



# **Survey Assist Hardware and Software Specification Guide**

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# Chapter 1: Introduction

The primary purpose of this guide is to provide detailed information of Survey Assist product requirements regarding hardware, software and product compatibility.

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## Scope

This document describes the different requirements for Survey Assist deployments.

# Chapter 2: Deployment Options

Survey Assist supports two types of Deployments:

- Single Box: A single virtual machine hosting Survey Assist services.
- Cluster: Three or more virtual machines configured and acting as a single unit to enable High Availability, Failover and Load Balancing.

At the same time, there are optional components to support features that require additional resources.

- Survey Assist CCT Connector Service: Requires a single virtual machine with Microsoft Windows Operating System and Microsoft .NET Framework Runtime.

# Chapter 3: Hardware and Software specifications for Single Box Deployment

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## Virtualization Resources Specifications

Before you deploy each Survey Assist virtual machine, ensure that the following set of resources is available on the VMWare™ ESXi host.

| Element                 | Minimum Requirements                     |
|-------------------------|--|
| vCPU                    | 4 virtual sockets.<br>2 core per socket. |
| Memory                  | 32 GB                                    |
| Storage                 | 150 GB                                   |
| Network                 | Gigabit Ethernet NIC (1000 Mb/s).        |
| Virtualization Platform | VMWare ESXi 6.0, 6.5 or 6.7              |

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## Software Specifications

Avaya Survey Assist provided Linux Virtual Appliance for Single Box Deployment (OVA) is required and it is the only supported operating system.

It consists of a ready to deploy Red Hat Enterprise Linux Virtual Appliance with pre-installed software and configuration.

Downloads are available from Avaya Support Site.

| Element  | Details                                     |
|----------|---|
| Filename | SurveyAssist_Linux_RH7.6_SingleBox_rel4.ova |
| Size     | 931 MB                                      |

# Chapter 4: Hardware and Software specifications for Cluster Deployment

---

## Virtualization Resources Specifications

Before you deploy each Survey Assist Cluster Node virtual machine, ensure that the following set of resources is available on the VMWare™ ESXi host.

| Element                 | Minimum Requirements  |
|-------------------------|---|
| vCPU                    | 4 virtual sockets.<br>2 core per socket.                              |
| Memory                  | 16 GB   |
| Storage                 | 50 GB   |
| Network                 | Gigabit Ethernet NIC (1000 Mb/s).                                     |
| Virtualization Platform | VMWare ESXi 6.0, 6.5 or 6.7   |
| Number of Cluster nodes | Minimum: 3<br>Default: 3<br>More nodes require Professional Services. |

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## Software Specifications

Avaya Survey Assist provided Linux Virtual Appliance for Cluster Deployment (OVA) is required and it is the only supported operating system.

This consists of a ready to deploy Red Hat Enterprise Linux Virtual Appliance with pre-installed software and configuration.

Downloads are available from Avaya Support Site.

| Element  | Details                                       |
|----------|---|
| Filename | SurveyAssist_Linux_RH7.6_Cluster_rel4.1.1.ova |
| Size     | 1750 MB                                       |

# Chapter 5: Optional: Hardware and Software specifications for AACC CCT Connector Service

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## Virtualization Resources Specifications

Ensure that the following set of resources is available on the VMWare™ ESXi host.

| Element | Minimum Requirements                                      |
|---------|---|
| vCPU    | 2 virtual sockets.<br>1 core per socket – each of 2.4 GHz |
| Memory  | 6 GB  |
| Storage | 40 GB   |
| Network | Gigabit Ethernet NIC (1000 Mb/s).                         |

---

## Software Specifications

Avaya does not provide the Operating System for AACC CCT Connector Service virtual machine.

The supported versions of Operating System and software details are listed below:

| Element | Details   |
|---------|---|
| OS      | Microsoft Windows Server 2012 R2<br>Microsoft Windows Server 2016<br>Microsoft Windows 10 |

|                         |                               |
|-------------------------|-------------------------------|
| Partition type          | NTFS                          |
| Software                | .Net Framework 4.6.2 or later |
| Firewall TCP Ports open | 29373 (in/out)<br>443 (out)   |

## AACC Call Flow Requirements

It is required that the inbound customer call Universal Call Identifier (UCID) does not change after the call hits AACC and is finally routed to Experience Portal for answering survey questions. If UCID changes, survey response won't provide Agent ID that initially handled the call on reports or events.

---

## AACC CCT Configuration Requirements and Limitations

The Survey Assist CCT Connector service uses AACC CCT .Net API to monitor calls on AACC in order to collect the Agent ID that answered the call. Due this, there are a couple of limitations and requirements to integrate Survey Assist with AACC.

### Requirements

- Create a service CCT user account linked to a Windows domain user.
- The service CCT user does not need to have a related CCMA Supervisor or Agent created.
- In order to monitor Agents, the service CCT user must monitor the Agent's Supervisor on CCT Administration -> Assign Agents.
- Supervisor must be a CCT User.
- If there are more than one level of Supervisors (a Supervisor that supervises another Supervisor) then the top-down Supervisor must be monitored, not the top one.
- The account "Supervisor Default" cannot be used as it is not a real user account and it can't be assigned to monitoring so if there are agents assigned to this account that must be monitored, those agents must be re-assign to a monitored supervisor.

### Limitations

- Due to CCT design, a maximum of 100 Agents of the same Supervisor can be monitored. If a Supervisor has more than 100 Agents, then split the Supervisor in two or more. This may change your CCMA Supervisors and Agents hierarchy, so the recommendation is to plan accordingly to this limitation.
- During Agents hierarchy changes (new Agent, change Supervisor, etc) the CCT Connector Service reloads the entire hierarchy. During the reload process, new calls

cannot be monitored so the Agent ID cannot be captured and will be missing on the Survey Reports.

