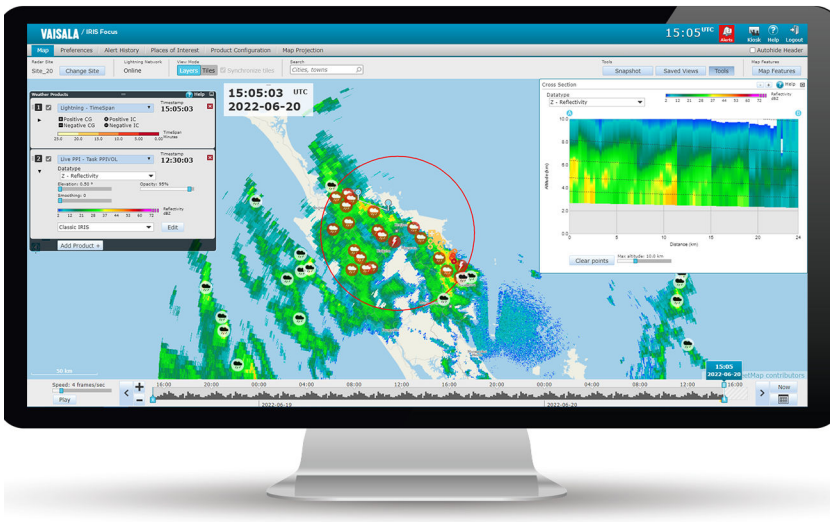
M211904EN-U
RESTRICTED

Release Notes

IRIS Focus version 7.4



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1. About this document

1.1 Version information

This document provides information on IRIS Focus releases.

Table 1 Document versions (English)

Document code	Date	Description
M211904EN-U	April 2024	For IRIS Focus 7.4
M211904EN-T	December 2023	For IRIS Focus 7.3
M211904EN-R	May 2023	For IRIS Focus 7.2

1.2 Related documents

Table 2 Related documents

Document code	Name
M211850EN	*IRIS Focus Administrator Guide*
M211849EN	*IRIS Focus User Guide*
M212924EN	*IRIS and RDA Software Installation Guide (M212924EN)*

1.3 Trademarks

2. IRIS Focus 7.4 release notes

2.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 7.4.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

If IRIS Analysis and IRIS Focus are installed on separate servers, you need to configure the IRIS Analysis server to allow the IRIS Focus server to connect to port 30735. By default, port 30735 is blocked by the firewall of the IRIS Analysis server. See chapter *Configuring the firewall* in *IRIS Focus Administrator Guide*.

You need to determine or set the fully qualified domain name (FQDN) of the IRIS Focus server before installing the software. See chapter *Verify or override the FQDN of your server* in *IRIS Focus Administrator Guide*.
If your internal network does not support DNS, you will need to include the **`--broken-dns`** command option when installing IRIS Focus.
If your internal network does support DNS, but the **`hostname --fqdn`** command does not return the correct name for your IRIS Focus server, you will need to include the **`--fqdn FQDN`** command option where FQDN is the fully qualified domain name of your IRIS Focus server.

Migrating to IRIS Focus 7.4

To install IRIS Focus 7.4 onto a new system, see *IRIS Focus Administrator Guide*.

IRIS Focus 7.4 requires AlmaLinux 9. As this is a major underlying change requiring the installation of a new OS, it is not possible to directly upgrade to IRIS Focus 7.4 from a prior release. If you are currently running IRIS Focus 6.0, 6.1, 7.1, 7.2 or 7.3, you will be able to migrate to IRIS Focus 7.4. Migration will transfer your IRIS Focus configuration and user account configuration to the new installation. Migration will not transfer historical radar, lidar, or lightning data. For migration instructions, see Migrating to IRIS Focus 7.4 (page 8).

Table 3 System requirements

AlmaLinux	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)	Windforge
IRIS Focus 7.4 requires AlmaLinux 9. It has been tested against AlmaLinux 9.2 and 9.3.	The radar data visualization features of IRIS Focus 7.4 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP version 1.2.7 or later on the same network.	The lidar data visualization features of IRIS Focus require Windforge version 3.5.0 or later in the same network.

2.2 Updates and fixes

New features

- *More data types for lidars*
- *Updated Max product*

Updates

- Previously, IRIS Focus used a fixed 250-meter bin size when displaying data on a map. This would cause a large discrepancy between the detail provided in RTI view and what was shown in the map view. This was particularly noticeable with lidar data, as lidar systems typically run with bin sizes much less than 250 meters in length. The IRIS Focus 7.4 release includes updates to use a dynamic bin size and will display map data at a higher resolution corresponding to the data's native resolution.
- Two new command line options have been added to the rsw-installer script used to install IRIS Focus 7.4. The `--docker-ip-addr 10.200.2.1` and `--docker-subnet-bits 28` options can be used to change the definition of the docker network created by IRIS Focus used for communications between Kubernetes and Docker containers. You only need to use these options if the default 10.200.2.1/28 subnet would conflict with an existing subnet on your network.
- The minimum TLS level permitted to access the system has been raised from 1.2 to 1.3.

Fixes

- 10038: Postgres 12 runs out of disk space because of WAL files.

2.3 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature works with WMS version 1.1.1 servers. Older or newer versions of WMS servers are not supported and may be incompatible.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 9619: Changing turbulence pointing scan configuration does not automatically change the task name, which may result in a turbulence calculation using several different configurations. If you change lidar azimuth or elevation angle configuration, use a different task name for different configurations to separate them from each other. For example, name them **`RWY28_1`** and **`RWY28_2`**. Failure to follow this convention may cause the turbulence charts to not appear in IRIS Focus.
- 10001: The **Cross Section** tool does currently not allow drawing freeform curved lines.
- 10245: Taking a snapshot of the **MAX** product causes a server error, which results in an error pop-up in the generated PNG image.
- "Anonymous" entries in the user table can occur. User with the `Administrator` role can safely remove these entries by logging them out.
- If you have a subscription to the **GLD360** layer and have upgraded from a prior release of IRIS Focus to IRIS Focus 7.3, an update to how time information was appended to request for external WMS products may cause an issue. To avoid this, login as `administrator` and verify in the layer editor that the **Time parameter supported** option is set to `every request`, and that the **Refresh rate** is set to something like 900 seconds (15 minutes).

2.4 Corrections and additions to the documentation

- Correction to chapter *Migrating to IRIS Focus 7.4* in *IRIS Focus Administrator Guide (M211850EN)*:
  - Instead of generating the *`focus-migrate-tool-7.4.0.tar.gz`* file, get a copy of the file from the IRIS Focus 7.4 USB media or download it from https://ftp.sigmet.com/files/releases/Focus/7.4.0/Focus_install/focus-migrate-tool-7.4.0.tar.gz and copy it to the IRIS Focus server you want to migrate from.

2.5 Migrating to IRIS Focus 7.4

If you have IRIS Focus 6.x or 7.x in use, you can take release 7.4 into use through a migration. In a migration, the following configurations will remain intact:

- User details
- Identity configuration

- Password configuration
- Organizations
- Application subscription
- Map layers
- Map view context
- Welcome and notification text
- Alert notification settings
- Weather alert message
- Technical alert messages
- Color scales
- DataFlow alert configuration
- GLD360 WMS layer
- Places of interest and events
- Nowcast configuration
- Saved views
- Predefined composites
- Projection setting

Use the version of the **rsw-migrate-install** tool that matches with the version of the target system where the new install will be done. For example, if you are migrating from 6.1 to 7.4, you need to use the **rsw-migrate-install** tool from the IRIS Focus 7.4 release.

IRIS Focus 7.4 requires a server computer running on AlmaLinux 9.

1. Get a copy of the *focus-migrate-tool-7.4.0.tar.gz* file from the IRIS Focus 7.4 USB media or download it from https://ftp.sigmet.com/files/releases/Focus/7.4.0/Focus_install/focus-migrate-tool-7.4.0.tar.gz and copy it to the IRIS Focus server you want to migrate from.
2. Untar the file:

   ```
   tar -xvf focus-migrate-tool-7.4.0.tar.gz
   ```

3. Run the migration tool to get a backup file:

   ```
   ./rsw-migrate-install --backup
   ```

4. The migration tool tells you where the resulting migration backup tar file is located. Copy the file to a safe place.
5. Install Focus 7.4 on a server running AlmaLinux 9.
6. Copy the migration backup tar file to the Focus 7.4 server.

7. On the Focus 7.4 server, run the migration tool from the Focus 7.4 release directory to restore the backup tar (`-s` is optional and will run the `rsw-basemap-site-setup` during the migration):

```
./rsw-migrate-install -s <IRIS Analysis socket server> --restore-archive <path to backup tar>
```

If you want to copy the settings from one 7.4 server to another, you can do a migration between the servers. Note that the migration tar file stores a number of additional configuration files from the source server that are not automatically migrated. So, if you are missing some settings from the 7.4 server after the migration, check for them in the tar file.

3. Backing up the data

3.1 Making a manual back-up

If you plan on installing the new version of IRIS Focus onto the system currently running the old version of IRIS Focus, you may want to consider making a backup before migrating. This backup will not be usable on the new system, but could be used if you decide to install the older release of IRIS Focus again.

1. Log in to the server as **`root`**.
2. Run: **`/usr/vaisala/radarsw/backup/bin/do-backups`**
3. Check that new files are created in the following directories:

```
/srv/vaisala/radarsw/backup/configuration/radarsw-configuration-
<timestamp>.tar.gz
```

```
/srv/vaisala/radarsw/backup/database/radarsw-database-wx-<timestamp>.gz
```

```
/srv/vaisala/radarsw/backup/database/radarsw-database-vsp-<timestamp>.gz
```

```
/srv/vaisala/radarsw/backup/database/radarsw-database-keycloak-
<timestamp>.gz
```

Each backup file includes a timestamp in the format:

```
radarsw-configuration-2019-09-05T06-48-26.tar.gz
```

3.2 Restoring from backup

If you have lost your configuration files, you will need to restore them before you will be able to restore databases. To restore your configuration files from backup, you can find a recent configuration backup under the */srv/vaisala/radarsw/backup* directory to restore and then run the following command:

```
bd=/srv/vaisala/radarsw/backup/configuration
(cd / && tar xzf ${bd}/radarsw-
configuration-2019-10-12T07-54-50.tar.gz)
```

1. Log in to the server as **root**.
2. Stop the Monit service:

   ```
   systemctl stop monit.service
   ```

3. Stop the IRIS Focus web application:

   ```
   systemctl stop vaisala-radarsw-webapp.service
   ```

4. Stop all services which might access the database.

   ```
   kubectl delete -f /etc/vaisala/focus/k8s/vaisala-focus.yaml
   ```

5. (Optional) Run the backup script:

   /usr/vaisala/radarsw/backup/bin/do-backups
   Database backups for the wx and vsp databases will be in */srv/vaisala/radarsw/backup/database*. Move a copy to a remote host if reinstalling or otherwise reimaging the machine.

