NAME
ovs-ctl – OVS startup helper script

SYNOPSIS
ovs-ctl --system-id=random|<uuid> [options] start
ovs-ctl stop
ovs-ctl --system-id=random|<uuid> [options] restart
ovs-ctl status
ovs-ctl version
ovs-ctl [options] load-kmod
ovs-ctl --system-id=random|<uuid> [options] force-reload-kmod
ovs-ctl [--protocol=<protocol>] [--sport=<sport>] [--dport=<dport>] enable-protocol
ovs-ctl delete-transient-ports
ovs-ctl help | -h | --help
ovs-ctl --version

DESCRIPTION
The ovs-ctl program starts, stops, and checks the status of Open vSwitch daemons. It is not meant to be invoked directly by system administrators but to be called internally by system startup scripts.

Each ovs-ctl command is described separately below.

The start command
The start command starts Open vSwitch. It performs the following tasks:

1. Loads the Open vSwitch kernel module. If this fails, and the Linux bridge module is loaded but no bridges exist, it tries to unload the bridge module and tries loading the Open vSwitch kernel module again. (This is because the Open vSwitch kernel module cannot coexist with the Linux bridge module before 2.6.37.)

The start command skips the following steps if ovsdb-server is already running:

2. If the Open vSwitch database file does not exist, it creates it. If the database does exist, but it has an obsolete version, it upgrades it to the latest schema.
3. Starts ovsdb-server, unless the --no-ovsdb-server command option is given.
4. Initializes a few values inside the database.
5. If the --delete-bridges option was used, deletes all of the bridges from the database.
6. If the --delete-transient-ports option was used, deletes all ports that have other_config:transient set to true.

The start command skips the following step if ovs-vswitchd is already running, or if the --no-ovs-vswitchd command option is given:

7. Starts ovs-vswitchd.
Options

Several command-line options influence the start command’s behavior. Some form of the following option should ordinarily be specified:

• \texttt{--system-\textasciitilde id=<uuid> or --system-\textasciitilde id=random}

This specifies a unique system identifier to store into \texttt{external-\textasciitilde ids:system-\textasciitilde id} in the database’s \texttt{Open\_v\_Switch} table. Remote managers that talk to the Open vSwitch database server over network protocols use this value to identify and distinguish Open vSwitch instances, so it should be unique (at least) within OVS instances that will connect to a single controller.

When \texttt{random} is specified, \texttt{ovs-\_ctl} will generate a random ID that persists from one run to another (stored in a file). When another string is specified \texttt{ovs-\_ctl} uses it literally.

The following options should be specified if the defaults are not suitable:

• \texttt{--system-\textasciitilde type=<type> or --system-\textasciitilde version=<version>}

Sets the value to store in the \texttt{system-\textasciitilde type} and \texttt{system-\textasciitilde version} columns, respectively, in the database’s \texttt{Open\_v\_Switch} table. Remote managers may use these values too determine the kind of system to which they are connected (primarily for display to human administrators).

When not specified, \texttt{ovs-\_ctl} uses values from the optional \texttt{system-\textasciitilde type.conf} and \texttt{system-\textasciitilde version.conf} files (see \texttt{Files}) or it uses the \texttt{lsb\_release} program, if present, to provide reasonable defaults.

The following options are also likely to be useful:

• \texttt{--external-\textasciitilde id="<name>=<value>"}

Sets \texttt{external-\textasciitilde ids:<name>} to \texttt{<value>} in the database’s \texttt{Open\_v\_Switch} table. Specifying this option multiple times adds multiple key-value pairs.

• \texttt{--delete-bridges}

Ordinarily Open vSwitch bridges persist from one system boot to the next, as long as the database is preserved. Some environments instead expect to re-create all of the bridges and other configuration state on every boot. This option supports that, by deleting all Open vSwitch bridges after starting \texttt{ovsdb-\_server} but before starting \texttt{ovs-\_v\_switchd}.

• \texttt{--delete-transient-ports}

Deletes all ports that have \texttt{other\_config:transient} set to \texttt{true}. This is important on certain environments where some ports are going to be recreated after reboot, but other ports need to be persisted in the database.

• \texttt{--ovs-\textasciitilde user=user[:group]}

Ordinarily Open vSwitch daemons are started as the user invoking the \texttt{ovs-\_ctl} command. Some system administrators would prefer to have the various daemons spawn as different users in their environments. This option allows passing the \texttt{--user} option to the \texttt{ovsdb-\_server} and \texttt{ovs-\_v\_switchd} daemons, allowing them to change their privilege levels.

