Sauron - User guide
Changes to version 2003-03-05

Revision History - new entry:
Revision 0.7 2014-09-12 Revised by: apadrta
Updated to new features in Sauron 0.7.4

Contents

Preface

This manual is designed to address user's questions about installing and using Sauron, free DNS & DHCP management software. Listed below are the topics covered in this User Guide.

- Chapter 1: Introduction to Sauron, and pointers to additional information about Sauron.
- Chapter 2: Explains how to install and configure Sauron.
- Chapter 3: Provides an overview of how to start using Sauron.
- Chapter 4: Explains how to manage user accounts.
- Chapter 5: Reference for Sauron web-based user interface.
- Chapter 6: Reference for Sauron command-line utilities.
- Chapter 7: Reference for technical details.
- Chapter 8: Comments & notices.

Version 0.7.4 supports both IPv4 and IPv6 addresses and CIDRs. In order to minimize changes in text, IPv4 is still reffered as IP only. The IPv6 is reffered in full name.

1 Introduction

No changes.

1.1 History of Sauron

New entry:

In 2014, Sauron has been modified to support IPv6 in DNS and DHCP configuration by Michal Kostěnec and Aleš Padrta at the University of West Bohemia in Pilsen. The work was also supported by CESNET (NREN in the Czech Republic).

1.2 System Overview

No changes.

1.2.1 Features

New features has been added:

- IPv6 support
- Configuration compatible with ISC DHCP 4.0+
- Configuration compatible with ISC BIND 9.0+

1.3 Sauron homepage

No changes.

1.4 Software Distribution Sites

No changes.

1.5 Mailing lists

No changes.

1.6 Acknowledgement

New Entry:

CESNET (www.cesnet.cz) and University of West Bohemia in Pilsen (www.zcu.cz) for sponsoring IPv6 modifications via grant FR CESNET 478R1/2013.

1.7 Copyright Notice

No changes.

2 Installation

No changes.

2.1 System Requirements

No changes.

2.1.1 Required programs

Following programs are needed to run Sauron.

- PostgreSQL v8.2 (at least 9.1 recommended)
- Perl 5 or later (at least 5.14 recommended)
  - CGI v2.752 or later (older versions should work fine too)
  - Digest::MD5 v2.16 or later
  - Net::DNS v0.66 or later
  - Net::IP v1.25 or later
  - Net::Netmask v1.9002 or later
  - DBD:Pg v2.16 or later (PostgreSQL interface)
- Apache or any other WWW server that supports CGI (for WWW interface)

2.1.2 Related programs

To use DNS & DHCP configurations generated by Sauron you will also need Internet Software Consortium's (http://www.isc.org/) DNS & DHCP programs.

- BIND 9.0.x or later (9.8.x or newer recommended)
- DHCP 4.0.x or later (4.2.x or newer strongly recommended)

2.2 Installing Sauron

Sauron 0.7.4 is avaiable as a source "tarball". Installation can be done as follows:

```
# wget <sauron-webpage>/sauron-0.7.4.tar.gz -O /tmp/install/sauron-0.7.4.tar.gz
# cd /tmp/install/
# tar -zxvf sauron-0.7.4.tar.gz
# cd sauron-0.7.4/
# ./configure
# make
# make docs
# make install
```

2.3 Sauron Configuration

No changes.

2.4 Database Configuration

No changes.

2.4.1 Creating database for Sauron

No changes.

2.4.2 Initializing Database

Before using Sauron, you need to initialize the database. For this there is `createtables` utility that is included with Sauron. To initialize the database, simply run following command in Sauron program directory:

```
./createtables
```

This command will create all the necessary tables needed by Sauron.

Since PostgreSQL 8.0, the OIDs are set OFF by default, but Sauron scripts use this value. The oids can be set ON by following commands:

```
# su postgres
$ psql -U <sauron-dbuser>
sauron=> ALTER DATABASE <sauron-dbname> SET default_with_oids=on;
sauron=> \q
```

You can check that everything worked by issuing the following command:

```
./status
```

This should produce output similar to following showing that the database connection works:

```
Sauron v0.7.4 status

Database connection:   OK
Database version:      1.5
CGI interface:         Enabled

No servers found in database!
```

2.4.3 Initializing Global Tables

No changes.

2.5 WWW Server Configuration

No changes.

3 Getting Started

No changes.

3.1 Creating Administrator Account

No changes.

3.2 Creating New Server

No changes.

3.2.1 Using Web interface

Changes:

- More default zones is added (more details are provided in subsection 5.2.5).
- Networks supports IPv6 notation.
- Reverse zones supports IPv6 notation.

