



DEPLOYMENT GUIDE

# Deploying Harmony Controller on Oracle Cloud Infrastructure

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## Overview

With applications distributed around the world in multiple data centers, sites, and across multiple clouds, application and security management is an ever-expanding challenge requiring advanced management systems with application intelligence and data analytics. A10 Harmony® Controller provides centralized agile management, automation, and traffic data analytics for A10 secure application services deployed over various underlying infrastructure—from data centers to private, public, and hybrid clouds.

With the Harmony Controller, organizations can efficiently automate the deployment and operations of application services, increase operational efficiency and agility, enhance end-user experiences, and reduce TCO. It simplifies the management of distributed application services deployed in data centers, private, public, and hybrid clouds to dramatically shorten troubleshooting times, and sends alerts on performance or security anomalies.

This deployment guide explains step-by-step configuration procedures to deploy A10 Harmony Controller in Oracle Cloud Infrastructure (OCI).

## Deployment Prerequisites

The selection of the OCI compute for Harmony Controller depends on many factors of the application services to be managed, such as number of devices, number of partitions, and the number of VIPs defined in the ADC infrastructure. For single-node deployment compute selection sizing refer to the guidelines below:

- Type: Single node Harmony Controller deployment
- Form: VM
- vCPU (1 OCPU = 2vCPUs): 16
- RAM: 64
- #Devices (single partition) or #Partitions (across all devices): 360
- Max log capacity (logs/second): 4500

**Note:** Telemetry and transaction logs for data analytics are sent by the ACOS device to the Harmony Controller. When the automatic log-rate is enabled (by default) on the operator console, Harmony Controller periodically adjusts the log-rate configuration parameter on Thunder devices as needed.

# Deployment Modes

For this deployment guide, one-node Harmony Controller instance is deployed. It collects, analyzes and reports on application traffic flowing through A10 application services.

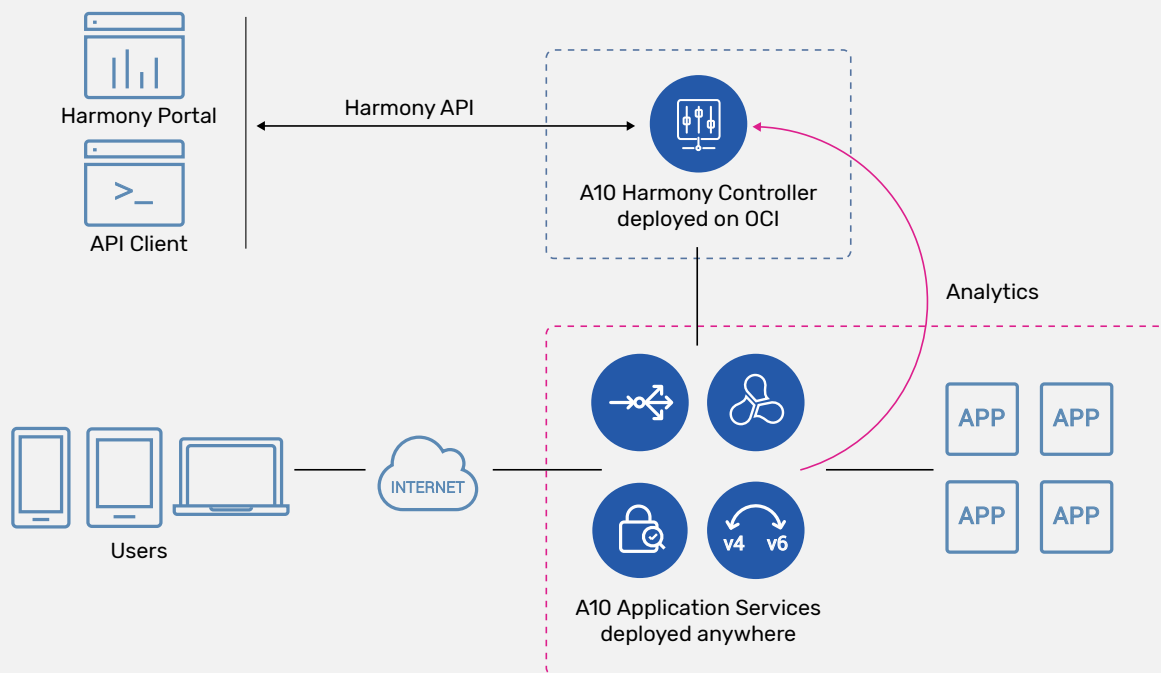


Figure 1: Harmony Controller deployment on Oracle Cloud Infrastructure

## Deploying Harmony Controller on OCI

The A10 Harmony Controller provides centralized management for A10 secure application services, including A10 Thunder® ADC, SSLi®, CFW, and CGN deployed over various underlying infrastructure—from data centers to private, public and hybrid clouds for application configuration and policy enforcement. It improves agility and efficiency with automation, thus reducing the need for IT administrators to set up and configure per-application infrastructure. It simplifies troubleshooting by providing visibility and actionable insights into application traffic and anomalous trends.

Steps needed to create a Harmony Controller instance in OCI:

Below are the key steps for the deployment of Harmony Controller

- Create VCN
- Create Harmony Controller compute instance
- Install Harmony Controller
- Set up Harmony Controller
- Onboard Thunder to Harmony Controller
- Get analytics and insights

**Note:** Before creating an instance in Oracle Cloud Infrastructure, a virtual cloud network (VCN) setup should be configured. If you already have VCN configured, you can skip this step and create a Harmony Controller compute instance.

## Create VCN

A virtual cloud network (VCN) is a customizable private network that you setup in OCI data centers. It resembles a traditional network with firewall rules or a virtual private cloud (VPC) in AWS. VCN resides in a single Oracle Cloud Infrastructure region and covers one or more CIDR blocks (IPv4 and IPv6, if enabled). You can create a VCN either manually or using an OCI guided wizard. The OCI guided wizard creates gateways, subnets, public NAT and security policies.

Follow the steps below to create a VCN using wizard.

