

# Roving Edge as Data Transfer Gateway

Version 3.0

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Public

## Purpose Statement

The purpose of the Roving Edge as Data Transfer Gateway is to provide a solution for addressing data migration from on-premises locations to Oracle Cloud Infrastructure (OCI) object storage. To help customers migrate their data to OCI. This solution ensures seamless connectivity, data security, and high-performance storage for organizations operating in both connected and disconnected environments.

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## Introduction

Roving Edge as Data Transfer Gateway delivers a seamless, efficient solution for managing data movement, synchronization, and storage across edge locations, on-premises systems, and Oracle Cloud Infrastructure (OCI). It facilitates data transfers of up to 45TB per Roving Edge device between edge environments, on-premises sites, and OCI Object Storage in environments with limited network bandwidth. With advanced features such as secure data synchronization and robust protocol support, including NFS v4.1, the gateway ensures reliable connectivity and strong data security.

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## Architecture Overview

This architecture enables efficient data transfer from on-premises environments which do not have access to OCI Fast Connect links or high bandwidth. On this use case, the data is securely stored on the Oracle Linux instance running on the Roving Edge Device and physically shipped to the nearest Oracle Solution Center for upload to OCI Object Storage bucket. Listed below are the components of the solution:

- **Oracle Linux data transfer gateway instance:** This instance act as a data transfer gateway (or Data Mule) instance, enabling seamless data movement between edge locations, on-premises environments to OCI Object Storage, especially in areas lacking high-speed connectivity options like Oracle Fast Connect. This instance is powered by a customized Oracle Linux operating system.
  - **Enterprise-Grade Stability:** Oracle Linux is a trusted platform for mission-critical workloads, offering high reliability and long-term support.
  - **Optimized Performance:** With kernel enhancements and optimizations, Oracle Linux delivers high performance for edge use cases, including data processing and storage.
  - **Comprehensive Security:** Oracle Linux integrates advanced security features, such as Security-Enhanced Linux (SELinux) policies and automated vulnerability fixes, to safeguard systems.
  - **Compatibility with OCI:** It is designed to seamlessly integrate with Oracle Cloud Infrastructure, enabling consistent operations between edge and cloud environments.
- **OCI Config Authentication** It is the authentication method used by the **Oracle Cloud Infrastructure (OCI) CLI, SDKs, and APIs** to securely interact with OCI resources. It is based on a configuration file, located at `~/.oci/config`, which contains credentials and connection details for accessing OCI services.
- **OCI Sync Tool:** The OCI Sync is a tool part of the Oracle Cloud Infrastructure (OCI) APIs that enables automatic synchronization of data between a local storage solution (e.g., the Roving Edge device) and OCI Object Storage. It is designed to ensure seamless data updates and consistency across environments, particularly when intermittent or limited connectivity is an issue. Key characteristics of the OCI Sync tool include:
  - **Automatic Synchronization:** It identifies changes or new data and syncs them with OCI Object Storage once connectivity is re-established.
  - **Data Transfer Efficiency:** The tool optimizes bandwidth usage, ensuring only necessary data is transferred (e.g., incremental updates).
  - **Resilience for Edge Use Cases:** Especially useful in edge environments with unpredictable or slow network connections, ensuring data is kept up to date with the cloud.
  - **Security:** Ensures secure data transfers by leveraging OCI's authentication protocols, such as API keys or IAM policies.
- **NFS v4.1 Protocol Support:** Facilitates efficient file sharing and system mounting with NFS v4.1 support for on-premises environments. Oracle Linux data transfer instance includes support for the **NFS v4.1 protocol**, enabling efficient file sharing and system mounting across on-premises environments. This advanced protocol ensures that data is easily accessible and manageable in distributed systems. Key benefits of NFS v4.1 include:
  - **Improved Performance:** NFS v4.1 introduces features which distributes file operations across multiple servers, enhancing throughput and scalability for high-demand workloads.
  - **Simplified Management:** Its unified protocol architecture eliminates the need for multiple versions, streamlining deployment and administration across environments.

- **Support for Stateful Protocols:** NFS v4.1 maintains stateful sessions, enabling better error recovery and session consistency.
- **Encryption:** Ensures enterprise-grade encryption is applied by default to secure data on the Roving Edge device.
- **Oracle Solution Center:** Oracle Solution Center (OSC) is a flagship program with state-of-the-art systems, technology and customer-experience sites around the world. At the OSC, customers design, architect, and validate their specific solutions with Oracle Cloud, Cloud@Customer, Hybrid Cloud, Multi-Cloud, and On Premises systems in a secure, scalable, and interoperable environment. OSC partners with ISVs, IHVs, MSPs, NSPs, SIs, VARs, and VADs to meet customers solution needs. <https://www.oracle.com/corporate/osc/>
- **Storage Capacity:** Handles up to 45TB of local NVME storage for data transfers with options for parallelism and incremental synchronization

