

---

# Networking Baremetal Documentation

*Release 3.0.1.dev3*

OpenStack Foundation

Dec 19, 2020



# CONTENTS

<b>1 networking-baremetal plugin</b>	<b>1</b>
<b>2 Installation Guide</b>	<b>3</b>
2.1 Installation . . . . .	3
<b>3 Configuration Guide</b>	<b>7</b>
3.1 Configuration Reference . . . . .	7
<b>4 Contributor Guide</b>	<b>25</b>
4.1 Contributing . . . . .	25
<b>5 Release Notes</b>	<b>37</b>
<b>6 Indices and tables</b>	<b>39</b>
<b>Python Module Index</b>	<b>41</b>
<b>Index</b>	<b>43</b>



## NETWORKING-BAREMETAL PLUGIN

This projects goal is to provide deep integration between the Networking service and the Bare Metal service and advanced networking features like notifications of port status changes and routed networks support in clouds with Bare Metal service.

- Free software: Apache license
- Documentation: <http://docs.openstack.org/networking-baremetal/latest>
- Source: <http://opendev.org/openstack/networking-baremetal>
- Bugs: <https://storyboard.openstack.org/#!/project/955>
- Release notes: <https://docs.openstack.org/releasenotes/networking-baremetal/>



## INSTALLATION GUIDE

### 2.1 Installation

This section describes how to install and configure the `networking-baremetal` plugin and `ironic-neutron-agent`.

The `ironic-neutron-agent` is a neutron agent that populates the host to physical network mapping for baremetal nodes in neutron. Neutron uses this to calculate the segment to host mapping information.

#### 2.1.1 Install the networking-baremetal plugin and agent

At the command line:

```
$ pip install networking-baremetal
```

Or, if you have neutron installed in a virtualenv, install the `networking-baremetal` plugin to the same virtualenv:

```
$ . <path-to-neutron-venv>/bin/activate  
$ pip install networking-baremetal
```

Or, use the package from your distribution. For RHEL7/CentOS7:

```
$ yum install python2-networking-baremetal python2-ironic-neutron-agent
```

#### 2.1.2 Enable baremetal mechanism driver in the Networking service

To enable mechanism drivers in the ML2 plug-in, edit the `/etc/neutron/plugins/ml2/ml2_conf.ini` configuration file. For example, this enables the `openvswitch` and `baremetal` mechanism drivers:

```
[ml2]  
mechanism_drivers = openvswitch,baremetal
```

### 2.1.3 Configure ironic-neutron-agent

To configure the baremetal neutron agent, edit the neutron configuration `/etc/neutron/plugins/ml2/ironic_neutron_agent.ini` file. Add an `[ironic]` section. For example:

```
[ironic]
project_domain_name = Default
project_name = service
user_domain_name = Default
password = password
username = ironic
auth_url = http://identity-server.example.com/identity
auth_type = password
os_region = RegionOne
```

### 2.1.4 Start ironic-neutron-agent service

To start the agent either run it from the command line like in the example below or add it to the init system.

```
$ ironic-neutron-agent \
  --config-dir /etc/neutron \
  --config-file /etc/neutron/plugins/ml2/ironic_neutron_agent.ini \
  --log-file /var/log/neutron/ironic_neutron_agent.log
```

You can create a systemd service file `/etc/systemd/system/ironic-neutron-agent.service` for `ironic-neutron-agent` for systemd based distributions. For example:

```
[Unit]
Description=OpenStack Ironic Neutron Agent
After=syslog.target network.target

[Service]
Type=simple
User=neutron
PermissionsStartOnly=true
TimeoutStartSec=0
Restart=on-failure
ExecStart=/usr/bin/ironic-neutron-agent --config-dir /etc/neutron --config-
↪file /etc/neutron/plugins/ml2/ironic_neutron_agent.ini --log-file /var/
↪log/neutron/ironic-neutron-agent.log
PrivateTmp=true
KillMode=process

[Install]
WantedBy=multi-user.target
```

---

**Note:** systemd service file may be already available if you are installing from package released by linux distributions.

---

Enable and start the `ironic-neutron-agent` service:



```
$ sudo systemctl enable ironic-neutron-agent.service
$ sudo systemctl start ironic-neutron-agent.service
```



## CONFIGURATION GUIDE

### 3.1 Configuration Reference

The following pages describe configuration options that can be used to adjust the service to your particular situation.

#### 3.1.1 Configuration Options

The following is an overview of all available configuration options in networking-baremetal. For a sample configuration file, refer to *Sample Configuration File*.

#### DEFAULT

##### debug

**Type** boolean

**Default** False

**Mutable** This option can be changed without restarting.

If set to true, the logging level will be set to DEBUG instead of the default INFO level.

##### log\_config\_append

**Type** string

**Default** <None>

**Mutable** This option can be changed without restarting.

The name of a logging configuration file. This file is appended to any existing logging configuration files. For details about logging configuration files, see the Python logging module documentation. Note that when logging configuration files are used then all logging configuration is set in the configuration file and other logging configuration options are ignored (for example, log-date-format).

Table 1: Deprecated Variations

Group	Name
DEFAULT	log-config
DEFAULT	log_config

**log\_date\_format****Type** string**Default** %Y-%m-%d %H:%M:%S

Defines the format string for `%(asctime)s` in log records. Default: the value above. This option is ignored if `log_config_append` is set.

**log\_file****Type** string**Default** <None>

(Optional) Name of log file to send logging output to. If no default is set, logging will go to `stderr` as defined by `use_stderr`. This option is ignored if `log_config_append` is set.

Table 2: Deprecated Variations

Group	Name
DEFAULT	logfile

**log\_dir****Type** string**Default** <None>

(Optional) The base directory used for relative `log_file` paths. This option is ignored if `log_config_append` is set.

Table 3: Deprecated Variations

Group	Name
DEFAULT	logdir

**watch\_log\_file****Type** boolean**Default** `False`

Uses logging handler designed to watch file system. When log file is moved or removed this handler will open a new log file with specified path instantaneously. It makes sense only if `log_file` option is specified and Linux platform is used. This option is ignored if `log_config_append` is set.

**use\_syslog****Type** boolean**Default** `False`

Use syslog for logging. Existing syslog format is DEPRECATED and will be changed later to honor RFC5424. This option is ignored if `log_config_append` is set.