6. Drop the current database with the **rsw-db-tool** utility:

   ```
   rsw-db-tool drop-db
   ```

7. Drop the current database with the **`rsw-vsp-db-tool`** utility:

```
rsw-vsp-db-tool drop-db
```

8. Drop the current keycloak database using the rsw-api-auth-tool:

```
rsw-api-auth-tool delete-db --no-prompt
```

9. Recreate an empty wx database:

```
rsw-db-tool create-db
```

10. Create an empty keycloak database:

```
rsw-api-auth-tool create-db
```

11. Recreate an empty vsp database:

```
rsw-vsp-db-tool create-db
```

12. Copy your database backup files back to the Focus server and restore the database contents by reading the file contents into the standard output stream and inserting them in the IRIS Focus databases:

```
ext=2019-10-12T07-54-50.gz
pre=radarsw-database
gzip -dc ${pre}-vsp-${ext} | psql -d vsp_v1 -U vsp_user -h localhost
gzip -dc ${pre}-wx-${ext} | psql -d wxdb2 -U wxuser -h localhost
gzip -dc ${pre}-keycloak-${ext} | psql -d keycloak -U keycloak -h localhost
```

13. Restart services which might use database.

```
kubectl apply -f /etc/vaisala/focus/k8s/vaisala-focus.yaml
```

14. Start the IRIS Focus web application:

```
systemctl start vaisala-radarsw-webapp.service
```

15. Start the Monit service:

```
systemctl start monit.service
```

4. IRIS Focus 7.3 release notes

4.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 7.3.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Upgrade to IRIS Focus 7.3

You can upgrade to IRIS Focus 7.3 from IRIS Focus 7.1 or 7.2. If you have an earlier version of IRIS Focus, you must migrate from a previous version to IRIS Focus 7.1 before you can upgrade to IRIS Focus 7.3. For upgrade instructions, see Upgrading IRIS Focus 7.2 to IRIS Focus 7.3 (page 27). For migration instructions, see Migrating from IRIS Focus 6.x to IRIS Focus 7.1 (page 45).

If IRIS Analysis and IRIS Focus are installed on separate servers, you need to configure the IRIS Analysis server to allow the IRIS Focus server to connect to port 30735. By default, port 30735 is blocked by the firewall of the IRIS Analysis server. See Corrections and additions to the documentation (page 17)

You need to determine or set the fully qualified domain name (FQDN) of the IRIS Focus server before installing the software. See chapter *Verify or override the FQDN of your server* in *IRIS Focus Administrator Guide*.
If your internal network does not support DNS, you will need to include the **`--broken-dns`** command option when installing IRIS Focus.
If your internal network does support DNS, but the **`hostname --fqdn`** command does not return the correct name for your IRIS Focus server, you will need to include the **`--fqdn FQDN`** command option where FQDN is the fully qualified domain name of your IRIS Focus server.

Table 4 System requirements

AlmaLinux	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)	Windforge
IRIS Focus 7.3 requires AlmaLinux 8. It has been tested against AlmaLinux 8.4, 8.7, and 8.8.	The radar data visualization features of IRIS Focus 7.3 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP version 1.2.7 or later on the same network.	The lidar data visualization features of IRIS Focus require Windforge version 3.5.0 or later in the same network.

4.2 Updates and fixes

New features

- *Event groups*
  This release introduces a new feature called **event groups**. You can use event groups when you want to monitor an area for several weather events, but only want to see the alert for the most important one if several of the events occur at the same time.
- *Alert API*
  IRIS Focus now provides an API for sending alerts generated both for technical and weather events to external systems.

Updates

- Performance improvements have been made so that the time line will update faster. This is most noticeable for radar sites that have a lot of historical data stored on the server.
- Several improvements have been made to improve the performance of the alert processing engine in IRIS Focus.
  Processing data (particularly radar data) for alert detection can be system intensive. In the case of a complex alert configuration, the system may sometimes be unable to keep up. When this occurs the delay from the time when data arrives until the time when you are notified will start to increase. In the prior releases of IRIS Focus, this could result in a situation where the delay could reach a limit of 20 minutes. Data that was older than 20 minutes was ignored and data within 20 minutes was processed. This could result in a perpetual state where data was being dropped and the alerts were always 20 minutes behind.
  With the 7.3 release, using separate threads enables a higher throughput than in prior releases. In addition, there are changes related to how the system handles the situation when the alert monitoring configuration is such that the alert engine is unable to keep up:
  - When the alert engine detects that data from a configured area/event combination is falling too far behind, it now clears all of the pending data to be processed for that area/event combination. As a result, data gets dropped, but the system is able to catch up to real-time.
  - The default timeout has been reduced from 20 minutes to 2 minutes. The value is adjustable. The default value was reduced as IRIS Focus now makes use of multiple threads when processing alerts allowing to do more in parallel than in previous releases.

  There are two new parameters related to the alert engine processing: `threads` and`flushTimeOut`. The `flushTimeOut` parameter defines the timeout period in seconds. The `threads` parameter defines the number of threads to make available for alert processing. If you have a complex alert configuration, you may need to adjust these parameters. They can be found in the *`application.yaml`* file in the *`/etc/vaisala/radarsw/webapp`* directory.
- The **`rsw-tar-logs`** command has been enhanced to include some more files and output from system commands to better facilitate troubleshooting IRIS Focus installation and operation issues.

- The default projection has been changed to Web Mercator instead of azimuthal equidistant.
- The alert icons and places of interest colors are now omitted during animation. You can still view the alert icons and place of interest alert states at historical points in time on the map when the animation is turned off.

Fixes

- 9680: Map tool tip visible on Admin panels.
- 9725: Data manager requires historical data to be loaded time ordered.
- 9769: Alert checks should run in parallel.
- 9776: Missing lightning data when in web mercator projection.
  The WebGL features in the OpenLayers 6.5.0 library introduced in IRIS Focus 7.0 had an issue displaying lightning data near the date line. Users with lightning networks whose area of coverage spanned the international date line were only able to view lightning data to the left or right of the date line when the Web Mercator map projection was used. This issue has been addressed by updating the OpenLayers mapping library to the 7.4.0 release. Lightning data now appears on both sides of the dateline.
- 9787: WMS layers that do not require append time are now properly displayed.
- 9811: Minimum calculation period for the **Turbulence** product in the UI sets to 60 seconds.
- 9825: Default data type of lidar sites is now Velocity instead of SNR

4.3 Corrections and additions to the documentation

- Corrections to *IRIS Focus Administrator Guide (M211850EN)* concerning the recommended OS version:
  - IRIS Focus 7.3 has been tested with AlmaLinux 8.7. However, it should also work with other AlmaLinux 8 versions.
  - The link in chapter *Installing AlmaLinux* is incorrect and leads to an AlmaLinux 8.4 package. The correct link is (https://ftp.sigmet.com/files/releases/AlmaLinux/). Go to this ftp site and select the desired OS version.
- Addition to chapter *Configuring IRIS for IRIS Focus* in *IRIS Focus Administrator Guide (M211850EN)*:
  IRIS Focus connects to IRIS Analysis using port 30735. By default, the firewall in the IRIS Analysis server blocks this port. When IRIS Analysis and IRIS Focus are installed on separate servers, you need to configure IRIS Analysis server to allow the connection to this port:
  a. Log in to the IRIS Analysis server as **admin**.
  b. Run the following commands:

```
sudo firewall-cmd --add-port=30735/tcp --permanent
sudo firewall-cmd -reload
```

- Addition to chapter *Weather events and alerts* in *IRIS Focus User Guide (M211849EN)*: The query for weather radar alerts goes back 5 minutes, so if you select a time on the timeline and some of the alerts are more than 5 minutes older than the selected time, you will not see the alert icons on the map for those products. Choosing an earlier time within the 5-minute range will make those alerts visible.

4.4 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature works with WMS version 1.1.1 servers. Older or newer versions of WMS servers are not supported and may be incompatible.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 9619: Changing turbulence pointing scan configuration does not automatically change the task name, which may result in a turbulence calculation using several different configurations. If you change lidar azimuth or elevation angle configuration, use a different task name for different configurations to separate them from each other. For example, name them **`RWY28_1`** and **`RWY28_2`**. Failure to follow this convention may cause the turbulence charts to not appear in IRIS Focus.
- 9624: An **RTI** chart may have a different minimum bin size resolution than a map product displayed next to it in a **Tiles** view. Map products show bin sizes no smaller than 250 m, while the **RTI** product will show what the sensor is configured to detect. The 250 m minimum bin size resolution for map products may be more noticeable with smaller-ranged sensors like lidars.
- 10001: The **Cross Section** tool does currently not allow drawing freeform curved lines.
- "Anonymous" entries in the user table can occur. User with the **`Administrator`** role can safely remove these entries by logging them out.
- If you have a subscription to the **GLD360** layer and have upgraded from a prior release of IRIS Focus to IRIS Focus 7.3, an update to how time information was appended to request for external WMS products may cause an issue. To avoid this, login as **`administrator`** and verify in the layer editor that the **Time parameter supported** option is set to **`every request`**, and that the **Refresh rate** is set to something like 900 seconds (15 minutes).

- 10038: Postgres 12 runs out of disk space because of WAL files. By default, Postgres generates and stores WAL files indefinitely. This can cause IRIS Focus to run out of disk space. To fix the issue, see Fix for issue 10038: Postgres runs out of disk space (page 24).

4.4.1 AlmaLinux 8.7 and earlier GPG key issue and Docker 25.0.0 upgrade issue (--online only)

This only applies to IRIS Focus 7.x.x online install and upgrades when the **`--online`** option is used. If your installation is offline and you are using the **`--offline`** option you do not need to worry about these issues.

The **`rsw-almalinux-7.3-patch`** script must be run **prior** to online installation or upgrade of IRIS Focus 7.3.0, 7.2.0, or 7.1.0 to address both the AlmaLinux GPG key and Docker 25 incompatibility issues.

