



Cisco Elastic Services Controller Installer Arguments

You need to specify the following *bootvm.py* script arguments to boot ESC instances.

| Arguments | Description |
|------------------|--|
| esc_hostname | Specifies the host name of the ESC VM instance. |
| --image | Specifies the image id used in the OpenStack glance to boot up the ESC instance. |
| --boot_volume | Specify the volume name or id of the external bootable volume from where you want to launch ESC instance. |
| --net | Specifies the Network IDs or names in OpenStack that ESC connects to. |
| --ipaddr | (Optional) Specifies the IP addresses that ESC will be assigned in the network. Note The IP address must correspond to the net_id in the --net argument. |
| --gateway_ip | (Optional) Specifies the default gateway IP address of ESC. |
| --os_auth_url | (Optional) Specifies the OpenStack keystone url used by os_auth_url for authentication. |
| --os_username | (Optional) Specifies the OpenStack keystone username used by os_username for authentication. |
| --os_password | (Optional) Specifies the OpenStack keystone password used by os_password for authentication. |
| --os_tenant_name | (Optional) Specifies the OpenStack tenant name used by os_tenant_name for ESC deployment. |
| --bs_os_auth_url | (Optional) Specifies the OpenStack keystone url used by bs_os_auth_url for authentication. |

| Arguments | Description |
|-----------------------|---|
| --bs_os_username | (Optional) Specifies the OpenStack keystone username used by bs_os_username for authentication. |
| --bs_os_password | (Optional) Specifies the OpenStack keystone password used by bs_os_password for authentication. |
| --bs_os_tenant_name | (Optional) Specifies the OpenStack tenant name used by bs_os_tenant_name for ESC deployment. |
| --flavor | (Optional) Specifies the OpenStack flavor id to boot the ESC VM. |
| --security_rules_file | (Optional) Specifies the file to define security rules (IP, Port security) for ESC VM. |
| --etc_hosts_file | (Optional) Specifies the file for adding more entries to the ESC vm's hosts file (/etc/hosts). |
| --avail_zone | (Optional) Specifies the OpenStack zone used for ESC deployment. |
| --esc_params_file | (Optional) Specifies the default parameter file for ESC deployment. |
| --db_volume_id | (Optional) Specifies the cinder volume id to mount for database storage in ESC HA Active/Standby [ESC-HA Active/Standby]. |
| --ha_node_list | (Optional) Specifies list of IP addresses for HA Active/Standby nodes in the Primary/Standby cluster. For ESC nodes with multiple network interfaces, these IPs should be the addresses in the network used for data synchronization. Note This argument is utilized for replication-based HA Active/Standby solution only. |
| --kad_vip | (Optional) Specifies the IP address for Keepalived VIP (virtual IP) plus the interface of Keepalived VIP [ESC-HA Active/Standby]. An example format for specifying the interface of VIP is --kad_vip 192.0.2.1:eth2 or --kad_vip [2001:cc0:2020::fc]:eth2 |
| --kad_vif | (Optional) Specifies the interface for Keepalived virtual IP and keepalived VRRP [ESC-HA Active/Standby]. You can also use this argument to only specify the interface for Keepalived VRRP, if the VIP interface is already specified using the <i>kad_vip</i> argument. |
| --kad_vri | Specified the virtual router id of vrrp instance. Accepted values for kad_vri are 0 to 254. ESC VMs in the same HA Active/Standby should use the same kad_vri number. If kad_vip is not used for L3 HA Active/Standby, the kad_vir has to be used, otherwise, you can skip kad_vri argument. |
| --route | Specifies the routing configuration for ESC VM. |
| --ntp_server | (Optional) Specifies the NTP server address. |

| Arguments | Description |
|---------------------------|--|
| --rsyslog_server | (Optional) Specifies the IP address of rsyslog server that ESC sends the log to |
| --rsyslog_server_port | (Optional) Specifies the port of rsyslog server that ESC sends the log to. |
| --rsyslog_server_protocol | (Optional) Specifies the protocol to be used by the ESC to forward logs to the server. |
| --secure | (Optional) Enables secure configuration. You can specify the following values: <ul style="list-style-type: none"> • A—Root is completely locked out. You cannot login as a root even from the console. • B—SELinux runs in the enforcing mode. • C—IPv4/IPv6 tables are started. • D—SSH password authentication is disabled. You need the private key to ssh into ESC vm. • E—host keys for confd will be re-created. |
| --host_mapping_file | (Optional) Specifies the host mapping file for VNF deployment. |
| --version | (Optional) Prints the version of bootvm.py and exits. |
| --rng_virtio | Enables installing and deploying the ESC VM on Libvirt/KVM with the RNG Virtio device. The default values are: device=/dev/random rate_period=1000 rate_bytes=1024 |