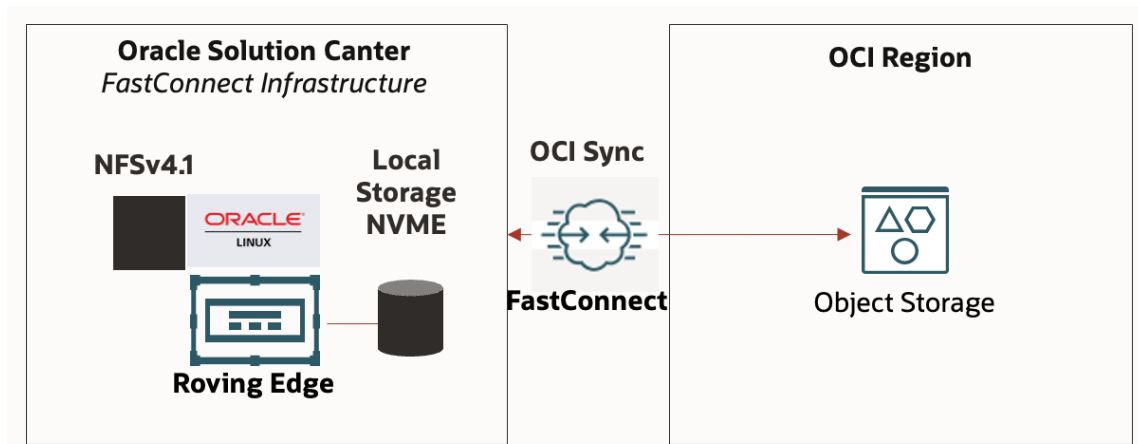


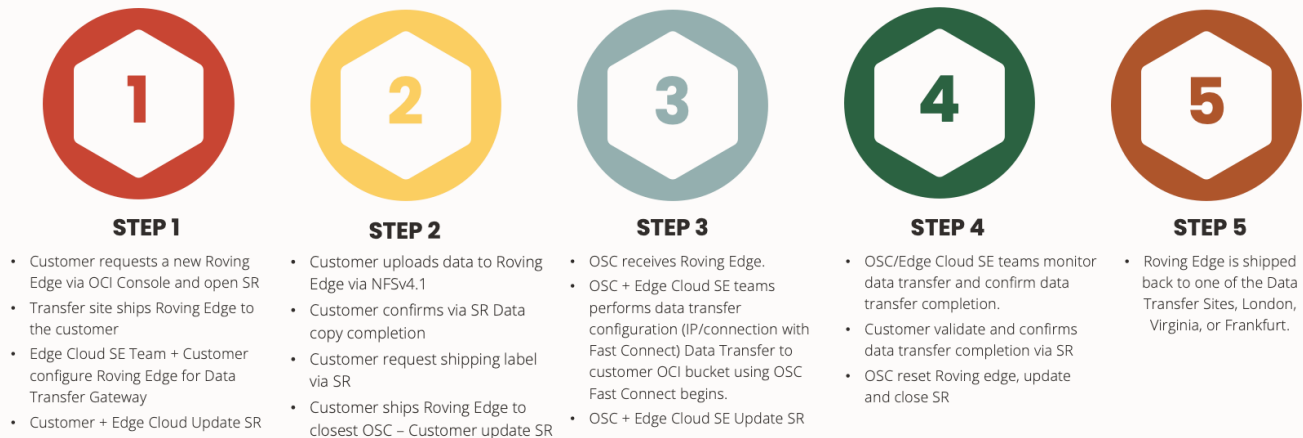
Figure 1. Architecture diagram of the Roving Edge as Data Transfer Gateway for on-premises locations without Oracle Fast Connect or low network bandwidth

## Requesting Roving Edge as Data Transfer Gateway

Listed below are the steps needed to request Roving Edge devices to be utilized as data transfer gateway and the architecture diagram of the Roving Edge as Data Transfer Gateway for on-premises locations without Oracle Fast Connect or low network bandwidth.

# Commercial Customers w/o Fast Connect – OC1 Process

Roving Edge as Data Transfer Gateway



**Figure 2. Steps needed to request Roving Edge devices to be utilized as data transfer gateway**

**Step 1. Customers request a new Roving Edge Device on Oracle Cloud Infrastructure OCI console and open a new Service Request. For these steps, refer to the link listed below or contact your sales representative.**

- For Roving Edge Devices, see [Creating a Roving Edge Infrastructure Device Node](#).
- For Roving Edge Ultra devices, see [Creating a Roving Edge Ultra Node](#).
- After you have requested your devices, you must establish the certificate authority (CA). See [Establishing the Certificate Authority](#) for more information.

**NOTE:** You're required to have an Oracle Cloud Infrastructure account to request Roving Edge Infrastructure devices. The account must be a UCM contract or Funded Allocation Model (FAM). It can't be Pay as You Go (PAYG) or Free Tier. If you currently have one of these unsupported Oracle Cloud Infrastructure accounts, contact your Account Team for instructions on how to upgrade to a supported Oracle Cloud Infrastructure account. You must also have a tenancy in an Oracle Cloud Infrastructure Realm and Region where Roving Edge Infrastructure is available. To learn how to request your Roving Edge Infrastructure devices in Oracle Cloud Infrastructure, refer to the following link: [Requesting Devices](#). Refer to the Refer to [Roving Edge Infrastructure](#) and [Roving Edge device data sheet](#) for additional information regarding Roving Edge platform, contract requirements, and pricing.

- Open a Service Request for the new Roving Edge device to be utilized as Data Transfer Gateway. Refer to: [How to create a Technical Service Request \(SR\) in My Oracle Support \(Doc ID 1321379.1\)](#) **NOTE:** You must have purchased support, have an active cloud subscription, or have an active cloud trial license to access My Oracle Support.
- Oracle transfer sites will prepare and ships the Roving Edge to the customer.
- The device will be shipped to the customer address specified in the new request.
- Once customer receives the new Roving Edge device, Oracle Edge Cloud Solutions Engineering team along with customer will setup the Roving Edge device as data transfer gateway. **NOTE:** Oracle Linux data transfer gateway image for Roving Edge will be provided by Oracle Edge Cloud Engineering Solutions team via service request.
- Customer updates the service request with the latest status.

## Step 2. Customer uploads data to Oracle Linux data transfer gateway instance:

- On-premises systems mount the NFSv4.1 share provided by the Oracle Linux data gateway instance deployed on Roving Edge Device.