The ability to install or upgrade the IRIS Focus 7.3.0, IRIS Focus 7.2.0, and IRIS Focus 7.1.0 releases is affected by the following events:

- The AlmaLinux website lost their GPG key used for signing packages found in the public AlmaLinux 8 repositories. AlmaLinux 8.7 and earlier have the old key, and online package updates of AlmaLinux systems packages are affected since January 17th, 2024.
- The IRIS Focus installation and some of the configuration files have an issue with Docker releases starting at the 25 release that occurred around January 19th, 2024. IRIS Focus is shipped with a 20.x.x release for offline installs and are compatible up to the 24.x.x release. Docker 25 does not appear to be an issue once IRIS Focus is setup and running, but it appears to have a compatibility issue with some of the installation and upgrade scripts. The Docker 25 incompatibility issue only appears to be at the time of installation, upgrade or possibly if running a docker-compose command. There does not appear to be an issue with upgrading to Docker 25 after IRIS Focus is setup and working.

The **`rsw-almalinux-7.3-patch`** script was created to address both the AlmaLinux GPG key and Docker 25 incompatibility issues. It does the following:

- Downloads and installs a new GPG key provided at the AlmaLinux website based on the instructions provided in the AlmaLinux 8 GPG key change web page.
- Checks to see if the system is running Docker 25 or later and if so, downgrades it back to Docker 20 provided in the offline repository included with the IRIS Focus release.
- Disables the **`docker-ce-stable`** repository to prevent the system upgrading to Docker 25.0.0.
- Modifies the **`k8s/k8s-install.sh`** key so that it disables the **`docker-ce-stable`** repository (in case it gets re-enabled) prior to installing or attempting to upgrade Docker.

To apply the necessary fixes so you can use the **--online** option when running **rsw-installer** or **rsw-upgrade**, you will need to do the following:

1. Copy the **rsw-almalinux-7.3-patch** script to the **release** directory where the **rsw-installer** and **rsw-upgrade** scripts are found.
2. Run the script with the **--apply** option (you can run it without any options or use **--help** for command line help). This must be done prior to installing or upgrading IRIS Focus.

```
chmod +x rsw-almalinux-7.3-patch
./rsw-almalinux-7.3.patch --apply
```

   The script will examine files on the system and should not report any error messages. Once the script has run successfully, you should then be able to use the **rsw-installer** or **rsw-upgrade** as with the **--online** option.

4.4.2 rsw-upgrade fails when importing container images

It is possible to encounter an issue where the **rsw-upgrade** process fails after importing 3 or 4 container images.

When the error occurs, you will see something similar to the following in the upgrade log file created in the */root* directory indicating that the **microk8s ctr image** export command failed to import a container image. The example output below shows that it failed with an exit code of -15 when it got to the, **cloud-licensing-service** container image, but it could occur on any of the images (though it typically tends to be after at least 2 or 3 images have successfully loaded).

```
[root@focus-main ~]# tail -20 rsw-upgrade-20240110-141130.log
--------------------------------------------------------------------------------
Command completed as expected
================================================================================
================================================================================
Loading K8S image cloud-licensing-service.tar
--------------------------------------------------------------------------------
Running system command: ['microk8s', 'ctr', 'image', 'import', '/srv/
Focus_install/installer73/deployment/release/k8s/images/cloud-licensing-
service.tar']
Results of running: ['microk8s', 'ctr', 'image', 'import', '/srv/Focus_install/
installer73/deployment/release/k8s/images/cloud-licensing-service.tar']

CompletedProcess(args=['microk8s', 'ctr', 'image', 'import', '/srv/
Focus_install/installer73/deployment/release/k8s/images/cloud-licensing-
service.tar'], returncode=-15, stdout=b'', stderr=b'')

--------------------------------------------------------------------------------
Command FAILED to complete as expected
================================================================================
Step failed: Failed to import all Kubernetes container images - see log
Skip, retry or fail step (skip/retry/fail)?

################################################################################
# Upgrade FAILED. Log: /root/rsw-upgrade-20240110-141130.log
################################################################################
Removed automatically added radarsw repository: /etc/yum.repos.d/radarsw.repo
[root@focus-main ~]#
```

As a workaround, do the following prior to running the `rsw-upgrade` script:

1. Import the keycloak container by hand (the `k8s/k8s-upgrade.sh` script will skip the import if it finds the correct version already loaded)
2. Make a change to the *`focus_k8s.py`* file found in the release directory to make multiple attempts when a failure occurs with increasing “sleeps” between each attempt.
3. Change to the release directory and preload the keycloak container image using the following command:

```
microk8s ctr image import ./k8s/repo/focus-k8s/el8/k8s-images/quay.io_keycloak_keycloak-21.1.1.tar
```

4. To make changes so that the import of other container images will be retried, you will need to edit the *focus_k8s.py* file and add the following line near the top of the file by the rest of the imports:

```
import time
```

5. Replace the **import_image** function definition with:

```
def import_image(self, image_path: str) -> subprocess.CompletedProcess:
        show_start("Loading K8S image {} ".format(os.path.basename(image_path)), self.logger)
        results = run_and_log(['microk8s', 'ctr', 'image', 'import', image_path], self.logger)
        show_results(results.returncode == 0, self.logger)
        if results.returncode == 0:
            return results
        time.sleep(3.0)
        results = run_and_log(['microk8s', 'ctr', 'image', 'import', image_path], self.logger)
        show_results(results.returncode == 0, self.logger)
        if results.returncode == 0:
            return results
        time.sleep(10.0)
        results = run_and_log(['microk8s', 'ctr', 'image', 'import', image_path], self.logger)
        show_results(results.returncode == 0, self.logger)
        return results
```

6. You will likely need “fail” out of any previous upgrade attempt and then run the **rsw-upgrade** script again with the **--skip-version-check** option similar to what is shown below:

```
./rsw-upgrade --offline --skip-os-version-check --skip-version-check
```

4.4.3 The webapp fails to start after running rsw-upgrade

Additions related to alert engine performance issues require updates to the *application.yaml* configuration file under the */etc/vaisala/radarsw/webapp* directory.

The changes to the configuration file cause the RPM package manager to rename the existing configuration file to *.rpmsave* and install a new factory fresh configuration file. The Kafka configuration set by the prior installation is lost (stored in the *.rpmsave* file) when the package was upgraded. The webapp service is unable to connect to the Kafka cluster using the factory default configuration instead of the randomized token set at initial installation.

To fix this problem, do the following:

1. Open the new configuration file (*application.yaml*) under the */etc/vaisala/radarsw/webapp* directory in a text editor.
2. The **bootstrap-servers** and **config** settings in *application.yaml* need to be restored to the values found in the *application.yaml.rpmsave* file.

   If you have a terminal open to the IRIS Focus 7.3.0 system and are logged in as the root user, you should be able to copy and paste the following to apply the necessary changes and restart the webapp (it uses **awk** to grab the original values and then apply them to the new configuration file):

```
conf=/etc/vaisala/radarsw/webapp/application.yaml

if [ -f "${conf}.rpmsave" ]; then
  eval sed $(cat ${conf}.rpmsave | awk -- '
$1 == "bootstrap-servers:" {
  printf("  -e '"'"'s/^\\( *%s\\).*$/\\1 %s/'"'"'", $1, $2);
}

$1 == "config:" {
  $1 = "";
  printf("  -e '"'"'s/^\\( *config:\\).*$/\\1 %s/'"'"'", $0);
}
') -i ${conf}

  systemctl restart vaisala-radarsw-webapp
fi
```

4.4.4 The Lightning Threat Zone containers are running on a radar/lidar only system

The **rsw-upgrade** script fails to check whether the initial installation had the LTZ modules loaded, which is common if the initial install did not include support for lightning. When the upgrade runs, it will install the updated LTZ files, but it will also try to restart the related containers regardless as to whether they were enabled and configured to begin with.

This does not cause any harm to the operation, but will result in unnecessary containers that fail to start. You can use the **k9s** command to see if you have any of these containers on your system. The containers will likely be in a bad state as they were not installed and configured initially.

1. To remove these unnecessary Kubernetes and Docker containers, you can run the following commands:

```
kubectl delete -f /etc/vaisala/focus/k8s/vaisala-focus-ltz.yaml
(cd /etc/vaisala/focus/docker/ltz && docker-compose rm --stop --force)
```

   You do not need to reboot unless you want to verify that the containers do not come back after reboot.

4.4.5 Fix for issue 10038: Postgres runs out of disk space

By default, Postgres generates and stores a large amount of WAL files. This can cause IRIS Focus to run out of disk space. To fix this problem, follow these steps:

1. Log in as **root**.
2. Go to file */etc/vaisala/focus/docker/db/docker-compose.yaml*. Make a backup of the file if you want to.

3. Edit the file with your preferred editor and find the section for postgis that looks like this:

```
postgis:
    container_name: postgis
    image: kartoza/postgis:12.1
    restart: always
    ports:
      - "127.0.0.1:5432:5432"
      - "::1:5432:5432"
      - "${K8S_HOST_ACCESS_IP:-10.200.2.1}:5432:5432"
    volumes:
      - /srv/container/mnt/postgresql:/var/lib/postgresql/
    healthcheck:
      test: "exit 0"
    environment:
      -
POSTGRES_MULTIPLE_EXTENSIONS=postgis,hstore,postgis_topology,postgis_raster
      - POSTGRES_TEMPLATE_EXTENSIONS="true"
      - POSTGRES_USER="docker"
      - POSTGRES_PASS="jisLBDVi20eRTs1ensLE81nJ32AUAUaw"
      - DEFAULT_ENCODING="UTF8"
      - DEFAULT_COLLATION="en_US.UTF-8"
      - DEFAULT_CTYPE="en_US.UTF-8"
    networks:
      - container_network
```

CAUTION! Make sure you only modify the postgis section! There are other sections in this file that look similar.

4. Modify the postgis section by adding two entries, WAL_LEVEL and ENTRA_CONF, in the **environment** section as shown in the following example:

```
postgis:
    container_name: postgis
    image: kartoza/postgis:12.1
    restart: always
    ports:
      - "127.0.0.1:5432:5432"
      - "::1:5432:5432"
      - "${K8S_HOST_ACCESS_IP:-10.200.2.1}:5432:5432"
    volumes:
      - firepostgis:/var/lib/postgresql/
    healthcheck:
      test: "exit 0"
    environment:
      -
POSTGRES_MULTIPLE_EXTENSIONS=postgis,hstore,postgis_topology,postgis_raster
      - POSTGRES_TEMPLATE_EXTENSIONS="true"
      - POSTGRES_USER="docker"
      - POSTGRES_PASS="docker"
      - DEFAULT_ENCODING="UTF8"
      - DEFAULT_COLLATION="en_US.UTF-8"
      - DEFAULT_CTYPE="en_US.UTF-8"
      - WAL_LEVEL=minimal
      - EXTRA_CONF=max_wal_senders=0\nwal_keep_segments=5
    networks:
      - container_network
```

Make sure the password in the POSTGRES_PASS field matches the docker user's password from your */root/.pgpass* file. Some upgrades may have this password empty or missing. If the password does not match, use the password from the *.pgpass* file for the docker user, and add it to the POSTGRES_PASS field, so that it looks like the above entry.

