

M211315EN-L

RESTRICTED

# Software Installation Guide

IRIS Radar  
IRIS and RDA



**VAISALA**

PUBLISHED BY

Vaisala Oyj

Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland

P.O. Box 26, FI-00421 Helsinki, Finland

+358 9 8949 1

[www.vaisala.com](http://www.vaisala.com)

[docs.vaisala.com](http://docs.vaisala.com)

© Vaisala 2023

No part of this document may be reproduced, published or publicly displayed in any form or by any means, electronic or mechanical (including photocopying), nor may its contents be modified, translated, adapted, sold or disclosed to a third party without prior written permission of the copyright holder. Translated documents and translated portions of multilingual documents are based on the original English versions. In ambiguous cases, the English versions are applicable, not the translations.

The contents of this document are subject to change without prior notice.

Local rules and regulations may vary and they shall take precedence over the information contained in this document. Vaisala makes no representations on this document's compliance with the local rules and regulations applicable at any given time, and hereby disclaims any and all responsibilities related thereto.

This document does not create any legally binding obligations for Vaisala towards customers or end users. All legally binding obligations and

agreements are included exclusively in the applicable supply contract or the General Conditions of Sale and General Conditions of Service of Vaisala.

This product contains software developed by Vaisala or third parties. Use of the software is governed by license terms and conditions included in the applicable supply contract or, in the absence of separate license terms and conditions, by the General License Conditions of Vaisala Group.

This product may contain open source software (OSS) components. In the event this product contains OSS components, then such OSS is governed by the terms and conditions of the applicable OSS licenses, and you are bound by the terms and conditions of such licenses in connection with your use and distribution of the OSS in this product. Applicable OSS licenses are included in the product itself or provided to you on any other applicable media, depending on each individual product and the product items delivered to you.

## Table of contents

<b>1.</b>	<b>About this document</b> .....	7
1.1	Version information.....	7
1.2	Related documents.....	7
1.3	Documentation conventions.....	8
1.4	Trademarks.....	8
<b>2.</b>	<b>File system hierarchy tree</b> .....	9
<b>3.</b>	<b>Installation image options</b> .....	11
<b>4.</b>	<b>Installing IRIS/RDA and AlmaLinux with Kickstart</b> .....	12
4.1	Creating Installation Media.....	12
4.1.1	Creating USB Installation Media on Windows.....	12
4.1.2	Creating USB installation media on Linux (AlmaLinux).....	13
4.2	Running the installation with Kickstart.....	14
4.3	Enabling login as root for using IRIS Focus.....	17
4.4	Logging in as radarop.....	18
4.5	Verifying that the services are running.....	18
4.6	Configuring IRIS license setups.....	19
<b>5.</b>	<b>Installing IRIS/RDA software (standalone)</b> .....	22
5.1	IRIS/RDA installation overview.....	22
5.2	Logging in as root.....	22
5.3	Mounting the installation media and verifying the mount point.....	23
5.4	Opening a terminal window.....	23
5.5	Running the installation script.....	24
5.6	Logging in as radarop.....	26
5.7	Verifying that the services are running.....	26
5.8	Configuring IRIS license setups.....	27
5.9	Configuring SSH.....	29
<b>6.</b>	<b>Upgrading IRIS and RDA Software</b> .....	30
6.1	IRIS RDA upgrade overview.....	30
6.2	Preparing for the upgrade.....	30
6.3	Getting upgrade software.....	32
6.3.1	Downloading upgrade files.....	33
6.4	Running Setup after upgrade.....	34
6.4.1	Invoking setup and built-in error checking.....	34
6.5	Checking the kernel module status.....	37
<b>7.</b>	<b>Configuring RDA software</b> .....	38
<b>8.</b>	<b>Installing IO-62 firmware</b> .....	40
<b>9.</b>	<b>Installing RVP10 (RDA) firmware</b> .....	42
<b>10.</b>	<b>Login, logout, and shutdown</b> .....	46
10.1	Powering up.....	46
10.2	Local and remote login.....	46
10.3	Default operator and root user login passwords.....	46
10.4	Logging in.....	46
10.4.1	Local login as operator after powerup.....	46
10.4.2	Switching from radarop to root user.....	47
10.4.3	Switching from su root user to radarop.....	47
10.4.4	Logging in as root.....	47

10.5 Powering off..... 47

**11. Troubleshooting..... 48**

11.1 Correcting File Ownership and Protection..... 48

11.2 Authorizing remote X-Windows on your node.....48

11.3 Making Quick Look Windows (QLW) appear..... 49

11.4 Replacing failed OS RAID disks.....50

**Appendix A: Installing AlmaLinux 8.7..... 53**

A.1 Overview to installing AlmaLinux 8.7..... 53

A.2 Creating Installation Media..... 53

    A.2.1 Creating USB Installation Media on Windows..... 53

    A.2.2 Creating USB installation media on Linux (AlmaLinux)..... 54

A.3 Installing AlmaLinux automatically..... 55

A.4 Installing AlmaLinux manually (interactive)..... 60

    A.4.1 Booting the system for manual installation..... 60

    A.4.2 Configuring the system and network..... 62

    A.4.3 Partitioning the destination disk..... 67

    A.4.4 Starting the installation..... 74

    A.4.5 Disabling monitor negotiation..... 74

    A.4.6 Configuring time sync with chronyd..... 75

    A.4.7 Rebooting the system..... 76

    A.4.8 Logging in with your user account..... 76

A.5 Setting the root password..... 77

**Appendix B: IRIS Diagnostic Utilities..... 78**

B.1 ps\_iris command..... 78

B.2 show\_iris command..... 79

B.3 sigmet\_env Command..... 81

B.4 structmap command..... 82

**Appendix C: Alternative Configurations.....84**

C.1 Installing IRIS 3DView.....84

C.2 Defining the Operator List in the Startup File..... 91

**Warranty..... 93**

**Technical support..... 93**

**Recycling..... 93**

## List of tables

Table 1	Document versions (English).....	7
Table 2	Vaisala Weather Radar documentation.....	7
Table 3	RDA configuration tools.....	38
Table 4	Recommended disk partitioning.....	67



# 1. About this document

## 1.1 Version information

This document provides information for system managers about installing and upgrading IRIS and RDA software.

Familiarity with operating system concepts is required.

Table 1 Document versions (English)

Document code	Date	Description
M211315EN-L	April 2023	Tenth version. IRIS 10.0.0. Updates include: <ul style="list-style-type: none"> <li>• Support for RVP10</li> <li>• New file system hierarchy</li> <li>• New installation process</li> <li>• New upgrade process</li> </ul>
M211315EN-K	June 2022	Ninth version. IRIS 9.2.0
M211315EN-J	April 2021	Eighth version. IRIS 9.1.0

## 1.2 Related documents

Table 2 Vaisala Weather Radar documentation

Document code	Name
M211315EN	<i>IRIS and RDA Software Installation Guide</i>
M211316EN	<i>IRIS and RDA Utilities Guide</i>
M211317EN	<i>IRIS Radar User Guide</i>
M211318EN	<i>IRIS Programming Guide</i>
M211319EN	<i>IRIS Product and Display Guide</i>
DOC236879	<i>IRIS RDA Release Notes</i>
M212604EN	<i>RVP10 Digital Receiver and Signal Processor User Guide</i>
M211320EN	<i>Radar Control Processor RCP8 User Guide</i>
M211849EN	<i>IRIS Focus User Guide</i>
M211850EN	<i>IRIS Focus Administrator Guide</i>
M211904EN	<i>IRIS Focus Release Notes</i>

Vaisala encourages you to send your comments or corrections to [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com).

## 1.3 Documentation conventions



**WARNING! Warning** alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.



**CAUTION! Caution** warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.



**Note** highlights important information on using the product.



**Tip** gives information for using the product more efficiently.



Lists tools needed to perform the task.



Indicates that you need to take some notes during the task.

## 1.4 Trademarks

IRIS™ is a trademark of Vaisala Oyj.

AlmaLinux™ is a trademark of AlmaLinux OS Foundation.

Linux® is a registered trademark of Linus Torvalds.

All other product or company names that may be mentioned in this publication are trade names, trademarks, or registered trademarks of their respective owners.

## 2. File system hierarchy tree

```

etc
├── vaisala
│   └── irisrda
│       ├── images
│       ├── init
│       ├── listings
│       ├── menu
│       └── overlay
│   └── irisrda_templates
├── systemd /* service files */
├── profile.d /* shell script files */
├── rc.d
│   └── init.d /* rc files */
├── logrotate.d /* logrotate conf files */
├── srv
│   └── iris_data
│       ├── ingest /* IRIS ingest files */
│       ├── product /* IRIS derived product files */
│       ├── product_raw /* IRIS RAW (packed ingest) files */
│       ├── tsarchive /* saved IQ data */
│       ├── tape_inv /* tape backup metadata */
│       ├── ascope /* Data saved from ascope utility */
│       ├── suncal /* Sun based calibration utility data */
│       ├── temp /* temp storage */
│       └── zdrCAL /* ZDR calibration utility data */
├── usr
│   ├── libexec
│   │   └── vaisala
│   │       ├── pipes /* pipes from data_converters */
│   │       └── irisrda /* scripts for irisrda */
│   ├── bin /* executables for irisrda */
│   ├── share
│   │   ├── X11 /* app defaults resource files */
│   │   ├── nls /* po files */
│   │   ├── vaisala
│   │   │   └── irisrda
│   │   │       ├── icons /* icon files */
│   │   │       ├── sounds /* sound files */
│   │   │       └── keys /* key files */
│   │   └── doc /* user documentation, release notes and license files */
│   ├── lib64 /* all libraries */
│   ├── include
│   │   └── vaisala/* all header files */

```

```
└─ var
  └─ log
    └─ irisrda /* all log files */
  └─ spool
    └─ vaisala-io
      └─ input /* Default IRIS input directory */
      └─ output /* Default IRIS output directory */
      └─ raw
      └─ volume
      └─ temp /* Conversion pipes temp storage */
```

## 3. Installation image options

IRIS/RDA 10.0.0 requires the AlmaLinux 8.7 operation system.

Vaisala provides customized ISO images for AlmaLinux 8.7 and IRIS/RDA software on the Vaisala FTP website:

<https://ftp.sigmet.vaisala.com/files/releases>

ISO Image	Notes	Instructions
<b>Combined AlmaLinux OS and IRIS/RDA sw ISO image</b>	<p>Automatically installs both the AlmaLinux 8.7 operating system and the IRIS/RDA software.</p> <p>Available on USB drive and FTP site.</p> <p>You can also use this image to only install the IRIS/RDA software.</p>	<p>Installing OS together with IRIS/RDA: Chapter <i>Installing IRIS/RDA and AlmaLinux with Kickstart</i></p> <p>Installing only IRIS/RDA: Chapter <i>Installing IRIS/RDA software</i></p>
<b>IRIS/RDA software as standalone ISO image</b>	<p>This image is smaller than the combined ISO image, so it is faster to download.</p> <p>Available on the FTP site.</p>	Chapter <i>Installing IRIS/RDA software</i>
<b>AlmaLinux operating system as standalone ISO image</b>	<p>This image is smaller than the combined ISO image, so it is faster to download.</p> <p>Available on the FTP site.</p>	Appendix <i>Installing AlmaLinux 8.7</i>

### Online and offline installation of IRIS/RDA standalone ISO

When installing the IRIS/RDA standalone ISO, you can select either online or offline installation. The online option enables access to RPMs from remote repositories that are needed if the host system does not contain dependencies that come from **AppStream** and **BaseOS** repositories. These repositories are automatically included when the combined OS and software ISO image used. The online installation requires Internet connection.

If you select the offline installation option, the installation only uses the repositories provided by ISO image and does not try to access remote repositories. In this case, for example, `devel` packages cannot be installed, because they require a specific version of base packages and this requires to access to remote repositories.

# 4. Installing IRIS/RDA and AlmaLinux with Kickstart

## 4.1 Creating Installation Media

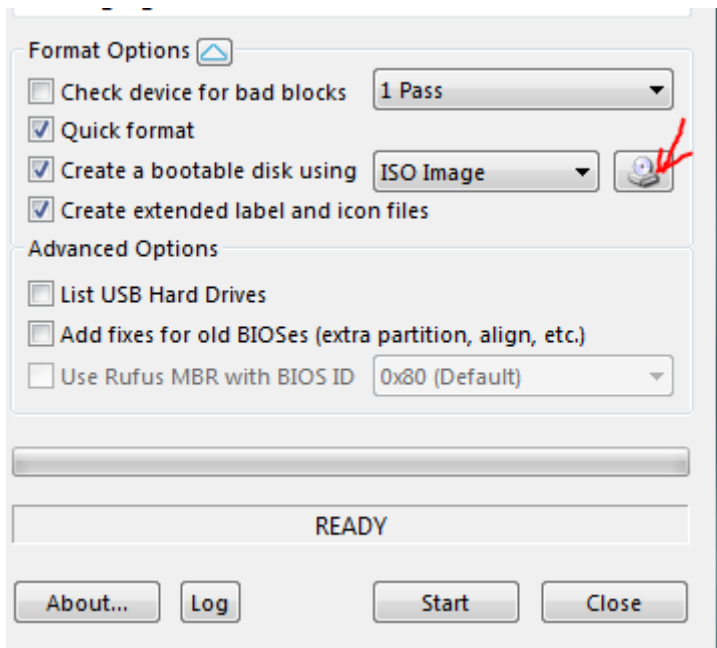
After creating and initializing the installation media, you can run the installation process.

### 4.1.1 Creating USB Installation Media on Windows

These instructions apply to Windows 10 and Windows 11.

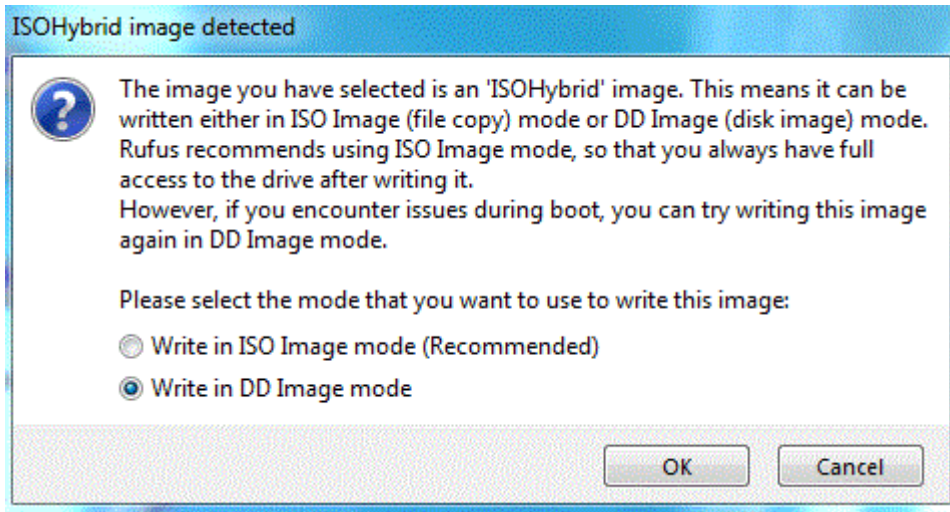
When creating USB installation media on Windows, use a standalone program such as **rufus** (available at <http://rufus.akeo.ie/>). Follow the on-screen instructions.

1. Launch **rufus** by double-clicking the program icon.
2. Insert a USB drive in the USB port.
3. Select the drop-down list to the right of the **Create a bootable disk using**, and select **ISO Image**.



4. Select the **Disc** icon and then select the iso image.

5. Select **Write in DD Image mode** if a warning for the hybrid ISO image is displayed.



6. Select **Close**.

#### 4.1.2 Creating USB installation media on Linux (AlmaLinux)



**CAUTION!** This operation destroys data on the device you operate on.

- ▶ 1. Run `$ lsblk` to list block devices on your system. Take note of the output.
- 2. Insert a USB drive in the USB port.
- 3. Run `$ lsblk`.

Compare the output to the previous step. The additional block device from this output is your USB drive.

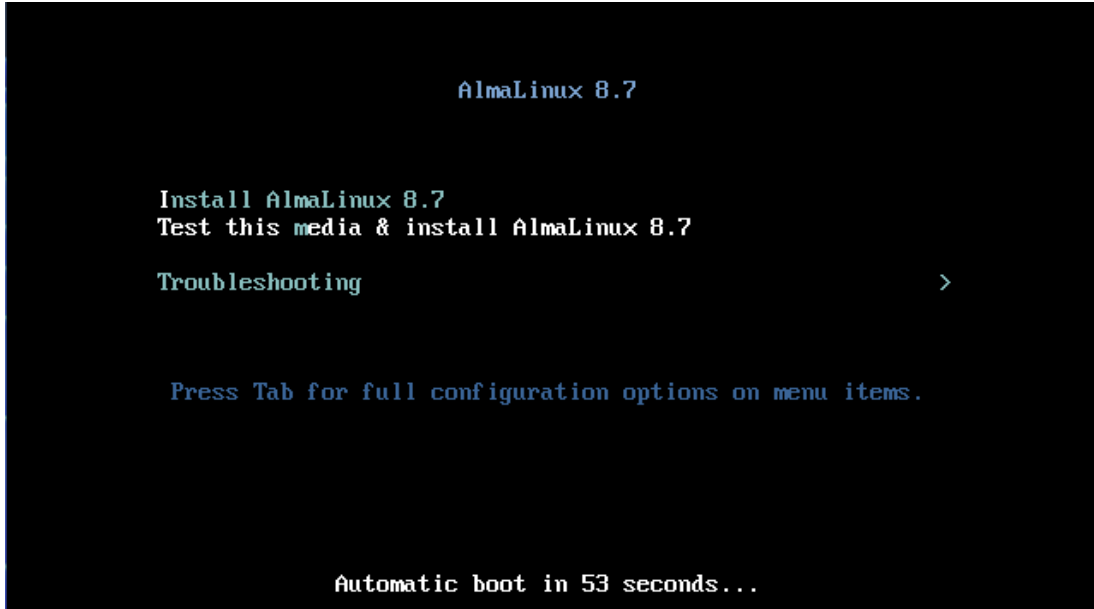
4. Run `$ dd if=path/toAlmaLinux.iso of=/dev/xxx`

Where `/dev/xxx` is the path to the USB drive. Do not use the partition number for the USB drive.