**use\_journal****Type** boolean**Default** `False`

Enable journald for logging. If running in a systemd environment you may wish to enable journal support. Doing so will use the journal native protocol which includes structured metadata in addition to log messages. This option is ignored if `log_config_append` is set.

**syslog\_log\_facility**

**Type** string

**Default** LOG\_USER

Syslog facility to receive log lines. This option is ignored if `log_config_append` is set.

**use\_json**

**Type** boolean

**Default** False

Use JSON formatting for logging. This option is ignored if `log_config_append` is set.

**use\_stderr**

**Type** boolean

**Default** False

Log output to standard error. This option is ignored if `log_config_append` is set.

**use\_eventlog**

**Type** boolean

**Default** False

Log output to Windows Event Log.

**log\_rotate\_interval**

**Type** integer

**Default** 1

The amount of time before the log files are rotated. This option is ignored unless `log_rotation_type` is set to interval.

**log\_rotate\_interval\_type**

**Type** string

**Default** days

**Valid Values** Seconds, Minutes, Hours, Days, Weekday, Midnight

Rotation interval type. The time of the last file change (or the time when the service was started) is used when scheduling the next rotation.

**max\_logfile\_count**

**Type** integer

**Default** 30

Maximum number of rotated log files.

**max\_logfile\_size\_mb**

**Type** integer

**Default** 200

Log file maximum size in MB. This option is ignored if `log_rotation_type` is not set to size.

### `log_rotation_type`

**Type** string

**Default** none

**Valid Values** interval, size, none

Log rotation type.

### Possible values

**interval** Rotate logs at predefined time intervals.

**size** Rotate logs once they reach a predefined size.

**none** Do not rotate log files.

### `logging_context_format_string`

**Type** string

**Default** `%(asctime)s.%(msecs)03d %(process)d %(levelname)s  
%(name)s [%(request_id)s %(user_identity)s]  
%(instance)s%(message)s`

Format string to use for log messages with context. Used by `oslo_log.formatters.ContextFormatter`

### `logging_default_format_string`

**Type** string

**Default** `%(asctime)s.%(msecs)03d %(process)d %(levelname)s  
%(name)s [-] %(instance)s%(message)s`

Format string to use for log messages when context is undefined. Used by `oslo_log.formatters.ContextFormatter`

### `logging_debug_format_suffix`

**Type** string

**Default** `%(funcName)s %(pathname)s:%(lineno)d`

Additional data to append to log message when logging level for the message is DEBUG. Used by `oslo_log.formatters.ContextFormatter`

### `logging_exception_prefix`

**Type** string

**Default** `%(asctime)s.%(msecs)03d %(process)d ERROR %(name)s  
%(instance)s`

Prefix each line of exception output with this format. Used by `oslo_log.formatters.ContextFormatter`

### `logging_user_identity_format`

**Type** string

**Default** %(user)s %(tenant)s %(domain)s %(user\_domain)s  
%(project\_domain)s

Defines the format string for %(user\_identity)s that is used in logging\_context\_format\_string. Used by oslo\_log.formatters.ContextFormatter

### default\_log\_levels

**Type** list

**Default** ['amqp=WARN', 'amqpplib=WARN', 'boto=WARN', 'qpuid=WARN', 'sqlalchemy=WARN', 'suds=INFO', 'oslo.messaging=INFO', 'oslo\_messaging=INFO', 'iso8601=WARN', 'requests.packages.urllib3.connectionpool=WARN', 'urllib3.connectionpool=WARN', 'websocket=WARN', 'requests.packages.urllib3.util.retry=WARN', 'urllib3.util.retry=WARN', 'keystonemiddleware=WARN', 'routes.middleware=WARN', 'stevedore=WARN', 'taskflow=WARN', 'keystoneauth=WARN', 'oslo.cache=INFO', 'oslo\_policy=INFO', 'dogpile.core.dogpile=INFO']

List of package logging levels in logger=LEVEL pairs. This option is ignored if log\_config\_append is set.

### publish\_errors

**Type** boolean

**Default** False

Enables or disables publication of error events.

### instance\_format

**Type** string

**Default** "[instance: %(uuid)s] "

The format for an instance that is passed with the log message.

### instance\_uuid\_format

**Type** string

**Default** "[instance: %(uuid)s] "

The format for an instance UUID that is passed with the log message.

### rate\_limit\_interval

**Type** integer

**Default** 0

Interval, number of seconds, of log rate limiting.

### rate\_limit\_burst

**Type** integer

**Default** 0

Maximum number of logged messages per `rate_limit_interval`.

**rate\_limit\_except\_level**

**Type** string

**Default** CRITICAL

Log level name used by rate limiting: CRITICAL, ERROR, INFO, WARNING, DEBUG or empty string. Logs with level greater or equal to `rate_limit_except_level` are not filtered. An empty string means that all levels are filtered.

**fatal\_deprecations**

**Type** boolean

**Default** False

Enables or disables fatal status of deprecations.

**agent**

**report\_interval**

**Type** floating point

**Default** 30

Seconds between nodes reporting state to server; should be less than `agent_down_time`, best if it is half or less than `agent_down_time`.

**log\_agent\_heartbeats**

**Type** boolean

**Default** False

Log agent heartbeats

**ironic**

**auth\_strategy**

**Type** string

**Default** keystone

**Valid Values** keystone, noauth

Method to use for authentication: noauth or keystone.

**Warning:** This option is deprecated for removal. Its value may be silently ignored in the future.

**Reason** This option is no longer used, please use the `[ironic]/auth_type` option instead.

**service\_type**



**Type** string

**Default** <None>

The default service\_type for endpoint URL discovery.

**service\_name**

**Type** string

**Default** <None>

The default service\_name for endpoint URL discovery.

**valid\_interfaces**

**Type** list

**Default** <None>

List of interfaces, in order of preference, for endpoint URL.

**region\_name**

**Type** string

**Default** <None>

The default region\_name for endpoint URL discovery.

Table 4: Deprecated Variations

Group	Name
ironic	os_region

**endpoint\_override**

**Type** string

**Default** <None>

Always use this endpoint URL for requests for this client. NOTE: The unversioned endpoint should be specified here; to request a particular API version, use the *version*, *min-version*, and/or *max-version* options.

Table 5: Deprecated Variations

Group	Name
ironic	ironic_url

**version**

**Type** string

**Default** <None>

Minimum Major API version within a given Major API version for endpoint URL discovery. Mutually exclusive with min\_version and max\_version

**min\_version**

**Type** string

**Default** <None>

The minimum major version of a given API, intended to be used as the lower bound of a range with `max_version`. Mutually exclusive with `version`. If `min_version` is given with no `max_version` it is as if `max_version` is latest.