5. Save the file.
6. Run the following command to stop and remove the postgis container:

```
docker-compose rm --stop --force postgis
```

7. Run the following command to redeploy the container with the new configuration:

```
docker-compose up -d postgis
```

The new configuration only produces approximately five files in the */srv/container/mnt/postgresql/12/main/pg_wal* directory. Although the files still are large, 1GB each, it will take much longer for them to fill up as the amount of data being written to the WAL files is now greatly reduced.

For more information on Postgres, see https://www.postgresql.org/docs/15/wal-intro.html and https://www.postgresql.org/docs/15/continuous-archiving.html.

4.5 Upgrading IRIS Focus 7.2 to IRIS Focus 7.3

The following instructions explain how to upgrade from IRIS Focus 7.1 or 7.2 to IRIS Focus 7.3.

If you have IRIS Focus 6.x, you must first migrate to IRIS Focus 7.1, and then you can upgrade to 7.3. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 6.0, and then you can migrate to IRIS Focus 7.1.

More information

- Migrating from IRIS Focus 6.x to IRIS Focus 7.1 (page 45)

4.5.1 Running the upgrade

To view installation command line options, run: **./rsw-upgrade -h**

In the following instructions, **x.x** means the IRIS Focus major version and minor version number.

1. Log in as **root**.
2. Backup the system configuration.

   For instructions, see *IRIS Focus Administrator Guide*.
3. Insert the upgrade USB stick.
4. Copy the Focus_install directory to the AlmaLinux server:

```
mkdir /srv/Focus_install
cp -r /run/media/root/IRIS_FOCUS/Focus_install/* /srv/Focus_install
```

5. Change to the `srv/Focus_install/installer` directory, and join the `.tar` file parts:

```
cd /srv/Focus_install/installer
cat IRIS_Focus_x_x_Installer_part_* >> IRIS_Focus_x_x_Installer.tar
```

6. To make sure that the file is now correct, run the following two commands and check that you get the same output:

```
md5sum IRIS_Focus_x_x_Installer.tar
cat IRIS_Focus_x_x_Installer.tar.md5
```

7. Extract the installation files into the default release directory:

```
tar -xvf IRIS_Focus_x_x_Installer.tar
```

8. Change to the directory created in the earlier step:

```
cd Vaisala-IRIS-Focus-v7.x.x
```

9. Run the upgrade script:
   - **Online upgrade:**

     ```
     ./rsw-upgrade --online
     ```

   - **Offline upgrade:**

     ```
     ./rsw-upgrade --offline
     ```

   If you have a new license file, run the upgrade script online or offline by specifying the location of the license file:

   ```
   ./rsw-upgrade --online|--offline --license LICENSE_FILE
   ```

   To upgrade without checking the license, run the upgrade online or offline with the following:

   ```
   ./rsw-upgrade --online|--offline --skip-license
   ```

10. Verify the upgrade by running: **`rpm -qa | grep vaisala`**

    Check that the `rpm` name is the correct version and patch number.

If you have a **Total Lightning Processor** (TLP) system that you will be connecting to your IRIS Focus server, see connection instructions in *M212545EN IRIS Focus Lightning Administrator Guide*.
After connecting the TLP system, add the **focus-lightning** role to each existing user account that you want to have access to the lightning products.
You can ignore this if you already have a TLP system connected before the upgrade.

4.5.2 Updating user roles

After the upgrade, depending on your system, you may need to update the user roles for the users.

If there are a lot of users in the system, you can easily update all the existing user accounts with the following instructions:

- If you have had only weather radars in the system, and you are now adding a lightning network: Update all the existing user accounts that currently have the **focus-radar** role to also have the **focus-lightning** role. Use this command (as **root**):

```
rsw-db-tool users-to-all-focus-roles
```

- If you only have a lightning network in the system: Give all the users the **focus-lightning** role. Use this command (as **root**):

```
rsw-db-tool users-to-ltg-role
```

- If you only have weather radars in the system: You should not need to manually update roles. All **focus** users are automatically updated to **focus-radar** users by the upgrade script. If this does not happen, run this command:

```
rsw-db-tool users-to-radar-role
```

4.6 Installation and configuration command options

Table 5 Installation command options

Option	Description
--admin-password	Assign a non-default admin password
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory

Option	Description
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor
--wms -w	Basemap WMS address (default: /wms)

Option	Description

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

5. IRIS Focus 7.2 release notes

5.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 7.2.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Upgrade to IRIS Focus 7.2

You can upgrade to IRIS Focus 7.2 from IRIS Focus 7.1. If you have an earlier version of IRIS Focus, you must migrate from a previous version to IRIS Focus 7.1 before you can upgrade to IRIS Focus 7.2. For upgrade instructions, see Upgrading IRIS Focus 7.2 to IRIS Focus 7.3 (page 27). For migration instructions, see Migrating from IRIS Focus 6.x to IRIS Focus 7.1 (page 45).

You need to determine or set the fully qualified domain name (FQDN) of the IRIS Focus server before installing the software. See chapter *Verify or override the FQDN of your server* in *IRIS Focus Administrator Guide*.
If your internal network does not support DNS, you will need to include the **`--broken-dns`** command option when installing IRIS Focus.
If your internal network does support DNS, but the **`hostname --fqdn`** command does not return the correct name for your IRIS Focus server, you will need to include the **`--fqdn FQDN`** command option where FQDN is the fully qualified domain name of your IRIS Focus server.

Table 6 System requirements

AlmaLinux	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)
IRIS Focus 7.2 requires AlmaLinux 8.7.	The radar data visualization features of IRIS Focus 7.2 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP v. 1.2.7 on the same network.

5.2 Updates and fixes

New features

- *Turbulence product*
  This release introduces the new Turbulence product. Turbulence visualizes variance of radial wind velocity over a defined period of time. The turbulence data is generated by wind lidars using pointing scans.
  Users can export Turbulence data in NetCDF file format. See Exporting NetCDF files from lidar systems to IRIS Focus (page 36).
- *RTI (Range Time Indicator) product*
  The new RTI product visualizes raw data from weather radars and wind lidars. The RTI product supports PPI scans and pointing scans.

Updates

- In the alert list that is opened by clicking the **Alerts** button, the alerts are marked with the color that matches the severity of the alert. That is, info alerts are marked with blue, warnings with yellow, and alarms with red color.
- To mark points on the map, users can now select either a pin or a **+** sign.
- The Alert history table no longer lists WARN alerts.
- Users with the `administrator` role can create global color scales (requires also a **focus** role).

Fixes

- 7753: VIL alerts not triggered when multiple criteria are used.
- 9139: Data Manager fails if two rows are added to the tables with the same hash value.
- 9574: IRIS Focus creates task names from ingested lidar data using the user-defined scan name in the lidar scan configuration. Lidar data previously ingested through IRIS Analysis may have a different scan naming scheme, with the scan type and scan ID (version of the configuration change in the lidar) separated by an underscore.
- 8801: In the Spanish UI, there is a layout issue in the alert notification editor that causes the last input field to disappear underneath the buttons.
- 8825: Place of interest: Alerts Enabled toggle doesn't persist.

5.3 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature works with WMS version 1.1.1 servers. Older or newer versions of WMS servers are not supported and may be incompatible.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.

- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 9619: Changing turbulence pointing scan configuration does not automatically change the task name, which may result in a turbulence calculation using several different configurations. If you change lidar azimuth or elevation angle configuration, use a different task name for different configurations to separate them from each other. For example, name them **`RWY28_1`** and **`RWY28_2`**. Failure to follow this convention may cause the turbulence charts to not appear in IRIS Focus.
- 9624: An **RTI** chart may have a different minimum bin size resolution than a map product displayed next to it in a **Tiles** view. Map products show bin sizes no smaller than 250 m, while the **RTI** product will show what the sensor is configured to detect. The 250 m minimum bin size resolution for map products may be more noticeable with smaller-ranged sensors like radars.
- "Anonymous" entries in the user table can occur. User with the **`Administrator`** role can safely remove these entries by logging them out.

5.4 Security notes

- *CVE-2022-40735 and CVE-2002-20001*
  To address security issues CVE-2022-40735 and CVE-2002-20001, you can run the ***`CVE-2022-40735.sh`*** script found under the ***`security-scripts`*** directory. The script disables support for the out-dated Diffie-Hellman key exchange algorithms in the SSH client and the SSHD server connections.
  Run the following command from the release directory as the root user to apply this security configuration change to IRIS Focus:

```
./security-scripts/CVE-2022-40735.sh
```

Once applied, you will be unable to establish SSH connections between IRIS Focus and older systems that only support Diffie-Hellman algorithms.

5.5 Corrections and additions to the documentation

- Corrections to chapters *Verifying and joining files*, *Upgrading IRIS Focus 7.1 to IRIS Focus 7.2*, and *Installing IRIS Focus from a USB stick* in *IRIS Focus Administrator Guide (M211850EN)*:
  Replace the tar filename `IRIS_Focus_7_1_Installer.tar` with the tar filename `IRIS_Focus_7_2_Installer.tar`.
- Addition to chapters *Verifying and joining files* and *Installing IRIS Focus from a USB stick* in *IRIS Focus Administrator Guide (M211850EN)*:
  While combining terrain file parts together, leave the map files in parts.
- Addition to chapter *Lidar product generation* in *IRIS Focus User Guide (M211849EN)*:
  IRIS Focus creates task names from ingested lidar data using the user-defined scan name in the lidar scan configuration. Lidar data previously ingested through IRIS Analysis may have a different scan naming scheme: the scan type and scan id (version of the configuration change in the lidar) separated by an underscore.
- Addition to chapter *Configuring Turbulence* in *IRIS Focus User Guide (M211849EN)*:
  The **Turbulence** product shows a number of bars that are each **Step size** wide. The actual time span displayed will be equal to or higher than the **Display time span** value, so that only entire bars will be shown.
  For example, a **Display time span** of 20 minutes with a **Step size** of 2 minutes will result in 10 bars, and the actual time span shown will be 20 minutes. However, a **Display time span** of 21 minutes with a **Step size** of 5 minutes will result in 5 bars, and the actual time span shown will be 25 minutes.
- For information on exporting NetCDF files, see chapter Exporting NetCDF files from lidar systems to IRIS Focus (page 36).
- For corrections to chapter *Adding external map layers* in *IRIS Focus Administrator Guide (M211850EN)*, see Adding external map layers (page 37).