For example: `/dev/sdc`.

## 4.2 Running the installation with Kickstart

1. In the AlmaLinux 8.7 window, select **Test this media & install AlmaLinux 8.7**, and press **ENTER**.



```
AlmaLinux 8.7

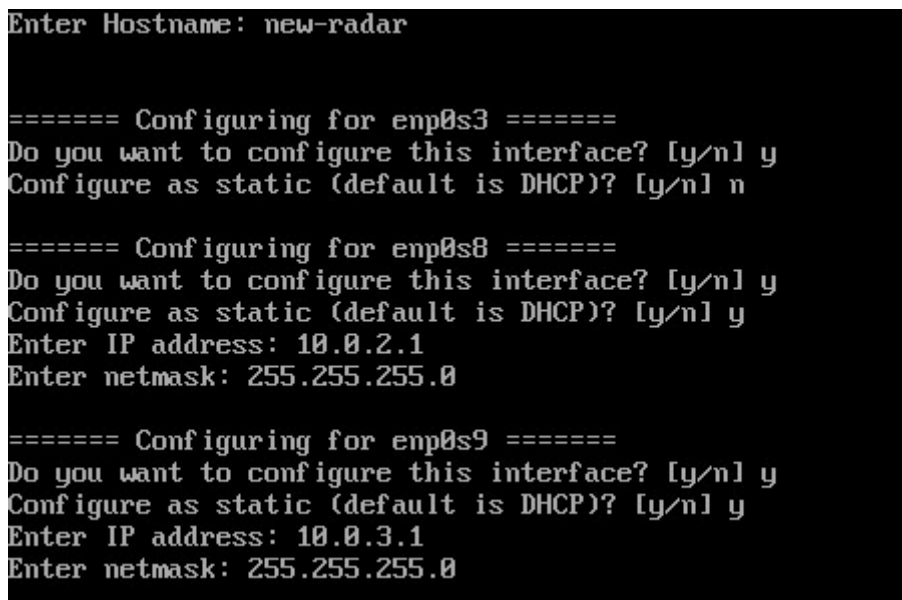
Install AlmaLinux 8.7
Test this media & install AlmaLinux 8.7
Troubleshooting >

Press Tab for full configuration options on menu items.

Automatic boot in 53 seconds...
```

The **Installation Summary** page opens.

2. When prompted, configure the hostname and IP address.



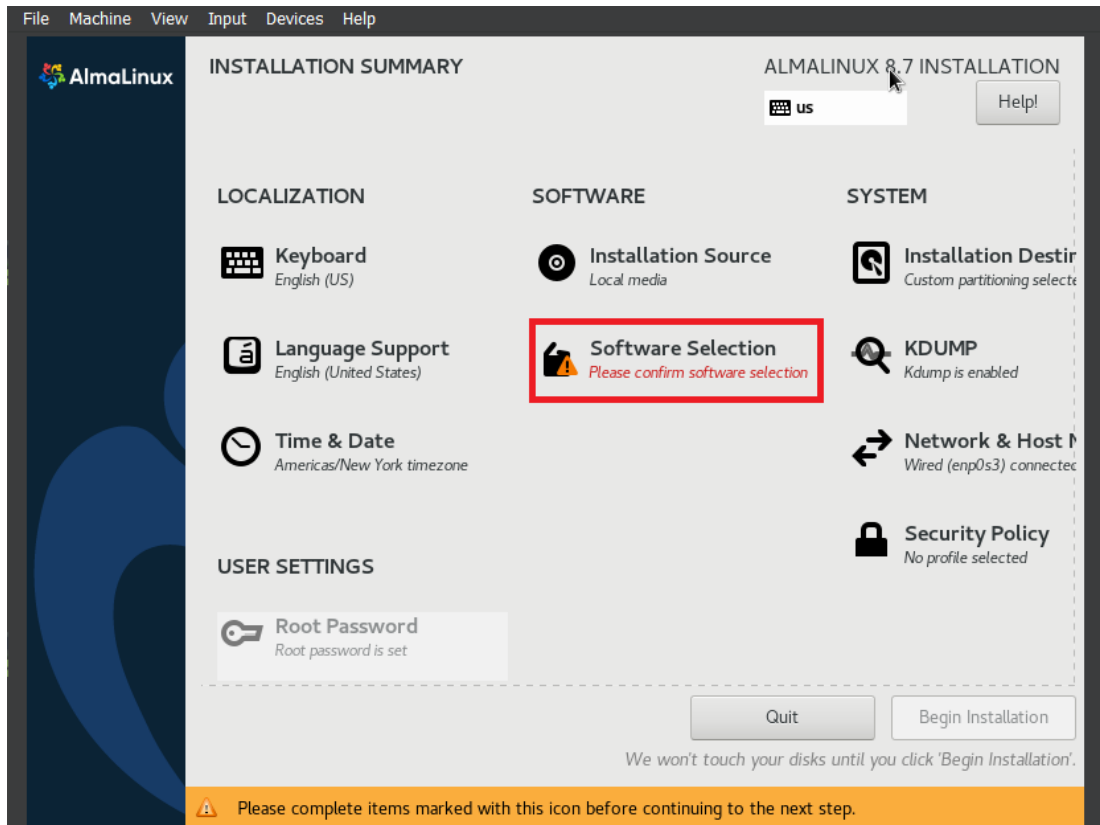
```
Enter Hostname: new-radar

===== Configuring for enp0s3 =====
Do you want to configure this interface? [y/n] y
Configure as static (default is DHCP)? [y/n] n

===== Configuring for enp0s8 =====
Do you want to configure this interface? [y/n] y
Configure as static (default is DHCP)? [y/n] y
Enter IP address: 10.0.2.1
Enter netmask: 255.255.255.0

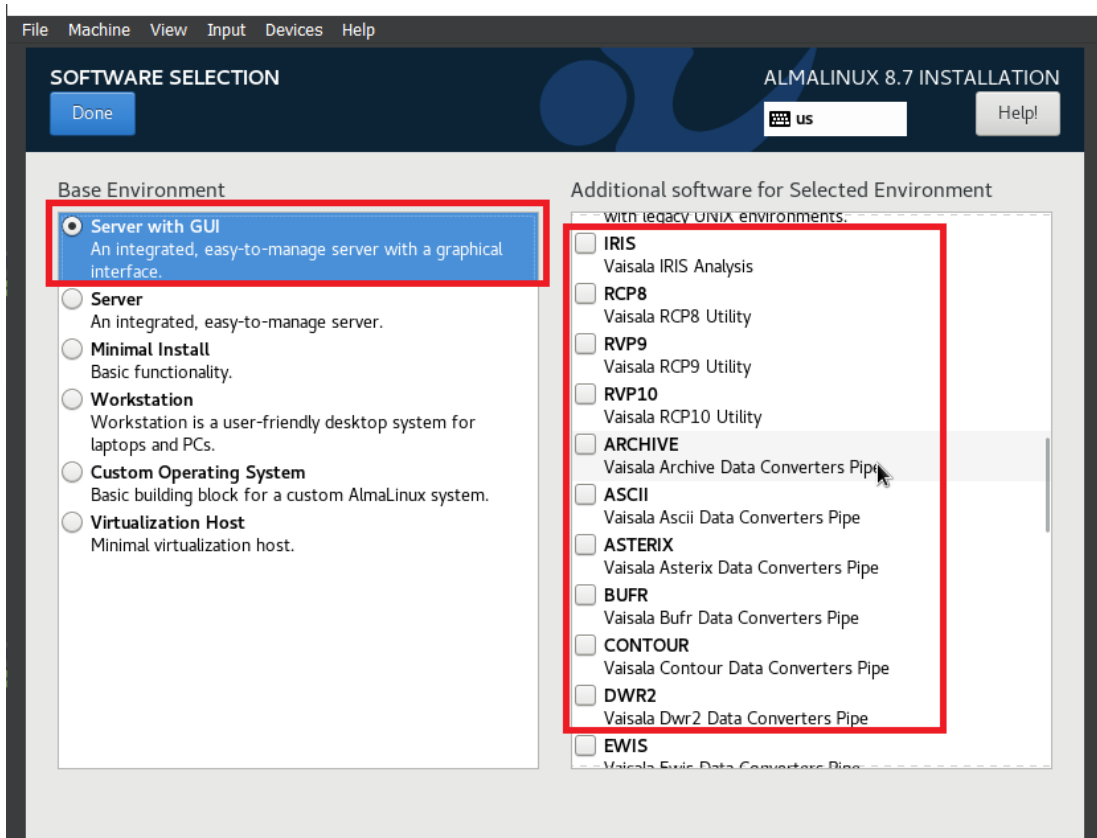
===== Configuring for enp0s9 =====
Do you want to configure this interface? [y/n] y
Configure as static (default is DHCP)? [y/n] y
Enter IP address: 10.0.3.1
Enter netmask: 255.255.255.0
```

### 3. Select **Software Selection**.

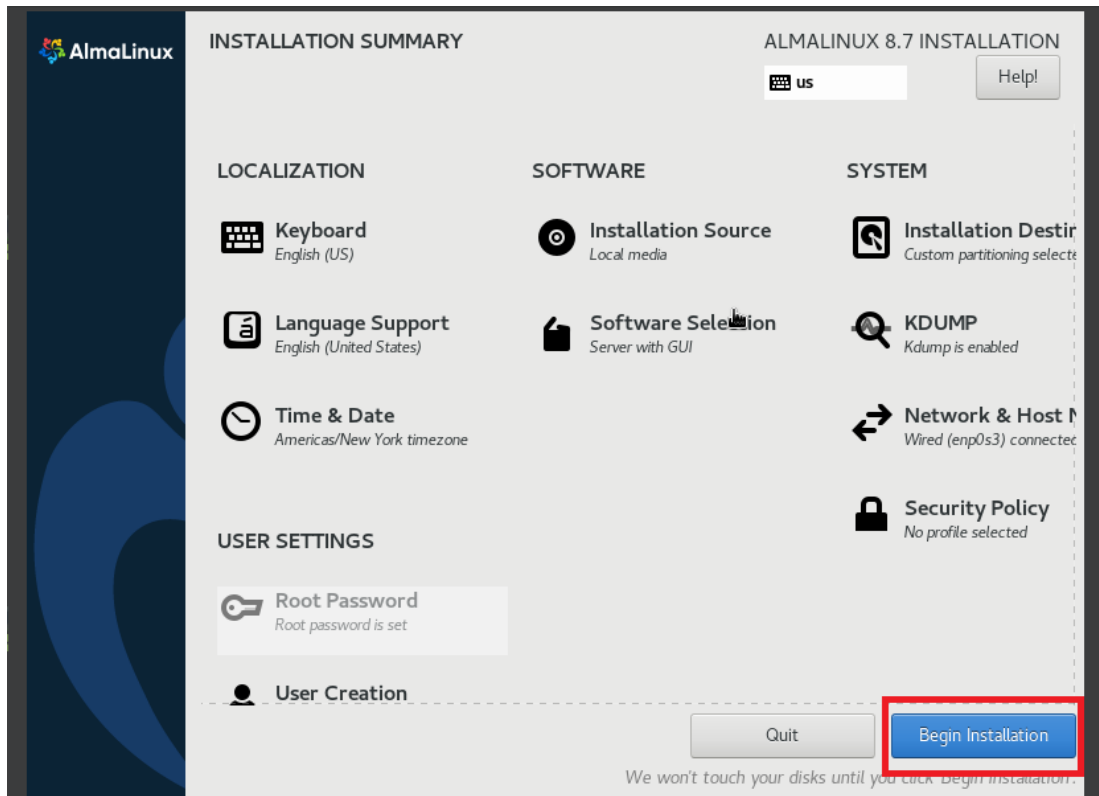


4. Select **Server with GUI** and the software you want to install, such as IRIS Analysis, RCP8 Utility, and RVP10 Utility.

For more information on the options, see [Running the installation script \(page 24\)](#).



5. In the **Installation Summary** page, select **Begin Installation**.



The installation process begins.

6. When the installation is complete, the system will reboot automatically.

## 4.3 Enabling login as **root** for using IRIS Focus

If you are installing IRIS Analysis and IRIS Focus on the same server, you need to enable logging in as **root**.

- ▶ 1. Log in as **admin** user.
2. Type:

```
$sudo passwd root
```

3. Follow the prompts.
4. Log out, and log in as **root**.

## 4.4 Logging in as **radarop**

The IRIS / RDA software installation creates two additional default user accounts: **radarop** and **observer**.

- ▶ 1. Select the **radarop** login icon.
- 2. Enter the default password (xxxxxx).
- 3. On the first login, change your password.

## 4.5 Verifying that the services are running

- ▶ 1. If you have not done so already, log in as **radarop**.
- 2. In the terminal window, list the services currently running by typing:

```
# ps_iris
```

The **COMMAND** column lists the running services.

Option	Running services
-rvp10	rvp10
-rcp8	rcp8

You may also see the that antenna (**ant\_\***) and receive (**rtd\_\***) processes have started.



IRIS does not start until you have installed the IRIS license.

### More information

- ▶ [ps\\_iris command \(page 78\)](#)

## 4.6 Configuring IRIS license setups

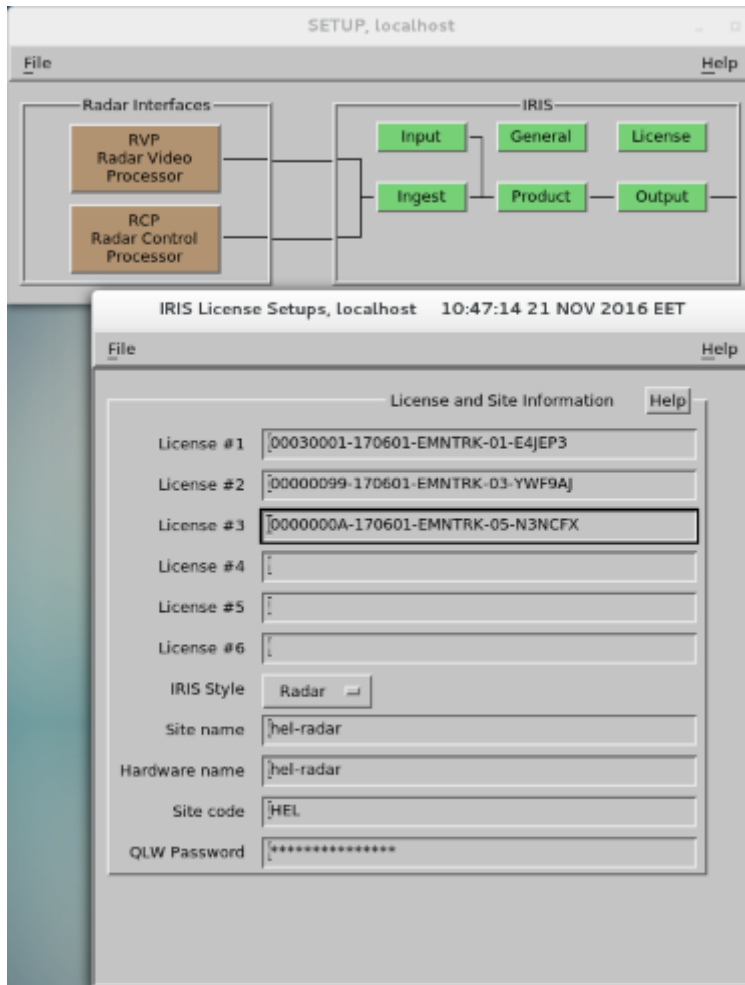


Figure 1 License setup example

Before you can use IRIS/RDA software, you must request and set up a license.

1. Open the **Setup** utility by typing:

```
setup&
```

2. In the **Setup** utility, select **License**.
  - a. Delete the default texts in the **License** fields.
  - b. Depending on your setup, for **IRIS Style**, select either **Radar** or **Analysis**.
  - c. In **Site name**, type a name for the machine (typically the host name of the machine).  
For example: **hel-radar**
  - d. In **Site code**, type a code name for the radar site.  
For example: **HEL**
  - e. In the **IRIS License Setups** window, select **File > Close**
  - f. Select **File > Save** and **File > Exit**.
3. In the terminal window, type: **show\_machine\_code**  
The terminal prints the licensing information about this machine. For example:

```
-----  
Licensing Information for IRIS Version 10.0.0  
-----
```

```
Machine Code: EMNTRK  
Site Name: hel-radar  
Check Code: WPEFXE  
OS Name: Linux  
OS Release: 3.10.0-229.el7.x86_64  
Host Name: localhost.localdomain  
Locking To: host
```

4. Copy all the information under **Licensing Information for IRIS Version <version number>**
5. Contact your Vaisala representative and request an IRIS license.  
Provide the information you copied in the previous step.
6. When you receive the license from Vaisala, return to **Setup > License** and type the **License 1, License 2, ... license codes in the order listed in the license**.  
Depending on your configuration, you may have codes such as:
  - IRIS Features Code
  - IRIS Product Code
  - RDA Features Code
7. Select **File > Save** and **File > Exit**.

8. To confirm that your license is correctly setup, start IRIS by typing:

```
siris
```

Check that the IRIS **Quick Look Window** starts.

If the IRIS **Quick Look Window** does not start, see [Making Quick Look Windows \(QLW\) appear \(page 49\)](#).

# 5. Installing IRIS/RDA software (standalone)

## 5.1 IRIS/RDA installation overview

Installing the IRIS/RDA software from the installation media with a script involves the following steps. The steps are described in detail in the following chapters.

- ▶ 1. Install the AlmaLinux operating system according to Appendix *Installing AlmaLinux*.
- 2. Log in as **root**.  
See [Logging in as root \(page 22\)](#).
- 3. Install the IRIS / RDA installation media, and verify that it mounts.  
See [Mounting the installation media and verifying the mount point \(page 23\)](#).
- 4. Open the CLI terminal.
- 5. Run the installation script.
- 6. Verify that the expected services have started.  
See [Verifying that the services are running \(page 18\)](#).
- 7. Configure your licenses.  
See [Configuring IRIS license setups \(page 19\)](#).
- 8. Check and update your firmware as needed:
  - [Installing IO-62 firmware \(page 40\)](#)
  - [Installing RVP10 \(RDA\) firmware \(page 42\)](#)

## 5.2 Logging in as root

- ▶ 1. In the login screen displaying your user accounts, select **Not Listed?** below the user account login box.
- 2. Enter **root** as the user name and your root password.  
The system displays a welcome message after the first time you log in and a blank screen after other logins.  
If prompted, select your language and input settings.