| Arguments | Description |
|-------------|--|
| --user_pass | <p>This along with --user_confid_pass are mandatory arguments from 3.0 onwards.</p> <p>This argument adds a user to access the ESC VM. Use this argument to specify a user without administrative privileges, i.e, a non-admin/non-root user. Use the following format: user_name:password. The bootvm.py command requires at least one --user_pass argument to create an admin account for linux (ssh/console access) . The following is the syntax for the mandatory user credential argument:</p> <pre>--user_pass admin: 'PASSWORD-OR-HASH' [:OPTIONAL-PUBLIC-KEY-FILE] [:OPTIONAL-ROLE]</pre> <p>This user can only do the following:</p> <ul style="list-style-type: none"> • Login to ESC through SSH. • Access and drive the Netconf CLI, such as, esc_nc_cli, netconf-console, and so on. • Read ESC -related logs from /var/logs/esc • Access REST interface through localhost <p>This user cannot:</p> <ul style="list-style-type: none"> • Access the ESC DB and reconfigure ESC system. • Access the system-level logs • Configure the system level components, such as: Rsyslog, Keepalived, DRDB, and so on. • Access the encryption keys and values from REST interface or ESC logs. <p>Following is an example of --user_pass for admin account and stronger clear text passwords. Use single quotes to avoid conflict with shell reserved characters:</p> <pre>-user_pass admin:'Strong4Security!'</pre> <p>Another example to install ESC using a password hash for both admin accounts. Use single quotes to avoid conflict with shell reserved characters:</p> <pre>--user_pass admin:'\$algorithm\$salt\$hash-of-salt-password'</pre> <p>ESC 2.1 and later, accepts the public key for this attribute. For example, the following will generate 'admin321' as the password for user 'admin' and use /tmp/abc.pub as the key file to inject the public key for it:</p> <pre>--user_pass admin:admin321:/tmp/abc.pub</pre> |

| Arguments | Description |
|-------------------------|--|
| --user_confid_pass | <p>Used to change confd users. The bootvm.py command requires at least one --user_confid_pass to create an admin account for ConfD (netconf/cli access). The following is the syntax for the mandatory user credential argument:</p> <pre>--user_confid_pass admin: 'PASSWORD-OR-HASH' [:OPTIONAL-PUBLIC-KEY-FILE]</pre> <p>Following is an example of --user_confid_pass for admin account and stronger clear text passwords. Use single quotes to avoid conflict with shell reserved characters:</p> <pre>--user_confid_pass:'Strong4Security!'</pre> <p>Another example, to install ESC using a password hash for both admin accounts. Use single quotes to avoid conflict with shell reserved characters:</p> <pre>--user_confid_pass:'\$algorithm\$salt\$hash-of-salt-password'</pre> <p>ESC 2.1 and later, accepts the public key for this attribute. For example, the following will generate 'admin321' as the password for user 'admin' and use /tmp/abc.pub as the key file to inject the public key for it:</p> <pre>--user_confid_pass:admin321:/tmp/abc.pub</pre> |
| --esc_portal_startup | (Optional) Starts the ESC portal. |
| --log | (Optional) Specifies the log file. By default, logs to stdout. |
| --esc_monitor_check_ips | (Optional) Specifies the IP addresses that must be monitored by esc_monitor (for HA Active/Standby failover). |
| --enable-https-rest | (Optional) Enables a secure REST Interface for the created ESC VM. |
| --enable-http-rest | (Optional) Enables an unsecured REST Interface for the created ESC VM. |
| --disable-rest-auth | (Optional) Disables REST API authentication. Note REST authentication should not be disabled in a production environment. |
| --enable-snmp-agent | (Optional) Enables automatic start-up of the SNMP service. The default value is False. |
| --ha_mode | Specifies the ESC HA Active/Standby mode for HA Active/Standby installation. Specify one of the following available options for HA Active/Standby: no_ha : No HA, cinder : Shared Cinder Volume, drbd : Built-in DRBD, drbd_on_cinder : DRBD over Cinder Volume |
| --enable-https-etsi | (Optional) Enables a secure ETSI REST Interface for the created ESC VM. |