# Chapter 6: Product Compatibility

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## Required Products

| Product   | Version           |
|---|-------------------|
| Avaya Aura Experience Portal (AAEP)                                 | 7.0, 7.1, 7.2     |
| Avaya Communication Manager (CM)                                    | 6.x, 7.0.x, 7.1.x |
| Avaya Aura System Manager (SMGR)<br>Avaya Aura Session Manager (SM) | 7.0+              |

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## Products by Integration

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### Avaya Oceana Integration

There are two options for Avaya Oceana Integration based on the existing deployment at customer site.

Option 1: By using Breeze snap-in for call redirection.

| Product   | Version  |
|---|----------|
| Avaya Oceana <ul style="list-style-type: none"><li>Voice Channel</li><li>OceanaCoreDataService snap-in (OCDS)</li></ul> | 3.5, 3.6 |
| Avaya Breeze  | 3.5, 3.6 |
| Avaya Media Server (AMS)  | 7.8, 8.0 |

Option 2: By using CC Elite's Return Destination for call redirection.

| Product  | Version |
|--|---------|
| Avaya Oceana <ul style="list-style-type: none"> <li>Voice Channel</li> <li>OceanaCoreDataService snap-in (OCDS)</li> </ul> | 3.6     |
| Avaya Call Center Elite  | 7+      |

---

## Avaya Aura Contact Center (AACC) Integration

| Product                   | Version      |
|---------------------------|--------------|
| Avaya Aura Contact Center | 7.0.x, 7.1.x |
| Avaya Breeze              | 3.5, 3.6     |
| Avaya Media Server (AMS)  | 7.8, 8.0     |
| CCT Service User Account  | N/A          |

---

## Avaya Contact Center Elite Integration

| Product  | Version                    |
|--|----------------------------|
| Avaya Contact Center Elite                       | 7.0.x, 7.1.x, 8.0.x, 8.1.x |
| Avaya Aura Application Enablement Services (AES) | 7.0.x, 7.1.x, 8.0.x, 8.1.x |

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## Outbound SMS/Voice Integration

| Product                                     | Version |
|---|---------|
| Avaya Aura Proactive Outreach Manager (POM) | 3.1     |
| Avaya Aura Experience Portal (AAEP)         | 7.2     |

**Note:**

All machines involved in this architecture must be on the same domain and must use a DNS server to properly identify each other.

# Chapter 7: Networking Requirements and configuration

---

## Networking Requirements

### DNS Requirement

Private network where Survey Assist Virtual Machines are deployed must have a DNS service to resolve local, network and public domains with latency no higher than 40ms. Recommended latency is less than 20ms.

### Subnets requirements

The subnets 172.17.0.0/16 and 172.18.0.0/16 are reserved for internal use of Survey Assist and should not be used by other applications. The supported configuration for Survey Assist assumes that these subnets are reserved for Survey Assist only, since it could cause network conflicts. It is possible to use the mentioned subnets for other applications, but that would require further configurations and it is discouraged.

In case the subnets 172.17.0.0/16 and 172.18.0.0/16 are not available exclusively, and the only option is to use different subnets for Survey Assist, contact support to get instructions on **how to use non default subnets**.

---

## Firewall ports Configuration

The ports are already open on the Survey server. You must open the ports on the enterprise firewall for communication into the network.

| Port Number | Usage    | Service                          | Details  | Deployment            |
|-------------|----------|----------------------------------|--|-----------------------|
| 443         | Required | Administration UI<br>Media Cache | Required to configure the application.<br>Required by AAEP audio file playing. | Single Box<br>Cluster |
| 9180        | Optional | Voice Module                     | Open it if you are using Voice channel.  | Single Box<br>Cluster |

| Port Number  | Usage    | Service               | Details   | Deployment            |
|--|----------|-----------------------|---|-----------------------|
| 9080   | Optional | SMS Module            | Open it if you are using SMS channel.           | Single Box<br>Cluster |
| 9192   | Optional | Kafka Broker          | Open it if you are consuming Survey events.     | Single Box<br>Cluster |
| 6443<br>10250<br>10251<br>10252<br>10255<br>2379-2380<br>30000-32767 | Required | Cluster Communication | Communication between Cluster Nodes.            | Cluster               |
| 123 (udp)  | Required | NTP Communication     | NTP Server Communication between Cluster Nodes. | Cluster               |

---

## Opening the ports on the enterprise firewall

In order to test all necessary ports are opened you can follow this procedure.

### Procedure

1. If firewall-cmd is not enable, you must run the following command:

```
$ sudo systemctl enable firewalld
```

```
[root@linpubn033 ~]# sudo systemctl enable firewalld
Created symlink from /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service to /usr/lib/systemd/system/firewalld.service.
Created symlink from /etc/systemd/system/multi-user.target.wants/firewalld.service to /usr/lib/systemd/system/firewalld.service.
[root@linpubn033 ~]#
```

2. If firewall-cmd is enabled, you must run the following command:

```
$ firewall-cmd --list-all
```

```
[root@linpubx010 ~]# firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens192
  sources:
  services: ssh dhcpv6 clients
  ports: 443/tcp 9180/tcp 9080/tcp 9192/tcp 2375/tcp
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[root@linpubx010 ~]# █
```

3. Check all the ports listed in previous chapter appears in the result.
4. If all the necessary port are not listed in the result. You have open the ports manually one by one with the following command:

```
$ firewall-cmd --permanent --zone=public --add-port=<PORT>/tcp
```