**NOTE:** NFSv4.1 share is already pre-configured with all tunable options for performance. **/datagateway** is the NFSv4.1 share already available to be mounted by the NFSv4.1 clients. Below is the recommended NFS mount options for best performance to be utilized on the NFSv4.1 on-premises clients.

```
mount -t nfs4 -o
rsize=1048576,wsize=1048576,noatime,nodiratime,actimeo=3600,lookupcach
e=all,timeo=600,retrans=10,vers=4.1,tcp <Oracle Linux Data Gateway
instance IP address:/datagateway /tmp
```

- NFSv4.1 clients upload the data to the NFSv4.1 server running on the Oracle Linux data gateway instance deployed on Roving Edge Device.
- Customer confirms via service request data copy completion
- Customer request shipping label via service request
- Customer ships Roving Edge to the closest Oracle Solution Center (OSC)- The Roving Edge Device is physically shipped to the closest Oracle Solution Center for data upload to OCI using Oracle Fast Connect. Oracle Solution Center acts as the intermediary point for uploading data to the Oracle Cloud Infrastructure.
- Customer updates service request

## Step 3. Data transfer process to OCI object Storage using Oracle FastConnect infrastructure

- Oracle Solution Center (OSC) receives Roving Edge
- At the Oracle Solution Center, the device is connected to the network, and the data will be uploaded to OCI Object Storage using OCI Sync tool.
- Oracle Solution Center along with Oracle Edge Cloud Solutions Engineering teams perform data transfer configuration (IP/connection with FastConnect)
- Oracle Solution Center along with Oracle Edge Cloud Solutions Engineering teams update service request

## Step 4. Data transfer monitoring

- Oracle Solution Center along with Oracle Edge Cloud Solutions Engineering teams monitor data transfer and confirm data transfer completion
- The customer verifies and confirms the completion of the data transfer and authorizes the factory reset of the Roving Edge device through a service request  
**Note:** Once customer approval is received, the Oracle Linux data transfer gateway instance will be terminated, all associated block devices will be deleted, and the Roving Edge device will undergo a factory reset.
- Oracle Solution Center team factory reset the Roving edge device, update and close the service request

## Step 5. Roving Edge is shipped back to one of the Oracle's Data Transfer Sites, in U.S (Virginia) or Europe (London or Frankfurt)



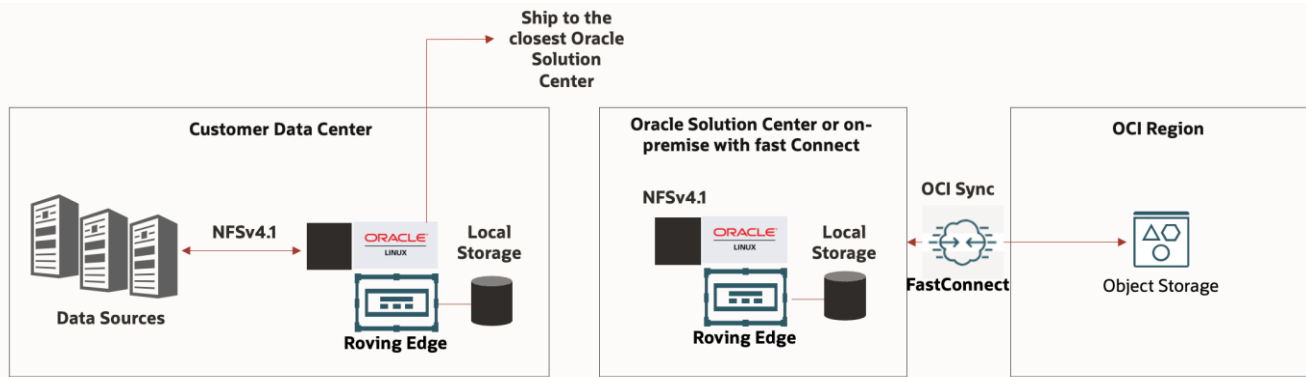


Figure 3. Architecture diagram of the Roving Edge as Data Transfer Gateway for on-premises locations without Oracle Fast Connect or low network bandwidth

## Configuring Roving Edge as Data Transfer Gateway

**Step 1.** Oracle Edge Cloud Solutions Engineering team will provide the customized Oracle Linux image for to be utilized as Data Transfer Gateway. This template already has all packages installed and tunable options to provide best performance for data sync between on-prem and OCI.

**Step 2.** Once deployed the Oracle Linux Data Transfer gateway instance, access via SSH and key utilized during the instance deployment. Ex: `ssh -i <your-key> opc@ip-address-of-the-instance`.

**IMPORTANT:** Customer is required to change the password for the Oracle Linux transfer gateway instance. Oracle personnel will not have access to the customer’s data or the Oracle Linux transfer gateway instance containing the customer’s data. If any issues arise during the data upload to OCI or troubleshooting is required, access to the Oracle Linux transfer gateway instance for troubleshooting must be authorized by the customer through a Service Request. This ensures collaboration between the customer and members of the Edge Cloud Engineering Solutions team or the Oracle Solution Center for resolving any issues with the customer.

**Step 3.** Create new block storage volumes on Roving Edge.

- **Log in to the Roving Edge Console:**
  - Navigate to the **Block Volumes** section.
  - Click **Create Block Volume**.
  - Specify:
    - **Name:** A descriptive name for the volume.
    - **Size:** Set the maximum size for the volume (up to **6TB**).
  - Select the **Compartment** where your resources reside.
  - Click **Create**.
- **Repeat** for additional block volumes as needed until you reach the storage capacity requested by the customer in the Service Request. Maximum of 45TB.
- Attach the Block Volumes to Oracle Linux Instance. Example below shows ten 6TB block storages attached to the Oracle Linux Data Transfer Gateway instance running on Roving Edge.