#### **max\_version**

**Type** string

**Default** <None>

The maximum major version of a given API, intended to be used as the upper bound of a range with `min_version`. Mutually exclusive with `version`.

#### **connect\_retries**

**Type** integer

**Default** <None>

The maximum number of retries that should be attempted for connection errors.

#### **connect\_retry\_delay**

**Type** floating point

**Default** <None>

Delay (in seconds) between two retries for connection errors. If not set, exponential retry starting with 0.5 seconds up to a maximum of 60 seconds is used.

#### **status\_code\_retries**

**Type** integer

**Default** <None>

The maximum number of retries that should be attempted for retrieable HTTP status codes.

Table 6: Deprecated Variations

Group	Name
ironic	max_retries

#### **status\_code\_retry\_delay**

**Type** floating point

**Default** <None>

Delay (in seconds) between two retries for retrieable status codes. If not set, exponential retry starting with 0.5 seconds up to a maximum of 60 seconds is used.

Table 7: Deprecated Variations

Group	Name
ironic	retry_interval

#### **interface**

**Type** string

**Default** <None>

The default interface for endpoint URL discovery.

**Warning:** This option is deprecated for removal. Its value may be silently ignored in the future.

**Reason** Using valid-interfaces is preferable because it is capable of accepting a list of possible interfaces.

#### **cafile**

**Type** string

**Default** <None>

PEM encoded Certificate Authority to use when verifying HTTPs connections.

#### **certfile**

**Type** string

**Default** <None>

PEM encoded client certificate cert file

#### **keyfile**

**Type** string

**Default** <None>

PEM encoded client certificate key file

#### **insecure**

**Type** boolean

**Default** False

Verify HTTPS connections.

#### **timeout**

**Type** integer

**Default** <None>

Timeout value for http requests

#### **collect\_timing**

**Type** boolean

**Default** False

Collect per-API call timing information.

#### **split\_loggers**

**Type** boolean

**Default** False

Log requests to multiple loggers.

**auth\_url**

**Type** unknown type

**Default** <None>

Authentication URL

**system\_scope**

**Type** unknown type

**Default** <None>

Scope for system operations

**domain\_id**

**Type** unknown type

**Default** <None>

Domain ID to scope to

**domain\_name**

**Type** unknown type

**Default** <None>

Domain name to scope to

**project\_id**

**Type** unknown type

**Default** <None>

Project ID to scope to

**project\_name**

**Type** unknown type

**Default** <None>

Project name to scope to

**project\_domain\_id**

**Type** unknown type

**Default** <None>

Domain ID containing project

**project\_domain\_name**

**Type** unknown type

**Default** <None>

Domain name containing project

**trust\_id**

**Type** unknown type

**Default** <None>

Trust ID

**user\_id**

**Type** unknown type

**Default** <None>

User ID

**username**

**Type** unknown type

**Default** <None>

Username

Table 8: Deprecated Variations

Group	Name
ironic	user-name
ironic	user_name

**user\_domain\_id**

**Type** unknown type

**Default** <None>

Users domain id

**user\_domain\_name**

**Type** unknown type

**Default** <None>

Users domain name

**password**

**Type** unknown type

**Default** <None>

Users password

### 3.1.2 Sample Configuration File

The following is a sample ironic-neutron-agent configuration for adaptation and use. For a detailed overview of all available configuration options, refer to *Configuration Options*.

The sample configuration can also be viewed in `file` form.

**Important:** The sample configuration file is auto-generated from networking-baremetal when this documentation is built. You must ensure your version of networking-baremetal matches the version of this documentation.

```
[DEFAULT]

#
# From oslo.log
#

# If set to true, the logging level will be set to DEBUG instead of the
↪ default
# INFO level. (boolean value)
# Note: This option can be changed without restarting.
#debug = false

# The name of a logging configuration file. This file is appended to any
# existing logging configuration files. For details about logging
↪ configuration
# files, see the Python logging module documentation. Note that when
↪ logging
# configuration files are used then all logging configuration is set in the
# configuration file and other logging configuration options are ignored
↪ (for
# example, log-date-format). (string value)
# Note: This option can be changed without restarting.
# Deprecated group/name - [DEFAULT]/log_config
#log_config_append = <None>

# Defines the format string for %(asctime)s in log records. Default:
# %(default)s . This option is ignored if log_config_append is set. (string
# value)
#log_date_format = %Y-%m-%d %H:%M:%S

# (Optional) Name of log file to send logging output to. If no default is
↪ set,
# logging will go to stderr as defined by use_stderr. This option is
↪ ignored if
# log_config_append is set. (string value)
# Deprecated group/name - [DEFAULT]/logfile
#log_file = <None>

# (Optional) The base directory used for relative log_file paths. This
↪ option
# is ignored if log_config_append is set. (string value)
# Deprecated group/name - [DEFAULT]/logdir
#log_dir = <None>

# Uses logging handler designed to watch file system. When log file is
↪ moved or
# removed this handler will open a new log file with specified path
# instantaneously. It makes sense only if log_file option is specified and
# Linux platform is used. This option is ignored if log_config_append is
↪ set.
# (boolean value)
```

(continues on next page)

(continued from previous page)

```

#watch_log_file = false

# Use syslog for logging. Existing syslog format is DEPRECATED and will be
# changed later to honor RFC5424. This option is ignored if log_config_
→append
# is set. (boolean value)
#use_syslog = false

# Enable journald for logging. If running in a systemd environment you may_
→wish
# to enable journal support. Doing so will use the journal native protocol
# which includes structured metadata in addition to log messages.This_
→option is
# ignored if log_config_append is set. (boolean value)
#use_journal = false

# Syslog facility to receive log lines. This option is ignored if
# log_config_append is set. (string value)
#syslog_log_facility = LOG_USER

# Use JSON formatting for logging. This option is ignored if log_config_
→append
# is set. (boolean value)
#use_json = false

# Log output to standard error. This option is ignored if log_config_
→append is
# set. (boolean value)
#use_stderr = false

# Log output to Windows Event Log. (boolean value)
#use_eventlog = false

# The amount of time before the log files are rotated. This option is_
→ignored
# unless log_rotation_type is setto "interval". (integer value)
#log_rotate_interval = 1

# Rotation interval type. The time of the last file change (or the time_
→when
# the service was started) is used when scheduling the next rotation._
→(string
# value)
# Possible values:
# Seconds - <No description provided>
# Minutes - <No description provided>
# Hours - <No description provided>
# Days - <No description provided>
# Weekday - <No description provided>
# Midnight - <No description provided>
#log_rotate_interval_type = days

# Maximum number of rotated log files. (integer value)
#max_logfile_count = 30

# Log file maximum size in MB. This option is ignored if "log_rotation_type
→" is