This example will open port 6789

```
[root@linpubx010 ~]# firewall-cmd --permanent --zone=public --
add-port=6789/tcp
```

success

If you run the command against the firewall-cmd will show you the following answer:

```
[root@linpubx010 ~]# firewall-cmd --permanent --zone=public --
add-port=6789/tcp
```

Warning: ALREADY\_ENABLED: 6789:tcp

Success

5. To close the ports manually you can run the following command:

```
$ firewall-cmd --permanent --zone=public --remove-
port=<PORT>/tcp
```

Success

This example will open port 6789

```
$ firewall-cmd --permanent --zone=public --remove-port=6789/tcp
```

success

If you run the command against the firewall-cmd will show you the following answer:

```
[root@linpubx010 ~]# firewall-cmd --permanent --zone=public --
remove-port=6789/tcp
```

Warning: NOT\_ENABLED: 6789:tcp

---

## When to Use Static Network Interface Settings

Use static IP addressing on those servers and devices whose network availability you want to ensure when automatic assignment methods, such as DHCP, fail. DHCP, DNS, and authentication servers are typical examples. Interfaces for out-of-band management devices are also worth configuring with static settings as these devices are supposed to work, as far as is possible, independently of other network infrastructure.

For hosts which are not considered vital, but for which static IP addressing is still considered desirable, use an automated provisioning method when possible. For example, DHCP servers can be configured to provide the same IP address to the same host every time. This method could be used for communal printers for example.

All the configuration tools listed in [“Selecting Network Configuration Methods”](#) allow assigning static IP addresses manually. The **nmcli** tool is also suitable for use with scripted assignment of network configuration.

---

## When to Use Dynamic Interface Settings

Enable and use dynamic assignment of IP addresses and other network information whenever there is no compelling reason not to. The time saved in planning and documenting manual settings can be better spent elsewhere. The *dynamic host control protocol* (DHCP) is a traditional method of dynamically assigning network configurations to hosts.

By default, **NetworkManager** calls the DHCP client, **dhclient**, when a profile has been set to obtain addresses automatically, by setting *BOOTPROTO* to *dhcp* in an interface configuration file. If DHCP is required, an instance of **dhclient** is started for every Internet protocol, IPv4 and IPv6, on an interface. If **NetworkManager** is not running, or not managing an interface, then the legacy network service will call instances of **dhclient** as required.

---

## Selecting Network Configuration Methods

- To configure an interface using **NetworkManager**'s text user interface tool, **nmtui**, proceed to [“Using the Text User Interface, nmtui”](#)
- To configure an interface using **NetworkManager**'s command-line tool, **nmcli**, proceed to [“Using the NetworkManager Command Line Tool, nmcli”](#)

---

## Using the Text User Interface, nmtui

### About this task

The text user interface tool **nmtui** can be used to configure an interface in a terminal window. Issue the following command to start the tool:

```
~]$ nmtui
```

The text user interface appears. Any invalid command prints a usage message.

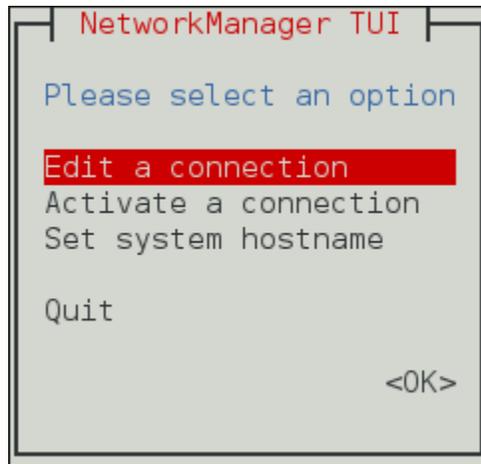


Figure 1: NetworkManager Text User Interface starting menu

To navigate, use the arrow keys or press **Tab** to step forwards and press **Shift+Tab** to step back through the options. Press **Enter** to select an option. The **Space** bar toggles the status of a check box.

To apply changes after a modified connection which is already active requires a reactivation of the connection. In this case, follow the procedure below:

### Procedure

1. Select the `Activate a connection` menu entry.

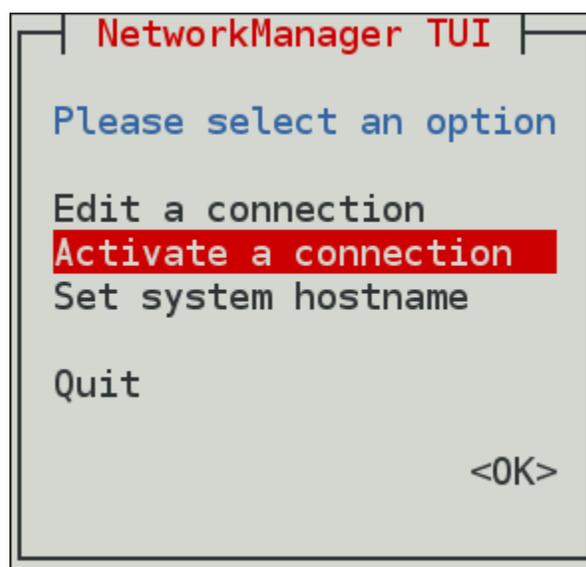
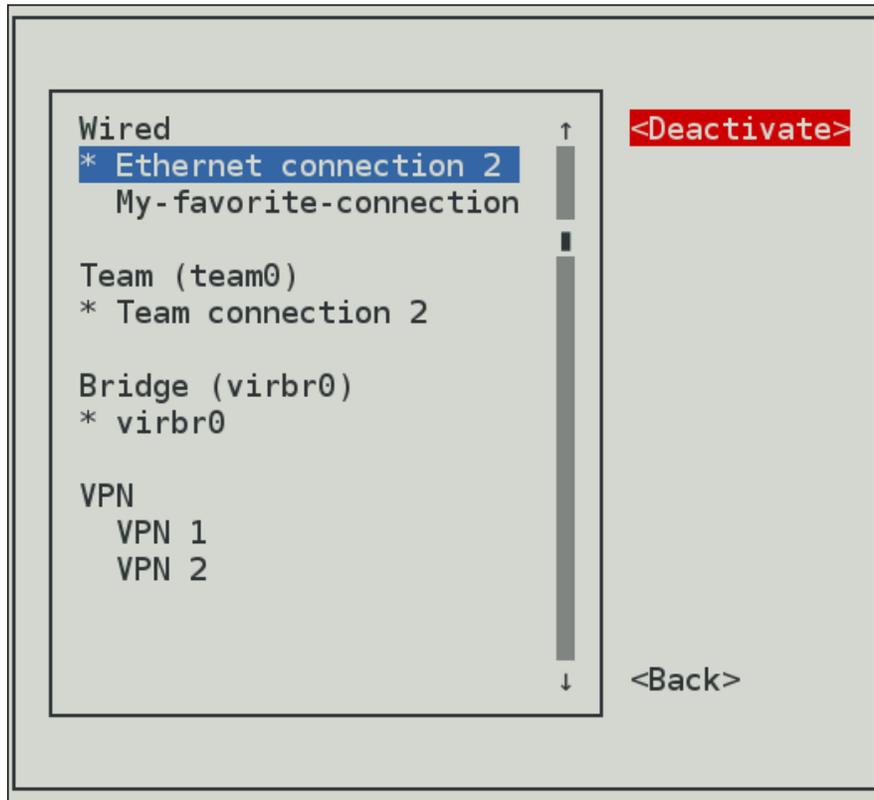


Figure 2: Activate a Connection

2. Select the modified connection. On the right, click the `Deactivate` button.



**Figure 3: Deactivate the Modified Connection**

3. Choose the connection again and click the `Activate` button.

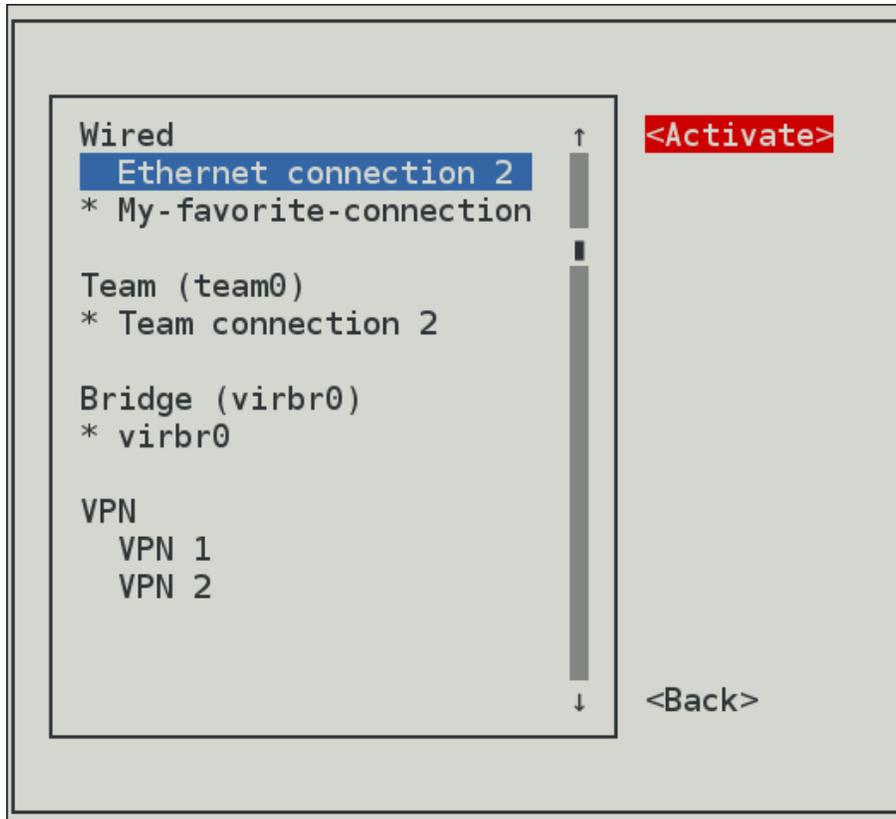


Figure 4: Reactivate the Modified Connection

## Using the NetworkManager Command Line Tool, `nmcli`

The `nmcli` (NetworkManager Command Line Interface) command-line utility is used for controlling NetworkManager and reporting network status. It can be utilized as a replacement for `nm-applet` or other graphical clients. `nmcli` is used to create, display, edit, delete, activate, and deactivate network connections, as well as control and display network device status.

The `nmcli` utility can be used by both users and scripts for controlling **NetworkManager**:

- For servers, headless machines, and terminals, `nmcli` can be used to control **NetworkManager** directly, without GUI, including creating, editing, starting and stopping network connections and viewing network status.
- For scripts, `nmcli` supports a terse output format which is better suited for script processing. It is a way to integrate network configuration instead of managing network connections manually.

The basic format of a `nmcli` command is as follows:

```
nmcli OPTIONS OBJECT { COMMAND | help }
```

where OBJECT can be one of the following

options: general, networking, radio, connection, device, agent, and monitor. You can use any prefix of these options in your commands. For example: `nmcli con help`.

Some of useful OPTIONS to get started are:

**-t, terse**

This mode is designed and suitable for computer (script) processing.

