SIEMENS

MindSphere
SICAM Localizer

V04.06

Manual

E50417-H7040-C640-B5

NOTE

For your own safety, observe the warnings and safety instructions contained in this document, if available.

Document version: E50417-H7040-C640-B5.00

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Version of the product described: V04.06

Preface

Purpose of the Manual

This manual provides system administrators and system engineers with all necessary information for using the **MindSphere – SICAM Localizer** application. It enables the reader to configure and operate the **SICAM Localizer** in desktop and mobile environments.

Target Audience

This manual is intended for project engineers, commissioning engineers, and operating personnel in electrical distribution grid substations.

Scope

This manual is valid for the **SICAM Localizer** V04.06.

Additional Support

For questions about the system, contact your Siemens sales partner.

Customer Support Center

Our Customer Support Center provides a 24-hour service.

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Training Courses

Inquiries regarding individual training courses should be addressed to our Training Center:

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Internet: *www.siemens.com/poweracademy*

Notes on Safety

This document is not a complete index of all safety measures required for operation of the equipment (module or device). However, it comprises important information that must be followed for personal safety, as well as to avoid material damage. Information is highlighted and illustrated as follows according to the degree of danger:

DANGER

DANGER means that death or severe injury **will** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid death or severe injuries.

WARNING

WARNING means that death or severe injury **may** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid death or severe injuries.

CAUTION

CAUTION means that medium-severe or slight injuries **can** occur if the specified measures are not taken.

✧ Comply with all instructions, in order to avoid moderate or minor injuries.

NOTICE

NOTICE means that property damage **can** result if the measures specified are not taken.

✧ Comply with all instructions, in order to avoid property damage.

NOTE

Important information about the product, product handling or a certain section of the documentation which must be given attention.

OpenSSL

This product includes software developed by the OpenSSL Project for use in OpenSSL Toolkit (*http://www.openssl.org/*).

This product includes software written by Tim Hudson (*tjh@cryptsoft.com*).

This product includes cryptographic software written by Eric Young (*eay@cryptsoft.com*).

Open Source Software

The product contains, among other things, Open Source Software developed by third parties. The Open Source Software used in the product and the license agreements concerning this software can be found in the Readme_OSS. These Open Source Software files are protected by copyright. Your compliance with those license conditions will entitle you to use the Open Source Software as foreseen in the relevant license. In the event of conflicts between Siemens license conditions and the Open Source Software license conditions, the Open Source Software conditions shall prevail with respect to the Open Source Software portions of the software. The Open Source Software is licensed royalty-free. Insofar as the applicable Open Source Software License Conditions provide for it you can order the source code of the Open Source Software from your Siemens sales contact – against payment of the shipping and handling charges – for a period of at least 3 years after purchase of the product. We are liable for the product including the Open Source Software contained in it pursuant to the license conditions applicable to the product. Any liability for the Open Source Software beyond the program flow intended for the product is explicitly excluded. Furthermore, any liability for defects resulting from modifications to the Open Source Software by you or third parties is excluded. We do not provide any technical support for the product if it has been modified.

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1 SICAM Localizer Overview

1.1 MindSphere Overview

MindSphere is the cloud-based, open IoT operating system that lets you to understand your data by quickly and securely connecting your products, manufacturing plants, systems and machines to the digital world. By unlocking the data from every machine and system in your business, MindSphere transforms this data into productive business results using powerful industrial applications with advanced analytics. In addition, it gives you access to a growing number of apps and a dynamic development platform as a service (PaaS).

The MindSphere IoT operating system offers:

- Data analysis
  Collecting, monitoring, and analyzing data in real time
- Versatile connectivity
  Connecting assets and uploading data to the cloud
- Tools for developers
- Applications and services with highest priority to data security
- Applications that increase the business value of your data

MindSphere fulfills the basic rules of the industry-relevant security standards as well as recommendations from regulatory authorities for handling data in cloud environments.

NOTE

Platform as a Service (PaaS) is:

- Open platform for development and operations
- Provides number of ready-to-use Application Program Interfaces (APIs) and services
- Smooth interfacing with Amazon Web Services (AWS) and Azure infrastructures
- Thriving community of developers and corporate partners

For more information on working methodology of MindSphere visit:
https://siemens.mindsphere.io/en

1.2 Introduction SICAM Localizer Application

Overview

SICAM Localizer is an easy-to-use time-series data based visualization application that assists you in gaining insights into your systems and about how devices are performing. Once started, you can instantly drill down data, which allows you to conduct root-cause analysis and to avoid downtimes. SICAM Localizer is completely integrated into MindSphere without the need of preceding data preparation.

Features and Benefits

SICAM Localizer offers the following features and benefits:

- Real-time fault detection, localization and acknowledgement
- Indication of fault prone zone for a selected feeder
- Trend visualization for load profiles over a selectable period of time
- Feeder and branch wise report log of load profiles in a systematic time-based chart
- Transformer load monitoring along with periodic reporting of overload status
- Trend visualization for fault distribution over a selectable period of time
- Report log of fault type and status in a systematic time-based chart
- Report log of operational events status
- Create and update assets with automatic mapping of data points in MindSphere

Recommended Browser

SICAM Localizer supports the following Web browsers:

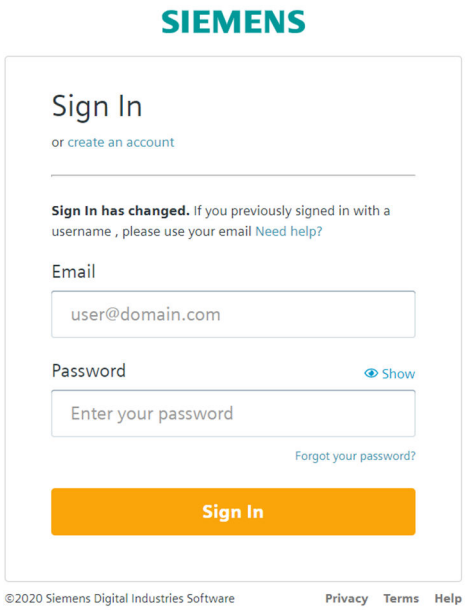
- Google Chrome – version 80.0 and higher

2 SICAM Localizer Application

2.1 Login and Default Launchpad

MindSphere Launchpad Screen

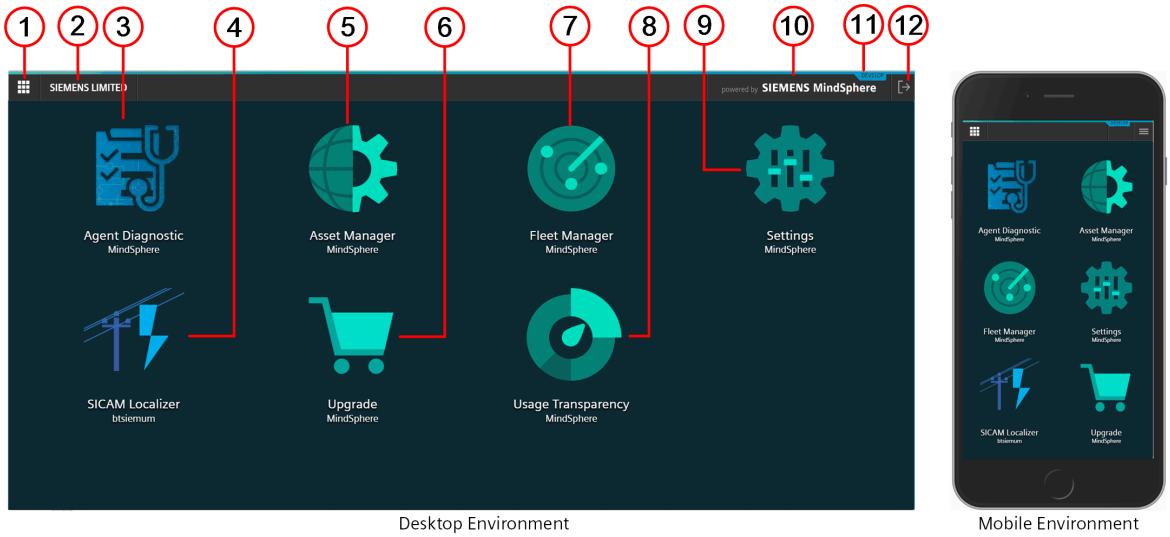
Sign in to following MindSphere IoT value plan launchpad with your login credentials. The login link is provided in the MindSphere IoT value plan welcome e-mail. The link is tenant specific and region specific with format: *https://<tenant>.<region>.mindsphere.io*



[sc_slocal_first_signin, 1, en_US]

Figure 2-1 MindSphere IoT Value Plan Sign In

Once logged on successfully, the following MindSphere launchpad appears in accordance to the selected IoT value plan.



Desktop Environment Mobile Environment

[le_msphere_login, 3, en_US]

Figure 2-2 MindSphere Launchpad - Desktop and Mobile Environments

(1) MindSphere launchpad
(2) Tenant information
(3) Agent Diagnostic

(4) SICAM Localizer application
(5) Asset Manager to model the structure of an industrial process using assets, types, and aspects
(6) Upgrade
(7) Fleet Manager to enable usage transperancy, visualization, and monitoring of assets
(8) Usage Transparency
(9) Settings
(10) MindSphere platform information
(11) Developer or Operator IoT value plan indication screen
(12) MindSphere logout button

NOTE

Connecting bay devices to the MindSphere cloud

SICAM FSI and SICAM FCG are devices in the distribution automation used for monitoring overhead lines. They can be connected to MindSphere by using the MindConnect Lib (MCL) in the SICAM FCG device (hardware extension is not required).

SICAM Localizer Access Options

Every SICAM Localizer user will be assigned one of the following access options by the TenantAdmin for accessing the application.

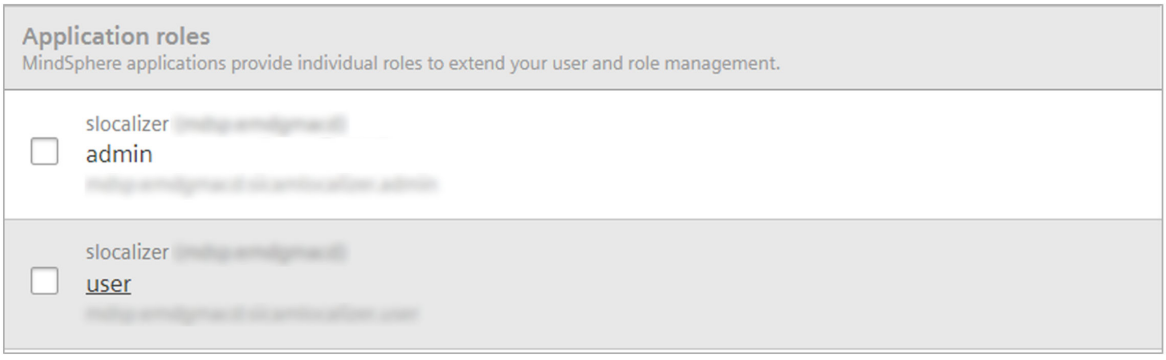


Figure 2-3 Types of User Access in SICAM Localizer

- admin – will have access to all SICAM Localizer functionalities
- user – will have access to all SICAM Localizer functionalities except the following Asset Configuration operations – create new asset, onboard new asset, edit asset, delete asset and offboard asset. Refer to *3.1 Asset Configuration Overview* for more details on **`Asset Configuration`** functionality.

NOTE

MindSphere TenantAdmin

The Admin user for SICAM Localizer must have MindSphere TenantAdmin privileges. This privilege is required to complete an action (onboarding a newly created asset) in Asset Manager application.

This action is mandatory while creating and onboarding a new asset, configure parameters and firmware in SICAM Localizer.

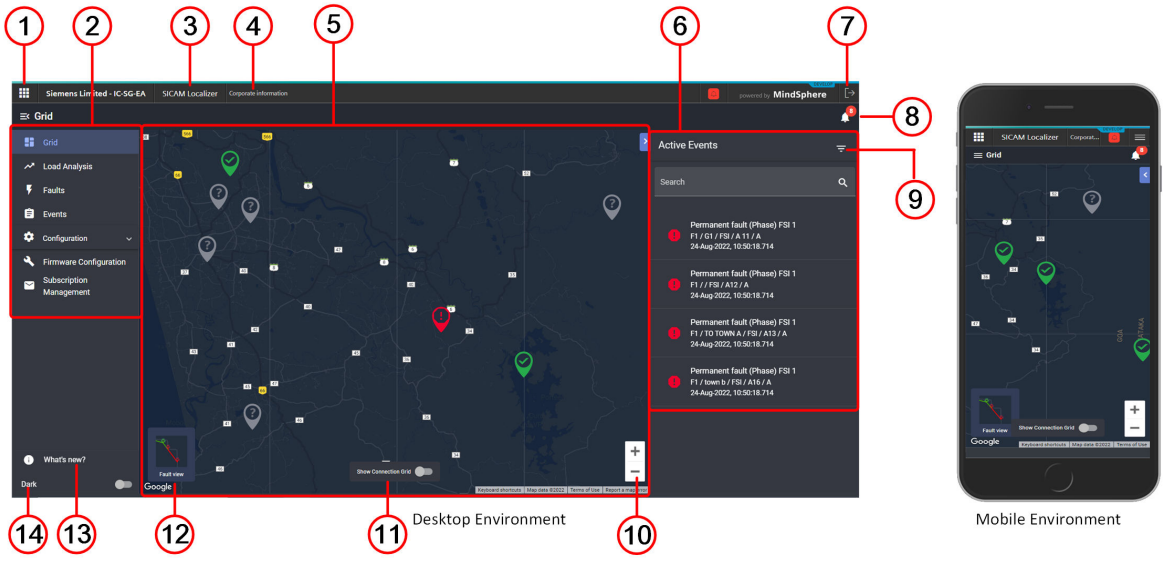
Refer to *3 SICAM Localizer Asset Management* and *4 Firmware Configuration* for more details on creating and onboarding new assets and configuring new parameters and firmware in SICAM Localizer.

Changing of User Access Roles

Once the user access rights are changed (admin → user or user → admin), you must logout from the SICAM Localizer application and login again for the new access rights to take effect.

2.2 Grid View

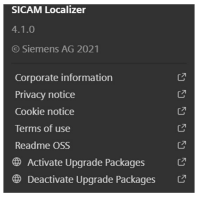
In the MindSphere launchpad (*Figure 2-2*), click the SICAM Localizer icon. The following default screen of SICAM Localizer Grid appears. The SICAM Localizer Grid has an integrated Google Maps view depicting the SICAM FCG physical locations with an icon.



[le_msphere_slocal_strtscrn, 10, en_US]

Figure 2-4 SICAM Localizer Grid

Table 2-1 Grid Parameter Description

Legend Number	Parameter	Description
1	MindSphere Launchpad	Button to access MindSphere Launchpad screen.
2	Navigation sidebar	SICAM Localizer navigation sidebar. You can toggle across the various functionalities of SICAM Localizer in this panel.
3	App info	 Clicking on this button opens a pop-up window that displays the SICAM Localizer application version, copyright information, corporate information, privacy notice, cookie notice, terms of use, Readme OSS, and activate and deactivate upgrade packages.
4	Corporate information	Click to view Siemens global corporate information
5	Grid view	Google Maps view of the SICAM FCG locations.
6	Active Events	Active event list with feeder name, event time and event details Format: Feeder name/Feeder tag/Device type/Device name (Asset name)/ (Label/Port)
7	Logout	SICAM Localizer and MindSphere logout button
8	Alerts	Alert Notification in case of voice call notifications that are missed, failed and cancelled. Refer *Figure 2-20* for more information.

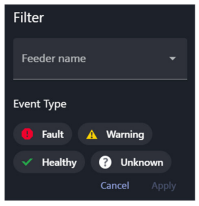
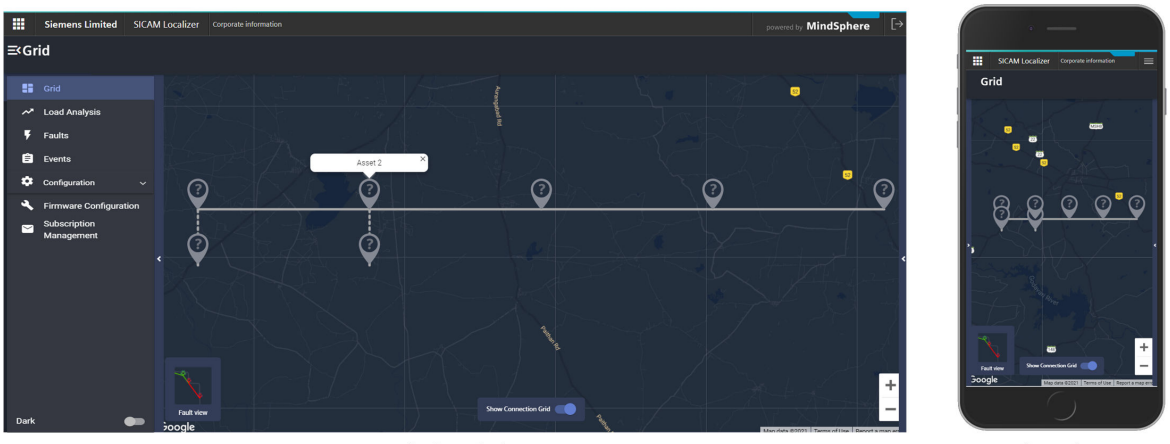
Legend Number	Parameter	Description
9	Filter	 Filter panel for selecting event type or feeder selection. For more details on feeder hierarchy and order of the assets, refer to *3.2.2 Set Hierarchy – Procedure*.
10	Zoom in/out	Google Maps option to zoom in/out
11	Show Connection Grid	By default shows the grid connection between assets either with solid or dotted lines. Solid line indicates overhead cables and dotted lines indicate underground cables (*Figure 2-5*). User has an option to switch off this option by ON/OFF toggle button. **Grid lines (solid or dotted) are represented only to understand the hierarchy of the feeder nodes. These lines does not represent actual physical position of feeder/s.**
12	Fault view	Takes the user to the fault prone zone.
13	Whats New	The purpose of this widget is to inform the user about any new features that have been introduced in the SICAM Localizer application.
14	Theme	SICAM Localizer theme layout option. The application currently supports the following themes: • Dark • Light

Table 2-2 Grid Location Icon Color Summary

Location Icon Color	Description
Red	Indicates a fault reported by FSI or connected binary input devices
Yellow	Indicates a event reported by the SICAM FCG in a feeder line
Green	Indicates no fault reported by the SICAM FCG
Grey	Indicates a temporary or permanent communication failure between SICAM FCG and MindSphere or SICAM FSI and SICAM FCG



Desktop Environment

Mobile Environment

[le_slocal_showgrdconn, 3, en_US]

Figure 2-5 Show Connection Grid - Hierarchy of Nodes

NOTE

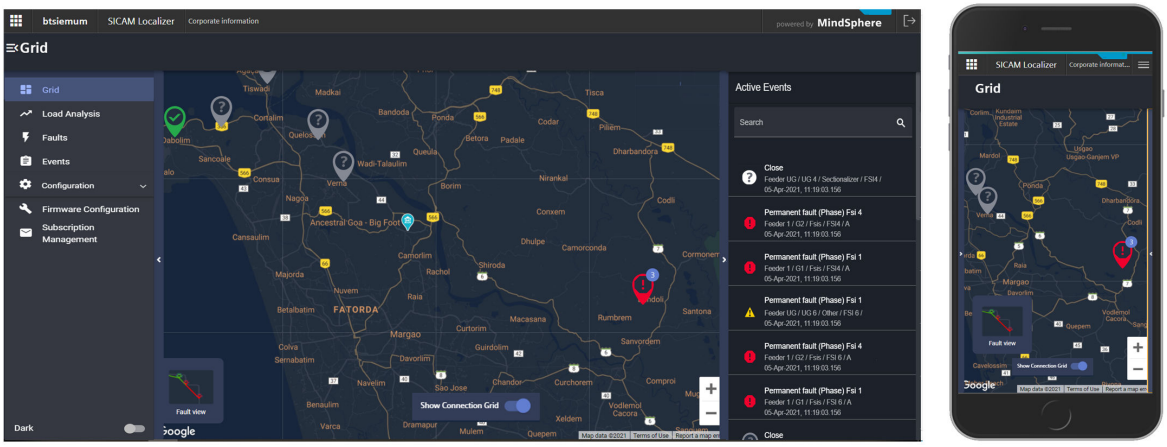
Siemens recommends clearing browser cache memory for smooth functioning of SICAM Localizer.

Google Chrome browser will ask your permission for using the location services. If you do not wish to share your location settings, you can deny permission for access. However, to use this feature in future, clear browser cache memory.

Ownership and Integrity of data lies with the customer.

In any event of a fault in the line, the SICAM FCG location icon near to the fault location turns to red color with number of faults and total list of Active Events (*Figure 2-6*).