```

(continues on next page)

(continued from previous page)

```

# not set to "size". (integer value)
#max_logfile_size_mb = 200

# Log rotation type. (string value)
# Possible values:
# interval - Rotate logs at predefined time intervals.
# size - Rotate logs once they reach a predefined size.
# none - Do not rotate log files.
#log_rotation_type = none

# Format string to use for log messages with context. Used by
# oslo_log.formatters.ContextFormatter (string value)
#logging_context_format_string = %(asctime)s.%(msecs)03d %(process)d
↳ %(levelname)s %(name)s [%(request_id)s %(user_identity)s] %(instance)s
↳ %(message)s

# Format string to use for log messages when context is undefined. Used by
# oslo_log.formatters.ContextFormatter (string value)
#logging_default_format_string = %(asctime)s.%(msecs)03d %(process)d
↳ %(levelname)s %(name)s [-] %(instance)s%(message)s

# Additional data to append to log message when logging level for the_
↳ message
# is DEBUG. Used by oslo_log.formatters.ContextFormatter (string value)
#logging_debug_format_suffix = %(funcName)s %(pathname)s:%(lineno)d

# Prefix each line of exception output with this format. Used by
# oslo_log.formatters.ContextFormatter (string value)
#logging_exception_prefix = %(asctime)s.%(msecs)03d %(process)d ERROR
↳ %(name)s %(instance)s

# Defines the format string for %(user_identity)s that is used in
# logging_context_format_string. Used by oslo_log.formatters.
↳ ContextFormatter
# (string value)
#logging_user_identity_format = %(user)s %(tenant)s %(domain)s %(user_
↳ domain)s %(project_domain)s

# List of package logging levels in logger=LEVEL pairs. This option is_
↳ ignored
# if log_config_append is set. (list value)
#default_log_levels = amqp=WARN,amqplib=WARN,boto=WARN,qpuid=WARN,
↳ sqlalchemy=WARN,suds=INFO,oslo.messaging=INFO,oslo_messaging=INFO,
↳ iso8601=WARN,requests.packages.urllib3.connectionpool=WARN,urllib3.
↳ connectionpool=WARN,websocket=WARN,requests.packages.urllib3.util.
↳ retry=WARN,urllib3.util.retry=WARN,keystonemiddleware=WARN,routes.
↳ middleware=WARN,stevedore=WARN,taskflow=WARN,keystoneauth=WARN,oslo.
↳ cache=INFO,oslo_policy=INFO,dogpile.core.dogpile=INFO

# Enables or disables publication of error events. (boolean value)
#publish_errors = false

# The format for an instance that is passed with the log message. (string
# value)
#instance_format = "[instance: %(uuid)s] "

```

(continues on next page)



(continued from previous page)

```
# The format for an instance UUID that is passed with the log message.
↳(string
# value)
#instance_uuid_format = "[instance: %(uuid)s] "

# Interval, number of seconds, of log rate limiting. (integer value)
#rate_limit_interval = 0

# Maximum number of logged messages per rate_limit_interval. (integer
↳value)
#rate_limit_burst = 0

# Log level name used by rate limiting: CRITICAL, ERROR, INFO, WARNING,
↳DEBUG
# or empty string. Logs with level greater or equal to rate_limit_except_
↳level
# are not filtered. An empty string means that all levels are filtered.
↳(string
# value)
#rate_limit_except_level = CRITICAL

# Enables or disables fatal status of deprecations. (boolean value)
#fatal_deprecations = false

[agent]

#
# From ironic-neutron-agent
#

# Seconds between nodes reporting state to server; should be less than
# agent_down_time, best if it is half or less than agent_down_time.
↳(floating
# point value)
#report_interval = 30

# Log agent heartbeats (boolean value)
#log_agent_heartbeats = false

[ironic]

#
# From ironic-client
#

# DEPRECATED: Method to use for authentication: noauth or keystone. (string
# value)
# Possible values:
# keystone - <No description provided>
# noauth - <No description provided>
# This option is deprecated for removal.
# Its value may be silently ignored in the future.
# Reason: This option is no longer used, please use the [ironic]/auth_type
# option instead.
```

(continues on next page)

(continued from previous page)

```

#auth_strategy = keystone

# The default service_type for endpoint URL discovery. (string value)
#service_type = <None>

# The default service_name for endpoint URL discovery. (string value)
#service_name = <None>

# List of interfaces, in order of preference, for endpoint URL. (list_
↳value)
#valid_interfaces = <None>

# The default region_name for endpoint URL discovery. (string value)
# Deprecated group/name - [ironic]/os_region
#region_name = <None>

# Always use this endpoint URL for requests for this client. NOTE: The
# unversioned endpoint should be specified here; to request a particular_
↳API
# version, use the `version`, `min-version`, and/or `max-version` options.
# (string value)
# Deprecated group/name - [ironic]/ironic_url
#endpoint_override = <None>

# Minimum Major API version within a given Major API version for endpoint_
↳URL
# discovery. Mutually exclusive with min_version and max_version (string_
↳value)
#version = <None>

# The minimum major version of a given API, intended to be used as the_
↳lower
# bound of a range with max_version. Mutually exclusive with version. If
# min_version is given with no max_version it is as if max version is
↳"latest".
# (string value)
#min_version = <None>

# The maximum major version of a given API, intended to be used as the_
↳upper
# bound of a range with min_version. Mutually exclusive with version._
↳(string
# value)
#max_version = <None>

# The maximum number of retries that should be attempted for connection_
↳errors.
# (integer value)
#connect_retries = <None>

# Delay (in seconds) between two retries for connection errors. If not set,
# exponential retry starting with 0.5 seconds up to a maximum of 60_
↳seconds is
# used. (floating point value)
#connect_retry_delay = <None>

```

(continues on next page)