3.2.2 Using Existing DNS/DHCP Configuration

New section about IPv6 was added at the end:

Configurations for IPv6 DHCP and IPv4 DHCP are stored in different files in case of ISC DHCP server. Data import from IPv6 DHCP can be done as follows:

```
./import-dhcp --dhcp6 --global ns1 /etc/dhcpd.ipv6.conf
```

This will update hosts in the server "ns1" with information from IPv6 dhcpd configuration file. The option `--dhcp6` switch the importing tool to IPv6 mode.

Configuration check for IPv6 DHCP has to be enabled in file `/usr/local/etc/sauron/config`:

```
# set to enable dhcpd6.conf validation from sauron
 $SAURON_DHCP6_CHK_PROG = '/usr/sbin/dhcpd';
 $SAURON_DHCP6_CHK_ARGS = '-6 -q -t -cf';
```

3.2.3 Using Demonstration Database

No changes.

3.3 Generating DNS & DHCP Configurations

There are now 3 configurations (BIND, IPv4 DHCP, IPv6 DHCP), whose can be generated by one command:

```
./sauron --bind --dhcp --dhcp6 --updateserial ns1 /opt/ns/
```

4 Account Management

No changes.

4.1 Managing User Accounts

No changes.

4.1.1 Creating User

No changes.

4.1.2 Setting Privileges

IP mask can be used to specify IPv6 address. The wildcards are similar to IPv4 address, for example `2001:db8:aa-ff:1428:a*c:57ab:*`.

4.1.3 Removing User

No changes.

4.1.4 Disabling User Temporarily

No changes.

4.1.5 Listing Users

No changes.

4.2 Managing User Groups

No changes.

4.2.1 Creating Group

No changes.

4.2.2 Setting Group Privileges

No changes.

4.2.3 Removing Group

No changes.

4.3 External User Authentication

No changes.

5 Web Interface

No changes.

5.1 Servers Menu

No changes.

5.1.1 Show Current

No changes.

5.1.2 Select

No changes.

5.1.3 Add

IP address of new server can be in IPv6 format. One row in table 5-1 has been changed:

Field	Description	Example
IP address	IP address of the server	192.168.1.1 2001:db8:1234::bad:b005

5.1.4 Delete

No changes.

5.1.5 Edit

Fields in *access control* block can contain IPv6 addresses and CIDRs. The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account. Next, field *transfer source IPv6* was added according to ISC BIND configuration needs. To distinguish IPv4 and IPv6 DHCP entries, two blocks (*DHCP6 Settings* and *DHCP6 Failover Settings*) are used. One new row has been added to table 5-2:

Field	Description	Example
Transfer source IPv6	Source IPv6 address for zone transfers (for multi-homed hosts)	2001:db8:1234::600d:b005

5.2 Zones Menu

No changes.

5.2.1 Show Current

No changes.

5.2.2 Show Pending

No changes.

5.2.3 Select

No changes.

5.2.4 Add

Reverse zones now support IPv6 reverze zone format.

5.2.5 Add Default Zones

Set of default zones now contains zones specified by appropriate RFCs (RFC 1912, RFC 3849, RFC 4193, RFC 4193, RFC 5735, RFC 5737, and RFC 6303), i.e. the list was extended to:

```
localhost
0.in-addr.arpa
127.in-addr.arpa
228.147.in-addr.arpa
255.in-addr.arpa
0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.ip6.arpa
d.f.ip6.arpa
8.e.f.ip6.arpa
9.e.f.ip6.arpa
a.e.f.ip6.arpa
b.e.f.ip6.arpa
```

5.2.6 Copy

No changes.

5.2.7 Delete

No changes.

5.2.8 Edit

Following fields now support IPv6 addresses or IPv6 CIDRs:

- IP addresses (A)
- Allow dynamic updates
- Allow queries from
- Allow zone-transfers from
- [Stealth] Servers to notify

The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account.

5.3 Hosts Menu

No changes.

5.3.1 Search

Search dialog now supports IPv6, i.e.

- CIDR or IP address can be in IPv6 format. The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account.
- IPv6 subnets are visible in subnets combo box.
- Search field list is extended by DUID and IAID items.

One row was changed in the table 5-5:

Field	Description	Example
CIDR (block) or IP	Limit search to given CIDR block or IP address (NOTE! this field supersedes the subnet field)	192.168.1.128/25 2001:db8:c001::/48

5.3.2 Last Search

No changes.

5.3.3 Add host

Two new rows were addres to table 5-6:

Field	Description	Example
DUID	DHCP Unique Identifier (DUID), 12-20 bytes in hexadecimal format	123456789abc123456789abc
IAID	The Interface Association Identifier (IAID), number in decimal format	0

Additional validations were implemented:

- Pair DUID+IAID has to be unique.
- IPv6 address must be present in order to enter DUID field.
- IPv4 address must be present in order to enter ether field.

Content of combo box *Group* is now limited to *normal group* or *Dynamic Address Pool*. Content of combo box *Subgroup* is now limited to *DHCP class* or *Custom DHCP class*.