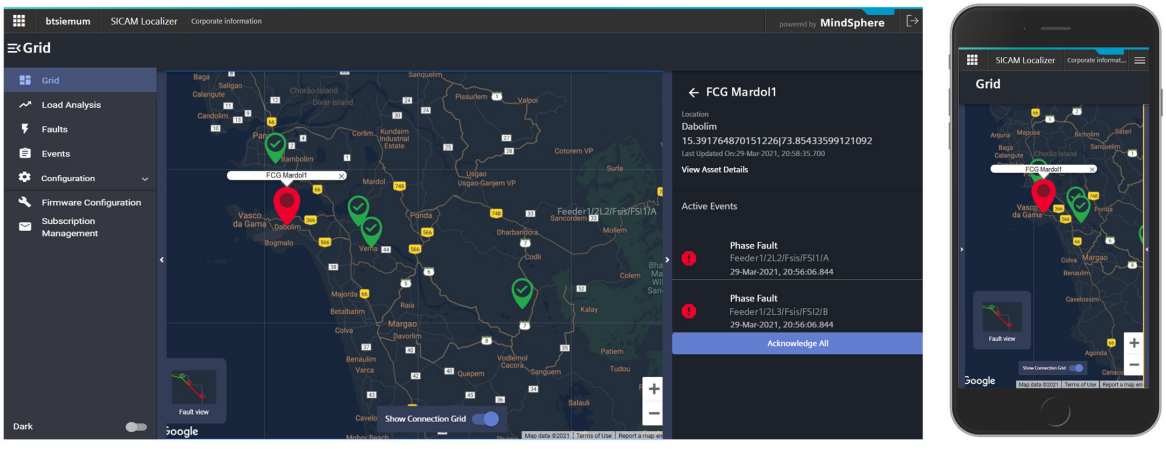
If the SICAM FCG icon turns to red color, then user is advised to monitor the overhead/underground line segment in the direction opposite to source substation.



[sc_slocalgridfault, 7, en_US]

Figure 2-6 Grid – Location Icon in Red Color Indicating Fault Presence

Once the user click the location icon, an Active Events tab opens with the list of devices connected showing the location, last updated on and active events list (*Figure 2-7*). User can also click on View Asset Details to navigate and view the Asset Configuration page.



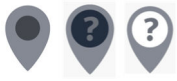
[sc_slocalgridfault-acteve, 4, en_US]

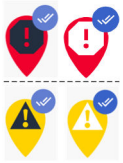
Figure 2-7 Grid – Active Events List

Table 2-3 Parameter Description for Grid Indicating Fault Presence

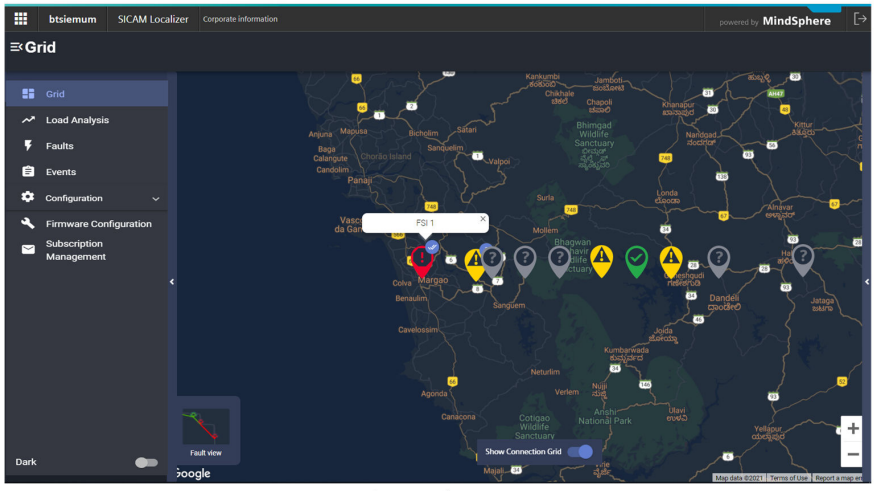
Parameter	Description
Landmark	Name of the SICAM FCG
Active Events	List of events connected to FCG showing the location, last updated on and active events list. Format: Feeder name/Feeder tag/Device type/Device name (Asset name)/ (Label/Port)
Event name	Name of the events which could be fault or a low priority events (FCM/FSI/FPI/ Sectionlizer/Recloser) Refer to *3.2.1 Creating Assets in SICAM Localizer* to understand hierarchy of assets in feeder.
Date and Time	Date in DD-MMM-YYYY format Time in HR:MIN:SS.MS format (Hours:Minutes:Seconds.Millseconds)
Location	Physical address of the SICAM FCG (Latitude and Longitude)
Last updated on	Last time stamp of the device sending data to the MindSphere cloud
View Asset Details – Button	User can navigate and view the respective asset configuration from this short-cut button
Filtered Active Events	Filtered list of faults and events on respective FCG
Acknowledge All	Acknowledge the list of filtered faults and events

Table 2-4 Fault Icon Color Summary

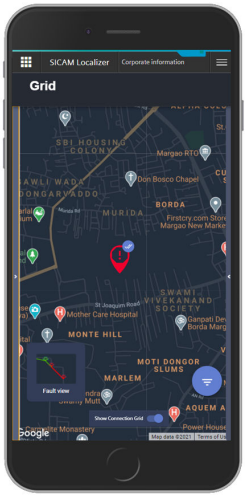
Fault Icon Color	Description
	Selected location with fault
	Selected location with event
	Selected location with line in normal Selected location with line healthy
	Line status unknown Device not communicating
	Single and multiple fault status. Circled numerical indicates number of faults in a line.
	Single and multiple event status. Circled numerical indicates number of events in a line.

Fault Icon Color	Description
	Fault and event acknowledged. 2 times check mark indicates that fault/event is acknowledged by the user.
	The ring below any location icon is referred to as a **Signifier**. This indicates the fault count severity for the branch beyond the connected node, on which no further devices/groups are installed. If there are more than 1 such terminating branches extending from the connected node, then signifier color representation indicates the branch with highest fault count among them. • Red - High fault prone zone • Yellow - Medium fault prone zone • Green - Low or no fault prone zone

Once a fault presence is shown in Active Events, you have the option to Acknowledge all the faults. In this case the location icon turns to acknowledged state from warning state. The acknowledgement of fault avoids multiple users attending the same fault. When the fault is cleared, the icon color changes back to green.



Desktop Environment

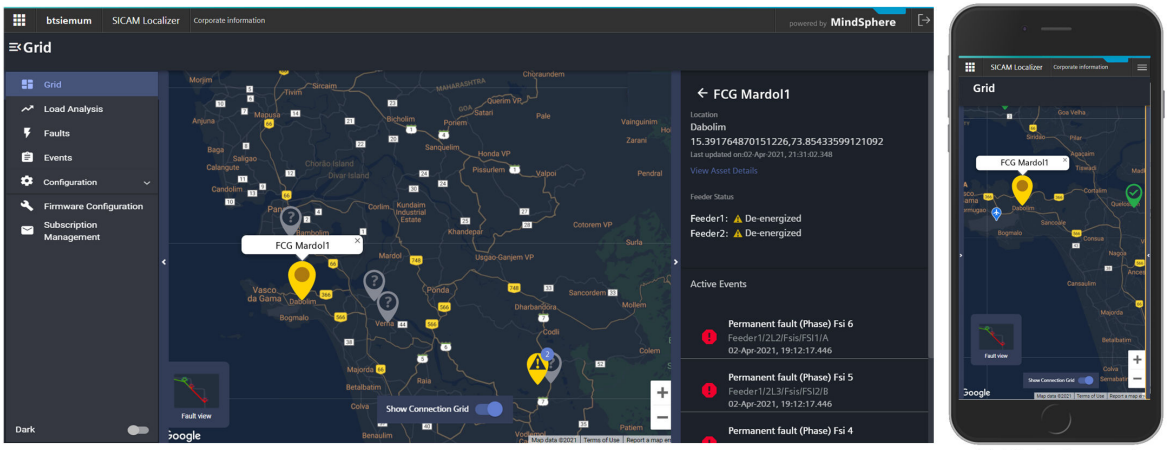


Mobile Environment

[sc_slocal-dboard-ack, 8, --_--]

Figure 2-8 Grid – Location Icon in Yellow Color Indicating Fault Acknowledged

In any event of a line status is Open-phase or De-energized, the SICAM FCG icon near to the fault location turns to yellow color. Once the user clicks the location icon, a side panel opens with the respective SICAM FSI device highlighted. The feeder status is collected from the FSI on that feeder and confirms the overhead line which is de-energized or open. If the SICAM FCG icon turns to yellow color, then user is advised to monitor the overhead line segment in the direction towards the source substation.



Desktop Environment

Mobile Environment

[le_slocal_linedeenergized_lineopen.vsd, 7, en_US]

Figure 2-9 Grid – Location Icon in Orange Color Indicating Line De-energized and Line Open

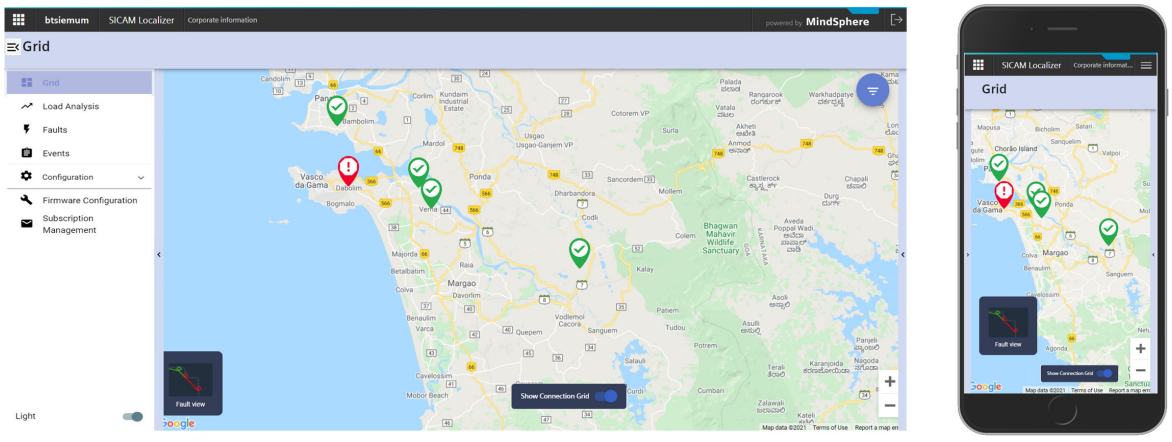
NOTE

It is advised to follow standard safety practices prior to carrying out maintenance activities on the line based on line status indicated in SICAM Localizer.

The line status De-energized is indicated based on the V-Off event triggered from FSIs (A, B, C phases) connected with 1st FCG from the source station. It is recommended to verify the feeder breaker status on the line prior to carrying out maintenance activities to confirm the presence or absence of voltage on the line.

In any event of communication failure between SICAM FCG and MindSphere or SICAM FSI and SICAM FCG for more than 1 hr, the location icons turn to grey color (*Figure 2-9*).

You can apply a theme to your entire application, such as Dark and Light. When you apply a theme, all visuals on your Localizer application use the colors from your selected theme. Following figure depicts the SICAM Localizer in White theme. The theme can be changed using the toggle functionality available at the bottom left of the screen.



Desktop Environment

Mobile Environment

[le_msphere_slocal_strtscrn_white, 2, en_US, 6, en_US]

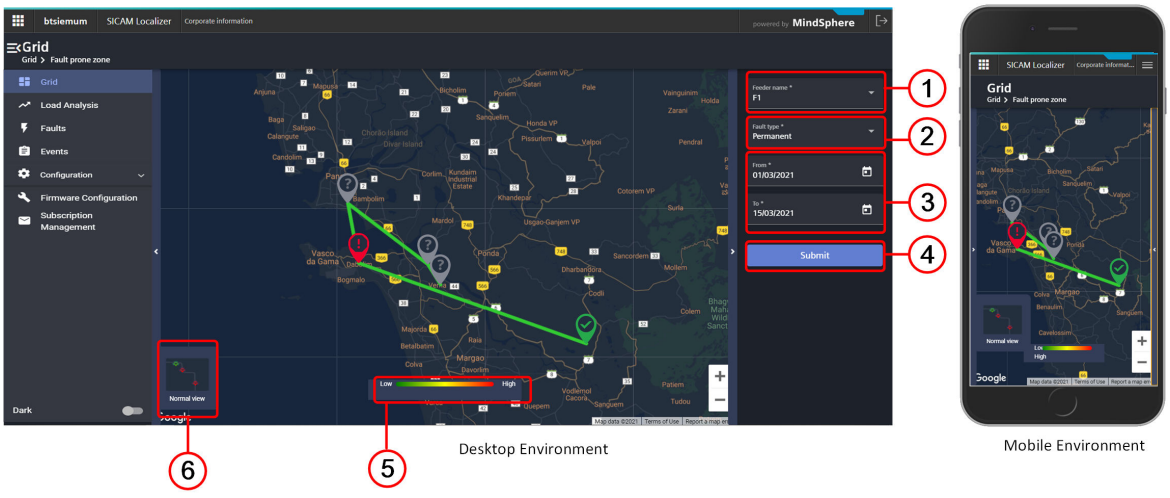
Figure 2-10 SICAM Localizer Grid in Light Theme

2.3 Fault Prone Zone View

The fault prone zone helps you identify the section of the feeder line which is more prone to faults. The fault prone zone is based on the historical data of temporary and permanent faults in the line.
The sections of the feeder line is displayed by a designated color to represent the frequency of fault:

- Red - High fault prone zone
- Yellow - Medium fault prone zone
- Green - Low or no fault prone zone

Navigate to the **Grid** view and click **Fault view**.
The following screen reflects the fault prone zone of a feeder as a graphical representation.



[le_slocal_faultpronezone, 6, en_US]

Figure 2-11 Fault Prone Zone

Legend Number	Parameter	Description
1	Feeder name	Branch/feeder on which SICAM FCG and other devices are installed
2	Fault type	Permanent and temporary faults
3	From/To	Period of time to be set for the fault prone zone
4	Submit	Display of fault prone zone is started
5	Fault prone zone legend	Legend to represent fault prone zone section of the feeder • Red - High fault prone zone • Yellow - Medium fault prone zone • Green - Low or no fault prone zone
6	Normal view	Click to view the default normal view of the Grid (*Figure 2-4*)

NOTE

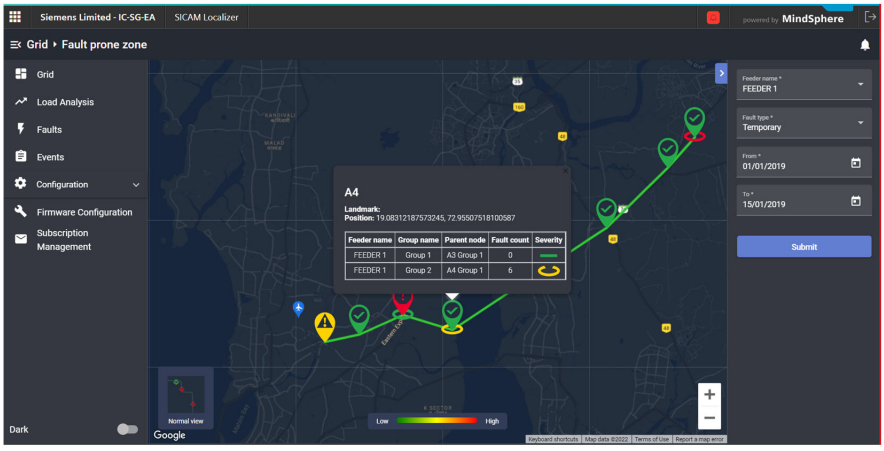
The fault prone zone data is available after a period 14 days, based on following mandatory procedure accomplished:

- Commissioning of assets
- Successfully onboarding assets
- Set correct feeder hierarchy formation

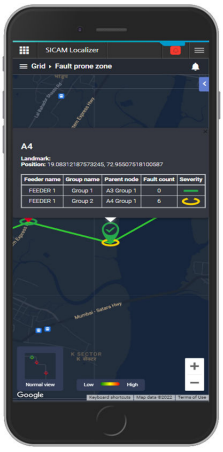
NOTE

Fault prone zone functionality does not work in single feeder asset.

The user can get more details about the corresponding fault zone by clicking on the respective device in feeder.



Desktop Environment



Mobile Environment

[le_slocal_faultpronezonewindow, 8, en_US]

Figure 2-12 Fault Prone Zone - Asset Fault Count

Parameter	Description
A4	Name of the device which is linked to parent node
Landmark	Physical address of the device
Position	Latitude and longitude of the device
Feeder name	Name of the branch/feeder on which the respective SICAM FSIs are present. Refer to *3.2.1 Creating Assets in SICAM Localizer* for more details.
Group name	Groups 1, 2, and 3 which are assigned to assets
Parent node	Code of branch/feeder on which the preceding SICAM FSIs are present. Refer to *3.2.1 Creating Assets in SICAM Localizer* for more details.
Fault count	Number of faults captured by the respective SICAM FCG system
Severity	The user can see the severity individually from the popup for each group. For the connected nodes that has branches with groups further connected to them, a line segment is shown which indicates continuation to next group.

Fault Prone Zone Report – Email Functionality

In addition to fault prone zone view, every tenant would receive a periodic fault prone zone report via email. The report includes the following data for each feeder:

- Summary giving a view of top 3 fault counts in descending order with fault entries.
- The detailed fault prone zone details of each fault in sequence are described below:
  - FCG name reporting the fault
  - Outage duration with start and end time (in hours)
  - Fault category (permanent or temporary)
  - Line phase on which fault is present and I_{max}[A]
  - Node details (Status, offline node count)
  - Number of offline nodes
  - FCG name of offline nodes

The report generated is automatically triggered to the tenant email ID (used for registration on MindSphere) for a duration of last month.

- If September 2020 is the current month, then report will be from 1st August 2020 to 31st August 2020.

2.4 Load Analysis View

The Load Analysis provides a view to analyze the performance of a selected feeder or a phase of the feeder over a selectable period.

Navigate to the SICAM Localizer sidebar and click Load Analysis.

The following screen reflects the performance of a feeder as a graphical representation.

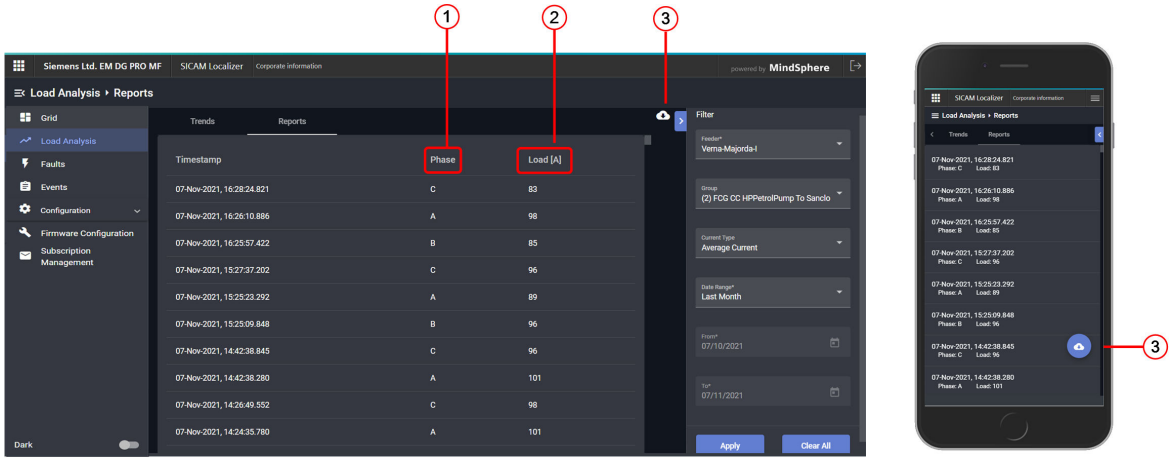
[le_slocal-loadanlys, 10, en_US]

Figure 2-13 SICAM Localizer – Load Analysis Trends

Table 2-5 Parameter Description Load Analysis

Legend Number	Parameter	Description
1	Feeder name	Name of the branch/feeder on which the respective devices are present.
2	Group	Branch name described with respect to (Order) Feeder name Feeder tag For example: (1) Majorda FCM
3	Current type	For SICAM FSI only: Average current, maximum current, minimum current, and instantaneous current For Fusesaver only: Average RMS current and fault current
4	Date range	Quick selection of current date and current real-time clock (RTC). The following date range settings are available for selection: • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Custom For example: Current date and time is 04-March-2021, 11:02 AM. If the user selects **Last day** (Last 1 Day), then From and To Date/Time is automatically set to 04-March-2021, 11:02 AM and 03-March-2021, 11:02 AM If the user selects **Custom**, then From and To gets enabled and the user can manually set the specific date range as required.

Legend Number	Parameter	Description
5	From/To	Period of time to be set for the load analysis. These fields are auto populated based on the **Date range** selection. This field is enabled for manual selection only when the **Date range** is selected as **Custom**.
6	Apply	Displays load analysis trends and reports.
7	Clear All	All filter selections except the selected time period are reset.
8	Trends	Graphical representation of current for the phases A, B, C [y-axis] in respective group and the date and time [x-axis]
9	Reports	Display of the selected current type for the phases A, B, C in respective group as shown in *Figure 2-14*.
10	Phase A (Red)	Phase A filter in trends view
	Phase B (Yellow)	Phase B filter in trends view
	Phase C (Blue)	Phase C filter in trends view
11	Set Threshold	Transformer threshold current in trends view



Desktop Environment

Mobile Environment

[sc_slocal-loadanlys-rep, 10, --_--]

Figure 2-14 Load Analysis Reports

Table 2-6 Load Analysis Reports Parameter Description

Legend Number	Parameter	Description
1	Phase	Phase of the overhead lines (Phase A, Phase B, or Phase C)
2	Load [A]	Value of current in the respective phase
3	Download	Download button for load analysis report. The report for the selected time period is downloaded in XLSX format.

NOTE

For a faster response of loading trends and reports, it is recommended to select a period of maximum 30 days.