**-p, pretty**

This causes **nmcli** to produce human-readable output. For example, values are aligned and headers are printed.

**-h, help**

Prints help information.

The **nmcli** tool has some built-in context-sensitive help:

**nmcli help**

This command lists the available options and object names to be used in subsequent commands.

**nmcli object help**

This command displays the list of available actions related to a specified object. For example,

```
nmcli c help
```

## Brief Selection of **nmcli** Examples

The *nmcli-examples(5)* man page has many useful examples. Some of them show: the overall status of NetworkManager:

```
nmcli general status
```

The current **NetworkManager** logging status:

```
nmcli general logging
```

All connections:

```
nmcli connection show
```

Only currently active connections, add the `--active` or `(-a)` option as follows:

```
nmcli connection show --active
```

Devices recognized by **NetworkManager** and their state:

```
nmcli device status
```

## Starting and Stopping an Interface Using **nmcli**

The **nmcli** tool can be used to start and stop any network interface, including masters. For example:

```
nmcli con up id bond0

nmcli con up id port0

nmcli dev disconnect bond0

nmcli dev disconnect ens3
```

**Note:**

The nmcli connection down command, deactivates a connection from a device without preventing the device from further auto-activation. The nmcli device 'disconnectcommand', disconnects a device and prevent the device from automatically activating further connections without manual intervention.

---

## The nmcli Interactive Connection Editor

The nmcli tool has an interactive connection editor. To use it, enter the following command:

```
~]$ nmcli con edit
```

You will be prompted to enter a valid connection type from the list displayed. After entering a connection type you are placed at the nmcli prompt. If you are familiar with the connection types you can add a valid connection type option to the nmcli con edit command and be taken straight to the nmcli prompt. The format is as follows for editing an existing connection profile:

```
nmcli con edit [id | uuid | path] ID
```

For editing a new connection profile, the following format applies:

```
nmcli con edit [type new-connection-type] [con-name new-connection-name]
```

Type help at the nmcli prompt to see a list of valid commands. Use the describe command to get a description of settings and their properties. The format is as follows:

```
describe setting.property
```

For example:

```
nmcli> describe team.config
```

---

## Creating and Modifying a Connection Profile

A connection profile contains the connection property information needed to connect to a data source. To **create** a new profile for NetworkManager, use the following command:

```
nmcli c add {ARGUMENTS}
```

The `nmcli c add` accepts two different types of parameters:

### Property names:

The names which NetworkManager uses to describe the connection internally. The most important are:

- `connection.type`

```
nmcli c add connection.type bond
```

- `connection.interface-name`

```
nmcli c add connection.interface-name eth0
```

- `connection.id`

```
nmcli c add connection.id "My Connection"
```

See the `nm-settings(5)` man page for more information on properties and their settings.

### Aliases names:

The human-readable names which are translated to properties internally. The most common are:

- Type (the `connection.type` property)

```
nmcli c add type bond
```

- `ifname` (the `connection.interface-name` property)

```
nmcli c add ifname eth0
```

- `con-name` (the `connection.id` property)

```
nmcli c add con-name "My Connection"
```

In previous versions of `nmcli`, to create a connection required using the `aliases`. For example, `ifname eth0` and `con-name My Connection`. A command in the following format could be used:

```
nmcli c add type ethernet ifname eth0 con-name "My Connection"
```

In more recent versions, both the `property names` and the `aliases` can be used interchangeably. The following examples are all valid and equivalent:

```
nmcli c add type ethernet ifname eth0 con-name "My Connection"
ethernet.mtu 1600
nmcli c add connection.type ethernet ifname eth0 con-name "My Connection"
ethernet.mtu 1600
nmcli c add connection.type ethernet connection.interface-name eth0
connection.id "My Connection" ethernet.mtu 1600
```

The arguments differ according to the connection types. Only the `type` argument is mandatory for all connection types and `ifname` is mandatory for all types except `bond`, `team`, `bridge` and `vlan`.

#### **type** *type\_name*

connection type. For example:

```
nmcli c add type bond
```

#### **ifname** *interface\_name*

interface to bind the connection to. For example:

```
nmcli c add ifname interface_name type ethernet
```

To **modify** one or more properties of a connection profile, use the following command:

```
nmcli c modify
```

For example, to change the `connection.id` from `My Connection` to `My favorite connection` and the `connection.interface-name` to `eth1`, issue the command as follows:

```
nmcli c modify "My Connection" connection.id "My favorite connection"
connection.interface-name eth1
```

#### **Note:**

It is preferable to use the property names. The aliases are used only for compatibility reasons. In addition, to set the ethernet MTU to 1600, modify the size as follows:

```
nmcli c modify "My favorite connection" ethernet.mtu 1600
```

To apply changes after a modified connection using nmcli, activate again the connection by entering this command:

```
nmcli con up con-name
```

For example:

```
nmcli con up My-favorite-connection
Connection successfully activated (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/16)
```

## Understanding the nmcli Options

Following are some of the important **nmcli** property options. See the comprehensive list in the *nmcli(1)* man page :

### **connection.type**

A connection type. Allowed values are: adsl, bond, bond-slave, bridge, bridge-slave, bluetooth, cdma, ethernet, gsm, infiniband, olpc-mesh, team, team-slave, vlan, wifi, wimax. Each connection type has type-specific command options. You can see the `TYPE_SPECIFIC_OPTIONS` list in the *nmcli(1)* man page. For example:

- A gsm connection requires the access point name specified in an `apn`.

```
nmcli c add connection.type gsm apn access_point_name
```

- A wifi device requires the service set identifier specified in a `ssid`.

```
nmcli c add connection.type wifi ssid My identifier
```

### **connection.interface-name**

A device name relevant for the connection.

```
nmcli con add connection.interface-name eth0 type ethernet
```

### **connection.id**

A name uses the connection profile. If you do not specify a connection name, one will be generated as follows:

```
connection.type -connection.interface-name
```

The `connection.id` is the name of a *connection profile* and should not be confused with the interface name which denotes a device (`wlan0`, `ens3`, `em1`). However, users can name the connections after interfaces, but they are not the same thing. There can be multiple connection profiles available for a device. This is particularly useful for mobile devices or when switching a network cable back and forth between different devices. Rather than edit the configuration, create different profiles and apply them to the interface as needed. The `id` option also refers to the connection profile name.