You can now continue with the IRIS/RDA software installation.

## 5.3 Mounting the installation media and verifying the mount point

The IRIS/RDA installation media can be either a USB drive or a DVD disc.

- ▶ 1. Install the USB drive in the USB port of the server, or install the DVD disc in the DVD drive.
- 2. If you are using a DVD drive, a small black window indicates that the DVD disc has been recognized.  
Select **X** in the upper right corner to close the window.
- 3. Verify that the installation media is recognized with the mount point by typing:

```
df
```

The installation media should be listed with the mount point in `/run/media/root/irisrda_X.XX.X`, where `X.XX.X` is the version of software you are installing.

- 4. If you do not see the installation media listed, try the following:
  - Insert the USB drive to a different port
  - Run the **lsblk** command to see if the installation media shows on the list. If it shows, mount it manually with the command:

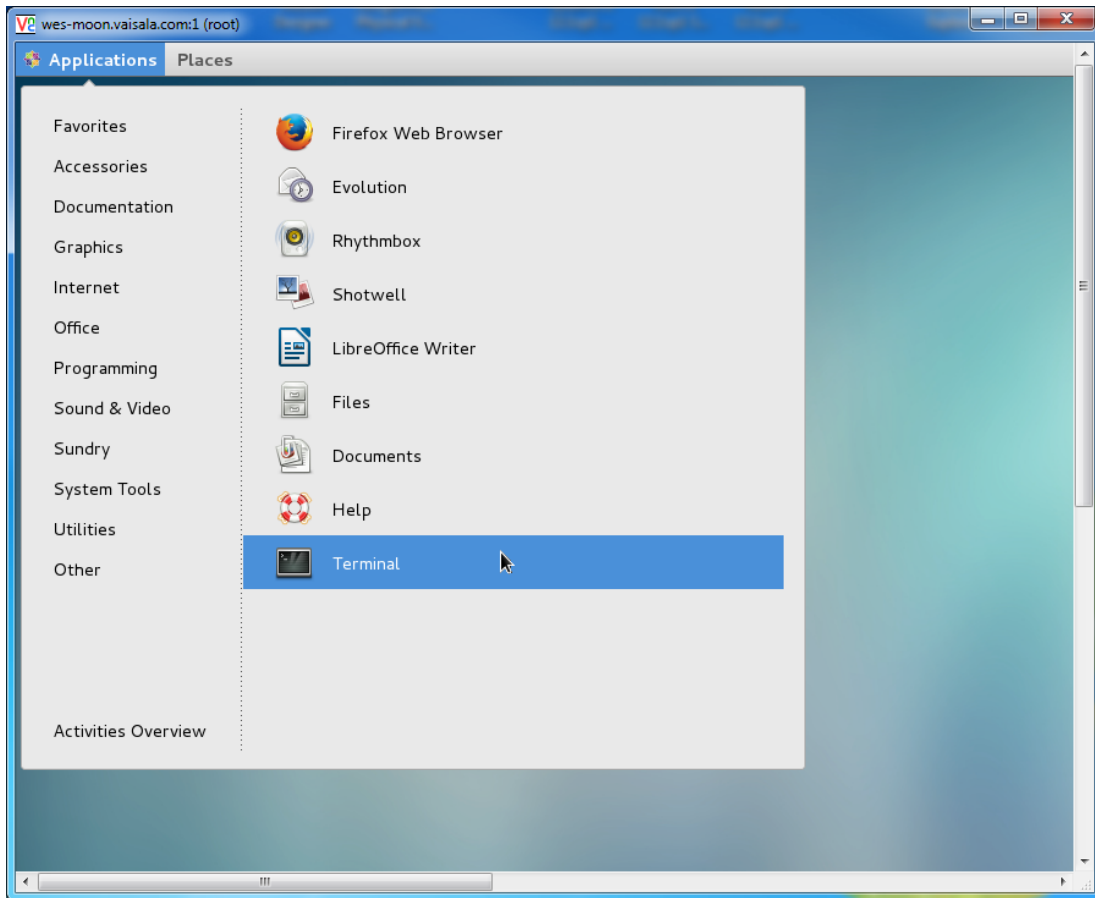
```
mount -o loop dev/<usbdevice> /mnt
```

, where **usbdevice** is the name of the USB drive from the `lsblk` list.  
In the case of a DVD, replace **<usbdevice>** with the the DVD from the `lsblk` list.

## 5.4 Opening a terminal window

- ▶ 1. In the upper left corner, left-click **Applications**.

2. Move your cursor to highlight the terminal and select it.



A terminal window with a prompt opens.

3. Remove the user you created during the operating system installation.

For example, if you created the user **service**, type:

```
# userdel -r service
```

## 5.5 Running the installation script

The *vaisala-iris-rda-install.sh* script automatically performs all the processes that make the system ready to run. For example, the script installs the requested products with their dependencies, creates directories, and configures paths and users.

The script also sets up a local repository that is required for installing upgrade packages via DNF.

- ▶ 1. Change to the directory where the IRIS/RDA installation media is mounted.  
For example, if the mounting point is `/run/media/root/irisrda`, type:

```
# cd /run/media/root/irisrda
```

2. Run the installation script with desired parameters by typing:

```
./vaisala-iris-rda-install.sh <parameter>
```

, where **<parameter>** can be any of the following:

- `--help`: Prints out the applicable parameters.
- `--iris`: Installs IRIS on a running system (with all dependencies, including **common** package).
- `--rcp8`: Installs RCP8 on a running system (with all dependencies, including **common** and **rda** packages).
- `--rvp9`: Installs RVP9 on running system (with all dependencies, including **common** and **rda** packages).
- `--rvp10`: Installs RVP10 on a running system (with all dependencies, including **common** and **rda** packages).



- `--rvp9` and `--rvp10` options cannot be used at the same machine.

- `--converter "<converter_name> <converter_name> <converter_name> ..."`: Installs **data-converters-<converter\_name>** on running system (with all dependencies, including **common** package). Accepts converter list inside quotes as argument. The option `--help` shows all converter names that can be installed with the script.
- `--online`: provides access to remote repositories that is set up on system.
- `--offline`: forces the script to use the repositories provided by the ISO image. No access to remote repositories.
- `--with-os`: If you want to point the external DVD ISO for dependencies that come from AppStream and BaseOS, provide the mount path of the Almalinux DVD. Providing `--os-media` may be useful if third party dependencies are not already installed on your system and installation image does not include those dependencies when you are running the offline installation.

3. Reboot the system to apply changes and to run enabled services:

```
reboot
```

## 5.6 Logging in as **radarop**

The IRIS / RDA software installation creates two additional default user accounts: **radarop** and **observer**.

- ▶ 1. Select the **radarop** login icon.
- 2. Enter the default password (xxxxxx).
- 3. On the first login, change your password.

## 5.7 Verifying that the services are running

- ▶ 1. If you have not done so already, log in as **radarop**.
- 2. In the terminal window, list the services currently running by typing:

```
# ps_iris
```

The **COMMAND** column lists the running services.

Option	Running services
-rvp10	rvp10
-rcp8	rcp8

You may also see the that antenna (**ant\_\***) and receive (**rtd\_\***) processes have started.



IRIS does not start until you have installed the IRIS license.

### More information

- ▶ [ps\\_iris command \(page 78\)](#)

## 5.8 Configuring IRIS license setups

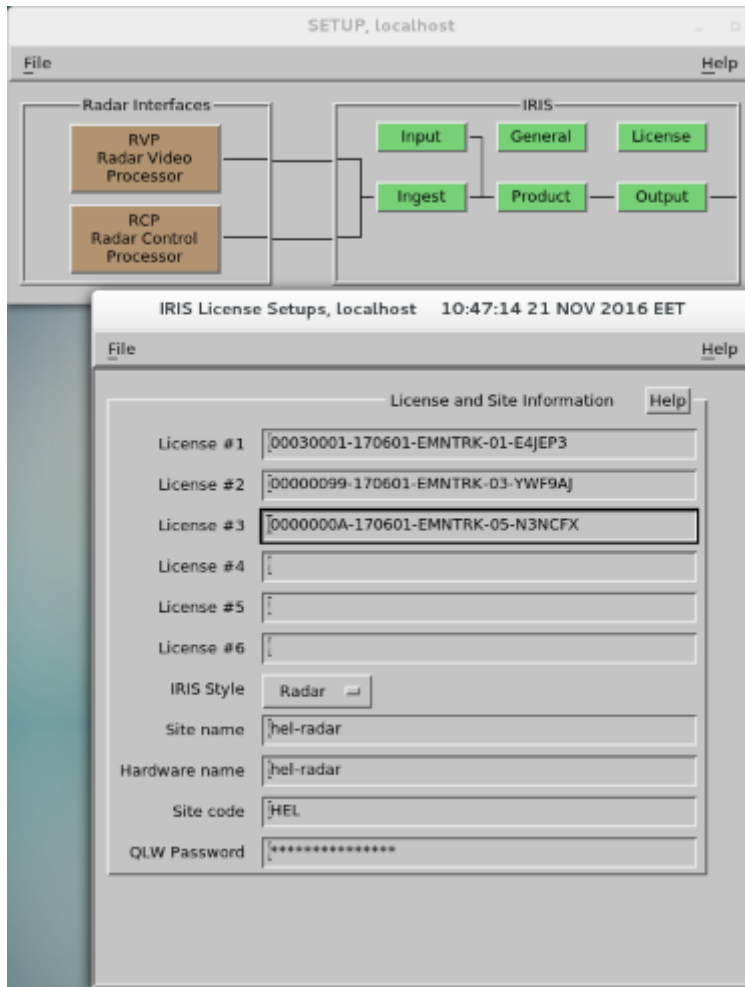


Figure 2 License setup example

Before you can use IRIS/RDA software, you must request and set up a license.

1. Open the **Setup** utility by typing:

```
setup&
```

2. In the **Setup** utility, select **License**.
  - a. Delete the default texts in the **License** fields.
  - b. Depending on your setup, for **IRIS Style**, select either **Radar** or **Analysis**.
  - c. In **Site name**, type a name for the machine (typically the host name of the machine).  
For example: **hel-radar**
  - d. In **Site code**, type a code name for the radar site.  
For example: **HEL**
  - e. In the **IRIS License Setups** window, select **File > Close**
  - f. Select **File > Save** and **File > Exit**.
3. In the terminal window, type: **show\_machine\_code**  
The terminal prints the licensing information about this machine. For example:

```
-----  
Licensing Information for IRIS Version 10.0.0  
-----
```

```
Machine Code: EMNTRK  
Site Name: hel-radar  
Check Code: WPEFXE  
OS Name: Linux  
OS Release: 3.10.0-229.el7.x86_64  
Host Name: localhost.localdomain  
Locking To: host
```

4. Copy all the information under **Licensing Information for IRIS Version <version number>**
5. Contact your Vaisala representative and request an IRIS license.  
Provide the information you copied in the previous step.
6. When you receive the license from Vaisala, return to **Setup > License** and type the **License 1, License 2, ...** license codes *in the order listed in the license*.  
Depending on your configuration, you may have codes such as:
  - IRIS Features Code
  - IRIS Product Code
  - RDA Features Code
7. Select **File > Save** and **File > Exit**.

8. To confirm that your license is correctly setup, start IRIS by typing:

```
siris
```

Check that the IRIS **Quick Look Window** starts.

If the IRIS **Quick Look Window** does not start, see [Making Quick Look Windows \(QLW\) appear \(page 49\)](#).

## 5.9 Configuring SSH

You must set up an ssh connection from one computer ( the **host**) to another (**target**) so that users can login from **host** to **target** without a password, and IRIS can send data from the **host** to the **target**.

1. Login to the host computer as **root**.
2. Check if `.ssh` directory exists.

If not, then create the directory by typing:

```
ssh-keygen -t dsa
```

When prompted with questions, press **ENTER** without typing anything.

3. Type:

```
ssh-copy-id -i id_rsa.pub radarop@remotehost
```

4. When prompted for login, enter the **radarop** password.
5. After a successful login, log out again.
6. On the host computer, test the SSH connection as **root** with the command:

```
ssh radarop@remotehost date
```

You should get the date and time display from the remote host without a password prompt.

You can now send data from the **host** computer to the **target** through the IRIS product output menu.

# 6. Upgrading IRIS and RDA Software

## 6.1 IRIS RDA upgrade overview

This chapter describes how to upgrade from IRIS/RDA 10.0.0 to later releases.

The upgrade is handled by the DNF package manager installed by the IRIS 10.0.0 installation script. In the upgrade process, the DNF replaces existing RPMs with new RPMs.

The upgrade process includes the following steps:

- ▶ 1. Back up your configuration files. See [Preparing for the upgrade \(page 30\)](#).
- 2. Get the latest software release ISO image and *Release Notes* at <https://ftp.sigmet.com/files/releases/>. See [Getting upgrade software \(page 32\)](#).
- 3. Run the install script. DNF identifies new versions of RPMs included in the installation image, and automatically triggers the upgrade process to higher versions. See [Running the installation script \(page 24\)](#).
- 4. Run the **Setup** utility. See [Running Setup after upgrade \(page 34\)](#).

## 6.2 Preparing for the upgrade

- ▶ 1. Login as **root**.  
The default password is xxxxxxxx.

## 2. Back up and save important configuration files.

As part of the upgrade, many files are erased and replaced. However, the upgrade procedure preserves everything in  $\${IRIS\_CONFIG}$ .

- a. Back up and save customized configuration files.
- b. Even though this file is not overwritten during the upgrade, create a backup of */etc/vaisala/irisrda*:

```
# cd /etc/vaisala/  
# tar cfz <config_nodename_date.tgz> irisrda/
```

- c. To back up the whole installation (for example, to support rollback), back up */etc/vaisala*:

```
# cd /etc/  
# cp -R vaisala/ sigmet_versionNumber/
```

## 3. Print the current setup.

Run the **Setup** utility on the old system, and generate an ASCII listing file with the **File/List** command.

The format of these files can change between software versions, so you may need to re-enter some information.

A date coded listing file is generated in the  $\${IRIS\_LISTING}$  directory, typically in *etc/vaisala/irisrda/listings*.

4. Make sure all applications are stopped by exiting any IRIS/RDA utilities that you are running and executing the following commands.

- For IRIS:

```
$ qiris
```

- For RDA:

```
$ su
service rvp10 stop (and/or service rcp8 stop)
service dspexport stop
qant
```

- For IRIS and RDA:

```
qiris
service rcp8 stop
service rvp10 stop
service dspexport stop

//if dspexport is running
qant
```

5. Verify that all processes have stopped by typing:

```
ps_iris
```

6. Stop any running processes as **root** with the **kill <process ID number>** command.

The process ID number is the first column of numbers from the `ps_iris` output.

## 6.3 Getting upgrade software

New features and updates are provided as software upgrades from the following sources:

- FTP download

Connect to the Vaisala Sigmet server in <ftp.sigmet.vaisala.com>.

- If using a web browser, navigate to `/files/releases/<latest version>`
- If using an FTP client, navigate to `/outgoing/releases/latest version`

These public releases are free of charge, but do not include support services unless you are under warranty or have purchased a support contract from Vaisala. Contact your Vaisala representative to arrange a support contract.

- USB drive or DVD disc  
Provided as part of a support contract or upon request.

### 6.3.1 Downloading upgrade files

If your radar server does not have Internet access, download the upgrade files first to another computer, and then transfer the files as instructed in [step 10](#).



The examples in this procedure use release 10.0.0 as an example. In most cases, you install the most recent version, labelled below as **X.XX**.

- ▶ 1. Create a directory named `/tmp/iris-X.XX`.
2. If you are downloading RDA software, create a directory named `/tmp/rda-X.XX`.  
You should make a separate directory for each version and type (IRIS/RDA) of software that you download.

3. Login as **radarop**.

```
$ cd /
$ mkdir /tmp/rda-10.0.0
```

4. Change to the `/tmp` directory by typing:

```
$ cd /tmp/rda-10.0.0
```



On Windows machines, you can type the commands in the command prompt (remember to use the `"\"` backslash for DOS).

5. Start the FTP browser.
6. In the directory listing of available releases, find your release.
7. Download the `irisrda_image.iso`.
8. Change to the **root** account using the **su** command and password.

9. Go to the directory where the files were downloaded and change the mode on two of the files that require execute privilege:

```
# cd /tmp/rda-10.0.0
# chmod +x install
# chmod +x instiris
```

10. If you need to transfer the files from a separate computer to the server computer, follow these steps:
  - a. Use FTP transfer, a USB drive, or a DVD disc to transfer the files from the other computer to the server computer.
  - b. On the server computer, change to the **root** account using the **su** command and password.
  - c. Go to the directory where the files were downloaded, and change the mode on two of the files that require execute privilege:

```
# cd /tmp/rda-10.0.0
# chmod +x install
# chmod +x instiris
```

## 6.4 Running Setup after upgrade

After upgrading, the **Setup** utility fills in default values for any new settings that were added. It is recommended that you read the *Release notes* document, then check the new settings to make sure they are right for your system.

- ▶ 1. Login as **radarop**.
2. Launch the **Setup** utility.

At startup for an upgrade, **Setup** checks the parameters to verify that they are within reasonable bounds and lists any problems. The listing gives the name of the variable in question and prompts the user to consider the repair command. Errors are usually related to new features that have not been addressed or outdated features that do not conform to the current upgrade.
3. In the list dialog, select **Repair** to replace any mismatches with the appropriate default.
4. If you receive errors related to customized fields that are important to your operation, see [Invoking setup and built-in error checking \(page 34\)](#).