2.5 Faults View

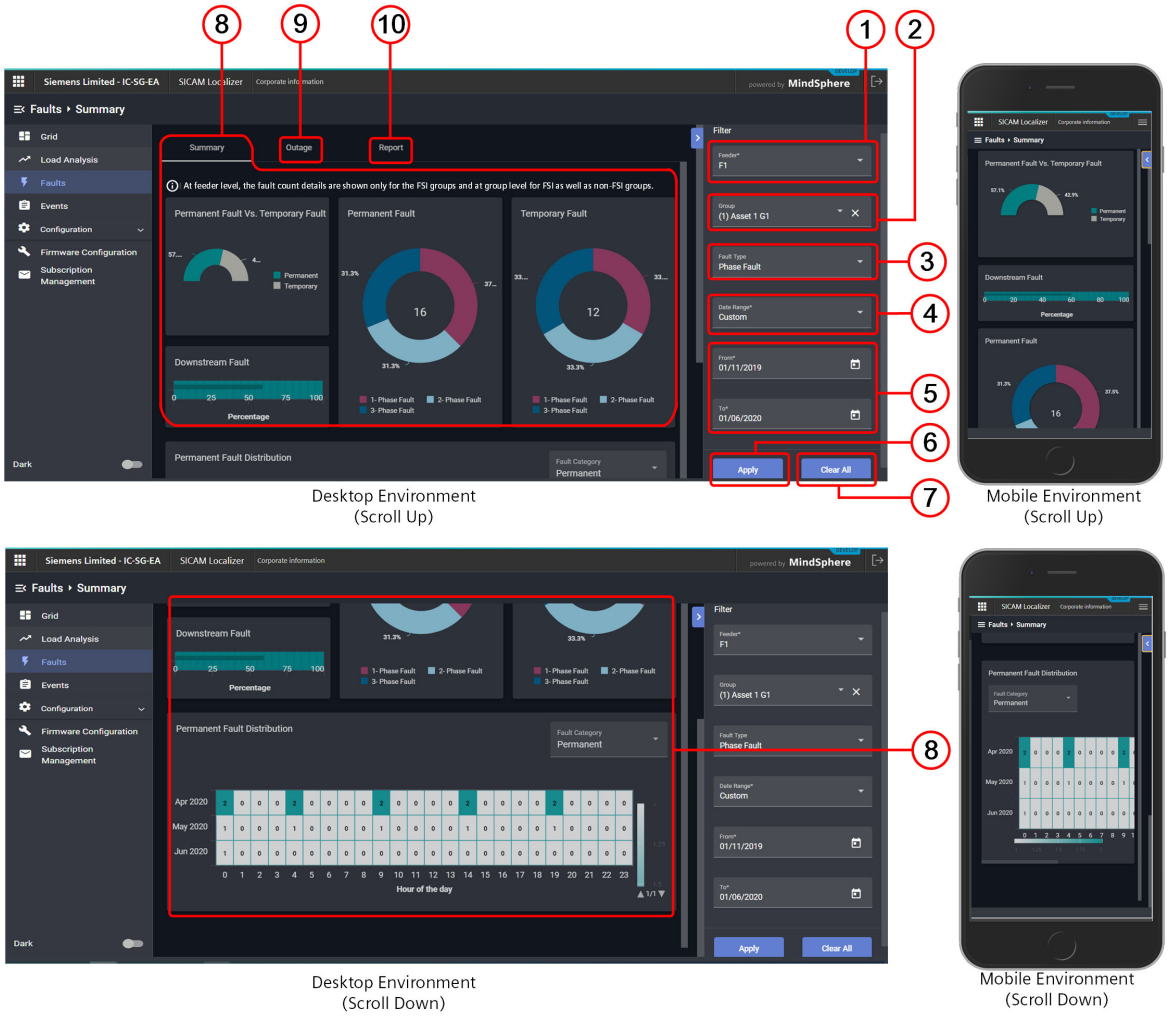
The Faults view provides an easy analysis of phase faults, ground faults, di/dt faults, and forward/reverse faults occurred in the feeder. The classification of these faults is available as temporary fault or permanent fault. You can see the fault records associated with the fault event via the graphical representation (under the Summary and Outage tab of the Faults view) and in the tabular format (under the Reports tab of the Faults view). The duration of the fault log can be filtered by the date range.

- **Summary**: Graphical representation of the selected fault type as termporary/permanent fault, occurrence of temporary fault vs. permanent fault and distribution of temporary/permanent fault over a 24 h period.
- **Outage**: This view provides an analysis of the fault-restoration data. This includes total outage (in hours) vs. number of faults, fault distribution by restoration time and a permanent/temporary fault report for the respective outage event.
- **Report**: Tabular representation of fault records with the fault event.

Navigate to the SICAM Localizer sidebar and click Faults.

Summary

The following screen shows the temporary/permanent phase faults as a graphical representation. By default the summary tab shows the permanent faults in heatmap.



[le_slocal-fault_summary, 3, en_US]

Figure 2-15 Faults View - Summary

Table 2-7 Faults View Parameter Details

Legend Number	Parameter	Description
1	Feeder name	Name of the branch/feeder on which the respective devices are present.
2	Group	Branch name described about (Order) Feeder name Feeder tag For example: (1) Majorda FCM
3	Fault type	For FCM: forward and reverser faults For FPI: phase and ground faults For FSI: phase faults and di/dt faults For Fusesaver: phase faults
4	Date range	Quick selection of current date and current real-time clock (RTC). The following date range settings are available for selection: • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Custom For example: Current date and time are 04-March-2021, 11:02 AM. If you select **Last day** (Last 1 Day), then From and To Date/Time is automatically set to 04-March-2021, 11:02 AM and 03-March-2021, 11:02 AM If you select **Custom**, then From and To gets enabled and manually set the specific date range as required.
5	From/To	Period of time to be set for the fault log These fields are auto populated based on the **Date range** selection. This field is enabled for manual selection only when the **Date range** is selected as **Custom**.
6	Apply	Display of summary, outage, and reports is started
7	Clear All	All filter selections except the selected time range are reset

Legend Number	Parameter	Description
8	Summary	When viewing faults in **Summary** at feeder level, fault count details are displayed only for the FSI groups. However at group level the fault count details are displayed for both FSI and non-FSI groups. **Permanent Fault vs. Temporary Fault** Donut chart to represent the percentage of permanent faults over temporary faults from the total number of faults detected. **Permanent Fault** Donut chart to display the total number of permanent faults detected along with breakup over 1-phase, 2-phase, and 3-phase faults. **Temporary Fault** Donut chart to display the total number of temporary faults detected along with breakup over 1-phase, 2-phase, and 3-phase faults. **Downstream Fault** Bullet chart to display the occurrence of downstream faults as a percentage of temporary faults. Donut and bullet charts can be zoomed in for better readability and accurate analysis. **Permanent/Temporary Fault Distribution** Tabular representation providing the distribution of permanent/temporary faults over a 24 h period. This view enables the user to get an understanding of the frequency of fault occurance by every hour across months.
9	Outage	When viewing faults in outage tab at feeder level or at group level, the details of permanent faults for the phases A, B, and C in respective groups are displayed and these details are only shown for the FSI groups.
10	Reports	Displays records of temporary and permanent faults for the phases A, B, and C in respective group as shown in *Figure 2-17*.

NOTE

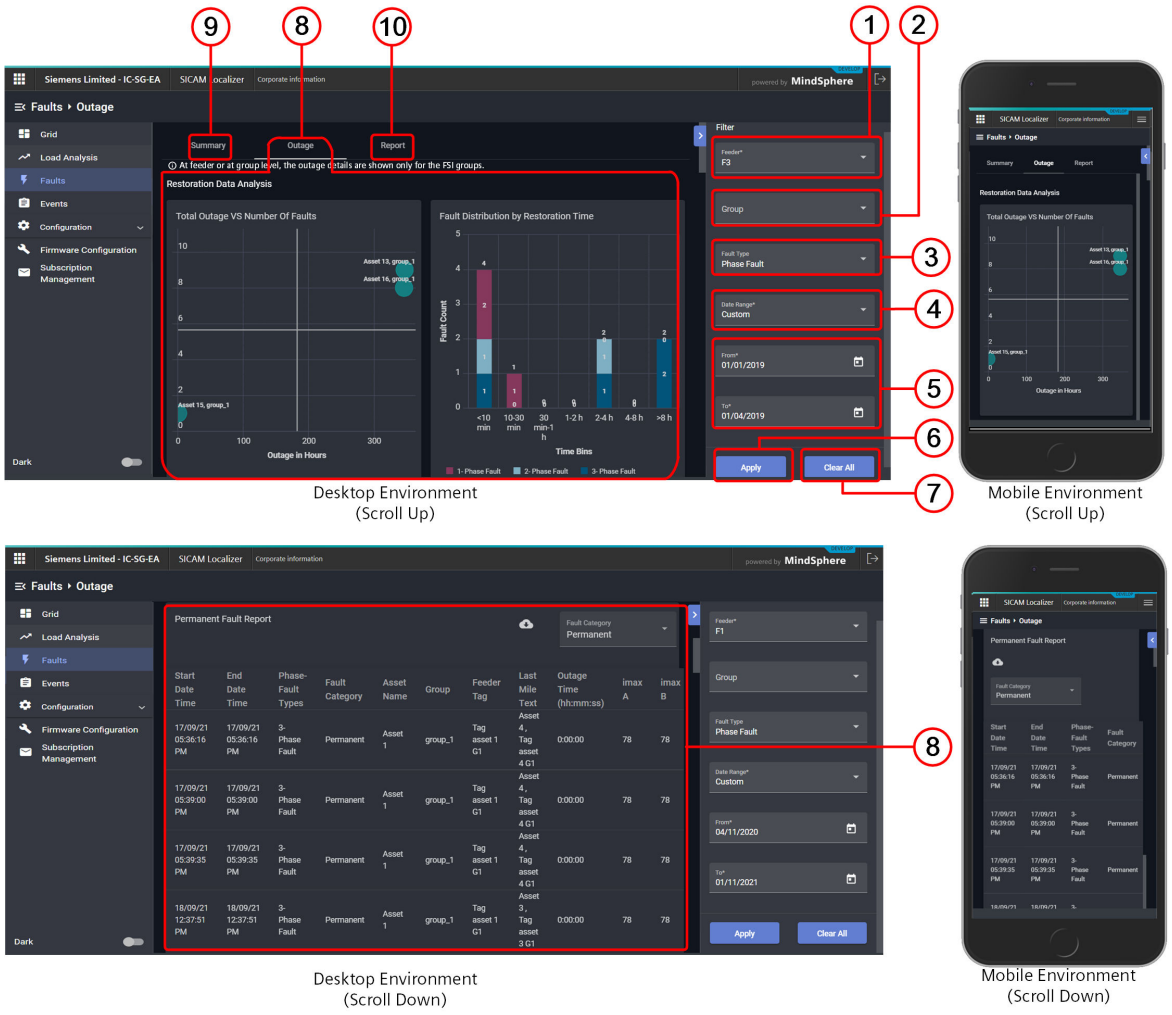
All downstream faults does not cross the threshold maximum current on the main feeder. This leads to non-tagging of a certain downstream faults. Additionally, the fault occuring on a downstream feeder must result in a load drop of minimum 10 A in the main feeder for a valid downstream fault to be tagged.

NOTE

The fault - summary and outage data is processed by analytics because of which it may take a period of up to 3 days to reflect the correct fault data in application.

Outage

The following screen shows the restoration data analysis over temporary/permanent phase faults as a graphical representation. By default the outage tab shows the permanent faults in reports.



[le_slocal-fault_summary_2, 3, en_US]

Figure 2-16 Faults View - Outage

Table 2-8 Faults View Parameter Details

Legend Number	Parameter	Description
1	Feeder name	Name of the branch/feeder on which the respective devices are present.
2	Group	Branch name described with respect to (Order) Feeder name Feeder tag For example: (1) Majorda FCM
3	Fault type	For FCM: forward and reverser faults For FPI: phase and ground faults For FSI: phase faults and di/dt faults For Fusesaver: phase faults[1]

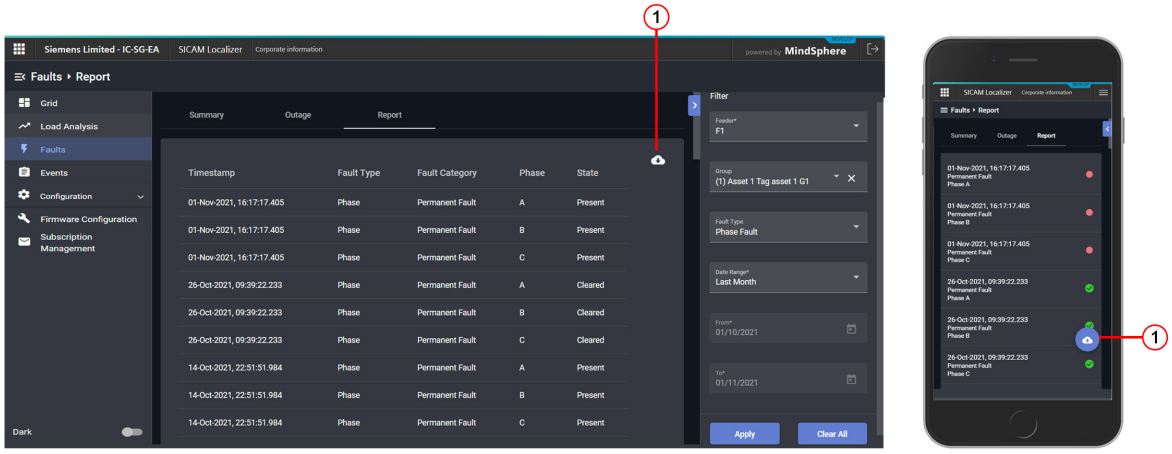
1 Fusesaver faults are tagged as phase faults in the application.

Legend Number	Parameter	Description
4	Date range	Quick selection of current date and current real-time clock (RTC). The following date range settings are available for selection: • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Custom For example: Current date and time is 04-March-2021, 11:02 AM. If the user selects **Last day** (Last 1 Day), then From and To Date/Time is automatically set to 04-March-2021, 11:02 AM and 03-March-2021, 11:02 AM If the user selects **Custom**, then From and To gets enabled and the user can manually set the specific date range as required.
5	From/To	Period of time to be set for the fault log These fields are auto populated based on the **Date range** selection. This field is enabled for manual selection only when the **Date range** is selected as **Custom**.
6	Apply	Display of summary, outage and reports is started
7	Clear All	All filter selections except the selected time period are reset
8	Outage	**Total Outage vs. Number of Faults** Bubble chart to display feeder wise data indicating number of permanent faults for each group and the respective outage duration caused as a result of these faults. If a group is selected in bubble chart, then report reflects all faults for the selected period and ignores any phase selection in stacked bar chart. **Fault Distribution by Restoration Time** Stacked bar chart to display the total number of permanent faults classified by their restoration time bin over 1-phase, 2-phase, and 3-phase faults for selected feeder/group. If a group is selected in bubble chart, then report reflects all faults for the selected period and ignores any phase selection in stacked bar chart. Bubble and stacked bar charts can be zoomed in for better readability and accurate analysis. **Permanent/Temporary Fault Report** Displays processed fault records for the phases A, B, and C in respective group.
9	Summary	Displays analysis of temporary and permanent faults for the A, B, and C in respective group.
10	Reports	Displays records of temporary and permanent faults for the A, B, and C in respective group as shown in *Figure 2-17*.

NOTE

The outage analysis along with restoration data provided in Faults view page cover outages caused by faults only. This does not include planned/maintenance related outages.

Reports



[sc_slocal-faultlog-rep, 10, --_--]

Figure 2-17 Faults View – Reports

Table 2-9 Faults View Reports Parameter Details

Legend Number	Parameter	Description
1	Download	Download button for fault log report. The report for the selected time period is downloaded in XLSX format.

NOTE

Every permanent fault is first reported as a temporary fault only by the bay device. They are considered permanent fault if voltage is not present after the PFVT (permanent fault verification time) setting time. In reports view, both the fault events (temporary fault and permanent fault) are displayed for a permanent fault as this report section displays raw data. The summary view will indicate only permanent fault by ignoring its associated previous state "temporary fault" as summary view displays processed data.

NOTE

For easier readability and understanding of the fault-data metrics, it is recommended to view the faults view (summary, outage and reports) in desktop environment (Laptop or PC).

NOTE

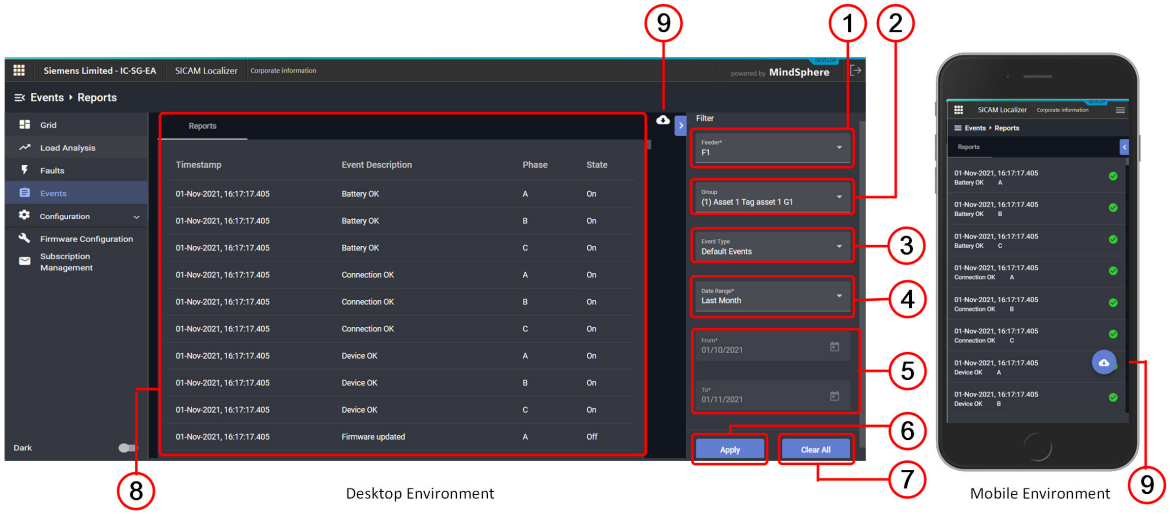
It is recommended to carry out timely maintenance of SICAM FCG. This is to make sure that there is no missing data from SICAM FCG to MindSphere at all times. This ensures accurate analysis in SICAM Localizer.

2.6 Events View

The Events view provides a report of events occurred in the phases A, B, C of the selected feeder. As a result the Events view also shows the event time and description with the state On/Off.

The duration of the Event Log can be filtered by the date range. Navigate to the SICAM Localizer sidebar and click Event Log.

The following screen populates events in tabular format that can be downloaded to XLSX format for event analysis.



[le_slocal-eventlog-rep, 10, en_US]

Figure 2-18 Events View – Reports

Table 2-10 Event Log Reports Parameter Description

Legend Number	Parameter	Description
1	Feeder name	Name of the branch/feeder on which the respective devices are present.
2	Group	Branch name described with respect to (Order) Feeder name Feeder tag For example: (1) Majorda FCM
3	Event type	Selection of the type of event to be populated in the report. Event type can be filtered as per the following events options: Types of Events For FSI only: FCG OK (this event is always selected), Voltage present, Connection OK, Battery OK, Device OK. For Fusesaver only: FCG OK (this event is always selected), Line Current, Communications OK, Battery OK. For RCU only: FCG OK (this event is always selected), Low Battery, Door Open, Source Power ON.

Legend Number	Parameter	Description
4	Date range	Quick selection of current date and current real-time clock (RTC). The following date range settings are available for selection: • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Custom For example: Current date and time is 04-March-2021, 11:02 AM. If the user selects **Last day** (Last 1 Day), then From and To Date/Time is automatically set to 04-March-2021, 11:02 AM and 03-March-2021, 11:02 AM If the user selects **Custom**, then From and To gets enabled and the user can manually set the specific date range as required.
5	From/To	Period of time to be set for the events These fields are auto populated based on the **Date range** selection. This field is enabled for manual selection only when the **Date range** is selected as **Custom**.
6	Apply	Display of event log starts
7	Clear All	All filter selections except the selected time period are reset
8	Reports	Displays records of the events along with state and timestamp for the phases A, B, C
9	Download	Download button for events report.

NOTE

In case the SICAM FCG restarts resulting in missing of fault cleared or voltage OFF event in MindSphere. The fault and event report will not have corresponding entries showcasing fault cleared or voltage off. However, the indications in Grid view will automatically correct this behaviour and show accurate indications.