The most important options for `nmcli` commands such as `show`, `up`, `down` are:

**id**

An identification string assigned by the user to a connection profile. `Id` can be used in `nmcli` connection commands to identify a connection. The `NAME` field in the command output always denotes the connection id. It refers to the same connection profile name that the `con-name` does.

**uuid**

A unique identification string assigned by the system to a connection profile. The `uuid` can be used in `nmcli` connection commands to identify a connection.

---

## Connecting to a Network Using nmcli

To list the currently available network connections, issue a command as follows:

```
~]$ nmcli con show
NAME                UUID                                TYPE
DEVICE
Auto Ethernet      9b7f2511-5432-40ae-b091-af2457dfd988  802-3-ethernet  --
ens3                fb157a65-ad32-47ed-858c-102a48e064a2  802-3-ethernet
ens3
MyWiFi              91451385-4eb8-4080-8b82-720aab8328dd  802-11-wireless
wlan0
```

**Note:**

The `NAME` field in the output always denotes the connection ID (name). It is not the interface name even though it might look the same. In the second connection shown above, `ens3` in the `NAME` field is the connection ID given by the user to the profile applied to the interface `ens3`. In the last connection shown, the user has assigned the connection ID `MyWiFi` to the interface `wlan0`.

Adding an Ethernet connection means creating a configuration profile which is then assigned to a device. Before creating a new profile, review the available devices as follows:

```
~]$ nmcli device status
DEVICE  TYPE        STATE           CONNECTION
ens3    ethernet   disconnected    --
ens9    ethernet   disconnected    --
lo      loopback    unmanaged      --
```

To set the device unmanaged by the **NetworkManager**:

```
$ nmcli device set ifname managed no
```

For example, to set `eth2` unmanaged:

```
$ nmcli device status
DEVICE      TYPE      STATE      CONNECTION
bond0       bond      connected  bond0
virbr0      bridge    connected  virbr0
eth1        ethernet  connected  bond-slave-eth1
eth2        ethernet  connected  bond-slave-eth2
eth0        ethernet  unmanaged  --
$ nmcli device set eth2 managed no
$ nmcli device status
DEVICE      TYPE      STATE      CONNECTION
bond0       bond      connected  bond0
virbr0      bridge    connected  virbr0
eth1        ethernet  connected  bond-slave-eth1
eth2        ethernet  unmanaged  --
eth0        ethernet  unmanaged  --
```

**Note:**

When you set the device unmanaged, **NetworkManager** does not control it. However, the device is still connected.

---

## Adding a Dynamic Ethernet Connection

To add an Ethernet configuration profile with dynamic IP configuration, allowing DHCP to assign the network configuration, a command in the following format can be used:

```
nmcli connection add type ethernet con-name connection-name ifname interface-name
```

For example, to create a dynamic connection profile named `my-office`, issue a command as follows:

```
~]$ nmcli con add type ethernet con-name my-office ifname ens3
Connection 'my-office' (fb157a65-ad32-47ed-858c-102a48e064a2) successfully added.
```

**NetworkManager** will set its internal parameter `connection.autoconnect` to `yes`. **NetworkManager** will also write out settings to `/etc/sysconfig/network-scripts/ifcfg-my-office` where the `ONBOOT` directive will be set to `yes`.

**Note:**

The manual changes to the `ifcfg` file will not be noticed by **NetworkManager** until the interface is next brought up.

To open the Ethernet connection, issue a command as follows:

```
~]$ nmcli con up my-office
Connection successfully activated (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/5)
```

Review the status of the devices and connections:

```
~]$ nmcli device status
DEVICE  TYPE      STATE      CONNECTION
ens3    ethernet  connected  my-office
ens9    ethernet  disconnected --
lo      loopback  unmanaged  --
```

To change the host name sent by a host to a DHCP server, modify the `dhcp-hostname` property as follows:

```
~]$ nmcli con modify my-office my-office ipv4.dhcp-hostname host-name
ipv6.dhcp-hostname host-name
```

To change the IPv4 client ID sent by a host to a DHCP server, modify the `dhcp-client-id` property as follows:

```
~]$ nmcli con modify my-office my-office ipv4.dhcp-client-id client-ID-
string
```

There is no `dhcp-client-id` property for IPv6, **dhclient** creates an identifier for IPv6. See the `dhclient(8)` man page for details.

To ignore the DNS servers sent to a host by a DHCP server, modify the `ignore-auto-dns` property as follows:

```
~]$ nmcli con modify my-office my-office ipv4.ignore-auto-dns yes
ipv6.ignore-auto-dns yes
```

See the `nm-settings(5)` man page for more information on properties and their settings.