5.5.1 Exporting NetCDF files from lidar systems to IRIS Focus

The following instructions show how to export NetCDF files from lidar systems to IRIS Focus.

The NetCDF files are created in the lidar system and delivered to IRIS Focus using the SFTP file transfer protocol.

Lidar volumes that contain multiple sweeps must be sent as a single NetCDF file.

5.5.1.1 Preparing IRIS Focus for transferring NetCDF files

The `dminput` user account was created during installation with the necessary settings for transferring NetCDF files. The account is disabled by default.

To enable the `dminput` user account, set up a password. Log in as the root user and use the following command:

```
su -
passwd dminput
```

5.5.1.2 Configuring the lidar system

For full instructions, see chapter *Configuring the FTP* in *WindCube Scan software suite User Manual (M212324EN)*.

1. Set the IP address of your IRIS Focus system as the host name.
2. Set the user to **`dminput`**.
3. Set the password to match the **`dminput`** account password.
4. Set the directory to */srv/pv/lidar-input-service*.

5.5.2 Adding external map layers

You can import an external map layer, such as a shapefile, into Geoserver for IRIS Focus to display on the map.

For information on adding WMS layers from external sources, see *IRIS Focus Administrator Guide (M211850EN)*.

1. Make sure you have a shapefile (*.shp*) available.

   For an example resource with shapefiles available for download, see the WGS84 projection examples at:
   https://osmdata.openstreetmap.de/data/coastlines.html
2. Use an **`scp`** client or similar application to copy the shapefile to a directory on the IRIS Focus server such as */srv/container/mnt/geoserver/inspire*.
3. Login to the server as **`root`**.
4. Open the file: */etc/vaisala/radarsw/configuration/gis-override.ini*
5. Copy the **`geoserver.admin.password`** .

   This password is autogenerated during installation.
6. Using a browser, login to IRIS Focus Geoserver at:

   http://<IRIS_Focus_server_name>:24180/geoserver/web/
   Login using the username **`admin`** and the password you copied earlier.

   

   Depending on your own network configuration you may need to do this at the server, over a remote console, or by using your local browser.

7. Add a new **Store**:
   a. Select **Stores > Add New Store**.
   b. Choose the data source:

      Shapefile - ESRI(tm) Shapefiles (*.shp)

   c. Select the following (the following list shows example values).
      - **Workspace**: `Vaisala`
      - **Data Source Name**: `coastlines`
      - **Description**: leave blank
      - **Shapefile location**: browse to the shapefile
        For example: `\files\lines.shp`

   d. Leave the other fields as default.
   e. Select **Save**.
8. Publish the layer:
   a. Check that the **New Layer** menu opens.
   b. If the **New Layer** menu does not open automatically, select **Layers > Add New Layer**.
   c. In the **Add layer from** list, find the new layer.
   d. Select **Publish**.

   The **Edit Layer** menu shows the new layer name. For example, `vaisala:coastlines`.
9. In the **Edit Layer** menu:
   a. Leave all inputs as they are except:
      - **Name**: `coastlines`
      - **Title**: `coastlines`
      - **Coordinate Reference Systems > Declared SRS**
      - Select **Find** and search for `4326 (WSG 84)`.

   b. To fill the bounding boxes, select **Compute from data** and **Compute from native bounds**.
   c. Select **Save**.
10. Select **Layer Groups**.
    a. Select an existing layer group (for example, `vai_full_en`) and then select **Add Layer**.
    b. Find the new layer and add it.

       The layer is now listed in the **Layers** table.

    c. Select **Save**.
11. Login to IRIS Focus as `user`.
12. To confirm that the new layer is visible, select **Map Features > Map Detail > Full Detail**.
13. Open IRIS Focus UI and login as `administrator`.

14. Go to **Admin > Maps > Map layers > Add new layer**:
    a. Select the following:
        - **Title**: `coastlines`
        - **URL**: `/wms`
        - **Layer**: `vaisala:[layer_name]`
        - Select **Find** and search for `4326 (WSG 84)`.
        - **Save**
        - **Request as tiles**: `yes`
15. Go to **Admin > Maps > Map layers > Map view contexts** and edit **TheMap**.
16. Enable the layer by selecting it.
    a. Set **Z level** to something bigger than existing layers so that it would appear on top of the other map layers.
17. Go back to the application an reload the page.

5.6 Installation and configuration command options

Table 7 Installation command options

Option	Description
--admin-password	Assign a non-default admin password
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)

Option	Description
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor
--wms -w	Basemap WMS address (default: /wms)

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

6. IRIS Focus 7.1 release notes

6.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 7.1.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Migration to IRIS Focus 7.1

You can migrate to IRIS Focus 7.1 from IRIS Focus 6.x releases. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 6.0 before you can migrate to IRIS Focus 7.1. For migration instructions, see Migrating from IRIS Focus 6.x to IRIS Focus 7.1 (page 45).

You need to determine or set the fully qualified domain name (FQDN) of the IRIS Focus server before installing the software. See chapter *Verify or override the FQDN of your server* in *IRIS Focus Administrator Guide*.

Table 8 System requirements

AlmaLinux	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)
IRIS Focus 7.1 requires AlmaLinux 8.4.	The radar data visualization features of IRIS Focus 7.1 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP v. 1.2.7 on the same network.

6.2 Updates and fixes

New features

- *Lightning Threat Zone*
  This release introduces the new Lightning Threat Zone (LTZ) product. The user can see a forecast of the progress of lightning zones, and see alerts when the Lightning Threat Zone reaches critical areas.
- *Storm Intensity*
  The Storm Intensity product layer is now available.

- *VHF support*
  IRIS Focus now supports viewing VHF (very high frequency) lightning data. This brings performance improvements for the TimeSpan product:
  - The use of WebGL has been introduced to improve both the rate and quantity of lightning events that can be displayed on the screen.
  - The client side cache has been increased to hold over 350,000 events.
    The client side cache has been optimized to perform best when you use IRIS Focus to view recent data keeping 350,000+ of the most recent events on hand. Due to this optimization choice, you may notice a slight delay at initial login or when transitioning from viewing old data back to "Now" time, as these events require the cache to be initially loaded.
  - A hard limit count of 25,000 events is imposed when viewing and updating real-time data. This is to prevent your browser from crashing during high data rates while viewing historical data. When viewing historical data with large time spans, the hard limit is increased to 350,000+ events (client side cache). Note that it will take several seconds for the browser to fetch and render 350,000+ events.
  - When viewing "Now" data, an animated ring normally appears around each new lightning event to help indicate where new lightning is occurring. This animation will automatically be disabled when large amounts of data need to be plotted in real-time. This saves system resources, allowing your browser to keep up with the data.
- *Dark mode*
  IRIS Focus now features a dark mode option. Users can select the dark mode in the Map Features panel. Administrators can also add custom dark layers; the software will automatically request them when the dark mode is selected, if the layer name ends with "`_dark`"

Updates

- *Areas of interest with different alert severities are now highlighted in different colors when alerts are triggered*
  When an alert is triggered in an area on interest, the area changes color: an area with info severity turns blue, an area with warning severity turns yellow, and an area with alarm severity turns red.
- *More functionalities in the IRIS Focus Light view*
  More functionalities are now available for users in IRIS Focus Light view. For example, users can see alerts on the map.
- *Presets menu for the animation timeline*
  You can now view an animation for a preset time period by selecting the time pediod in the **Presets** menu next to the timeline.
- *Enabling/disabling clear notifications removed from the Admin view*
  In the **Admin** area, the **Enable clear notifications** checkboxes were removed. Clear notifications are always enabled in the system. Users can select whether to receive them or not.

Fixes

- 8798: **BASE** event uses **height** in the <>= comparison. The unit should be km, not dBz as shown.

6.3 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature works with WMS version 1.1.1 servers. Older or newer versions of WMS servers are not supported and may be incompatible.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 8801: In the Spanish UI, there is a layout issue in the alert notification editor that causes the last input field to disappear underneath the buttons. As a workaround, temporarily switch to the English UI to edit the field.
- 8825: Place of interest: Alerts Enabled toggle doesn't persist. When configuring areas of interest, the option 'Enable alerts for this place' may not show the correct state (Enabled / Disabled). To verify the correct state, check whether the area of interest is shown on the main map. If the toggle state is Disabled, the area is not shown.
- "Anonymous" entries in the user table can occur.

6.4 Corrections and additions to the documentation

- Addition to the installation instructions:
  Add `127.0.0.1 kafka.vaisala.-focus-external-services` to `/etc/hosts`.
  Run the installer with this env var set:

  ```
  export KAFKA_BIND_HOST=kafka.vaisala-focus-external-services
  ```

  Check that the IRIS Focus server has a DNS entry in your internal DNS server:

  ```
  [ -x /usr/bin/host ] || dnf install -y /usr/bin/host # make sure /usr/bin/
  host is installed
  FQDN="${FQDN:-$(hostname --fqdn)}" # Get the fully qualified host name (or
  let user specify via export FQDN=my.name.com
  host -t a "$FQDN" # Verify user's LAN is set up to resolve their host name
  ```

  Check that IPv6 is enabled:

  ```
  ping -c 1 ::1
  ```

- Addition to the installation instructions:
  If you receive a pre-installed server delivery from Vaisala, you need to set the fully qualified domain name (FQDN) of IRIS Focus as it will be known on your network. For example, if the final name is **`focus.customer.com`**, run the following command:

  ```
  rsw-change-fqdn enable --fqdn focus.customer.com
  ```

- Addition to chapter *SSH connection for Data Manager* in *IRIS Focus Administrator Guide (M211850EN)*: Do the following before the first step:
  For an SSH connection between the IRIS Focus server and another server (for example, IRIS Analysis server), use the EdDSA (ed25519) scheme. If your server does not already have a file called */root/.ssh/id_ed25519.pub*, create it with the following command:

  ```
  ssh-keygen -t ed25519 -C "unique name to identify this key."
  ```

- Correction to chapter *Verify or override the FQDN of your server* in *IRIS Focus Administrator Guide (M211850EN)*: There is an extra line **{code:sh}** in the second command example. This line should not be included. The correct command is:

```
export HOST_FQDN=my-iris-focus.company.com
```

6.5 Migrating from IRIS Focus 6.x to IRIS Focus 7.1

If you have had an earlier version of IRIS Focus than 7.0, you need migrate your configuration from the earlier release to 7.1. To do this, you need to first create an archive file, then install IRIS Focus 7.1, and then migrate the archive to your system.

The following instructions assume that you are upgrading from IRIS Focus 6.0 or a later version to IRIS Focus 7.1.If you have an earlier version of IRIS Focus than IRIS Focus 6.0, upgrade first to IRIS Focus 6.0, and then migrate to IRIS Focus 7.1.