5.3.4 Edit (button)

The changes are similar to Add host (described in subsection 5.3.3). The original edit dialog also allow to add DHCP entries (for IPv4). To distinguish between entries for IPv4 DHCP and IPv6 DHCP, new DHCPv6 entries block was added.

5.3.5 Delete (button)

No changes.

5.3.6 Copy (button)

No changes.

5.3.7 Move (button)

No changes.

5.3.8 Alias (button)

No changes.

5.3.9 Add alias

No changes.

5.3.10 Add MX entry

No changes.

5.3.11 Add delegation

No changes.

5.3.12 Add glue rec.

No changes.

5.3.13 Add DHCP entry

No changes.

5.3.14 Add SRV rec.

No changes.

5.3.15 Add reservation

No changes.

5.3.16 Network Settings (button)

No changes.

5.3.17 History (button)

No changes.

5.3.18 Ping (button)

No changes.

5.3.19 Traceroute (button)

No changes.

5.4 Templates Menu

No changes.

5.4.1 Show MX

No changes.

5.4.2 Show WKS

No changes.

5.4.3 Show HINFO

No changes.

5.4.4 Add MX

No changes.

5.4.5 Add WKS

No changes.

5.4.6 Add HINFO

No changes.

5.5 Groups Menu

No changes.

5.5.1 Show Groups

No changes.

5.5.2 Add

No changes.

5.6 Nets Menu

No changes.

5.6.1 Networks

No changes.

5.6.2 Add net

The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account when creating IPv6 net.

5.6.3 Add subnet

The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account when creating IPv6 subnet.

5.6.4 Edit (button)

Support for IPv6 addresses has beed added to *Auto assign address range* fields. The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account when modifying IPv6 (sub)net CIDR.

5.6.5 VLANs

No changes.

5.6.6 Add vlan

No changes.

5.7 Login Menu

No changes.

5.7.1 User Info

No changes.

5.7.2 Who

No changes.

5.7.3 News (motd)

No changes.

5.7.4 Login

No changes.

5.7.5 Logout

No changes.

5.7.6 Change password

No changes.

5.7.7 Edit settings

No changes.

5.7.8 Save settings

No changes.

5.7.9 Frames ON/OFF

No changes.

5.7.10 Lastlog

No changes.

5.7.11 Session Info

No changes.

5.7.12 Add news msg

No changes.

6 Command Reference

6.1 addgroup

No changes.

6.2 addhosts

New version is able to recognize IPv6 addresses and AAAA records. Further, new option `--addip` was added, i.e. the table was extended by one row:

options	description
`--addip`	Add new IP address to the existing host record instead of replacing old IP address. Option is ignored, if combined with `--newonly` option.

6.3 adduser

No changes.

6.4 check-pending

No changes.

6.5 delgroup

No changes.

6.6 deluser

No changes.

6.7 expire-hosts

No changes.

6.8 export-networks

No changes.

6.9 generatehosts

New version is able to generate IPv6 records, i.e. `starting-IP` can be in IPv6 format. Table of tags used in `hostname` changed to:

tag	description
`:N:`	current sequence number
`:IP1:`	in case of IPv4 address: first octet of current IP-number in case of IPv6 address: fifth hextet of current IP-number
`:IP2:`	in case of IPv4 address: second octet of current IP-number in case of IPv6 address: sixth hextet of current IP-number
`:IP3:`	in case of IPv4 address: third octet of current IP-number in case of IPv6 address: seventh hextet of current IP-number
`:IP4:`	in case of IPv4 address: fourth octet of current IP-number in case of IPv6 address: eighth hextet of current IP-number

Note: First four hextets cannot be specified by tags, but it should not be necessary because of minimal subnet size /64.

6.10 import

New version has improved importing capabilites. Following features has beed added:

- recognizing IPv6 addresses in PTR records
- recognizing AAAA records
- capability to parse included files
- recognizing ACLs
- recognizing options block

There are still some limitations implied by Sauron architecture:

- *views* in ISC BIND configuration are not supported
- special records (SSHFP, etc.) are ignored

6.11 import-dhcp

New version has improved importing capabilites. Following features has beed added:

- recognizing DHCP classes (existence, options, and members)
- recognizing dynamic address pools (existence, options, and members)
- print more warnings about inconsistencies in configuration
- recognizing hosts specific DHCP entries

New option `--dhcp6` was added in order to allow import IPv6 DHCP configuration of ISC DHCP. This can be used as follows:

```
# cd /usr/local/sauron
# ./import-dhcp6 --global ns1 /etc/dhcpd.ipv6.conf
```

It has the same improved capabilities as IPv4 import with appropriate changes (for example MAC address → DUID, `subnet` → `subnet6`, etc.).

6.12 import-ethers

No changes.

6.13 import-roots

No changes.

