NAME

ovn-ic-sbctl – Open Virtual Network interconnection southbound db management utility

SYNOPSIS

ovn–ic–sbctl [*options*] *command* [*arg...*]

DESCRIPTION

This utility can be used to manage the OVN interconnection southbound database.

GENERAL COMMANDS

init Initializes the database, if it is empty. If the database has already been initialized, this command has no effect.

show [*availability_zone***]**
Prints a brief overview of the database contents. If *availability_zone* is provided, only records related to that availability zone are shown.

DATABASE COMMANDS

These commands query and modify the contents of **ovsdb** tables. They are a slight abstraction of the **ovsdb** interface and as such they operate at a lower level than other **ovn–ic–sbctl** commands.

Identifying Tables, Records, and Columns

Each of these commands has a *table* parameter to identify a table within the database. Many of them also take a *record* parameter that identifies a particular record within a table. The *record* parameter may be the UUID for a record, which may be abbreviated to its first 4 (or more) hex digits, as long as that is unique. Many tables offer additional ways to identify records. Some commands also take *column* parameters that identify a particular field within the records in a table.

For a list of tables and their columns, see **ovn–ic–sb**(5) or see the table listing from the **––help** option.

Record names must be specified in full and with correct capitalization, except that UUIDs may be abbreviated to their first 4 (or more) hex digits, as long as that is unique within the table. Names of tables and columns are not case-sensitive, and **–** and **_** are treated interchangeably. Unique abbreviations of table and column names are acceptable, e.g. **g** or **gatew** is sufficient to identify the **Gateway** table.

Database Values

Each column in the database accepts a fixed type of data. The currently defined basic types, and their representations, are:

integer A decimal integer in the range –2**63 to 2**63–1, inclusive.

real A floating-point number.

Boolean
True or false, written **true** or **false**, respectively.

string An arbitrary Unicode string, except that null bytes are not allowed. Quotes are optional for most strings that begin with an English letter or underscore and consist only of letters, underscores, hyphens, and periods. However, **true** and **false** and strings that match the syntax of UUIDs (see below) must be enclosed in double quotes to distinguish them from other basic types. When double quotes are used, the syntax is that of strings in JSON, e.g. backslashes may be used to escape special characters. The empty string must be represented as a pair of double quotes (**""**).

UUID Either a universally unique identifier in the style of RFC 4122, e.g. **f81d4fae–7dec–11d0–a765–00a0c91e6bf6**, or an *@name* defined by a **get** or **create** command within the same **ovs–vsctl** invocation.

Multiple values in a single column may be separated by spaces or a single comma. When multiple values are present, duplicates are not allowed, and order is not important. Conversely, some database columns can have an empty set of values, represented as **[]**, and square brackets may optionally enclose other non-empty sets or single values as well.

A few database columns are ‘‘maps’’ of key-value pairs, where the key and the value are each some fixed database type. These are specified in the form *key*=*value*, where *key* and *value* follow the syntax for the column’s key type and value type, respectively. When multiple pairs are present (separated by spaces or a comma), duplicate keys are not allowed, and again the order is not important. Duplicate values are allowed. An empty map is represented as **{}**. Curly braces may optionally enclose non-empty maps as well (but use quotes to prevent the shell from expanding **other−config={0=x,1=y}** into **other−config=0=x other−config=1=y**, which may not have the desired effect).

Database Command Syntax

[**−−if−exists**] [**−−columns=***column*[**,***column*]...] **list** *table* [*record*]...

Lists the data in each specified *record*. If no records are specified, lists all the records in *table*.

If **−−columns** is specified, only the requested columns are listed, in the specified order. Otherwise, all columns are listed, in alphabetical order by column name.

Without **−−if−exists**, it is an error if any specified *record* does not exist. With **−−if−exists**, the command ignores any *record* that does not exist, without producing any output.

[**−−columns=***column*[**,***column*]...] **find** *table* [*column*[**:***key*]**=***value*]...

Lists the data in each record in *table* whose *column* equals *value* or, if *key* is specified, whose *column* contains a *key* with the specified *value*. The following operators may be used where **=** is written in the syntax summary:

= != < > <= >=

Selects records in which *column*[**:***key*] equals, does not equal, is less than, is greater than, is less than or equal to, or is greater than or equal to *value*, respectively.