2.7 Subscription Management

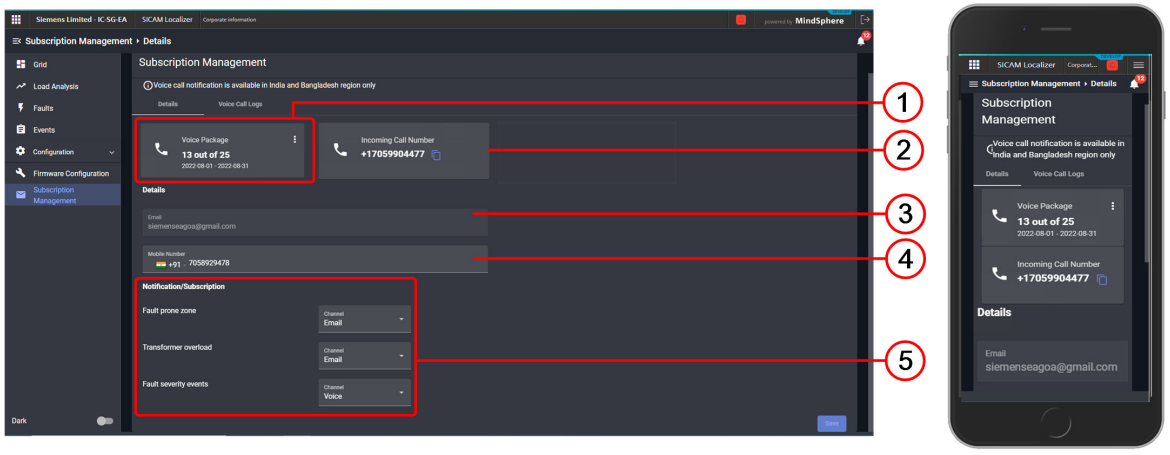
NOTE

From SICAM Localizer version 4.5.0 and above, the previous subscriptions made by the user will become null and void. The user must perform fresh subscription to the notifications using the subscription management module.

Subsciption Management module provide a quick summary of the customers SICAM Localizer package subscription usage. This module also allows the user to update the mobile number details and notification channel chosen for receiving the notifications.

In the navigation sidebar, click **Subscription Management**. The following default page appears:

Details



Desktop Environment

Mobile Environment

[le_slocal-submanag_Details, 2, en_US]

Figure 2-19 Subscription Management - Details

Table 2-11 Subscription Management - Details Desciption

Legend Number	Parameter	Description
1	Voice Package	Displays the count of notifications used out of total notifications availed as per the package chosen. Also displays the validity of the package.
2	Incoming Voice Number	Siemens designated number from which voice call notifications are received.
3	Email	Email address of the customer on which email notifications are received.

Legend Number	Parameter	Description
4	Mobile Number	Mobile number of the customer on which voice call notifications and SMS are received. This can be updated by the user in this module. Once the number is updated, press **Save** to confirm and activate the details.
5	Notification/Subscription - Channel	This section allows the user to choose the channel via which they wish to receive notifications for various types of notifications as mentioned below: • Fault Prone Zone - email notification only • Transformer Overload - email notification only • Fault Severity Events - SMS notification or voice call notification or both (SMS and voice call) notifications Once the respective channel(s) are chosen, press **Save** to confirm and activate the changes. In case the user wishes to unsubscribe from receiving some or any notifications, uncheck the channels selected, press **Save** to confirm and activate the changes.

Notifications

Email Notifications

The email is pre-configured as per user MindSphere login. The user can select the respective subscription categories to receive emails. Fault prone zone and transformer overload notifications are sent in email. Refer to *Fault Prone Zone Report – Email Functionality , Page 24* and *Table 3-3* for more information on fault prone zone report and transformer overload report respectively.

SMS Notifications

The SMS notifications include the occurance of permanent fault and fault severity events. The SMS notification includes the following details - date and time of the event, type and state of the event, name of the asset and link to the asset in the SICAM Localizer application. For each event, only the fault occurance is notified and fault clearance notification is not provided.

NOTE

The SMS service provider MindSphere has stopped their services in India region due to legal restrictions. Hence, the SMS channel is not available for selection in India.

The SMS notification delivery success rate is dependent on the country specific network carriers.

NOTE

For SICAM FCG BB hardware version, the time stamp tagged will have UTC time when SMS is sent.

Voice Call Notifications

The voice call notifications can be configured for permanent fault and fault severity events at on the feeder level. The voice call notification includes the following details - date and time of the event, type and state of the event and name of the asset in the SICAM Localizer application. For each event, only the fault occurance is notified and fault clearance notification is not provided.

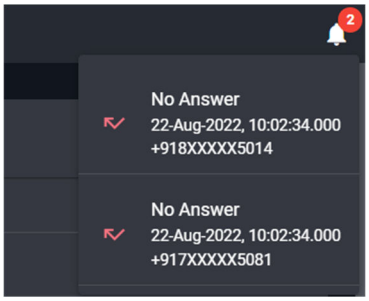
Once a fault occurs, a voice call notification is sent to the user after 3 minutes. Every subsequent voice call notification is made if the preceding voice call notification is not answered. A total of 3 voice call notification are made to the user in the first 25 minutes post occurance of the fault. The voice call notification delivery success is dependent on the country specific network carrier. Due to this dependency, the voice call may get delayed but the notification will be triggered from the application after 3 minutes of fault occurance.

NOTE

Customers must choose the voice call notification package based on the country of the tenant.

Voice Call Notifications - Alerts

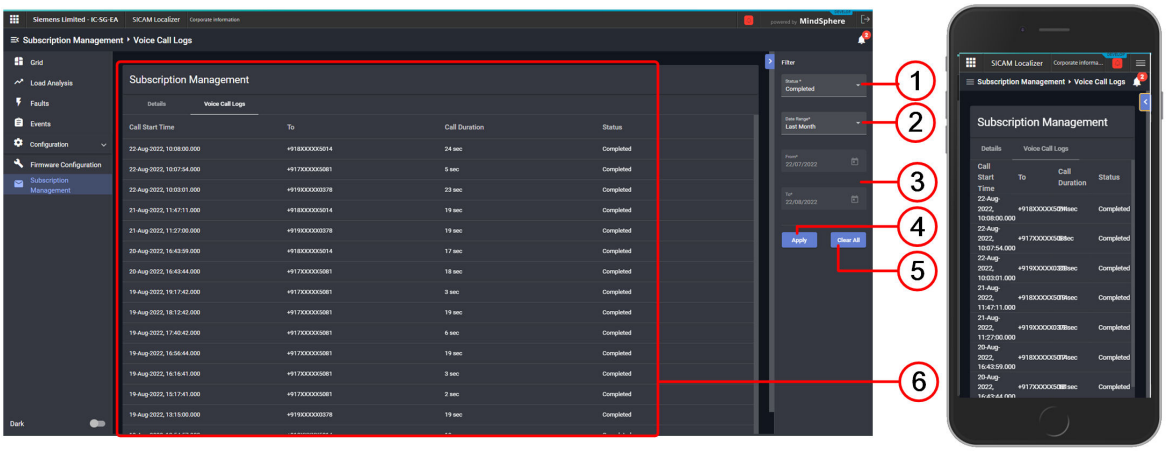
There is a voice call notification alert icon in the top right corner of the application. This will showcase the count of missed, failed and cancelled voice call notifications in the last 24 hours. Upon clicking on the alert icon, a popup window will display the list of voice calls along with time of call and the user number on which the voice call notification attempts were made.



[sc_slocal-missedalert, 1, en_US]

Figure 2-20 Vocie Call Notifications - Alerts

Voice Call Logs



Desktop Environment Mobile Environment

[le_slocal-submanag_vociecall, 1, en_US]

Figure 2-21 Subscription Management - Voice Call Logs

Table 2-12 Voice Call Log Reports Parameter Description

Legend Number	Parameter	Description
1	Status	Status of the Voice call notification made to the user. Status parameter can be filtered as per the following status options: • Completed: The call was answered and ended normally. • Failed: The call could not be completed as dialed, most likely because the phone number was non-existent. • Busy: The call received a busy signal. • No Answer: There was no answer or the call was rejected. • Queued: The call is ready and waiting in line before dialing. • Ringing: The call is currently ringing. • In Progress: The call was answered and is currently in progress. • Cancelled: The call was hung up while it was queued or ringing. By default, Completed is chosen as the filter selection.
2	Date range	Quick selection of current date and current real-time clock (RTC). The following date range settings are available for selection: • Last day • Last week • Last month • Last 3 months • Last 6 months • Last year • Custom For example: Current date and time is 04-March-2021, 11:02 AM. If the user selects **Last day** (Last 1 Day), then From and To Date/Time is automatically set to 04-March-2021, 11:02 AM and 03-March-2021, 11:02 AM If the user selects **Custom**, then From and To gets enabled and the user can manually set the specific date range as required.
3	From/To	Period of time to be set for the events These fields are auto populated based on the **Date range** selection. This field is enabled for manual selection only when the **Date range** is selected as **Custom**.
4	Apply	Display of Voice call log starts as per the chosen filter selections.
5	Clear All	All filter selections except the selected time period are reset
6	Reports	Displays records of the voice call log along with call time, call duration, status of the call and mobile number on which the voice call notification was sent.

Voice Call Notification - Troubleshooting

Observation	Action
Not receiving voice call notification	Check the voice call notification package for the following details: • Available voice call quota • Validity of the package • Accuracy of mobile number • Selection of voice channel under notification categories - fault severity events

3 SICAM Localizer Asset Management

3.1 Asset Configuration Overview

NOTE

Within the context of SICAM Localizer application, the term **`asset`** refers to a gateway device (for example SICAM FCG) which communicates data collected from its associated sensor devices (for example SICAM FSI).

The Configuration functionality provides you with a provision to create assets in SICAM Localizer that receives and reports data associated SICAM FSI, SICAM FCG and also from other bay devices like SICAM Fault Passage Indicator (FPI), SICAM Feeder Condition Monitor (FCM), Siemens reclosers and sectionalizers via FCG binary inputs. In addition to creating new assets, you can perform the following actions on the existing assets in SICAM Localizer:

- Edit/Delete asset details
- Download asset onboarding key
- Download root certificates (.zip)
- Offboard assets
- Set hierarchy
- Add/Edit/Delete transformer load threshold details

The Configuration functionality provides parameter configuration of SICAM FCG, SICAM FSI, SICAM FCM, SICAM FPI and other devices. When SICAM FCG is configured using Siemens managed cloud service, the configuration settings of SICAM FCG and bay devices are stored in MindSphere cloud. SICAM Localizer has access to the MindSphere file storage and displays the currently configured SICAM FCG, SICAM FSI settings (Operational Parameters[2] and Administrative Settings[3]), SICAM FCM, and SICAM FPI in the application interface. Thus SICAM Localizer enables you to configure the SICAM FCG and bay device parameters remotely from the application interface.

NOTE

It is necessary to configure mandatory SICAM FSI parameters in SICAM FCG WebGUI and then proceed to update/edit the parameters remotely from SICAM Localizer. Refer to *A.1 Commissioning and Configuration of SICAM FCG and SICAM FSI using SICAM Localizer* for mandatory commissioning steps.

NOTE

It is mandatory to set the correct feeder hierarchy formation for proper functioning of SICAM Localizer features. Refer to *3.2.2 Set Hierarchy – Procedure* for more information.

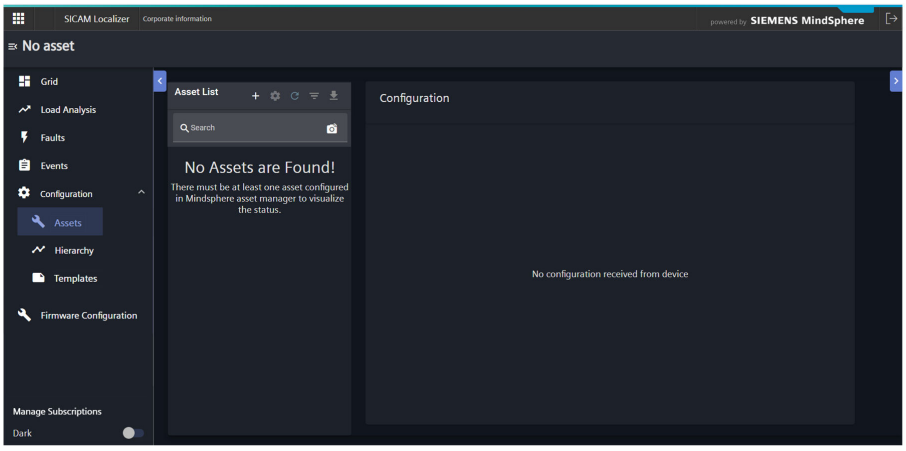
2 Operational parameters which can be remotely updated from SICAM Localizer are Binary Inputs, Binary Outputs, LED settings, and FSI Settings.

3 Administrative settings which can be remotely updated from SICAM Localizer are Time Synchronization and Communication (DNS servers, Mobile Communciation, and Short-Range Communication).

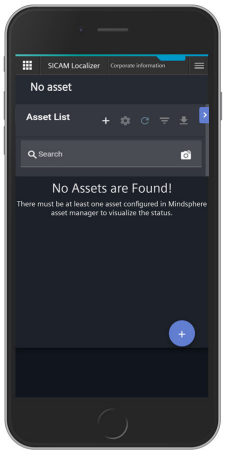
3.2 Creating Assets in SICAM Localizer

3.2.1 Creating Assets in SICAM Localizer

- On SICAM Localizer sidebar click **Configuration**, then following default screen appears for configuring assets, setting hierarchy and creating templates.



Desktop Environment



Mobile Environment

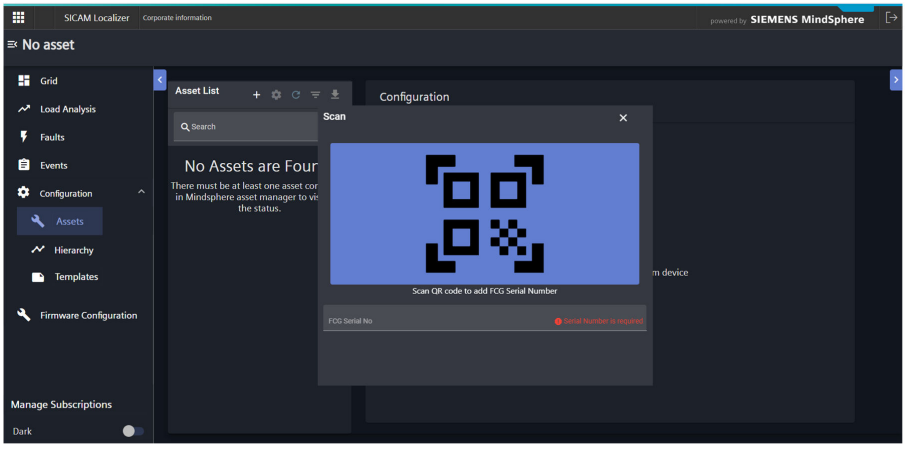
[dw_slocal_asset_config_default, 5, en_US]

Figure 3-1 Configuration – Default Page

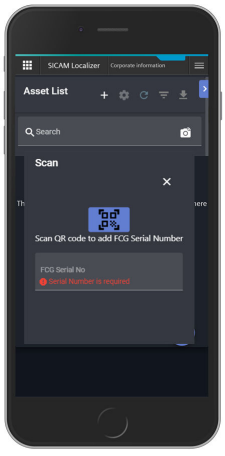
- Click **Assets** and then click **+** to add assets in the Asset List default page.
- A pop-up window containing a QR code scanner appears for capturing the FCG serial number. Scan the QR code present on the device label to auto-populate FCG serial number in the **FCG Serial no** field.

NOTE

It is recommended to scan device serial number from FCG device label with SICAM Localizer QR code scanner to avoid any error caused in manual entry of serial number.



Desktop Environment

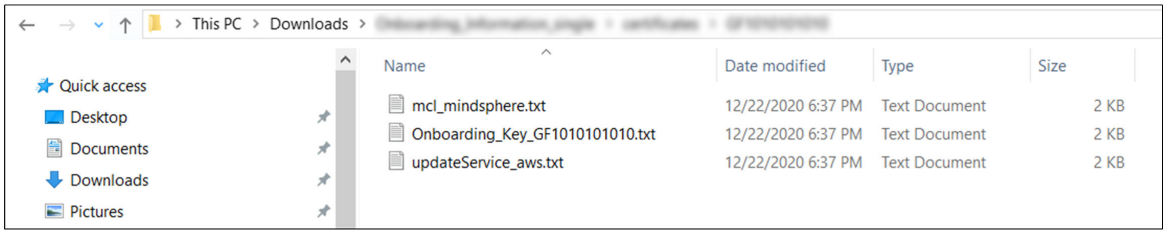


Mobile Environment

[dw_slocal_asset_qrcode, 4, en_US]

Figure 3-2 QR Code Application to Read FCG Serial Number

- Click **Download Onboarding Info** of the respective device. Onboarding Information is a zip file containing MindSphere and AWS certificates (Root CA certificates) along with an unique onboarding key.



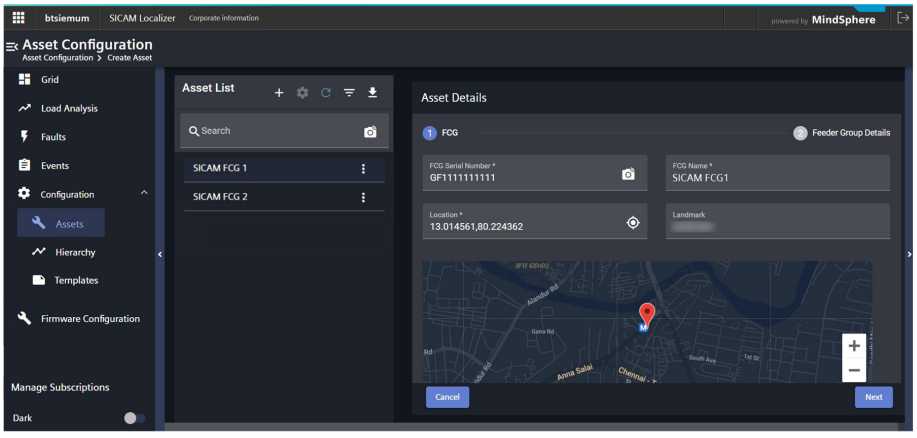
[dw_slocal_asset_download_onboard_info, 1, en_US]

Figure 3-3 Download Onboarding Information

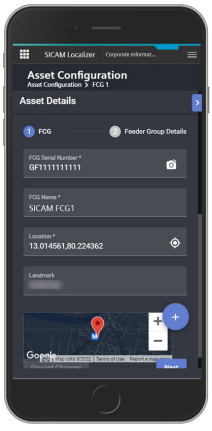
NOTE

User has the option to download the onboarding info of all the assets at once in a zip file by entering multiple FCG Serial No. and clicking Download Onboarding Info.

- Continue the procedure to add remaining SICAM FCGs to the **Asset List**. Once the assets are added, enter mandatory **Asset Details** for each SICAM FCG.



Desktop Environment



Mobile Environment

[dw_slocal_asset_config_asset details, 4, en_US]

Figure 3-4 Asset Configuration - Asset Details

Refer to the following table while filling the SICAM FCG details:

Table 3-1 Asset Configuration - Asset Details Description

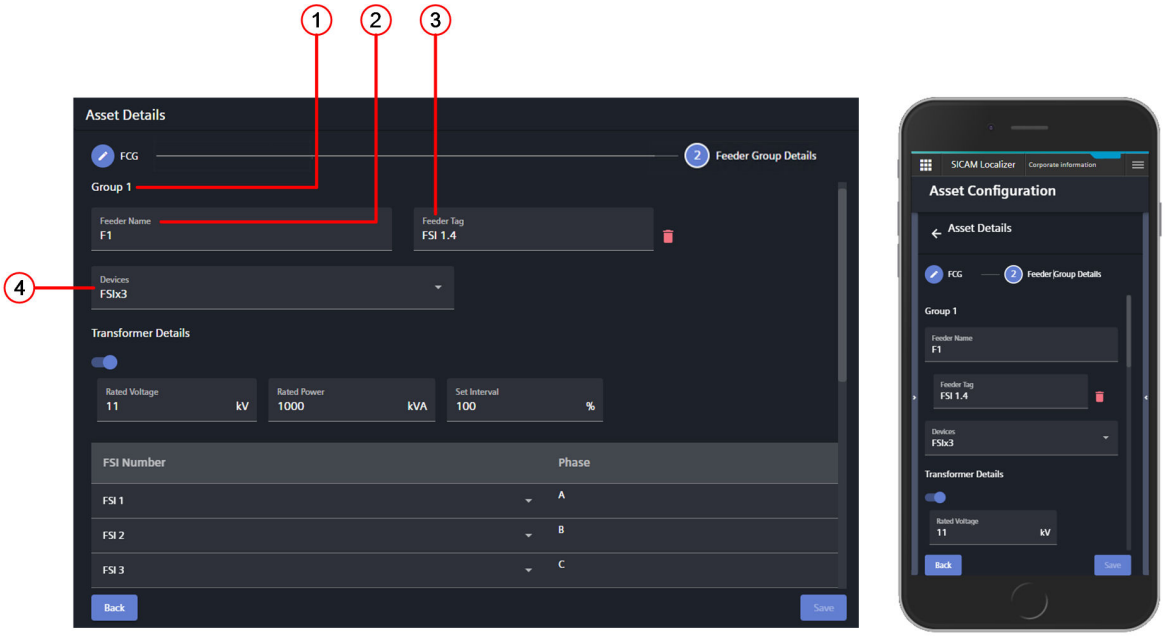
Parameter	Description	Character Limit	Character Allowed	Mandatory/ Optional
FCG Serial Number	To be entered by using the QR code application. The serial number is available on SICAM FCG device in the following format: GFXXXXXXXXXX	12 characters	Alphanu-meric	Mandatory
FCG Name	User defined name for the respective SICAM FCG	Up to 25 char-acters	Alphanu-meric, space, Underscore	Mandatory

Parameter	Description	Character Limit	Character Allowed	Mandatory/ Optional
Location (Latitude and Longitude)	Captured automatically from a device browser location setting on a mobile phone with location accuracy set to Precise Location or to be entered manually or drag the device site location pin from the Google Maps. The entry in this text box must be in the format below. Illustrated example: • 12.1234, 43.1234 • -31.1234, 130.1234 • -37.1234, -81.1234 • 58.1234, -136.1234	Minimum 4 digits after decimal value	As per format	Mandatory
Landmark	Physical address of SICAM FCG	Up to 255 characters	No Restrictions	Optional

NOTE

Every asset added in SICAM Localizer must have different latitude and longitude coordinates.