To view installation command line options, run: **rsw-migrate-install --help**

1. Log in to the server as **root**.
2. Back up the system configuration.
3. Insert the migration USB stick to the server, and mount it.
4. Under the deployment folder, run the migrate script in the backup mode:

```
./rsw-migrate-install --backup
```

The migration script collects all required configuration files, settings, and data base schema to be migrated to IRIS Focus 7.1. The archive file will have a timestamp in its name.
The location of the archive file is: */srv/vaisala/radarsw/iris_focus_migrate_<TIMESTAMP>.tar.gz.*

5. Copy the archive file to the USB stick:

```
cp /srv/vaisala/radarsw/iris_focus_migrate_<TIMESTAMP>.tar.gz   /mnt/usb
```

6. Install IRIS Focus 7.1.
7. Login in as **root** to the freshly installed IRIS Focus 7.1.
8. Check that all IRIS Focus services are stopped.
9. Insert the migration USB stick, and mount it.
10. Copy the archive file from the USB stick:

```
cp /mnt/usb/iris_focus_migrate_TIMESTAMP.tar.gz. /tmp
```

11. Run the migration script in the restore mode:

```
./rsw-migrate-install -restore-archive /tmp/
iris_focus_upgrade_<TIMESTAMP>.tar.gz
```

12. If there was a socket server configured in IRIS Focus 6.1, you can run the migration script to configure radar sites:

```
./rsw-migrate-install -restore-archive /tmp/
iris_focus_migrate_<TIMESTAMP>.tar.gz -s <SOCKET_SERVER>
```

13. You have now completed the migration process. Note that it may take a few minutes for the system to become available after the migration.

More information

- Upgrading IRIS Focus 7.2 to IRIS Focus 7.3 (page 27)

6.6 Installation and configuration command options

Table 9 Installation command options

Option	Description
--admin-password	Assign a non-default admin password

Option	Description
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor

Option	Description
--wms -w	Basemap WMS address (default: /wms)

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

7. IRIS Focus 7.0 release notes

7.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 7.0.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Upgrade to IRIS Focus 7.0

You can upgrade to IRIS Focus 7.0 from IRIS Focus 6.0 or a later versions. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 6.0 before you can upgrade to IRIS Focus 7.0.

When upgrading to 7.0, the maps and the terrain file will stay installed.

When you upgrade from IRIS Focus 6.x to 7.0, the data in Data Manager is deleted.

The upgrade script takes a back-up of the webapp/config database and the config directory. If you need to back up other files, do a manual back-up.
For information on adding the historical data to your system after the upgrade, see *IRIS Focus Administrator Guide (M211850EN)*.

Table 10 System requirements

AlmaLinux	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)
IRIS Focus 7.0 requires AlmaLinux 8.4.	The radar data visualization features of IRIS Focus 7.0 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP v. 1.2.7 on the same network.

7.2 Updates and fixes

New features

- *Alerts for lightning*
  The user can now monitor and receive alerts for areas of interest that are based on lightning alert criteria

- *Alerts for combined lightning and weather radar data*
  The user can now be alerted by events that combine both weather radar data and information from a lightning network.
- *Alert notifications*
  You can now receive several types of notifications for alerts. You can choose whether to hear asound notification when an alert is triggered, and receive notifications by email or SMS.
- *Alert severities*
  IRIS Focus can now generate alerts that have different level of severity. The level depends on the severity criterion assigned to the area of interest. The options are: Information,Warning, and Alarm.
- *Alert history*
  The new alert history page shows detailed information about active and past alerts.
- *Lightning animation*
  Lightning events are now highlighted with an animation: when viewing the TimeSpan product, and a new lightning event occurs, the user can now visualize an animated circle around the lightning icon.

Updates

- *New look and feel for places of interest and alert settings*
  Users should expect a new Vaisala look and feel within this latest version, including an improved approach for creating areas of interest

Fixes

- 7472: When using the Hayford-Gauss projection, there are inconsistencies in map behavior at the edge of the map.

7.3 Security notes

- *CVE-2021-44228 (log4j)*
  In December of 2021, a critical vulnerability known as CVE-2021-44228 was found in a log4j package. For IRIS Focus 7.0, we have removed the vulnerable log4j package (log4j-core) from our builds, and replaced it with an alternative package.
  The third party zipkin service included in the IRIS Focus 7.0 installation still includes the log4j-core package. However, we have verified that we are running the latest version of zipkin (2.23.16) and that the log4j-core package included with zipkin is version 2.17.1 and, thus, includes the fix for vulnerability CVE-2021-44228.

7.4 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature works with WMS version 1.1.1 servers. Older or newer versions of WMS servers are not supported and may be incompatible.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5408: Tile view does not work in kiosk mode.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 8188: If the `user` role has been deleted, the upgrade from 5.3 to 6.x fails.
- 8580: Audio access permissions at initial page load. Some web browsers by default block sounds on web pages until the user interacts with the page. Thus, in some cases, the web page may not play the alert notification sounds in IRIS Focus. This may occur, for example, if the user automatically logs into IRIS Focus by clicking the browser reload button while logged in. When the user has logged into IRIS Focus through the normal login, this issue should not occur. To make sure users hear the sound notifications right away when alerts are triggered, enable the web browser to play sounds by default.
- 8798: **BASE** event uses **height** in the <>= comparison. The unit should be km, not dBz as shown.
- 8801: In the Spanish UI, there is a layout issue in the alert notification editor that causes the last input field to disappear underneath the buttons. As a workaround, temporarily switch to the English UI to edit the field.
- 8825: Place of interest: Alerts Enabled toggle doesn't persist. When configuring areas of interest, the option 'Enable alerts for this place' may not show the correct state (Enabled / Disabled). To verify the correct state, check whether the area of interest is shown on the main map. If the toggle state is Disabled, the area is not shown.
- "Anonymous" entries in the user table can occur.

7.5 Corrections to the documentation

- Correction to *IRIS Focus 7.0 Administrator Guide* and *IRIS Focus 7.0 Lightning Administrator Guide*, chapter *Restoring from backup*: for the correct procedure, see Restoring from backup (page 12) in this document.
- Correction to *IRIS Focus 7.0 Administrator Guide* and *IRIS Focus 7.0 Lightning Administrator Guide*, chapter *Installing IRIS Focus from a USB stick*: for the correct procedure, see Installing IRIS Focus from a USB stick (page 51) in this document.

7.5.1 Installing IRIS Focus from a USB stick

In these instructions, `x.x` is the number of the version/patch.

The IRIS Focus installation USB contains the following file structure for the main version installation:

```
Focus_install
     vaisala-iris-maps-v2
     vaisala-iris-terrain-v2
     installer
     documentation
```

In the case of a patch release, the USB stick may also include an additional .tar file for the patch.

To install IRIS Focus from the USB stick, you must copy the files to the AlmaLinux server and prepare the files for installation.

1. Reboot the system.
2. Log in to the server as **`root`**.
3. Insert the USB stick.

   If it is already plugged-in, remove and re-insert the stick.
4. In the pop-up dialog, select **Open With Files**.
5. Right-click a blank area and select **Open in Terminal**.
6. In the terminal, type **`pwd`** and press **ENTER**.

   The result is usually `/run/media/root/IRIS_FOCUS`.
7. Copy the *`Focus_install`* directory to the AlmaLinux server:

   ```
   mkdir /srv/Focus_install
   cp -r /run/media/root/IRIS_FOCUS/Focus_install/* /srv/Focus_install
   ```

8. Change to the */srv/Focus_install/installer* directory, and join the .tar file parts:

   ```
   cd /srv/Focus_install/installer
   cat IRIS_Focus_7_0_Installer_part_* >> IRIS_Focus_x_x_Installer.tar
   ```

9. To make sure that the file is now correct, run the following two commands and check that you get the same output:

   ```
   md5sum IRIS_Focus_x_x_Installer.tar
   cat IRIS_Focus_7_1_Installer.tar.md5
   ```

10. Extract the installation files into the default release directory:

```
tar -xvf IRIS_Focus_x_x_Installer.tar
```

11. Change to the */srv/Focus_install/vaisala-iris-terrain-v2* directory:

```
cd /srv/Focus_install/vaisala-iris-terrain-v2
```

    a. Join the file parts:

    ```
    cat vaisala-iris-terrain-v2-part* > vaisala-iris-terrain-v2.zip
    ```

    b. Unzip the resulting terrain zip file:

    ```
    unzip vaisala-iris-terrain-v2.zip
    ```

    c. Remove the extra files:

    ```
    rm -rf vaisala-iris-terrain-v2-part*
    rm -rf vaisala-iris-terrain-v2.zip
    ```

12. Run the IRIS Focus installation scripts:

`<root application URL>` in the installation command example below corresponds to the hostname. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header.It must have the same value as the root application URL. The default value is the installation machine name.

```
cd /srv/Focus_install/installer
./rsw-installer --offline --gis-db-dump\
/srv/Focus_install/vaisala-iris-maps-v2 --terrain-dir\
/srv/Focus_install/vaisala-iris-terrain-v2\
--radar -s <hostname or IP of IRIS Analysis socket server>\
--lightning -cow <root application URL>
```

13. Reboot the system with the following command to cleanly bring up the services:

```
reboot
```

7.6 Installation and configuration command options

Table 11 Installation command options

Option	Description
--admin-password	Assign a non-default admin password
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory

Option	Description
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor
--wms -w	Basemap WMS address (default: /wms)

Option	Description

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

8. IRIS Focus 6.1 release notes

8.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 6.1.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Upgrade to IRIS Focus 6.1

You can upgrade to IRIS Focus 6.1 from IRIS Focus 5.0 or a later versions. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 5.0 before you can upgrade to IRIS Focus 6.1.

When upgrading to 6.1, the maps and the terrain file will stay installed.

When you upgrade from IRIS Focus 5.x to 6.1, the data in Data Manager is not deleted.

The upgrade script takes a back-up of the webapp/config database and the config directory. If you need to back up other files, do a manual back-up.
For information on adding the historical data to your system after the upgrade, see *IRIS Focus Administrator Guide (M211850EN)*.

Table 12 System requirements

CentOS	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)
IRIS Focus 6.1 has been tested with CentOS 7.4 and 7.6. IRIS Focus is also expected to work with other versions of CentOS 7.x.	The radar data visualization features of IRIS Focus 6.1 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP v. 1.2.7 on the same network, or, alternatively, a subscription to a LINET service.

8.2 Updates and fixes

New features

- *Shape and GeoTIFF format export*
  The image export functionality has been extended to support georeferenced image formats geoTIFF (.geotiff) and shapefile (.shp). For more information, see User instructions for new features (page 59).