6.14 import-zone

New version has improved importing capabilites. Following features has beed added:

- parsing IPv6 reverse zone
- recognizing IPv6 addresses
- recognizing AAAA records

6.15 last

No changes.

6.16 modgroup

The changes are described in subsection 6.18 (Command Reference: moduser). In fact, `modgroup` is a symlink to `moduser`.

6.17 modhosts

New version is able to use IPv6 CIDRs and IPv6 addresses in options `--cidr` and `--move`. The limitations of IPv6 CIDR specification (described in subsection 8.1) has to be taken into account. Next, the group of host can be delete via option `--setgroup`.

option	**description**
`--setgroup=groupname`	Assign hosts to this group. When entered groupname is `NONE` (upper case), group is removed.

6.18 moduser

New version is able to utilize IPv6 addresses and CIDRs in privilege management, i.e. in parameters `net` and `ipmask`. The delimiter (colon) in non-interactive privilege addition had to be replaced because of colons presence in IPv6 addresses. New delimiter is a plus sign. Some rows of table have been changed:

option	**description**
`--add=zone,servername+zonename,mode`	Add zone privilege (mode=R—RW—RWX).
`--add=net,servername+net`	Add net (IP-range) restriction.

Warning: The delimiter `:` (colon) was replaced by `+` (plus sign) because of colons presence in IPv6 addresses. When used in some user-defined scripts, it has to be changed.

6.19 runsql

No changes.

6.20 sauron

New version has improved generation of IPv4 DHCP configuration (correct handling with DHCP classes and pool access management) and is capable to generate IPv6 DHCP configuration. Option `--dhcp` means IPv4 configuration for ISC DHCP server and option `--dhcp6` means IPv6 configuration for ISC DHCP servers. One row has been changed and one has been added to the table:

option	description
`--dhcp`	Generate IPv4 DHCP (dhcpd) configuration files.
`--dhcp6`	Generate IPv6 DHCP (dhcpd) configuration files.

6.21 status

No changes.

6.22 update-dhcp-info

No changes.

7 Technical Details

7.1 Technical details

Change: Current Sauron Database version is 1.5

All tables and their realations are unchanged, new fields only were added to some tables.

Table servers

New fields have been added:

field	type	comments
df_port6	integer DEFAULT 520	listen port for IPv6
df_max_delay6	integer DEFAULT 60	max-response-delay for IPv6
df_max_uupdates6	integer DEFAULT 10	max-unacked-updates for IPv6
df_mclt6	integer DEFAULT 3600	mlct for IPv6
df_split6	integer DEFAULT 128	split for IPv6
df_loadbalmax6	integer DEFAULT 3	load balance max seconds for IPv6
dhcp_flags6	integer DEFAULT 0	DHCP option flags for IPv6
listen_on_port_v6	text	listen on port IPv6 (optional)
transfer_source_v6	inet	transfer-source IPv6 (optional)
query_src_ip_v6	text	query source IPv6 (optional)
query_src_port_v6	text	query source port for IPv6 (optional)

Table zones

New field has been added:

field	type	comments
transfer_source_v6	inet	Transfer Source for IPv6

Table hosts

New fields have been added:

field	type	comments
duid	character varying(40)	DHCP Unique Identifier (DUID)
iaid	bigint	The Interface Association Identifier (IAID

Table deleted_hosts

New field has been added:

field	type	comments
duid	character varying(40)	DHCP Unique Identifier (DUID)

Table leases

New field has been added:

field	type	comments
duid	character varying(40)	DHCP Unique Identifier (DUID)

Table user_rights

Field `rule` has been prolonged to 80 characters from 40:

field	type	comments
rule	character(80)	R,RW,RWS or regexp

7.2 Software License

No changes.

8 Comments and Notices

In this new section, the unclassifiable comments and notices, are presented.

8.1 IPv6 CIDR

When specifying IPv6 CIDR, the limitation of `IP::Net` Perl module has to be taken into account: only zeroes are allowed in host portion of prefix.

For example:

```
2001:db8:beef::/48 ........ correct
2001:db8:beef:1001::/52 ... wrong (last 1 is in host portion of prefix)
2001:db8:beef:1::/52 ...... wrong (in fact, 1 is interpreted as 0001)
2001:db8:beef:1000::/52 ... correct
```

8.2 Known Issues

- Sauron is not capable to use ISC BIND's *view*.
- Keys are not accesible neither via web GUI nor command line utilities.
- update-dhcp-info is not modified for IPv6 because of non-clear unstable format from ISC.
- Slave zones still have disabled custom entries.

8.3 IPv6 Sauron - Quick How to

New technical documentation for IPv6 Sauron (0.7.4) installation / upgrade from 0.7.3 named *IPv6 Sauron - Quick How To* has been created and supplied with Sauron 0.7.4.