1. Login to your Oracle OCI with Oracle Cloud account
2. Click on "set up a network with a wizard" tab

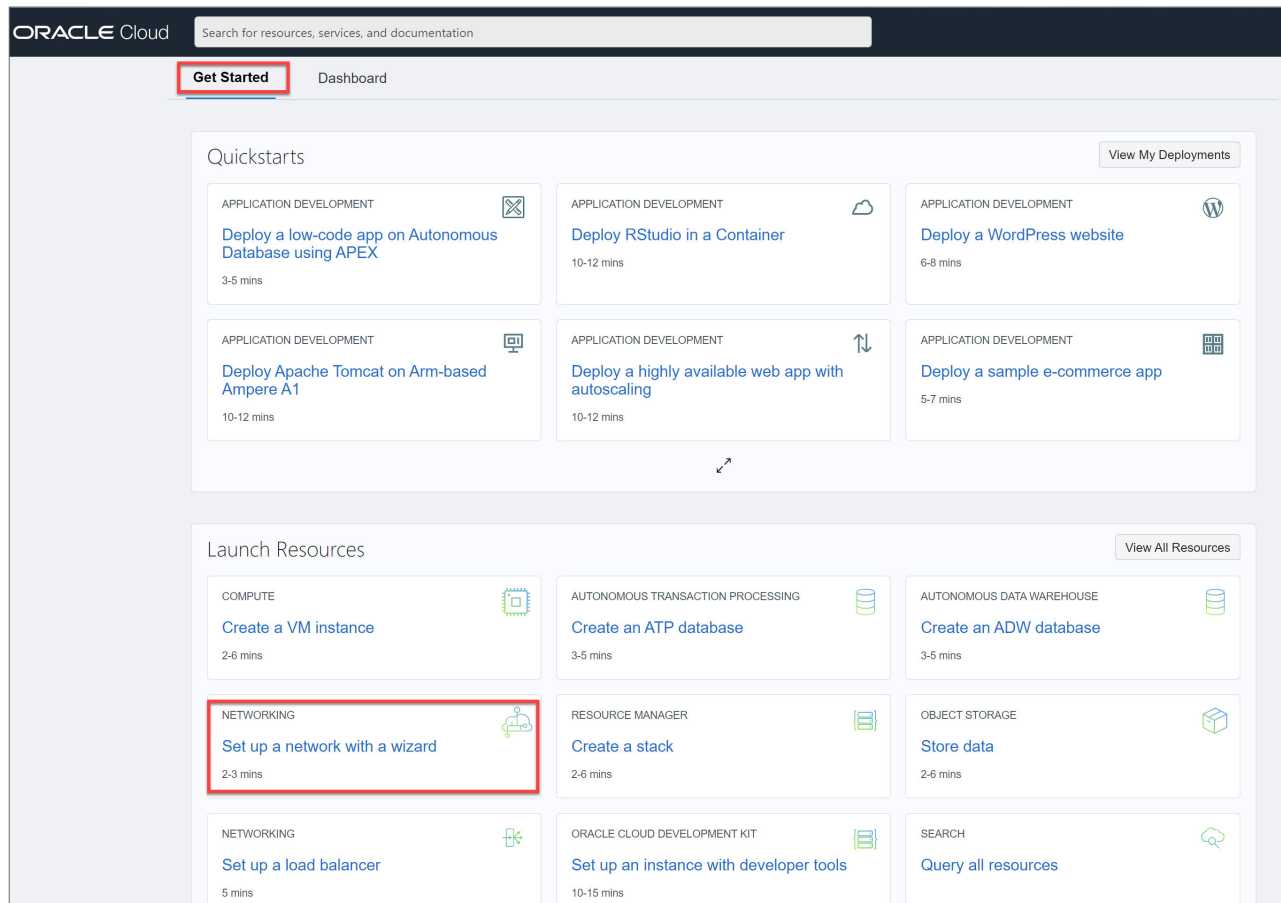


Figure 2: Setting up a network with a wizard

3. Select option "Create VCN with Internet Connectivity" and click "Start VCN Wizard"

## Start VCN Wizard [Help](#)

**Create VCN with**

Internet Connectivity

**Add Internet Connectivity and Site-to-Site VPN to a VCN**

Connectivity and Site-to-Site VPN to a VCN

Creates a VCN with a public subnet that can be reached from the internet. Also creates a private subnet that can connect to the internet through a NAT gateway, and also privately connect to the Oracle Services Network.

**Includes:** VCN, public subnet, private subnet, internet gateway (IG), NAT gateway (NAT), service gateway (SG).

[Start VCN Wizard](#) [Cancel](#)

Figure 3: Starting VCN wizard

4. In this screen,
  - a. Enter the VCN name
  - b. Select compartment where the VCN will be created (set by your administrator)
  - c. Specify your VCN CIDR block. It must be /16 or /30.
  - d. Specify the public subnet. The resources in the subnet are allowed to have public IP addresses.
  - e. Specify the private subnet. The resources in the subnet are not allowed to have public IP addresses.
  - f. Click "Next"