Attached Block Volumes

Block volumes provide high-performance network storage to support a broad range of I/O intensive workloads.

Name	State	Volume Type	Device Path	Type	Access	Size	Created
datagateway01	Attached	Block Volume	/dev/oracleoci/oracleovb	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:42:52 UTC
datagateway02	Attached	Block Volume	/dev/oracleoci/oracleovc	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:02 UTC
datagateway03	Attached	Block Volume	/dev/oracleoci/oracleovd	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:10 UTC
datagateway04	Attached	Block Volume	/dev/oracleoci/oracleovde	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:17 UTC
datagateway05	Attached	Block Volume	/dev/oracleoci/oracleovf	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:25 UTC
datagateway06	Attached	Block Volume	/dev/oracleoci/oracleovg	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:33 UTC
datagateway07	Attached	Block Volume	/dev/oracleoci/oracleovh	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:41 UTC
datagateway08	Attached	Block Volume	/dev/oracleoci/oracleovi	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:43:49 UTC
datagateway09	Attached	Block Volume	/dev/oracleoci/oracleovj	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:44:04 UTC
datagateway10	Attached	Block Volume	/dev/oracleoci/oracleovk	paravirtualized	Read/Write	5.86 TB	Wed, Dec 18, 2024, 21:44:15 UTC

Figure 4. Attached block devices to the Oracle Linux Data Transfer Gateway – Roving Edge console

**Step 4.** Run **lsblk** to identify the new block devices configured on Roving Edge to be attached to the Oracle Linux Data Transfer Gateway instance.

```
[root@datagateway ~]# lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                                  8:0    0   50G  0 disk
├─sda1                               8:1    0  100M  0 part /boot/efi
├─sda2                               8:2    0    1G   0 part /boot
├─sda3                               8:3    0  45.5G  0 part
├─ocivolume-root                    252:0    0  35.5G  0 lvm /
└─ocivolume-oled                    252:1    0   10G   0 lvm /var/oled
sdb                                  8:16   0   5.9T  0 disk
sdc                                  8:32   0   5.9T  0 disk
sdd                                  8:48   0   5.9T  0 disk
sde                                  8:64   0   5.9T  0 disk
sdf                                  8:80   0   5.9T  0 disk
sdg                                  8:96   0   5.9T  0 disk
sdh                                  8:112  0   5.9T  0 disk
sdi                                  8:128  0   5.9T  0 disk
sdj                                  8:144  0   5.9T  0 disk
sdk                                  8:160  0   5.9T  0 disk
```

Figure 5. Attached block devices to the Oracle Linux Data Transfer Gateway instance

**Step 5.** As root user, run the **setup\_storage.sh** script to create a new volume group, logical volume, file system, update the instance’s fast, and mount the volume. Listed below is the output of the setup\_storage.sh script. The script is located on **/usr/local/bin/setup\_storage.sh**

```

[root@datagateway ~]# ./setup_storage.sh
Identifying block devices with size 5.9T...
Found devices: /dev/sdb
/dev/sdc
/dev/sdd
/dev/sde
/dev/sdf
/dev/sdg
/dev/sdh
/dev/sdi
/dev/sdj
/dev/sdk
Creating Volume Group: vol01...
  Physical volume "/dev/sdb" successfully created.
  Physical volume "/dev/sdc" successfully created.
  Physical volume "/dev/sdd" successfully created.
  Physical volume "/dev/sde" successfully created.
  Physical volume "/dev/sdf" successfully created.
  Physical volume "/dev/sdg" successfully created.
  Physical volume "/dev/sdh" successfully created.
  Physical volume "/dev/sdi" successfully created.
  Physical volume "/dev/sdj" successfully created.
  Physical volume "/dev/sdk" successfully created.
  Volume group "vol01" successfully created
Creating Logical Volume: lvol01 in Volume Group: vol01...
  Logical volume "lvol01" created.
Formatting Logical Volume: /dev/vol01/lvol01 as XFS...
meta-data=/dev/vol01/lvol01      isize=512    agcount=59, agsize=268435455 blks
        =                       sectsz=512   attr=2, projid32bit=1
        =                       crc=1          finobt=1, sparse=1, rmapbt=0
        =                       reflink=1     bigtime=0 inobtcount=0
data      =                       bsize=4096  blocks=15728629760, imaxpct=1
        =                       sunit=0      swidth=0 blks
naming    =version 2             bsize=4096  ascii-ci=0, ftype=1
log       =internal log        bsize=4096  blocks=521728, version=2
        =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime  =none                 extsz=4096  blocks=0, rtextents=0
Discarding blocks...Done.
Creating mount point: /datagateway...
Mounting /dev/vol01/lvol01 on /datagateway...
Updating /etc/fstab...
Logical Volume mounted and fstab updated successfully!
Script completed successfully.

```

**NOTE:** The new /datagateway will be mounted and available.

```

/dev/mapper/vol01-lvol01 xfs 59T 419G 59T 1% /datagateway

```

**Step 6.** Restart the NFS server: `systemctl restart nfs-server`

## Configuring OCI CLI Authentication for Data Transfer

**Step 1.** Run the Configuration Setup: Configure the CLI with your OCI credentials: **oci setup config**

**Step 2.** Enter the following details when prompted:

- **User OCID:** Available in the OCI Console under "Identity, My Profile, User Information"
- **Tenancy OCID:** Found in "Tenancy Details" in the OCI Console.
- **Region:** Choose your preferred OCI region, closest one to your location or to the OSC location which the Roving Edge device will be shipped to.
- **Private Key Path:** Path to a private key file (~/.oci/oci\_api\_key.pem). The setup script generates or uses an existing API signing key.
- **Directory for the keys:** Enter a directory for your keys to be created [/root/.oci] is the default directory.
- **Enter a name for your key** [oci\_api\_key] is the default name for the key.
  - **Enter N/A for the passphrase for your private key** ("N/A" for no passphrase): N/A