| Arguments | Description |
|----------------------|--|
| --enable-http-etsi | (Optional) Enables an unsecured ETSI REST Interface for the created ESC VM. Enabling this interface is not recommended in a production environment. |
| --encrypt_key | Specifies the key for encryption. |
| --proxy | Uses the proxy on a given port. |
| --noproxy | Lists the hosts which do not use proxy. |
| --kad_unicast_src_ip | Specifies the source IP address of unicast. Should be the IP address of interface that ESC VM uses for unicast (L3) VRRP communication. Example: --kad_unicast_src_ip 10.0.0.1 |
| --kad_unicast_peer | Specified the peer IP addresses of unicast. Should be the ip address of interface that ESC peer VM uses for unicast (L3) VRRP communication. Example: --kad_unicast_peer 10.0.0.1 |
| --placement_hint | Use this argument to specify the placement of ESC HA Active/Standby virtual machines using the server group, samehost, differenthost filters. Example: <ul style="list-style-type: none"> • --placement_hint different_host=2b299428-e7a7-4528-8566-9a4970183c6a [ID should be the VM uuid] • --placement_hint same_host=2b299428-e7a7-4528-8566-9a4970183c6a [ID should be the VM uuid] • --pacement_hint group=4c7758ab-e9cb-4cf0-8f02-344ec666365b [ID should be the server group uuid] |
| --format {json} | Use this argument to capture the success and failure message in the output. Example: \$./bootvm.py --image ESC-2_3_0_8 --net network --format json --test-0 { "status" : "Success" , "vm_uuid" : "UUID" } |
| --user_rest_pass | Adds a user to access the Rest API. Format is username: password. This option can be repeated. |
| --user_portal_pass | Add a portal user. Format username: password. This option can be repeated. |
| --user_etsi_pass | Adds a user to access the ETSI REST API. Format username:password. This option can be repeated. |

| Arguments | Description |
|----------------------|---|
| --no_vim_credentials | <p>Use this argument to deploy ESC without passing the VIM credential. If this argument is used, following parameters will not be passed during the installation:</p> <ul style="list-style-type: none"> • --os_auth_url • --os_username • --os_password • --os_tenant_name <p>After the deployment is complete, the user can set these VIM credential through ESC's VIM/VIM User APIs (REST/Netconf). For more information on configuring through REST APIs and Netconf, see <i>Configuring VIM credentials after installing ESC</i> in the Post Installation Tasks chapter.</p> |
| --etsi_startup | <p>This argument is deprecated in ESC 4.4 and above, it is unavailable in future releases. The use of --etsi_startup shows an error message with the appropriate replacement argument to use. See --enable-etsi-http and --enable-etsi-https.</p> |

Cisco Elastic Services Controller Installer File Reference

| File | Description |
|---------------------|--|
| security_rules_file | <p>The file contains the following:</p> <ul style="list-style-type: none"> • Security rules to create a security group for the tenant. • Configurations to allow traffic for the tenant. |
| etc_hosts_file | The file contains one or more entries that you want to include in the /etc/hosts file. |
| esc_params_file | The file contains information to configure various parameters of ESC. For details on parameters that can be configured in the esc_params_file are described in table below. |
| host_mapping_file | The file contains information to map a network based on the hosts. |

ESC Configuration Parameters

Using this file, you can configure various ESC parameters during the installation. The parameters that can be configured are shown in the table.

Below is an example configuration using this file:

```
openstack.endpoint=adminURL
affinity.filter=ServerGroupAffinity
```

Table 1: ESC Configuration Parameters

| esc_param.conf | Type | Default Value | Description |
|---------------------------------|--------|---------------------|--|
| default.vm_recovery_retries_max | Int | 3 | Number of recovery attempts allowed per VM. |
| openstack.endpoint | String | publicURL | <p>The parameter to set up the keystone endpoint value of ESC. Options: adminURL, publicURL</p> <p>You can change the default value using CLI or REST services.</p> <p>Using CLI:</p> <pre>\$ sudo escadm escmanager config set --key openstack.endpoint --value publicURL { "category": "OPENSTACK", "type": "STRING", "value": "publicURL", "key": "ENDPOINT" }</pre> <p>Using REST:</p> <pre>\$ curl -X PUT http://172.16.0.1:8080/ESCManager/v0/config /openstack/endpoint/publicURL</pre> |
| log.level | String | INFO | Level of logging. Options: INFO, Trace, DEBUG |
| affinity.filter | String | SameHostFilter | <p>A constant string used to build PolicyEngine and initializing VM policy table.</p> <p>Options: SameHostFilter, ServerGroupAffinity</p> |
| anti_affinity.filter | String | DifferentHostFilter | <p>A constant string used to build PolicyEngine and initializing VM policy table.</p> <p>Options: DifferentHostFilter</p> |



Note ESC uses SameHostFilter and DifferentHostFilter for ESC policy engine by default but OpenStack may not configure those filters by default. You may need to add SameHostFilter and DifferentHostFilter to the following scheduler options in the `/etc/nova/nova.conf` file of the nova service in your OpenStack.

```
scheduler_default_filters = RetryFilter, AvailabilityZoneFilter,RamFilter, ComputeFilter,
ComputeCapabilitiesFilter,
ImagePropertiesFilter, ServerGroupAntiAffinityFilter, ServerGroupAffinityFilter,
DifferentHostFilter, SameHostFilter
```

ServerGroupAntiAffinityFilter for Openstack

ESC adapts to use ServerGroupAntiAffinityFilter for Openstack.