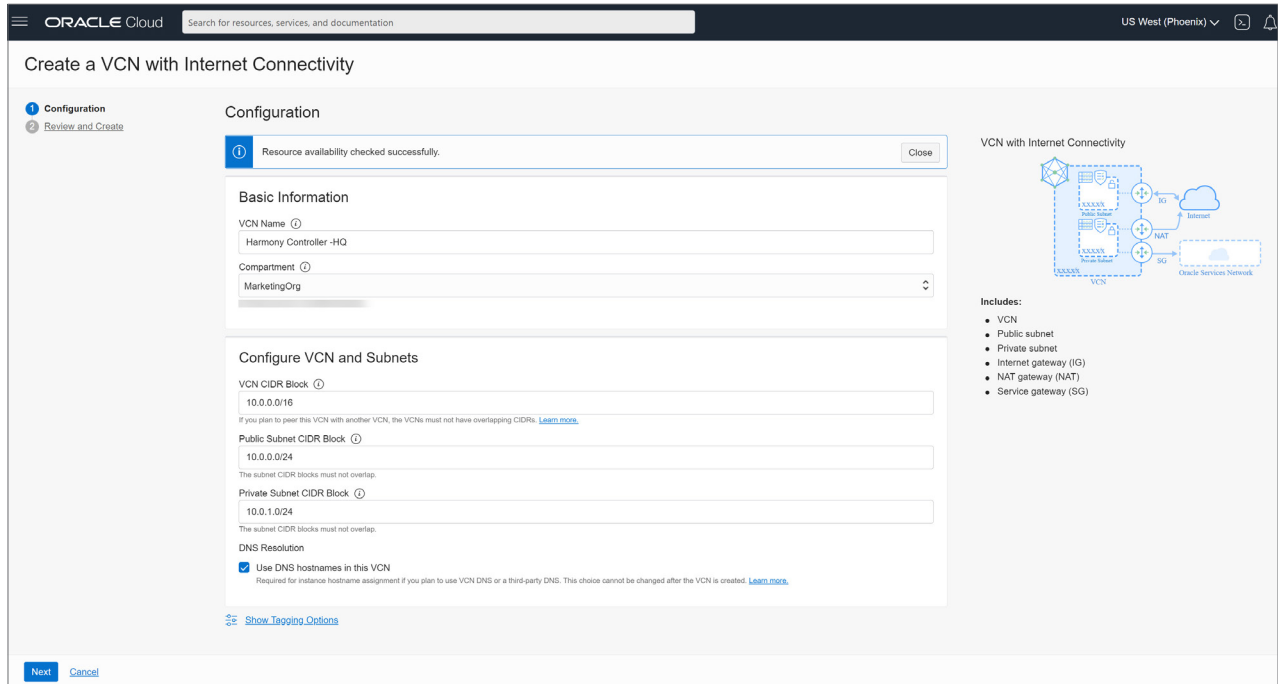


Figure 4: Configuring a VCN in Oracle Cloud Infrastructure

5. Click on Create

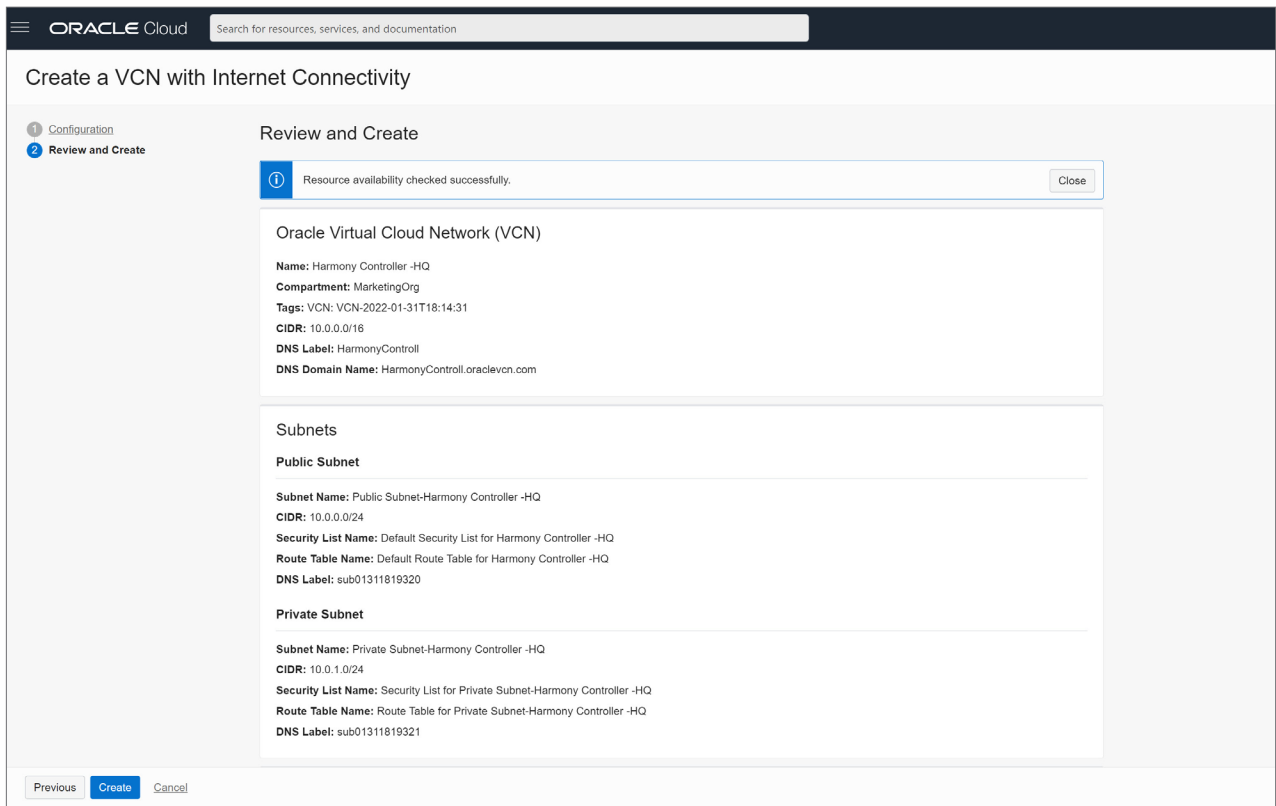


Figure 5: Example of a VCN creation

6. When the create wizard completes, each task will be displayed as “resolved”

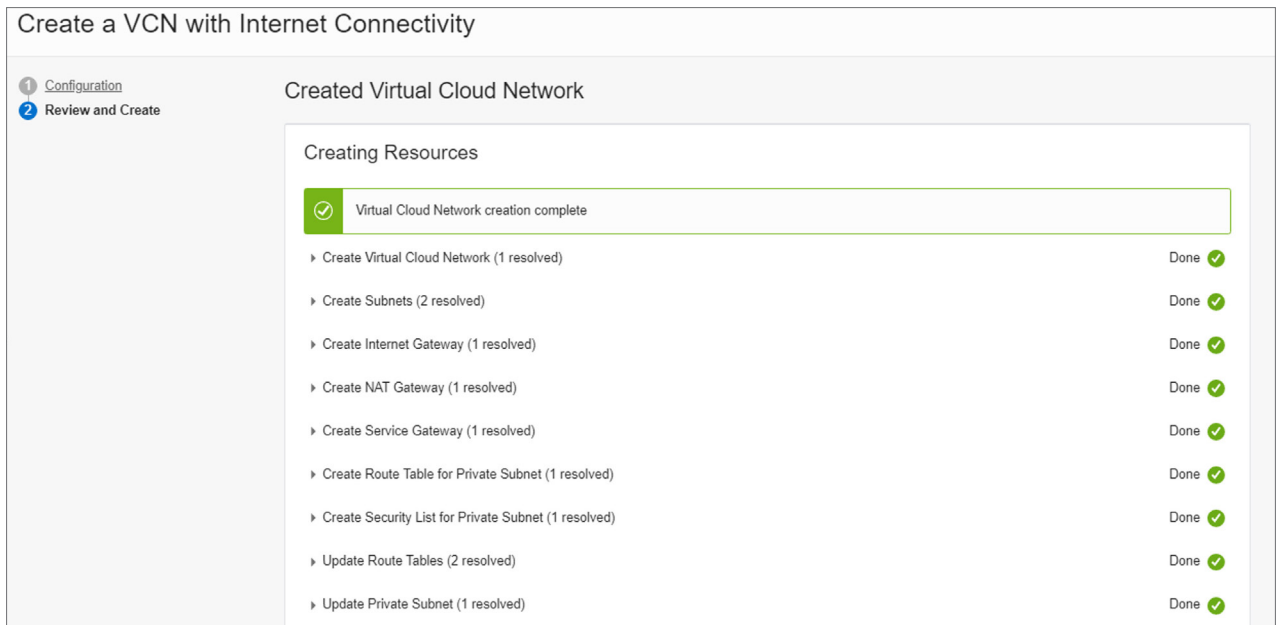


Figure 6: Example of VCN creation details

With this the first part completes. Now the next step is to create Harmony Controller instance.



## Create Harmony Controller Compute Instance

Follow the steps below to create Harmony Controller

1. On the home page, click on "compute" and select "instances."

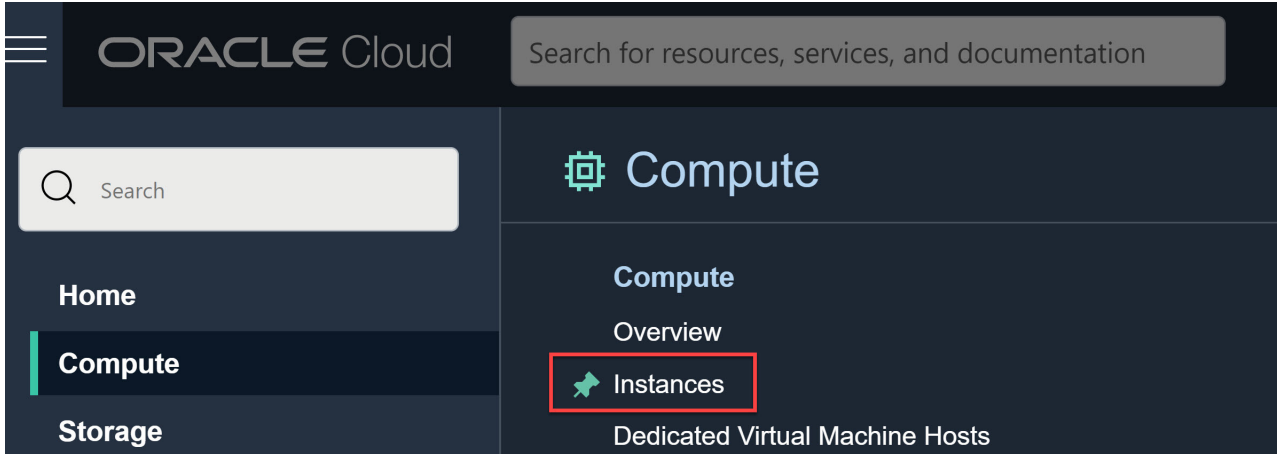


Figure 7: Creating Instance

2. Click on "create instance"



3. In this screen,
  - a. Enter the name of the instance
  - b. Select the compartment where the instance will be created
  - c. Under placement, select the availability domain where the instance will be created. In this example, AD1 has been selected

ORACLE Cloud Search for resources, services, and documentation

## Create compute instance

Create an instance to deploy and run applications, or save as a reusable Terraform stack for creating an instance with Resource Manager.

Name  
Harmony Controller

Create in compartment  
MarketingOrg

/MarketingOrg

### Placement [Collapse](#)

The [availability domain](#) helps determine which shapes are available.

Availability domain

AD 1 LjsV:PHX-AD-1 ✓	AD 2 LjsV:PHX-AD-2	AD 3 LjsV:PHX-AD-3
-------------------------	-----------------------	-----------------------

[Show advanced options](#)


Figure 8A: Configuring Harmony Controller instance (availability domain)

d. For “image and shape,” click “change image”

### Image and shape [Collapse](#)

A [shape](#) is a template that determines the number of CPUs, amount of memory, and other resources allocated to an instance. The image is the operating system that runs on top of the shape.

**Image**





**Oracle Linux 7.9** 

Image build: 2021.12.08-0

[Change image](#)

**Shape**



**VM.Standard.E4.Flex**

Virtual machine, 1 core OCPU, 16 GB memory, 1 Gbps network bandwidth

[Change shape](#)

Figure 8B: Configuring Harmony Controller instance (image)

Select “Cent OS” version 7 from the OS version drop-down as indicated and click on “select image”








### Browse all images



An image is a template of a virtual hard drive that determines the operating system and other software for an instance.

Image source  
Platform images

Compartment  
MarketingOrg  
a10networkscloud (root)/MarketingOrg

[Platform images](#) are pre-built operating systems for Oracle Cloud Infrastructure.

Image name	OS version	Image build	
<input type="checkbox"/> Canonical Ubuntu 	20.04	2021.12.01-0	<a href="#">Advanced options</a>
<input checked="" type="checkbox"/> CentOS 	7 	2021.12.03-0 	<a href="#">Advanced options</a>
<input type="checkbox"/> Oracle Autonomous Linux 	7.9	2021.11-1	<a href="#">Advanced options</a>
<input type="checkbox"/> Oracle Linux 	8	2021.12.08-0	<a href="#">Advanced options</a>
<input type="checkbox"/> Oracle Linux Cloud Developer 	8	2021.08.27-0	<a href="#">Advanced options</a>
<input type="checkbox"/> Windows	Server 2019 Standard	2022.01.11-0	<a href="#">Advanced options</a>

 Looking for an alternative to CentOS? Oracle Linux is a great option. [Read our blog](#) 

Select image
Cancel

Figure 8C: Configuring Harmony Controller instance (image)

- e. Click “change shape” to customize the CPU and memory sizes. Below, Intel-Flexible OCPU count has been selected. Note that 1 OCPU = 2vCPU. Select “VM.Optimized3.Flex” enter 8 OCPUs and 64 GB of memory. You can also use the AMD Compute shape and configure the supported CPU and memory sizes. Please refer to A10’s sizing guideline under [Deployment Prerequisites](#) section.