**Step 3.** Test the authentication with the customer OCI object storage bucket:

Verify that the CLI is configured correctly: **oci os bucket list --compartment-id <compartment\_OCID>**

**NOTE:** Replace <compartment\_OCID> with your compartment OCID provided by the customer via Service Request.

**Refer to:** [Configuring the CLI](#) for additional questions.

## Starting the Data Transfer to OCI Object Storage

**Step 1.** After successfully configuring the OCI CLI for authentication with Oracle Cloud Infrastructure (OCI), upload the data to the NFSv4.1 running on the customized Oracle Linux Instance deployed on Roving Edge Device. Below are the recommended NFS mount options for best performance to be utilized on the clients.

```
mount -t nfs4 -o
rsize=1048576,wsiz=1048576,noatime,nodiratime,actimeo=3600,lookupcache=all,timeo=600,retrans=10
,vers=4.1,tcp <Oracle Linux Data Gateway instance IP address>:/datagateway /tmp
```

**Step 2.** Edit the OCI oci\_sync.sh script and enter the correct bucket name on OCI provided by the customer via Service Request.

Ex: vi /usr/local/bin/oci\_sync.sh script and add the name of your OCI bucket:

```
BUCKET_NAME="my_bucket"
```

**Step 3.** Once the data is uploaded on the NFSv4.1 share, execute the following command to start the data transfer from the local NFSv4.1 (datagateway) share to the specified OCI Object Storage bucket:

**Step 4.** Enable the Data Transfer Gateway service to start on boot:

```
sudo systemctl enable oci-sync.service
```

**Step 5.** Start the Data Transfer Gateway service

```
sudo systemctl start oci-sync.service
```

**Step 6.** Check the service status:

```
sudo systemctl status oci-sync.service
```

**Step 7.** Monitor the data upload via [https://<ip address of the Oracle Linux Data Transfer instance:8443>/static/chart\\_viewer.html](https://<ip address of the Oracle Linux Data Transfer instance:8443>/static/chart_viewer.html) A screen similar to the listed below will be available. Or via /var/log/oci\_sync.log

## OCI Sync Chart

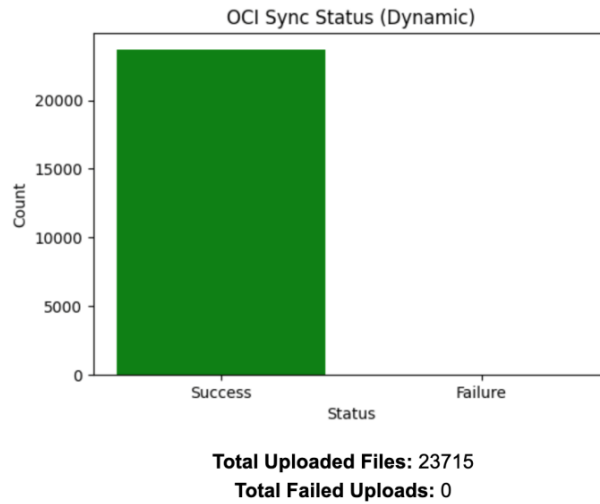


Figure 6: OCI Sync Chart allows for monitoring of the data upload

## Oracle Solution Center – Data Upload Process

Due to varying IP address and CIDR block configurations on customer Roving Edge devices, it is necessary to adjust the Roving Edge’s public pull IP address and management IPs to align with the Oracle Solution Center’s network CIDR when the device is returned. This ensures the Oracle Linux Data Transfer Gateway instance on the Roving Edge device can access the OCI bucket.

To update the public pull IP address, access the Roving Edge device console and follow the steps outlined below.

### Roving Edge device public and management IP addressing configuration

**Step 1.** Direct connect to the Roving Edge device using a laptop and the same IP address currently configured on the Roving Edge Device.

**Step 2.** Access the Roving Edge Device administration console via <https://IP address of the roving edge device:8015> with the IP address and credentials provided by the customer.

**NOTE:** Download the Root CA Certificate. Download the root CA certificate from the Roving Edge Device to your host. The host is the system you plan to use to manage services on the device. The root CA certificate acts as a credential to validate the identity of the host, and enables communication between the device and host.

Use one of the following procedures to download the root CA certificate from a Roving Edge Device to your host.

### Linux and Mac OS

- A. On your host, use the following command to download the root CA certificate from the Roving Ede device:

```
echo -n | openssl s_client -showcerts -connect <RED_ip_address>:8015 | sed -ne '/-BEGIN CERTIFICATE-/,/-END CERTIFICATE-/p' > redroot.pem
```

- B. Based on the OS you're using, perform one of the following actions:
  1. If you're using a Mac OS system on a Safari or Chrome browser, use the MacOS Keychain. Open the Finder and look for the redroot.pem file. Double-click the file and install the certificate.
  2. If you're using a Linux system on a Chrome browser, go to **Chrome Settings (or Preferences) > Security and Privacy > Security > Manage certificates > Authorities tab > Import > Browse** and choose the redroot.pem file in the location where you created it. Next, click **Open** and select the **Trust this certificate for identifying websites** option. The certificate appears in the list of certificate authorities.