(continued from previous page)

```
# The maximum number of retries that should be attempted for retrievable HTTP
# status codes. (integer value)
# Deprecated group/name - [ironic]/max_retries
#status_code_retries = <None>

# Delay (in seconds) between two retries for retrievable status codes. If not
# set, exponential retry starting with 0.5 seconds up to a maximum of 60
# seconds is used. (floating point value)
# Deprecated group/name - [ironic]/retry_interval
#status_code_retry_delay = <None>

# DEPRECATED: The default interface for endpoint URL discovery. (string_
# value)
# This option is deprecated for removal.
# Its value may be silently ignored in the future.
# Reason: Using valid-interfaces is preferrable because it is capable of
# accepting a list of possible interfaces.
#interface = <None>

# PEM encoded Certificate Authority to use when verifying HTTPS_
# connections.
# (string value)
#cafile = <None>

# PEM encoded client certificate cert file (string value)
#certfile = <None>

# PEM encoded client certificate key file (string value)
#keyfile = <None>

# Verify HTTPS connections. (boolean value)
#insecure = false

# Timeout value for http requests (integer value)
#timeout = <None>

# Collect per-API call timing information. (boolean value)
#collect_timing = false

# Log requests to multiple loggers. (boolean value)
#split_loggers = false

# Authentication URL (string value)
#auth_url = <None>

# Scope for system operations (string value)
#system_scope = <None>

# Domain ID to scope to (string value)
#domain_id = <None>

# Domain name to scope to (string value)
#domain_name = <None>

# Project ID to scope to (string value)
#project_id = <None>
```

(continues on next page)

(continued from previous page)

```
# Project name to scope to (string value)
#project_name = <None>

# Domain ID containing project (string value)
#project_domain_id = <None>

# Domain name containing project (string value)
#project_domain_name = <None>

# Trust ID (string value)
#trust_id = <None>

# User ID (string value)
#user_id = <None>

# Username (string value)
# Deprecated group/name - [ironic]/user_name
#username = <None>

# User's domain id (string value)
#user_domain_id = <None>

# User's domain name (string value)
#user_domain_name = <None>

# User's password (string value)
#password = <None>
```

## CONTRIBUTOR GUIDE

### 4.1 Contributing

This document provides some necessary points for developers to consider when writing and reviewing networking-baremetal code.

#### 4.1.1 Getting Started

If you're completely new to OpenStack and want to contribute to the networking-baremetal project, please start by familiarizing yourself with the [Infra Teams Developer Guide](#). This will help you get your accounts set up in Launchpad and Gerrit, familiarize you with the workflow for the OpenStack continuous integration and testing systems, and help you with your first commit.

#### LaunchPad Project

Most of the tools used for OpenStack require a launchpad.net ID for authentication.

**See also:**

- <https://launchpad.net>
- <https://launchpad.net/ironic>

#### Related Projects

Networking Baremetal is tightly integrated with the ironic and neutron projects. Ironic and its related projects are developed by the same community.

**See also:**

- <https://launchpad.net/ironic>
- <https://launchpad.net/neutron>

### Project Hosting Details

**Bug tracker** <https://bugs.launchpad.net/networking-baremetal>

**Mailing list (prefix Subject line with [ironic] [networking-baremetal])** <http://lists.openstack.org/cgi-bin/mailman/listinfo/openstack-discuss>

**Code Hosting** <https://opendev.org/openstack/networking-baremetal>

**Code Review** <https://review.opendev.org/#/q/status:open+project:openstack/networking-baremetal,n,z>

### 4.1.2 Developer quick-starts

These are quick walk throughs to get you started developing code for networking-baremetal. These assume you are already familiar with submitting code reviews to an OpenStack project.

#### Deploying networking-baremetal with DevStack

DevStack may be configured to deploy networking-baremetal Networking service plugin. It is highly recommended to deploy on an expendable virtual machine and not on your personal work station. Deploying networking-baremetal with DevStack requires a machine running Ubuntu 14.04 (or later) or Fedora 20 (or later).

**See also:**

<http://docs.openstack.org/devstack/latest>

Create `devstack/local.conf` with minimal settings required to enable networking-baremetal with ironic. Here is an example of `local.conf`:

```
cd devstack
cat >local.conf <<END
[[local|localrc]]
# Credentials
ADMIN_PASSWORD=password
DATABASE_PASSWORD=password
RABBIT_PASSWORD=password
SERVICE_PASSWORD=password
SERVICE_TOKEN=password
SWIFT_HASH=password
SWIFT_TEMPURL_KEY=password

# Enable networking-baremetal plugin
enable_plugin networking-baremetal https://opendev.org/openstack/
↪networking-baremetal.git
enable_service ir-neutronagt

# Enable ironic plugin
enable_plugin ironic https://opendev.org/openstack/ironic
enable_service networking_baremetal

# Enable neutron which is required by ironic and disable nova-network.
disable_service n-net
disable_service n-novnc
enable_service q-svc
```

(continues on next page)

(continued from previous page)

```
enable_service q-agt
enable_service q-dhcp
enable_service q-l3
enable_service q-meta
enable_service neutron

# Enable swift for agent_* drivers
enable_service s-proxy
enable_service s-object
enable_service s-container
enable_service s-account

# Disable horizon
disable_service horizon

# Disable heat
disable_service heat h-api h-api-cfn h-api-cw h-eng

# Disable cinder
disable_service cinder c-sch c-api c-vol

# Swift temp URL's are required for agent_* drivers.
SWIFT_ENABLE_TEMPURLS=True

# Create 3 virtual machines to pose as ironic's baremetal nodes.
IRONIC_VM_COUNT=3
IRONIC_VM_SSH_PORT=22
IRONIC_BAREMETAL_BASIC_OPS=True
DEFAULT_INSTANCE_TYPE=baremetal

# Enable additional hardware types, if needed.
#IRONIC_ENABLED_HARDWARE_TYPES=ipmi,fake-hardware
# Don't forget that many hardware types require enabling of additional
# interfaces, most often power and management:
#IRONIC_ENABLED_MANAGEMENT_INTERFACES=ipmitool,fake
#IRONIC_ENABLED_POWER_INTERFACES=ipmitool,fake
# The 'ipmi' hardware type's default deploy interface is 'iscsi'.
# This would change the default to 'direct':
#IRONIC_DEFAULT_DEPLOY_INTERFACE=direct

# Change this to alter the default driver for nodes created by devstack.
# This driver should be in the enabled list above.
IRONIC_DEPLOY_DRIVER=ipmi

# The parameters below represent the minimum possible values to create
# functional nodes.
IRONIC_VM_SPECS_RAM=1280
IRONIC_VM_SPECS_DISK=10

# Size of the ephemeral partition in GB. Use 0 for no ephemeral partition.
IRONIC_VM_EPHEMERAL_DISK=0

# To build your own IPA ramdisk from source, set this to True
IRONIC_BUILD_DEPLOY_RAMDISK=False

VIRT_DRIVER=ironic
```