**Browse all shapes**

A [shape](#) is a template that determines the number of CPUs, amount of memory, and other resources allocated to a newly created instance.

Instance type

**Virtual machine**

A virtual machine is an independent computing environment that runs on top of physical bare metal hardware. ✓

**Bare metal machine**

A bare metal compute instance gives you dedicated physical server access for highest performance and strong isolation.

Shape series

**AMD**

Flexible OCPU count. AMD processors.

**Intel**

Flexible OCPU count. Intel processors. ✓

**Ampere**

Arm-based processor.

**Specialty and previous generation**

Earlier generation AMD and Intel standard shapes. Always Free, Dense I/O, GPU, and HPC shapes.

Image: CentOS 7

Shape name	OCPU	Memory (GB)	Network bandwidth (Gbps)	Max. total VNICs ⓘ
<input type="checkbox"/> VM.Standard3.Flex	1	16	1	2
<input checked="" type="checkbox"/> VM.Optimized3.Flex	8	64	32	16

You can customize the number of OCPUs and the amount of memory allocated to a flexible shape. The other resources scale proportionately. [Learn more about flexible shapes.](#)

Number of OCPUs

1 5 8 9 13 18

Amount of memory (GB) ⓘ

1 52 64 103 154 205 256

<input type="checkbox"/> VM.Standard2.1 ⓘ	1	15	1	2
<input type="checkbox"/> VM.Standard2.2 ⓘ	2	30	2	2

Figure 8D: Configuring Harmony Controller instance (CPU)

- f. Under networking, select the VCN and public subnet that you created earlier. For public IP address, select “Assign a public IPv4 address.” This will make instances accessible from the internet.

### Networking [Collapse](#)

[Networking](#) is how your instance connects to the internet and other resources in the Console. To make sure you can [connect to your instance](#), assign a public IP address to the instance.

Primary network  
 Select existing virtual cloud network    Create new virtual cloud network    Enter subnet OCID

Virtual cloud network in **MarketingOrg** ([Change Compartment](#))  
MarketingPublicVCN

Subnet  
 Select existing subnet    Create new public subnet

Subnet in **MarketingOrg** ⓘ ([Change Compartment](#))  
MktgPubNw-Data1 (regional)

Public IP address  
 Assign a public IPv4 address    Do not assign a public IPv4 address

⚠ Assigning a public IP address makes this instance accessible from the internet. If you're not sure whether you need a public IP address, you can always assign one later.

Figure 8E: Configuring Harmony Controller instance (networking)

- g. Next section is “Add SSH Keys”

Instances launched using Oracle Linux, CentOS, or Ubuntu images use an SSH key pair instead of a password to authenticate remote users. You have the option of creating your own or letting OCI create the keys needed. These keys are required to log into the server for SSH login. The key must be in OpenSSH format. If you use putty as your SSH client, the key generated by PuttyGen will need to be copied and pasted into the panel. The private key saved in the .ppk format (private putty key) is used to connect to the instance. See the [documentation](#) for complete instructions on SSH format and access options.

For this example, OCI will generate the keys for SSH access. The OCI instance will use the public key and the private key will be used by the originator of the SSH session. Click on save private key, public key and save the keys securely.

## Add SSH keys

Generate an [SSH key pair](#) to connect to the instance using a Secure Shell (SSH) connection, or upload a public key that you already have.

Generate a key pair for me    Upload public key files (.pub)    Paste public keys    No SSH keys

**i** Download the private key so that you can connect to the instance using SSH. It will not be shown again.

[↓ Save Private Key](#)   [↓ Save Public Key](#)

Figure 8F: Configuring Harmony Controller instance (SSH keys)

h. Lastly, For boot volume, select “Specify a custom boot volume size.” Enter 1100 GB.

OCI’s image’s default boot volume size is 46.6GB. One TB storage is recommended for a production deployment that requires data analytics, logs, and configuration data for a longer duration. Refer to the storage recommendation on the [documentation](#). Set the volume to custom 1100GB. This will account for additional space needed for the boot volume partition.

## Boot volume

A [boot volume](#) is a detachable device that contains the image used to boot the compute instance.

Specify a custom boot volume size  
[Volume performance](#) varies with volume size. Default boot volume size: 46.6 GB. When you specify a custom boot volume size, service limits apply.

Boot volume size (GB)

Integer between 50 GB and 32,768 GB (32 TB). Must be larger than the default boot volume size for the selected image.

Use in-transit encryption  
[Encrypts data](#) in transit between the instance, the boot volume, and the block volumes.

Encrypt this volume with a key that you manage  
By default, Oracle manages the keys that encrypt this volume, but you can choose a key from a vault that you have access to if you want greater control over the key’s lifecycle and how it’s used. [How do I manage my own encryption keys?](#)

[Show advanced options](#)

     [Cancel](#)

Figure 8G: Configuring Harmony Controller instance (boot volume)

- i. Finish the process by selecting the “create” button. The instance summary panel within OCI will be displayed, and the instance shows “provisioning” and active” once completed.

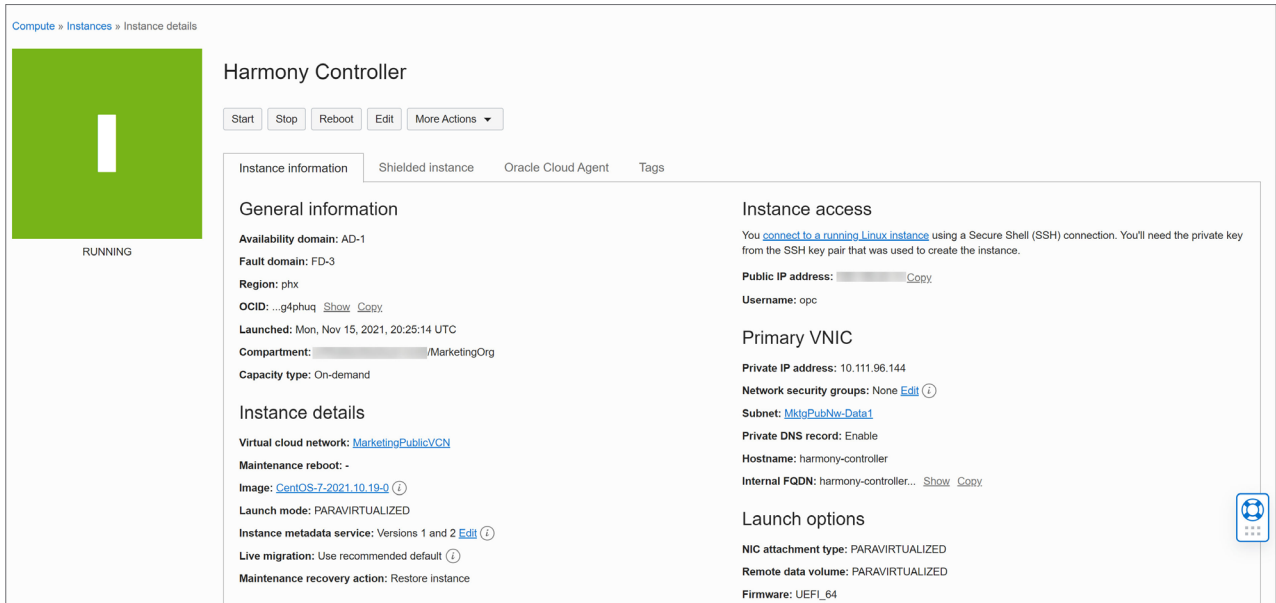


Figure 9: Example configuration of Harmony Controller instance

- 4. Open ports for the Harmony Controller communications:
  - a. Select the subnet from the Primary VNIC section (public subnet). This will open the VCN subnet details panel.