Consider *column*[**:***key*] and *value* as sets of elements. Identical sets are considered equal. Otherwise, if the sets have different numbers of elements, then the set with more elements is considered to be larger. Otherwise, consider a element from each set pairwise, in increasing order within each set. The first pair that differs determines the result. (For a column that contains key-value pairs, first all the keys are compared, and values are considered only if the two sets contain identical keys.)

{=} {!=}

Test for set equality or inequality, respectively.

{<=} Selects records in which *column*[**:***key*] is a subset of *value*. For example, **flood−vlans{<=}1,2** selects records in which the **flood−vlans** column is the empty set or contains 1 or 2 or both.

{<} Selects records in which *column*[**:***key*] is a proper subset of *value*. For example, **flood−vlans{<}1,2** selects records in which the **flood−vlans** column is the empty set or contains 1 or 2 but not both.

{>=} {>}

Same as **{<=}** and **{<}**, respectively, except that the relationship is reversed. For example, **flood−vlans{>=}1,2** selects records in which the **flood−vlans** column contains both 1 and 2.

The following operators are available only in Open vSwitch 2.16 and later:

{in} Selects records in which every element in *column*[**:***key*] is also in *value*. (This is the same as **{<=}**.)

{not−in}

Selects records in which every element in *column*[**:***key*] is not in *value*.

For arithmetic operators (**= != < > <= >=**), when *key* is specified but a particular record's *column* does not contain *key*, the record is always omitted from the results. Thus, the condition **other−config:mtu!=1500** matches records that have a **mtu** key whose value is not 1500, but not those that lack an **mtu** key.

For the set operators, when *key* is specified but a particular record's *column* does not contain *key*, the comparison is done against an empty set. Thus, the condition **other−config:mtu{!=}1500** matches records that have a **mtu** key whose value is not 1500 and those that lack an **mtu** key.

Don't forget to escape **<** or **>** from interpretation by the shell.

If **−−columns** is specified, only the requested columns are listed, in the specified order. Otherwise all columns are listed, in alphabetical order by column name.

The UUIDs shown for rows created in the same **ovs−vsctl** invocation will be wrong.

[**−−if−exists**] [**−−id=@***name*] **get** *table record* [*column*[**:***key*]]...

Prints the value of each specified *column* in the given *record* in *table*. For map columns, a *key* may optionally be specified, in which case the value associated with *key* in the column is printed, instead of the entire map.

Without **−−if−exists**, it is an error if *record* does not exist or *key* is specified, if *key* does not exist in *record*. With **−−if−exists**, a missing *record* yields no output and a missing *key* prints a blank line.

If **@***name* is specified, then the UUID for *record* may be referred to by that name later in the same **ovs−vsctl** invocation in contexts where a UUID is expected.

Both **−−id** and the *column* arguments are optional, but usually at least one or the other should be specified. If both are omitted, then **get** has no effect except to verify that *record* exists in *table*.

−−id and **−−if−exists** cannot be used together.

[**−−if−exists**] **set** *table record column*[**:***key*]**=***value*...

Sets the value of each specified *column* in the given *record* in *table* to *value*. For map columns, a *key* may optionally be specified, in which case the value associated with *key* in that column is changed (or added, if none exists), instead of the entire map.

Without **−−if−exists**, it is an error if *record* does not exist. With **−−if−exists**, this command does nothing if *record* does not exist.

[**−−if−exists**] **add** *table record column* [*key***=**]*value*...

Adds the specified value or key-value pair to *column* in *record* in *table*. If *column* is a map, then *key* is required, otherwise it is prohibited. If *key* already exists in a map column, then the current *value* is not replaced (use the **set** command to replace an existing value).

Without **−−if−exists**, it is an error if *record* does not exist. With **−−if−exists**, this command does nothing if *record* does not exist.

[**−−if−exists**] **remove** *table record column value*...

[**−−if−exists**] **remove** *table record column key*...