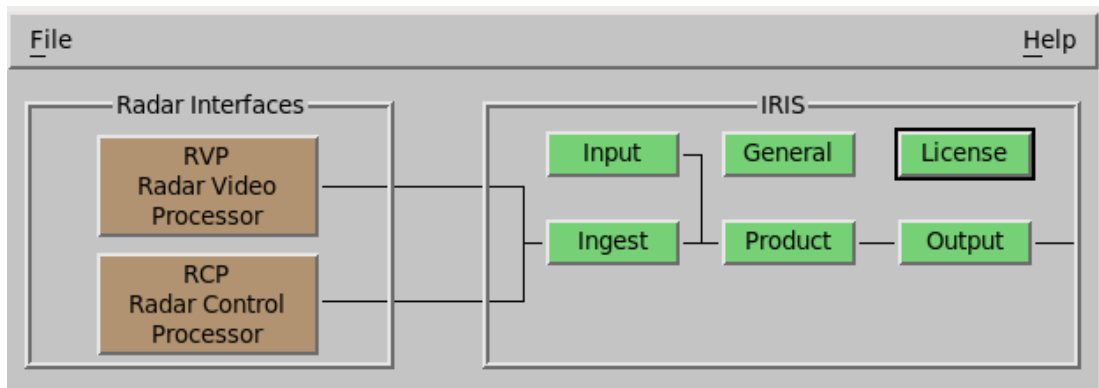
### 6.4.1 Invoking setup and built-in error checking

When IRIS starts, it performs configuration and bounds checks.

For new users, the **Setup** parameters are typically correctly set and do not cause any configuration errors. If an error does occur, follow these steps.

- ▶ 1. In the terminal window, type: **setup&**

The **Setup** utility launches.



There are 2 variants of the **Setup** utility: one for IRIS and one for the RDA (RVP signal processor or an RCP8 antenna controller). The RDA variant does not show the IRIS setup features.

2. Select the part of the system setup you want to check or configure.
3. Make your changes and close the window for the selected part of the system.
4. Select **File > Save**.

The configuration files are now updated.

5. To create a listing file of the **Setup** configuration:
  - a. Select **File > List**.

A listing file called *YYYYMMDDHHMM.setup* is created in the  $\${IRIS\_LISTINGS}$  directory.

6. To take the configuration changes into effect, restart the application:
  - a. For changes made to the **Setup > IRIS** section, restart the IRIS daemons by typing:

```
qiris
siris
```

- b. For changes to the **Setup > RVP** section, stop any running utilities with the command `service <services> stop`, for example:

```
service iris rvp10 rcp8 stop
```

- c. Restart the utilities with the command `service <services> start`, for example:

```
service iris rvp10 rcp8 start
```

RVP has a configuration state accessible through **dspx**. Part of that state is local to the processor and part of it is also visible in **Setup > RVP**.

- d. For changes to the **Setup > RCP** section, in addition to the above, you must stop RCP8 (if you have one), and stop the antenna daemons, by typing:

```
$ qiris
$ sudo service rvp10 stop
$ sudo service rcp8 stop
$ qant
$ sudo service rcp8 start
$ sudo service rvp10 start
$ siris
```

RCP8 has a configuration state accessible through **Antx**. These changes take effect when you return to the top level prompt. You must save your changes.



License changes can affect RVP and IRIS.

7. If an error list is displayed,
  - a. Check the error list for parameters that you have customized and correct these customizations.
  - b. Select **Repair** to make corrections that are necessary for the software but do not need to be customized for your operation.
  - c. Select **File > Save**.

## 6.5 Checking the kernel module status

After installation or upgrade, check that the RDA kernel module has been installed and loaded. If the kernel module has not been loaded, the rvp10 process will not start.

To check this, type:

```
lsmod | grep rda
```

If no data is displayed, the kernel module has not been loaded or installed properly.

To check the status of the kernel module, type:

```
systemctl status systemd-modules-load.service
```

If the kernel module is not running, start the module by typing:

```
systemctl start systemd-modules-load.service
```

## 7. Configuring RDA software

After the receiving your unit from the factory, or after software re-installation, you must configure the software to customize your system for your environment and application.

Table 3 RDA configuration tools

Configuration tool	RDA device	Description
setup/RVP utility <i>setup_dsp.conf</i> See <i>IRIS and RDA Utilities Guide (M211316EN)</i> .	RVP10	Configures the local environment required to run RVP support utilities such as <b>Ascope</b> and <b>dspx</b> .  Examples: radar equation parameters that are required for calibration, pulse width definitions, and PRF request limits.
setup/RCP utility <i>setup_ant.conf</i> See <i>RVP10 User Guide (M212604EN)</i> .	RCP8	Configures the local environment required to run the RCP8 support utilities that such as <b>Antenna</b> or <b>Bitex</b> .  Examples: max allowed AZ/EL velocity request, MIN and MAX elevation angles that can be requested, and LAT/LON of radar for sun tracking.
RVP10 NV setups <i>rvp10.conf</i> See <i>RVP10 User Guide (M212604EN)</i> .	RVP10	Defines the details of the sampling and processing algorithms, as well as the operational configuration of the system.  Examples: IF filter design and selection, PRF limits, relative trigger timing, dual-polarization features.
RCP8 NV setups <i>rcp8.conf</i> See <i>RCP8 User Guide (M211320EN)</i> .	RCP8	Configures which status and control bits are available and define the antenna servo control parameters.  Examples: physical or virtual tachometer selection, shutdown safety criteria and internal antenna simulator on/off.
<i>softplane.conf</i>	RVP10 RCP8	Defines the I/O signals on the I/O-62 connector panel, pin-by-pin.  Examples: whether a line is an input or output, electrical specification such as RS422 or TTL, what local variable name is associated with each line.



During installation, you must configure the **Setup** utility and the TTY setups for your system.

The configuration results are stored as ASCII text *.conf* files, typically in the */etc/vaisala/irisrda* directory. Each file has a factory default configuration file that is stored in the template directory. The default is:

```
/etc/vaisala/irisrda/templates/init/
```



For a radar network with identical hardware, you can perform configuration maintenance by copying pre-tested files over the network.

## 8. Installing IO-62 firmware

If you have installed or upgraded the RDA software, and your system includes an IO-62 card and connector panel, you must update the firmware running on RCP8 to be compatible with the installed RDA software.

- ▶ 1. Login as **root**
- 2. Check for running processes by typing: **ps-iris**
- 3. Stop any running processes by typing:

```
# qiris
# quant
```

- 4. Log in as **radarop** (with password xxxxxx)  
You enter X-Windows.
- 5. Right-click and start a terminal window.
- 6. For each Vaisala component, type the appropriate command. For example:

Vaisala component	Command
Standard I/O-62 card	io62-0
Standard connector panel	io62cp-0

- 7. Shut down the system by typing: **poweroff**
- 8. When **Power down** is displayed, turn power off with power switch on lower right of front panel.  
The FPGA software installation is complete.
- 9. Reboot the unit.  
Follow the progress of the reboot on the monitor. The front panel LED display shows the time of the reboot and display diagnostic messages.  
The reboot takes about 1 minute.
- 10. Stop the RCP process by typing:

```
$ killall rcp8
```

11. Run the following diagnostics and observe the results:

```
$ rdadiags io62-0  
$ rdadiags io62cp-0
```

12. Restart the RCP8 process by typing:

```
rcp8 &
```

13. Verify that the restart messages show no faults.
14. Configure RCP.

See *RCP8 User Guide (M211320EN)*.

## 9. Installing RVP10 (RDA) firmware

Before installing RVP10 (RDA) firmware, make sure that:

- The second Ethernet port has been configured. See [Configuring the system and network \(page 62\)](#).
- IFDR10 is physically connected to the port.

If you have installed or upgraded the RDA software, you must update the firmware running on IFDR10 to be compatible with the installed RDA software.

- ▶ 1. Reboot the computer.
2. Login as **radarop**.
3. If IRIS / RDA services are running, turn them off.
  - a. Check what is running.

```
# ps_iris
```

- b. If any services are running, stop them.

```
# service iris stop
# service rvp10 stop
# service rcp8 stop
# service dspexport stop
# service antennad stop
```

4. Verify that all services have stopped:

```
# ps_iris
```

If there are services running, stop them using the **service** or **systemctl** commands or manually kill them.

You must be logged in as **root** to use the **kill** command:

```
# su
# kill <process ID number>
```

5. If not powered, power on IFDR10, and wait for it to boot.

6. If the network cable is not attached, attach IFDR10 to the second Ethernet connection configured for the 10.0.3.x network.
7. Verify that IFDR10 is accessible over Ethernet.

Run **ping** letting at least 4 packets transmit, and press **CTRL+C** to exit program. Verify that there is 0% packet loss.

```
# ping 10.0.3.254
```

**10.0.3.254** is the default IP address of IFDR10.

8. Change to the repository where the image is installed (be default */usr/bin*):

```
cd /usr/bin
```



12. Configure RVP.

See *RVP10 User Guide (M212604EN)*.

13. If the upgrade is interrupted or not completed successfully, the unit stays in diagnostic mode on the next reboot so you can recover from the failure.

14. For RVP upgrades, if the RDA software boots, but is unresponsive, you can force the RVP into diagnostic mode by sticking a paper clip in the inner most hole on the side of the enclosure.

After entering the diagnostic boot mode, you can re-flash the IFDR10 software from the signal processor to recover from a corrupted image.

If the IFDR10 firmware upgrade is part of a software upgrade process, see [Running Setup after upgrade \(page 34\)](#).

# 10. Login, logout, and shutdown

## 10.1 Powering up

When you power-up the computer, the system goes through an automatic startup of the operating system at the end of which the software starts and performs power-up self tests.

If you are not doing any diagnostic or software maintenance work on the system, there is no need to log-in after power-up. When you turn the unit on, your application software takes over.

## 10.2 Local and remote login

You can login either locally or remotely.

- Login locally using the local workstation or through a KVM.
- You can login remotely if `ssh` is enabled. Check with your network administrator.

Here, we assume a local login is used.

## 10.3 Default operator and **root** user login passwords

The standard software installation defines three standard users:

- **root** (password: `xxxxxxx`)— for operating system maintenance functions.
- **radarop** (password: `xxxxxx`)— for application software maintenance functions.
- **observer** (password: `xxxxxx`)

The system administrator can change either of these passwords using the standard Linux password support.

## 10.4 Logging in

### 10.4.1 Local login as operator after powerup

- ▶ 1. At the power-up login prompt, type **radarop** and press **ENTER**.  
When prompted, provide the password (factory default is `xxxxxx`).  
An X-Window screen appears.

2. Right-click and select **New Window** to get a terminal window.

The top of the terminal window shows your user name, the node name of the system, and the current directory path.

### 10.4.2 Switching from radarop to root user

- ▶ 1. Type the super user command: **su** –
- 2. Type the **root** password (factory default is **xxxxxxx**)  
The prompt changes from \$ to #, indicating that you are **root**.

### 10.4.3 Switching from su root user to radarop

In the terminal where you are the super user (**su**), type: **exit**

The prompt changes from # to \$.

### 10.4.4 Logging in as root

You can login as root after a power-up or after exiting X-Windows.

- ▶ 1. Type: **root**
- 2. In the login prompt, press **ENTER** and type the **root** password.

You are now in a full screen terminal. This is not as convenient as X-Windows since only one terminal can be displayed on the screen.



If you need a second full screen terminal, type **ALT+F2**. You can return to your original terminal by typing **ALT+F1**. The other function keys can provide additional terminals.

## 10.5 Powering off

- ▶ 1. Type **poweroff**.  
The system goes through a shutdown sequence. When it is done, **Power down** is displayed.

# 11. Troubleshooting

## 11.1 Correcting File Ownership and Protection

Sometimes, when starting or program or trying to access calibration files, users cannot access some files or receive an error message saying they do not have privileges to do an operation.

This is because the file ownership and protection settings are incorrect.



Do not change the file protection manually. Always use `instiris -setown` to fix the protection of your files.

- ▶ 1. To correct the file ownership and protection, type:

```
# instiris -setown
```

The script goes through the `/etc/vaisala` directory tree, changing the ownership of the files to `operator` and setting the protection as follows:

- Directories—`rw-rw-r-x`
- All files, except executable files—`r-rw-r--`
- Executable files—`rwsrwsr-x`

## 11.2 Authorizing remote X-Windows on your node

- ▶ 1. To enable IRIS systems running on other nodes to send output to your screen, enter the command:

```
$ xhost +<host>
```

Where `<host>` is the remote hostname, or IP address.

2. Check that this works as you intend.

3. Add the appropriate command at the end of one of the following files:
  - To authorize the windows as soon as anyone logs in: `/etc/profile.d/sigmat.sh`
  - To support just one user authorizing the windows: home directory `.bash_profile`

## 11.3 Making Quick Look Windows (QLW) appear

For any problem that prevents the window from starting, IRIS prints:

```
OUTPUT, Error in open_display call.
```

The **Radar Status** menu also indicates **Error** and **Exit** next to the window process.

If you cannot identify the problem from the error message:

- ▶ 1. Check that the workstation is turned on and the network is up and running.
2. Login as **radarop**.
3. Open the **Radar Status** menu and toggle the **Product Output** process off/on.
4. In the command prompt of the workstation where the window should appear, check the user rights by typing:

```
xhost+
```

5. Restart IRIS on your workstation by typing:

```
sudo service iris restart
```



**CAUTION!** This command restarts all IRIS processes.

IRIS tests each process and restarts any that have stopped.

6. If the IRIS Quick Look Window (QLW) does not appear after typing **siris** in a terminal window:
  - a. Log in as **root**.
  - b. In the first line of the `/etc/hosts` file, add the host name to the first line of the file:

```
127.0.0.1 <host-name> local host...
```

## 11.4 Replacing failed OS RAID disks

RAID1 is automatically configured on the server. However, in some cases, you may need to remove, recover, and add new devices to RAID.

In most cases, this requires removing the failing disk and installing a new one.



While you can do this while powered up, if the system allows you to power down, do so.

- ▶ 1. To check the status of the RAID1 disk, type:

```
cat /proc/mdstat
```

When RAID1 is working correctly, the terminal prints, for example:

```
Personalities : [raid1]

md126 : active raid1 sda[1] sdb[0]

      125032448 blocks super external:/md127/0 [2/2] [UU]

md127 : inactive sdb[1](S) sda[0](S)

      4520 blocks super external:imsm
```

- [UU] indicates that both disks are operational.
  - If there is a problem with one of the disks, the [UU] string is [\_U] or [U\_].
2. Check if disk `sda` or `sdb` has failed.

3. To remove the disk from RAID configuration, type:



Take care when removing the failing disk.  
Remove only the disk identified as failing. In the following example, it is `sdb`.

```
mdadm --manage /dev/md/ism0 --remove /dev/sdb
```

The terminal prints:

```
mdadm: hot removed /dev/sdb from /dev/md/ism0
```

4. Power down computer, replace the failing disk, and reboot
5. To create the partition on the replacement disk, type:

```
sfdisk -d /dev/sda | sfdisk /dev/sdb
```

6. To verify the partition, type:

```
fdisk -l
```

7. To add a new disk to the raid array, type:

```
mdadm --manage /dev/md/ism0 --add /dev/sdb
```

8. To check the recovery process, type:

```
cat /proc/mdstat
```

The terminal prints:

```
[root@wes-install ~]# cat /proc/mdstat

Personalities : [raid1]

md126 : active raid1 sdb[2] sda[1]

        125032448 blocks super external:/md127/0 [2/2] [UU]

md127 : inactive sdb[1](S) sda[0](S)

        4520 blocks super external:imsm

unused devices: <none>
```

# Appendix A. Installing AlmaLinux 8.7

## A.1 Overview to installing AlmaLinux 8.7



IRIS software release 10.0.0 requires the AlmaLinux 8.7 operation system.

Vaisala provides a customized ISO image for AlmaLinux 8.7 on the Vaisala FTP website at:

<https://ftp.sigmet.vaisala.com/files/releases/AlmaLinux/>

Vaisala supports two installation methods from the Vaisala spin version of the ISO image:

- Automatic - unattended installation
- Manual - interactive installation

For both installation methods you can use the local USB device as your installation media.

We recommend that you use the automatic process unless you have special system configuration needs or if your custom configuration fails the automatic installation process.

Installing Linux requires a Linux software installation tree and a boot device. You must transfer the AlmaLinux 8.4 distributions ISO images to the media that you are going to use in the installation.

You need the following to create installation media:

- PC running Windows 10/11, or AlmaLinux
  - USB port and USB Flash Drive 64 GB
- Vaisala recommends a USB 3.0 drive because data transfer is much faster than USB 2.0.

## A.2 Creating Installation Media

After creating and initializing the installation media, you can run the installation process.

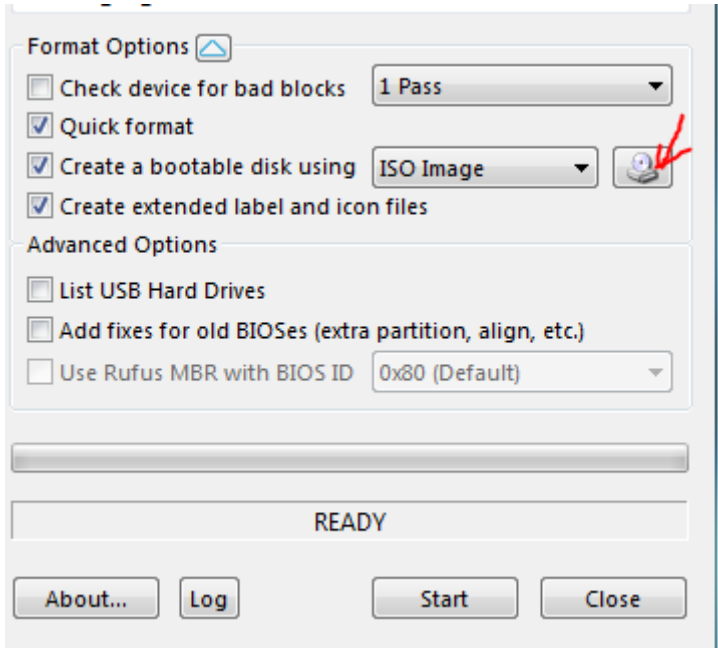
### A.2.1 Creating USB Installation Media on Windows

These instructions apply to Windows 10 and Windows 11.