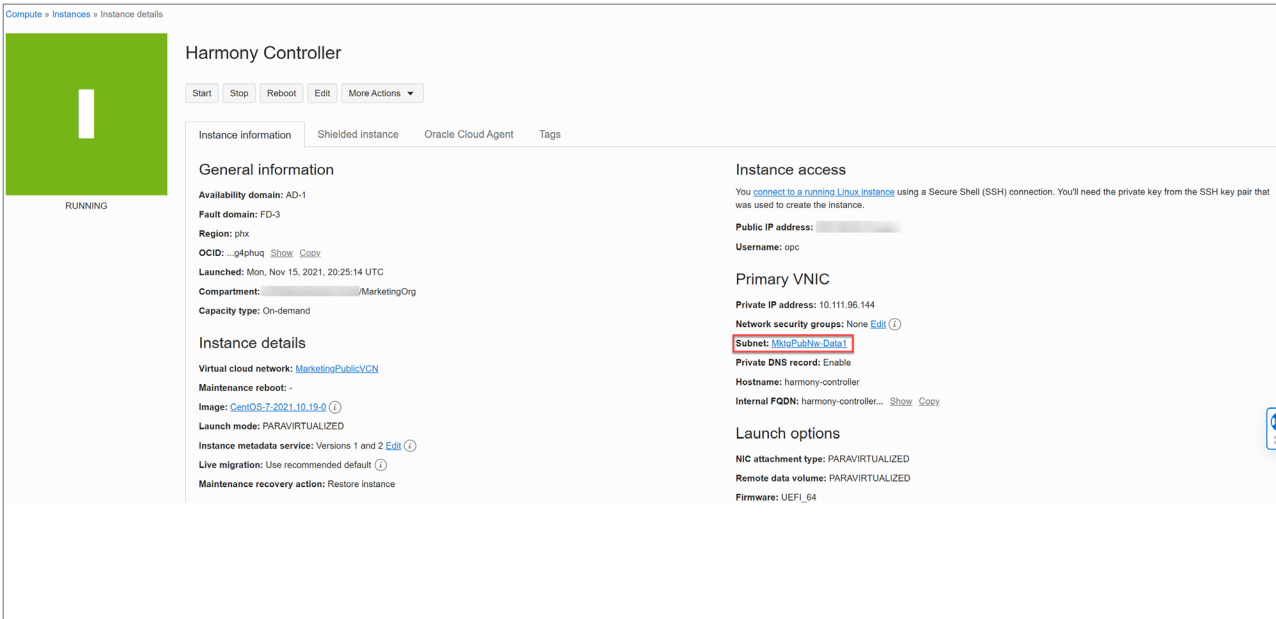


Figure 10: Harmony Controller instance configuration

- b. Click on the default security list and the ingress rule set will open.

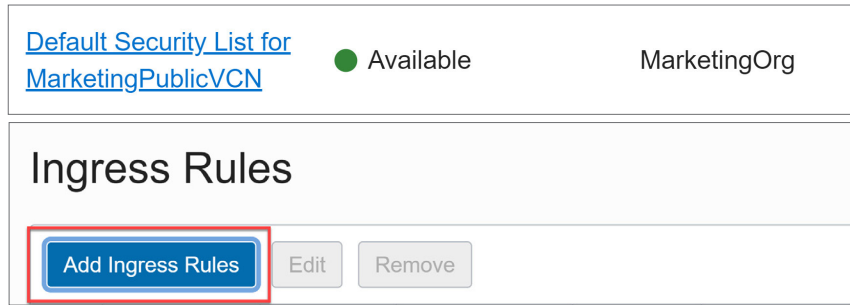


Figure 11: Ingress rules configuration

- c. To allow Thunder devices to connect to the Harmony Controller, the following TCP ports need to be allowed. Click on “add ingress rules” and add rules for ports  
TCP destination ports - 443,2222,5671,9093,9094,25500 from “all” source port range  
UDP destination port - 123 from “all” source port range

**Note:** This example uses source CIDR as 0.0.0.0/0, but you can use Thunder IP range

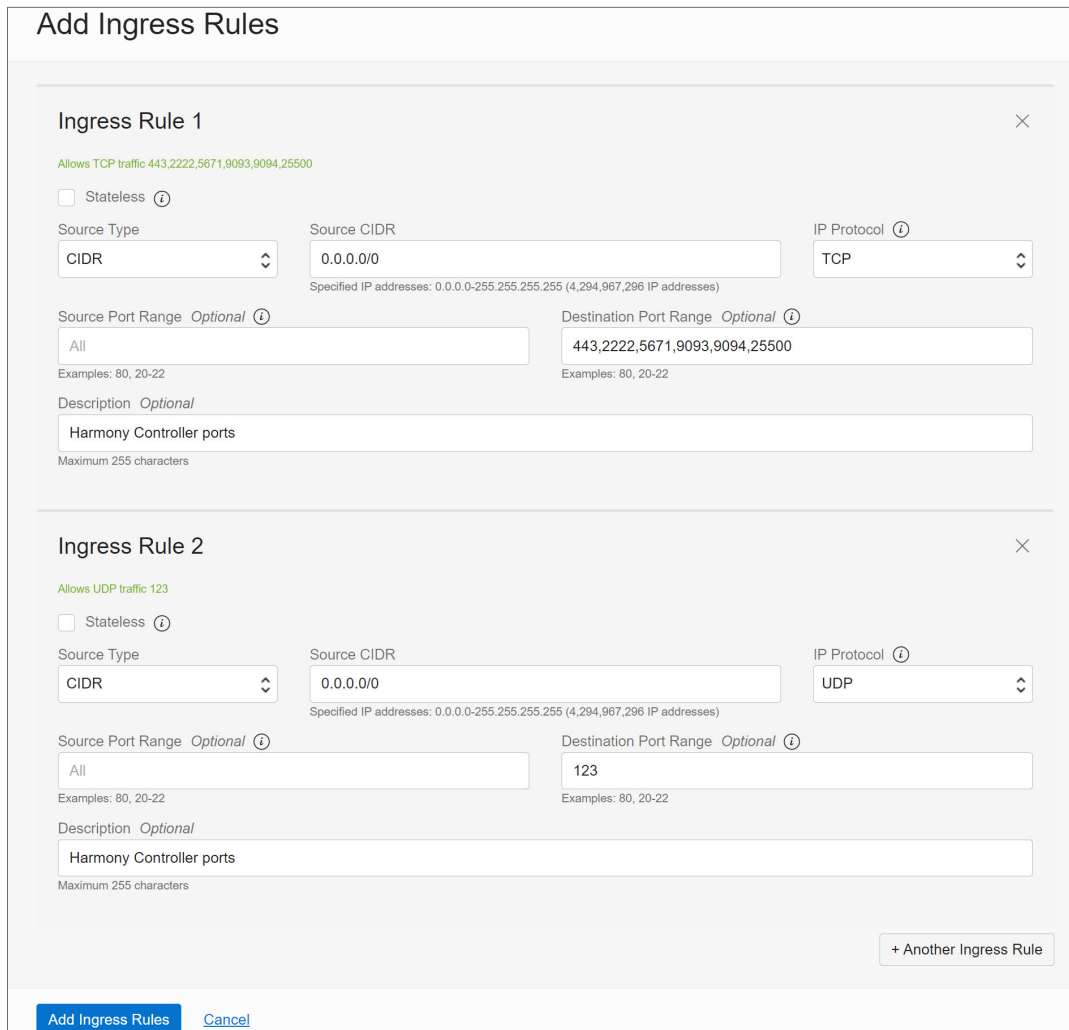


Figure 12: Example of Ingress rules configuration

Click on “add ingress rules” to save changes. With this, Harmony Controller is ready to install.



## Install Harmony Controller Instance

1. Log in to the instance CLI :

SSH into the instance using the public IP address from the summary screen and use the private key ssh auth login. The default username is "opc." Once key verification is successful, you have access into the Centos instance.

Refer to the [documentation](#) for instructions on how to login to an OCI instance

Below is the log in prompt through putty.

```
login as: opc
Authenticating with public key "imported-openssh-key" from agent
[opc@harmony-controller ~]$
```

2. Storage Setup:

- a. Run command 'lsblk -a'

```
[opc@harmony-controller ~]$ lsblk -a
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda          8:0    0  1.1T  0 disk
├─sda1       8:1    0   512M  0 part /boot/efi
├─sda2       8:2    0     8G  0 part [SWAP]
└─sda3       8:3    0  38.1G  0 part /
```

It displays the storage allocation within the instance. The OS is typically installed on the disk's '/boot' partition and Harmony Controller can be installed in '/' partition. Notice that the boot volume has not extended the available storage to the root directory partition "/". Use command 'growpart' to extend the space to the partition for use by Harmony Controller.