**Microsoft Windows**

- A. Use the following command to download the root CA certificate from the Roving Edge device:
  - a. execute command - openssl.exe s\_client -connect <RED\_ip\_address>:8015 -showcerts
- B. Copy and paste the root CA certificate from the browser to Notepad and save the file with the filename redroot.cer.  
The certificate starts with a line containing: BEGIN CERTIFICATE and end with the line containing: END CERTIFICATE
- C. Using an Edge or a Chrome browser, perform these steps:
  - a. Add the certificate to the trust store by opening the File Explorer and double-clicking the redroot.cer file.
  - b. Install the certificate.
  - c. Place all certificates in the Trusted Root Certificate Authorities folder.

**Step 3.** Stop the Oracle Linux Data Transfer instance, then go to **Networking, Public IPs**, then select the three dots in front of the reserved public IP address pool and click **terminate**.

**Step 4.** Go to Compute, click on the instance name, under resources, click on attached VNICs. Click on the primary VNIC name.

Name	State	FQDN ⓘ
<a href="#">datagateway</a> (Primary VNIC)	● Attached	datagatowa... <a href="#">Show</a> <a href="#">Copy</a>

**Figure 7: Table of attached VNICs**

**Step 5.** On the IP addresses screen, click on the three dots as listed below, then click edit.

Private IP Address	Public IP Address	Fully Qualified Domain Name	Assigned
10.0.1.7 (Primary IP)	10.0.4.112 (Ephemeral)	datagatowa... <a href="#">Show</a> <a href="#">Copy</a>	Mon, Jan 20, 2025, 21:06:48 UTC

**Figure 8: Table of IP addresses**

**Step 6.** Select **No public IP** option, then click update. This will unassign the ephemeral public IP address previously setup on this instance, so the new IP address public pool range can be configured.

### Edit Private IP Address

Private IP Address *Read-only*

10.0.1.7

Must be from 10.0.1.2 to 10.0.1.31. Cannot be in current use.

Hostname *Optional*

datagateway

No spaces. Only letters, numbers, and hyphens. 63 characters max.

FQDN ⓘ: datagateway.sn1.os1.oraclevcn.com

Public IP Type

- No public IP  
If you want to unassign the existing public IP, select this option and save your changes. To assign a different public IP to this private IP, you can then edit this private IP again.
- Ephemeral public IP  
The public IP's lifetime is bound to the lifetime of the private IP. You can unassign it from this private IP but not reassign it elsewhere. [Learn more.](#)
- Reserved public IP  
Not allowed until you unassign the existing public IP.

ⓘ This will unassign ephemeral public IP 10.0.4.112 from private IP 10.0.1.7.

Figure 9: Edit screen for IP address

**Step 7.** Confirm the public IP address has been successfully removed from the Oracle Linux Data Transfer Gateway instance.

### IP Addresses

Private IP Address	Public IP Address
10.0.1.7 (Primary IP)	(Not Assigned)

Figure 10: Table of IP address

**Step 8.** Using a laptop, connect to the Roving Edge using the terminal emulation to identify the IP address/CIDR configuration.

**Step 9.** Next step, a new public IP address pool needs to be configured. Using your laptop, connect to the Roving Edge device serial port. It is recommended to work with the following terminal emulation software based on your host operating system:

**Microsoft Windows:** PuTTY

**Mac OS X:** ZOC or screen (for example: screen /dev/ttyusbserialX 115200)

**Linux:** PuTTY, Minicom, screen (for example: screen /dev/ttyUSBX 115200)

Based on your host OS, use the appropriate method to ensure that the pl2303 USB driver is installed. This USB driver is required for connectivity to the Roving Edge Device DB-9 serial or console port. The USB driver is preinstalled on Oracle Unbreakable Enterprise Kernel. The following command shows that the USB driver is present:



```
[root@localhost ~]# modprobe pl2303
[root@localhost ~]# lsmod | grep -i pl2303
pl2303 24576 0
[root@localhost ~]# modinfo -d pl2303
Prolific PL2303 USB to serial adaptor driver
```

If the driver isn't installed, use the appropriate method to install the driver. For example, go to the Microsoft Windows or Apple store to obtain and install the driver.

**Step 10.** Configure the terminal emulator software settings as follows:

```
Terminal Type: VT100+
Bits per second: 115200
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None
```

**NOTE:** With PuTTY, you can't configure all these settings individually. However, you can configure the PuTTY default settings by selecting the Serial connection type and specifying 115200 for the Serial Line baud speed. This configuration is sufficient to use PuTTY as a terminal emulator for the device.

For additional information, refer to [Roving Edge Device Setup Guide](#) and [Roving Edge Operating Serial Console](#)

**Step 11.** Unlock the Roving Edge device

Anytime you reboot the Roving Edge device, it reverts to a locked state. Receiving a **Device is locked** message after trying to connect to an API endpoint or console is indicative that the device is in a locked state. Unlock the device to proceed.

**NOTE:** To unlock the Roving Edge device, the passphrase configured when the customer created the device node will be needed. Customer needs to provide the passphrase via SR.

- From the serial console you will be asked to **Enter the passphrase to unlock the screen:**
- Enter the unlock passphrase to unlock the device.

```
Enter the passphrase to unlock the screen: *****
The screen is unlocked successfully!
Press ENTER to return...
```

- The device is unlocked, and the serial console menu is displayed.



- 1) Unlock Device
- 2) Change Passphrase
- 3) Configure Networking
- 4) Show Status
- 5) Show System Diagnostics
- 6) Shutdown Device
- 7) Reboot Device
- 8) Enter Safe-Mode
- 9) Exit Safe-Mode
- 10) Shred Key
- 11) Recover Key
- 12) Reset Device
- 13) Advanced Menu
- 14) Cluster Health
- 15) Node Health
- 16) Diagnostics
- 17) Help

**Step 12.** Set Node IP Setting

Via terminal emulation, adjust the IP address, subnet, gateway, DNS and NTP information on the Roving Edge device to match the local network CIDR infrastructure.