- Click **Next** to enter the **Feeder Group Details**. The Feeder Group Details is dependant on selection of the Devices.



Desktop Environment

Mobile Environment

[le_slocal_asset_config_feeder details, 3, en_US]

Figure 3-5 Asset Configuration - FSI Feeder Group Details with Phase Selection

Table 3-2 Add Feeder Group Details and Phase Selection Descriptions

Legend Number	Parameter	Description	Character Limit	Character Allowed	Mandatory/ Optional
1	Group	A group is a set of 3 SICAM FSIs which monitors the Phases A, B, C or any other devices connected via SICAM FCG. Assign feeder list to the respective groups. A maximum of 9 group feeders can be added.	–	–	–
2	Feeder Name	User defined name of the distribution line which is monitored by the sensor devices.	Up to 15 characters	Alpha numeric	-
3	Feeder tag	To easily identify the location of an asset in a feeder, a description is entered manually with respect to preceeding or suceeding asset in a group. This field is necessary when 2 groups have same feeder name.	Up to 20 characters	Alpha numeric	Optional
4	Devices	Selection of bay devices (FSIx3, FUSx3, FPI, FCM, Disconnector, Sectionalizer, Recloser, RCU and other devices)	–	–	–

NOTE

Refer to *Figure 3-12* for an example representation of Feeder wise Group of Location of Assets for clearer understanding of the above Parameters.

If the user selects FSIx3 from the Devices list box, then follow the procedure below.

—The optional Transformer Details can be applied by the toggle functionality (*Figure 3-5*). In order to set required transformer threshold current, user inputs the following parameters:

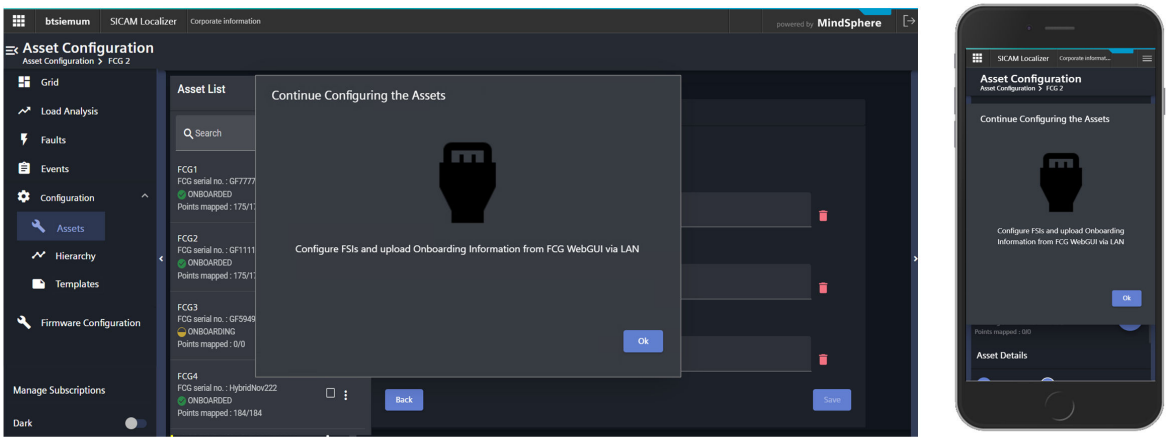
- Rated voltage (in kV)
- Rated power (in kVA)
- Set threshold (in %)

Refer to *Annexure 1: Transformer Load Monitoring, Page 56*) for more details.

— Assign **FSI Number** to the respective phases A, B, and C.

— Click **Add Group** to register the additional groups in the feeder branch. A maximum of 9 groups can be added.

— Once the feeder details and phase selection details are saved, you will be asked to configure SICAM FSI and onboarding information in SICAM FCG Web GUI.



Desktop Environment

Mobile Environment

[dw_slocal_asset_config_pop-FSIs, 4, en_US]

Figure 3-6 Asset Configuration - Message to Configure FSI and Onboarding Key

NOTE

Refer to SICAM Localizer Asset Onboarding Steps - Application Note (E50417-X8940-C650-A1) for a complete understanding of the asset onboarding procedure in SICAM Localizer application and SICAM FCG Web GUI respectively.

If the user selects FPI from the Devices list box, then follow the procedure below.

— Enter the feeder name and feeder tag. Refer to *Table 3-2*.

— Select the phase fault, ground fault and other fault status from the **Signal Name** list box. Character limit of Signal name is 15 characters.

— Assign the terminal connections (L2/1, L4/3, L6/5, P8/9, P10/9, P11/12) to the respective faults from the **Terminal Block** list box.

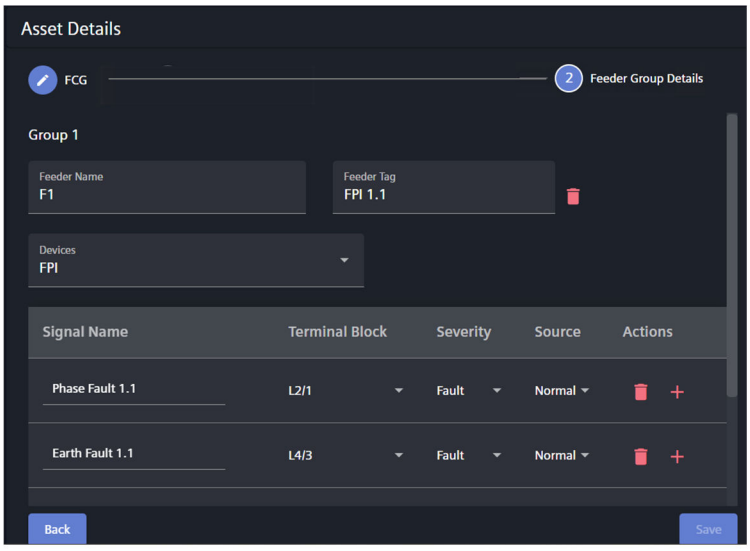
— Assign the severity to each fault from the **Severity** list box. The severity can be a **Fault** (red icon) itself, **High** (yellow icon) and **None**. Selecting a None from the list box will not show a fault in grid dasboard.

— Select the fault either a **Normal** or a **Inverted** source.

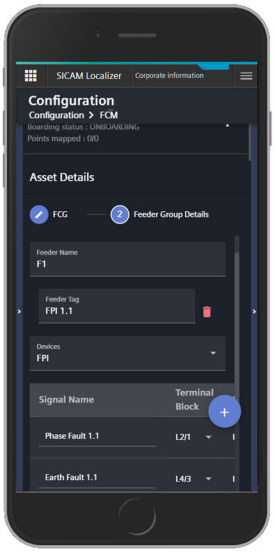
— User can either delete the existing Signals and can add upto maximum 6 signal names.

— Click **Add Group** to register the additional groups in the feeder branch. A maximum of 9 group feeders can be added.

— Once the **Group** and feeder details are saved, you will be asked to configure FCG and onboarding information.



Desktop Environment



Mobile Environment

[le_slocal_asset_config_FPIfeeder, 3, en_US]

Figure 3-7 Asset Configuration - FPI Feeder Group Details

NOTE

Do not configure FPI binary inputs from SICAM FCG WebGUI.

If the user selects FUSx3 from the Devices list box, then follow the procedure below.

—The optional Transformer Details can be applied by the toggle functionality (*Figure 3-5*). In order to set required transformer threshold current, user inputs the following parameters:

- Rated voltage (in kV)
- Rated power (in kVA)
- Set threshold (in %)

Refer to *Annexure 1: Transformer Load Monitoring, Page 56*) for more details.

— Assign **Device Number** to the respective phases A, B, and C.

— Click **Add Group** to register the additional groups in the feeder branch. A maximum of 9 group feeders can be added.

— Once the feeder details and phase selection details are saved, you will be asked to configure FCG and onboarding information.

If user selects FCM/Sectionalizer/Recloser/Other Device from the Devices list box, then follow the procedure below.

— Select the forward direction fault, reverse direction fault and other fault status from the **Signal Name** list box. Character limit of Signal name is 15 characters.

NOTE

Forward direction and reverse direction faults are only applicable for SICAM FCM. Sectionalizer, recloser and other devices can be entered with custom signal as per site configuration.

— Assign the terminal connections (L2/1, L4/3, L6/5, P8/9, P10/9, P11/12) to the respective faults from the **Terminal Block** list box.

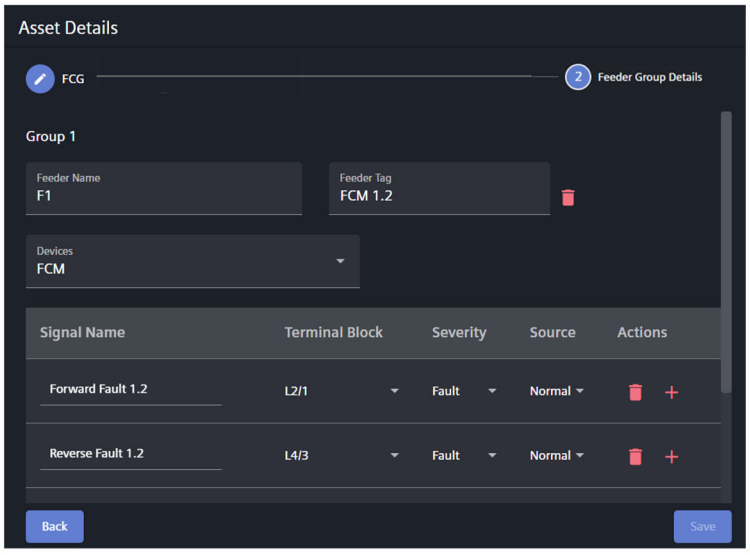
— Assign the severity to each fault from the **Severity** list box. The severity can be a **Fault** (red icon) itself, **High** (yellow icon) fault and **None**. Selecting a None from the list box will not show a fault in grid dasboard.

— Select the fault either a **Normal** or a **Inverted** source.

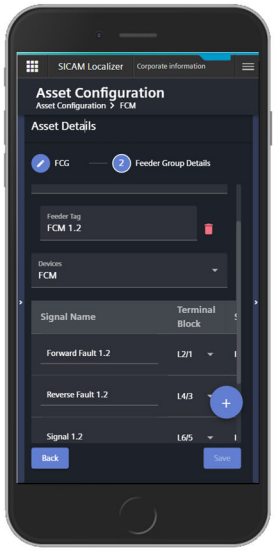
— User can either delete the existing Signals and can add upto maximum 6 signal names.

— Click **Add Group** to register the additional groups in the feeder branch. A maximum of 9 group feeders can be added.

— Once the **Group** and feeder details are saved, you will be asked to configure FCG and onboarding information.



Desktop Environment



Mobile Environment

[le_slocal_asset_config_FCMfeeder, 3, en_US]

Figure 3-8 Asset Configuration - FCM/Sectionalizer/Recloser/Other Device, Feeder Group Details

NOTE

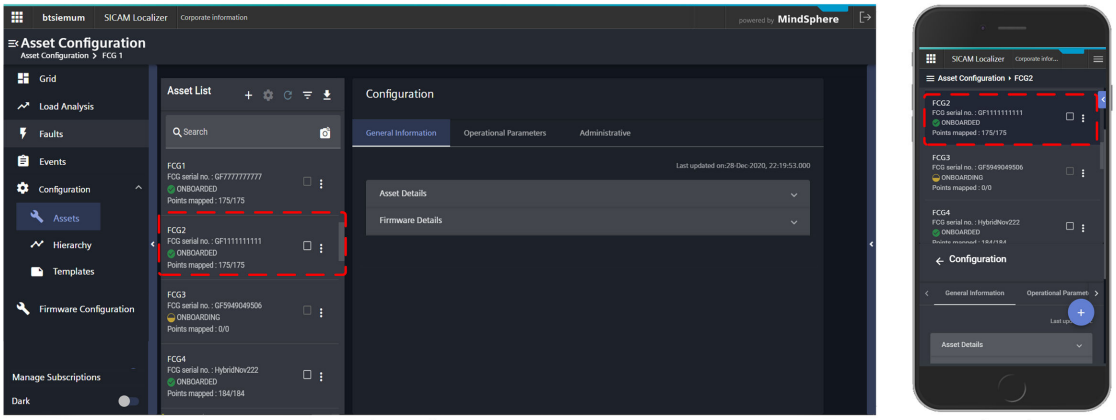
Do not configure FCM/Sectionalizer/Recloser/Other Device binary inputs from SICAM FCG WebGUI.

NOTE

If the SICAM FPI, SICAM FCM, and other bay devices are associated with SICAM FCG and Localizer, then these devices must be configured with a voltage based reset function for proper functioning.

Verifying Onboarded Asset in SICAM Localizer

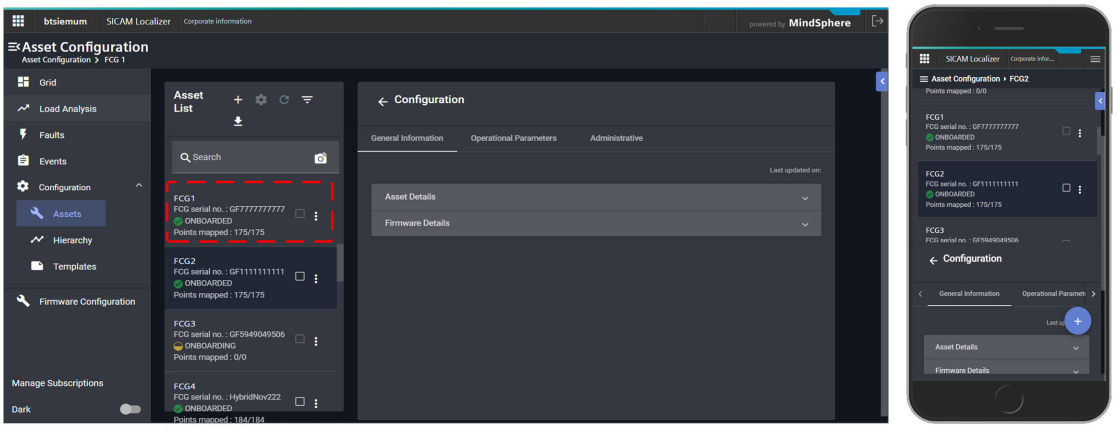
- Once the Onboarding key is activated from SICAM FCG WebGUI, return to the SICAM Localizer application.
- Select the Asset List tab to view the list of all the saved assets in SICAM Localizer. You can use the scroll bar to view the newly added asset. The following figure shows the newly added asset.



[le_slocal_create_asset6_statusNoprofile, 7, en_US]

Figure 3-9 Asset List Screen - Asset Details

- Once the status is ONBOARDED, the data points from the device (SICAM FCG/SICAM FSI) get automatically mapped with the asset in SICAM Localizer via MindSphere cloud.
  The succesful ONBOARDED asset reflects in green color icon.



[le_slocal_create_asset10_onboarded, 8, en_US]

Figure 3-10 Asset List Screen with Asset Onboarded Status

NOTE

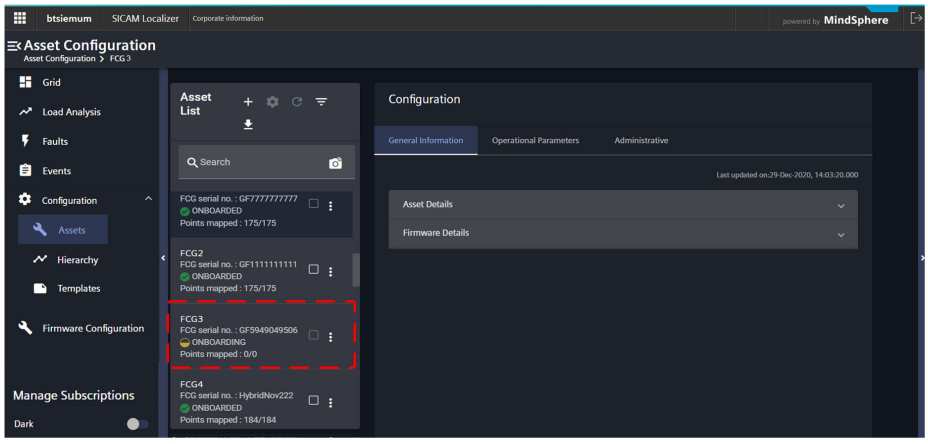
If the asset firmware is updated but not communicated to MindSphere cloud, then downloaded report reflects old firmware version. Refer to *Report Format, Page 93* for more information.

- Once the newly created asset attains onboarded status, it starts reporting data corresponding to the device it is mapped to.
- Set the asset hierarchy and add transformer details as a mandatory steps (*3.2.2 Set Hierarchy – Procedure*, *Annexure 1: Transformer Load Monitoring, Page 56* and *Annexure 2: Transformer Overload Event , Page 57*). Then various functionalities are now be accessed for the newly created asset once data is collected for a suitable time period.

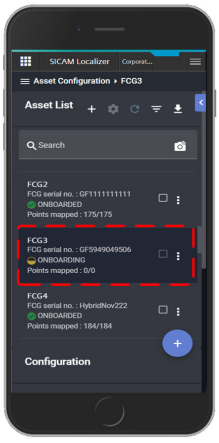
NOTE

If SICAM FCG did not receive any data from the linked SICAM FSIs (from asset creation date till current date), then SICAM Localizer features corresponding to the respective asset will not function.

- If the asset is not properly onboarded, then on Asset Configuration page the device remains in yellow icon.



Desktop Environment



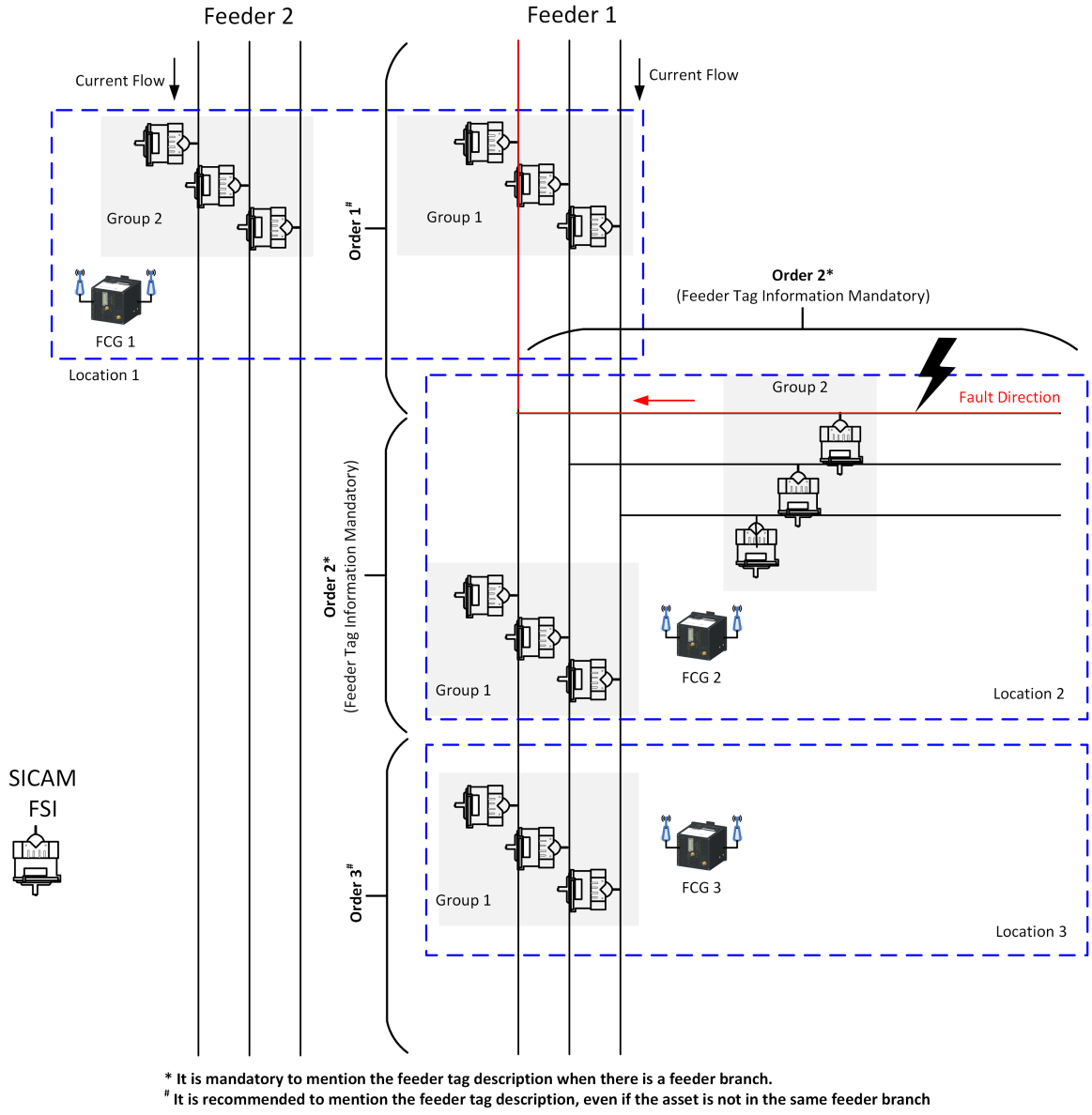
Mobile Environment

[dw_slocal_create_asset11_error, 5, en_US]

Figure 3-11 Asset Onboarding Error

3.2.2 Set Hierarchy – Procedure

The **Set Hierarchy** is a Google map view-based feeder hierarchy formation. A map displays the assets (FCG) created with geographical information like latitude and longitude. A pop-up indicates the user-friendly names of the FSIs groups associated with the FCG asset. The hierarchy helps to understand how the feeder is navigating from substation till the feeder end based on the device groups installed. To form the hierarchy, each group created under a feeder should be linked with its preceding and succeeding groups considering the feeder route or fault current travelling path.