- b. Map disk space to the root partition

Run the following commands in the ssh terminal to install the "growpart" utility

- 1) `sudo yum -y install cloud-utils-growpart gdisk` ---> Will install utility
- 2) `sudo growpart /dev/sda 3` ---> It will extend the third partition ("/" root - sda3) of the disk to fill available free space on disk so that OS will know about the addition of extra space and make it available for use
- 3) `sudo reboot` ---> Reboots the instance
- 4) `lsblk` ---> Results will now display the added disk space to the sda3 partition.

```
[opc@harmony-controller ~]$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda          8:0    0  1.1T  0 disk
├─sda1       8:1    0   512M  0 part /boot/efi
├─sda2       8:2    0     8G  0 part [SWAP]
└─sda3       8:3    0  1.1T  0 part / ---> additional storage mapped from sda
```

### 3. Load Harmony Controller installation files

- a. Change directory to root by running the command below

```
cd /
```

- b. Create a new directory and change directory by running the commands below

```
sudo su
mkdir hc5.3
cd /hc5.3
```

- c. Get the 5.3-p1 Harmony Controller installation files by the running the commands below

```
wget https://harmony-controller.s3.us-east-2.amazonaws.com/HC-5.3.0-P1/HC-5.3.0-P1-envsetup-GA.tar.gz
wget https://harmony-controller.s3.us-east-2.amazonaws.com/HC-5.3.0-P1/HC-5.3.0-P1-images-GA.tar.gz
wget https://harmony-controller.s3.us-east-2.amazonaws.com/HC-5.3.0-P1/HC-5.3.0-P1-install-GA.tar.gz
```

- d. Once successfully downloaded, unzip the tar file and change directory to `a10-harmony-controller-HC-5.3.0-P1` by running the commands below

```
tar -zxvf HC-5.3.0-P1-install-GA.tar.gz
cd a10-harmony-controller-HC-5.3.0-P1/
```

### 4. Enable IP forwarding by running the commands below

Insert the following line using vi editor 'i', will put you in insert mode.

```
vi /etc/sysctl.conf
net.ipv4.ip_forward = 1 -> Add this line
wq -> Save and exit the file
```

```
[root@harmony-controller a10-harmony-controller-HC-5.3.0-P1]# vi /etc/sysctl.conf
# sysctl settings are defined through files in
# /usr/lib/sysctl.d/, /run/sysctl.d/, and /etc/sysctl.d/.
#
# Vendors settings live in /usr/lib/sysctl.d/.
# To override a whole file, create a new file with the same in
# /etc/sysctl.d/ and put new settings there. To override
# only specific settings, add a file with a lexically later
# name in /etc/sysctl.d/ and put new settings there.
#
# For more information, see sysctl.conf(5) and sysctl.d(5).
net.ipv4.ip_forward = 1
```

5. Set selinux to permissive state

- a. Check the current status by running the command

```
[root@harmony-controller a10-harmony-controller-HC-5.3.0-P1]# sestatus
SELinux status:                enabled
SELinuxfs mount:              /sys/fs/selinux
SELinux root directory:       /etc/selinux
Loaded policy name:            targeted
Current mode:                enforcing
Mode from config file:      enforcing
Policy MLS status:             enabled
Policy deny_unknown status:    allowed
```

- b. Current mode is set to “enforcing.” Change the mode to “permissive”

In this guide we use vi editor. ‘i’ to enter insert mode, edit selinux config file as follows.

```
[root@harmony-controller a10-harmony-controller-HC-5.3.0-P1]# vi /etc/selinux/config

# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=permissive
# SELINUXTYPE= can take one of three values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Press <esc> and enter wq to write/save and exit once done

- c. Reboot the system by running the command below  
reboot

- d. Re-check the status to ensure the parameter has changed

```
[root@harmony-controller opc]# sestatus
SELinux status:                enabled
SELinuxfs mount:              /sys/fs/selinux
SELinux root directory:      /etc/selinux
Loaded policy name:          targeted
Current mode:                permissive
Mode from config file:      permissive
Policy MLS status:           enabled
Policy deny_unknown status:   allowed
Max kernel policy version:    31
```

- 6. Check if all prerequisites have been met to install Harmony controller. If any item has an 'error' note, fix if needed before proceeding with install. All should complete with a 'done' status and validation complete.

Run the command `./pre-install-upgrade-validations.sh`

```
[root@harmony-controller a10-harmony-controller-HC-5.3.0-P1]# ./pre-install-upgrade-
validations.sh
Tue Nov 16 02:20:47 GMT 2021: Checking if user is root or has sudo permissions...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if /tmp has execute permissions...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if hostname contains dot (.) character...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if ipv6 is enabled in the kernel...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if default gateway is configured...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if IP Forwarding is enabled...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if SELinux mode is set to Permissive...
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking if Harmony Controller is running in an offline mode...
Tue Nov 16 02:20:47 GMT 2021: [Info] Harmony Controller is running in an online mode. Time will
be synced with NTP servers as part of installation/upgrade.
Tue Nov 16 02:20:47 GMT 2021: ...done
Tue Nov 16 02:20:47 GMT 2021: Checking root partition disk-space...
Tue Nov 16 02:20:47 GMT 2021: Validation complete
```

- 7. Install the Harmony Controller by running the command below needed for OCI cloud install.

```
sudo ./Install --iscloudsetup Y
```

It starts Harmony Controller installation script with cloud setup script parameters.

8. Answer the questions presented as part of installation process.
  - a. Enter number of nodes being used in this installation: 1
  - b. What IP version will this controller use ([IPv4]/IPv6/Dual): IPv4
  - c. Enter the IPv4 address for node0: <Enter Public IP Address>
  - d. Do you want to install Harmony Controller on [/] partition ([y]/n)?: y
  - e. Is this [/] partition mounted on a high-speed persistent disk/storage volume like SSD (y/[n])?: n
  - f. Enter the value of internal subnet
  - g. Create operator console user admin and controller scope user super-admin passwords
  - h. firewalld is enabled or active and it will be disabled to continue with installation.  
Proceed ? ([y]/n): y

Installation may take about 40 minutes. Once the installation is complete, it will return the URLs for logging into the Harmony Controller (Operator Console and Harmony Controller portal). Passwords were set during the installation script. See below for a sample output.

```

Preparing for harmony controller installation ..... [Done]
Step 2 of 4: Setting Up Infrastructure Components..... [Done]
Step 3 of 4: Setting Up Harmony Controller
Components.....
..... [Done]
Step 4 of 4: Setting Up Add-Ons... [Done]

*****
Congratulations! A10 Harmony Controller is deployed successfully!
*****

1. Access Operator Console at https://<IP>/oconsole and setup NTP Server, SMTP Server, FQDN and
SSL certificate for Harmony Portal. Operator username is admin and password was created by you
during the installation.

2. Access Harmony Portal at https://<IP> and setup provider, tenants and other users. Username
is super-admin and password was provided by you during the installation.

3. Backup of analytics data is NOT enabled by default. You can enable analytics backup by
executing the shell script: /home/opc/hc5.3/a10-harmony-controller-HC-5.3.0-P1/utilities/
metrics_backup_setup.sh