- From the Roving Edge Device serial console, select **Network Configuration** and **Set Node IP Settings** options:

- 1) Unlock Device
- 2) Change Passphrase
- 3) **Configure Networking**
- 4) Show Status
- 5) Show System Diagnostics
- 6) Shutdown Device
- 7) Reboot Device
- 8) Enter Safe-Mode
- 9) Exit Safe-Mode
- 10) Shred Key
- 11) Recover Key
- 12) Reset Device
- 13) Advanced Menu
- 14) Cluster Health
- 15) Node Health
- 16) Diagnostics
- 17) Help

## Network Configuration

- 
- 1) Set Node IP Settings (Current Node Only)
  - 2) Display Settings
  - 3) Set Public IP Pool Range for Compute Instances (Cluster-Wide)
  - 4) Display Public IP Pool Status
  - 5) Control Network Ports
  - 6) Configure DNS (Cluster-Wide)
  - 7) Configure NTP (Cluster-Wide)
  - 8) Configure Subnet Gateway (Cluster-Wide)
  - 9) Reset Network
  - 10) Configure Ethernet Bonding
  - 11) Help

Enter command number (or press Ctrl+C to go back): 1

**Step 13.** Enter the new IP address for the Roving Edge management interface, the subnet mask length, and Gateway.

Configuring IP address, subnet mask length, gateway

Example:

```
IP Address           : 10.0.0.2
Subnet Mask Length   : 24
Gateway              : 10.0.0.1
```

Subnet mask length 24 <=> 255.255.255.0

IP Address: X.X.X.X

- For DNS and NTP configuration, select options 6 and 7 from the Network Configuration menu.

**Step 14.** Adjust the public ip addressing pull of the Roving Edge device

Via terminal emulation, adjust the public ip address pull of the Roving Edge device to the available public (or private) CIDR range of the Oracle Solution Center fast connect infrastructure. Only one public IP address is need for the Oracle Linux Data Gateway instance on the Roving Edge device, enter the new public IP address as listed below.

- From the Roving Edge Device serial console, select **Configure Networking** option:

Roving Edge Device

-----

- 1) Unlock Device
- 2) Change Passphrase
- 3) Configure Networking**
- 4) Show Status
- 5) Show System Diagnostics
- 6) Shutdown Device
- 7) Reboot Device
- 8) Enter Safe-Mode
- 9) Exit Safe-Mode
- 10) Shred Key
- 11) Recover Key
- 12) Reset Device
- 13) Advanced Menu
- 14) Cluster Health
- 15) Node Health
- 16) Diagnostics
- 17) Help

Enter command number: 3

- Under Network Configuration, **Set Public IP Pool Range for Compute Instances (Cluster-Wide)**

Network Configuration

-----

- 1) Set Node IP Settings (Current Node Only)
- 2) Display Settings
- 3) Set Public IP Pool Range for Compute Instances (Cluster-Wide)**
- 4) Display Public IP Pool Status
- 5) Control Network Ports
- 6) Configure DNS (Cluster-Wide)
- 7) Configure NTP (Cluster-Wide)
- 8) Configure Subnet Gateway (Cluster-Wide)
- 9) Reset Network
- 10) Configure Ethernet Bonding
- 11) Help

Enter command number (or press Ctrl+C to go back): 3

Expected IP address range format is: x.x.x.x-y.y.y.y. Where "x.x.x.x" and "y.y.y.y" are IP addresses representing range boundaries. For example, an input string "172.10.20.1-172.10.20.30" represents a range starting with 172.10.20.1 and ending with 172.10.20.30 address (inclusive). Individual IP addresses can be entered as: 172.10.20.35

**WARNING:** This will empty current public IP pool (if present), and re-populate it with new ranges from the input.

Enter IP address range followed by ENTER (or an empty string to stop): **x.x.x.x-y.y.y.y**

- Wait for the new Public IP pool configuration to take effect.

Validating public IP pool. Please wait...

Applying changes. Please wait...

Complete!

**Step 15.** Check if the new Public IP address have been correctly set to the Oracle Linux Data Gateway instance on the Roving Edge device

- Connect to the Roving Edge administration console using the new IP address setup for the management interface and create a new reserved IPs pool. On the Roving Edge administration console, click on **Networking, Public IPs**, then **Create Reserved Public IP**. Enter a name for the new reserved public IP pool, then click on **Create Reserved Public IP**.

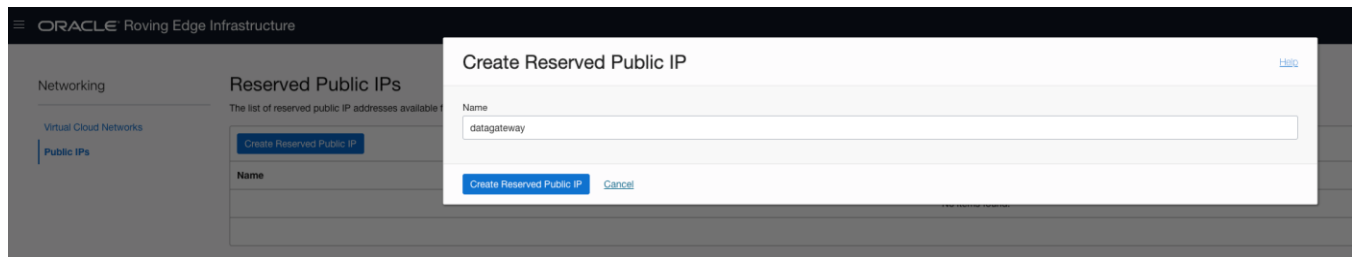


Figure 11: IP address setup screen

- Go to **Compute**, click on the instance name, under resources, click on **attached VNICs**. Click on the primary VNIC name. On the IP addresses screen, click on the three dots as listed in-front of the (Primary IP), then click edit.
- Select Ephemeral public IP option, then click update. A new public IP address from the new reserved public IP address pool will be assigned to the interface.