The following options are less important:

• \texttt{--no-\textasciitilde monitor}

By default \texttt{ovs-\_ctl} passes \texttt{--monitor} to \texttt{ovs-\_v\_switchd} and \texttt{ovsdb-\_server}, requesting that it spawn a process monitor which will restart the daemon if it crashes. This option suppresses that behavior.
• **---daemon-cwd=<directory>**

Specifies the current working directory that the OVS daemons should run from. The default is / (the root directory) if this option is not specified. (This option is useful because most systems create core files in a process’s current working directory and because a file system that is in use as a process’s current working directory cannot be unmounted.)

• **---no-force-corefiles**

By default, ovs-ctl enables core dumps for the OVS daemons. This option disables that behavior.

• **---no-mlockall**

By default ovs-ctl passes --mlockall to ovs-vswitchd, requesting that it lock all of its virtual memory, preventing it from being paged to disk. This option suppresses that behavior.

• **---no-self-confinement**

Disable self–confinement for ovs-vswitchd and ovsdb-server daemons. This flag may be used when, for example, OpenFlow controller creates its Unix Domain Socket outside OVS run directory and OVS needs to connect to it. It is better to stick with the default behavior and not to use this flag, unless:

- You have Open vSwitch running under SELinux or AppArmor Mandatory Access Control that would prevent OVS from messing with sockets outside ordinary OVS directories.
- You believe that relying on protocol handshakes (e.g. OpenFlow) is enough to prevent OVS to adversely interact with other daemons running on your system.
- You don’t have much worries of remote OVSDB exploits in the first place, because, perhaps, OVSDB manager is running on the same host as OVS and share similar attack vectors.

• **---ovsdb-server-priority=<niceness>** or **---ovs-vswitchd-priority=<niceness>**

Sets the nice(1) level used for each daemon. All of them default to -10.

• **---ovsdb-server-wrapper=<wrapper>** or **---ovs-vswitchd-wrapper=<wrapper>**

Configures the specified daemon to run under <wrapper>, which is one of the following:

- **valgrind**: Run the daemon under valgrind(1), if it is installed, logging to <daemon>.valgrind.log.<pid> in the log directory.
- **strace**: Run the daemon under strace(1), if it is installed, logging to <daemon>.strace.log.<pid> in the log directory.
- **glibc**: Enable GNU C library features designed to find memory errors.

By default, no wrapper is used.

Each of the wrappers can expose bugs in Open vSwitch that lead to incorrect operation, including crashes. The valgrind and strace wrappers greatly slow daemon operations so they should not be used in production. They also produce voluminous logs that can quickly fill small disk partitions. The glibc wrapper is less resource–intensive but still somewhat slows the daemons.

The following options control file locations. They should only be used if the default locations cannot be used. See FILES, below, for more information.

• **---db-file=<file>**

Overrides the file name for the OVS database.
•  --db-sock=<socket>

  Overrides the file name for the Unix domain socket used to connect to ovsdb-server.

•  --db-schema=<schema>

  Overrides the file name for the OVS database schema.

•  --extra-dbs=<file>

  Adds <file> as an extra database for ovsdb-server to serve out. Multiple space-separated file names may also be specified. <file> should begin with /; if it does not, then it will be taken as relative to <db-dir>.

**The stop command**

The stop command stops the ovs-vswitchd and ovsdb-server daemons. It does not unload the Open vSwitch kernel modules. It can take the same --no-ovsdb-server and --no-ovs-vswitchd options as that of the start command.

This command does nothing and finishes successfully if the OVS daemons aren’t running.

**The restart command**

The restart command performs a stop followed by a start command. The command can take the same options as that of the start command. In addition, it saves and restores OpenFlow flows for each individual bridge.

**The status command**

The status command checks whether the OVS daemons ovs-vswitchd and ovsdb-server are running and prints messages with that information. It exits with status 0 if the daemons are running, 1 otherwise.

**The version command**

The version command runs ovsdb-server --version and ovs-vswitchd --version.

**The force-reload-kmod command**

The force-reload-kmod command allows upgrading the Open vSwitch kernel module without rebooting. It performs the following tasks:

1. Gets a list of OVS “internal” interfaces, that is, network devices implemented by Open vSwitch. The most common examples of these are bridge “local ports”.
2. Saves the OpenFlow flows of each bridge.
3. Stops the Open vSwitch daemons, as if by a call to ovs-ctl stop.
4. Saves the kernel configuration state of the OVS internal interfaces listed in step 1, including IP and IPv6 addresses and routing table entries.
5. Unloads the Open vSwitch kernel module (including the bridge compatibility module if it is loaded).
6. Starts OVS back up, as if by a call to ovs-ctl start. This reloads the kernel module, restarts the OVS daemons and finally restores the saved OpenFlow flows.
7. Restores the kernel configuration state that was saved in step 4.
8. Checks for daemons that may need to be restarted because they have packet sockets that are listening on old instances of Open vSwitch kernel interfaces and, if it finds any, prints a warning on stdout. DHCP is a common example: if the ISC DHCP client is running on an OVS internal interface, then it will have to be restarted after completing the above procedure. (It would be nice if ovs-ctl could restart daemons automatically, but the details are far too specific to a particular distribution and installation.)

force-kmod-reload internally stops and starts OVS, so it accepts all of the options accepted by the start command except for the --no-ovs-vswitchd option.
The load−kmod command
The load−kmod command loads the openvswitch kernel modules if they are not already loaded. This operation also occurs as part of the start command. The motivation for providing the load−kmod command is to allow errors when loading modules to be handled separately from other errors that may occur when running the start command.

