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 abbrevi-
ated to their first 4 (or more) hex digits, as long as that is unique within the table. Names of tables and col-
umns are not case-sensitive, and − and _ are treated interchangeably. Unique abbreviations of table and col-
umn 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 repre-
sentations, 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 repre-
sented 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 an 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 (\(\neq\), \(<\), \(\le\), \(\ge\), \(=\)), 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 \(\text{other-config:mtu}\neq1500\) 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 \(\text{other-config:mtu}[^!]=1500\) 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 \texttt{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 \texttt{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 \texttt{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 \texttt{get} has no effect except to verify that \(record\) exists in \texttt{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 \texttt{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 \texttt{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 \texttt{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 \texttt{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 \texttt{--if-exists}, it is an error if \textit{record} does not exist. With \texttt{--if-exists}, this command does nothing if \textit{record} does not exist.

\textbf{[---if-exists]} \texttt{clear table record column}...

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

Without \texttt{--if-exists}, it is an error if \textit{record} does not exist. With \texttt{--if-exists}, this command does nothing if \textit{record} does not exist.

\textbf{[---id=@name]} \texttt{create table column}[;\texttt{:key}]=\texttt{value}...

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

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

Caution (ovs-vsctl as example)

Records in the Open vSwitch database are significant only when they can be reached directly or indirectly from the \texttt{Open_vSwitch} table. Except for records in the \texttt{QoS} or \texttt{Queue} tables, records that are not reachable from the \texttt{Open_vSwitch} table are automatically deleted from the database. This deletion happens immediately, without waiting for additional \texttt{ovs-vsctl} commands or other database activity. Thus, a \texttt{create} command must generally be accompanied by additional commands \textit{within the same ovs-vsctl invocation} to add a chain of references to the newly created record from the top-level \texttt{Open_vSwitch} record.

The \textbf{EXAMPLES} section gives some examples that show how to do this.

\textbf{[---if-exists]} \texttt{destroy table record}...

Deletes each specified \textit{record} from \textit{table}. Unless \texttt{--if-exists} is specified, each \textit{records} must exist.

\textbf{---all destroy table}

Deletes all records from the \textit{table}.

Caution (ovs-vsctl as example)

The \texttt{destroy} command is only useful for records in the \texttt{QoS} or \texttt{Queue} tables. Records in other tables are automatically deleted from the database when they become unreachable from the \texttt{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, \texttt{destroy} is silently ignored. See the \textbf{EXAMPLES} section below for more information.

\texttt{wait-until table record [column][;key]=value}...

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

If no \texttt{column}[;key]=\texttt{value} arguments are given, this command waits only until \textit{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 \texttt{wait-until} should be placed at the beginning of a set of ovs-vsctl commands. For example, \texttt{wait-until bridge br0 \rightarrow get bridge br0 datapath_id} waits until a bridge named \texttt{br0} is created, then prints its \texttt{datapath_id} column, whereas \texttt{get bridge br0 datapath_id \rightarrow wait-until bridge br0} will abort if no bridge named \texttt{br0} exists when ovs-vsctl initially connects to the database.

Consider specifying \texttt{--timeout=0} along with \texttt{--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 ovn−appctl(8) 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 ovn−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 ovn−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
  Sets the maximum logging verbosity level, equivalent to --verbose=dbg.

-\-vP ATTERN:destination:pattern
  Sets the log pattern for destination to pattern. Refer to ovs-appctl(8) for a description of the valid syntax for pattern.

-\-vF ACILITY: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
  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 fol-
lowing 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 connec-
tions.

-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.