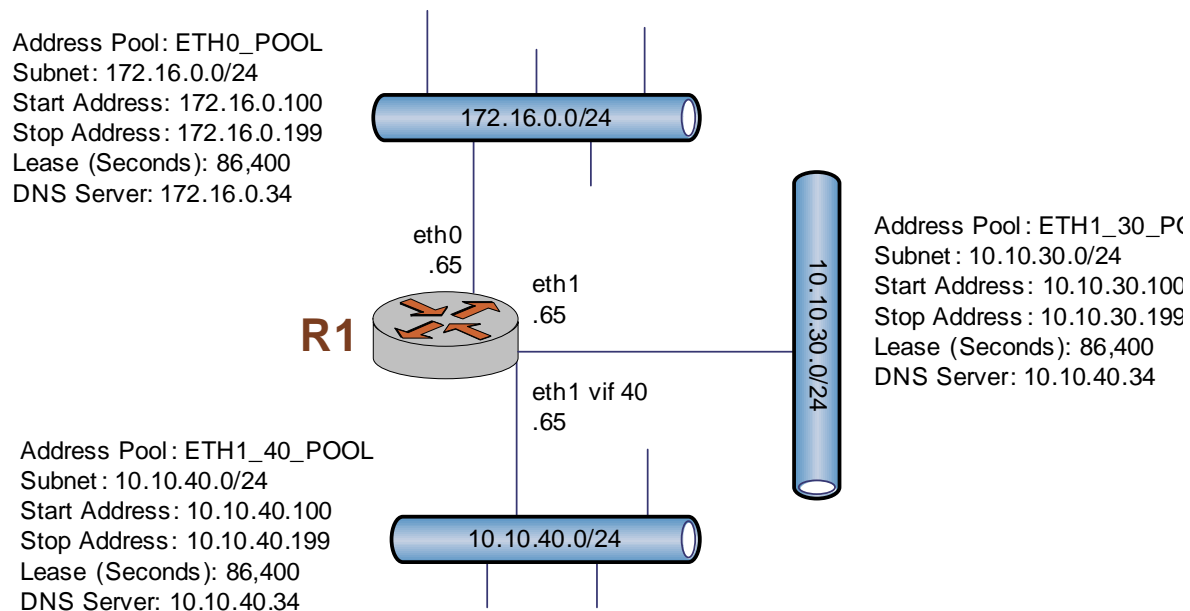
- **ETH0_POOL**. This address pool serves subnet 172.16.0.0/24, which is connected to interface eth0. The lease time will remain at the default, 24 hours (86,400 seconds). This address pool is able to use the DNS name server at 172.16.0.34.

- **ETH1_30_POOL.** This address pool serves subnet 10.10.30.0/24, which is connected directly to interface eth1. The lease time will remain at the default, 24 hours (86,400 seconds). This address pool will use the DNS name server at 10.10.40.34, which is directly connected to eth1.40 (that is, eth1 vif 40).
- **ETH1_40_POOL.** This address pool serves subnet 10.10.40.0/24, which is connected to interface eth1.40. The lease time will remain at the default, 24 hours (86,400 seconds). This address pool will use the DNS name server at 10.10.40.34, which is connected to eth1.40.

In all of these pools, the range of addresses is configured for .100 through .199.

Figure 3-1 shows the sample address pool configuration.

Figure 3-1 DHCP address pool configuration



To configure DHCP address pools, perform the following steps in configuration mode:

Example 3-2 Configuring DHCP address pools

Step	Command
Create the configuration node for ETH0_POOL on subnet 172.16.0.0/24. Specify the start and stop IP addresses for the pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH0_POOL subnet 172.16.0.0/24 start 172.16.0.100 stop 172.16.0.199 [edit]</pre>
Specify the default router for ETH0_POOL .	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH0_POOL subnet 172.16.0.0/24 default-router 172.16.0.65 [edit]</pre>
Specify a DNS server for ETH0_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH0_POOL subnet 172.16.0.0/24 dns-server 172.16.0.34 [edit]</pre>
Create the configuration node for ETH1_30_POOL on subnet 10.10.30.0/24. Specify the start and stop IP addresses for the pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_30_POOL subnet 10.10.30.0/24 start 10.10.30.100 stop 10.10.30.199 [edit]</pre>
Specify the default router for ETH1_30_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_30_POOL subnet 10.10.30.0/24 default-router 10.10.30.65 [edit]</pre>
Specify a DNS server for ETH1_30_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_30_POOL subnet 10.10.30.0/24 dns-server 10.10.40.34 [edit]</pre>
Create the configuration node for ETH1_40_POOL on subnet 10.10.40.0/24. Specify the start and stop IP addresses for the pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_40_POOL subnet 10.10.40.0/24 start 10.10.40.100 stop 10.10.40.199 [edit]</pre>
Specify the default router for ETH1_40_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_40_POOL subnet 10.10.40.0/24 default-router 10.10.40.65 [edit]</pre>
Specify a DNS server for ETH1_40_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_40_POOL subnet 10.10.40.0/24 dns-server 10.10.40.34 [edit]</pre>
Commit the change.	<pre>vyatta@R1# commit [edit]</pre>

Example 3-2 Configuring DHCP address pools

Show the configuration.

```
vyatta@R1# show service dhcp-server
  shared-network-name ETH0_POOL {
    subnet 172.16.0.0/24 {
      default-router 172.16.0.65
      dns-server 172.16.0.34
      start 172.16.0.100 {
        stop 172.16.0.199
      }
    }
  }
  shared-network-name ETH1_30_POOL {
    subnet 10.10.30.0/24 {
      default-router 10.10.30.65
      dns-server 10.10.30.34
      start 10.10.30.100 {
        stop 10.10.30.199
      }
    }
  }
  shared-network-name ETH1_40_POOL {
    subnet 10.10.40.0/24 {
      default-router 10.10.40.65
      dns-server 10.10.40.34
      start 10.10.40.100 {
        stop 10.10.40.199
      }
    }
  }
}
[edit]
```

Show the interface configuration.

```
vyatta@R1# show interfaces
  ethernet eth0 {
    address 172.16.0.65/24
    hw-id 00:0c:29:42:05:2b
  }
  ethernet eth1 {
    address 10.10.30.65/24
    hw-id 00:0c:29:42:05:35
    vif 40 {
      address 10.10.40.65/24
    }
  }
}
[edit]
```

Creating a Static Mapping

There are situations where it makes sense to map a specific IP address to a specific host rather than dynamically assign an IP address from a pool of addresses. This is known as a “static mapping”.

Static mappings are defined using the **static-mapping** option of the **service dhcp-server** configuration node. This example adds a static mapping to ETH0_POOL created in Example 3-2 . Example 3-3 does the following:

- Maps IP address 172.16.0.101 to the device with a MAC address of 00:15:c5:b3:2e:65.

Example 3-3 Creating a static mapping

Step	Command
Create a static mapping called “lab” and specify the static IP address within the ETH0_POOL pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH0_POOL subnet 172.16.0.0/24 static-mapping lab ip-address 172.16.0.101 [edit]</pre>
Specify the associated MAC address within the static mapping called “lab” in the ETH0_POOL pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH0_POOL subnet 172.16.0.0/24 static-mapping lab mac-address 00:15:c5:b3:2e:65 [edit]</pre>
Commit the information.	<pre>vyatta@R1# commit [edit]</pre>
Show the configuration.	<pre>vyatta@R1# show service dhcp-server shared-network-name ETH0_POOL shared-network-name ETH0_POOL { subnet 172.16.0.0/24 { default-router 172.16.0.65 dns-server 172.16.0.34 start 172.16.0.100 { stop 172.16.0.199 } static-mapping lab { ip-address 172.16.0.101 mac-address 00:15:c5:b3:2e:65 } } } [edit]</pre>

Setting up DHCP Servers for Failover

The Vyatta system also provides a failover feature to allow for DHCP redundancy on a given subnet.

In a failover configuration, two DHCP servers act as failover peers, with one of the peers designated as the primary and the other as the secondary. For DHCP failover to work:

- Both peers must be Vyatta systems, and must be running the same version of Vyatta software.
- Each server must be configured to point to the other as the failover peer.
- The time on the servers must be exactly synchronized.
- There must be at least one IP address in the start-stop range for each subnet that has not been either excluded (using **service dhcp-server shared-network-name <name> subnet <ipv4net> exclude <ipv4>**) or statically mapped (using **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>**).

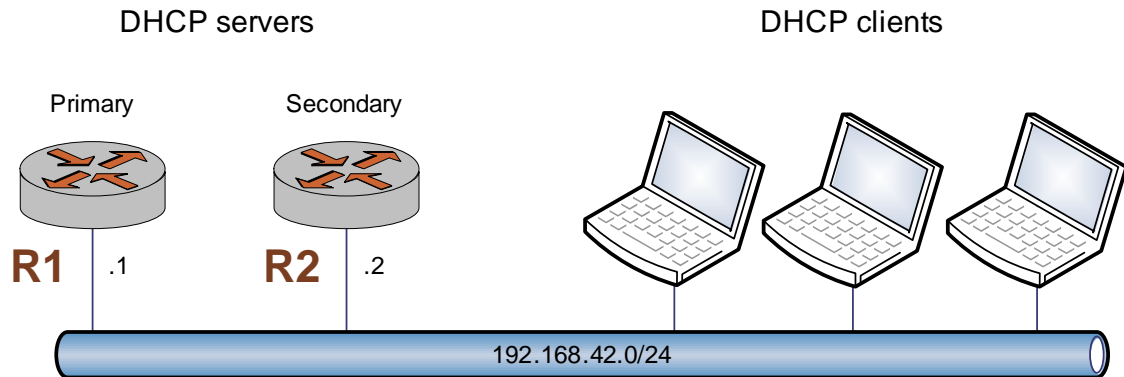
The system times should be synchronized before configuring DHCP failover. Use of NTP time synchronization is highly recommended. However, if difficulties arise due to incorrect system times, disable NTP, reset the times correctly, and then re-enable NTP.

Note that DHCP leases are only assigned in failover configurations if proper communication is established between the two failover peers. If the configuration is incorrect (if, for example, one failover peer is configured but the other is not), DHCP leases will not be dispersed.

Also note that statically mapped addresses will not be renewed by a failover server unless they are explicitly defined on that server using the **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>** command (see page 99).

Figure 3-2 shows the sample DHCP server failover configuration.

Figure 3-2 DHCP server failover configuration



To configure R1 as the Primary DHCP server in this failover scenario, perform the following steps in configuration mode on R1:

Example 3-4 Setting up DHCP failover on R1

Step	Command
Create the configuration node for DHCP1 on subnet 192.168.42.0/24. Specify the start and stop IP addresses for the pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 start 192.168.42.100 stop 192.168.42.199 [edit]</pre>
Specify the default router for DHCP1.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 default-router 192.168.42.254 [edit]</pre>
Specify a DNS server for DHCP1.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 dns-server 192.168.42.253 [edit]</pre>
Specify the local IP address for the DHCP server for failover.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover local-address 192.168.42.1 [edit]</pre>
Specify the IP address of the peer DHCP server for failover.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover peer-address 192.168.42.2 [edit]</pre>
Specify the role that the DHCP server will play in the failover group.	<pre>vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover status primary [edit]</pre>

Example 3-4 Setting up DHCP failover on R1

Specify the name of the failover group.	vyatta@R1# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover name FAILOVER [edit]
Commit the change	vyatta@R1# commit [edit]
Show the configuration.	vyatta@R1# show service dhcp-server shared-network-name DHCP1 <pre> shared-network-name DHCP1 { subnet 192.168.42.0/24 { default-router 192.168.42.254 dns-server 192.168.42.253 failover { local-address 192.168.42.1 name FAILOVER peer-address 192.168.42.2 status primary } start 192.168.42.100 { stop 192.168.42.199 } } } </pre> [edit]

To configure R2 as the Secondary DHCP server in this failover scenario, perform the following steps in configuration mode on R2:

Example 3-5 Setting up DHCP failover on R2

Step	Command
Create the configuration node for DHCP1 on subnet 192.168.42.0/24. Specify the start and stop IP addresses for the pool.	vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 start 192.168.42.100 stop 192.168.42.199 [edit]
Specify the default router for DHCP1.	vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 default-router 192.168.42.254 [edit]

Example 3-5 Setting up DHCP failover on R2

Specify a DNS server for DHCP1.	<pre>vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 dns-server 192.168.42.253 [edit]</pre>
Specify the local IP address for the DHCP server for failover.	<pre>vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover local-address 192.168.42.2 [edit]</pre>
Specify the IP address of the peer DHCP server for failover.	<pre>vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover peer-address 192.168.42.1 [edit]</pre>
Specify the role that the DHCP server will play in the failover group.	<pre>vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover status secondary [edit]</pre>
Specify the name of the failover group.	<pre>vyatta@R2# set service dhcp-server shared-network-name DHCP1 subnet 192.168.42.0/24 failover name FAILOVER [edit]</pre>
Commit the change	<pre>vyatta@R2# commit [edit]</pre>
Show the configuration.	<pre>vyatta@R2# show service dhcp-server shared-network-name DHCP1 shared-network-name DHCP1 { subnet 192.168.42.0/24 { default-router 192.168.42.254 dns-server 192.168.42.253 failover { local-address 192.168.42.2 name FAILOVER peer-address 192.168.42.1 status secondary } } start 192.168.42.100 { stop 192.168.42.199 } } [edit]</pre>

Setting up DHCP Relay

Configure DHCP relay if you want the Vyatta system to forward DHCP requests to another DHCP server.

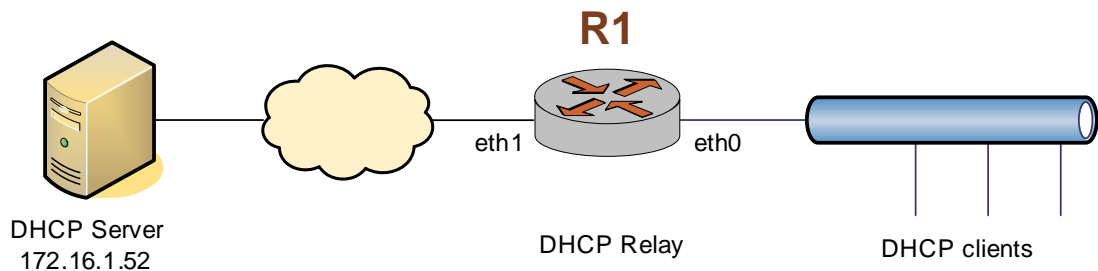
Every interface involved in the DHCP relay must be configured. So, for example, if requests are coming in on interface eth0 and the DHCP server specified in the configuration is reached through interface eth1, both eth0 and eth1 must be configured for DHCP.