(continues on next page)

(continued from previous page)

```
# By default, DevStack creates a 10.0.0.0/24 network for instances.
# If this overlaps with the hosts network, you may adjust with the
# following.
NETWORK_GATEWAY=10.1.0.1
FIXED_RANGE=10.1.0.0/24
FIXED_NETWORK_SIZE=256

# Log all output to files
LOGFILE=$HOME/devstack.log
LOGDIR=$HOME/logs
IRONIC_VM_LOG_DIR=$HOME/ironic-bm-logs

END
```

## Deploying networking-baremetal and multi-tenant networking with DevStack

DevStack may be configured to deploy networking-baremetal Networking service plugin together with networking-generic-switch for multi-tenant networking. It is highly recommended to deploy on an expendable virtual machine and not on your personal work station. Deploying networking-baremetal with DevStack requires a machine running Ubuntu 14.04 (or later) or Fedora 20 (or later).

### See also:

<http://docs.openstack.org/devstack/latest>

Create `devstack/local.conf` with minimal settings required to enable networking-baremetal with ironic and networking-generic-switch for multi-tenant networking. Here is an example of `local.conf`:

```
[[local|localrc]]

# Credentials
ADMIN_PASSWORD=password
DATABASE_PASSWORD=password
RABBIT_PASSWORD=password
SERVICE_PASSWORD=password
SERVICE_TOKEN=password
SWIFT_HASH=password
SWIFT_TEMPURL_KEY=password

# Install networking-generic-switch Neutron ML2 driver that interacts with
↪OVS
enable_plugin networking-generic-switch https://opendev.org/openstack/
↪networking-generic-switch

# Enable networking-baremetal plugin
enable_plugin networking-baremetal https://opendev.org/openstack/
↪networking-baremetal.git
enable_service networking_baremetal
enable_service ir-neutronagt

# Add link local info when registering Ironic node
IRONIC_USE_LINK_LOCAL=True

IRONIC_ENABLED_NETWORK_INTERFACES=flat,neutron
```

(continues on next page)



(continued from previous page)

```
IRONIC_NETWORK_INTERFACE=neutron

#Networking configuration
OVS_PHYSICAL_BRIDGE=brbm
PHYSICAL_NETWORK=mynetwork
IRONIC_PROVISION_NETWORK_NAME=ironic-provision
IRONIC_PROVISION_PROVIDER_NETWORK_TYPE=vlan
IRONIC_PROVISION_SUBNET_PREFIX=10.0.5.0/24
IRONIC_PROVISION_SUBNET_GATEWAY=10.0.5.1
Q_PLUGIN=ml2
ENABLE_TENANT_VLANS=True
Q_ML2_TENANT_NETWORK_TYPE=vlan
TENANT_VLAN_RANGE=100:150
Q_USE_PROVIDERNET_FOR_PUBLIC=False

# Enable segments service_plugin for routed networks
Q_SERVICE_PLUGIN_CLASSES=neutron.services.l3_router.l3_router_plugin.
↳L3RouterPlugin,segments
IRONIC_USE_NEUTRON_SEGMENTS=True

# Configure ironic from ironic devstack plugin.
enable_plugin ironic https://opendev.org/openstack/ironic

# Enable Ironic API and Ironic Conductor
enable_service ironic
enable_service ir-api
enable_service ir-cond

# Enable Neutron which is required by Ironic and disable nova-network.
disable_service n-net
disable_service n-novnc
enable_service q-svc
enable_service q-agt
enable_service q-dhcp
enable_service q-l3
enable_service q-meta
enable_service neutron

# Enable Swift for agent_* drivers
enable_service s-proxy
enable_service s-object
enable_service s-container
enable_service s-account

# Disable Horizon
disable_service horizon

# Disable Heat
disable_service heat h-api h-api-cfn h-api-cw h-eng

# Disable Cinder
disable_service cinder c-sch c-api c-vol

# Swift temp URL's are required for agent_* drivers.
SWIFT_ENABLE_TEMPURLS=True
```

(continues on next page)

(continued from previous page)

```
# Create 3 virtual machines to pose as Ironic's baremetal nodes.
IRONIC_VM_COUNT=3
IRONIC_BAREMETAL_BASIC_OPS=True
DEFAULT_INSTANCE_TYPE=baremetal

# Enable additional hardware types, if needed.
#IRONIC_ENABLED_HARDWARE_TYPES=ipmi,fake-hardware
# Don't forget that many hardware types require enabling of additional
# interfaces, most often power and management:
#IRONIC_ENABLED_MANAGEMENT_INTERFACES=ipmitool,fake
#IRONIC_ENABLED_POWER_INTERFACES=ipmitool,fake
# The 'ipmi' hardware type's default deploy interface is 'iscsi'.
# This would change the default to 'direct':
#IRONIC_DEFAULT_DEPLOY_INTERFACE=direct

# Change this to alter the default driver for nodes created by devstack.
# This driver should be in the enabled list above.
IRONIC_DEPLOY_DRIVER=ipmi

# The parameters below represent the minimum possible values to create
# functional nodes.
IRONIC_VM_SPECS_RAM=1024
IRONIC_VM_SPECS_DISK=10

# Size of the ephemeral partition in GB. Use 0 for no ephemeral partition.
IRONIC_VM_EPHEMERAL_DISK=0

# To build your own IPA ramdisk from source, set this to True
IRONIC_BUILD_DEPLOY_RAMDISK=False

VIRT_DRIVER=ironic

# By default, DevStack creates a 10.0.0.0/24 network for instances.
# If this overlaps with the hosts network, you may adjust with the
# following.
NETWORK_GATEWAY=10.1.0.1
FIXED_RANGE=10.1.0.0/24
FIXED_NETWORK_SIZE=256

# Log all output to files
LOGFILE=$HOME/devstack.log
LOGDIR=$HOME/logs
IRONIC_VM_LOG_DIR=$HOME/ironic-bm-logs
```

### 4.1.3 Full networking-baremetal python API reference

- [modindex](#)

#### [networking\\_baremetal](#)

#### [networking\\_baremetal package](#)

#### [Subpackages](#)

#### [networking\\_baremetal.agent package](#)

#### [Submodules](#)

#### [networking\\_baremetal.agent.ironic\\_neutron\\_agent module](#)

**class** `networking_baremetal.agent.ironic_neutron_agent.BaremetalNeutronAgent`

Bases: `oslo_service.service.ServiceBase`

**get\_template\_node\_state** (*node\_uuid*)

**reset** ()

Reset service.