[sc_slocal_assetconfig_sethire, 1, en_US]

Figure 3-12 Example – Feederwise Group Location of Assets

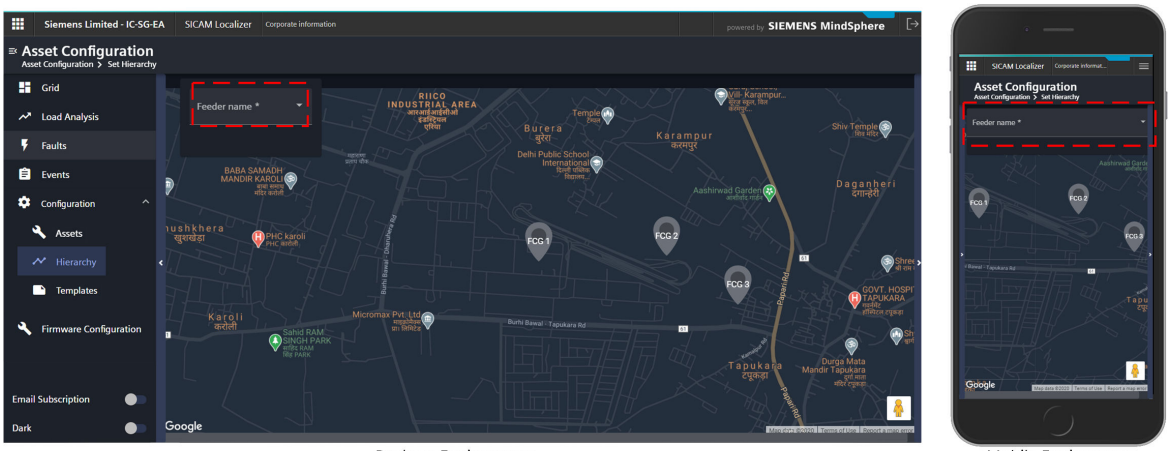
Following explanation gives the feeder-wise group location of assets of example above:

– **Group 1** located on the feeder line (Location 1) is the preceding group for all other groups installed on the feeder.

– The succeeding groups located on the feeder line can be selected by clicking the FCG location icon in SICAM Localizer. By doing so, **Group 1** at location 1 has to be selected as **Parent node** for the **Group 1** and **Group 2** at location 2.

– Similarly Location 2 **Group 1** becomes the parent group for Location 3 **Group 1**. Continue this procedure to set a simple hierarchy with a continous connected line between assets and its parent groups. Thus helps to ensure that all the FSI groups are properly linked.

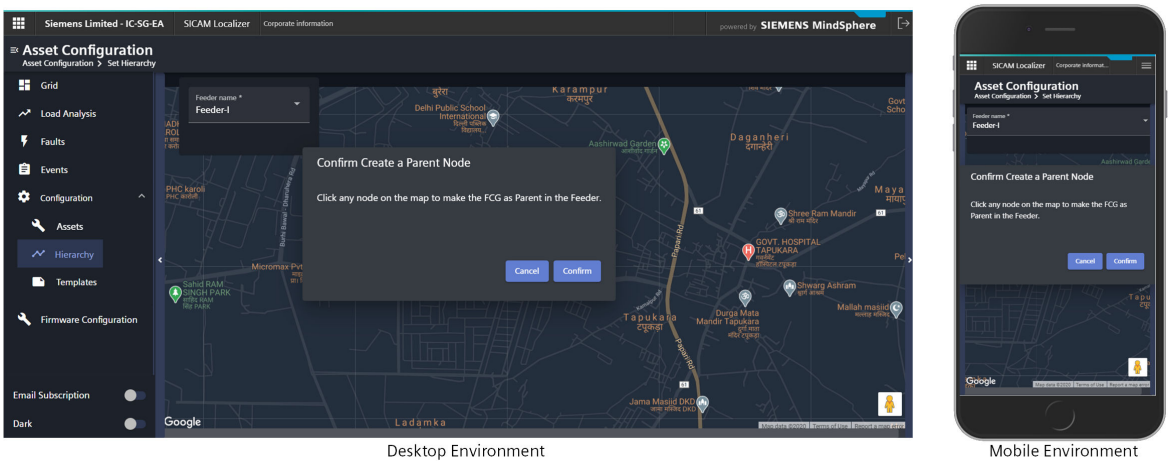
- Once the assets are onboarded (*Figure 3-10*), click **Set Hierarchy** to view the following default screen. Select the respective **Feeder name** (Feeder 1) from the drop box.



[sc_slocal_asset_config_sethier1, 4, en_US]

Figure 3-13 Set Hierarchy - Default Screen

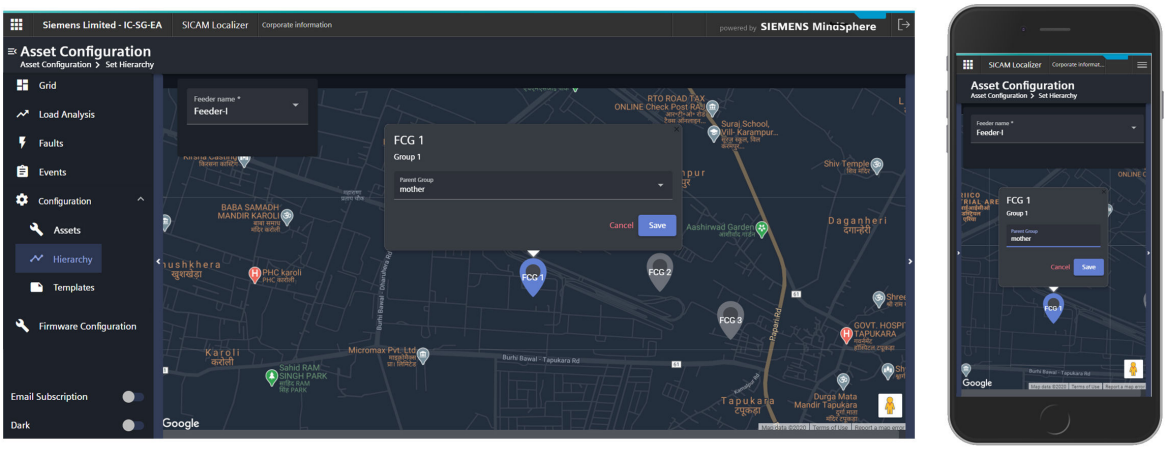
- A message pops-up to create a **Parent Node**, click **Confirm** to register FCG as parent in the feeder.



[sc_slocal_asset_config_sethier2, 3, en_US]

Figure 3-14 Set Hierarchy - Select Parent Node

- Select an asset (FCG 1 icon) from the Google Map. Once the first node is selected, the application takes it as a feeder parent. In the following figure **FCG 1** is taken as a **Parent Group**.
- Fill the **Parent Group** details as mother node under **Group 1** and click **Save**.



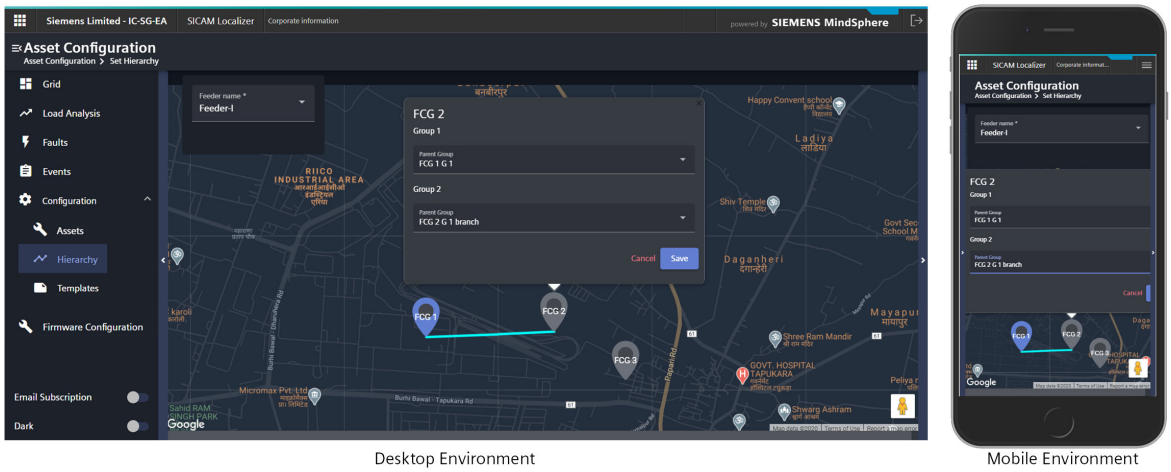
Desktop Environment

Mobile Environment

[sc_slocal_asset_config_sethier3, 3, en_US]

Figure 3-15 Set Hierarchy - Selected FCG 1 as Parent Group with Mother Node

- Now click **FCG 2** asset icon under **Group 2** as a next conneting asset in a feeder and click **Save**.



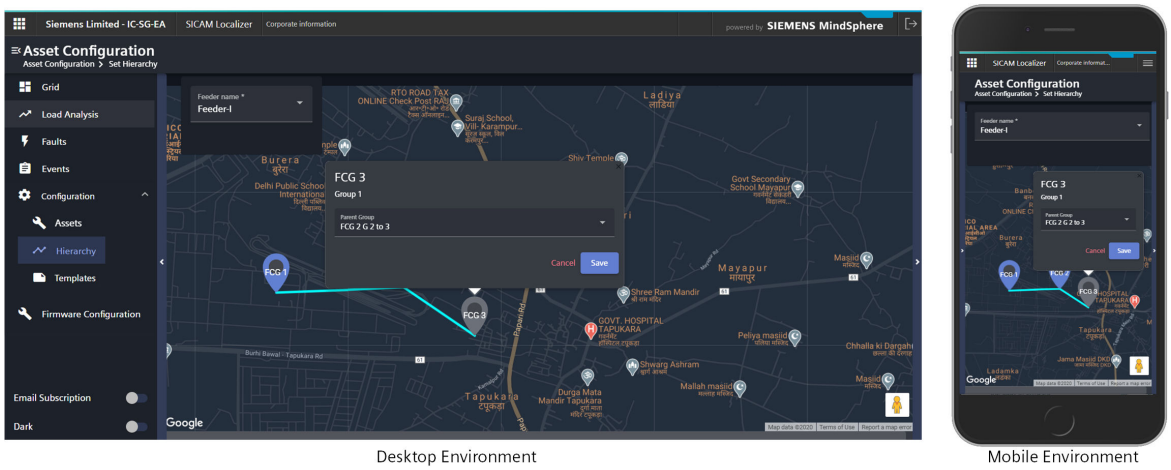
Desktop Environment

Mobile Environment

[sc_slocal_asset_config_sethier5, 3, en_US]

Figure 3-16 Set Hierarchy - FCG 2 as a Succeding Asset for FCG 1

- Continue this procedure for the next asset **FCG 3** as a succeding asset to **FCG 2** of **Group 1** as shown in figure below.



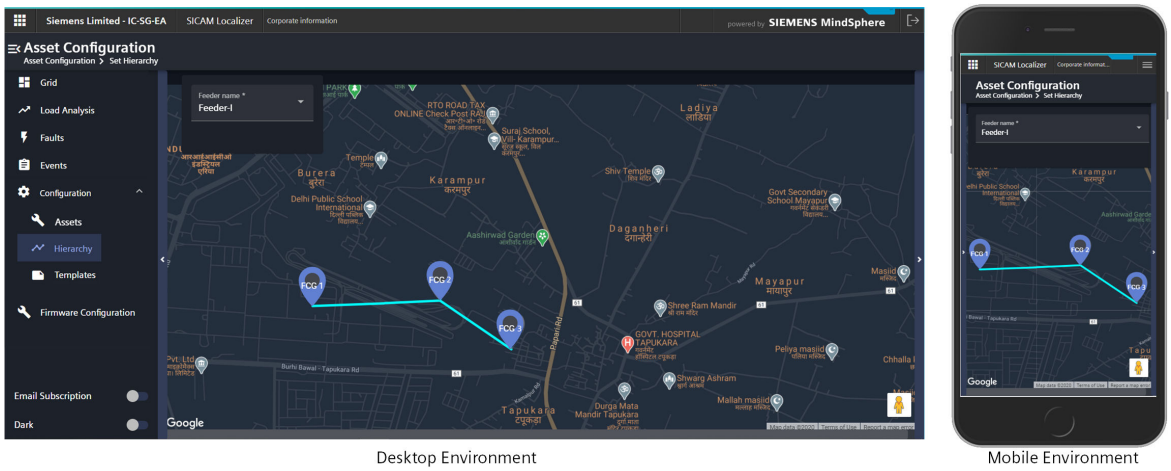
Desktop Environment

Mobile Environment

[sc_slocal_asset_config_sethier6, 3, en_US]

Figure 3-17 Set Hierarchy - FCG 3 as a Succeding Asset for FCG 2

- Once the FCG 3 and FCG 2 are successfully connected as succeding assets to parent node (FCG 1), following hierarchy is assigned as a line pattern for feeder 1.



Desktop Environment

Mobile Environment

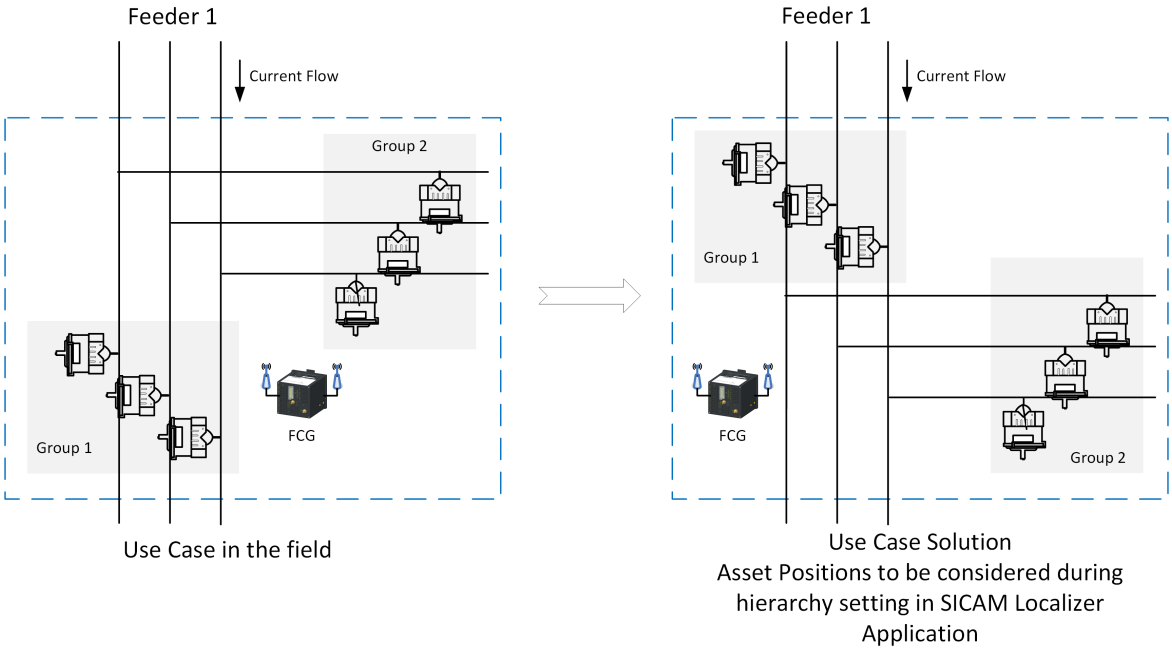
[sc_slocal_asset_config_sethier7, 3, en_US]

Figure 3-18 Set Hierarchy Accomplished

Annexure: Set Hierarchy Use Case

As per set hierarchy procedure, to form the hierarchy, each group created under a feeder should be linked with its preceding and succeeding groups considering the feeder route or fault current travelling path.

However, sometimes there is a challenge if the SICAM FCG located on the first location has more than 1 group placed after the pole (Refer Use Case in *Figure 3-19*). In this case, the hierarchy should be set in SICAM Localizer by considering the asset positioning according to use case solution (Refer *Figure 3-19*). The remaining procedure for setting the hierarchy is to be followed as per *3.2.2 Set Hierarchy – Procedure*.



[sc_slocal_assetconfig_sethire_usecase, 1, en_US]

Figure 3-19 Set Hierarchy Use Case and Solution

NOTE

It is recommended to form the hierarchy in such a way that fault communicating devices (SICAM FSI, SICAM FPI, SICAM FCM, FUS) are placed as the last node for better representation of Fault Prone Zone.

3.2.3 Important Aspects during Asset Creation

Creating Templates to Configure Multiple Assets

Siemens recommends to understand the procedure to configure SICAM FCG and SICAM FSI parameters and then create templates to configure mulitple assets. Refer to *3.4 Configurating SICAM FCG and SICAM FSI Parameters*.

Annexure 1: Transformer Load Monitoring

The transformer load monitoring functionality enables the user to monitor the load on connected transformers in the grid. User can see the load on all three phases (*Figure 2-13*) thus enabling to take informed decisions while expanding the grid with new loads, balancing the load on 3-phases in case of an unbalance or for planning upgradation / replacement of transformers in case the transformers are not sufficient to handle the connected load.

NOTE

The set threshold determines the transformer threshold current. Transformer threshold current is 10 % to 150 % of transformer rated current.

- Rated current = (Rated power/Rated voltage)

The application only accepts transformer details for transformer threshold current between 15 A to 850 A. If the calculated current does not fall in this range, then it displays an error.

Annexure 2: Transformer Overload Event

Any occurance of a transformer overload event is captured in the Events functionality of SICAM Localizer. User can input the required FCG and feeder details along with the time period. The corresponding Events report will provide details about any transformer overloading (*Figure 2-18*).

Additionaly, every tenant would receive a periodic **transformer overload report** via email. The report will include the event time stamp, transformer overload status along with the respective impacted phase. Sharing below a sample report for understanding:

Table 3-3 Transformer Overload Sample Report

Time stamp	Phase	Transformer Overload Status
30-Mar-2020, 00:30:16.395	B	True
30-Mar-2020, 02:21:19.930	B	False
30-Mar-2020, 03:09:35.356	C	True
30-Mar-2020, 04:05:42.248	C	False

The status **True** indicates beginning of transformer overloading event and **False** indicates ending of transformer overloading event for the respective phase.

The report will be automatically triggered to the tenant's registered email ID on every 1st and 16th of the respective month.

- Report generated on 1st will have data from 15th to 30th/31st of previous month
- Report generated on 16th will have data from 1st to 15th of the current month

NOTE

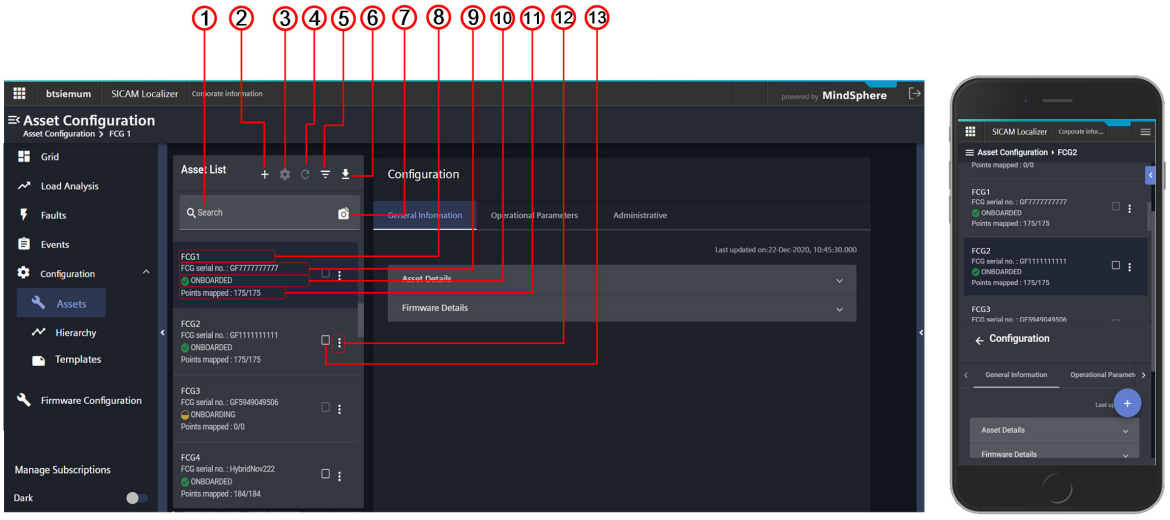
At the beginning of every report, if the transformer is normally loaded, then a false status event will be indicated for the corresponding phases.

3.3 Updating Assets in SICAM Localizer

You can update already existing assets in SICAM Localizer.

- On SICAM Localizer sidebar click **Configuration**, then select the **Asset** tab.

The corresponding screen shows the list of all the mapped SICAM FCG/FSI/FPI/FCM and other assets in SICAM Localizer.