Example 3-6 does the following:

- Configures both eth0 and eth1 for DHCP. The router is expected to receive client requests for the DHCP server through interface eth0. It will forward client-to-server DHCP messages to the DHCP server at 172.16.1.52 out through interface eth1.
- Enables relay options. This directs the system to add the Relay Agent Information option (option 82) to the DHCP message before forwarding, as specified by RFC 3046.
- Re-forwarding of DHCP messages will not be permitted by this system. If a packet is received that already contains relay information, the packet is discarded.
- Other relay option parameters are left at default values. This means that the router will use port 67 for DHCP messaging, will allow a maximum DHCP packet size of at most 576 bytes, and will have a maximum hop count of 10 hops.

Figure 3-3 shows the sample DHCP relay configuration.

Figure 3-3 DHCP relay configuration



To configure DHCP relay, perform the following steps in configuration mode:

Example 3-6 Setting up DHCP relay

Step	Command
Enable DHCP relay on interface eth0.	vyatta@R1# set service dhcp-relay interface eth0 [edit]
Enable DHCP relay on interface eth1.	vyatta@R1# set service dhcp-relay interface eth1 [edit]
Specify the IP address of the DHCP server.	vyatta@R1# set service dhcp-relay server 172.16.1.52 [edit]
Set the router to discard messages containing relay information. Leave other parameters at default values.	vyatta@R1# set service dhcp-relay relay-options relay-agents-packets discard [edit]
Commit the change	vyatta@R1# commit [edit]
Show the configuration.	vyatta@R1# show service dhcp-relay interface eth0 interface eth1 server 172.16.1.52 relay-options { relay-agents-packets discard } [edit]

Setting Additional DHCP Configuration Parameters

WARNING This is an advanced feature and should only be used by advanced users in special situations.

The Vyatta DHCP server commands provide a set of commonly used DHCP server features. However, many additional features are available. Information regarding the available DHCP server features can be found on the **dhcpcd.conf** man page. To access it, type the following at the Vyatta command prompt:

```
man dhcpcd.conf
```

To access these additional features use one of the following commands, depending on the required scope of the feature. The commands are listed from widest to narrowest scope:

- **service dhcp-server global-parameters <params>**
- **service dhcp-server shared-network-name <name> shared-network-parameters <params>**

- **service dhcp-server shared-network-name <name> subnet <ipv4net> subnet-parameters <params>**
- **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> static-mapping-parameters <params>**

The precedence of scope of these commands is from narrowest to widest. That is, if more than one command is specified and a given host address falls within the scope of both, it will be governed by parameters specified in the command with the narrowest scope.

Multiple parameter strings can be specified. Each parameter string specified adds a separate line into the **dhcpd.conf** file.

Note that no validation is done by the Vyatta system prior to passing the parameter string from these commands to the DHCP server process (dhcpd). Because of this it is imperative that the syntax described in the **dhcpd.conf** documentation be strictly followed. Failure to do so could result in the DHCP server crashing. It is advisable to check the system log for errors when using these parameter strings. Also, the **show system processes** command can be used to determine if the **dhcpd** process is still running.

The following example shows how the additional DHCP server parameters can be accessed. To configure additional DHCP server parameters, perform the following steps in configuration mode:

Example 3-7 Setting up DHCP server with additional parameters

Step	Command
Enable DHCP server and define an option that does not already have a keyword defined in the dhcpd process. See the dhcpd man page for further information.	<pre>vyatta@R1# set service dhcp-server global-parameters 'option rfc3442-static-route code 121 = string;' [edit]</pre>
Specify the value to be used for the option for all shared networks, subnets, and static mappings defined in the DHCP server configuration.	<pre>vyatta@R1# set service dhcp-server global-parameters 'option rfc3442-static-route 01:01:01:01:01:01:01:01;' [edit]</pre>
Specify that the DHCP server is authoritative for the specified shared network.	<pre>vyatta@R1# set service dhcp-server shared-network-name NET1 authoritative enable [edit]</pre>
Specify the subnet and address pool to use.	<pre>vyatta@R1# set service dhcp-server shared-network-name NET1 subnet 172.16.117.0/24 start 172.16.117.10 stop 172.16.117.20 [edit]</pre>
Specify an IP address to statically map to a host with a specific MAC address.	<pre>vyatta@R1# set service dhcp-server shared-network-name NET1 subnet 172.16.117.0/24 static-mapping MAP1 ip-address 172.16.117.15 [edit]</pre>
Specify the MAC address of a host to be statically mapped to an IP address.	<pre>vyatta@R1# set service dhcp-server shared-network-name NET1 subnet 172.16.117.0/24 static-mapping MAP1 mac-address 09:09:09:09:09:09 [edit]</pre>
Override the global value of the parameter defined above for a specific host.	<pre>vyatta@R1# set service dhcp-server shared-network-name NET1 subnet 172.16.117.0/24 static-mapping MAP1 static-mapping-parameters 'option rfc3442-static-route 01:01:01:01:01:01:01:02;' [edit]</pre>
Commit the change	<pre>vyatta@R1# commit [edit]</pre>

Example 3-7 Setting up DHCP server with additional parameters

Show the configuration.

```
vyatta@R1# show service dhcp-server
global-parameters "option rfc3442-static-route code 121
= string;"
global-parameters "option rfc3442-static-route
01:01:01:01:01:01:01;"
shared-network-name foo {
    authoritative enable
    subnet 172.16.117.0/24 {
        start 172.16.117.10 {
            stop 172.16.117.20
        }
        static-mapping bar {
            ip-address 172.16.117.15
            mac-address 09:09:09:09:09:09
            static-mapping-parameters "option
rfc3442-static-route
01:01:01:01:01:01:01:02;"
        }
    }
}
[edit]
```

DHCP Commands

This chapter contains the following commands.

Configuration Commands	
DHCP Relay	
service dhcp-relay	Configures the system to relay DHCP client messages to an off-net DHCP server.
service dhcp-relay interface <interface>	Specifies the interface to use for accepting DHCP requests or relaying DHCP client messages.
service dhcp-relay relay-options	Specifies whether to add the Relay Agent Information option (option 82) to the client-to-server packet.
service dhcp-relay server <ipv4>	Sets the IP address of the DHCP server.
DHCP Server	
service dhcp-server	Enables DHCP server functionality.
service dhcp-server disabled <state>	Allows you to disable the DHCP server without discarding configuration.
service dhcp-server dynamic-dns-update enable <state>	Specifies whether or not to dynamically update the Domain Name System.
service dhcp-server global-parameters <params>	Specifies additional global DHCP Server parameters.
service dhcp-server shared-network-name <name>	Specifies the name of a DHCP address pool.
service dhcp-server shared-network-name <name> authoritative <state>	Specifies whether the DHCP server is authoritative.
service dhcp-server shared-network-name <name> description <desc>	Provides a description of the shared network.
service dhcp-server shared-network-name <name> disable	Disables DHCP configuration for the shared network.
service dhcp-server shared-network-name <name> shared-network-parameters <params>	Specifies additional shared network DHCP Server parameters.
service dhcp-server shared-network-name <name> subnet <ipv4net>subnet	Specifies the IPv4 network to be served by a DHCP address pool.
service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-name <bootfile>	Specifies a bootstrap file from which diskless PCs can boot.
service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-sever <addr>	Specifies a bootstrap server from which diskless PCs can boot.

service dhcp-server shared-network-name <name> subnet <ipv4net> client-prefix-length <prefix>	Specifies the subnet prefix length to be assigned to clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> default-router <ipv4>	Specifies the address of the default router for DHCP clients on this subnet.
service dhcp-server shared-network-name <name> subnet <ipv4net> dns-server <ipv4>	Specifies the address of a DNS server for DHCP clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> domain-name <domain-name>	Provides the domain name for DHCP clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> exclude <ipv4>	Excludes an IP address from a DHCP address pool.
service dhcp-server shared-network-name <name> subnet <ipv4net> failover	Enables DHCP failover functionality for a DHCP address pool on a subnet.
service dhcp-server shared-network-name <name> subnet <ipv4net> failover local-address <ipv4>	Specifies the IP address of the local failover peer.
service dhcp-server shared-network-name <name> subnet <ipv4net> failover name <peer-name>	Specifies the peer name for the local failover peer.
service dhcp-server shared-network-name <name> subnet <ipv4net> failover peer-address <ipv4>	Specifies the IP address of the failover peer.
service dhcp-server shared-network-name <name> subnet <ipv4net> failover status <status>	Specifies the DHCP failover status for this peer.
service dhcp-server shared-network-name <name> subnet <ipv4net> ip-forwarding enable <state>	Specifies whether the client should configure its IP layer for packet forwarding.
service dhcp-server shared-network-name <name> subnet <ipv4net> lease <seconds>	Specifies how long the address assigned by the DHCP server will be valid.
service dhcp-server shared-network-name <name> subnet <ipv4net> ntp-server <ipv4>	Specifies the address of an NTP (Network Time Protocol) server available to clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> pop-server <ipv4>	Specifies the address of a POP3 (Post Office Protocol 3) server available to clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> server-identifier <ipv4>	Specifies the address for the DHCP server identifier.
service dhcp-server shared-network-name <name> subnet <ipv4net> smtp-server <ipv4>	Specifies the address of a SMTP (Simple Mail Transfer Protocol) server available to clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> start <ipv4> stop <ipv4>	Specifies the range of addresses that will be assigned to DHCP clients.
service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>	Maps a static IP address to a specific DHCP client based on its MAC address.

<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> disable</code>	Disables DHCP configuration for the specified static mapping.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> ip-address <ipv4></code>	Specifies a static IP address for a specific DHCP client.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> mac-address <mac></code>	Specifies the MAC address of a DHCP client to assign a static IP address to.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> static-mapping-parameters <params></code>	Specifies additional static mapping DHCP Server parameters.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-route destination-subnet <ipv4net></code>	Specifies the destination subnet of a static route for clients to store in their routing cache.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> static-route router <ipv4></code>	Specifies the router for the destination of a static route for clients to store in their routing cache.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> subnet-parameters <params></code>	Specifies additional subnet DHCP Server parameters.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> tftp-server-name <servername></code>	Specifies the name of a TFTP (Trivial File Transfer Protocol) server available to clients.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> time-offset <seconds></code>	Specifies the offset of the client's subnet in seconds from UTC (Coordinated Universal Time).
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> time-server <ipv4></code>	Specifies the address of an RFC868 time server available to clients.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> wins-server <ipv4></code>	Specifies the address of a WINS server that is available to DHCP clients.
<code>service dhcp-server shared-network-name <name> subnet <ipv4net> wpad-url <url></code>	Specifies the Web Proxy Autodiscovery (WPAD) URL

Operational Commands

<code>clear dhcp lease ip <ipv4></code>	Removes the DHCP lease for the specified IP address.
<code>clear dhcp leases</code>	Removes current DHCP leases.
<code>release dhcp interface <interface></code>	Releases the current DHCP client lease on an interface.
<code>renew dhcp interface <interface></code>	Renews the current DHCP client lease on an interface.
<code>show dhcp client leases</code>	Displays DHCP information for interfaces configured as DHCP clients.
<code>show dhcp leases</code>	Displays current DHCP lease information.

show dhcp statistics

Displays DHCP server statistics.

clear dhcp lease ip <ipv4>

Removes the DHCP lease for the specified IP address.

Syntax

```
clear dhcp lease ip ipv4
```

Command Mode

Operational mode.

Parameters

<i>ipv4</i>	Clears the DHCP lease for the specified IP address.
-------------	---

Default

None.

Usage Guidelines

Use this command to remove a DHCP lease. It is applicable to leases provided by the DHCP server. DHCP server is configured using the **service dhcp-server** command (see page 47).

clear dhcp leases

Removes current DHCP leases.

Syntax

```
clear dhcp leases
```

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to remove all DHCP leases. It is applicable to leases provided by the DHCP server. DHCP server is configured using the **service dhcp-server** command (see page 47).

release dhcp interface <interface>

Releases the current DHCP client lease on an interface.

Syntax

```
release dhcp interface interface
```

Command Mode

Operational mode.

Parameters

<i>interface</i>	The interface using DHCP to obtain an IP address.
------------------	---

Default

None.

Usage Guidelines

Use this command to release the DHCP client lease on the specified interface. The interface must be a DHCP client that obtained an IP address from a DHCP server.

renew dhcp interface <interface>

Renews the current DHCP client lease on an interface.

Syntax

```
renew dhcp interface interface
```

Command Mode

Operational mode.

Parameters

<i>interface</i>	The interface using DHCP to obtain an IP address.
------------------	---

Default

None.

Usage Guidelines

Use this command to renew the DHCP client lease on the specified interface. The interface must be a DHCP client that obtained an IP addresses from a DHCP server.

service dhcp-relay

Configures the system to relay DHCP client messages to an off-net DHCP server.

Syntax

```
set service dhcp-relay
delete service dhcp-relay
show service dhcp-relay
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
    dhcp-relay {
    }
}
```

Parameters

None.

Default

None.

Usage Guidelines

Use this command to configure the system as a DHCP relay agent.

A DHCP relay agent receives DHCP packets from DHCP clients and forwards them to a DHCP server. This allows you to place DHCP clients and DHCP servers on different networks; that is, across router interfaces.

The relay agent is configured with addresses of DHCP servers to which they should relay client DHCP message. The relay agent intercepts the broadcast, sets the gateway address (the **giaddr** field of the DHCP packet) and, if configured, inserts the Relay Agent Information option (option 82) in the packet and forwards it to the DHCP server.

The DHCP server echoes the option back verbatim to the relay agent in server-to-client replies, and the relay agent strips the option before forwarding the reply to the client.

All interfaces involved in the `dhcp-relay` for both clients and servers must be explicitly defined using the `service dhcp-relay interface <interface>` command (see page 41).

Use the **set** form of this command to define DHCP relay configuration.

Use the **delete** form of this command to remove DHCP relay configuration.

Use the **show** form of this command to view DHCP relay configuration.

service dhcp-relay interface <interface>

Specifies the interface to use for accepting DHCP requests or relaying DHCP client messages.

Syntax

```
set service dhcp-relay interface interface
delete service dhcp-relay interface interface
show service dhcp-relay interface
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-relay {
    interface text {
    }
  }
}
```

Parameters

<i>interface</i>	Mandatory. Multi-node. The interface to use to accept DHCP requests or relay DHCP client messages. If the interface through which requests are received is different from the interface used to reach the DHCP server specified in the request, both interfaces must be configured. You can assign multiple interfaces to be used for DHCP by creating multiple interface configuration nodes.
------------------	--

Default

None.

Usage Guidelines

Use this command to specify the interface to use to accept DHCP requests or relay DHCP client messages.

Use the **set** form of this command to specify the interface to use to accept DHCP requests or relay DHCP client messages.

Use the **delete** form of this command to remove the specified value.

Use the **show** form of this command to view the specified value.

service dhcp-relay relay-options

Specifies whether to add the Relay Agent Information option (option 82) to the client-to-server packet.

Syntax

```
set service dhcp-relay relay-options [hop-count count | max-size size | port port |  
relay-agents-packets policy]
```

```
delete service dhcp-relay relay-options [hop-count | max-size | port |  
relay-agents-packets]
```

```
show service dhcp-relay relay-options [hop-count | max-size | port |  
relay-agents-packets]
```

Command Mode

Configuration mode.