To configure a dynamic Ethernet connection using the interactive editor, issue commands as follows:

```

~]$ nmcli con edit type ethernet con-name ens3

===| nmcli interactive connection editor |===

Adding a new '802-3-ethernet' connection

Type 'help' or '?' for available commands.
Type 'describe [<setting>.<prop>]' for detailed property description.

You may edit the following settings: connection, 802-3-ethernet
(ethernet), 802-1x, ipv4, ipv6, dcb
nmcli> describe ipv4.method

=== [method] ===
[NM property description]
IPv4 configuration method. If 'auto' is specified then the appropriate
automatic method (DHCP, PPP, etc) is used for the interface and most other
properties can be left unset. If 'link-local' is specified, then a link-
local address in the 169.254/16 range will be assigned to the interface.
If 'manual' is specified, static IP addressing is used and at least one IP
address must be given in the 'addresses' property. If 'shared' is
specified (indicating that this connection will provide network access to
other computers) then the interface is assigned an address in the
10.42.x.1/24 range and a DHCP and forwarding DNS server are started, and
the interface is NAT-ed to the current default network connection.
'disabled' means IPv4 will not be used on this connection. This property
must be set.

nmcli> set ipv4.method auto
nmcli> save
Saving the connection with 'autoconnect=yes'. That might result in an
immediate activation of the connection.
Do you still want to save? [yes] yes
Connection 'ens3' (090b61f7-540f-4dd6-bf1f-a905831fc287) successfully
saved.
nmcli> quit
~]$

```

The default action is to save the connection profile as persistent. If required, the profile can be held in memory only, until the next restart, by means of the `save temporary` command.

---

## Adding a Static Ethernet Connection

To add an Ethernet connection with static IPv4 configuration, a command in the following format can be used:

```
nmcli connection add type ethernet con-name connection-name ifname
interface-name ip4 address gw4 address
```

IPv6 address and gateway information can be added using the `ip6` and `gw6` options. For example, a command to create a static Ethernet connection with only IPv4 address and gateway is as follows:

```
~]$ nmcli con add type ethernet con-name test-lab ifname ens9 ip4
10.10.10.10/24 \
gw4 10.10.10.254
```

Optionally, at the same time specify IPv6 address and gateway for the device as follows:

```
~]$ nmcli con add type ethernet con-name test-lab ifname ens9 ip4
10.10.10.10/24 \
gw4 10.10.10.254 ip6 abbe::cafe gw6 2001:db8::1
Connection 'test-lab' (05abfd5e-324e-4461-844e-8501ba704773) successfully
added.
```

**NetworkManager** will set its internal parameter `ipv4.method` to `manual` and `connection.autoconnect` to `yes`. **NetworkManager** will also write out settings to `/etc/sysconfig/network-scripts/ifcfg-my-office` where the corresponding `BOOTPROTO` will be set to `none` and `ONBOOT` will be set to `yes`.

The manual changes to the `ifcfg` file will not be noticed by **NetworkManager** until the interface is next brought up.

To set two IPv4 DNS server addresses:

```
~]$ nmcli con mod test-lab ipv4.dns "8.8.8.8 8.8.4.4"
```

This replaces any previously set DNS servers. To set two IPv6 DNS server addresses:

```
~]$ nmcli con mod test-lab ipv6.dns "2001:4860:4860::8888
2001:4860:4860::8844"
```

This replaces any previously set DNS servers. Alternatively, to add additional DNS servers to any previously set, use the `+` prefix as follows:

```
~]$ nmcli con mod test-lab +ipv4.dns "8.8.8.8 8.8.4.4"
~]$ nmcli con mod test-lab +ipv6.dns "2001:4860:4860::8888
2001:4860:4860::8844"
```

To open the new Ethernet connection, issue a command as follows:

```
~]$ nmcli con up test-lab ifname ens9
Connection successfully activated (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/6)
```

Review the status of the devices and connections:

```
~]$ nmcli device status
DEVICE   TYPE         STATE         CONNECTION
ens3     ethernet    connected    my-office
ens9     ethernet    connected    test-lab
lo       loopback    unmanaged    --
```

To view detailed information about the newly configured connection, issue a command as follows:

```
~]$ nmcli -p con show test-lab
=====
====
                        Connection profile details (test-lab)
=====
====
connection.id:                test-lab
connection.uuid:              05abfd5e-324e-4461-844e-
8501ba704773
connection.interface-name:    ens9
connection.type:              802-3-ethernet
connection.autoconnect:      yes
connection.timestamp:        1410428968
connection.read-only:        no
connection.permissions:
connection.zone:              --
connection.master:           --
connection.slave-type:       --
connection.secondaries:
connection.gateway-ping-timeout: 0
[output truncated]
```

The use of the `-p`, `--pretty` option adds a title banner and section breaks to the output.

To configure a static Ethernet connection using the interactive editor, issue commands as follows:

```
~]$ nmcli con edit type ethernet con-name ens3
===| nmcli interactive connection editor |===
Adding a new '802-3-ethernet' connection
```

```

Type 'help' or '?' for available commands.
Type 'describe [>setting<.>prop<'] for detailed property description.

You may edit the following settings: connection, 802-3-ethernet
(ethernet), 802-1x, ipv4, ipv6, dcb
nmcli> set ipv4.addresses 192.168.122.88/24
Do you also want to set 'ipv4.method' to 'manual'? [yes]: yes
nmcli>
nmcli> save temporary
Saving the connection with 'autoconnect=yes'. That might result in an
immediate activation of the connection.
Do you still want to save? [yes] no
nmcli> save
Saving the connection with 'autoconnect=yes'. That might result in an
immediate activation of the connection.
Do you still want to save? [yes] yes
Connection 'ens3' (704a5666-8cbd-4d89-b5f9-fa65a3dbc916) successfully
saved.
nmcli> quit
~]$

```

The default action is to save the connection profile as persistent. If required, the profile can be held in memory only, until the next restart, by means of the `save temporary` command.

---

## Configuring Static Routes Using nmcli

To configure static routes using the `nmcli` tool, the command line or the interactive editor mode can be used.