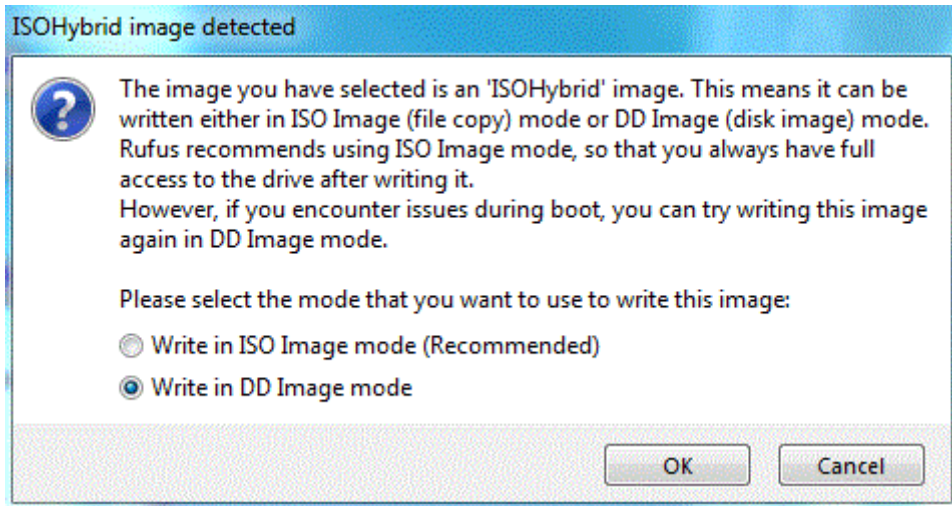
When creating USB installation media on Windows, use a standalone program such as `rufus` (available at <http://rufus.akeo.ie/>). Follow the on-screen instructions.

- ▶ 1. Launch `rufus` by double-clicking the program icon.
2. Insert a USB drive in the USB port.

3. Select the drop-down list to the right of the **Create a bootable disk using**, and select **ISO Image**.




4. Select the **Disc** icon and then select the iso image.
5. Select **Write in DD Image mode** if a warning for the hybrid ISO image is displayed.



6. Select **Close**.

## A.2.2 Creating USB installation media on Linux (AlmaLinux)



**CAUTION!** This operation destroys data on the device you operate on.

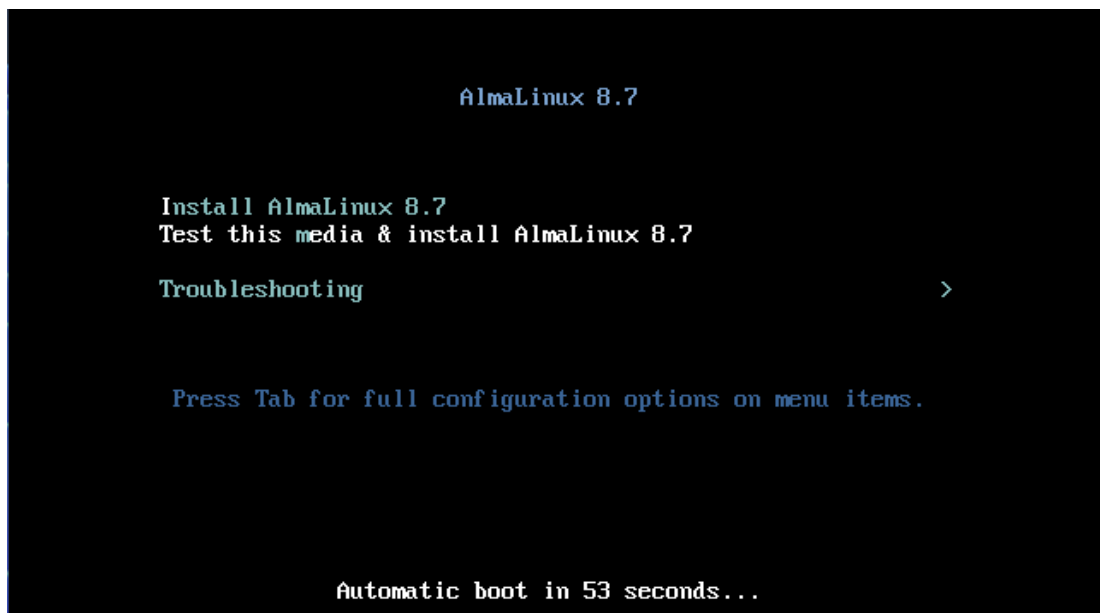
- ▶ 1. Run `$ lsblk` to list block devices on your system. Take note of the output.
- 2. Insert a USB drive in the USB port.
- 3. Run `$ lsblk`.  
Compare the output to the previous step. The additional block device from this output is your USB drive.
- 4. Run `$ dd if=path/toAlmaLinux.iso of=/dev/xxx`  
Where `/dev/xxx` is the path to the USB drive. Do not use the partition number for the USB drive.  
For example: `/dev/sdc`.

## A.3 Installing AlmaLinux automatically

The automated installation uses KICKSTART to run an unattended installation.

The instructions in this section are for the Vaisala-provided server. If you are using a different system, consult your systems manual for instructions.

- ▶ 1. Power up the system by pressing the power button on the server.
- 2. Insert the USB drive into the USB port. If you are using the USB port for the first time, this also enables the port.
- 3. In the AlmaLinux 8.7 window, select **Test this media & install AlmaLinux 8.7**, and press **ENTER**.



4. The installation starts. When prompted, configure the hostname and IP address.
  - For one port, configure the internal network: Select **Configure as static (default is DHCP)?**: **Y**, and enter the IP address **10.0.2.1**.
  - Configure a second port as DHCP by selecting **Configure as static (default is DHCP)?**: **N**.

```
Enter Hostname: testme

===== Configuring for enp0s3 =====
Do you want to configure this interface? [y/n] y
Configure as static (default is DHCP)? [y/n] y
Enter IP address: 10.0.1.20
Enter netmask: 255.255.255.0_
```

Then the installation will continue.

- a. In the **Installation Summary** window, select **Installation Destination**.
  - b. Create new partitions: **/**, **/boot**, **swap**, **/srv**, and **boot/efi**.  
See chapters [Partitioning the destination disk \(page 67\)](#) and [Recommended partitioning settings \(page 67\)](#).
  - c. In the **Installation Summary** window, select **Begin Installation**.
5. When the installation is complete, the system will reboot automatically.
  6. Login as **root**.  
The default password is **xxxxxxx**.
  7. The default **root** password is insecure. To change the password, see [Setting the root password \(page 77\)](#).
  8. Select **Application > System Tools > Settings GUI**.
  9. In **Region & Language**, configure your language settings.

10. Depending on your configuration, you may need to configure the ports.

- If you are using **Dell PowerEdge R440** server, use ports **em1** and **em2**.
- If you have an **American Megatrend** server, your **enp9s0** port is automatically set to communicate with the IFDR10 on a 10.0.1.x network.

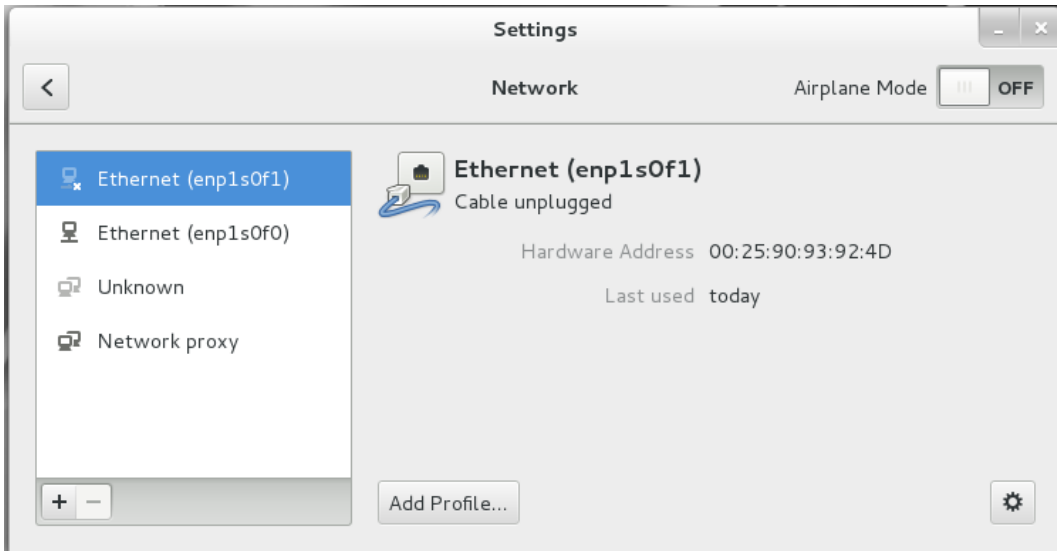


**CAUTION!** Do not reconfigure the network port to IFDR10.

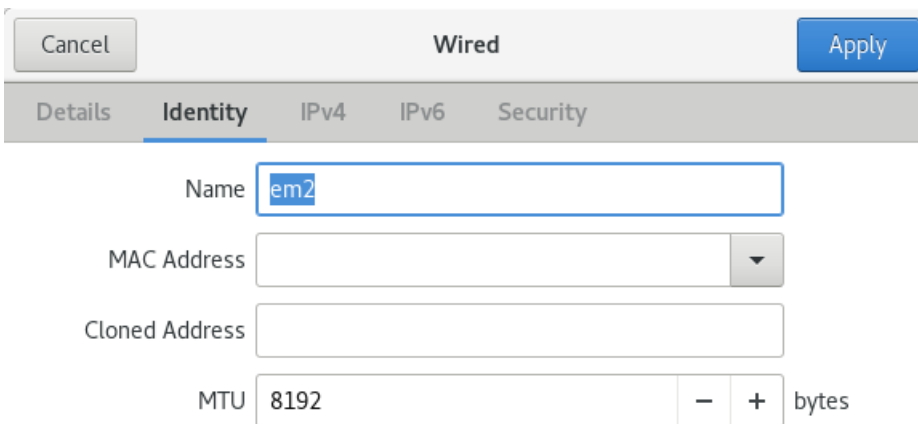
- If you have a **SuperMicro** server, your network settings for IFDR10 are not pre-initialized. The IFDR10 10.0.1.x network is usually configured on the **enp9s0**, **enp1s0f1**, or **eth1** ports but is not limited to these ports.

This example uses the `enp1s0f1` port.

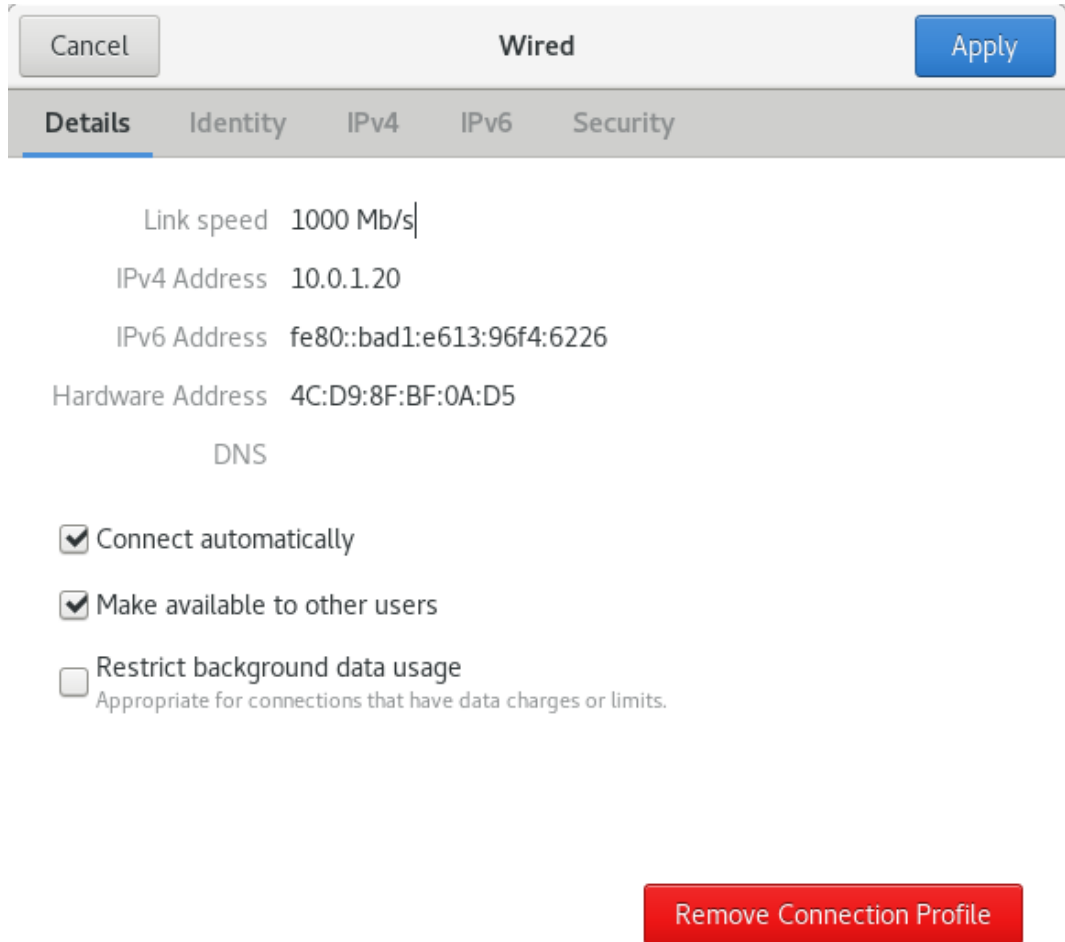
- a. Select **System Tools > Settings > Network**.



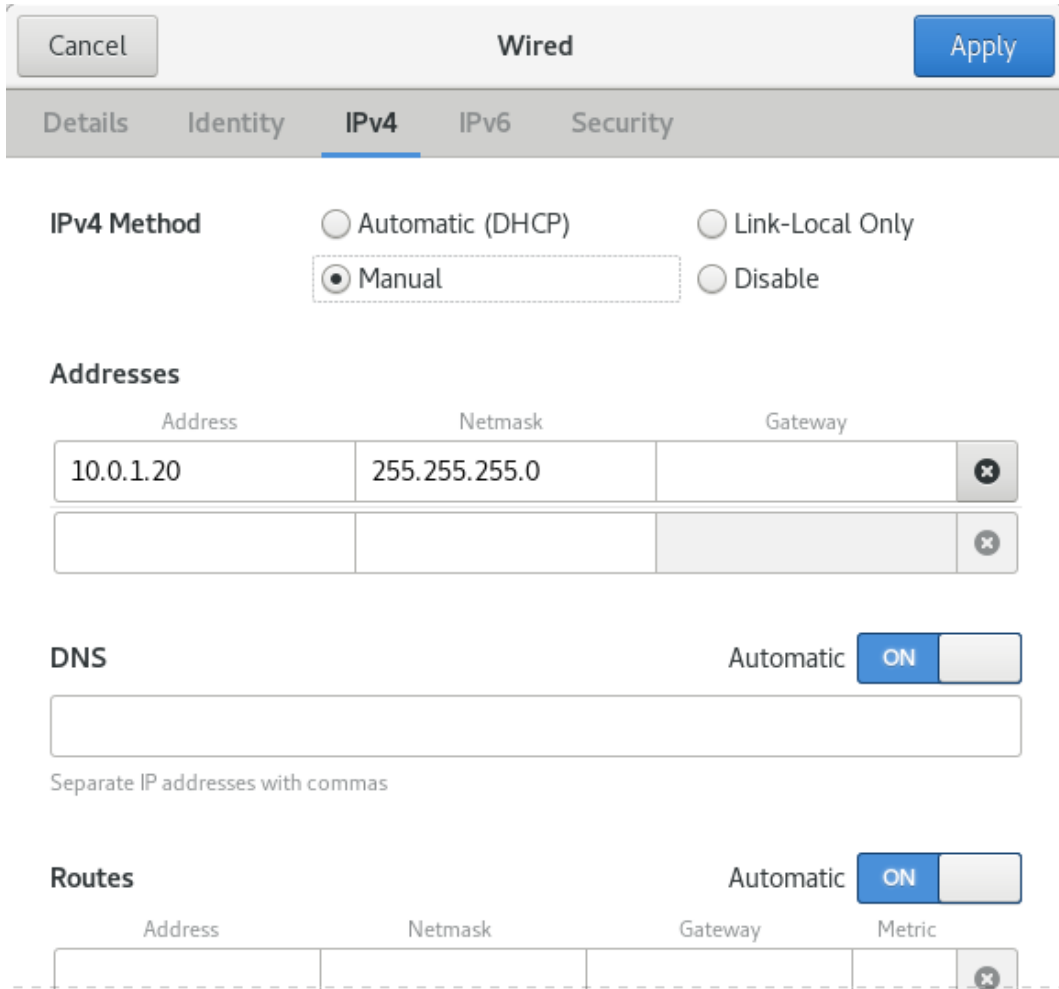
- b. In the **Network** window, select the gear icon in the lower right corner.
- c. Select the **Identity** tab.  
In **MTU**, type **8192**.



- d. Select the **Details** tab.  
Select **Connect automatically** and **Make available to other users**.



- e. In the right pane, select **IPv4**.



Change **Addressing** to **Manual**.  
In the **Address**, **Netmask**, and **Gateway** fields, type enter the test shown in the figure.  
Select **Apply**.