[**−−if−exists**] **remove** *table record column key***=***value*... Removes the specified values or key-value pairs from *column* in *record* in *table*. The first form applies to columns that are not maps: each specified *value* is removed from the column. The second and third forms apply to map columns: if only a *key* is specified, then any key-value pair with the given *key* is removed, regardless of its value; if a *value* is given then a pair is removed only if both key and value match.

It is not an error if the column does not contain the specified key or value or pair.

Without **−−if−exists**, it is an error if *record* does not exist. With **−−if−exists**, this command does nothing if *record* does not exist.

[**−−if−exists**] **clear** *table record column...*

Sets each *column* in *record* in *table* to the empty set or empty map, as appropriate. This command applies only to columns that are allowed to be empty.

Without **−−if−exists**, it is an error if *record* does not exist. With **−−if−exists**, this command does nothing if *record* does not exist.

[**−−id=**(@*name*|*uuid*)] **create** *table column*[**:***key*]**=***value...*

Creates a new record in *table* and sets the initial values of each *column*. Columns not explicitly set will receive their default values. Outputs the UUID of the new row.

If @*name* is specified, then the UUID for the new row may be referred to by that name elsewhere in the same ***(PN** invocation in contexts where a UUID is expected. Such references may precede or follow the **create** command.

If a valid *uuid* is specified, then it is used as the UUID of the new row.

Caution (ovs-vsctl as example)

Records in the Open vSwitch database are significant only when they can be reached directly or indirectly from the **Open_vSwitch** table. Except for records in the **QoS** or **Queue** tables, records that are not reachable from the **Open_vSwitch** table are automatically deleted from the database. This deletion happens immediately, without waiting for additional **ovs−vsctl** commands or other database activity. Thus, a **create** command must generally be accompanied by additional commands *within the same* **ovs−vsctl** *invocation* to add a chain of references to the newly created record from the top-level **Open_vSwitch** record. The **EXAMPLES** section gives some examples that show how to do this.

[**−−if−exists**] **destroy** *table record...*

Deletes each specified *record* from *table*. Unless **−−if−exists** is specified, each *record*s must exist.

−−all destroy *table*

Deletes all records from the *table*.

Caution (ovs-vsctl as example)

The **destroy** command is only useful for records in the **QoS** or **Queue** tables. Records in other tables are automatically deleted from the database when they become unreachable from the **Open_vSwitch** table. This means that deleting the last reference to a record is sufficient for deleting the record itself. For records in these tables, **destroy** is silently ignored. See the **EXAMPLES** section below for more information.

wait−until *table record* [*column*[**:***key*]**=***value*]...

Waits until *table* contains a record named *record* whose *column* equals *value* or, if *key* is specified, whose *column* contains a *key* with the specified *value*. This command supports the same operators and semantics described for the **find** command above.

If no *column*[**:***key*]**=***value* arguments are given, this command waits only until *record* exists. If more than one such argument is given, the command waits until all of them are satisfied.

Caution (ovs-vsctl as example)

Usually **wait−until** should be placed at the beginning of a set of **ovs−vsctl** commands. For example, **wait−until bridge br0 −− get bridge br0 datapath_id** waits until a bridge named **br0** is created, then prints its **datapath_id** column, whereas **get bridge br0 datapath_id −− wait−until bridge br0** will abort if no bridge named **br0** exists when **ovs−vsctl** initially connects to the database.

Consider specifying **−−timeout=0** along with **−−wait−until**, to prevent **ovs−vsctl** from terminating after waiting only at most 5 seconds.

comment [*arg*]...
This command has no effect on behavior, but any database log record created by the command will include the command and its arguments.

REMOTE CONNECTIVITY COMMANDS

get−connection
Prints the configured connection(s).

del−connection
Deletes the configured connection(s).

[**−−inactivity−probe=***msecs*] **set−connection** *target*...
Sets the configured manager target or targets. Use **−−inactivity−probe=***msecs* to override the default idle connection inactivity probe time. Use 0 to disable inactivity probes.

SSL CONFIGURATION COMMANDS

get−ssl Prints the SSL configuration.

del−ssl Deletes the current SSL configuration.