To configure a static route for an existing Ethernet connection using the command line, enter a command as follows:

```

~]# nmcli connection modify eth0 +ipv4.routes "192.168.122.0/24
10.10.10.1"

```

This will direct traffic for the `192.168.122.0/24` subnet to the gateway at `10.10.10.1`

To configure a static route for an Ethernet connection using the interactive editor, issue commands as follows:

```

~]# nmcli con edit type ethernet con-name ens3

==| nmcli interactive connection editor |==

Adding a new '802-3-ethernet' connection

Type 'help' or '?' for available commands.
Type 'describe [>setting<.>prop<'] for detailed property description.

```

```
You may edit the following settings: connection, 802-3-ethernet
(ethernet), 802-1x, ipv4, ipv6, dcb
nmcli> set ipv4.routes 192.168.122.0/24 10.10.10.1
nmcli>
nmcli> save persistent
Saving the connection with 'autoconnect=yes'. That might result in an
immediate activation of the connection.
Do you still want to save? [yes] yes
Connection 'ens3' (704a5666-8cbd-4d89-b5f9-fa65a3dbc916) successfully
saved.
nmcli> quit
~]$
```

# Chapter 8: Installing Survey Assist Linux Virtual Appliance

---

## Deployment on VMWare™ ESXi

### Procedure

1. Connect to the ESXi host server through the vSphere client.
2. Select file **Deploy OVF Template**.
3. In the **Deploy OVF Template** window, click **Browse** to select the location.
4. Verify the details about the Survey Assist Linux OVA template.
5. Type in a unique name for the new virtual machine.
6. Select the resource pool if the host has resource pools.
7. Select the data store location to store the virtual machine files.
  - **Note:**

The data store is local to the host or a mounted shared storage, such as Network Filesystem Storage (NFS) or Storage Area Network (SAN). The virtual machine configuration file and virtual disk files are stored in the data store. Select a data store that can store the virtual machine and all the virtual disk files.
8. Select the required disk format to store the virtual machine and the virtual disks.
  - **Note:**

Use Thick Provision Lazy Zero disks. For more information about thin and thick deployments and best practices for VMware features, see [Avaya Customer Experience Virtualized Environment Solution Description](#).
9. If the system displays the Network Mapping window, verify the Destination VM Networks setting, and update the details if required.
10. Verify the deployment properties and complete the deployment procedure.
11. (Optional) In the **Ready to complete** window, select the **Power on after deployment** check box to start the virtual machine after the system completes the deployment process. You can manually start the virtual machine after the deployment process completes.

---

## Starting up the Virtual Machine

After the Virtual Machine starts, log in with root credentials and then configure the network, Timezone and NTP services.

### Survey Assist Linux OVA Operating System users:

| Username | Password   | Login Type   |
|----------|------------|--------------|
| root     | Avaya@123  | Local Only   |
| survey   | Survey@123 | Local<br>SSH |

- **Important:**

The password for the survey user has a 30-day expiration date. After it expires, it needs to be changed by using the VMWare console, or contact Avaya Support.

### Avaya Services Logins (EASG)

| Username | Login Type |
|----------|------------|
| sroot    | SSH        |
| craft    | SSH        |
| init     | SSH        |

---

## Configure Networking

### Procedure

1. To configure the network, use the script `/root/network-config.sh`. These parameters must be completed to configure the network.
  - IP Address
  - Netmask

- Broadcast
  - Gateway
  - DNS
2. After the script finishes, run the following commands to verify the configuration:  
`hostname -f`

This command returns the fully qualified domain name (FQDN) that is, `survey-test-server.avaya.com`

---

## Time zone and NTP Service

You can configure the server's timezone and the NTP client. This configuration requires root access privileges.

---

### Configuring Server's Time zone

#### Procedure

1. To check the current time zone defined, use the following command:

```
timedatectl
```

2. To see a list of available Time zones, use the following:

```
timedatectl list-timezones
```

3. To set the time zone, use the following command:

```
timedatectl set-timezone <timezone>
```

Where <timezone> is one option displayed on step 2 that is:

```
timedatectl set-timezone America/Argentina/Buenos_Aires
```

---

### Configuring the ntp client

The OVA provided by Avaya already includes the **chrony** client. This client is configured and running against the default RHEL ntp servers. If you want to use different servers, or cannot use the default ones, you can follow this procedure.

#### Procedure

1. Edit chrony configuration, included in the following file:

```
/etc/chrony.conf
```

2. Replace the servers in the following lines with the one(s) you want to use:

```
server 0.rhel.pool.ntp.org iburst
```

```
server 1.rhel.pool.ntp.org iburst
```

```
server 2.rhel.pool.ntp.org iburst
```

```
server 3.rhel.pool.ntp.org iburst
```

3. Type in comments at the servers you are not using, by adding # as the first character in the line:

```
server 0.centos.pool.ntp.org iburst
```

```
#server 1.rhel.pool.ntp.org iburst
```

```
#server 2.rhel.pool.ntp.org iburst
```

```
#server 3.rhel.pool.ntp.org iburst
```

4. Save the file.
5. Restart chrony daemon, by using the following command:

```
systemctl restart chronyd
```

# Appendix I

---

## Related resources

The following table lists the documents related to Survey Assist. Download the documents from the Avaya Support website at <http://support.avaya.com>.

| Title   | Use this resource to:                                  | Audience                                    |
|---|--|---|
| <b>Maintenance</b>                            |  |   |
| <i>Installation Guide</i>                     | Install the Survey Assist product.                     | Users.                                      |
| <i>Administration and Configuration Guide</i> | Configure the admin part of the Survey Assist product. | System administrators or support personnel. |