**More information**

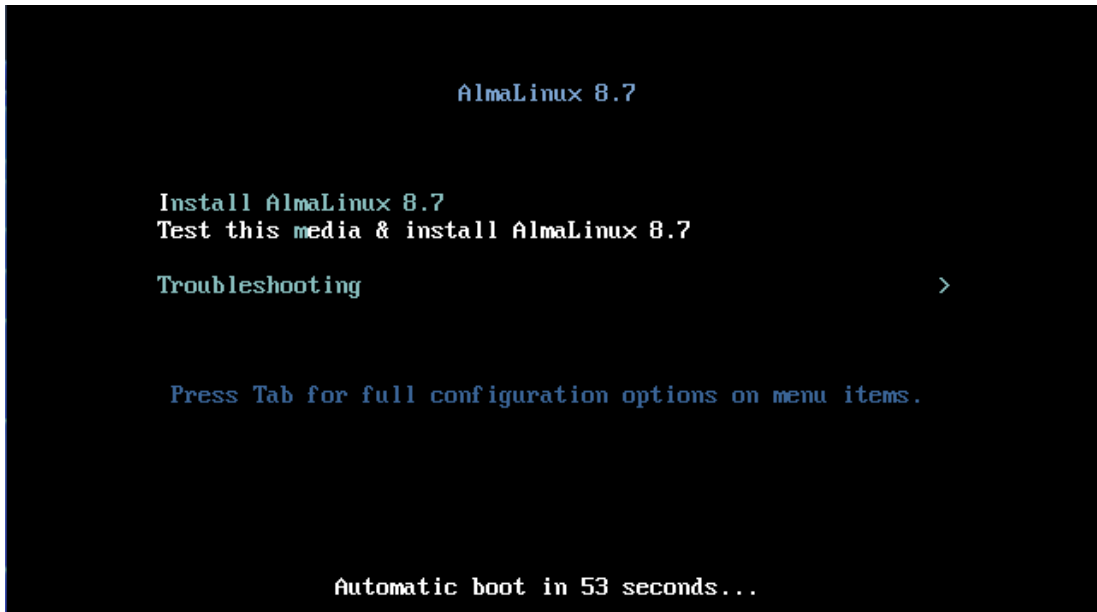
- ▶ [Recommended partitioning settings \(page 67\)](#)

## A.4 Installing AlmaLinux manually (interactive)

### A.4.1 Booting the system for manual installation

You must configure the system to boot from the media device that you have created.  
The instructions in this section are for the Vaisala-provided server. If you are using a different system, consult your systems manual for instructions.

- ▶ 1. Power up the system by pressing the power button on the server.
2. Insert the USB drive into the USB port. If you are using the USB port for the first time, this also enables the port.
3. In the AlmaLinux 8.7 window, select **Test this media & install AlmaLinux 8.7**, and press **ENTER**.



4. Select a language.  
(This instruction assumes that **English (United States)** is selected.)
5. Select **Continue**.
6. Select the keyboard icon to select the keyboard type (default is **English**).
7. Select **Language Support** to select the language.
8. Select **Time & Date** to set up the time and date.
  - Region: **Etc**
  - City: **Coordinated Universal Time**
9. Select **USER CREATION**.  
The **User creation** window opens.
  - a. In the user name text box, enter user account name or if you wish to have the user account name generated from the full name, enter the user's full name in the **Full name** text box.
  - b. In the password text box, enter the user account's password.
  - c. In the confirm text box, re-enter the user account's password.
  - d. Select **Done**.  
If your password is weak, you are prompted to select **Done** a second time.

10. Select **Root Password** to set up the root password.  
For details, see [Setting the root password \(page 77\)](#).
11. For **Installation Source**, select the default value (**Local media**).
12. Select **Software Selection (Server with GUI)**, and for additional software, select **Development Tools**.
13. Click on **Installation Destination**
14. Select local Standard Disks, and check the **Custom** button.
15. Select **Done**.
16. Select **LVM** for the partition scheme from the drop-down menu.  
Select the **+** icon to add a partition. For more information about the partitioning, see [Partitioning the destination disk \(page 67\)](#).

#### A.4.2 Configuring the system and network

- ▶ 1. In the **Installation summary** window, select **Network & Host Name**.
- 2. Enter the host name in the **Host name** text box in the lower left corner.
  - a. Select the network device you wish to configure listed in the panel on the left hand side. The selected device is highlighted.
  - b. In some interfaces, to enable the network interface, select the blank button next to **OFF** in the upper right-hand corner.  
If the button exists, slide the button to the **ON** position.
  - c. Select **Configure** at the bottom right-hand corner to display the **Editing** window.

3. Select the **General** tab to set the connectivity options.

Editing enp0s3

Connection name:

**General** Ethernet 802.1X Security DCB IPv4 Settings IPv6 Settings

Automatically connect to this network when it is available

All users may connect to this network

Automatically connect to VPN when using this connection

Firewall zone:

- a. Select **Automatically connect to this network when it is available**.
- b. Select **All users may connect to this network**.

4. Select the **IPv4 Settings** tab.

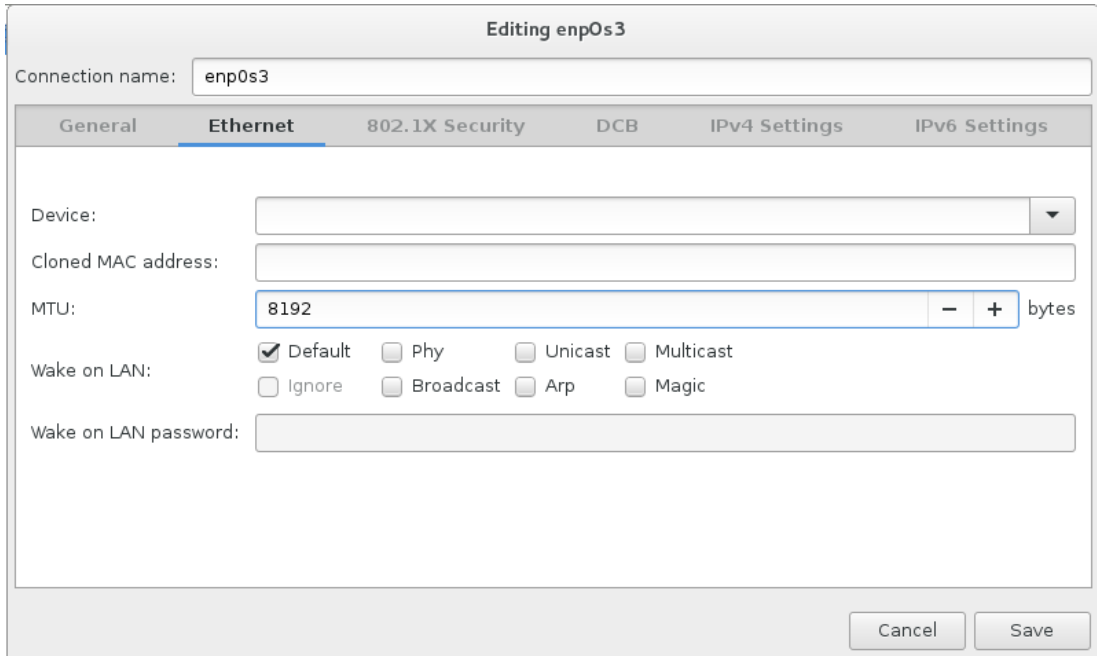
The screenshot shows the 'Editing enp0s3' window with the 'IPv4 Settings' tab selected. The 'Method' is set to 'Manual'. Below this is a table for 'Addresses' with columns for 'Address', 'Netmask', and 'Gateway'. The first row contains '10.0.1.20', '24', and '0.0.0.0'. There are 'Add' and 'Delete' buttons to the right of the table. Below the table are input fields for 'DNS servers:', 'Search domains:', and 'DHCP client ID:'. A checkbox labeled 'Require IPv4 addressing for this connection to complete' is at the bottom left. A 'Routes...' button is at the bottom right. At the very bottom of the window are 'Cancel' and 'Save' buttons.

- a. In the **Method** drop-down menu, select **Manual**.
  - b. Select **Add**.
  - c. Enter the IP address, netmask, and gateway in the text entry boxes under the headers.
  - d. If configuring your **eth0** interface, type your DNS server address in the **DNS server** field.  
If configuring your **eth1** interface, leave this blank.
  - e. If configuring your **eth0** interface, type your domain name in the **Search** domains field.  
If configuring your **eth1** interface, leave this blank.
  - f. Check the **Require IPv4 addressing for this connection** box near the bottom of the page.
5. Optional: If you are configuring the computer to run RDA software and connect to IFDR10, you need to configure Ethernet ports. See [Configuring the system and network for RDA and IFDR10 \(page 64\)](#).
  6. Select **Save** in the lower right corner to finish network configuration.
  7. Select **Done** in the upper left corner of the **Network and Host Name** tab to return to the **Installation summary** window.

#### A.4.2.1 Configuring the system and network for RDA and IFDR10

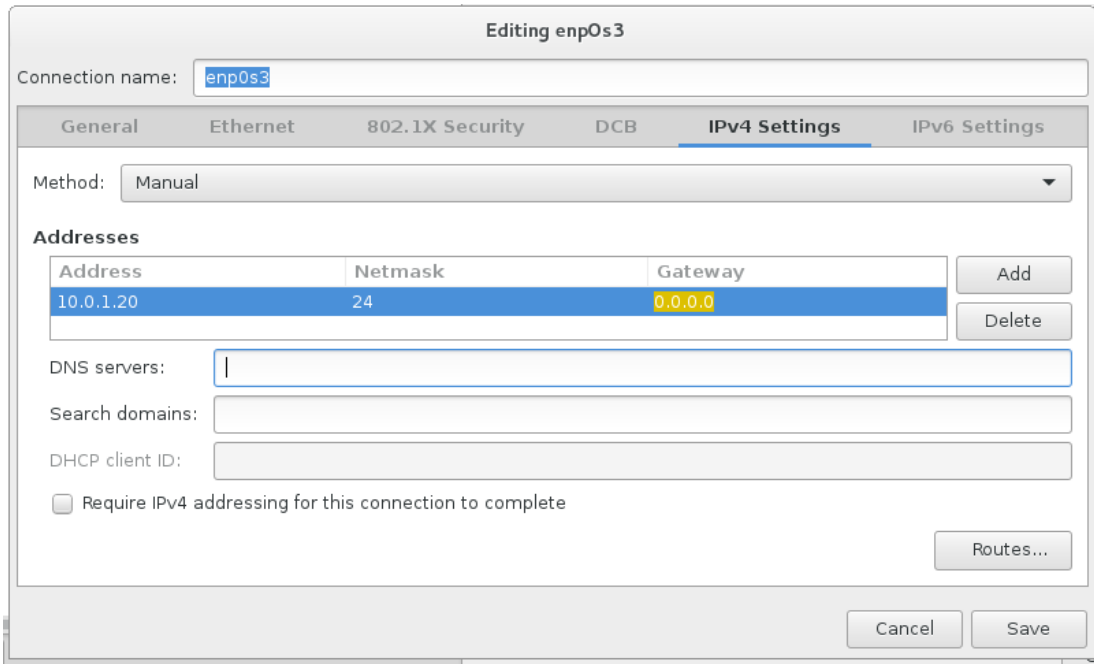
If you plan to run RDA software on this computer and connect to IFDR10, two Ethernet ports are required.

1. In the installation summary page, select **Network and Host Name**.  
The required Ethernet ports should appear in the panel on the left hand side of the **Network and Host Name** window.
2. Select the **Ethernet** tab. In the **MTU** field, type **8192**.



The screenshot shows a window titled "Editing enp0s3" with a "Connection name" field containing "enp0s3". Below this is a tabbed interface with tabs for "General", "Ethernet", "802.1X Security", "DCB", "IPv4 Settings", and "IPv6 Settings". The "Ethernet" tab is selected. The "Device" field is empty. The "Cloned MAC address" field is empty. The "MTU" field is set to "8192" with a "bytes" label and minus/plus buttons. The "Wake on LAN" section has several radio button options: "Default" (checked), "Phy", "Unicast", "Multicast", "Ignore", "Broadcast", "Arp", and "Magic". The "Wake on LAN password" field is empty. At the bottom right are "Cancel" and "Save" buttons.

3. Select the **IPv4 Settings** tab.



- a. In the **Method** drop-down menu, select **Manual**.
- b. Select **Add**.
- c. Enter the IP address, netmask, and gateway in the text entry boxes under the headers.
  - If you are configuring the Ethernet port connected to the Internet or your corporate network: The settings in this window are specific to your network configuration. If you are unsure what to enter in these fields, contact your IT support.
  - If you are configuring the Ethernet interface for direct connection to the IFDR10, use the following settings:

Setting	Value
Address	10.0.3.1
Netmask	24
Gateway	0.0.0.0

- d. Type your DNS server address in the **DNS server** field.
- e. Type your domain name in the **Search** domains field.
- f. Check the **Require IPv4 addressing for this connection** box near the bottom of the page.

4. Select **Save** in the lower right corner to finish network configuration.

5. Select **Done** in the upper left corner of the **Network and Host Name** window to return to the installation summary page.

### A.4.3 Partitioning the destination disk

#### A.4.3.1 Recommended partitioning settings

Vaisala recommends the following disk partitioning.

You need the `/boot/efi` partition if your computer uses the UEFI boot.

Table 4 Recommended disk partitioning

Partition	File system type	Size
<code>/home</code>		50 GB
<code>/boot</code>	EXT4	500 MB
<code>/boot/efi</code>	EXT4	600 MB
<code>/var</code>		50 GB
<code>/</code>	EXT4	50 GB
<code>swap</code>	SWAP	size of RAM + 2 GB
<code>/srv</code>	EXT4	All of the remaining disk space

Use the xfs file system for partitioning.

Partition `/srv` is a data partition.

If there is only a little disk space, you can decrease the size of the `/home`, `/var`, and `/` partitions by 10-20 GB.

### A.4.3.2 Partitioning the destination disk automatically

- ▶ 1. In **INSTALLATION DESTINATION**, start manual partitioning:
  - a. Select the hard disk.
  - b. Select **Select Storage Configuration, Custom**.
  - c. Select **Done**.


**INSTALLATION DESTINATION** ALMALINUX 8.4 INSTALLATION

[Done](#)  [Help!](#)

**Device Selection**  
Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

**Local Standard Disks**

1000 GiB

 **VMware Virtual disk**  
sda / 1000 GiB free

*Disks left unselected here will not be touched.*

**Specialized & Network Disks**

[Add a disk...](#)

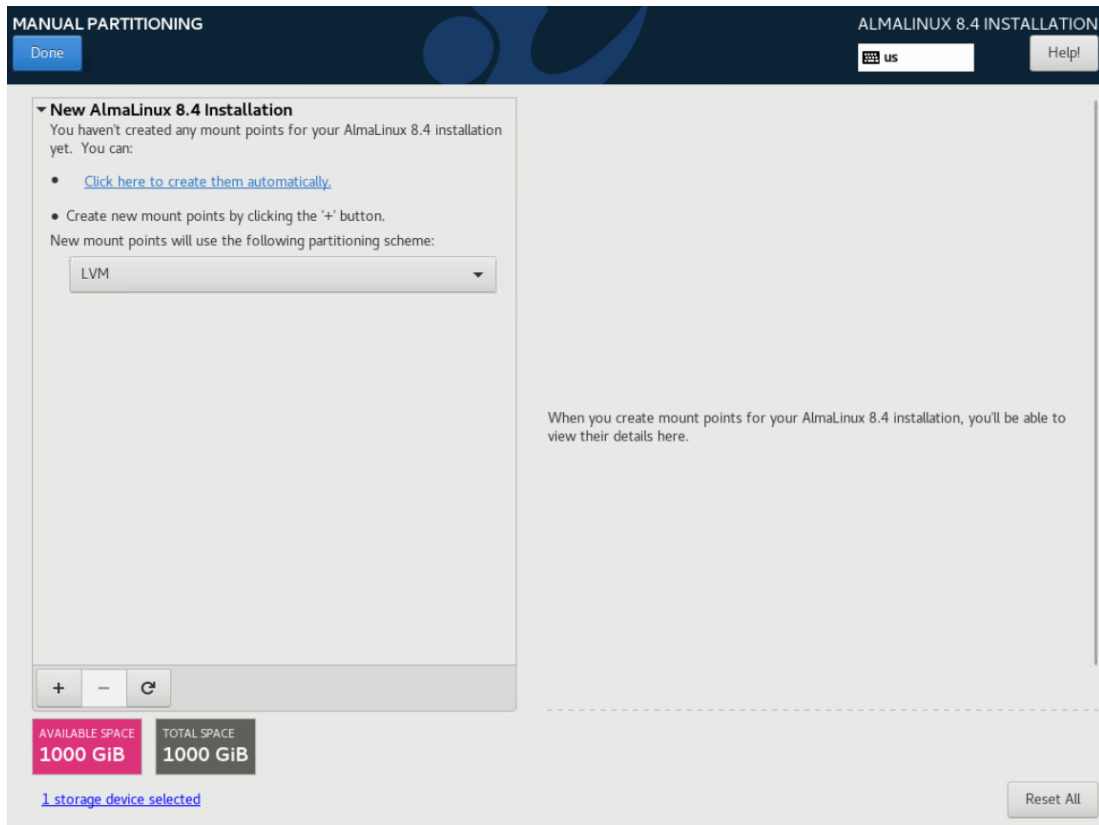
*Disks left unselected here will not be touched.*

**Storage Configuration**

Automatic  Custom

[Full disk summary and boot loader...](#) 1 disk selected; 1000 GiB capacity; 1000 GiB free [Refresh...](#)

2. Select **Click here to create them automatically**.



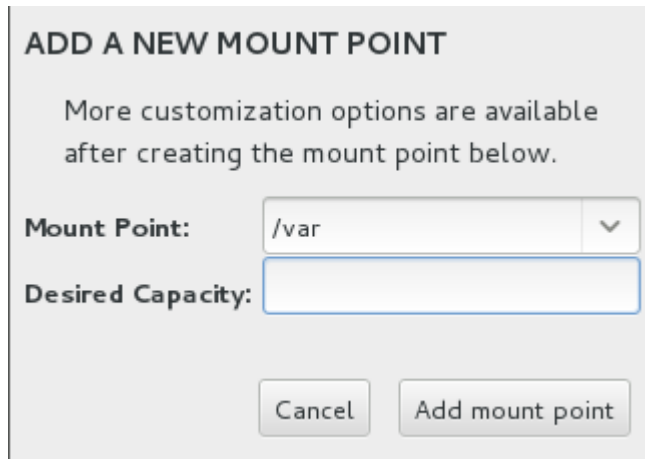
After creating the automatic partitions, you need to modify the partition manually in the next steps.

3. Modify the **/home** partition.
  - a. Select the **/home** partition.
  - b. Under **Desired Capacity**, set the size of the home partition (**/home**) to **50 GiB**.
  - c. Set the **File System** to **ext4**.
  - d. Select **Update Settings**.

4. Create the */var* partition:

- a. Select the plus (+) icon.

The **ADD A NEW MOUNT POINT** dialog appears.



**ADD A NEW MOUNT POINT**

More customization options are available after creating the mount point below.

**Mount Point:**  ▼

**Desired Capacity:**

- b. In **Mount Point**, type */var*

- c. Under **Desired Capacity**, set the size of the */var* partition by typing **50 GiB**.

- d. Select **Add mount point**.