Configuration Statement

```
service {  
  dhcp-relay {  
    relay-options {  
      hop-count 1-255  
      max-size 64-1400  
      port 1-65535  
      relay-agents-packets [append|discard|forward|replace]  
    }  
  }  
}
```

Parameters

hop-count <i>count</i>	Optional. Sets the hop count for outgoing relayed messages. Once the hop count is reached, the packet is discarded. The hop count should be set high enough that relayed packets are able to reach the DHCP Server. The range is 1 to 255. The default is 10.
-------------------------------	---

max-size <i>size</i>	<p>Optional. Sets the maximum size of the DHCP packet to be created after appending the relay agent information option. If, after appending the information, the packet would exceed this size, the packet is forwarded without appending the information. This value should be set to the lowest MTU size in your network. The range is 64 to 1400. The default is 576.</p> <p>If this option not configured, the router does not forward DHCP packets that exceed the MTU of the interface on which relaying is configured.</p>
port <i>port</i>	<p>Optional. Specifies the port on this interface to be used for relaying DHCP client messages. This should be done only for debugging purposes as the behavior changes - responses are broadcast rather than being sent to port 68 of the requesting client. The range is 1 to 65535.</p>
relay-agents-packet <i>policy</i>	<p>Optional. Sets the reforwarding policy for a DHCP relay agent. This is the action the router will take if the DHCP message already contains relay information. Supported values are as follows:</p> <p>append: The DHCP relay agent may append its own set of relay options to the packet, leaving the supplied option field intact.</p> <p>discard: If the packet already contains relay information, it will be discarded.</p> <p>forward: The packet will be forwarded regardless of whether it contains relay information.</p> <p>replace: The DHCP relay agent may replace the supplied option field with its own set of relay options.</p> <p>The default is forward.</p>

Default

None.

Usage Guidelines

Use this command to configure the Relay Agent Information option (option 82) in the client-to-server packet, as specified by RFC 3046, and configure DHCP relay options.

Setting the **port** to a value other than 67 should be done only for debugging purposes. When this is done DHCP requests from clients are still accepted on port 67 but the responses from DHCP servers will be forwarded to broadcast address 255.255.255.255 port 0 rather than on port 68, where DHCP clients listen.

Use the **set** form of this command to set DHCP relay options.

Use the **delete** form of this command to restore default DHCP relay option values.

Use the **show** form of this command to view DHCP relay option configuration.

service dhcp-relay server <ipv4>

Sets the IP address of the DHCP server.

Syntax

```
set service dhcp-relay server ipv4
delete service dhcp-relay server ipv4
show service dhcp-relay server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-relay {
    server ipv4 {
    }
  }
}
```

Parameters

<i>ipv4</i>	Mandatory. Multi-node. The IP address of the DHCP server. You can relay messages to more than one DHCP server, by creating multiple server configuration nodes.
-------------	---

Default

None.

Usage Guidelines

Use this command to specify the IP address of the DHCP server.

Use the **set** form of this command to specify the IP address of the DHCP server in a DHCP relay configuration.

Use the **delete** form of this command to remove DHCP server configuration in a DHCP relay configuration.

Use the **show** form of this command to view DHCP server configuration in a DHCP relay configuration.

service dhcp-server

Enables DHCP server functionality.

Syntax

```
set service dhcp-server
delete service dhcp-server
show service dhcp-server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
    dhcp-server {
    }
}
```

Parameters

None.

Default

None.

Usage Guidelines

Use this command to configure a pool of addresses the system can use for Dynamic Host Configuration Protocol (DHCP).

At least one address pool must be configured for DHCP to be available as a service.

At least one address pool must lie within a configured subnet on any of the broadcast interfaces.

Each subnet specified contains a distinct address pool. A given interface can support more than one address pool (that is, more than one subnet).

Use the **set** form of this command to enable DHCP server functionality.

Use the **delete** form of this command to remove the DHCP server functionality.

Use the **show** form of this command to view DHCP server configuration.

service dhcp-server disabled <state>

Allows you to disable the DHCP server without discarding configuration.

Syntax

```
set service dhcp-server disabled state
delete service dhcp-server disabled
show service dhcp-server disabled
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    disabled [true|false]
  }
}
```

Parameters

<i>state</i>	The administrative state of the DHCP server. Supported values are as follows: true : Disables DHCP server without discarding configuration. false : Enables the DHCP server.
--------------	--

Default

DHCP server functionality is disabled.

Usage Guidelines

Use this command to disable the DHCP server without discarding configuration.

Use the **set** form of this command to specify whether the DHCP server should be disabled or not.

Use the **delete** form of this command to restore the default state.

Use the **show** form of this command to view DHCP server configuration.

service dhcp-server dynamic-dns-update enable <state>

Specifies whether or not to dynamically update the Domain Name System.

Syntax

```
set service dhcp-server dynamic-dns-update enable state
delete service dhcp-server dynamic-dns-update enable
show service dhcp-server dynamic-dns-update enable
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    dynamic-dns-update {
      enable [true|false]
    }
  }
}
```

Parameters

<i>state</i>	The state of dynamic DNS updates. Supported values are as follows: true : DNS updates are sent dynamically. false : DNS updates are not sent.
--------------	---

Default

DNS updates are not sent by the DHCP Server.

Usage Guidelines

Use this command to control DNS updates from the DHCP Server.

Use the **set** form of this command to specify whether dynamic DNS updates should be sent or not.

Use the **delete** form of this command to restore the default state.

Use the **show** form of this command to view the dynamic DNS update configuration.

service dhcp-server global-parameters <params>

Specifies additional global DHCP Server parameters.

Syntax

```
set service dhcp-server global-parameters params
delete service dhcp-server global-parameters params
show service dhcp-server global-parameters
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    global-parameters text
  }
}
```

Parameters

<i>params</i>	The string of parameters to be used by the DHCP Server. The string must be enclosed in single quotes.
---------------	---

Default

None.

Usage Guidelines

WARNING *This is an advanced feature and should only be used by advanced users in special situations.*

Use this command to specify additional global DHCP Server parameters that are not available within the **service dhcp-server** commands. The Vyatta DHCP Server commands are a subset of those available for DHCP Server configuration. This command provides access to all DHCP Server configuration parameters. Further information regarding DHCP Server configuration can be found on the **dhcpd.conf** man page. To access it, type the following at the Vyatta command prompt:

```
man dhcpd.conf
```

No validation is done by the Vyatta system prior to passing the parameter string to the DHCP Server process (dhcpd). Because of this it is imperative that the syntax described in the **dhcpd.conf** documentation be strictly followed. Failure to do so could result in the

DHCP Server crashing. It is advisable to check the system log for errors when using these parameter strings. Also, the **show system processes** command can be used to determine if the **dhcpcd** process is still running.

The scope of these parameters is global. They will apply to all **shared-networks**, **subnets**, and **static-mappings** unless parameters with a narrower scope are specified using the **shared-network-parameters**, **subnet-parameters**, or **static-mapping-parameters** version of this command.

Multiple parameter strings can be specified. Each parameter string specified adds a separate line into the **dhcpcd.conf** file.

Use the **set** form of this command to specify additional global DHCP Server parameters.

Use the **delete** form of this command to remove additional global DHCP Server parameters.

Use the **show** form of this command to view the additional global DHCP Server parameters configuration.

service dhcp-server shared-network-name <name>

Specifies the name of a DHCP address pool.

Syntax

```
set service dhcp-server shared-network-name name
delete service dhcp-server shared-network-name name
show service dhcp-server shared-network-name name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. Multi-node. The name for the DHCP address pool. You can define multiple address pools by creating multiple shared-network-name configuration nodes, each with a different name.
-------------	--

Default

None.

Usage Guidelines

Use this command to create a DHCP server address pool with the specified name.

Use the **set** form of this command to create a DHCP address pool.

Use the **delete** form of this command to remove a DHCP address pool.

Use the **show** form of this command to view DHCP address pool configuration.

service dhcp-server shared-network-name <name> authoritative <state>

Specifies whether the DHCP server is authoritative.

Syntax

```
set service dhcp-server shared-network-name name authoritative state
delete service dhcp-server shared-network-name name authoritative
show service dhcp-server shared-network-name name authoritative
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      authoritative [enable|disable]
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>state</i>	Specifies whether the DHCP server is the authoritative server. Supported values are as follows: enable : Enables authoritative state. disable : Disables authoritative state. The default is disable .

Default

The DHCP server is not authoritative.

Usage Guidelines

Use this command to set the server as the authoritative DHCP server.

Setting the server as authoritative sets the server as a master server and allows it to protect itself from rogue DHCP servers or misconfigured DHCP clients. If the server is authoritative, it sends a DHCPNAK to a misconfigured client; otherwise, the client cannot update its IP address until after the old lease expires.

Use the **set** form of this command to enable or disable the authoritative state for a DHCP server.

Use the **delete** form of this command to restore the default authoritative state.

Use the **show** form of this command to view the authoritative DHCP configuration.

service dhcp-server shared-network-name <name> description <desc>

Provides a description of the shared network.

Syntax

```
set service dhcp-server shared-network-name name description desc  
delete service dhcp-server shared-network-name name description  
show service dhcp-server shared-network-name name description
```

Command Mode

Configuration mode.

Configuration Statement

```
service {  
  dhcp-server {  
    shared-network-name text {  
      description text  
    }  
  }  
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>desc</i>	A description of the specified shared network.

Default

None.

Usage Guidelines

Use this command to provide a description of the shared network.

Use the **set** form of this command to provide a description of the shared network.

Use the **delete** form of this command to remove the shared network description.

Use the **show** form of this command to view the shared network description.

service dhcp-server shared-network-name <name> disable

Disables DHCP configuration for the shared network.

Syntax

```
set service dhcp-server shared-network-name name disable
delete service dhcp-server shared-network-name name disable
show service dhcp-server shared-network-name name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      disable
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
-------------	-----------------------------------

Default

The shared network configuration is enabled.

Usage Guidelines

Use this command to disable configuration of the shared network.

Use the **set** form of this command to disable configuration of the shared network.

Use the **delete** form of this command to enable the configuration of the shared network.

Use the **show** form of this command to view the shared network configuration.

service dhcp-server shared-network-name <name> shared-network-parameters <params>

Specifies additional shared network DHCP Server parameters.

Syntax

```
set service dhcp-server shared-network-name name shared-network-parameters
params
```

```
delete service dhcp-server shared-network-name name shared-network-parameters
params
```

```
show service dhcp-server shared-network-name name shared-network-parameters
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      shared-network-parameters text
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>params</i>	The string of parameters to be used by the DHCP Server. The string must be enclosed in single quotes.

Default

None.

Usage Guidelines

WARNING *This is an advanced feature and should only be used by advanced users in special situations.*

Use this command to specify additional shared network DHCP Server parameters that are not available within the **service dhcp-server** commands. The Vyatta DHCP Server commands are a subset of those available for DHCP Server configuration. This command

provides access to all DHCP Server configuration parameters. Further information regarding DHCP Server configuration can be found on the **dhcpd.conf** man page. To access it, type the following at the Vyatta command prompt:

```
man dhcpd.conf
```

No validation is done by the Vyatta system prior to passing the parameter string to the DHCP Server process (dhcpd). Because of this it is imperative that the syntax described in the **dhcpd.conf** documentation be strictly followed. Failure to do so could result in the DHCP Server crashing. It is advisable to check the system log for errors when using these parameter strings. Also, the **show system processes** command can be used to determine if the **dhcpd** process is still running.

The scope of these parameters is for the specified shared network. They will apply to all **subnets**, and **static-mappings** within this scope unless parameters with a narrower scope are specified using the **subnet-parameters**, or **static-mapping-parameters** version of this command.

Multiple parameter strings can be specified. Each parameter string specified adds a separate line into the **dhcpd.conf** file.

Use the **set** form of this command to specify additional shared network DHCP Server parameters.

Use the **delete** form of this command to remove additional shared network DHCP Server parameters.

Use the **show** form of this command to view the additional shared network DHCP Server parameters configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net>

Specifies the IPv4 network to be served by a DHCP address pool.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net
delete service dhcp-server shared-network-name name subnet ipv4net
show service dhcp-server shared-network-name name subnet ipv4net
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network to be served with the addresses defined the specified address pool. The format is <i>ip-addr/prefix</i> .

Default

None.

Usage Guidelines

Use this command to specify the IPv4 network to be served with the addresses that are defined in this named rule. DHCP requests from devices on this subnet are served static address assignments or an address from the defined range.

Use the **set** form of this command to specify the DHCP address pool subnet.

Use the **delete** form of this command to remove DHCP address pool subnet configuration.

Use the **show** form of this command to view tDHCP address pool subnet configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-name <bootfile>

Specifies a bootstrap file from which diskless PCs can boot.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net bootfile-name
bootfile
```

```
delete service dhcp-server shared-network-name name subnet ipv4net bootfile-name
```

```
show service dhcp-server shared-network-name name subnet ipv4net bootfile-name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        bootfile-name text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>bootfile</i>	The name of the bootstrap file to be used to boot.

Default

None.

Usage Guidelines

Use this command to specify a bootstrap file from which diskless PCs may boot.

Use the **set** form of this command to specify the bootstrap file.

Use the **delete** form of this command to remove boot file configuration.

Use the **show** form of this command to view boot file configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> bootfile-server <addr>

Specifies a bootstrap server from which diskless PCs can boot.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net bootfile-server addr
```

```
delete service dhcp-server shared-network-name name subnet ipv4net bootfile-server
```

```
show service dhcp-server shared-network-name name subnet ipv4net bootfile-server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        bootfile-server text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>addr</i>	The IPv4 address or hostname of the bootfile server.

Default

None.

Usage Guidelines

Use this command to specify a bootstrap server from which diskless PCs may boot.

Use the **set** form of this command to specify the bootstrap server.

Use the **delete** form of this command to remove boot server configuration.

Use the **show** form of this command to view boot server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> client-prefix-length <prefix>

Specifies the subnet prefix length to be assigned to clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net
client-prefix-length prefix

delete service dhcp-server shared-network-name name subnet ipv4net
client-prefix-length

show service dhcp-server shared-network-name name subnet ipv4net
client-prefix-length
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        client-prefix-length 0-32
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>prefix</i>	Optional. The subnet prefix length that will be assigned to each client. By default, the prefix length defined in the subnet parameter is assigned. The range is 0 to 32.

Default

None.

Usage Guidelines

Use this command to specify the subnet prefix length that will be assigned to each client.

Use the **set** form of this command to specify the subnet prefix length that will be assigned to each client.

Use the **delete** form of this command to remove the client-prefix-length configuration.

Use the **show** form of this command to view the client-prefix-length configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> default-router <ipv4>

Specifies the address of the default router for DHCP clients on this subnet.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net default-router ipv4
delete service dhcp-server shared-network-name name subnet ipv4net default-router
show service dhcp-server shared-network-name name subnet ipv4net default-router
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        default-router ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Gives the address of the default router for DHCP clients on this subnet. The default router should be on the same subnet as the client. The format is an IP address.

Default

None.

Usage Guidelines

Use this command to specify the address of the default router for DHCP clients on this subnet.

Use the **set** form of this command to specify the address of the default router for DHCP clients on this subnet.

Use the **delete** form of this command to remove the default-router configuration.

Use the **show** form of this command to view the default-router configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> dns-server <ipv4>

Specifies the address of a DNS server for DHCP clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net dns-server ipv4
delete service dhcp-server shared-network-name name subnet ipv4net dns-server ipv4
show service dhcp-server shared-network-name name subnet ipv4net dns-server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        dns-server ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Multi-node. The IPv4 address of the DNS server . You can specify more than one DNS server by issuing this statement multiple times.

Default

None.

Usage Guidelines

Use this command to specify the address of a DNS server that is available to DHCP clients.

Use the **set** form of this command to specify the address of a DNS server that is available to DHCP clients.

Use the **delete** form of this command to remove DNS server configuration.

Use the **show** form of this command to view DNS server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> domain-name <domain-name>

Provides the domain name for DHCP clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net domain-name
domain-name
```

```
delete service dhcp-server shared-network-name name subnet ipv4net domain-name
```

```
show service dhcp-server shared-network-name name subnet ipv4net domain-name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        domain-name text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>domain-name</i>	Optional. The domain name to be given to DHCP clients on this subnet. A domain name can include letters, numbers, hyphens (“-”), and one period (“.”). For example, “vyatta.com”.

Default

None.

Usage Guidelines

Use this command to specify the domain name to be used by DHCP clients on this subnet.

Use the **set** form of this command to specify the client domain name.

Use the **delete** form of this command to remove client domain name configuration.

Use the **show** form of this command to view client domain name configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> exclude <ipv4>

Excludes an IP address from a DHCP address pool.

Syntax

set service dhcp-server shared-network-name *name* **subnet** *ipv4net* **exclude** *ipv4*

delete service dhcp-server shared-network-name *name* **subnet** *ipv4net* **exclude** *ipv4*

show service dhcp-server shared-network-name *name* **subnet** *ipv4net* **exclude**

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        exclude ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Multi-node. The IP address to be excluded from the lease range. You can exclude more than one IP address by creating multiple exclude configuration nodes.

Default

None.

Usage Guidelines

Use this command to exclude an IP address from a DHCP address pool. Excluded addresses are never leased to DHCP clients. The exception is an IP addresses that is statically mapped using the **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>** command (see page 99). These addresses will not be excluded.

Use the **set** form of this command to exclude an IP address from the lease range.

Use the **delete** form of this command to remove an IP address from the exclusion list.

Use the **show** form of this command to view excluded addresses.

service dhcp-server shared-network-name <name> subnet <ipv4net> failover

Enables DHCP failover functionality for a DHCP address pool on a subnet.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net failover
delete service dhcp-server shared-network-name name subnet ipv4net failover
show service dhcp-server shared-network-name name subnet ipv4net failover
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        failover {
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .

Default

None.

Usage Guidelines

Use this command to enable DHCP failover for an address pool on a given network, allowing two DHCP servers to share an address pool.

In a failover configuration, two DHCP servers act as failover peers, with one of the peers designated as the primary and the other as the secondary. For DHCP failover to work:

- Both peers must be Vyatta systems, and must be running the same version of Vyatta software.
- Each server must be configured to point to the other as the failover peer.
- The time on the servers must be exactly synchronized.
- There must be at least one IP address in the start-stop range for each subnet that has not been either excluded (using **service dhcp-server shared-network-name <name> subnet <ipv4net> exclude <ipv4>**) or statically mapped (using **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>**).

The system times should be synchronized before configuring DHCP failover. Use of NTP time synchronization is highly recommended. However, if difficulties arise due to incorrect system times, disable NTP, reset the times correctly, and then re-enable NTP.

Note that DHCP leases are only assigned in failover configurations if proper communication is established between the two failover peers. If the configuration is incorrect (if, for example, one failover peer is configured but the other is not), DHCP leases will not be dispersed.

Also note that statically mapped addresses will not be renewed by a failover server unless they are explicitly defined on that server using the **service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>** command (see page 99).

Use the **set** form of this command to define DHCP failover configuration

Use the **delete** form of this command to remove DHCP failover configuration.

Use the **show** form of this command to view DHCP failover configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> failover local-address <ipv4>

Specifies the IP address of the local failover peer.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net failover
local-address ipv4

delete service dhcp-server shared-network-name name subnet ipv4net failover
local-address

show service dhcp-server shared-network-name name subnet ipv4net failover
local-address
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        failover {
          local-address ipv4
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	The IP address for the local failover peer.

Default

None.

Usage Guidelines

Use this command to specify the DHCP failover IP address for the local failover peer.

Use the **set** form of this command to set the DHCP failover IP address.

Use the **delete** form of this command to remove local failover IP address configuration.

Use the **show** form of this command to view local failover IP address configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> failover name <peer-name>

Specifies the peer name for the local failover peer.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net failover name
peer-name
```

```
delete service dhcp-server shared-network-name name subnet ipv4net failover name
```

```
show service dhcp-server shared-network-name name subnet ipv4net failover name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        failover {
          name text
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>peer-name</i>	The DHCP failover peer name for the local peer.

Default

None.

Usage Guidelines

Use this command to specify a name for the local peer in a DHCP failover pair.

Use the **set** form of this command to specify the DHCP failover peer name.

Use the **delete** form of this command to remove the local peer name configuration.

Use the **show** form of this command to view local peer name configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> failover peer-address <ipv4>

Specifies the IP address of the failover peer.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net failover  
peer-address ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net failover  
peer-address
```

```
show service dhcp-server shared-network-name name subnet ipv4net failover  
peer-address
```

Command Mode

Configuration mode.

Configuration Statement

```
service {  
  dhcp-server {  
    shared-network-name text {  
      subnet ipv4net {  
        failover {  
          peer-address ipv4  
        }  
      }  
    }  
  }  
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Specifies the IP address for the failover peer.

Default

None.

Usage Guidelines

Use this command to specify the DHCP failover IP address for the local peer.

Use the **set** form of this command to specify the DHCP failover IP address for the local peer.

Use the **delete** form of this command to remove the IP address configuration.

Use the **show** form of this command to view the IP address configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> failover status <status>

Specifies the DHCP failover status for this peer.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net failover status
status
```

```
delete service dhcp-server shared-network-name name subnet ipv4net failover status
```

```
show service dhcp-server shared-network-name name subnet ipv4net failover status
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        failover {
          status [primary|secondary]
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>status</i>	Indicates whether this peer is the primary or secondary peer in the failover configuration. Supported values are as follows: primary : The local system is primary peer. secondary : The local system is the secondary peer.

Default

None.

Usage Guidelines

Use this command to specify the DHCP failover status of this system.

Use the **set** form of this command to specify whether this system is primary or secondary.

Use the **delete** form of this command to remove failover status configuration.

Use the **show** form of this command to view failover status configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> ip-forwarding enable <state>

Specifies whether the client should configure its IP layer for packet forwarding.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net ip-forwarding
enable state
```

```
delete service dhcp-server shared-network-name name subnet ipv4net ip-forwarding
enable
```

```
show service dhcp-server shared-network-name name subnet ipv4net ip-forwarding
enable
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        ip-forwarding {
          enable [true|false]
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .

<i>state</i>	<p>Specifies whether or not the client should configure its IP layer for packet forwarding. Supported values are as follows:</p> <p>true: The client should configure its IP later for packet forwarding.</p> <p>false: The client should not configure its IP later for packet forwarding.</p> <p>The default false.</p>
--------------	--

Default

The DHCP server does not direct clients to configure for packet forwarding.

Usage Guidelines

Use this command to specify whether the DHCP server directs clients to configure the IP layer for packet forwarding.

Use the **set** form of this command to specify whether the client should configure its IP layer for packet forwarding.

Use the **delete** form of this command to restore the default configuration.

Use the **show** form of this command to view IP forwarding configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> lease <seconds>

Specifies how long the address assigned by the DHCP server will be valid.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net lease seconds
delete service dhcp-server shared-network-name name subnet ipv4net lease
show service dhcp-server shared-network-name name subnet ipv4net lease
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        lease u32
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>seconds</i>	Optional. Specifies how long the address assigned by the DHCP server will be valid, in seconds. The range is 120 to 4294967296.

Default

The default is 86400 (24 hours).

Usage Guidelines

Use this command to specify how long the address assigned by the DHCP server will be valid.

Use the **set** form of this command to specify how long the address assigned by the DHCP server will be valid.

Use the **delete** form of this command to remove the lease configuration.

Use the **show** form of this command to view the lease configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> ntp-server <ipv4>

Specifies the address of an NTP (Network Time Protocol) server available to clients.

Syntax

set service dhcp-server shared-network-name *name* **subnet** *ipv4net* **ntp-server** *ipv4*

delete service dhcp-server shared-network-name *name* **subnet** *ipv4net* **ntp-server** *ipv4*

show service dhcp-server shared-network-name *name* **subnet** *ipv4net* **ntp-server**

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        ntp-server ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Specifies the IP address of an NTP server available to clients. Multiple NTP server addresses can be specified in separate commands. The list of NTP servers should be specified in order of preference.

Default

None.

Usage Guidelines

Use this command to specify the address of an NTP (Network Time Protocol) server available to clients.

Use the **set** form of this command to specify the address of an NTP server available to clients.

Use the **delete** form of this command to remove the NTP server configuration.

Use the **show** form of this command to view the NTP server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> pop-server <ipv4>

Specifies the address of a POP3 (Post Office Protocol 3) server available to clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net pop-server ipv4
delete service dhcp-server shared-network-name name subnet ipv4net pop-server ipv4
show service dhcp-server shared-network-name name subnet ipv4net pop-server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        pop-server ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Specifies the IP address of an POP3 server available to clients. Multiple POP3 server addresses can be specified in separate commands. The list of POP3 servers should be specified in order of preference.

Default

None.

Usage Guidelines

Use this command to specify the address of an POP3 (Post Office Protocol 3) server available to clients.

Use the **set** form of this command to specify the address of an POP3 server available to clients.

Use the **delete** form of this command to remove the POP3 server configuration.

Use the **show** form of this command to view the POP3 server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> server-identifier <ipv4>

Specifies the address for the DHCP server identifier.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net server-identifier
ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net
server-identifier
```

```
show service dhcp-server shared-network-name name subnet ipv4net server-identifier
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        server-identifier ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Specifies the address for the DHCP server identifier.

Default

None.

Usage Guidelines

Use this command to specify the address for the DHCP server identifier.

The server identifier option is a field in a DHCP message that identifies the DHCP server as the destination address from clients to servers. When the DHCP server includes this field in a DHCP Offer, the client can use it to distinguish between multiple lease offers. The server identifier must be an address that is reachable from the client.

Use the **set** form of this command to specify the address for the DHCP server identifier.

Use the **delete** form of this command to remove the address for the DHCP server identifier.

Use the **show** form of this command to view the DHCP server identifier configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> smtp-server <ipv4>

Specifies the address of a SMTP (Simple Mail Transfer Protocol) server available to clients.

Syntax

set service dhcp-server shared-network-name *name* **subnet** *ipv4net* **smtp-server** *ipv4*

delete service dhcp-server shared-network-name *name* **subnet** *ipv4net* **smtp-server** *ipv4*

show service dhcp-server shared-network-name *name* **subnet** *ipv4net* **smtp-server**

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        smtp-server ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Specifies the IP address of an SMTP server available to clients. Multiple SMTP server addresses can be specified in separate commands. The list of SMTP servers should be specified in order of preference.

Default

None.

Usage Guidelines

Use this command to specify the address of an SMTP (Simple Mail Transfer Protocol) server available to clients.

Use the **set** form of this command to specify the address of an SMTP server available to clients.

Use the **delete** form of this command to remove the SMTP server configuration.

Use the **show** form of this command to view the SMTP server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> start <ipv4> stop <ipv4>

Specifies the range of addresses that will be assigned to DHCP clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net start ipv4 stop ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net start [ipv4  
[stop]]
```

```
show service dhcp-server shared-network-name name subnet ipv4net start [ipv4]
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        start ipv4 {
          stop ipv4
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>start</i>	Optional. Multi-node. The start address in an address range. This is the first address in the range that can be assigned. You can define multiple address ranges within an address pool, by creating multiple start configuration nodes.
<i>stop</i>	Mandatory. The stop address in this address range. This is the last address in the range that can be assigned.

Default

None.

Usage Guidelines

Use this command to specify the range of addresses that will be assigned to DHCP clients.

Use the **set** form of this command to specify the range of addresses that will be assigned to DHCP clients.

Use the **delete** form of this command to remove the address range configuration.

Use the **show** form of this command to view the address range configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname>

Maps a static IP address to a specific DHCP client based on its MAC address.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-mapping text {
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>mapname</i>	Optional. Multi-node. Allows you to statically map an IP address within an address pool to the MAC address of a device on the network. You can define multiple static mappings of this type by creating multiple static-mapping configuration nodes.

Default

None.

Usage Guidelines

Use this command to define a static mapping between a specific DHCP client based on its MAC address and an IP address.

Use the **set** form of this command to define a static mapping between a specific DHCP client based on its MAC address and an IP address.

Use the **delete** form of this command to remove the static mapping configuration.

Use the **show** form of this command to view the static mapping configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> disable

Disables DHCP configuration for the specified static mapping.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapnamedisable
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapnamedisable
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-mapping text {
          disable
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>mapname</i>	Optional. Multi-node. Allows you to statically map an IP address within an address pool to the MAC address of a device on the network. You can define multiple static mappings of this type by creating multiple static-mapping configuration nodes.

Default

The static mapping configuration is enabled.

Usage Guidelines

Use **this** command to disable configuration of the specified static map.

Use the **set** form of this command to disable configuration of the static map.

Use the **delete** form of this command to enable the configuration of the static map.

Use the **show** form of this command to view the static map configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> ip-address <ipv4>

Specifies a static IP address for a specific DHCP client.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname ip-address ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname ip-address
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname ip-address
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-mapping text {
          ip-address ipv4
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>mapname</i>	Multi-node. Allows you to statically map an IP address within an address pool to the MAC address of a device on the network. You can define multiple static mappings of this type by creating multiple static-mapping configuration nodes.

<i>ipv4</i>	Mandatory. The IP address to be statically assigned to the device.
-------------	--

Default

None.

Usage Guidelines

Use this command to specify a static IP address for a specific DHCP client based on its MAC address.

Use the **set** form of this command to specify a static IP address for a specific DHCP client based on its MAC address.

Use the **delete** form of this command to remove the static mapping configuration.

Use the **show** form of this command to view the static mapping configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> mac-address <mac>

Specifies the MAC address of a DHCP client to assign a static IP address to.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname mac-address mac
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname mac-address
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname mac-address
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-mapping text {
          mac-address text
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>mapname</i>	Multi-node. Allows you to statically map an IP address within an address pool to the MAC address of a device on the network. You can define multiple static mappings of this type by creating multiple static-mapping configuration nodes.

<i>mac</i>	Mandatory. The MAC address to be statically mapped to the specified IP address.
------------	---

Default

None.

Usage Guidelines

Use this command to specify the MAC address of a DHCP client to assign an IP address to.

Use the **set** form of this command to specify the MAC address of the DHCP client.

Use the **delete** form of this command to remove the static mapping configuration.

Use the **show** form of this command to view the static mapping configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-mapping <mapname> static-mapping-parameters <params>

Specifies additional static mapping DHCP Server parameters.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname static-mapping-parameters params
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname static-mapping-parameters params
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-mapping
mapname static-mapping-parameters
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-mapping text {
          static-mapping-parameters text
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>mapname</i>	Optional. Multi-node. Allows you to statically map an IP address within an address pool to the MAC address of a device on the network. You can define multiple static mappings of this type by creating multiple static-mapping configuration nodes.

<i>params</i>	The string of parameters to be used by the DHCP Server. The string must be enclosed in single quotes.
---------------	---

Default

None.

Usage Guidelines

WARNING *This is an advanced feature and should only be used by advanced users in special situations.*

Use this command to specify additional static mapping DHCP Server parameters that are not available within the **service dhcp-server** commands. The Vyatta DHCP Server commands are a subset of those available for DHCP Server configuration. This command provides access to all DHCP Server configuration parameters. Further information regarding DHCP Server configuration can be found on the **dhcpd.conf** man page. To access it, type the following at the Vyatta command prompt:

```
man dhcpd.conf
```

No validation is done by the Vyatta system prior to passing the parameter string to the DHCP Server process (dhcpd). Because of this it is imperative that the syntax described in the **dhcpd.conf** documentation be strictly followed. Failure to do so could result in the DHCP Server crashing. It is advisable to check the system log for errors when using these parameter strings. Also, the **show system processes** command can be used to determine if the **dhcpd** process is still running.

The scope of these parameters is for the specified map name. They will apply to all **static-mappings** within this scope unless parameters with a narrower scope are specified using the **static-mapping-parameters** version of this command.

Multiple parameter strings can be specified. Each parameter string specified adds a separate line into the **dhcpd.conf** file.

Use the **set** form of this command to specify additional static mapping DHCP Server parameters.

Use the **delete** form of this command to remove additional static mapping DHCP Server parameters.

Use the **show** form of this command to view the additional static mapping DHCP Server parameters configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-route destination-subnet <ipv4net>

Specifies the destination subnet of a static route for clients to store in their routing cache.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-route
destination-subnet ipv4net2

delete service dhcp-server shared-network-name name subnet ipv4net static-route
destination-subnet

show service dhcp-server shared-network-name name subnet ipv4net static-route
destination-subnet
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-route {
          destination-subnet ipv4net
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4net2</i>	Specifies the destination IP subnet of a static route for clients to store in their routing table.

Default

None.

Usage Guidelines

Use this command to specify the destination subnet of a static route for clients to store in their routing cache. The other part of the static route is defined by the the **service dhcp-server shared-network-name <name> subnet <ipv4net> static-route router <ipv4>** command (see page 111). Only one static route can be defined for a given subnet.

Use the **set** form of this command to specify the destination subnet of a static route for clients to store in their routing cache.

Use the **delete** form of this command to remove the destination subnet configuration.

Use the **show** form of this command to view the destination subnet configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> static-route router <ipv4>

Specifies the router for the destination of a static route for clients to store in their routing cache.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net static-route router ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net static-route router
```

```
show service dhcp-server shared-network-name name subnet ipv4net static-route router
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        static-route {
          router ipv4
        }
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Specifies the IP address of the router for the destination of a static route for clients to store in their routing cache.

Default

None.

Usage Guidelines

Use this command to specify the router for the destination of a static route for clients to store in their routing cache. The other part of the static route is defined by the the **service dhcp-server shared-network-name <name> subnet <ipv4net> static-route destination-subnet <ipv4net>** command (see page 109).

Use the **set** form of this command to specify the router for the destination of a static route for clients to store in their routing cache.

Use the **delete** form of this command to remove the router configuration.

Use the **show** form of this command to view the router configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> subnet-parameters <params>

Specifies additional subnet DHCP Server parameters.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net subnet-parameters
params
```

```
delete service dhcp-server shared-network-name name subnet ipv4net
subnet-parameters params
```

```
show service dhcp-server shared-network-name name subnet ipv4net
subnet-parameters
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        subnet-parameters text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>params</i>	The string of parameters to be used by the DHCP Server. The string must be enclosed in single quotes.

Default

None.

Usage Guidelines

WARNING *This is an advanced feature and should only be used by advanced users in special situations.*

Use this command to specify additional subnet DHCP Server parameters that are not available within the **service dhcp-server** commands. The Vyatta DHCP Server commands are a subset of those available for DHCP Server configuration. This command provides access to all DHCP Server configuration parameters. Further information regarding DHCP Server configuration can be found on the **dhcpd.conf** man page. To access it, type the following at the Vyatta command prompt:

```
man dhcpd.conf
```

No validation is done by the Vyatta system prior to passing the parameter string to the DHCP Server process (dhcpd). Because of this it is imperative that the syntax described in the **dhcpd.conf** documentation be strictly followed. Failure to do so could result in the DHCP Server crashing. It is advisable to check the system log for errors when using these parameter strings. Also, the **show system processes** command can be used to determine if the **dhcpd** process is still running.

The scope of these parameters is for the specified subnet. They will apply to all **static-mappings** within this scope unless parameters with a narrower scope are specified using the **static-mapping-parameters** version of this command.

Multiple parameter strings can be specified. Each parameter string specified adds a separate line into the **dhcpd.conf** file.

Use the **set** form of this command to specify additional subnet DHCP Server parameters.

Use the **delete** form of this command to remove additional subnet DHCP Server parameters.

Use the **show** form of this command to view the additional subnet DHCP Server parameters configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> tftp-server-name <servername>

Specifies the name of a TFTP (Trivial File Transfer Protocol) server available to clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net tftp-server-name
servername
```

```
delete service dhcp-server shared-network-name name subnet ipv4net
tftp-server-name
```

```
show service dhcp-server shared-network-name name subnet ipv4net
tftp-server-name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        tftp-server-name text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>servername</i>	Specifies the name of a TFTP server available to clients.

Default

None.

Usage Guidelines

Use this command to specify the name of a TFTP (Trivial File Transfer Protocol) server available to clients.

Use the **set** form of this command to specify the name of a TFTP (Trivial File Transfer Protocol) server available to clients.

Use the **delete** form of this command to remove the TFTP server configuration.

Use the **show** form of this command to view the TFTP server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> time-offset <seconds>

Specifies the offset of the client's subnet in seconds from UTC (Coordinated Universal Time).

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net time-offset seconds
delete service dhcp-server shared-network-name name subnet ipv4net time-offset
show service dhcp-server shared-network-name name subnet ipv4net time-offset
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        time-offset u32
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>seconds</i>	Specifies the offset of the client's subnet in seconds from UTC (Coordinated Universal Time).

Default

None.

Usage Guidelines

Use this command to specify the offset of the client's subnet in seconds from UTC (Coordinated Universal Time).

Use the **set** form of this command to specify the offset of the client's subnet in seconds from UTC (Coordinated Universal Time).

Use the **delete** form of this command to remove the time offset configuration.

Use the **show** form of this command to view the time offset configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> time-server <ipv4>

Specifies the address of an RFC868 time server available to clients.

Syntax

set service dhcp-server shared-network-name *name* **subnet** *ipv4net* **time-server** *ipv4*

delete service dhcp-server shared-network-name *name* **subnet** *ipv4net* **time-server** *ipv4*

show service dhcp-server shared-network-name *name* **subnet** *ipv4net* **time-server**

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        time-server ipv4
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Specifies the IP address of an RFC868 time server available to clients. Multiple time server addresses can be specified in separate commands. The list of time servers should be specified in order of preference.

Default

None.

Usage Guidelines

Use this command to specify the address of an RFC 868 time server available to clients.

Use the **set** form of this command to specify the address of a time server available to clients.

Use the **delete** form of this command to remove the time server configuration.

Use the **show** form of this command to view the time server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> wins-server <ipv4>

Specifies the address of a WINS server that is available to DHCP clients.

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net wins-server ipv4
```

```
delete service dhcp-server shared-network-name name subnet ipv4net wins-server  
ipv4
```

```
show service dhcp-server shared-network-name name subnet ipv4net wins-server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {  
  dhcp-server {  
    shared-network-name text {  
      subnet ipv4net {  
        wins-server ipv4  
      }  
    }  
  }  
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>ipv4</i>	Optional. Multi-node. Gives the address of a NetBIOS Windows Internet Naming Server (WINS) available to DHCP clients on this subnet. The WINS server provides a name resolution services the Microsoft DHCP clients can use to correlate host names to IP addresses. You can specify more than one WINS server by issuing this statement multiple times. The format is an IP address.

Default

None.

Usage Guidelines

Use this command to specify the address of a WINS server that is available to DHCP clients.

Use the **set** form of this command to specify the address of a WINS server that is available to DHCP clients.

Use the **delete** form of this command to remove the wins-server configuration.

Use the **show** form of this command to view the wins-server configuration.

service dhcp-server shared-network-name <name> subnet <ipv4net> wpad-url <url>

Specifies the Web Proxy Autodiscovery (WPAD) URL

Syntax

```
set service dhcp-server shared-network-name name subnet ipv4net wpad-url url
delete service dhcp-server shared-network-name name subnet ipv4net wpad-url
show service dhcp-server shared-network-name name subnet ipv4net wpad-url
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dhcp-server {
    shared-network-name text {
      subnet ipv4net {
        wpad-url text
      }
    }
  }
}
```

Parameters

<i>name</i>	Mandatory. The DHCP address pool.
<i>ipv4net</i>	Mandatory. Multi-node. The IPv4 network served by the DHCP address pool. The format is <i>ip-addr/prefix</i> .
<i>url</i>	Optional. Specifies the Web Proxy Autodiscovery (WPAD) URL

Default

None.

Usage Guidelines

Use this command to specify the Web Proxy Autodiscovery (WPAD) URL

Use the **set** form of this command to specify the Web Proxy Autodiscovery (WPAD) URL

Use the **delete** form of this command to remove the WPAD URL configuration.

Use the **show** form of this command to view the WPAD URL configuration.

show dhcp client leases

Displays DHCP information for interfaces configured as DHCP clients.

Syntax

```
show dhcp client leases [interface ethx]
```

Command Mode

Operational mode.

Parameters

<i>ethx</i>	Shows client information for the specified interface.
-------------	---

Usage Guidelines

Use this command to see current DHCP client information for interfaces configured as DHCP clients.

When used with no option, this command displays client information on all interfaces configured as DHCP clients. When an interface is provided, this command displays client information for the specified interface.

To configure an interface as a DHCP client, see the documentation for the interface.

Examples

Example 3-8 shows sample output of **show dhcp client leases** with no option.

Example 3-8 "show dhcp client leases"

```
vyatta@R1> show dhcp client leases
interface : eth0
ip address : 192.168.1.157      [Active]
subnet mask: 255.255.255.0
router     : 192.168.1.254
name server: 192.168.1.254 74.150.163.68 74.150.163.100
dhcp server: 192.168.1.254
lease time : 86400
last update: Wed Feb 17 02:18:20 GMT 2010
expiry     : Thu Feb 18 02:18:18 GMT 2010
reason    : BOUND
vyatta@R1>
```

show dhcp leases

Displays current DHCP lease information.

Syntax

```
show dhcp leases [expired | pool pool-name]
```

Command Mode

Operational mode.

Parameters

expired	Shows expired leases.
pool <i>pool-name</i>	Shows lease information for the specified address pool.

Usage Guidelines

Use this command to see current lease information for DHCP subscribers or expired leases.

When used with no option, this command displays all current lease information. When address **pool** is provided, this command displays lease information for the specified address pool. When the **expired** option is specified, only expired leases are displayed.

DHCP is configured using the the **service dhcp-server** command (see page 47).

Examples

Example 3-9 shows sample output of **show dhcp leases** with no option.

Example 3-9 "show dhcp leases"

```
vyatta@R1> show dhcp leases

IP address      Hardware Address  Lease expiration  Pool  Client Name
-----
192.168.11.101  00:12:3f:e3:af:67  2007/06/23 16:28:26  POOL1  Laptop 9

vyatta@R1>
```

show dhcp statistics

Displays DHCP server statistics.

Syntax

```
show dhcp statistics [pool pool-name]
```

Command Mode

Operational mode.

Parameters

<i>pool-name</i>	Shows DHCP statistics for the specified address pool
------------------	--

Usage Guidelines

Use this command to see current lease information for DHCP subscribers.

When used with no option, this command displays all current lease information. When address pool is provided, this command displays lease information for the specified address pool.

DHCP is configured using the the **service dhcp-server** command (see page 47).

Examples

Example 3-10 shows sample output of **show dhcp statistics** with no option.

Example 3-10 "show dhcp statistics"