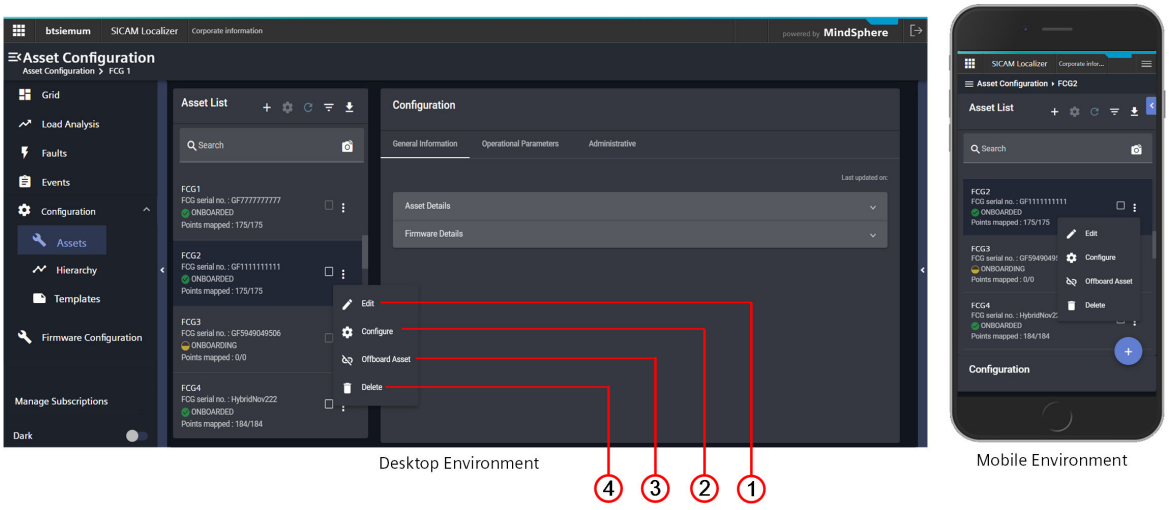
[le_slocal_update_asset1_default, 7, en_US]

Figure 3-20 Asset Configuration - Asset List Screen

Legend number	Description
1	Search the asset by entering Asset name.
2	Add Asset → click + button to add a new asset in the application. Refer to *3.2.1 Creating Assets in SICAM Localizer*.
3	Configure icon – opens a dialog box for Multiple Asset Configuration. Refer to *Creating Templates to Configure Multiple Assets, Page 75* for procedure to multiple assets.
4	Refresh Assets – click this button to ensure the following: • Display latest boarding status of all the assets listed in the application • Update of any asset details gets reflected in the application • Creation of a new asset gets reflected in the application
5	Filter by asset status
6	Download report - This report is a summarized list of feeder name, asset and group details. This report is only available once you complete asset configuration and its parameters. Refer to *Report Format, Page 93*- for a sample report. The summarized list configuration and definitions are described in *3.2.1 Creating Assets in SICAM Localizer*.
7	Search the asset by PC, laptop computer, or mobile web camera
8	Asset details – includes name
9	Asset serial number
10	Asset boarding status – Onboarded/Onboarding/Noprofile
11	Points mapped – Number of data points mapped between Asset and bay device

Legend number	Description
12	More options – option to update asset details
13	Select the FCG to configure multiple assets. This activates configure icon .

- In order to update the desired asset, click **More options**.



[le_slocal_update_asset2_DROPDOWN, 7, en_US]

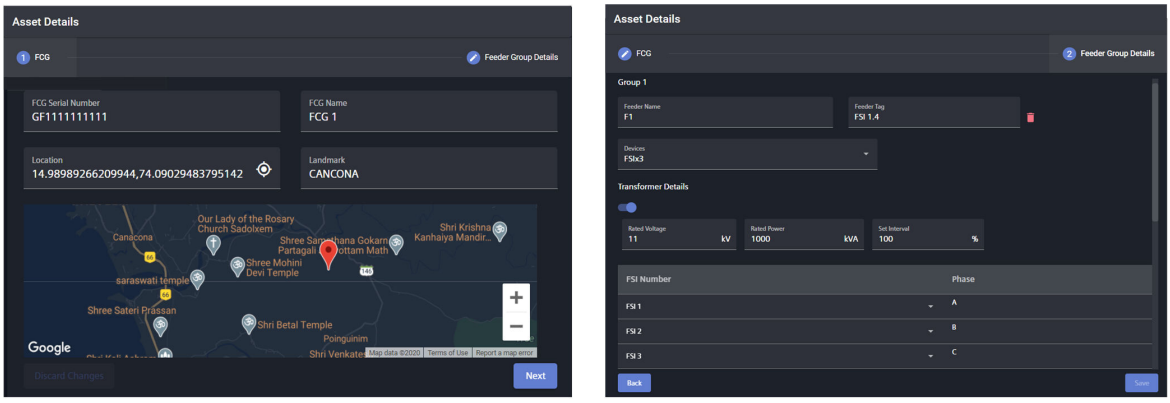
Figure 3-21 Asset List with Update Options

Legend number	Description
1	Edit – to edit asset details stored in SICAM Localizer
2	Configure – to configure the FCG and FSI parameters. This is only available for the device/(s) which are successfully onboarded. **Configure option is only available for FSI parameters in SICAM Localizer**
3	Offboard asset – to disconnect the asset from MindSphere cloud Onboarding info – Download the onboarding key with certificates *Onboarding info button will be active only if the asset is not onboarded.*
4	Delete - to permanently delete the asset from SICAM Localizer

- In order to configure FCG and FSI parameters, click **Configure**. Refer to *3.4 Configurating SICAM FCG and SICAM FSI Parameters*.
- In order to edit any asset details, click **Edit**.

A 2-step Update Asset wizard will start for editing the asset details. The following 2 screens are part of Update Asset wizard.

You can update SICAM FCG Name, SICAM FCG serial number, SICAM FCG location, and landmark. Additionally, you can also edit the respective group names and tag information.



Step - 1 Step - 2

Desktop Environment

[sc_slocal-UPDATE_FCG1, 7, en_US]

Figure 3-22 Update Asset Wizard

- Once the required asset details are updated, click **Save**. The asset details will be updated in SICAM Localizer.

3.4 Configurating SICAM FCG and SICAM FSI Parameters

The **Asset Configuration** functionality provides parameter configuration of SICAM FCG and SICAM FSI from SICAM Localizer. When SICAM FCG is configured using the Siemens managed cloud service the configuration settings of SICAM FCG/SICAM FSI are stored in the MindSphere cloud. SICAM Localizer has access to the MindSphere file storage and displays the currently configured SICAM FSI and SICAM FCG settings (Operational Parameters[4] and Administrative settings[5]) in the application interface. Thus, SICAM Localizer enables you to configure the bay device (SICAM FCG and SICAM FSI) parameters from the application interface. For every new update saved, the application stores the new configuration with the latest time stamp.

SICAM FCG periodically polls for checking any change to the configuration file. Based on the time stamp of the file, a change is detected and the device downloads the new/updated configuration file from the MindSphere cloud. The new settings then get applied in the respective device. Similarly, any new changes done on the field devices are sent to the MindSphere cloud and gets updated in SICAM Localizer.

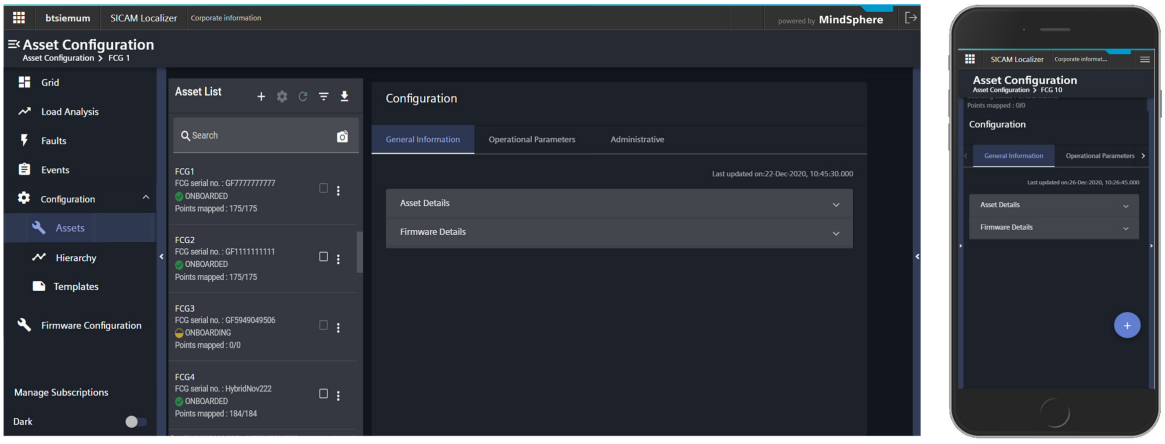
NOTE

Before updating SICAM FCG and SICAM FSI configuration using SICAM Localizer, do not configure SICAM FCG/SICAM FSI parameters simultaneously with SICAM FCG Web GUI.

If you configure simultaneously, then the configuration saved with latest time stamp is applied to the device.

When the parameter settings are polled from SICAM FCG to the MindSphere cloud and the firmware configuration is completed, navigate to Configuration as shown in *Figure 3-23*.

For more information about firmware configuration, refer to *4.1 SICAM FCG and SICAM FSI Firmware Update using SICAM Localizer* .



Desktop Environment

Mobile Environment

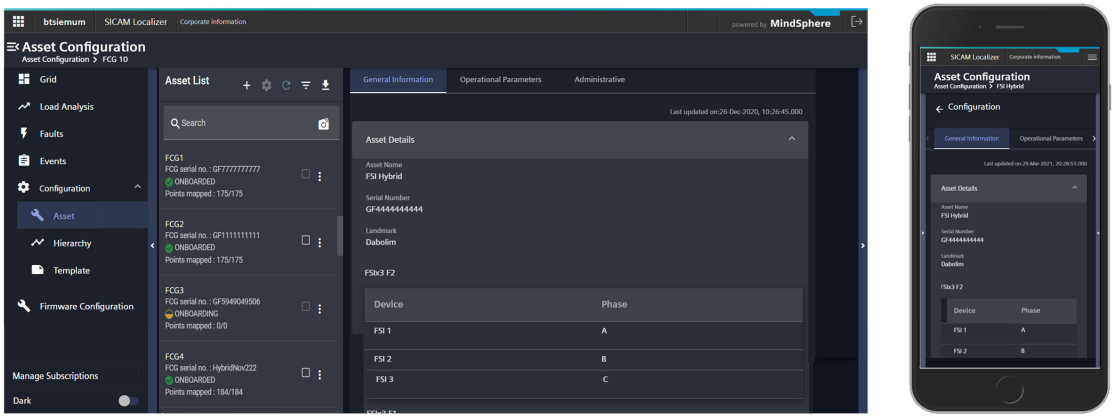
[le_slocal_default_gen_info, 5, en_US]

Figure 3-23 Configuration – Assets General Information, Operational Parameters, and Administrative

4 Operational parameters which can be remotely updated from SICAM Localizer are Binary Inputs, Binary Outputs, LED settings, and FSI Settings.

5 Administrative settings which can be remotely updated from SICAM Localizer are Time Synchronization and Communication (DNS servers, Mobile Communciation, and Short-Range Communication).

- Click **Asset Details** to view the **Asset Name**, **Device Serial Number**, **Location** and phase selection.



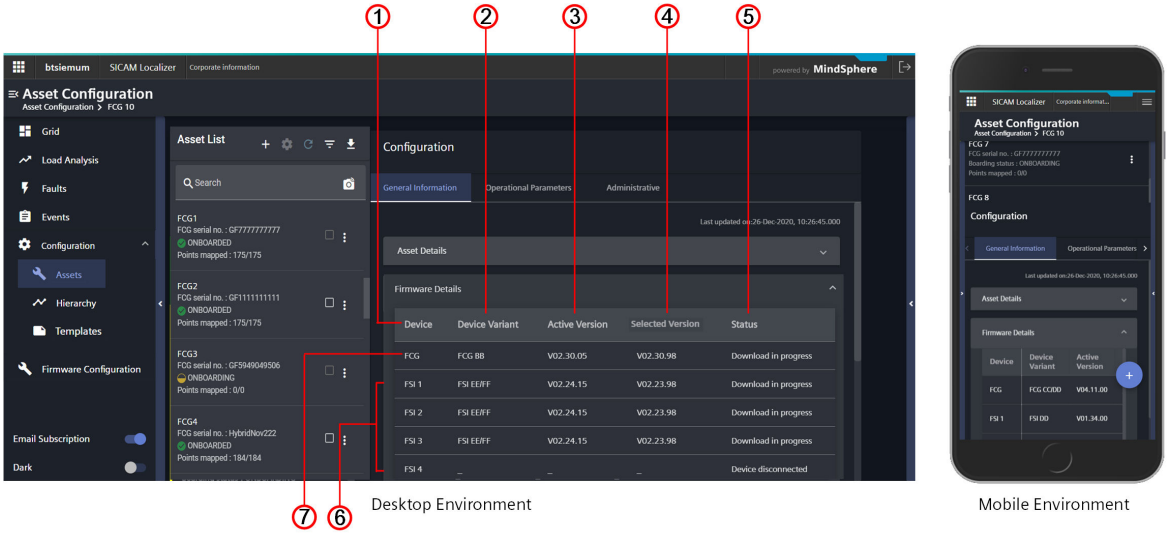
Desktop Environment

Mobile Environment

[dw_slocal_gen_info_asset_details, 5, en_US]

Figure 3-24 Configuration – Assets General Information, Asset Details

- Click **Firmware Details** to view the list of SICAM FCG and SICAM FSI devices associated with the asset, **Active Version** (latest) and **Selected Version** of the firmware, and the **Status** of the assets.



Desktop Environment

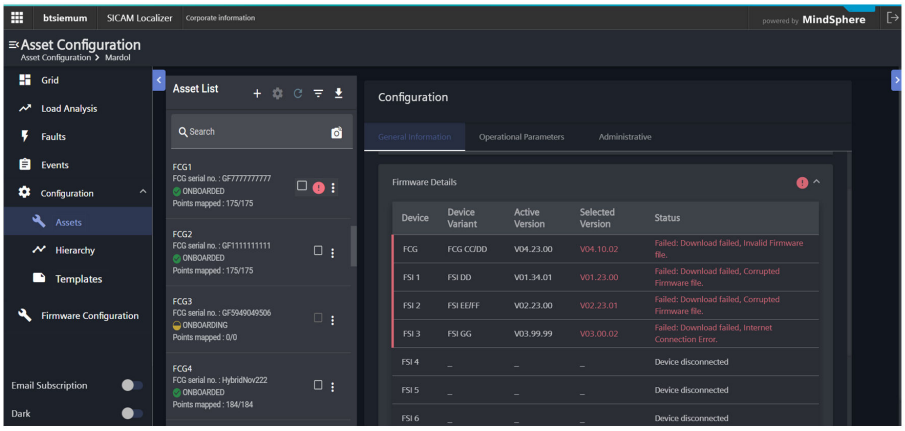
Mobile Environment

[le_slocal_gen_info_firm_det, 5, en_US]

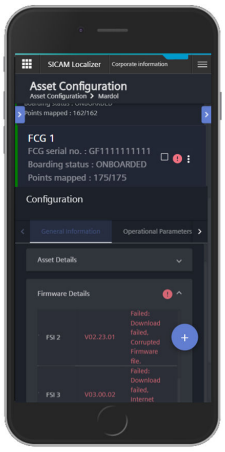
Figure 3-25 Configuration – Assets General Information, Firmware Details

NOTE

If the asset firmware is updated but the asset has not yet communicated to MindSphere cloud, then downloaded report reflects last communicated firmware version. Refer to *Report Format, Page 93*.



Desktop Environment



Mobile Environment

[dw_slocal_gen_info_firm_det_error, 4, en_US]

Figure 3-26 Configuration – Assets Firmware Details (Failed Messages in Red Color)

Refer to following table to understand the firmware details of the asset configured.

Table 3-4 Configuration – Assets General Information, Firmware Details

Legend number	Description
1	**Device** – showcases the SICAM FCG and SICAM FSIs associated with the asset • SICAM FCG is the added asset from the asset list and brief details are also available in asset details (*Figure 3-24*). • A total of 3, 6, or 9 SICAM FSIs can be configured to 1 individual SICAM FCG. To configure the number of SICAM FSIs, refer to the **SICAM FCG User Manual** for Operational Parameters.
2	**Device Variant** – SICAM FCG with hardware version and SICAM FSI with hardware version. Example 1: SICAM FCG BB - SICAM FCG with hardware version BB. Example 2: SICAM FSI EE/FF - SICAM FSI with hardware versions either with EE and FF.
3	**Active Version** – is the latest firmware version available.
4	**Selected Version** – is the firmware version currently active and uploaded in SICAM FCG or SICAM FSIs.

Legend number	Description
5	**Status** - This shows the device status (*Figure 3-26*): • Firmware update in progress: firmware version in the SICAM Localizer does not match with the version used by SICAM FCG/SICAM FSI, but matches the version downloaded in SICAM FCG. • Firmware download in progress: firmware version in the SICAM Localizer does not match with the version downloaded in the SICAM FCG/SICAM FSI, but there is no failure reported. • Firmware update successful: firmware version in the SICAM Localizer matches with the version used by SICAM FCG/SICAM FSI. • No firmware selected for udpate: no firmware uploaded/selected in the SICAM Localizer. • Device disconnected: firmware version of the device is reported as **Disconnected** as its not connected. • Download failed: firmware version in the SICAM Localizer does not match with the version downloaded in SICAM FCG/SICAM FSI, then there is a failure reported. Following are details of failed messages which are displayed in red color. – Invalid firmware file: firmware file uploaded is having a large file size (or) SICAM FCG firmware file overlap on the SICAM FSI firmware file. – Corrupted firmware file: – Firmware file successfully downloaded, but decode fail due to signature verification. – Firmware file successfully downloaded, but decode fail due to decoding of file. – Internet connection error: no network availability or internet not available. – Server error: no network availability, no server response, or timeout message.
6	SICAM FSIs which are configured to the respective SICAM FCG
7	SICAM FCG which is associated with 3, 6, or 9 SICAM FSIs in a branch

NOTE

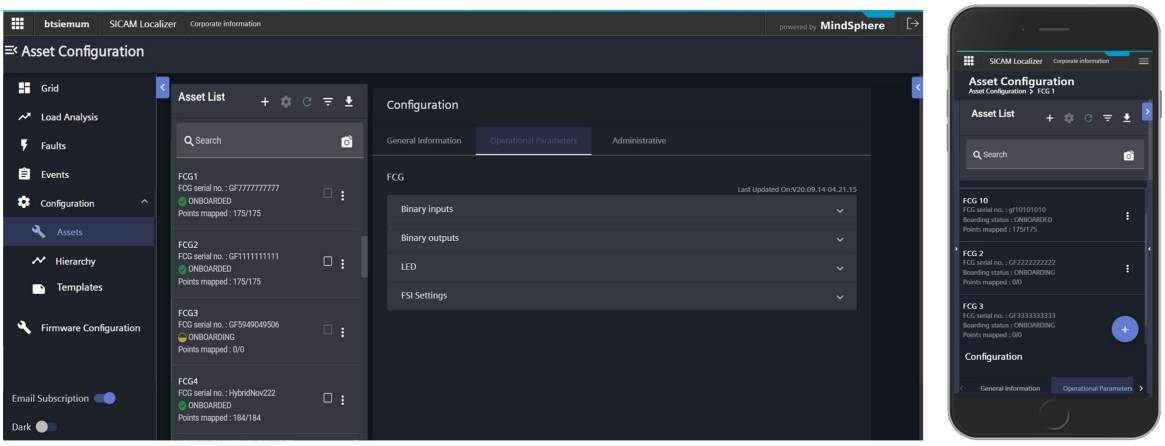
Before performing procedure below, it is recommended to thoroughly understand commisioning and configuration procedure from user manuals of SICAM FCG, SICAM FSI, and SICAM Localizer.

NOTE

If you want to update the parameters remotely even after configuring mandatory parameters in SICAM FCG WebGUI, then proceed with the following procedure by SICAM Localizer.

Operational Parameters

- To view and edit the SICAM FCG and SICAM FSI operational parameter settings which are pushed from SICAM FCG to the MindSphere cloud, click **Operational Parameters**.
- **Operational Parameters** are subcategorized into **Binary Inputs**, **Binary Outputs**, **LED settings**, and **FSI settings** (Parameterizing).

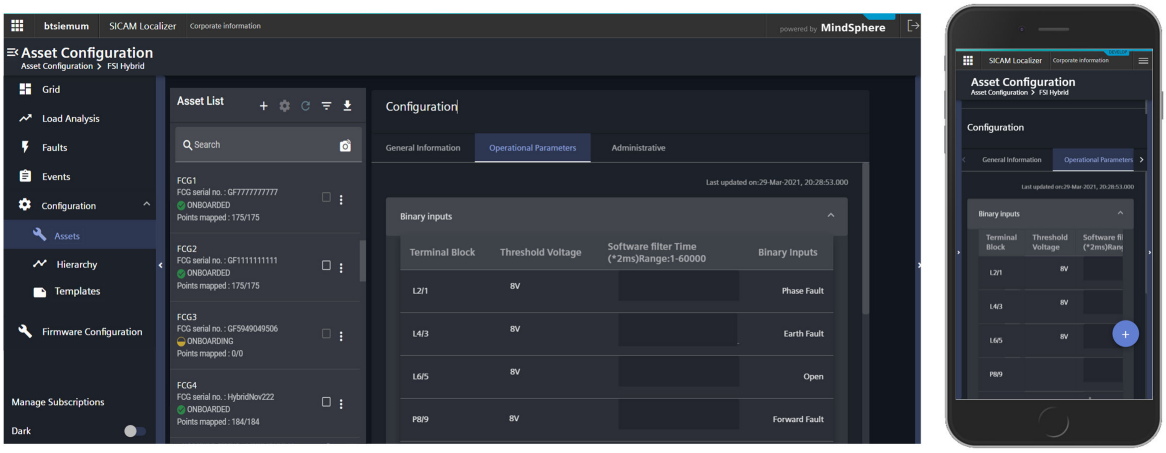


Desktop Environment Mobile Environment

[dw_slocal_asset_config_oper_par, 5, en_US]

Figure 3-27 Configuration – Assets Operational Parameters

- To change the settings for the **Binary Inputs**, select the parameters from list box and as per *Table 3-5*.