REST


```
PUThttp://localhost:8080/ESCManager/v0/config/anti_affinity/filter/ServerGroupAntiAffinity
```

```
PUThttp://localhost:8080/ESCManager/v0/config/affinity/filter/ServerGroupAffinity
```

CLI

```
sudo escadm escmanager config set --key ANTI_AFFINITY.FILTER --value ServerGroupAntiAffinity
sudo escadm escmanager config set --key AFFINITY.FILTER --value ServerGroupAffinity
```

Important Points

ServerGroupAntiAffinityFilter from Openstack doesn't support inter-dep anti-affinit, scaling, and mix use of ServerGroup and default (SameHost/DifferentHost) filter. If you are using ServerGroupAntiAffinity filter, Intra vm group placement is not allowed. You can only use <placement_group> for the VM based placement policy, one VM per vm_group. You can not add a single vm group in two different placement_groups.

ESC Services, Ports, and Security Group Overview

Table 2: External Services

| | Service | Visibility | Optional? | Interface | Protocol | Port |
|---|--|--------------------------|--|-----------|----------------|-----------------------|
| 1 | sshd | External (Orchestration) | No | 0.0.0.0 | TCP | 22 |
| 2 | ESC Web UI/Portal (HTTPS) | External (Orchestration) | Yes (REST and/or Netconf can be used instead) | 0.0.0.0 | TCP | 443 (Previously 9001) |
| 3 | ESC Netconf API | External (Orchestration) | Yes (REST and/or Portal can be used instead) | 0.0.0.0 | TCP | 830 |
| 4 | ESC SNMP | External (Orchestration) | Yes (only configurable through custom user-data/esc-config.yaml) | 0.0.0.0 | TCP | 2001 |
| 5 | ESC DRBD (HA Active/Standby Replication) | External (Orchestration) | No. Required for HA Active/Standby setup. | 0.0.0.0 | TCP | 7789 |
| 6 | ESC REST API (HTTPS) | External (Orchestration) | Yes (Portal and/or Netconf can be used instead) | 0.0.0.0 | TCP | 8443 |
| 7 | ESC Keepalived | External (Orchestration) | No. Required for HA Active/Standby setup. | 0.0.0.0 | Multicast VRRP | N/A |

| | Service | Visibility | Optional? | Interface | Protocol | Port |
|----|--------------------------------------|--------------------------|---|--------------------------------------|----------|------------------|
| 8 | ETSI-VNFM (HTTP) | External | Yes (configurable through etsi-production.properties) | 0.0.0.0 | TCP | 8250 |
| 9 | ETSI-VNFM (HTTPS) | External | Yes (configurable through etsi-production.properties) | 0.0.0.0 | TCP | 8251 |
| 10 | ESC Health API | External (Orchestration) | No | 0.0.0.0 | TCP | 60000 |
| 11 | D-MONA REST API | External | No | 0.0.0.0 | TCP | 8443 |
| 12 | Consul Service ¹ | External | No | 0.0.0.0 | TCP | 8300, 8301, 8302 |
| 13 | ConfD | External ² | No for A/A set | Limited to ESC node IPs ³ | TCP | 4565 |
| 14 | PostgreSQL | External ⁴ | No for A/A set | Limited to ESC node IPs ⁵ | TCP | 7878 |
| 15 | ESCManager RMI Registry ⁶ | External | No for A/A set | Limited to ESC node IPs | TCP | 8679 |
| 16 | ESCManager RMI Service ⁷ | External | No for A/A set | Limited to ESC node IPs | TCP | 8680 |

¹ Only needed for A/A ESC set. Otherwise, the port is not listened.

² Introduced only since ESC 5.0

³ ESC A/A set (3 VMs)

⁴ Introduced only since ESC 5.0

⁵ ESC A/A set (3 VMs)

⁶ Only needed for A/A ESC set. Otherwise, the port is not listened.

⁷ Only needed for A/A ESC set. Otherwise, the port is not listened.