```
vyatta@R1> show dhcp statistics

pool                pool size  # leased  # avail
----                -
POOL1               100       1         99

vyatta@R1>
```

Chapter 4: DNS

This chapter explains how to use Domain Name System (DNS) on the Vyatta system.

This chapter presents the following topics:

- DNS Configuration
- DNS Commands

DNS Configuration

This section presents the following topics:

- DNS Overview
- DNS Configuration Examples

DNS Overview

The Domain Name System (DNS) is an Internet directory service providing mappings between human-readable domain names and numeric IP addresses. DNS mappings are recorded in resource records that are stored on name servers distributed throughout the Internet. A device needing to access a host across the Internet sends a DNS query to a name server. The name server consults its resource records and returns an answer with the IP address of the specified name.

The DNS system forms its own network on the Internet. If the requested record is not local to the consulted name server, the name server consults another name server, and so on, until the requested information is located and returned.

There are billions of resource records in the DNS system. To keep the data manageable, the records are divided into zones, which contain resource records for a DNS domain or subdomain.

The Vyatta system supports three main DNS-related features:

- System DNS
- Dynamic DNS
- DNS Forwarding

System DNS

In system DNS, you define the list of name servers that the Vyatta system can use to resolve hostnames to IP addresses. This list is created using the **system name-server** command. (The **system name-server** command is described in the *Vyatta Basic System Reference Guide*; for your convenience, an example of system DNS is provided in this chapter in “Example 4-1 Configuring static access to a DNS name server.”)

Dynamic DNS

Originally, DNS mappings were statically specified in “zone files,” which were periodically loaded onto DNS servers. This worked reasonably well at a time when most hosts were configured with static IP addresses. However, since the 1990s, many network

endpoints have been assigned IP addresses using dynamic protocols such as Dynamic Host Configuration Protocol. Until 1997, devices with DHCP-assigned IP addresses essentially could not participate in the DNS system.

In 1997, the Internet Engineering Task Force (IETF) published RFC 2136, *Dynamic Updates in the Domain Name System*, describing the dynamic DNS update protocol. Dynamic DNS (DDNS) provides a mechanism for DNS entries to be established and removed dynamically. Devices using dynamic DNS can notify a domain name server in real time of changes to host name, IP address, or other DNS-related information.

This feature is particularly useful for systems where a dynamic IP address is provided by the Internet Service Provider (ISP). Whenever the IP address changes, the Vyatta system updates a DDNS service provider with the change. The DDNS provider is responsible for propagating this change to other DNS servers. The Vyatta system supports a number of DDNS providers.

DNS Forwarding

In many environments using consumer-level ISP connections, the ISP both assigns the client router with its IP address and notifies the client router of the DNS server to use. In many cases, the IP address of the DNS server itself is assigned through DHCP and changes periodically; the ISP notifies the client router of the change in DNS server IP address through periodic updates. This makes it problematic to statically configure a DNS server IP address on the client router's DHCP server for its LAN clients.

In cases like these, the Vyatta system can use DNS forwarding (also called DNS relay) to maintain connectivity between hosts on its network and the ISP's DNS server.

When DNS forwarding is used, the client router offers its own client-side IP address (which is static) as the DNS server address to the hosts on its network, so that all client DNS requests are made to the client router's client-side address. When DNS requests are made, the client router forwards them to the ISP DNS server; answers are directed back to the client router and forwarded through to the client hosts. If the ISP changes the address of its DNS server, the client router simply records the new address of the server. The server address remains unchanged from the point of view of the LAN clients.

Another advantage to DNS forwarding is that DNS requests are cached in the Vyatta system (until either the time-to-live value in the DNS record expires or the cache fills). Subsequent requests for a cached entry are responded to locally, with a corresponding reduction in WAN traffic.

DNS Configuration Examples

This section presents the following topics:

- Configuring Access to a Name Server
- Configuring Dynamic DNS

- Configuring DNS Forwarding
- Statically Configured Entries and DNS Forwarding

This section includes the following examples:

- Example 4-1 Configuring static access to a DNS name server
- Example 4-2 Setting up dynamic DNS
- Example 4-3 Setting up DNS forwarding

Configuring Access to a Name Server

In order to be able to translate host names (such as `www.vyatta.com`) to IP addresses (such as `69.59.150.141`), the system must be able to access a DNS server.

Configuring access to a DNS server is a function of basic system management, and is described in the *Vyatta Basic System Reference Guide*. For your convenience, the configuration example is repeated here.

Example 4-1 configures a static IP address for the DNS server at address `12.34.56.100`. To configure the Vyatta system in this way, perform the following steps.

Example 4-1 Configuring static access to a DNS name server

Step	Command
Specify the IP address of the DNS server.	<code>vyatta@R1# set system name-server 12.34.56.100</code> <code>[edit]</code>

Configuring Dynamic DNS

Figure 4-1 shows a typical DDNS scenario. In this scenario:

- The Vyatta system (R1) is connected to an ISP via `eth0`.
- The network domain is **company.com**.
- The Vyatta system hostname is **r1.company.com**.
- The company's web server is located behind the Vyatta system. Its hostname is **www.company.com**.
- The ISP is providing dynamic IP addresses to its clients through DHCP.
- The IP address of the Vyatta system's `eth0` interface changes over time due to the dynamic assignment by the ISP.

- The company's web server is behind a Network Address Translation (NAT) device on the Vyatta system, so its IP address (as viewed from the Internet) changes when the ISP assigns a new address to the eth0 interface.
- Because the web server's address changes, responses to DNS queries for **www.company.com** must also change to the new IP address. DDNS resolves this problem.

DDNS allows the Vyatta system (R1) to update the DNS system with the new IP address information for any local hostnames (for example, **r1.company.com**, and **www.company.com**) whenever the IP address on eth0 changes. The set-up process is as follows:

- 1 Sign up for DDNS service from one of the supported service providers:

DNS Park: www.dnspark.com

DSL Reports: www.dslreports.com

DynDNS: www.dyndns.com

easyDNS: www.easydns.com

namecheap: www.namecheap.com

SiteSolutions: www.sitelutions.com

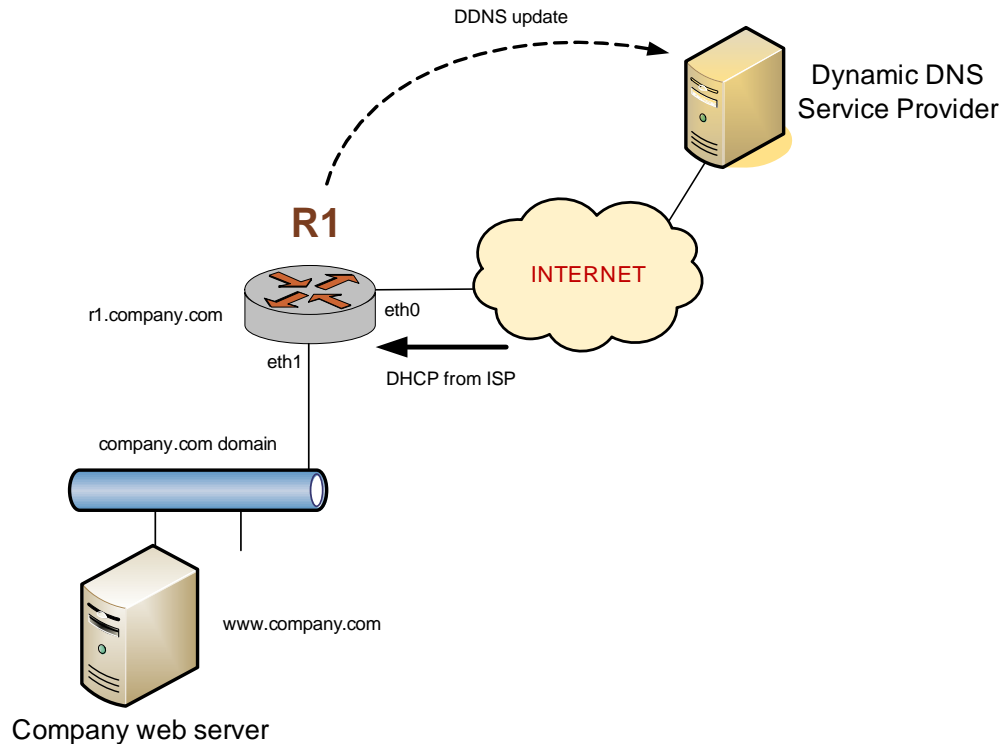
zoneedit: www.zoneedit.com.

Instructions for sign-up are available at the individual providers.

- 2 Configure the Vyatta system (R1 in the example) with service provider information such as the service name, a login ID, and a password so that it knows how to log on and send updates to the DDNS service provider.
- 3 Configure the Vyatta system with the hostnames that must be updated in the DNS system when the IP address on eth0 changes.

NOTE Depending on the service provider, hostnames may or may not need to include the domain name (e.g. "www" versus "www.company.com").

Figure 4-1 Dynamic DNS



Example 4-2 sets up DDNS for DDNS service provider DynDNS. This example assumes that you have already signed up with DynDNS). To configure the Vyatta system in this way, perform the following steps in configuration mode.

Example 4-2 Setting up dynamic DNS

Step	Command
Set the service provider.	<pre>vyatta@R1# set service dns dynamic interface eth0 service dyndns [edit]</pre>
Set the DDNS service provider login id (e.g. vtest).	<pre>vyatta@R1# set service dns dynamic interface eth0 service dyndns login vtest [edit]</pre>
Set the DDNS service provider password (e.g. testpwd).	<pre>vyatta@R1# set service dns dynamic interface eth0 service dyndns password testpwd [edit]</pre>
Specify r1 as a hostname whose DNS entry needs to be updated when the IP address on eth0 changes.	<pre>vyatta@R1# set service dns dynamic interface eth0 service dyndns host-name r1.company.com [edit]</pre>

Example 4-2 Setting up dynamic DNS

Specify www as a hostname whose DNS entry needs to be updated when the IP address on eth0 changes.	<pre>vyatta@R1# set service dns dynamic interface eth0 service dyndns host-name www.company.com [edit]</pre>
--	--

Commit the change	<pre>vyatta@R1# commit OK [edit]</pre>
-------------------	--

Show the dynamic DNS configuration.	<pre>vyatta@R1# show service dns dynamic interface eth0 { service dyndns { host-name r1.company.com host-name www.company.com login vtest password testpwd } } [edit]</pre>
-------------------------------------	---

At this point, whenever the IP address on eth0 changes, the Vyatta system automatically logs onto the DynDNS service using login ID **vtest** and password **testpwd**. It sends an update for hostnames **r1.company.com** and **www.company.com** specifying the new IP address required to reach those hosts on the **company.com** domain. External users that query DNS for **r1.company.com** or **www.company.com** will subsequently be answered with the new address from the DNS system.

Configuring DNS Forwarding

There are two main steps to configuring the Vyatta system for DNS forwarding:

- 1 Specifying the DNS name servers to forward to
- 2 Specifying the interfaces on which to listen for DNS requests

► Specifying DNS Name Servers

There are three places for which name server locations can be obtained:

- From the system name server list, defined using the **set system name-server** command.
- By DHCP.
- By listing additional name servers using the **set service dns forwarding dhcp** command

By default, the Vyatta system forwards DNS requests to name servers on the system name server list plus name servers obtained through DHCP. You can override the default behavior by specifying any or all of the following:

- Specifically use system-defined name servers. To do this, use the **set service dns forwarding** system command.
- Specifically use name servers received for the interface that is using DHCP client to get an IP. To do this use the **set service dns forwarding dhcp** command.
- List additional name servers using the **set service dns forwarding name-server** command.

These three options can be used in any combination; however, using any of them eliminates the default DNS forwarding behavior.

When DNS forwarding starts or restarts, it broadcasts a message to all the name servers in the pool and selects the first name server to answer. This name server is used unless it becomes unreachable, in which case the system sends another broadcast message to the remaining name servers in the pool.

► Specifying the Listening Interfaces

The listening interfaces are the interfaces to which internal clients will forward DNS requests. The DNS forwarding service listens for these requests and forwards them to the name server.

To set the listening interface, use the **set service dns forwarding listen-on** command. You can specify more than one interface by issuing this command multiple times.

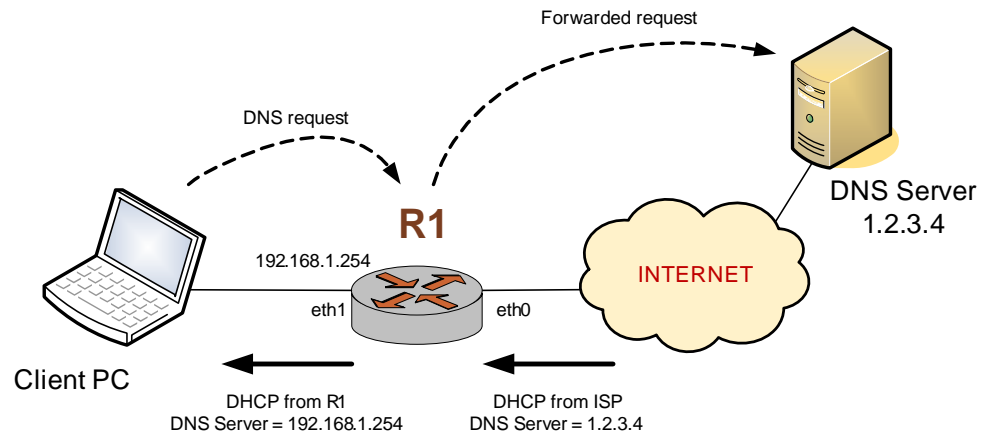
► DNS Forwarding Scenario

Once these steps are complete DNS forwarding is set up. At this point, the Vyatta DHCP server can be used to distribute the DNS forwarding interface address to DHCP clients. (For information about setting up a DHCP server on the Vyatta system, see “Chapter 3: DHCP.”)

Figure 4-3 shows a typical scenario where DNS forwarding would be deployed. In this scenario:

- The ISP is providing dynamic IP addresses to its customers, including a Vyatta system (R1) via DHCP.
- The Vyatta system (R1) is providing DHCP service to clients on its local network.
- Local clients send DNS requests to the Vyatta device.
- The DNS forwarding service on the Vyatta device forwards the requests to the ISP’s DNS server.

Figure 4-2 Scenario using DNS forwarding



Example 4-3 sets up the key parts of the Vyatta system for the scenario above. To configure the Vyatta system in this way, perform the following steps in configuration mode.

Example 4-3 Setting up DNS forwarding

Step	Command
Set IP address/prefix on eth1	<pre>vyatta@R1# set interfaces ethernet eth1 address 192.168.1.254/24 [edit]</pre>
Set eth0 as a DHCP client	<pre>vyatta@R1# set interfaces ethernet eth0 address dhcp [edit]</pre>
Set up the DHCP Server on R1 by creating the configuration node for ETH1_POOL on subnet 192.168.1.0/24. Specify the start and stop IP addresses for the pool.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_POOL subnet 192.168.1.0/24 start 192.168.1.100 stop 192.168.1.199 [edit]</pre>
Specify the default router for ETH1_POOL.	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_POOL subnet 192.168.1.0/24 default-router 192.168.1.254 [edit]</pre>
Create a DNS server list using DNS server information provided by the ISP's DHCP Server (on eth0).	<pre>vyatta@R1# set service dns forwarding dhcp eth0 [edit]</pre>

Example 4-3 Setting up DNS forwarding

Listen for DNS requests on eth1	<pre>vyatta@R1# set service dns forwarding listen-on eth1 [edit]</pre>
Specify a DNS server for ETH1_POOL (in this case it will act as a DNS Forwarder).	<pre>vyatta@R1# set service dhcp-server shared-network-name ETH1_POOL subnet 192.168.1.0/24 dns-server 192.168.1.254 [edit]</pre>
Commit the change	<pre>vyatta@R1# commit [edit]</pre>
Show the DNS-related configuration.	<pre>vyatta@R1# show service dns forwarding { dhcp eth0 listen-on eth1 } [edit]</pre>

Statically Configured Entries and DNS Forwarding

Due to difficulties interworking with network address translation (NAT) on the corporate gateway, it is sometimes difficult to obtain correct IP addresses for hosts on the corporate network. To work around this problem, you can create static entries on a local Vyatta system using the **system static-host-mapping** command. Any entries configured in this way are compared with incoming DNS queries prior to the query being passed to DNS forwarding. If a match is found, the corresponding IP address is returned.

Example 4-4 sets up the system to return an IP address of 12.34.56.78 if it receives a DNS query for either “vyatta.com” or “vdut1”

Example 4-4 Setting up static entries

Step	Command
Create the static host mapping configuration node.	<pre>vyatta@R1# set system static-host-mapping host-name vyatta.com [edit]</pre>
Provide an alias host name (this is optional).	<pre>vyatta@R1# set system static-host-mapping host-name vyatta.com alias vdut1 [edit]</pre>
Specify the IP address to be returned in response to the DNS query.	<pre>vyatta@R1# set system static-host-mapping host-name vyatta.com inet 12.34.56.78 [edit]</pre>

Example 4-4 Setting up static entries

Commit the change	<pre>vyatta@R1# commit [edit]</pre>
Show the static host mapping configuration.	<pre>vyatta@R1# show system static-host-mapping host-name vyatta.com{ alias vdut1 inet 12.34.56.78 } [edit]</pre>

DNS Commands

This chapter contains the following commands

Configuration Commands	Description
Dynamic DNS Configuration Commands	
service dns dynamic interface <interface>	Enables support for DDNS on an interface.
service dns dynamic interface <interface> service <service>	Specifies a DDNS service provider.
service dns dynamic interface <interface> service <service> host-name <hostname>	Specifies the host name to update the DNS record for with DDNS service provider.
service dns dynamic interface <interface> service <service> login <service-login>	Specifies the login ID to use to log on to a DDNS service provider.
service dns dynamic interface <interface> service <service> password <service-password>	Specifies the password to use to log on to a DDNS service provider.
service dns dynamic interface <interface> service <service> server <addr>	Specifies the server to send DDNS updates to.
DNS Forwarding Configuration Commands	
service dns forwarding cache-size <size>	Specifies the size of the DNS forwarding service cache.
service dns forwarding dhcp <interface>	Specifies an interface on which DHCP updates to name server information will be received.
service dns forwarding listen-on <interface>	Specifies an interface on which to listen for DNS requests.
service dns forwarding name-server <ipv4>	Specifies a name server to forward DNS requests to.
service dns forwarding system	Specifies DNS forwarding to system configured name servers.
Operational Commands	Description
clear dns forwarding all	Clears all counters related to DNS forwarding and clears the DNS forwarding cache.
clear dns forwarding cache	Removes all entries in the DNS forwarding cache.
show dns dynamic status	Displays update status for all hosts configured for dynamic DNS updates.
show dns forwarding nameservers	Displays name servers being used for DNS forwarding.
show dns forwarding statistics	Displays counters related to DNS forwarding.

update dns dynamic interface <interface>

Sends a forced update to a DDNS service provider on the specified interface.

clear dns forwarding all

Clears all counters related to DNS forwarding and clears the DNS forwarding cache.

Syntax