Called in case service running in daemon mode receives SIGHUP.

**start** ()

Start service.

**stop** ()

Stop service.

**wait** ()

Wait for service to complete.

**class** `networking_baremetal.agent.ironic_neutron_agent.HashRingMemberManagerNotif`

Bases: `object`

Class variables members and hashring is shared by all instances

**filter\_rule** = `<oslo_messaging.notify.filter.NotificationFilter object>`

**hashring** = `<tooz.hashring.HashRing object>`

**info** (*ctxt, publisher\_id, event\_type, payload, metadata*)

**members** = []

`networking_baremetal.agent.ironic_neutron_agent.list_opts` ()

`networking_baremetal.agent.ironic_neutron_agent.main` ()

## Module contents

### networking\_baremetal.plugins package

#### Subpackages

### networking\_baremetal.plugins.ml2 package

#### Submodules

### networking\_baremetal.plugins.ml2.baremetal\_mech module

**class** `networking_baremetal.plugins.ml2.baremetal_mech.BaremetalMechanismDriver`

Bases: `neutron.plugins.ml2.drivers.mech_agent.SimpleAgentMechanismDriverBase`

**create\_network\_postcommit** (*context*)

Create a network.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will cause the deletion of the resource.

**Parameters context** NetworkContext instance describing the new network.

**create\_network\_precommit** (*context*)

Allocate resources for a new network.

Create a new network, allocating resources as necessary in the database. Called inside transaction context on session. Call cannot block. Raising an exception will result in a rollback of the current transaction.

**Parameters context** NetworkContext instance describing the new network.

**create\_port\_postcommit** (*context*)

Create a port.

Called after the transaction completes. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will result in the deletion of the resource.

**Parameters context** PortContext instance describing the port.

**create\_port\_precommit** (*context*)

Allocate resources for a new port.

Create a new port, allocating resources as necessary in the database. Called inside transaction context on session. Call cannot block. Raising an exception will result in a rollback of the current transaction.

**Parameters context** PortContext instance describing the port.

**create\_subnet\_postcommit** (*context*)

Create a subnet.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will cause the deletion of the resource.

**Parameters context** SubnetContext instance describing the new subnet.

**create\_subnet\_precommit** (*context*)

Allocate resources for a new subnet.

Create a new subnet, allocating resources as necessary in the database. Called inside transaction context on session. Call cannot block. Raising an exception will result in a rollback of the current transaction.

**Parameters context** SubnetContext instance describing the new subnet.

**delete\_network\_postcommit** (*context*)

Delete a network.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Runtime errors are not expected, and will not prevent the resource from being deleted.

**Parameters context** NetworkContext instance describing the current state of the network, prior to the call to delete it.

**delete\_network\_precommit** (*context*)

Delete resources for a network.

Delete network resources previously allocated by this mechanism driver for a network. Called inside transaction context on session. Runtime errors are not expected, but raising an exception will result in rollback of the transaction.

**Parameters context** NetworkContext instance describing the current state of the network, prior to the call to delete it.

**delete\_port\_postcommit** (*context*)

Delete a port.

state of the port, prior to the call to delete it. Called after the transaction completes. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Runtime errors are not expected, and will not prevent the resource from being deleted.

**Parameters context** PortContext instance describing the current state of the port, prior to the call to delete it.

**delete\_port\_precommit** (*context*)

Delete resources of a port.

Called inside transaction context on session. Runtime errors are not expected, but raising an exception will result in rollback of the transaction.

**Parameters context** PortContext instance describing the current state of the port, prior to the call to delete it.

**delete\_subnet\_postcommit** (*context*)

Delete a subnet.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Runtime errors are not expected,

and will not prevent the resource from being deleted.

**Parameters context** SubnetContext instance describing the current state of the subnet, prior to the call to delete it.

**delete\_subnet\_precommit** (*context*)

Delete resources for a subnet.

Delete subnet resources previously allocated by this mechanism driver for a subnet. Called inside transaction context on session. Runtime errors are not expected, but raising an exception will result in rollback of the transaction.

**Parameters context** SubnetContext instance describing the current state of the subnet, prior to the call to delete it.

**get\_allowed\_network\_types** (*agent*)

Return the agents or drivers allowed network types.

For example: return (flat, ). You can also refer to the configuration the given agent exposes.

**get\_mappings** (*agent*)

Return the agents bridge or interface mappings.

For example: agent[configurations].get(bridge\_mappings, {}).

**try\_to\_bind\_segment\_for\_agent** (*context, segment, agent*)

Try to bind with segment for agent.

**Parameters**

- **context** PortContext instance describing the port
- **segment** segment dictionary describing segment to bind
- **agent** agents\_db entry describing agent to bind

**Returns** True iff segment has been bound for agent

**Neutron segments api-ref:** <https://docs.openstack.org/api-ref/network/v2/#segments>

**Example segment dictionary:** {**segmentation\_id**: **segmentation\_id**, **network\_type**: **network\_type**, **id**: **segment\_uuid**}

Called outside any transaction during bind\_port() so that derived MechanismDrivers can use agent\_db data along with built-in knowledge of the corresponding agents capabilities to attempt to bind to the specified network segment for the agent.

If the segment can be bound for the agent, this function must call context.set\_binding() with appropriate values and then return True. Otherwise, it must return False.

**update\_network\_postcommit** (*context*)

Update a network.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will cause the deletion of the resource. update\_network\_postcommit is called for all changes to the network state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** NetworkContext instance describing the new state of the network, as well as the original state prior to the update\_network call.

**update\_network\_precommit** (*context*)

Update resources of a network.

Update values of a network, updating the associated resources in the database. Called inside transaction context on session. Raising an exception will result in rollback of the transaction. `update_network_precommit` is called for all changes to the network state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** NetworkContext instance describing the new state of the network, as well as the original state prior to the `update_network` call.