[**−−bootstrap**] **set−ssl** *private-key certificate ca-cert* [*ssl-protocol-list* [*ssl-cipher-list*]]
Sets the SSL configuration.

OPTIONS

−−db *database*
The OVSDB database remote to contact. If the **OVN_IC_SB_DB** environment variable is set, its value is used as the default. Otherwise, the default is **unix:/ovn_ic_sb_db.sock**, but this default is unlikely to be useful outside of single-machine OVN test environments.

−−leader−only
−−no−leader−only
By default, or with **−−leader−only**, when the database server is a clustered database, **ovn−ic−sbctl** will avoid servers other than the cluster leader. This ensures that any data that **ovn−ic−sbctl** reads and reports is up-to-date. With **−−no−leader−only**, **ovn−ic−sbctl** will use any server in the cluster, which means that for read-only transactions it can report and act on stale data (transactions that modify the database are always serialized even with **−−no−leader−only**). Refer to **Understanding Cluster Consistency** in **ovsdb**(7) for more information.

LOGGING OPTIONS

−v[*spec*]
−−verbose=[*spec*]
Sets logging levels. Without any *spec*, sets the log level for every module and destination to **dbg**. Otherwise, *spec* is a list of words separated by spaces or commas or colons, up to one from each category below:

- A valid module name, as displayed by the **vlog/list** command on **ovs−appctl**(8), limits the log level change to the specified module.
- **syslog**, **console**, or **file**, to limit the log level change to only to the system log, to the console, or to a file, respectively. (If **−−detach** is specified, the daemon closes its standard file descriptors, so logging to the console will have no effect.)

  On Windows platform, **syslog** is accepted as a word and is only useful along with the **−−syslog−target** option (the word has no effect otherwise).
- **off**, **emer**, **err**, **warn**, **info**, or **dbg**, to control the log level. Messages of the given severity or higher will be logged, and messages of lower severity will be filtered out. **off** filters out all messages. See **ovs−appctl**(8) for a definition of each log level.

Case is not significant within *spec*.

Regardless of the log levels set for **file**, logging to a file will not take place unless **−−log−file** is also specified (see below).

For compatibility with older versions of OVS, **any** is accepted as a word but has no effect.

−v
−−verbose
Sets the maximum logging verbosity level, equivalent to **−−verbose=dbg**.

−vPATTERN:*destination***:***pattern*
−−verbose=PATTERN:*destination***:***pattern*
Sets the log pattern for *destination* to *pattern*. Refer to **ovs−appctl**(8) for a description of the valid syntax for *pattern*.

−vFACILITY:*facility*
−−verbose=FACILITY:*facility*
Sets the RFC5424 facility of the log message. *facility* can be one of **kern**, **user**, **mail**, **daemon**, **auth**, **syslog**, **lpr**, **news**, **uucp**, **clock**, **ftp**, **ntp**, **audit**, **alert**, **clock2**, **local0**, **local1**, **local2**, **local3**, **local4**, **local5**, **local6** or **local7**. If this option is not specified, **daemon** is used as the default for the local system syslog and **local0** is used while sending a message to the target provided via the **−−syslog−target** option.

−−log−file[**=***file*]
Enables logging to a file. If *file* is specified, then it is used as the exact name for the log file. The default log file name used if *file* is omitted is **/usr/local/var/log/ovn/***program***.log**.

−−syslog−target=*host***:***port*
Send syslog messages to UDP *port* on *host*, in addition to the system syslog. The *host* must be a numerical IP address, not a hostname.

−−syslog−method=*method*
Specify *method* as how syslog messages should be sent to syslog daemon. The following forms are supported:

- **libc**, to use the libc **syslog()** function. Downside of using this options is that libc adds fixed prefix to every message before it is actually sent to the syslog daemon over **/dev/log** UNIX domain socket.
- **unix:***file*, to use a UNIX domain socket directly. It is possible to specify arbitrary message format with this option. However, **rsyslogd 8.9** and older versions use hard coded parser function anyway that limits UNIX domain socket use. If you want to use arbitrary message format with older **rsyslogd** versions, then use UDP socket to localhost IP address instead.
- **udp:***ip***:***port*, to use a UDP socket. With this method it is possible to use arbitrary message format also with older **rsyslogd**. When sending syslog messages over UDP socket extra precaution needs to be taken into account, for example, syslog daemon needs to be configured to listen on the specified UDP port, accidental iptables rules could be interfering with local syslog traffic and there are some security considerations that apply to UDP sockets, but do not apply to UNIX domain sockets.
- **null**, to discard all messages logged to syslog.