```
clear dns forwarding all
```

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to clear all counters related to DNS forwarding. All entries in the DNS forwarding cache are also removed.

clear dns forwarding cache

Removes all entries in the DNS forwarding cache.

Syntax

```
clear dns forwarding cache
```

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to remove all entries in the DNS forwarding cache.

service dns dynamic interface <interface>

Enables support for DDNS on an interface.

Syntax

```
set service dns dynamic interface interface
delete service dns dynamic interface interface
show service dns dynamic interface interface
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface to support DDNS. You can have more than one interface supporting DDNS, by creating multiple interface configuration nodes.
------------------	--

Default

None.

Usage Guidelines

Use this command to specify which interfaces will support dynamic DNS (DDNS).

Use the **set** form of this command to enable DDNS on an interface.

Use the **delete** form of this command to disable DDNS on an interface and remove all its dynamic DNS configuration.

Use the **show** form of this command to view DDNS configuration.

service dns dynamic interface <interface> service <service>

Specifies a DDNS service provider.

Syntax

```
set service dns dynamic interface interface service service
delete service dns dynamic interface interface service service
show service dns dynamic interface interface service service
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
        service text {}
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface supporting DDNS.
<i>service</i>	Multi-node. The name of a DDNS service provider. Supported values are as follows: dnspark , dslreports , dyndns , easydns , namecheap , sitelutions , and zoneedit . You can specify more than one DDNS provider per interface by creating multiple service configuration nodes.

Default

None.

Usage Guidelines

Use this command to specify the organizations providing the dynamic DNS (DDNS) service to the Vyatta system.

Use the **set** form of this command to specify the DDNS service provider.

Use the **delete** form of this command to remove a DDNS service provider from the configuration.

Use the **show** form of this command to view the DDNS service provider information.

service dns dynamic interface <interface> service <service> host-name <hostname>

Specifies the host name to update the DNS record for with DDNS service provider.

Syntax

```
set service dns dynamic interface interface service service host-name hostname
delete service dns dynamic interface interface service service host-name hostname
show service dns dynamic interface interface service service host-name
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
        service text {
          host-name text
        }
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface supporting DDNS.
<i>service</i>	Multi-node. The name of a DDNS service provider. Supported values are as follows: dnspark , dslreports , dyndns , easydns , namecheap , sitelutions , and zoneedit .
<i>hostname</i>	The host name to update DNS record for at the Dynamic DNS provider.

Default

None.

Usage Guidelines

Use this command to specify the host name to update DNS record for at the Dynamic DNS provider.

Use the **set** form of this command to specify the host name.

Use the **delete** form of this command to remove the host name from the configuration.

Use the **show** form of this command to view host name configuration.

service dns dynamic interface <interface> service <service> login <service-login>

Specifies the login ID to use to log on to a DDNS service provider.

Syntax

set service dns dynamic interface *interface* **service** *service* **login** *service-login*

delete service dns dynamic interface *interface* **service** *service* **login**

show service dns dynamic interface *interface* **service** *service* **login**

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
        service text {
          login text
        }
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface supporting DDNS.
<i>service</i>	Multi-node. The name of a DDNS service provider. Supported values are as follows: dnspark , dslreports , dyndns , easydns , namecheap , sitelutions , and zoneedit .
<i>login</i>	The login ID for the system to use when logging on to the DDNS service provider's system.

Default

None.

Usage Guidelines

Use this command to specify the login ID the system should use when it logs on to the system of a dynamic DNS (DDNS) service provider.

Use the **set** form of this command to specify the login ID for a DDNS service provider.

Use the **delete** form of this command to remove the login ID for a DDNS service provider.

Use the **show** form of this command to view DDNS service provider login ID configuration.

service dns dynamic interface <interface> service <service> password <service-password>

Specifies the password to use to log on to a DDNS service provider.

Syntax

```
set service dns dynamic interface interface service service password service-password
delete service dns dynamic interface interface service service password
show service dns dynamic interface interface service service password
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
        service text {
          password text
        }
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface supporting DDNS.
<i>service</i>	Multi-node. The name of a DDNS service provider. Supported values are as follows: dnspark , dslreports , dyndns , easydns , namecheap , sitelutions , and zoneedit .
<i>password</i>	The password for the system to use when logging on to the DDNS service provider's system.

Default

None.

Usage Guidelines

Use this command to specify the password the system should use when it logs on to the system of a dynamic DNS (DDNS) service provider.

Use the **set** form of this command to specify the password for a DDNS service provider.

Use the **delete** form of this command to remove the password for a DDNS service provider.

Use the **show** form of this command to view DDNS service provider password configuration.

service dns dynamic interface <interface> service <service> server <addr>

Specifies the server to send DDNS updates to.

Syntax

```
set service dns dynamic interface interface service service server addr
delete service dns dynamic interface interface service service server
show service dns dynamic interface interface service service server
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    dynamic {
      interface text {
        service text {
          server text
        }
      }
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. The interface supporting DDNS.
<i>service</i>	Multi-node. The name of a DDNS service provider. Supported values are as follows: dnspark , dslreports , dyndns , easydns , namecheap , sitelutions , and zoneedit .
<i>addr</i>	The IP address or hostname of the DDNS service provider's server that DDNS updates are sent to. Only some DDNS service providers require this.

Default

DDNS service provider's default servers are used.

Usage Guidelines

Use this command to specify the IP address or hostname of the DDNS service provider's server that DDNS updates are sent to. This should be set only if the DDNS service provider requires it.

Use the **set** form of this command to specify the server to send DDNS updates to.

Use the **delete** form of this command to use the default DDNS service provider servers.

Use the **show** form of this command to view DDNS service provider server configuration.

service dns forwarding cache-size <size>

Specifies the size of the DNS forwarding service cache.

Syntax

```
set service dns forwarding cache-size size
delete service dns forwarding cache-size
show service dns forwarding cache-size
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    forwarding {
      cache-size u32
    }
  }
}
```

Parameters

<i>size</i>	Optional. The maximum number of DNS entries to be held in the DNS forwarding cache. The range is 0 to 10000, where 0 means an unlimited number of entries are stored. The default is 150.
-------------	---

Default

A maximum of 150 DNS entries are stored in the DNS forwarding cache.

Usage Guidelines

Use this command to specify the DNS forwarding service cache size.

Use the **set** form of this command to set the DNS forwarding service cache size.

Use the **delete** form of this command to restore the DNS forwarding service cache size to the default.

Use the **show** form of this command to view DNS forwarding service cache size configuration.

service dns forwarding dhcp <interface>

Specifies an interface on which DHCP updates to name server information will be received.

Syntax

```
set service dns forwarding dhcp interface
delete service dns forwarding dhcp interface
show service dns forwarding dhcp interface
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    forwarding {
      dhcp text
    }
  }
}
```

Parameters

<i>interface</i>	Multi-node. An interface that is to receive name server information updates from a DHCP server.
------------------	---

Default

The system forwards DNS requests to all configured name servers and all name servers specified through DHCP.

Usage Guidelines

Use this command to specify an interface that is to act as a DHCP client and receive updates to DNS name server information. The Vyatta system will use this information to forward DNS requests from its local clients to the name server.

In order to be configured to listen for updates to name server information, the interface must be configured to obtain its own IP address through DHCP; that is, it must be configured as a DHCP client. For information about configuring the IP address of a physical interface, see the *Vyatta LAN Interfaces Reference Guide*.

By default, the DNS forwarding service creates a pool of name servers to which it forwards DNS requests; this comprises any name servers statically configured for the system (using the **system name-server**), and those of which it is notified through DHCP. This command is used to override the default behavior: when an interface is specified using this command, the system will attend to DHCP name server information updates arriving on the specified interface.

This command can be combined with **service dns forwarding name-server <ipv4>** and/or **service dns forwarding system** to provide a larger pool of candidate name servers.

Use the **set** form of this command to specify an interface to be used as the source for DHCP name server updates.

Use the **delete** form of this command to restore the default method of receiving name server updates.

Use the **show** form of this command to view DNS forwarding DHCP update configuration.

service dns forwarding listen-on <interface>

Specifies an interface on which to listen for DNS requests.

Syntax

```
set service dns forwarding listen-on interface
delete service dns forwarding listen-on interface
show service dns forwarding listen-on interface
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    forwarding {
      listen-on text {}
    }
  }
}
```

Parameters

<i>interface</i>	Mandatory. Multi-node. The interface on which to listen for client-side DNS requests. You can specify more than one interface to receive client-side DNS requests, by creating multiple listen-on configuration nodes.
------------------	--

Default

None.

Usage Guidelines

Use this command to specify interfaces on which to listen for client DNS requests. Only queries received on interfaces specified with this command will receive DNS answers. At least one interface must be specified for DNS forwarding to operate.

Use the **set** form of this command to specify an interface on which to listen for DNS requests.

Use the **delete** form of this command to stop an interface from listening for DNS requests.

Use the **show** form of this command to view DNS request listening configuration.

service dns forwarding name-server <ipv4>

Specifies a name server to forward DNS requests to.

Syntax

```
set service dns forwarding name-server ipv4
delete service dns forwarding name-server ipv4
show service dns forwarding name-server ipv4
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    forwarding {
      name-server ipv4
    }
  }
}
```

Parameters

<i>ipv4</i>	Optional. Multi-node. The IPv4 address of a name server to which to forward DNS requests. You can forward DNS requests to more than one name server by creating multiple name-server configuration nodes.
-------------	---

Default

None.

Usage Guidelines

Use this command to specify a name server to which client DNS requests should be forwarded.

Use of this command is optional. By default, the DNS forwarding service creates a default pool of name servers comprised of those statically configured specified using the **system name-server** command plus those of which it was notified using DHCP. This command is used to override the defaults: when this command is issued, the system forwards DNS requests to the specified name server(s).

This command can be combined with **service dns forwarding dhcp <interface>** and/or **service dns forwarding system** to provide a larger pool of candidate name servers.

Use the **set** form of this command to specify a name server to forward DNS requests to.

Use the **delete** form of this command to remove a name server from the list of name servers to forward DNS requests to. If the last specified server is removed, the default forwarding behavior is restored.

Use the **show** form of this command to see which name servers DNS requests will be forwarded to.

service dns forwarding system

Specifies DNS forwarding to system configured name servers.

Syntax

```
set service dns forwarding system
delete service dns forwarding system
show service dns forwarding
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  dns {
    forwarding {
      system
    }
  }
}
```

Parameters

None

Default

None.

Usage Guidelines

Use this command to direct the system to forward DNS requests to name servers statically configured using the **system name-server** command.

By default, the DNS forwarding service forwards DNS requests to a pool of name servers comprised of the statically configured name servers plus those of which it was notified using DHCP. This command is used to override the defaults: when this command is issued, DNS requests are forwarded to statically configured name servers.

This command can be combined with **service dns forwarding dhcp <interface>** and/or **service dns forwarding name-server <ipv4>** to provide a larger pool of candidate name servers.

Use the **set** form of this command to specify the system-set name servers to forward DNS requests to.

Use the **delete** form of this command to restore the default DNS forwarding behavior.

Use the **show** form of this command to view DNS forwarding configuration.

show dns dynamic status

Displays update status for all hosts configured for dynamic DNS updates.

Syntax

```
show dns dynamic status
```

Command Mode

Operational mode.

Parameters

None

Usage Guidelines

Use this command to display the update status for all host names configured to be updated by dynamic DNS (DDNS).

Examples

Example 4-5 shows sample output of **show dns dynamic status**.

Example 4-5 Displaying information for hosts configured for DDNS

```
vyatta@R1> show dns dynamic status
show dns dynamic status
interface      : eth2
ip address    : 1.2.3.4
host-name     : test1.getmyip.com
last update   : Thu Sep 11 19:30:43 2008
update-status: good

interface      : eth2
ip address    : 1.2.3.5
host-name     : test2.getmyip.com
last update   : Thu Sep 11 19:30:43 2008
update-status: good

interface      : eth3
ip address    : 1.3.4.5
host-name     : test4
last update   : Thu Sep 11 19:34:16 2008
update-status: good
vyatta@R1>
```

show dns forwarding nameservers

Displays name servers being used for DNS forwarding.

Syntax

```
show dns forwarding nameservers
```

Command Mode

Operational mode.

Parameters

None

Usage Guidelines

Use this command to display the name servers that are currently being used for DNS forwarding as well as those that are available but are not being used for DNS forwarding.

Examples

Example 4-6 shows sample output of **show dns forwarding nameservers**.

Example 4-6 Displaying DNS forwarding name server information

```
vyatta@R1> show dns forwarding nameservers
-----
Nameservers configured for DNS forwarding
-----
10.0.0.30 available via 'system'

-----
Nameservers NOT configured for DNS forwarding
-----
10.0.0.31 available via 'dhcp eth3'

vyatta@R1>
```

show dns forwarding statistics

Displays counters related to DNS forwarding.