- *LINET data on IRIS Focus*
  It is now possible to visualize third-party lightning data from LINET on IRIS Focus. For more information, see User instructions for new features (page 59).

Fixes

- 7764, 7159: SHEAR alerts shall be triggered correctly for lidar and radar data
- 8039: Radar selector issue when a a user who is not a `focus-radar` user selects a pre-generated composite radar site
- 8050: Alert icons disappear when a WMS layer is on top of a radar layer
- 8080: Intermittent reticule latitude lines missing
- 8083: Lightning data paints many old dots when making a big jump forward
- 8261, 8257: Issues with weather events and alerts when animating and looking back in time

Additions and corrections to the documentation

- *IRIS Focus 6.0 Administrator Guide* chapter *5.4 Installing IRIS Focus from a USB stick* shows the `-cow` parameter in the installation command example. The parameter `<root application URL>` in the installation command corresponds to the hostname. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
- Addition to *IRIS Focus 6.0 Administrator Guide*:
  To update any entry in the *`vsoweb-override.ini`* file, use the command:

```
configure-vsoweb-ini
```

  With this command, you can change the following settings:
  `radar.enabled = true/false`
  `lightning.enabled = true/false`
  `iris.socket.server.host`
  `security.cors.origin.whitelist`
  Example:

```
$/usr/vaisala/radarsw/configuration/bin/configure-vsoweb-ini --radar false
--lightning true --cors-origin-whitelist localhost --iris_host
iris_server.mydomain.com
```

- Correction to *IRIS Focus 6.0 Administrator Guide*, chapter *5.9.1 Setting or changing the socket server*. The correct procedure is:
  a. Update the *vsoweb-override.ini* file with the following command:

```
/usr/vaisala/radarsw/configuration/bin/configure-vsoweb-ini -i
<socket_server_host_name>
```

  b. Type the following command:

```
rsw-basemap-site-setup --socket-server <socket_server_host_name>
```

  c. Stop and restart the IRIS Focus web application service (between the stop and start commands, wait until the process has stopped):

```
systemctl stop vaisala-radarsw-webapp
systemctl start vaisala-radarsw-webapp
```

8.3 User instructions for new features

8.3.1 Exporting images as .shp files

Use this procedure to export images as shape files (.shp). The output is a zip file containing all the files for the shape file.

1. In the IRIS Focus **Map** view, set-up the view you want to save.

   For example, you can save the settings for:
   - **Weather Products**
   - Map tools such as the cross-section and tracking tools
   - Zoom level
2. Select **Saved Views > Save**.
3. Name the view and select **Save**.

   The new view is added to the **Saved Views** list for your future use.
4. Configure your web server to access the IRIS Focus image export service:

```
@Request: POST <server-name>/focus-webapp/api/v2/image-export/shp
@Produces: "application/octet-stream"
```

   The image is exported as a zip file.

5. Configure the following parameters:

Parameter	Description
`username`	A valid IRIS Focus username. For security reasons and for smooth user experience, Vaisala recommends that you configure a specific user for exporting images. If you are using the username of an active user, and that user is logged when a scheduled export takes place, the user will get logged out, because a user cannot be logged in from two machines at the same time.
`password`	IRIS Focus password for the user.
`time`	Time, in ISO-8601 format: `2021-06-18T17:55:23.000Z`
`savedViewName`	The name of the saved view you created.
`savedViewUser`	Optional value. Used if you configure a specific user for exporting images (recommended).

6. Instead of steps 4 and 5, you can run the export from the command line by creating a script and setting-up a **cron** job. For example:

   a. Create a Python script for the image export such as the following:

```
#!/usr/bin/python3
from requests.sessions import Session
from datetime import datetime, timedelta

# Change to host name of IRIS Focus if run externally
APP_URL = "https://localhost"

# User account to login with to render image
USERNAME = "image-export"
PASSWORD = "USER_PASSWORD"

# Name of saved view and user account that created the saved view
VIEW = "SAVED_VIEW_NAME"
VIEW_USER = "USER_THAT_SAVED_VIEW"

# You can change these values
OUTPUT_DIR = '.'   # Directory to write output file to
FILE_BASE_NAME = "image-export" # Name of file sans extension
SSL_VERIFY = False # Set to True if you have a valid certificate
TYPE = "shp"       # Can be "shp" or "geotiff"

# Example of backing up 5 minutes from "now" (no data at time causes
404)
TIME = datetime.utcnow() - timedelta(days=0, hours=0, minutes=5)

def main():
    ext = ".tiff"
    if TYPE == "shp":
        ext = ".zip"
    file_path = OUTPUT_DIR + "/" + FILE_BASE_NAME + ext
```

```
    session = Session()
    time_str = TIME.isoformat()
    url  = APP_URL + "/focus-webapp/api/v2/image-export/" + TYPE
    req_params = {"username": USERNAME, "password": PASSWORD,
                  "time": time_str,
                  "savedViewName": VIEW, "savedViewUser": VIEW_USER}
    res = session.post(url, params=req_params, verify=SSL_VERIFY)
    print('{0} response status: {1}'.format(time_str, res.status_code))
    if res.status_code == 200:
        with open(file_path, 'wb') as f:
            f.write(res.content)
        print('Created file: {0}'.format(file_path))

if __name__ == '__main__':
    main()
```

Although the example **`image-export.py`** script saves only one snapshot, you can edit it to loop a set number of times and get multiple snapshots at a time.

b. Type **`crontab -e`** in the terminal and add, for example, the following line to the *`crontab`* file (add your own paths and arguments).

```
*/15 * * * * /usr/bin/python3
        /path/to/script/image-export.py >> /path/to/log/export.log 2>&1
```

This executes the **`image-export.py`** script every 15 minutes and creates a single ZIP file containing the shape file components.

8.3.2 Exporting images as .geotiff files

You can also export images as geoTIFF files.

The procedure is otherwise similar to Exporting images as .shp files (page 59), but to configure your web server to access the IRIS Focus image export service, use the following command:

```
@Request: POST <server-name>/focus-webapp/api/v2/image-export/geotiff
@Produces: "image/tiff"
```

The image is exported as a ***`.tiff`*** file.

Note that you can use the sample Python script shown in Exporting images as .shp files (page 59) to grab geotiff files by setting the TYPE to "geotiff".

8.4 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature currently works with WMS version 1.1.1.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5408: Tile view does not work in kiosk mode.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6953: Timeline needs to be clicked twice to get a product after panning.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 7472: When using the Hayford-Gauss projection, there are inconsistencies in map behavior at the edge of the map.
- 8188: If the `user` role has been deleted, the upgrade from 5.3 to 6.x fails.
- 8268: monit trying to restart dm too soon after system reboot.
  Data Manager intermittently fails to restart after system reboot. Please contact Vaisala technical support.
- "Anonymous" entries in the user table occur if someone attempts to access IRIS Focus using a bad URL. If you see a lot of these in your table with external IP addresses, it may indicate that the server is under attack.

8.5 Upgrading IRIS Focus 6.x to IRIS Focus 7.x.x

The following instructions assume that you are migrating from IRIS Focus 6.x to IRIS Focus 7.x.x.

You can upgrade to IRIS Focus 6.x.x from IRIS Focus 5.0. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 5.0 before you can upgrade to IRIS Focus 6.x.x.

8.5.1 Running the upgrade

To view installation command line options, run: **`rsw-migrate-install`**

1. Log in to the server as **root**.
2. Backup the system configuration.

   For instructions, see *IRIS Focus Administrator Guide*.
3. Insert the upgrade USB stick.
4. Under deployment folder, run the upgrade script as backup mode:

   ```
   ./rsw-migrate-install -m backup
   ```

   The upgrade script will collect all required configuration files, settings, and data base schema to be migrated to IRIS Focus 7.x. The archive file can be found in:

   ```
   /srv/vaisala/radarsw/iris_focus_upgrade_<TIMESTAMP>.tar.gz
   ```

5. Copy the archive file to USB:

   If your USB drive mount point is other than */mnt/usb*, substitute */mnt/usb* in the command with your mount point.

   ```
   cp /srv/vaisala/radarsw/iris_focus_upgrade_TIMESTAMP.tar.gz   /mnt/usb
   ```

6. To view the installation steps of IRIS Focus 7.x, see *IRIS Focus Administrator Guide*.
7. Login in as **root** to the freshly installed IRIS Focus 7.x.
8. Ensure that all IRIS Focus 7.x services are stopped.
9. Insert the upgrade USB stick.
10. Copy the archive file from USB:

    ```
    cp /mnt/usb/iris_focus_upgrade_TIMESTAMP.tar.gz /tmp
    ```

11. Run the upgrade script in restore mode:

    ```
    ./rsw-migrate-install -m restore -r /tmp/
    iris_focus_upgrade_TIMESTAMP.tar.gz
    ```

8.5.2 Updating user roles

After the upgrade, depending on your system, you may need to update the user roles for the users.

If there are a lot of users in the system, you can easily update all the existing user accounts with the following instructions:

- If you have had only weather radars in the system, and you are now adding a lightning network: Update all the existing user accounts that currently have the **focus-radar** role to also have the **focus-lightning** role. Use this command (as **root**):

  ```
  rsw-db-tool users-to-all-focus-roles
  ```

- If you only have a lightning network in the system: Give all the users the **focus-lightning** role. Use this command (as **root**):

  ```
  rsw-db-tool users-to-ltg-role
  ```

- If you only have weather radars in the system: You should not need to manually update roles. All **focus** users are automatically updated to **focus-radar** users by the upgrade script. If this does not happen, run this command:

  ```
  rsw-db-tool users-to-radar-role
  ```

8.6 Installation and configuration command options

Table 13 Installation command options

Option	Description
--admin-password	Assign a non-default admin password
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory

Option	Description
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor
--wms -w	Basemap WMS address (default: /wms)

Option	Description

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

9. IRIS Focus 6.0 release notes

9.1 Release notices

Vaisala is pleased to announce the release of IRIS Focus 6.0.

IRIS Focus supports current Microsoft Edge®, Mozilla Firefox®, and Google Chrome™ browsers.

Upgrade to IRIS Focus 6.0

You can upgrade to IRIS Focus 6.0 from IRIS Focus 5.0 or a later version. If you have an earlier version of IRIS Focus, you must upgrade through each previous version to IRIS Focus 5.0 before you can upgrade to IRIS Focus 6.0.

When upgrading to 6.0, the maps and the terrain file will stay installed.

When you upgrade from IRIS Focus 5.x to 6.0, the data in Data Manager is not deleted.