[root@harmony-controller a10-harmony-controller-HC-5.3.0-P1]#

```

## Set Up Harmony Controller

The Harmony Controller operator console allows users to configure, debug, and monitor the A10 Harmony Controller system services quickly and efficiently. It also provides APIs to perform the configuration. To get detailed information of the services running.

1. Log in to the Harmony Controller operator console : `https://<IPAddress>/oconsole`
2. Expand the configuration tab and configure the settings below
  - a. Server certificate for enabling HTTPS web access on Harmony Controller UI
  - b. NTP server
  - c. Email server for configuring welcome, activation and password reset emails to new users.

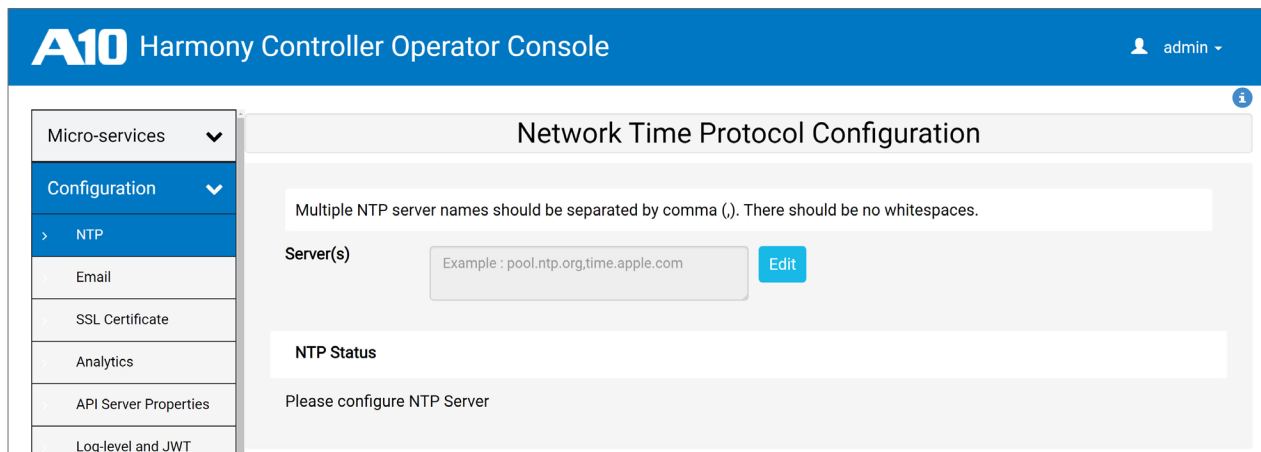


Figure 13: Harmony Controller operator console configuration

For instructions, refer to this [documentation](#).

## Onboard Thunder to Harmony Controller

Before registration of Thunder devices on to Harmony Controller, make sure to set up

1. NTP on both Thunder and Harmony Controller to synchronize time
2. Network reachability between Harmony Controller and Thunder
3. Enable Harmony Apps as required. For detailed instructions on these steps, refer to this [documentation](#).
4. Register the Thunder device from Harmony Controller: Once you log in to the Harmony Controller GUI <https://<IP>> pull down from the top menu and select 'root.' This is a default provider created by the system. Navigate to the infrastructure on the left panel.

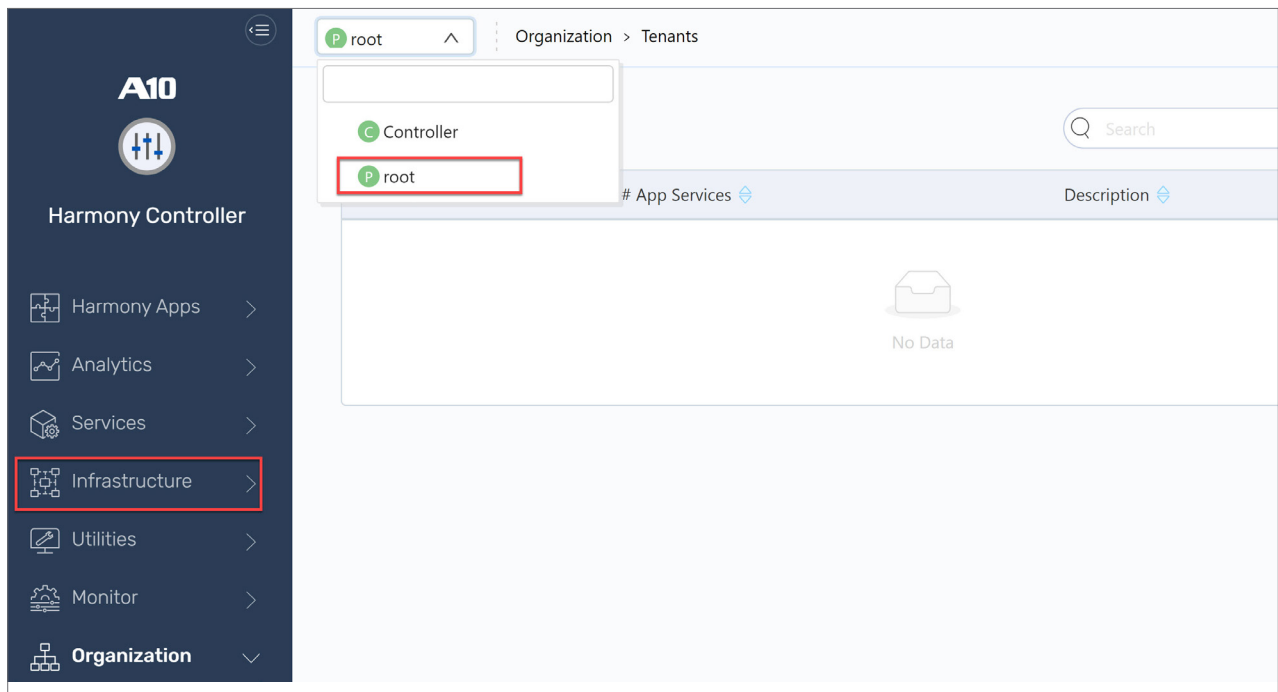


Figure 14: Harmony Controller portal

The infrastructure tab enables the management of physical and virtual Thunder devices. A cluster is a logical container of one or more Thunder devices for a service. In the infrastructure tab, you can

- a. Create cluster and add devices.
- b. Repeat step one if you have more Thunder devices in the same service
- c. Provision these resources to a tenant for the service deployment.

Refer to the documentation on how to add cluster, devices, and provision cluster.

5. (Optional) Register Thunder device to Harmony Controller: Suppose the Thunder device is not reachable from Harmony Controller via public IP (on management interface). In that case, you can register the Thunder device from its GUI or CLI by establishing a secure tunnel to Harmony Controller. Registering using GUI (use SaaS tunnel setting - supported from ACOS version 5.2.1-P3 onwards):
  - a. Log in to the Thunder device (ACOS) GUI
  - b. Navigate to system > admin > controller tab
  - c. Configure the Harmony Controller settings as indicated below

The screenshot shows the 'Harmony Controller Settings' configuration page in the Thunder ADC GUI. The page is titled 'System / Admin / Controller'. The settings are as follows:

- Status:
- Host:  (highlighted with a red box)
- Port:
- Tunnel:
  - Use Management Port
  - Use SaaS Tunnel
- Provider Name:
- Username:
- Password:
- IP To Access Thunder From Harmony:
- Thunder Location: Region:
- Thunder Location: Zone:

A green 'Register Device' button is located at the bottom right of the form.

Figure 15: Thunder ADC-Harmony Controller registration configuration

- d. Click register device
6. Registering through CLI:
  - a. Run the following commands on Thunder device CLI on config mode to register.