The default is taken from the **OVS_SYSLOG_METHOD** environment variable; if it is unset, the default is **libc**.

TABLE FORMATTING OPTIONS

These options control the format of output from the **list** and **find** commands.

−f *format*
−−format=*format*
Sets the type of table formatting. The following types of *format* are available:

table 2-D text tables with aligned columns.

list (default)
A list with one column per line and rows separated by a blank line.

html HTML tables.

csv Comma-separated values as defined in RFC 4180.

json JSON format as defined in RFC 4627. The output is a sequence of JSON objects, each of which corresponds to one table. Each JSON object has the following members with the noted values:

caption
The table's caption. This member is omitted if the table has no caption.

headings
An array with one element per table column. Each array element is a string giving the corresponding column's heading.

data An array with one element per table row. Each element is also an array with one element per table column. The elements of this second-level array are the cells that constitute the table. Cells that represent OVSDB data or data types are expressed in the format described in the OVSDB specification; other cells are simply expressed as text strings.

−d *format*
−−data=*format*
Sets the formatting for cells within output tables unless the table format is set to **json**, in which case **json** formatting is always used when formatting cells. The following types of *format* are available:

string (default)
The simple format described in the **Database Values** section of **ovs−vsctl**(8).

bare The simple format with punctuation stripped off: **[]** and **{}** are omitted around sets, maps, and empty columns, items within sets and maps are space-separated, and strings are never quoted. This format may be easier for scripts to parse.

json The RFC 4627 JSON format as described above.

−−no−headings
This option suppresses the heading row that otherwise appears in the first row of table output.

−−pretty
By default, JSON in output is printed as compactly as possible. This option causes JSON in output to be printed in a more readable fashion. Members of objects and elements of arrays are printed one per line, with indentation.

This option does not affect JSON in tables, which is always printed compactly.

−−bare Equivalent to **−−format=list −−data=bare −−no−headings**.

PKI Options
PKI configuration is required to use SSL for the connection to the database.

−p *privkey.pem*
−−private−key=*privkey.pem*
Specifies a PEM file containing the private key used as identity for outgoing SSL connections.

−c *cert.pem*
−−certificate=*cert.pem*
Specifies a PEM file containing a certificate that certifies the private key specified on **−p** or **−−private−key** to be trustworthy. The certificate must be signed by the certificate authority (CA) that the peer in SSL connections will use to verify it.

−C *cacert.pem*
−−ca−cert=*cacert.pem*
Specifies a PEM file containing the CA certificate for verifying certificates presented to this program by SSL peers. (This may be the same certificate that SSL peers use to verify the certificate specified on **−c** or **−−certificate**, or it may be a different one, depending on the PKI design in use.)

−C none
−−ca−cert=none
Disables verification of certificates presented by SSL peers. This introduces a security risk, because it means that certificates cannot be verified to be those of known trusted hosts.

−−bootstrap−ca−cert=*cacert.pem*
When *cacert.pem* exists, this option has the same effect as **−C** or **−−ca−cert**. If it does not exist, then the executable will attempt to obtain the CA certificate from the SSL peer on its first SSL connection and save it to the named PEM file. If it is successful, it will immediately drop the connection and reconnect, and from then on all SSL connections must be authenticated by a certificate signed by the CA certificate thus obtained.

This option exposes the SSL connection to a man-in-the-middle attack obtaining the initial CA certificate, but it may be useful for bootstrapping.

This option is only useful if the SSL peer sends its CA certificate as part of the SSL certificate chain. The SSL protocol does not require the server to send the CA certificate.

This option is mutually exclusive with **−C** and **−−ca−cert**.

Other Options

−h
−−help Prints a brief help message to the console.

−V
−−version
Prints version information to the console.