By default the load−kmod command attempts to load the openvswitch kernel module.

The enable−protocol command
The enable−protocol command checks for rules related to a specified protocol in the system’s iptables(8) configuration. If there are no rules specifically related to that protocol, then it inserts a rule to accept the specified protocol.

More specifically:
• If iptables is not installed or not enabled, this command does nothing, assuming that lack of filtering means that the protocol is enabled.
• If the INPUT chain has a rule that matches the specified protocol, then this command does nothing, assuming that whatever rule is installed reflects the system administrator’s decisions.
• Otherwise, this command installs a rule that accepts traffic of the specified protocol.

This command normally completes successfully, even if it does nothing. Only the failure of an attempt to insert a rule normally causes it to return an exit code other than 0.

The following options control the protocol to be enabled:
• --protocol=<protocol>

The name of the IP protocol to be enabled, such as gre or tcp. The default is gre.
• --sport=<sport> or --dport=<dport>

TCP or UDP source or destination port to match. These are optional and allowed only with --protocol=tcp or --protocol=udp.

The delete−transient−ports command
Deletes all ports that have the other_config:transient value set to true.

The help command
Prints a usage message and exits successfully.

OPTIONS
In addition to the options listed for each command above, these options control the behavior of several ovs−ctl commands.

By default, ovs−ctl controls the ovsdb−server and ovs−vswitchd daemons. The following options restrict that control to exclude one or the other:
• --no−ovsdb−server

Specifies that the ovs−ctl commands start, stop, and restart should not modify the running status of ovsdb−server.
• --no−ovs−vswitchd

Specifies that the ovs−ctl commands start, stop, and restart should not modify the running status of ovs−vswitchd. It is an error to include this option with the force−reload−kmod command.
EXIT STATUS

`ovs-ctl` exits with status 0 on success and nonzero on failure. The `start` command is considered to succeed if OVS is already started; the `stop` command is considered to succeed if OVS is already stopped.

ENVIRONMENT

The following environment variables affect `ovs-ctl`:

- **PATH**

  `ovs-ctl` does not hardcode the location of any of the programs that it runs. `ovs-ctl` will add the `<sbindir>` and `<bindir>` that were specified at `configure` time to `PATH`, if they are not already present.

- **OVS_LOGDIR, OVS_RUNDIR, OVS_DBDIR, OVS_SYSCONFDIR, OVS_PKGDATADIR, OVS_BINDIR, OVS_SBindIR**

  Setting one of these variables in the environment overrides the respective `configure` option, both for `ovs-ctl` itself and for the other Open vSwitch programs that it runs.

FILES

`ovs-ctl` uses the following files:

- **`ovs-lib`**

  Shell function library used internally by `ovs-ctl`. It must be installed in the same directory as `ovs-ctl`.

- **`<logdir>/<daemon>.log`**

  Per-daemon logfiles.

- **`<rundir>/<daemon>.pid`**

  Per-daemon pidfiles to track whether a daemon is running and with what process ID.

- **`<pkgdatadir>/vswitch.ovsschema`**

  The OVS database schema used to initialize the database (use `--db-schema` to override this location).

- **`<dbdir>/conf.db`**

  The OVS database (use `--db-file` to override this location).

- **`<rundir>/openvswitch/db.sock`**

  The Unix domain socket used for local communication with `ovsdb-server` (use `--db-sock` to override this location).

- **`<sysconfdir>/openvswitch/system-id.conf`**

  The persistent system UUID created and read by `--system-id=random`.

- **`<sysconfdir>/openvswitch/system-type.conf`** and **`<sysconfdir>/openvswitch/system-version.conf`**

  The `system-type` and `system-version` values stored in the database’s `Open_vSwitch` table when not specified as a command-line option.

EXAMPLE

The files `debian/openvswitch-switch.init` and `xenserver/etc_init.d_openvswitch` in the Open vSwitch source distribution are good examples of how to use `ovs-ctl`.

SEE ALSO

`README.rst`, `ovsdb-server(8)`, `ovs-vsctl(8)`.