Syntax

```
show dns forwarding statistics
```

Command Mode

Operational mode.

Parameters

None

Usage Guidelines

Use this command to display statistics related to DNS forwarding. The statistics restart each time there is a change in name servers from any source (dhcp, system, or statically configured), a change in static host mapping (using the **system static-host-mapping** command), or a change made to the DNS forwarding configuration.

Examples

Example 4-7 shows sample output of **show dns forwarding statistics**.

Example 4-7 Displaying DNS forwarding statistics

```
vyatta@R1> show dns forwarding statistics
-----
Cache statistics
-----
Cache size: 150
Queries forwarded: 5
Queries answered locally: 2
Total DNS entries inserted into cache: 23
DNS entries removed from cache before expiry: 0

-----
Nameserver statistics
-----
Server: 10.0.0.30
Queries sent: 5
Queries retried or failed: 0

vyatta@R1>
```

update dns dynamic interface <interface>

Sends a forced update to a DDNS service provider on the specified interface.

Syntax

```
update dns dynamic interface text
```

Command Mode

Operational mode.

Parameters

<i>interface</i>	The interface from which to send the forced update.
------------------	---

Usage Guidelines

Use this command to manually initiate a forced update to a dynamic DNS (DDNS) service provider. The forced update provides the DDNS service provider with the current status of the specified interface.

Note that this command should be used sparingly as frequent unnecessary updates could cause the host name to be blocked by the DDNS service provider.

Chapter 5: Web Caching

This chapter explains how to set up web caching on the Vyatta system.

This chapter presents the following topics:

- Web Caching Configuration
- Web Caching Commands

Web Caching Configuration

This section presents the following topics:

- Web Caching Overview
- Web Caching Configuration Example

Web Caching Overview

The Vyatta system can be configured to act as a web proxy server for web caching and URL filtering. A client can request a web page from the Vyatta system, which connects to the web server and requests the page on the client's behalf. The Vyatta system caches the response; if the page is requested again it can be served directly from the cache, saving the time and bandwidth required for transacting with the web server.

By default, the system acts as a transparent proxy. A transparent proxy automatically redirects port 80 traffic to the web proxy server.

The Vyatta system can also be set as non-transparent proxy. Non-transparent proxies require client browsers to supply the proxy address and port before requests are redirected. The clients must be configured with this information. The advantage of non-transparent proxying is that the client web browser can detect that a proxy is in use, and can behave accordingly. In addition, web-transmitted malware can sometimes be blocked by a non-transparent web proxy, since the malware is unlikely to be aware of the proxy settings.

To configure the Vyatta system as a non-transparent proxy, use the **service webproxy listen-address <ipv4> disable-transparent** command.

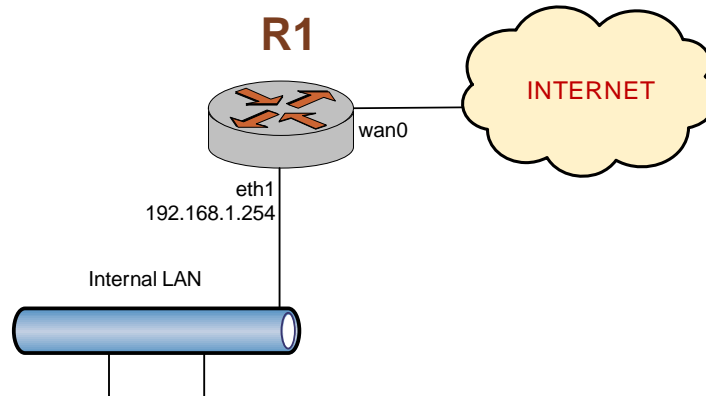
NOTE *Vyatta recommends against enabling web caching on systems with flash memory storage as the cache will repeatedly write to disk and wear out the flash storage medium over time. Web caching should only be used in environments with a hard disk drive.*

Web Caching Configuration Example

Figure 5-1 shows the web proxy deployment used in the examples in this section. In this scenario:

- Devices on the company's internal LAN are accessing the Internet through the Vyatta system (R1).
- The web proxy is deployed on R1 to provide caching and URL filtering functionality to employees accessing the Internet.

Figure 5-1 Web proxy



This section presents the following example:

- Example 5-1 Setting up web caching

Configuring Web Caching

Example 5-1 sets up simple web caching. In this example:

- The listen address is set to the primary IP address of the internal interface.
- The default cache-size is set to 100MB.
- The default port is set to 3128. HTTP traffic (that is, traffic on port 80) will be redirected to this port.

To set up web caching on the Vyatta system perform the following steps:

Example 5-1 Setting up web caching

Step	Command
Set web proxy to listen on address 192.168.1.254 for web requests.	<pre>vyatta@R1# set service webproxy listen-address 192.168.1.254 [edit]</pre>
Commit the change	<pre>vyatta@R1# commit [edit]</pre>
Show web proxy-related configuration.	<pre>vyatta@R1# show service webproxy listen-address 192.168.1.254 { } [edit]</pre>

Web Caching Commands

This chapter contains the following commands.

Configuration Commands

<code>service webproxy append-domain <domain></code>	Appends a domain name to URLs not containing a dot.
<code>service webproxy cache-size <size></code>	Sets the size of the web proxy service cache.
<code>service webproxy default-port <port></code>	Sets the default port for web proxy listen addresses.
<code>service webproxy disable-access-log</code>	Disables logging of HTTP accesses.
<code>service webproxy domain-noncache <domain></code>	Exempts a domain from caching when the web proxy is enabled.
<code>service webproxy listen-address <ipv4></code>	Specifies a web proxy listening address.
<code>service webproxy listen-address <ipv4> disable-transparent</code>	Disables web proxy transparent mode at a listening address.
<code>service webproxy listen-address <ipv4> port <port></code>	Sets the listening port for a listening address.

Operational Commands

None.

service webproxy append-domain <domain>

Appends a domain name to URLs not containing a dot.

Syntax

```
set service webproxy append-domain domain
delete service webproxy append-domain
show service webproxy append-domain
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    append-domain text
  }
}
```

Parameters

<i>domain</i>	Optional. The domain name to be appended to the domain name within URLs.
---------------	--

Default

None.

Usage Guidelines

Use this command to specify a domain name to be appended to domain names within URLs that do not include a dot (“.”). For example, if the domain to be appended is set to “vyatta.com” and the URL received is “www/xyz.htm,” the system renders the final URL as “www.vyatta.com/xyz.htm.”

Use the **set** form of this command to specify a domain name to be appended.

Use the **delete** form of this command to remove the domain name configuration.

Use the **show** form of this command to view the domain name configuration.

service webproxy cache-size <size>

Sets the size of the web proxy service cache.

Syntax

```
set service webproxy cache-size size
delete service webproxy cache-size
show service webproxy cache-size
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    cache-size u32
  }
}
```

Parameters

<i>size</i>	Optional. The amount of disk space, in megabytes, to allocate for the web proxy cache. The range is 0 to 4294967295, where 0 disables web caching. The default is 100 MB.
-------------	---

Default

The web cache is 100 MB.

Usage Guidelines

Use this command to specify the size of the web proxy service cache size.

Use the **set** form of this command to modify the web proxy service cache size.

Use the **delete** form of this command to restore the default web proxy service cache size.

Use the **show** form of this command to view web proxy service cache size configuration.

service webproxy default-port <port>

Sets the default port for web proxy listen addresses.

Syntax

```
set service webproxy default-port port
delete service webproxy default-port
show service webproxy default-port
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    default-port u32
  }
}
```

Parameters

<i>port</i>	Optional. The port number to use for the web proxy service. The range is 0 to 65535. The default is 3128.
-------------	---

Default

Port 3128 is used for web proxy listen addresses.

Usage Guidelines

Use this command to specify the port on which the web proxy service is to listen for web requests from clients. This port is used by default on web proxy listen addresses.

Use the **set** form of this command to specify the default listening port.

Use the **delete** form of this command to restore the default listening port.

Use the **show** form of this command to view web proxy listening port configuration.

service webproxy disable-access-log

Disables logging of HTTP accesses.

Syntax

```
set service webproxy disable-access-log
delete service webproxy disable-access-log
show service webproxy disable-access-log
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    disable-access-log
  }
}
```

Parameters

None.

Default

HTTP accesses are logged.

Usage Guidelines

Use this command to disable logging of HTTP accesses.

Use the **set** form of this command to disable HTTP access logging.

Use the **delete** form of this command to restore the default behavior for HTTP access logging.

Use the **show** form of this command to view HTTP access logging configuration.

service webproxy domain-noncache <domain>

Exempts a domain from caching when the web proxy is enabled.

Syntax

```
set service webproxy domain-noncache domain
delete service webproxy domain-noncache domain
show service webproxy domain-noncache
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    domain-noncache text
  }
}
```

Parameters

<i>domain</i>	Multi-node. The domain to be exempted from caching.
---------------	---

Default

When this parameter is not set, accesses to all sites are cached when the web proxy is enabled.

Usage Guidelines

Use this command to specify domains that are to be accessed without caching. Unless a site is exempted from caching using this command, any accesses of it are cached. Use the **set** form of this command to specify a domain to be exempted from caching. Use the **delete** form of this command to restore caching for a domain. Use the **show** form of this command to view domain exemption configuration.

service webproxy listen-address <ipv4>

Specifies a web proxy listening address.

Syntax

```
set service webproxy listen-address ipv4 port port
```

```
delete service webproxy listen-address ipv4 port
```

```
show service webproxy listen-address ipv4 port
```

Command Mode

Configuration mode.

Configuration Statement

```
service {  
  webproxy {  
    listen-address ipv4 {  
      port u32  
    }  
  }  
}
```

Parameters

<i>ipv4</i>	Multi-node. The IP address the web proxy service listens on. You can set the system to listen for client web requests at more than one IP address by creating multiple listen-address configuration nodes.
-------------	--

Default

None.

Usage Guidelines

Use this command to specify the web proxy listen address.

The listen address is the IP address on which the web proxy service listens for client web requests. For security, a listen address should only be used on internal/trusted networks, since a proxy can be used to hide the client's true IP address.

Use the **set** form of this command to set a specific listening address for the web proxy service.

Use the **delete** form of this command to restore the web proxy's use of the configured default listen address.

Use the **show** form of this command to view web proxy listen address configuration.

service webproxy listen-address <ipv4> disable-transparent

Disables web proxy transparent mode at a listening address.

Syntax

```
set service webproxy listen-address ipv4 disable-transparent
delete service webproxy listen-address ipv4 disable-transparent
show service webproxy listen-address ipv4
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    listen-address ipv4 {
      disable-transparent
    }
  }
}
```

Parameters

<i>ipv4</i>	The IP address on which the web proxy service is listening for web requests.
disable-transparent	Disables transparent mode.

Default

Transparent mode is enabled.

Usage Guidelines

Use this command to disable web proxy transparent mode for the specified listen address.

In transparent mode, all traffic arriving on port 80 and destined for the Internet is automatically forwarded through the web proxy. This allows immediate proxy forwarding without configuring client browsers.

Non-transparent proxying requires that the client browsers be configured with the proxy settings before requests are redirected. The advantage of this is that the client web browser can detect that a proxy is in use and can behave accordingly. In addition, web-transmitted malware can sometimes be blocked by a non-transparent web proxy, since they are not aware of the proxy settings.

Use the **set** form of this command to disable web proxy transparent mode for the specified listening address.

Use the **delete** form of this command to re-enable transparent mode.

Use the **show** form of this command to view the configuration for the specified listening address.

service webproxy listen-address <ipv4> port <port>

Sets the listening port for a listening address.

Syntax

```
set service webproxy listen-address ipv4 port port
delete service webproxy listen-address ipv4 port
show service webproxy listen-address ipv4 port
```

Command Mode

Configuration mode.

Configuration Statement

```
service {
  webproxy {
    listen-address ipv4 {
      port u32
    }
  }
}
```

Parameters

<i>ipv4</i>	An IP address the web proxy service is listening on.
<i>port</i>	The port on which the web proxy service is to listen. The default is the value configured as the default listening port.

Default

The default listening port is specified using the **service webproxy default-port <port>** command.

Usage Guidelines

Use this command to specify the listening port for a listening address.

By default, the web proxy service listens on the port defined as the default listening port, which is configurable using the **service webproxy default-port <port>** command. This command allows you to override the default listening port for a specific IP address.

Use the **set** form of this command to specify the listening port for a listening address.

Use the **delete** form of this command to restore the default listening port.

Use the **show** form of this command to view listening port configuration.

Glossary of Acronyms

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
BGP	Border Gateway Protocol
BIOS	Basic Input Output System
BPDU	Bridge Protocol Data Unit
CA	certificate authority
CHAP	Challenge Handshake Authentication Protocol
CLI	command-line interface
DDNS	dynamic DNS
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6
DLCI	data-link connection identifier
DMI	desktop management interface
DMZ	demilitarized zone
DN	distinguished name
DNS	Domain Name System

DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
eBGP	external BGP
EGP	Exterior Gateway Protocol
ECMP	equal-cost multipath
ESP	Encapsulating Security Payload
FIB	Forwarding Information Base
FTP	File Transfer Protocol
GRE	Generic Routing Encapsulation
HDLC	High-Level Data Link Control
I/O	Input/Output
ICMP	Internet Control Message Protocol
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IGP	Interior Gateway Protocol
IPS	Intrusion Protection System
IKE	Internet Key Exchange
IP	Internet Protocol
IPOA	IP over ATM
IPsec	IP security
IPv4	IP Version 4
IPv6	IP Version 6
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAN	local area network
LDAP	Lightweight Directory Access Protocol

MAC	medium access control
MIB	Management Information Base
MLPPP	multilink PPP
MRRU	maximum received reconstructed unit
MTU	maximum transmission unit
NAT	Network Address Translation
ND	Neighbor Discovery
NIC	network interface card
NTP	Network Time Protocol
OSPF	Open Shortest Path First
OSPFv2	OSPF Version 2
OSPFv3	OSPF Version 3
PAM	Pluggable Authentication Module
PAP	Password Authentication Protocol
PAT	Port Address Translation
PCI	peripheral component interconnect
PKI	Public Key Infrastructure
PPP	Point-to-Point Protocol
PPPoA	PPP over ATM
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PVC	permanent virtual circuit
QoS	quality of service
RADIUS	Remote Authentication Dial-In User Service
RA	router advertisement
RIB	Routing Information Base
RIP	Routing Information Protocol

RIPng	RIP next generation
RS	router solicitation
Rx	receive
SLAAC	Stateless address auto-configuration
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SSH	Secure Shell
STP	Spanning Tree Protocol
TACACS+	Terminal Access Controller Access Control System Plus
TCP	Transmission Control Protocol
ToS	Type of Service
Tx	transmit
UDP	User Datagram Protocol
vif	virtual interface
VLAN	virtual LAN
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	wide area network