The screenshot shows the Oracle Roving Edge Infrastructure console. On the left, a green hexagon with a white 'V' indicates the instance is 'AVAILABLE'. The main content area is titled 'datagateway' and contains several sections: 'VNIC Information' (OCID: ...6wtjna, Created: Mon, Jan 20, 2025, 21:06:48 UTC, Subnet: datagateway), 'Primary IP Information' (Private IP Address: 10.0.1.7, Private IP OCID: ...55pcnq, Assigned: Mon, Jan 20, 2025, 21:06:49 UTC), and 'IP Addresses' (Private IP Address: 10.0.1.7 (Primary IP)). On the right, the 'Edit Private IP Address' form is visible, showing the current Private IP Address as 10.0.1.7, Hostname as 'datagateway', and FQDN as 'datagateway.sn1.os1.oraclevcn.com'. The 'Public IP Type' is set to 'Ephemeral public IP'.

Figure 12: Edit screen for private IP address

- Connect the Roving Edge device to the Oracle Solution Center Fast Connect network infrastructure with the same public IP CIDR of the new one configured on the Roving Edge device.

**NOTE:** Make sure the FastConnect network segment that the Roving Edge device connects to does not require an internal proxy to access OCI Object Storage. If an internal proxy is required, you'll need access to the Oracle Linux Transfer Gateway instance, and the oci sync service will need to be configured to work with the proxy.

- Start the Oracle Linux Data Gateway instance, and check if the new Public IP address has been correctly assigned.

The screenshot shows the Oracle Roving Edge Infrastructure console with the instance 'datagateway' in a 'RUNNING' state, indicated by a green square with a white 'I'. The 'Instance Information' tab is active, showing 'General Information' (Fault Domain: FD-1, Region: orel-1, OCID: ...wy17ka, Launched: Mon, Jan 20, 2025, 21:06:44 UTC) and 'Instance Details' (Virtual Cloud Network: os1, Image: datagateway, Launch Mode: CUSTOM). The 'Shape Configuration' section shows Shape: VM.Standard.RX2.8, OCPU Count: 8, Memory (GB): 64, Local Disk: Block Storage Only, and Cross Numa Node: No. On the right, 'Instance Access' shows Public IP Address: 192.168.100.4, and 'Primary VNIC' shows Private IP Address: 10.0.1.7 and Internal FQDN: datagateway... Subnet: datagateway. 'Launch Options' include NIC Attachment Type: PARAVIRTUALIZED, Remote Data Volume: PARAVIRTUALIZED, Firmware: UEF1\_64, and Boot Volume Type: PARAVIRTUALIZED.

Figure 13: Oracle Linux Data Gateway instance screen

- Oracle Linux Data Gateway instance will start the Oracle Data Transfer service and upload the data to the customer’s OCI Object Storage.

**Step 16.** Monitor the data upload via [https://<ip address of the Oracle Linux Data Transfer instance:8443/static/chart\\_viewer.html](https://<ip address of the Oracle Linux Data Transfer instance:8443/static/chart_viewer.html) A screen like to the listed below will be available.

### OCI Sync Chart

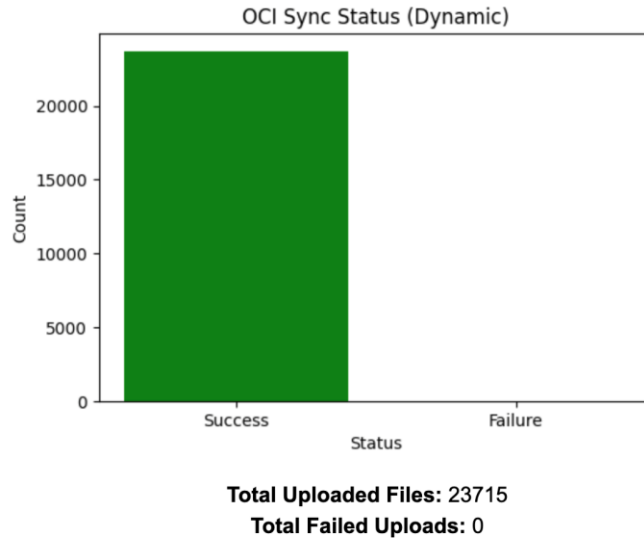


Figure 14: OCI Sync Chart allows for monitoring of the data upload

**Step 17.** Once confirmed successfully completion of data transfer by the customer. Oracle Solution Center

- Oracle Solution Center monitors data transfer and confirm data transfer completion
- The customer verifies and confirms the completion of the data transfer and authorizes the factory reset of the Roving Edge device through a service request **NOTE:** Once customer approval is received, the Oracle Linux data transfer gateway instance will be terminated, all associated block devices will be deleted, and the Roving Edge device will undergo a factory reset.
- Oracle Solution Center team factory reset the Roving edge device and close the service request

**Step 18.** From the Roving Edge Device serial console, select **Reset Device** option to reset the Roving Edge device.

- 1) Unlock Device
- 2) Change Passphrase
- 3) Configure Networking
- 4) Show Status
- 5) Show System Diagnostics
- 6) Shutdown Device
- 7) Reboot Device
- 8) Enter Safe-Mode
- 9) Exit Safe-Mode
- 10) Shred Key
- 11) Recover Key
- 12) Reset Device**
- 13) Advanced Menu
- 14) Cluster Health
- 15) Node Health
- 16) Diagnostics
- 17) Help

Enter command number: 12

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