```
Thunder(config)#harmony-controller profile
Thunder(config-profile)#host <Hostname/IP of Harmony> port 443 use-mgmt-port
Thunder(config-profile)#provider root
Thunder(config-profile)#user-name provider-admin
Thunder(config-profile)#cluster-name <Cluster name created on Harmony>
Thunder(config-profile)#password <super-admin user password>
Thunder(config-profile)#region <Country name>
Thunder(config-profile)#availability-zone <City name>
Thunder(config-profile)#thunder-mgmt-ip <Thunder device management IP>
Thunder(config-profile)#tunnel enable
Thunder(config-profile)#register
```

For detailed instructions, refer to the [documentation](#).

7. Once you provision the cluster to tenants, onboarding is complete. Shortly after, you will see Harmony Controller starts populating traffic visibility and service analytics on the Harmony Apps.



## Viewing Analytics and Insights

Gain visibility and actionable insights into the application traffic. Harmony apps help analyze collected data to detect anomalous trends and simplify troubleshooting via access to contextualized data and logs. Operators can get alerts based on various metrics and customizable fields via email or webhook URL for automated and rapid action. Example below shows the ADC app.

1. Log in to Harmony Controller GUI
2. Expand Harmony apps and click on Thunder ADC

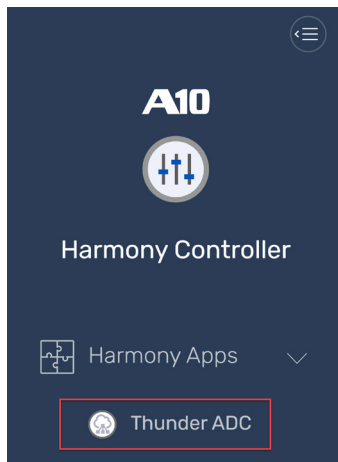


Figure 16: Harmony Controller GUI

3. Select the tenant from the drop-down menu and click "Proceed." The ADC app dashboard screen opens on a new tab.

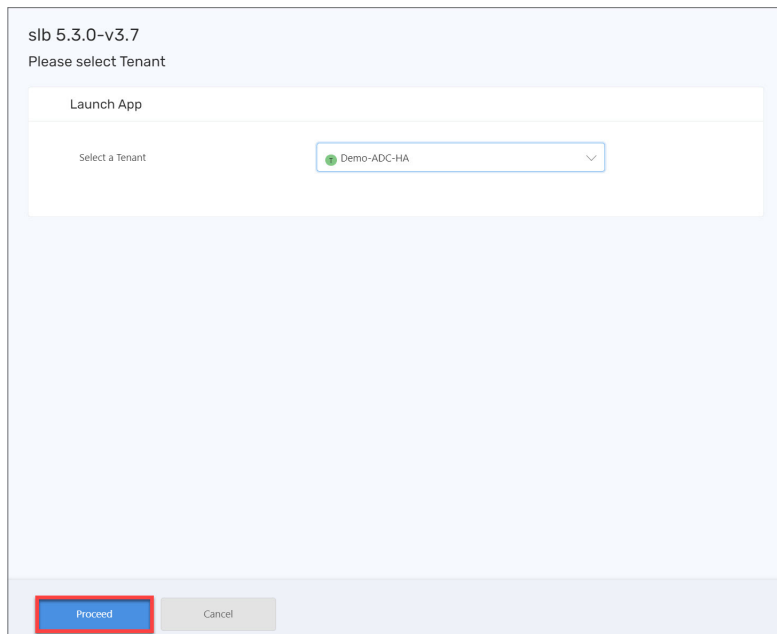


Figure 17: Launching the Thunder ADC app

- The dashboard displays real-time ADC traffic pattern statistics and insights on categories such as the number of requests, request locations, request methods, response codes, deployment locations, WAF events, average end-to-end latency.

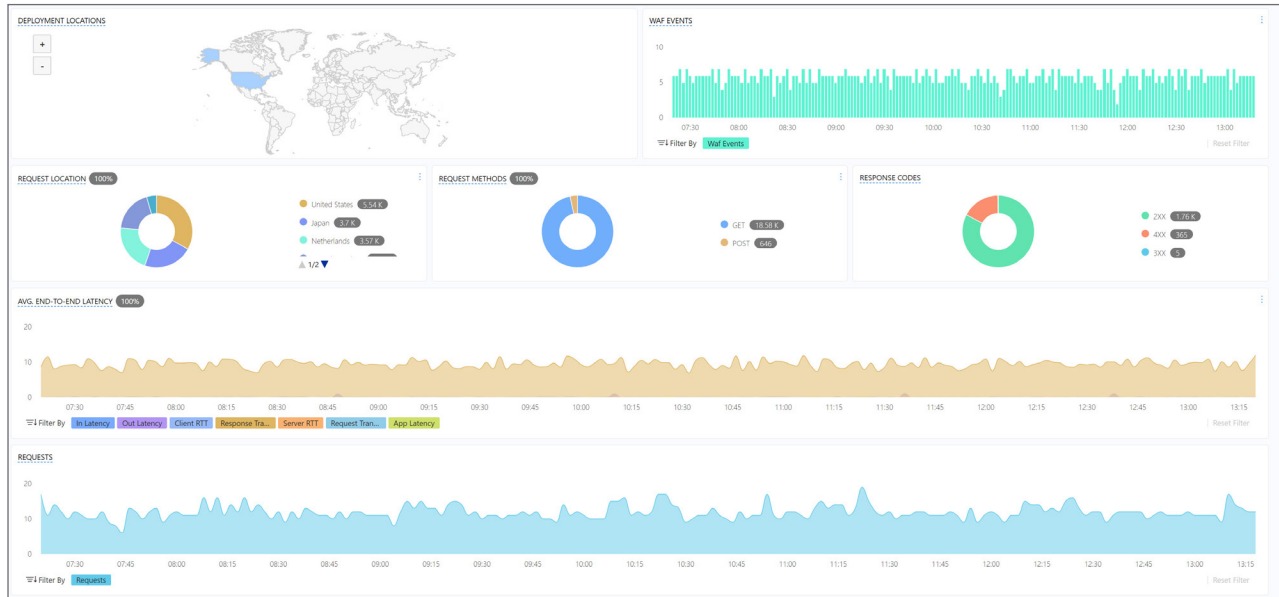


Figure 18: Harmony traffic visibility and analytics

- To gain latency insights on specific sessions, click on HTTP on the bottom left side of the screen. It provides detailed ADC transaction logs with client information (IP, location, device, etc.), ADC service information (e.g., VIP, service port, protocol), and transaction details, including request and response details. Response time distribution representing session latency (RTT) in various phases of request and response transaction assists you in pinpointing possible issues/bottlenecks in both network and application layers.

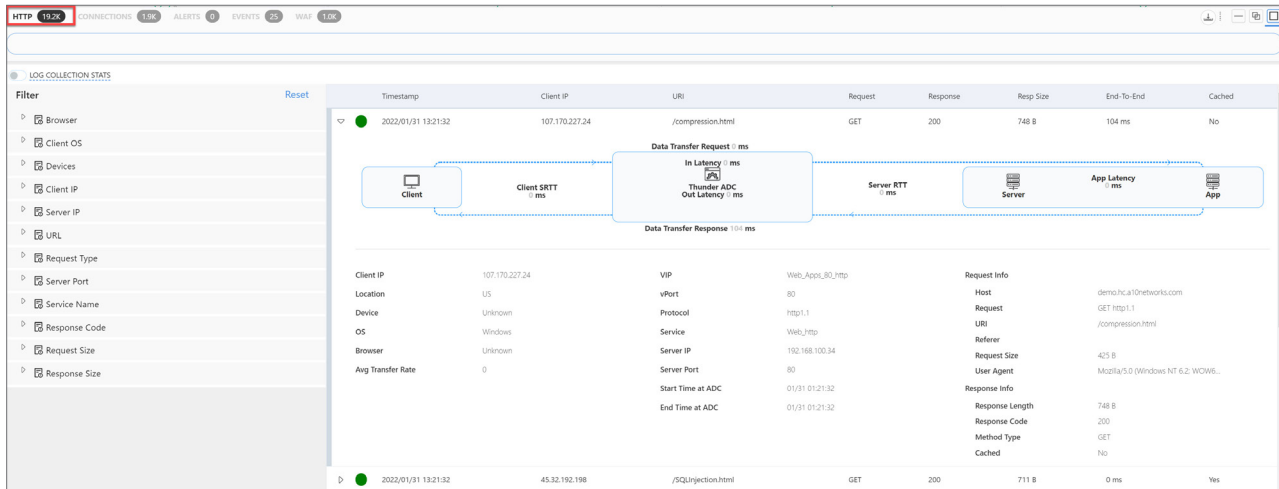


Figure 19: Session log drill-down

## Summary

This document describes how to deploy Harmony Controller in Oracle Cloud Infrastructure (OCI). A10 Harmony Controller supports easy and flexible deployment options, helps IT operators perform centralized agile management, automation, and application traffic data analytics for A10 secure application services deployed over the various underlying infrastructure.

Oracle Cloud Infrastructure is a public cloud service designed for enterprises, offering powerful compute and networking performance and a comprehensive portfolio of infrastructure and platforms that enable users to run mission-critical business applications in a highly available hosted environment. Deploying Harmony Controller on OCI provides the following benefits.

- Simplified centralized management for A10 Networks' Thunder portfolio including ADC, SSLi, CFW and CGN products.
- Increase operational efficiency—reduce the need for IT administrators to setup and configure per-application infrastructure.
- Get real-time analytics and actionable insights into application traffic—simplify troubleshooting via access to contextualized data and logs and quickly pinpoint problem areas.

For more information about A10 Harmony Controller, please refer to

[A10networks.com/products/harmony-controller/](https://a10networks.com/products/harmony-controller/)

[A10networks.com/wp-content/uploads/A10-DS-Harmony-Controller.pdf](https://a10networks.com/wp-content/uploads/A10-DS-Harmony-Controller.pdf)

<http://docs.hc.A10networks.com/>

## Appendix – Harmony Controller Trial

Harmony Controller free trial is offered for both SaaS and self-managed deployments. The trial license allows you to manage A10 Thunder devices in both hardware and virtual form factors running A10 application service capabilities, including Application Delivery Controller (ADC), Convergent Firewall (CFW), Carrier Grade Networking (CGN), and SSL Insight (SSLi). The trial license is valid for 30 days. To sign up for the free trial and experience the benefits, click on the link below and submit your details.

[A10networks.com/products/harmony-trial/](https://a10networks.com/products/harmony-trial/)

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