5. Select **/boot**.

- a. Under **Desired Capacity**, set the size of the */boot* partition by typing **500 MiB**.

- b. Select **Update Settings**.

6. Select **/**.

- a. Under **Desired Capacity**, set the size of the root partition (*/*) by typing **50 GiB**.

- b. Select **Update Settings**.

7. Select **swap**.

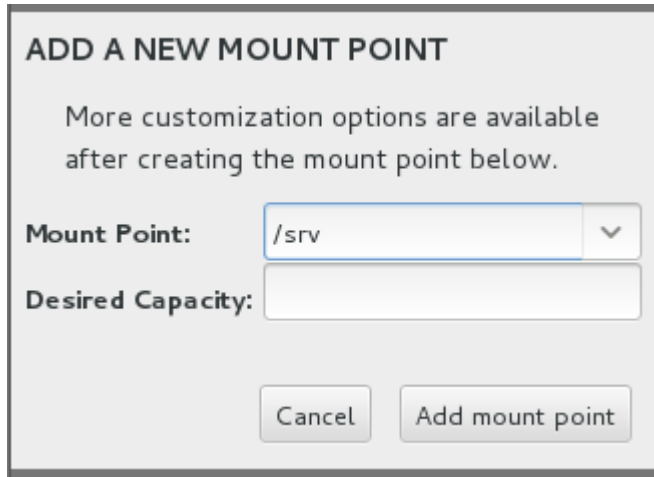
- a. Under **Desired Capacity**, set the size of the swap to the size that corresponds to RAM + 2 GB.

- b. Select **Update Settings**.

8. Create the `/srv` partition:

a. Select the plus (+) icon.

The **ADD A NEW MOUNT POINT** dialog appears.



b. In **Mount Point**, type `/srv`

c. Under **Desired Capacity**, use nearly all the available server space (indicated in the pink box) for the `/srv` partition by typing, for example, **284 GiB**.

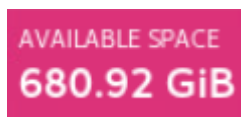


Figure 3 Example of available disk space

d. Select **Add mount point**.

9. Select **Done**.

10. In the window listing the partitions, check that the partitions are defined as described in [Recommended partitioning settings \(page 67\)](#).

11. Select **Done > Accept Changes**.

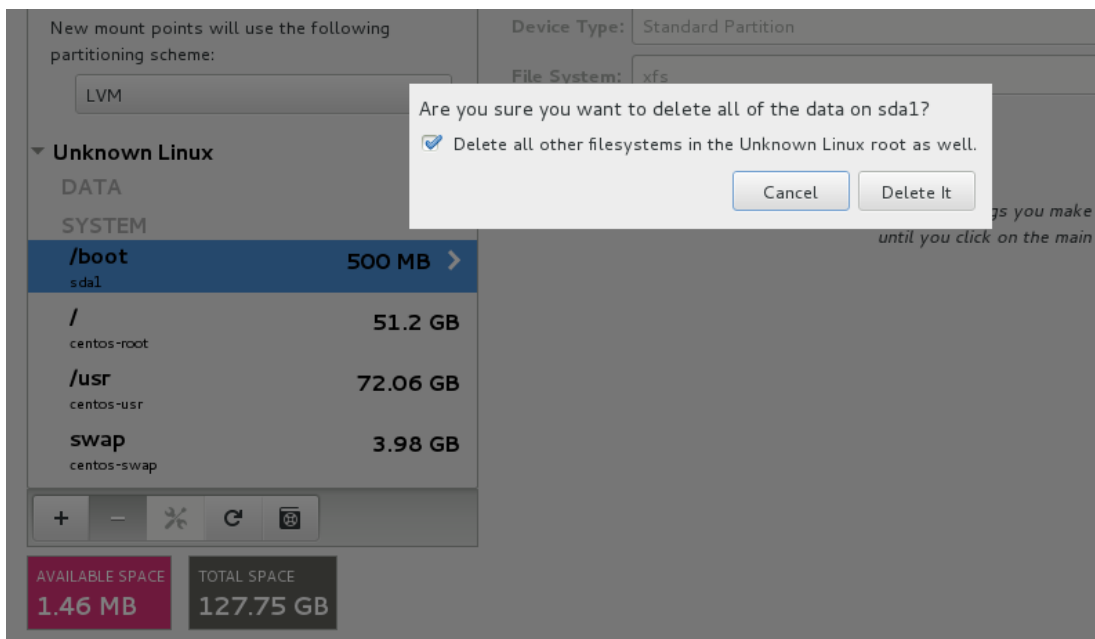
#### A.4.3.3 Partitioning the destination disk manually

- ▶ 1. On the installation summary page, select **Destination Installation**.
- 2. To select the destination disk for the AlmaLinux installation, select the **Disk** icon. Once selected, a check mark appears on the icon.
- 3. Select **Storage configuration > Custom**. For recommended settings, see [Recommended partitioning settings \(page 67\)](#).
- 4. Follow the instructions to create new partitions, or, if needed, to re-use or delete existing partitions.

### A.4.3.3.1 Deleting existing partitions

If you do not want to use the existing partitions, you must delete them to provide disk space for your installation.

1. Select the arrow to the left of the drive name you want to modify to expand the partitioning scheme.
2. Select a partition to delete.
3. Select a minus sign (-) icon to delete the partition.
4. On the pop-up window, check **Delete all other filesystems....** and select **Delete it**.



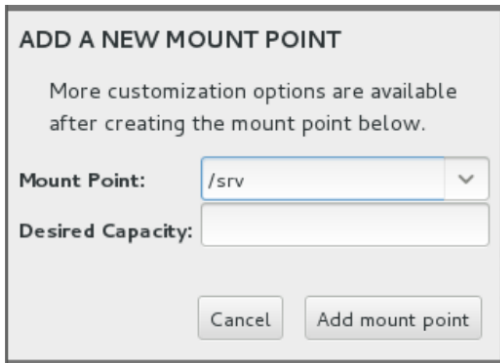
### A.4.3.3.2 Creating new partitions



Vaisala recommends the LVM partitioning scheme.

1. If the `/home` partition exists, delete it by selecting the minus (-) icon.
2. Select the plus (+) icon to add partitions.  
Do this 4 times, once for each partition.

3. For each new directory, do the following:



- a. From the **Mount Point** menu, select the directory.
  - b. Go to **ADD A NEW MOUNT POINT > Desired Capacity**, and type the value recommended in [Recommended partitioning settings \(page 67\)](#).
  - c. Select **Add mount point**.
4. Create the `/srv` partition:
    - a. In the **Mount Point** field, type `/srv`.  
Type a number larger than the remaining data size. For example: **9999999999**.
    - b. Select **Add mount point**.
  5. One at a time, select each partition, and modify the value in the **Desired Capacity** field with recommended values.  
For **File System Type**, you can select either **EXT4** or **xfs**.
  6. Select **Done > Accept changes** to finish partitioning.

When you have completed partitioning, do one of the following:

- If you are doing a manual installation, go to [Starting the installation \(page 74\)](#).
- If you are doing an automatic installation, go back to [Installing AlmaLinux automatically \(page 55\)](#).

#### A.4.3.3.3 Re-using existing partitions

If your disk has an operating system installed, the partitioning scheme list is displayed.

- ▶ 1. To expand the partitioning scheme, select the arrow to the left of the drive name you want to re-use.
2. In the partition window, for each partition shown in the left pane, select the partition, and enter the name shown in the **Mount Point** field.  
For the **swap** partition, you do not need to enter the mount point name, but you still need to perform steps 3 and 4.
3. Check the **Reformat** check box next to the **File System** drop-down list.
4. Select **Update Settings**.

5. When you have updated the settings for all the partitions, select **Done**.
6. Select **Accept Changes** to return to the installation summary page.

#### A.4.4 Starting the installation

Before starting the installation, make sure you have your root password and user account information.

- ▶ 1. In the lower right corner of the installation summary page, select **Begin installation**.  
The user settings configuration page appears.
- 2. While the installation process is in progress and before the end of the installation, configure the **root** password.
- 3. When installation status shows complete, select **Reboot** and remove the installation media.  
The installation takes 20 ... 30 minutes.
- 4. If the server does not reboot automatically, use the power button to power cycle the system.
- 5. If on the first boot you see the prompt window **Accept the License Information**, in the initial setup window:
  - a. Select **License Information**.
  - b. Check the **I accept the license agreement** box.
  - c. Select **Done**.
  - d. Select **Finish configuration**.  
Login screen is displayed.
- 6. Disable monitor negotiation.
- 7. The first time you login to each new account, follow the series of windows to verify your keyboard and localization settings.
  - a. Select **Next** until you get to the thank you screen.
  - b. Select **Start using**.
- 8. Log out of the user account to continue with the installation.

##### More information

- ▶ [Setting the root password \(page 77\)](#)
- ▶ [Disabling monitor negotiation \(page 74\)](#)

#### A.4.5 Disabling monitor negotiation

During manual operating system installations, Vaisala recommends disabling monitor negotiation to ensure that the server recognizes the monitors.

- ▶ 1. Login as **root**.

The default password is xxxxxxxx.

- 2. In the `/etc/default/grub` file, after the quiet in `GRUB_CMDLINE_LINUX` add:

```
nomodeset
```

- 3. Save your changes.
- 4. To update the configuration file, run the following script:

```
cd /boot/grub2/  
grub2-mkconfig -o grub.cfg
```

#### A.4.6 Configuring time sync with chronyd

You can configure your machine to time sync with another machine using **chronyd**.

- ▶ 1. In the `/etc/crony.conf` file, update the lines that start with the word **server** by removing the default server lines and adding your own. For example:

```
# configure the servers for synchronization using ip address or name  
server 198.102.75.10 iburst  
server 0.centos.pool.ntp.org iburst
```

- 2. If **chronyd** is already running and you would like changes to take effect, use the following command:

```
#systemctl restart chronyd.service
```

3. If you would like NTP to start automatically on restart, type:

```
#systemctl enable chronyd.service
```

This takes effect after the next reboot. To start without rebooting, type:

```
#systemctl start chronyd.service
```

The system takes 15 minutes to sync the time. If the times are more than 10 minutes apart, NTP assumes there is an error and does not change the time.

4. To check on the status of **chronyd**, type:

```
# chronyd sources -v
```

The first character before the server host is **\*** when it is time synced.

## A.4.7 Rebooting the system

- ▶ 1. When the installation is complete, select **Reboot** to reboot the system.
- 2. Depending on your system bios boot sequence setting, you may need to remove the installation media right after you see the system shutdown complete window flash by in order to boot using the hard drive.

## A.4.8 Logging in with your user account

After rebooting, the login window shows the user account you created.

- ▶ 1. Select your user account, and enter your password in the text box.
- 2. Select **Sign in**.  
The first time you log in to each new user account, you are asked to set some initialization settings. The default settings are normally properly set during the installation process, and no setting changes should be required.
- 3. In the **Welcome** window, select your language, and select **Next**.
- 4. In the **Input Sources** window, verify your source, and select **Next**.
- 5. In the **On-line Accounts** window, select **Next**.
- 6. In the **Thank you** window, select **Start using AlmaLinux**.
- 7. Read the **GNOME Help** window and press **X** in the upper right corner to close the window.

The installation and initialization process for AlmaLinux is complete.

## A.5 Setting the root password

If your system was pre-installed in Vaisala, the default password is `xxxxxxxx`.

- ▶ 1. Select **ROOT PASSWORD**.  
The **Root Password** window opens.
- 2. Enter your root password.  
Check the password strength meter. While Vaisala recommends a strong password, the software does not stop you from entering a weak one.
- 3. In the confirm text box, re-enter your root password.
- 4. In the upper left hand corner, select **Done** to return to the main configuration page.  
If your password is weak, you are prompted to select **Done** a second time.

# Appendix B. IRIS Diagnostic Utilities

## B.1 ps\_iris command

Use the **ps\_iris** command to list currently active IRIS, antenna, and utility processes, including information about their owner UID, PID, time start time, and total CPU time.



To stop a process, use the PID as an argument to the `kill` command.

For example:

```

Detached Processes:
  USER      GROUP  PID  PPID  NI  PRI  %CPU  TIME  %MEM   VSZ  COMMAND
  operator  users  3353   1    0  19   0.0   0:02  0.0  168216  server IRIS_SERVER
  operator  users  3355   1    4  15   0.0   0:00  0.0  142236  sserver IRIS_SSERVER
  operator  users  3399   1   -8  27   0.0   0:49  0.0  136788  ingfio  IRIS_INGFIO
  operator  users  3407   1    4  15   0.0   0:00  0.0  136768  network IRIS_NETWORK
  operator  users  3411   1    8  11   0.4   7:17  0.0  143124  product IRIS_PRODUCT
  operator  users  3413   1    8  11   0.0   0:00  0.0  157800  reingest
IRIS_REINGEST
  operator  users  3415   1    4  15   0.0   0:00  0.1  180620  output IRIS_OUTPUT001
  operator  users  3418   1    4  15   0.0   0:01  0.0  156556  output IRIS_OUTPUT002
  operator  users  3420   1    0  19   0.0   0:02  0.0  136776  input  IRIS_INPUT01
  operator  users  3423   1    0  19   0.0   0:09  0.0  138996  watchdog
IRIS_WATCHDOG
  operator  users  23970  1   -8  27   0.0   0:08  0.0  142164  ingest IRIS_INGEST
    
```

```

Antenna Processes:
  USER      GROUP  PID  PPID  NI  PRI  %CPU  TIME  %MEM   VSZ  COMMAND
  operator  users  1756   1    0  19   0.0   0:04  0.0  115676  ant_logd ANT_LOGD
  operator  users  1789   1   -15  34   0.0   0:51  0.0  115684  ant_rcvd ANT_RCVD
  operator  users  1793  1789  -15  34   0.0   1:10  0.0  115684  ant_rcvd ANT_RCVD
  operator  users  1823   1   -15  34   0.0   1:08  0.0  115680  ant_xmtd ANT_XMTD
    
```

```

Stand-alone Utilities:
  USER      GROUP      PID  PPID  NI  PRI  %CPU  TIME  %MEM  VSZ  COMMAND
  radarop   radarop   23933 23923  0  19  0.0   0:00  0.0 116244 audio
iris_audio
  operator  users     4321 4319  4  15  0.0   0:00  0.0 12636 clntRecv
CLNT_RECV_WINDOW -pipe 8
  radarop   radarop   23923 4163  0  19  0.0   0:04  0.0 189464 iris
  radarop   radarop   23934 23923  0  19  0.0   0:00  0.0 116236 iris_clnt_rcv
7 1073741826
  operator  users     3330  1  0  19  4.6  67:30  0.0 699324 /rcp8 -
console /dev/null
  operator  users     2021  1  0  19  9.4 138:57  0.4 796880 /rvp10 -
daemon
  operator  users     2297 2021  -  50 12.0 176:43  0.3 275560 rvp10proc
RVP10_PROC-0
  operator  users     2347 2021  -  50 11.8 172:44  0.3 275556 rvp10proc
RVP10_PROC-1

```

## B.2 show\_iris command

Use the **show\_iris** command to show information about the IRIS process: When it started, the present state of semaphores and event flags, and the current inventory of in-use products.

The **show\_iris** command also provides command line options for in-use bits. For more information, type **show\_iris -help**.

```

$ show_iris
IRIS Activity on 'hot' at: 09:52:52 17 SEP 1999
IRIS V7.11 was started at 16:19:38 16 SEP 1999 by 'joe'.
Manual startup from TTY:'/dev/tty' ; Restarts:1
Features License: 00004001-000101-WAHRMA-01-Y9ANHF
Products License: 000007FF-000101-WAHRMA-03-WFW4KR

```

Present states of Semaphores...

PROCESS CONTROL: FREE (ID: 5833)      PROCESS MODES: FREE (ID: 5826)  
TASK SCHEDULE: FREE (ID: 5834)      PRODUCT SCHEDULE: FREE (ID: 5831)  
INGEST DIRECTORY: FREE (ID: 5831)      PRODUCT DIRECTORY: FREE (ID: 5849)  
DEVICE TABLE: FREE (ID: 5852)      MODE SWITCH TABLE: FREE (ID: 5834)  
ARCHIVE DIRECTORY: FREE (ID: 5834)      ERROR LOG: FREE (ID: 5834)

Present states of Event Flags...

RTDISP: CLEAR      INGEST: CLEAR  
INGFIO: CLEAR      INGFIO MAPPING: SET  
INGFIO WAITING: SET      WATCHDOG: CLEAR  
PRODUCT: CLEAR      REINGEST: CLEAR  
NETWORK: CLEAR      NORDRAD: CLEAR  
GLOBAL MAPPED: SET

Event Flags SET for Output Processes: 7 8

Event Flags SET for Network Child Processes: 1 2 3 4 5 6 7 8 9 10 11 12 13 14  
15 16

Checking INGEST inventory for in-use files:

Total files checked: 92, total in use: 0.

Checking PRODUCT inventory for in-use files:

Total files checked: 260, total in use: 0.

```

===== Product Inventory Contents =====
Prod Type          Count          Size(Mb)          Kept Count        Kept Size
PPI                 0              0.00             0                 0.00
RHI                 0              0.00             0                 0.00
CAPPI               159            92.06            21                60.92
Cross Section      0              0.00             0                 0.00
Echo Tops          0              0.00             0                 0.00
Tracking           0              0.00             0                 0.00
Hourly Rainfall   0              0.00             0                 0.00
N Hours Rainfall  0              0.00             0                 0.00
Vol. Vel. Proc.   0              0.00             0                 0.00
Vert.Int. Liquid  0              0.00             0                 0.00
Wind Shear         0              0.00             0                 0.00
Warning            1              0.01             0                 0.01
Real Time PPI     0              0.00             0                 0.00
Real Time RHI     0              0.00             0                 0.00
Raw Data           73            52.35            73                52.35
Max with panels   0              0.00             0                 0.00
User Map           0              0.00             0                 0.00
User Section       0              0.00             0                 0.00
User Other         0              0.00             0                 0.00
Status             25            0.06             0                 0.00
Shear Line         0              0.00             0                 0.00
Horizontal Wind    0              0.00             0                 0.00
Beam Pattern       0              0.00             0                 0.00
Text               0              0.00             0                 0.00
Forecast           0              0.00             0                 0.00
Multi-Doppler     2              15.36            2                 15.36
Image              0              0.00             0                 0.00
Composite          0              0.00             0                 0.00
LLWAS              0              0.00             0                 0.00
                   260            159.84 Mb       97                128.65 Mb

```

## B.3 sigmet\_env Command

Use **sigmet\_env** to test or troubleshoot items associated with an IRIS installation.