The upgrade script takes a back-up of the webapp/config database and the config directory. If you need to back up other files, do a manual back-up.
For information on adding the historical data to your system after the upgrade, see *IRIS Focus Administrator Guide (M211850EN)*.

Table 14 System requirements

CentOS	IRIS Analysis/IRIS Radar	Total Lightning Processor (TLP)
IRIS Focus 6.0 has been tested with CentOS 7.4 and 7.6. IRIS Focus is also expected to work with other versions of CentOS 7.x.	The radar data visualization features of IRIS Focus 6.0 require IRIS Analysis/Radar 8.13.6 or later on the same network. Note that IRIS Analysis must not be visible to the public Internet.	The lightning data visualization features of IRIS Focus require TLP v. 1.2.7 on the same network.

9.2 Updates and fixes

New features

- *Real-time lighting data visualization*
  IRIS Focus now enables the visualization of lightning data from a **Total Lightning Processor**. The data can be visualized as a product layer, which can be shown on top of a weather radar product layer. A separate license is required for visualizing lightning data from the Vaisala precision lightning sensor network.

- *On-demand lightning TimeSpan product generation*
  The new **TimeSpan** lightning product enables the user to visualize the evolution of recent lightning events. The TimeSpan product shows lightning events as color-coded areas that change over time. The timeline histogram shows information about strikes up to 7 days in the past at rates as high as 100,000 events per day. When viewing in real time, the product shows new lightning events as they occur.
- *Lightning network health visualization*
  IRIS Focus enables the user to visualize the performance of the lightning sensor network. The **Network Health** product uses a color-coded grid representation of the performance estimate generated by the Total Lightning Processor (TLP). This is an advanced feature that works with a separate license.
- *Lightning cursor tool*
  IRIS Focus enables the user to view details of the lightning data and the network health information with the cursor tool. The tool includes the location of the strike, with accuracy represented by the error ellipse.

Updates

- *Weather pane layers*
  The ordering of the weather layers has been improved. Now the layer number 1 is on the top. When the user adds a new layer, the layer is added on top, and the existing layers move down in the list.
- *New user roles*
  The `Focus` user role has been replaced with two separate user roles: `Focus Weather Radar User` for users who want to view weather radar data, and `Focus Lightning User` for users who want to view lightning data. The current `Focus` users will be automatically upgraded to `Focus Weather Radar User` roles.
- *Nowcasting on a separate server*
  IRIS Focus Nowcasting feature can now be run in a separate server for improving performance. For detailed instructions, see chapter *Installing nowcasting as a separate service* in *IRIS Focus Administrator Guide*.
- *Licensing: License required for adding more radars*
  The new licenses are issued with a defined number of radar sites. If the network contains more radars than the number of the radar sites in the license, the user can define which radars are shown in the application by editing the [LICENSING] section in the *`vsoweb-override.ini`* file. If the customer has an active service contract, the new license will be updated according to the existing number of sites connected to the application.
- *Licensing: License required for visualizing external WMS layers*
  A license is required for visualizing external WMS layers in the application. If the customer has an active service contract, the new license will be updated to include this license.

- *Installation:*
  The `cors-origin-whitelist` (`-cow`) switch has been added to the installation script for determining the value of the "`Access-Control-Allow-Origin`" header. It must have the same value as the root application URL. The value defaults to the installation machine name.
  Installation command :

```
/srv/Vaisala-IRIS-Focus-v6.x.x/rsw-installer --offline --gisdb dump
vaisala-iris-maps-v2 --terrain-dir vaisala-iris-terrain-v2 -radar -s
<hostname or IP of IRIS Analysis socket server> -cow <root application URL>
```

Fixes

- 7695: Smoothing knob misbehavior when changing datatypes
- 7294, 6920: User-defined color scales revert to default without user interaction
- 7727, 7980: Tools and alerts shall not need to have an on-demand product as a driving product
- 7702: LOG,CSR,PMI, and XCORV data types shall display properly
- 7753, 7159: Alerts using IRIS Analysis products (VIL, SHEAR, RAINN) shall be triggered
- 7852: Cross Section Tool image blank
- 7899: When switching tasks quickly, an error was prompted
- 8041: Alert icons shall show regardless of the layer order

9.3 Known issues

For troubleshooting information, see *IRIS Focus Administrator Guide (M211850EN)*.

- IRIS Focus WMS feature currently works with WMS version 1.1.1.
- Currently, the alerting functionality is limited to single radar sites only. Alerts are not generated for composite sites.
- 5408: Tile view does not work in kiosk mode.
- 5660: The user interface uses UTC as the default timezone. If the user changes the timezone in the **Admin** panel, the new timezone is not displayed in the web user interface.
- 5704: Different radars in a composite can have the same task name but different sweeps. The composite method uses the sweep ID so it assumes that all the tasks have the same elevations.
- 6953: Timeline needs to be clicked twice to get a product after panning.
- 6974: Two WMS layers with same layer name causes the application not to respond.
- 7472: When using the Hayford-Gauss projection, there are inconsistencies in map behavior at the edge of the map.

- "Anonymous" entries in the user table occur if someone attempts to access IRIS Focus using a bad URL. If you see a lot of these in your table with external IP addresses, it may indicate that the server is under attack.

9.4 Upgrading IRIS Focus 6.x to IRIS Focus 7.x.x

The following instructions assume that you are migrating from IRIS Focus 6.x to IRIS Focus 7.x.x.

You can upgrade to IRIS Focus 6.x.x from IRIS Focus 5.0. If you have an earlier version of IRIS Focus, you must upgrade through previous versions to IRIS Focus 5.0 before you can upgrade to IRIS Focus 6.x.x.

9.4.1 License

This upgrade requires a new license. The upgrade instructions include a step for identifying the Lock ID that you need for getting the new license.

If you have a contract agreement with Vaisala, you should receive your upgrade license via email. If you have not received the license, please contact Vaisala technical support at helpdesk@vaisala.com. In other cases, please contact your Vaisala Sales representative to get a new license.

CAUTION! It is possible to upgrade your system without a valid license with the command `./rsw-upgrade --online --skip-license`, but it is not recommended. Upgrading without a valid license will cause your system to stop or run in a degraded state until you receive and install a valid license file.

9.4.2 Running the upgrade

To view installation command line options, run: **`rsw-migrate-install`**

1. Log in to the server as **`root`**.
2. Backup the system configuration.

   For instructions, see *IRIS Focus Administrator Guide*.
3. Insert the upgrade USB stick.

4. Under deployment folder, run the upgrade script as backup mode:

```
./rsw-migrate-install -m backup
```

   The upgrade script will collect all required configuration files, settings, and data base schema to be migrated to IRIS Focus 7.x. The archive file can be found in:

```
/srv/vaisala/radarsw/iris_focus_upgrade_<TIMESTAMP>.tar.gz
```

5. Copy the archive file to USB:

   If your USB drive mount point is other than */mnt/usb*, substitute */mnt/usb* in the command with your mount point.

```
cp /srv/vaisala/radarsw/iris_focus_upgrade_TIMESTAMP.tar.gz   /mnt/usb
```

6. To view the installation steps of IRIS Focus 7.x, see *IRIS Focus Administrator Guide*.
7. Login in as **root** to the freshly installed IRIS Focus 7.x.
8. Ensure that all IRIS Focus 7.x services are stopped.
9. Insert the upgrade USB stick.
10. Copy the archive file from USB:

```
cp /mnt/usb/iris_focus_upgrade_TIMESTAMP.tar.gz /tmp
```

11. Run the upgrade script in restore mode:

```
./rsw-migrate-install -m restore -r /tmp/
iris_focus_upgrade_TIMESTAMP.tar.gz
```

9.4.3 Updating user roles

After the upgrade, depending on your system, you may need to update the user roles for the users.

If there are a lot of users in the system, you can easily update all the existing user accounts with the following instructions:

- If you have had only weather radars in the system, and you are now adding a lightning network: Update all the existing user accounts that currently have the **focus-radar** role to also have the **focus-lightning** role. Use this command (as **root**):

```
rsw-db-tool users-to-all-focus-roles
```

- If you only have a lightning network in the system: Give all the users the **focus-lightning** role. Use this command (as **root**):

```
rsw-db-tool users-to-ltg-role
```

- If you only have weather radars in the system: You should not need to manually update roles. All **focus** users are automatically updated to **focus-radar** users by the upgrade script. If this does not happen, run this command:

```
rsw-db-tool users-to-radar-role
```

9.5 Installation and configuration command options

Table 15 Installation command options

Option	Description
--admin-password	Assign a non-default admin password
--admin-user	Assign a non-default admin user
-c --config-dir	Configuration directory

Option	Description
-cow	The `cors-origin-whitelist (-cow)` switch determines the value of the `Access-Control-Allow-Origin` header. It must have the same value as the root application URL. In the installation command, `<root application URL>` corresponds to the hostname. The default value is the installation machine name. If the hostname changes, you also need to change the `security.cors.origin.whitelist` parameter value in the *`vsoweb-override.ini`* file, and restart the application.
--deactivate-admin	Deactivate the admin account after running this script. Not needed for standard installations.
-d --dry-run	List the steps that will be run (without running them)
-g --geoserver-config-url	GeoServer configuration endpoint (default: http://localhost:24180/geoserver)
-gis-db-dump	Location of map files
-h or --help	Show help information
--lightning	Allow configuration for lightning provider
--no-prompt	Fails (exits) on error without user confirmation
--offline	Disable online AlmaLinux base repository and require a local AlmaLinux base repository
--online	Allow online AlmaLinux base repository
--pg-data-dir	Use an alternative Postgres data directory location
--radar	Allow configuration for radar provider
-s	Socket server host
--skip-geoserver-installation	Do not install map server
--skip-geoserver-site-configuration	
--skip-os-version-check	Force the installation on a AlmaLinux version other than directly supported
--skip-terrain	Do not install terrain detail to the map server
--terrain-dir	Location of terrain files
--tlp TLP_ADDRESS	Address of the Total Lightning Processor
--wms -w	Basemap WMS address (default: /wms)

Option	Description

--broken-dns	Only use this option if you network is unable to resolve the name of your IRIS Focus system using DNS and you can not use the **`--fqdn FQDN`** option to specify the correct name.
	
	`hostname --fqdn`
	`(default: False)`

--fqdn FQDN	During installation, the fully qualified domain name of the system is determined by using the **`hostname --fqdn`** command. Use this option if your network is set up so that **`hostname --fqdn`** returns the wrong name and you know the correct FQDN.

Technical support

Contact Vaisala technical support at 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.

Warranty

For standard warranty terms and conditions, see 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.

Recycling

Recycle all applicable material according to local regulations.

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