**update\_port\_postcommit** (*context*)

Update a port.

Called after the transaction completes. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will result in the deletion of the resource. `update_port_postcommit` is called for all changes to the port state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** PortContext instance describing the new state of the port, as well as the original state prior to the `update_port` call.

**update\_port\_precommit** (*context*)

Update resources of a port.

Called inside transaction context on session to complete a port update as defined by this mechanism driver. Raising an exception will result in rollback of the transaction. `update_port_precommit` is called for all changes to the port state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** PortContext instance describing the new state of the port, as well as the original state prior to the `update_port` call.

**update\_subnet\_postcommit** (*context*)

Update a subnet.

Called after the transaction commits. Call can block, though will block the entire process so care should be taken to not drastically affect performance. Raising an exception will cause the deletion of the resource. `update_subnet_postcommit` is called for all changes to the subnet state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** SubnetContext instance describing the new state of the subnet, as well as the original state prior to the `update_subnet` call.

**update\_subnet\_precommit** (*context*)

Update resources of a subnet.

Update values of a subnet, updating the associated resources in the database. Called inside transaction context on session. Raising an exception will result in rollback of the transaction. `update_subnet_precommit` is called for all changes to the subnet state. It is up to the mechanism driver to ignore state or state changes that it does not know or care about.

**Parameters context** SubnetContext instance describing the new state of the subnet, as well as the original state prior to the `update_subnet` call.

## Module contents

## Module contents

## Submodules

### networking\_baremetal.constants module

### networking\_baremetal.ironic\_client module

`networking_baremetal.ironic_client.get_client()`

Get an ironic client connection.

`networking_baremetal.ironic_client.get_session(group)`

`networking_baremetal.ironic_client.list_opts()`

## Module contents



**RELEASE NOTES**

Release Notes



## INDICES AND TABLES

- genindex
- search



## PYTHON MODULE INDEX

### a

`networking_baremetal.agent`, 32  
`networking_baremetal.agent.ironic_neutron_agent`,  
31

### c

`networking_baremetal.constants`, 36

### i

`networking_baremetal.ironic_client`,  
36

### n

`networking_baremetal`, 36

### p

`networking_baremetal.plugins`, 36  
`networking_baremetal.plugins.ml2`,  
36  
`networking_baremetal.plugins.ml2.baremetal_mech`,  
32



## INDEX

### B

BaremetalMechanismDriver  
(class in network-  
ing\_baremetal.plugins.ml2.baremetal\_mech),  
32

BaremetalNeutronAgent (class in network-  
ing\_baremetal.agent.ironic\_neutron\_agent),  
31

delete\_port\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

delete\_subnet\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

delete\_subnet\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 34

### C

create\_network\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 32

create\_network\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 32

create\_port\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 32

create\_port\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 32

create\_subnet\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 32

create\_subnet\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

### F

filter\_rule (network-  
ing\_baremetal.agent.ironic\_neutron\_agent.HashRingMemberManager  
attribute), 31

### G

get\_allowed\_network\_types() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 34

get\_client() (in module network-  
ing\_baremetal.ironic\_client), 36

get\_mappings() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 34

get\_session() (in module network-  
ing\_baremetal.ironic\_client), 36

get\_template\_node\_state() (network-  
ing\_baremetal.agent.ironic\_neutron\_agent.BaremetalNeutronAgent  
method), 31

### D

delete\_network\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

delete\_network\_precommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

delete\_port\_postcommit() (network-  
ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMechanismDriver  
method), 33

### H

hashring (network-  
ing\_baremetal.agent.ironic\_neutron\_agent.HashRingMemberManager  
attribute), 31

HashRingMemberManagerNotificationEndpoint  
(class in network-  
ing\_baremetal.agent.ironic\_neutron\_agent),  
31

info() (network-

*ing\_baremetal.agent.ironic\_neutron\_agent.HashRingMemberManagerNotificationEndpoint*  
*method), 31*

## L

*list\_opts()* (in module *network-  
ing\_baremetal.agent.ironic\_neutron\_agent*),  
31

*list\_opts()* (in module *network-  
ing\_baremetal.ironic\_client*), 36

## M

*main()* (in module *network-  
ing\_baremetal.agent.ironic\_neutron\_agent*)  
31

*members* (network-  
*ing\_baremetal.agent.ironic\_neutron\_agent.HashRingMemberManagerNotificationEndpoint*  
attribute), 31

## module

*networking\_baremetal*, 36

*networking\_baremetal.agent*, 32

*networking\_baremetal.agent.ironic\_neutron\_agent*  
31

*networking\_baremetal.constants*,  
36

*networking\_baremetal.ironic\_client*,  
36

*networking\_baremetal.plugins*, 36

*networking\_baremetal.plugins.ml2*,  
36

*networking\_baremetal.plugins.ml2.baremetal\_mech*  
32

## N

*networking\_baremetal*  
module, 36

*networking\_baremetal.agent*  
module, 32

*networking\_baremetal.agent.ironic\_neutron\_agent*  
module, 31

*networking\_baremetal.constants*  
module, 36

*networking\_baremetal.ironic\_client*  
module, 36

*networking\_baremetal.plugins*  
module, 36

*networking\_baremetal.plugins.ml2*  
module, 36

*networking\_baremetal.plugins.ml2.baremetal\_mech*  
module, 32

## R

*reset()* (network-

## S

*start()* (network-  
*ing\_baremetal.agent.ironic\_neutron\_agent.BaremetalNeu-*  
*method), 31*

*stop()* (network-  
*ing\_baremetal.agent.ironic\_neutron\_agent.BaremetalNeu-*  
*method), 31*

## T

*try\_to\_bind\_segment\_for\_agent()*  
(network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*MethodManagerNotificationEndpoint*  
method), 31

## U

*update\_network\_postcommit()*  
(network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 34*

*update\_network\_precommit()* (network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 34*

*update\_port\_postcommit()* (network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 35*

*update\_port\_precommit()* (network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 35*

*update\_subnet\_postcommit()* (network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 35*

*update\_subnet\_precommit()* (network-  
*ing\_baremetal.plugins.ml2.baremetal\_mech.BaremetalMe-*  
*method), 35*

## W

*wait()* (network-  
*ing\_baremetal.agent.ironic\_neutron\_agent.BaremetalNeu-*  
*method), 31*