To sue the command, log in as a normal IRIS user, run **sigmet\_env**. The **sigmet\_env** command checks the following:

- That all the IRIS operators and observers are in the */etc/users* file.
- That all IRIS environment variables that point to directories are defined and the directory exists, and the directory can be read and written as required.
- For obvious bad file names in the saved menu directory.
- That IRIS executable files which require the **set-UID-on-execute** bit set are set with the correct UID.
- The RDA (RVP/RCP) environment.

The following example shows a case with a bad file name of *.TSC*.

```

$ sigmet_env
Checking IRIS_OPERATORS list...
Checking IRIS_OBSERVERS list...
Checking installation directories...
Checking configuration directories...
Checking data directories...
Checking file names in IRIS_MENU...
Bad menu filename: '/etc/vaisala/irisrda/menu/.TSC'
Checking root file ownerships...

Errors Detected -- Please Check Printout

```

## B.4 structmap command

Use the **structmap** command to display the format of IRIS structures. This is useful when writing applications that access IRIS data.



To make **structmap** available on your system, install IRIS with the **-headers** option .

### structmap options

To show a list of **structmap** options, enter the command without options or parameters:

```

$ structmap
Command Line Options:
<struct name> :   Display internal contents of IRIS structure(s)
-include <dir> :  Override default 'include' directory name
-nopack :         Force no packing of structure elements
-scan :          Produce list of all defined structures
-scanlocal :     Like 'scan', but do local directory only
-noflags :       Suppress error flags in output
-recursive :     Descend into substructures
-data :          Show numeric data read from std.input
-dimension N :   Use with '-data' for N-dimensional printout

```

For example **structmap 'structmap -scan'** displays everything.

### structmap <structure name> option

Invoke **structmap** with the name of a structure to display the name of the include file where the structure is defined and a description of each element in the structure.

It offsets from the beginning of the structure, its size, the number of times it occurs, its data type, and name.

For example, to display information about the **tape\_header\_record** structure:

```

$ structmap tape_header_record

tape_header_record /usr/include/irisrda/output.h
0      12      1    struct structure_header hdr
12     16     16   char stape_id[]
28     16     16   char sitename[]
44     12     1    struct ymds_time init_time
56     2      1    SINT2 idrive
58     2      2    char ipad58x2[]
60     8      8    char sversion[]
68     252   252   char ipad_end[]
320

```

The example shows that the structure is defined in `/include/irisrda/output.h` and contains:

- `hdr`, a structure of type `structure_header`, taking up the first 12 bytes.
- `stape_id` and `sitename`, arrays of 16 characters each, at offsets 12 and 28.
- `init_time` is a `ymds_time`, structures taking up 12 bytes starting at offset 44.
- `idrive`, a long integer at offset 56.
- `ipad58x2`, `sversion`, and `ipad_end`, arrays of 2, 8, and 252 characters, at offsets 58, 60, and 68, respectively.

The total size of the structure is 320 bytes.

### **-scan Option**

The `-scan` option lists the names of the structure defined by IRIS.

You can use the `-scan` option to recursively call `structmap` and display the format of all the structures in the system.

```

$ structmap -scan
ant_manual_setup
bitex_field_def
bitex_top_def
cappi_psi_struct
.
.
.

```

To redirect the output to a file, type:

```

$ structmap 'structmap -scan' > allstructs.out

```

# Appendix C. Alternative Configurations

## C.1 Installing IRIS 3DView

It is not necessary for IRIS software to be installed on the system to use 3DView.

If you chose to have the IRIS software on the same system, it is recommended that you install the IRIS software before installing the IRIS 3D View.

IRIS 3DView software is a separately licensed software package that renders 3D visualizations of IRIS format radar data.

You can install the IRIS 3DView either on an IRIS Analysis machine, or a machine without IRIS.

- ▶ 1. Obtain the following RPMs:
  - *libogg-devel-1.1.4-2.1.el6.i686.rpm*
  - *libtheora-devel-1.1.0-2.el6.i686.rpm*
  - *qtwebkit-2.1.1-1.el6.i686.rpm*
  - *qt-mobility-1.1.3-2.el6.i686.rpm*
  - *gl2ps-1.3.5-1.el6.i686.rpm*
  - *gl2ps-devel-1.3.5-1.el6.i686.rpm*
  - *compat-expat1-1.95.8-8.el6.i686.rpm*
  - *expat-2.0.1-9.1.el6.i686.rpm*
  - *expat-devel-2.0.1-9.1.el6.i686.rpm*
  - *xorg-x11-apps-7.4-10.el6.i686.rpm*
  - *xorg-x11-server-common-1.7.7-29.el6.i686.rpm*
  - *xorg-x11-server-Xvfb-1.7.7-29.el6.i686.rpm*
  - *vtk-5.8.0-6.el6.i686.rpm*
  - *vtk-devel-5.8.0-6.el6.i686.rpm*
  - *vtk-java-5.8.0-6.el6.i686.rpm*
  - *vtk-python-5.8.0-6.el6.i686.rpm*
  - *vtk-qt-5.8.0-6.el6.i686.rpm*
  - *vtk-tcl-5.8.0-6.el6.i686.rpm*
  - *acroread-9.4.0-1.el6.i686.rpm*
  - *acroread-plugin-9.4.0-1.el6.i686.rpm*

2. Install the RPMs in the following order:
  - a. `#rpm -Uvh libogg-devel-1.1.4-2.1.el6.i686.rpm`
  - b. `#rpm -Uvh libtheora-devel-1.1.0-2.el6.i686.rpm`
  - c. `#rpm -Uvh qtwebkit-2.1.1-1.el6.i686.rpm`
  - d. `#rpm -Uvh qt-mobility-1.1.3-2.el6.i686.rpm`
  - e. `#rpm -Uvh gl2ps-1.3*`
  - f. `#rpm -Uvh compat-expat1-1.95.8-8.el6.i686.rpm`
  - g. `#rpm -Uvh expat-2*`
  - h. `#rpm -Uvh xorg-x11*`
  - i. `#rpm -Uvh vtk*`
  - j. `#rpm -Uvh acroread-9*`
3. Log in as **root**.
4. The IRIS 3D View application is in the rpm package called *iris3dview-1.0.2-1.i686.rpm*. Install it using the rpm installation tool

```
# rpm -Uvh iris3dview-1.0.2-1.i686.rpm
```



It is recommended that you do not run the IRIS 3D View application while logged in as a **root** user.

If you have IRIS software installed on your system, log in as **radarop** user.

If IRIS software is not installed, create a user on your system.

5. In the **GNOME** window, create a user by selecting **System > Administration > Users and Groups** and follow the online instructions.
6. Log in as normal user and check `.config/Vaisala` directory for the following files:
  - *IRIS3D.conf*
  - *IRIS3DColors.conf*
  - *IRIS3DLandmarks.conf*
  - *IRIS3DVisStyles.conf*

7. Do one of the following:
  - a. If you have the IRIS software installed, create the following directories:

```
/usr/iris_data/data/geo      # for geo data
/usr/iris_data/data/2d      # for 2d data
/usr/iris_data/data/3d      # for 3d data
/usr/iris_data/data/background_output
# for background images processing results
```

The permissions and ownership for these directories are:

```
drwxrwsr-x
2 operator users 4096 Dec 11 13:14 2d drwxrwsr-x
2 operator users 4096 Dec 11 13:15 3d drwxrwsrwx
2 operator users 4096 Dec 11 13:15 background_output drwxrwsr-x
2 operator users 4096 Dec 11 13:14 geo
```

- b. If you do not have the IRIS software installed, you can put your data directory anywhere you want, but you must set the directory permissions to read/write access.
8. Run **IRIS 3DView** visualization:

```
/usr/bin/iris3dview &
```

When you first start **IRIS 3DView**, it runs a license wizard. Follow the online instructions.

9. If your system has an IRIS or RDA system already installed, the **IRIS 3D View License** dialog box displays the **Sitename** for your system.

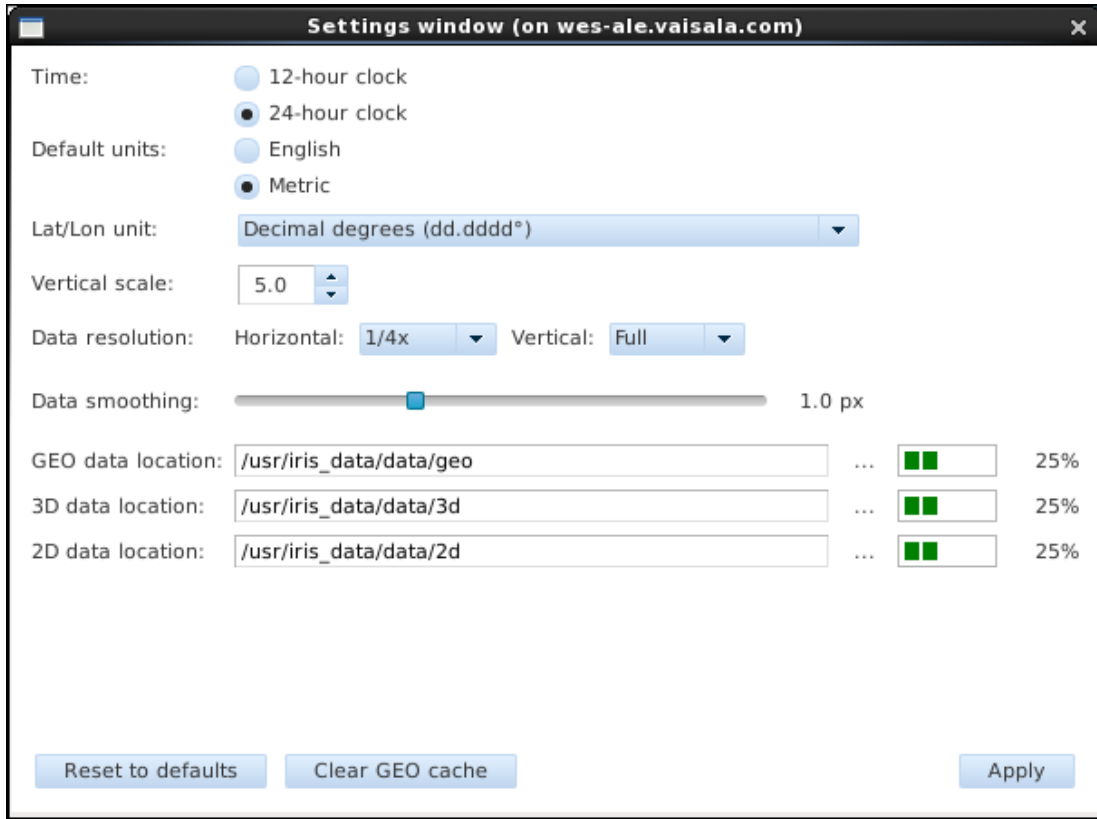
In that case, leave it unchanged.

If not, enter a unique **Sitename** (16 characters or less) and select **Next**.

The **IRIS 3D View License** dialog displays the site code and check code.

10. Send the information shown in previous figure to Vaisala and request a license string.
11. Enter the license string in the **License** field and click **Finish**.

- 12. Once the **IRIS 3D View** window opens, click the setup icon in the upper right hand corner to open the **Settings Window** dialog box.



Configure the data directory to point to the directories created earlier, according to your data type.

## 13. Configure background processing.

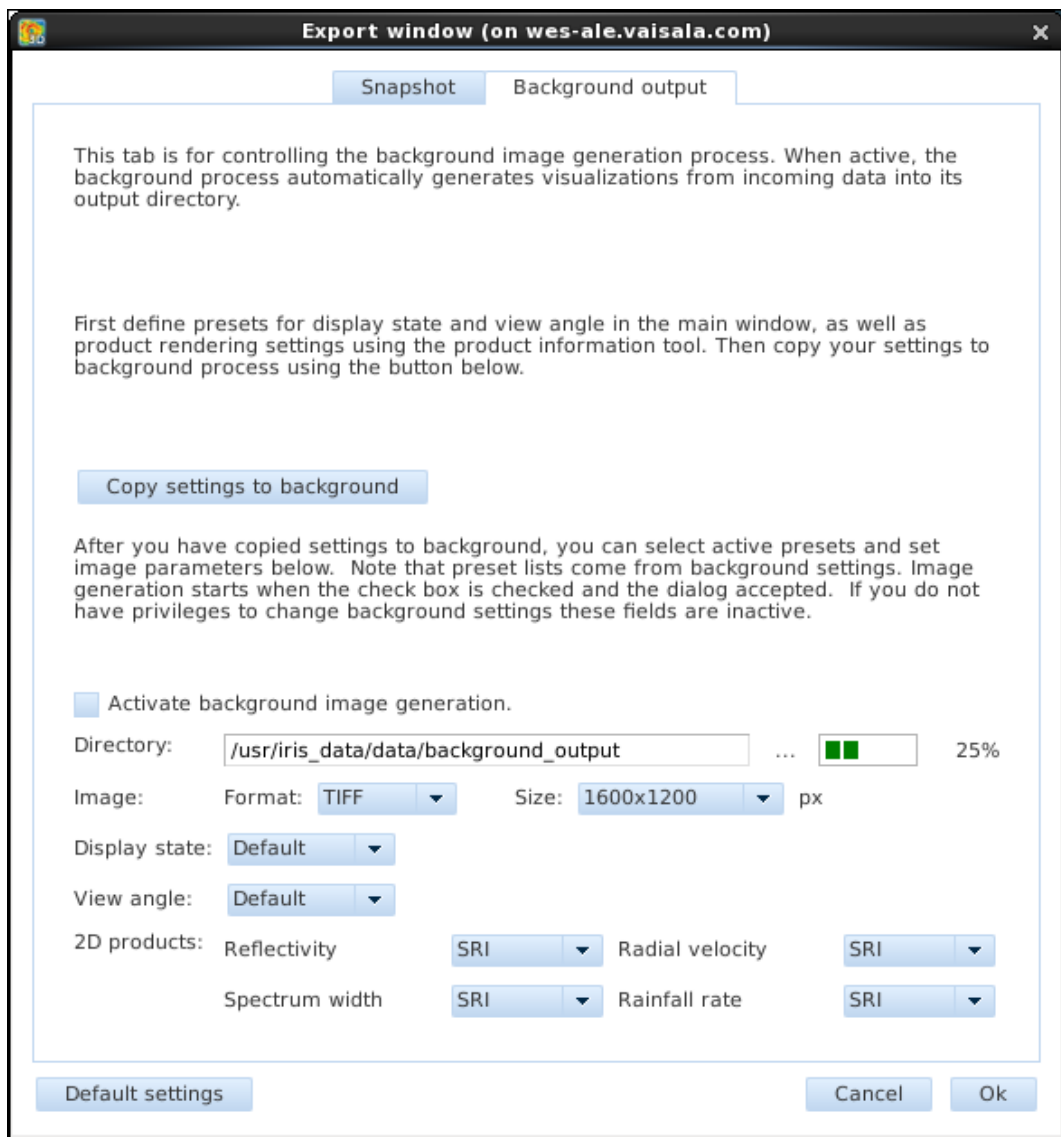
Background processing is run by the `iris3d` user; however, the user who runs the `iris3d` visualization must copy the configuration files to the `.config` directory of the `iris3d` user:

- a. Set permissions for everybody to be able to read and write by running:

```
#chmod -R 777 /home/iris3d/ as root user
```

- b. From the visualization window, select **File > Export tool**.

- c. From the export window, select the **Background** output tab and follow the online instructions to finish the setup.



After installing the IRIS 3D View, the background processing daemon starts automatically.

14. Check the daemon by running the `ps -ef` command:

```
ps -ef | grep iris
```

and you should get the printout similar to:

```
iris3d  3432    1  0 13:24 ?        00:00:00 dbus -launch -- autolaunch
841d3b9bca80c846219d29fc00000022 --binary-syntax --close-stderr
iris3d  3433    1  0 13:24 ?        00:00:00 /bin/ dbus - daemon --fork --
print- pid 5 --print-address 7 --session
iris3d  3435    1  0 13:24 ?        00:00:00 /usr/bin/ iris3dviewd --
loglevel =2 --daemon
```

If you need to restart the daemon, change to the root user by typing:

```
su root
```

You are prompted for the password.  
Stop and start the daemon by typing the following:

```
#!/sbin/service iris3dviewd stop
#!/sbin/service iris3dviewd start
```

15. Test background processing:
  - a. Copy 3D data to the 3D directory that you configured.
  - b. Wait for a second and check the output file in output directory that you configured.
16. If needed, modify the logging level.
  - a. To check the logging, go to `/home/iris3d/` and open the `iris3dviewd.log` file.
  - b. To view real-time logging messages while you are running background processing, run `tail -f iris3dviewd.log`.
  - c. To set logging level to more details, like level 6, editing the `/etc/sysconfig/iris3dviewd` and change `loglevel=2` to `OPTIONS="-- loglevel=6 -- daemon"`.
  - d. Restart the processing daemon.

## C.2 Defining the Operator List in the Startup File

Most environments can function with **radarop** and **observer** users without any further definitions. If you wish to manage named users, follow the instructions below.

The `/etc/sigmat/profile.conf` file defines some of the base configuration, including the lists of users who can operate IRIS fully, and who can observe its operation but not make any changes.



Every IRIS user must share group access to files owned by the operator by being a member of the users group.

1. Edit the file and change these as needed.

```
operators='radarop operator john george mary root'  
observers='observer'
```

2. Check your environment by typing:

```
$ env | grep IRIS
```



# Warranty

For standard warranty terms and conditions, see [www.vaisala.com/warranty](http://www.vaisala.com/warranty).

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

# Technical support



Contact Vaisala technical support at [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com). Provide at least the following supporting information as applicable:

- Product name, model, and serial number
- Software/Firmware version
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see [www.vaisala.com/support](http://www.vaisala.com/support).

# Recycling



Recycle all applicable material according to local regulations.





# VAISALA