Desktop Environment Mobile Environment

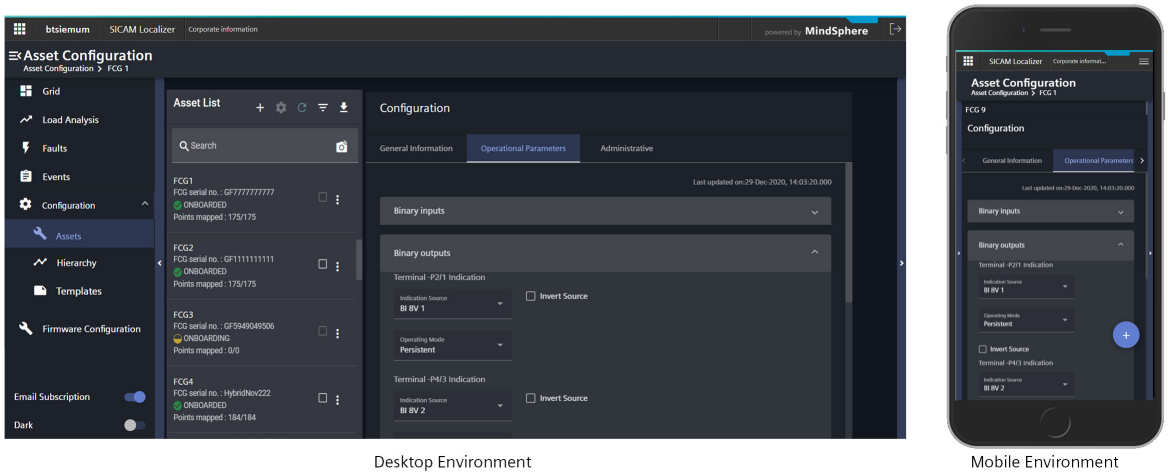
[dw_slocal_asset_config_oper_par_bi, 5, en_US]

Figure 3-28 Configuration – Assets Operational Parameters (Binary Inputs)

Table 3-5 Settings for Binary Inputs

Terminal Block	Parameter	Default Setting	Setting Range
L2/1, L4/3, L6/5	Threshold voltage	8 V	Fixed, cannot be changed
	Software filter time (can be set individually for each terminal block in 2 ms steps)	1 ms (* 2 ms)	1 ms to 60 000 ms
P8/9, P10/9, P11/12	Threshold voltage (can be set for all binary inputs block P)	19 V	19 V 88 V 176 V
	Software filter time (can be set individually for each terminal block in 2 ms steps)	1 ms (* 2 ms)	1 ms to 60 000 ms

- Once the **Binary Inputs** parameters are changed, click **Save**. This pushes the binary input settings to the MindSphere cloud. For every new configuration saved, the SICAM Localizer stores the new configuration with the latest time stamp. Binary input name cannot be changed, once these are in **Feeder Group Details**.
- SICAM FCG periodically polls for checking any change to the configuration file. Based on the time stamp of the file, a change is detected and the device downloads the new and updated configuration file from the MindSphere cloud. The new settings then get applied in the respective device.
- Similarly, any new changes done in the device are sent to the MindSphere cloud and get reflected in SICAM Localizer.
- If you do not want to change any other settings, click **Next**.
- Continue to update the settings for the **Binary Outputs**, select the parameters from the list box and click **Save** (*Table 3-6*).



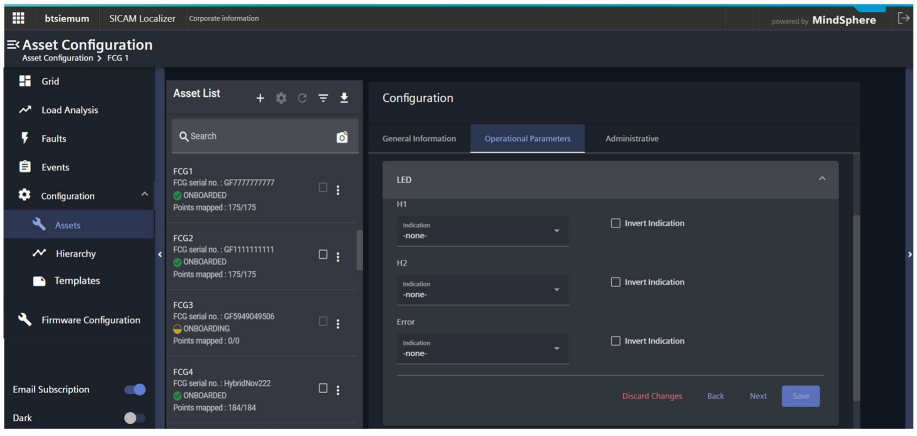
[dw_slocal_asset_config_oper_par_bo, 4, en_US]

Figure 3-29 Configuration – Assets Operational Parameters (Binary Outputs)

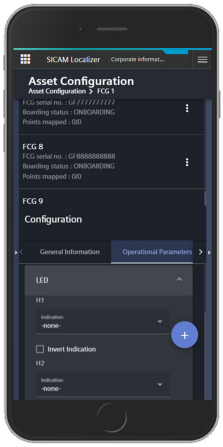
Table 3-6 Binary Output Settings

Parameter	Default Setting	Setting Range
Indication source (can be set individually for all relay outputs)	P2/1: Fault on line 1 (SICAM FSI 1-3) P4/3: Fault on line 2 (SICAM FSI 4-6) P5/6/7: Fault on line 3 (SICAM FSI 7-9)	Refer to **SICAM FCG User manual** for more details on Binary Outputs setting range.
Inverted source (can be set individually for all relay outputs)	No	No Yes
Operating mode (can be set individually for all relay outputs)	Persistent	Persistent Persistent with fail safe Pulse Pulse with retrigger
		Output time for pulse operating mode (Range: 5 ms to 360 000 ms)

- If you do not want to change any other settings, click **Next**.
- Continue to update the **LED** settings as per *Table 3-7* and click **Save**.



Desktop Environment



Mobile Environment

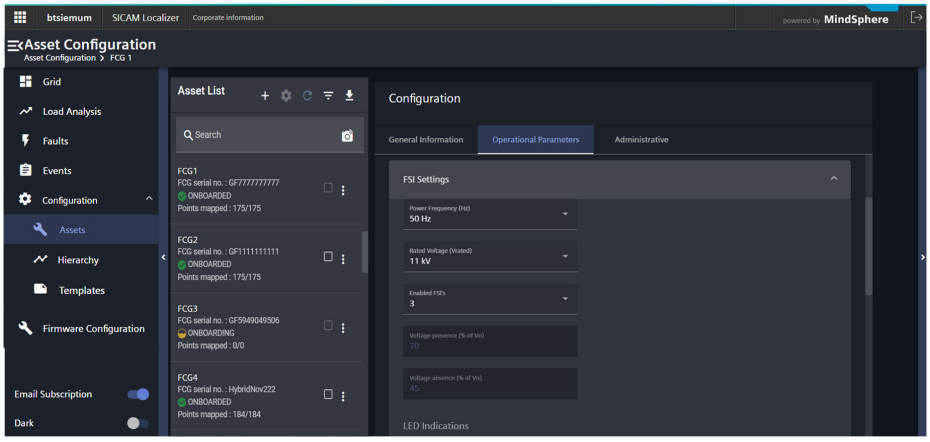
[dw_slocal_asset_config_oper_par_leds, 4, en_US]

Figure 3-30 Configuration – Assets Operational Parameters (LED)

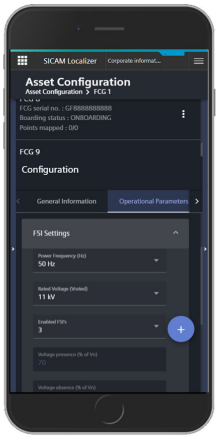
Table 3-7 LED Settings

LED	Default Setting	Settings
H1 Indication	-none-	Refer to **SICAM FCG User Manual** for more details on LED setting range.
H2 Indication	-none-	
ERROR Indication	-none-	
Invert Indication	No	No Yes

- If you do not want to change any other settings, click **Next**.
- Continue to update the **FSI settings** as per *Table 3-8* and then click **Save**.



Desktop Environment



Mobile Environment

[dw_slocal_asset_config_oper_par_FSIs, 4, en_US]

Figure 3-31 Configuration – Assets Operational Parameters (SICAM FSI Settings)

Table 3-8 SICAM FSI Settings

Parameter	Default Setting	Setting Range
Power frequency	50 Hz	50 Hz 60 Hz
Rated voltage (V_{rated})	11 kV	3.3 kV 6.6 kV 11 kV 22 kV 33 kV 66 kV
Enabled FSIs	3	3 6 9
Voltage presence (%)	80 Vn	-
Voltage absence (%)	35 Vn	-
Enable LED indication for		
Temporary phase fault	Enabled	-
Permanent phase fault	Enabled	-
Temporary di/dt fault	Enabled	-
Permanent di/dt fault	Enabled	-
Battery Low	Enabled	-
Wireless failure	Enabled	-
Enable Reset for		
Voltage restoration	Enabled	-
Fault indication time expired	Enabled	-
Wireless command	Enabled	-
FSI Specific settings		
Device alias	PH0X	-
Device information	Device information	-
Serial number	-	-
IEEE address	-	-
Installation code	-	-
Hardware version	Not Applicable (NA) or SICAM FSI FF/GG version	-
Rated current	100 A	50 A 100 A 150 A 200 A 250 A 300 A 350 A 400 A 450 A 500 A

Parameter	Default Setting	Setting Range
Current threshold	1.5 x I(rated)	disable 1.5 x I(rated) 2.0 x I(rated) 2.5 x I(rated) 3.0 x I(rated)
Fault indication time	2.0 hrs	2 hrs 2.5 hrs 3.0 hrs 3.5 hrs 4.0 hrs 4.5 hrs 5.0 hrs 5.5 hrs 6.0 hrs 6.5 hrs 7.0 hrs 7.5 hrs 8.0 hrs 8.5 hrs 9.0 hrs 9.5 hrs 10.0 hrs 10.5 hrs 11.0 hrs 11.5 hrs 12.0 hrs 12.5 hrs 13.0 hrs 13.5 hrs 14.0 hrs 14.5 hrs 15.0 hrs 15.5 hrs 16.0 hrs
Wireless reporting time	1.0 h	1.0 hr 2.0 hrs 6.0 hrs 12.0 hrs 24.0 hrs
Permanent fault-verification time	disable	3 s 35 s 70 s

Parameter	Default Setting	Setting Range
DI Current	disable	disable 5 A 10 A 15 A 20 A 25 A 30 A 35 A 40 A 45 A 50 A 55 A 60 A 65 A 70 A 75 A 80 A 120 A 160 A
Inrush restraint time	disable	disable 3 s 35 s 70 s
Auto recloser retries	disable	disable 1 2 3 4
Auto recloser time	0	0 s to 99.9 s
Cable type (SICAM FSI BB/DD/EE version)	Wolf	others Mole Rose Squirrel Weasel Rabbit Racoon Dog Wolf Panther
Cable type (SICAM FSI FF/GG version)	Non insulated	Non insulated Insulated
Cable diameter (SICAM FSI FF/GG version)	15 mm	Non insulated (5 mm to 40 mm) Insulated (5 mm to 40 mm)

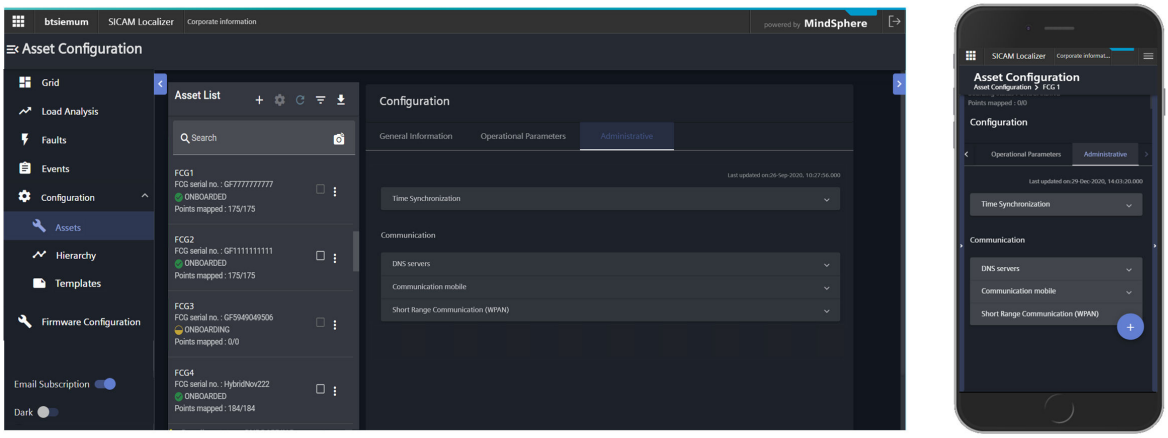
NOTE

By saving the changes, SICAM Localizer pushes the parameter settings to the MindSphere cloud. Simultaneously, SICAM FCG during every 1-hour time-stamp fetches these settings and configures for respective assets (SICAM FCG/SICAM FSI).

It is recommended to refresh the FSI settings page to reflect the updated parameters in SICAM Localizer.

Administrative Properties

- To view and edit the **Administrative** settings which are pushed from SICAM FCG to THE MindSphere cloud, click **Administrative**.
- **Administrative** settings are subcategorized into **Time Synchronization** and **Communication**.



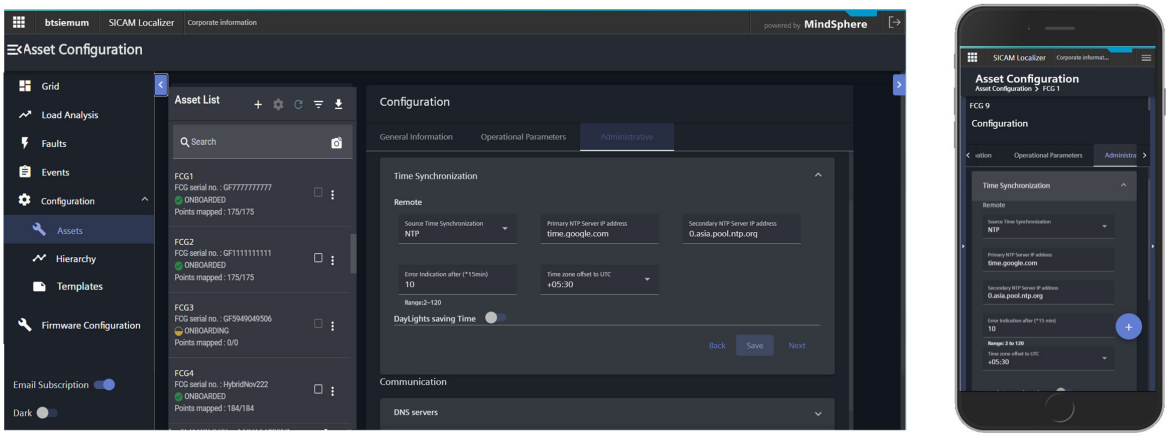
Desktop Environment

Mobile Environment

[dw_slocal_asset_config_admin_mainpage, 4, en_US]

Figure 3-32 Configuration – Assets Administrative Main Page

- To change the **Time Synchronization**, select the parameters from the list box (*Table 3-9*) and click **Save**. If you do not want to change any other settings, then click **Next**.



Desktop Environment

Mobile Environment

[dw_slocal_asset_config_admin_timesync, 4, en_US]

Figure 3-33 Configuration – Assets Administrative (Time Synchronization)

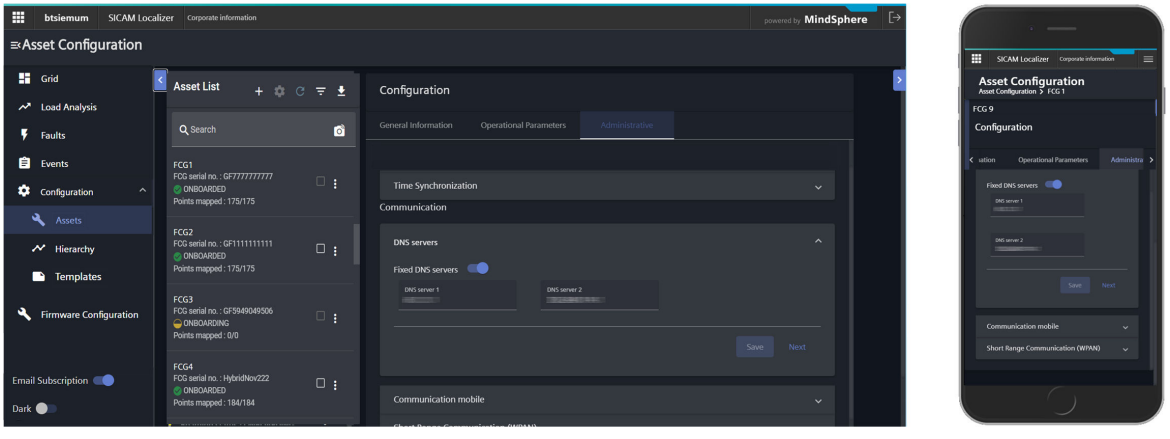
Table 3-9 Time-Synchronization Settings

Parameter	Default Setting	Settings
Source time synchronization	NTP	NTP (Recommended setting for MindSphere cloud)
Time zone offset to UTC	+00:00	-12 to +13 (hours) (in increments of 0.5 h)
Daylight saving time (DST) switchover	Yes	No Yes
DST offset to UTC	+01:00	0 to + 2 (hours) (in increments of 0.5 h)
Start of DST	March Last week Sunday 02:00 AM	Refer to **SICAM FCG User Manual** for more details on time-synchronization settings.
End of DST	October Last week Sunday 02:00 AM	
Additional parameters if the source is NTP		
Primary NTP server IP address	192.168.0.254	Any
Secondary NTP server IP address	192.168.0.253	Any
Error indication after	10 min	2 min to 120 min

NOTE

For SICAM FCG BB hardware version, the time stamp tagged will have UTC time when SMS is sent.

- If you do not want to change any other settings, click **Next**.
- Activate the **Fixed DNS servers** and enter the DNS server 1 and 2 IPv4 address. Click **Save**.



Desktop Environment

Mobile Environment

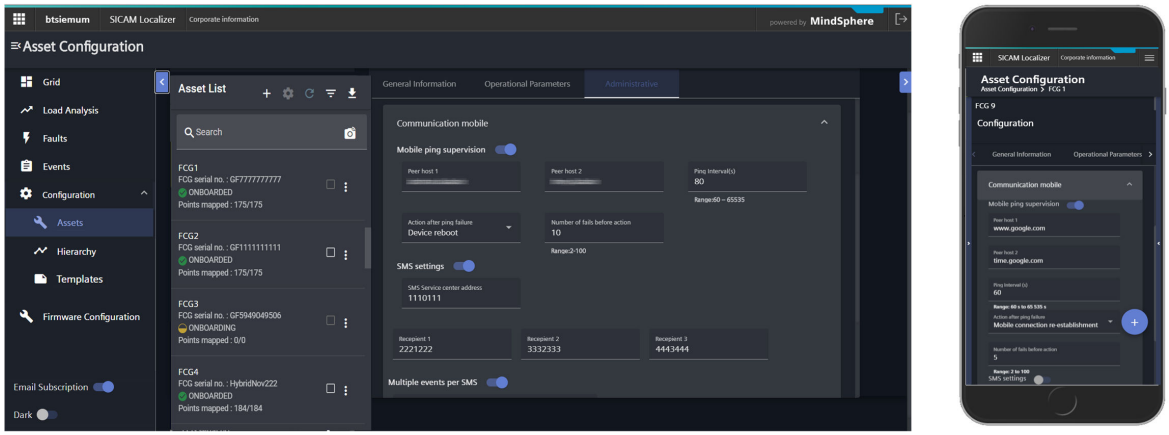
[dw_slocal_asset_config_admin_dns, 4, en_US]

Figure 3-34 Configuration – Assets Administrative (DNS Servers)

NOTE

DNS server IP addresses are provided by the mobile network operator. Alternatively, you can use explicitly defined DNS servers. In this case, public or private DNS servers can be used until the server is reachable via the mobile network. Refer to **SICAM FCG User Manual** for more details on DNS servers.

- If you do not want to change any other settings, click **Next** to proceed with mobile communication settings.
- Enable Mobile ping supervision and then enter details as per *Table 3-10*.
- Enable SMS settings and enter SMS service center address, recipient telephone numbers, enable **Multiple Events per SMS** to enter maximum events (range: 1 to 10) and maximum wait time (range: 1 ms to 3 600 ms). Click **Save**.



Desktop Environment

Mobile Environment

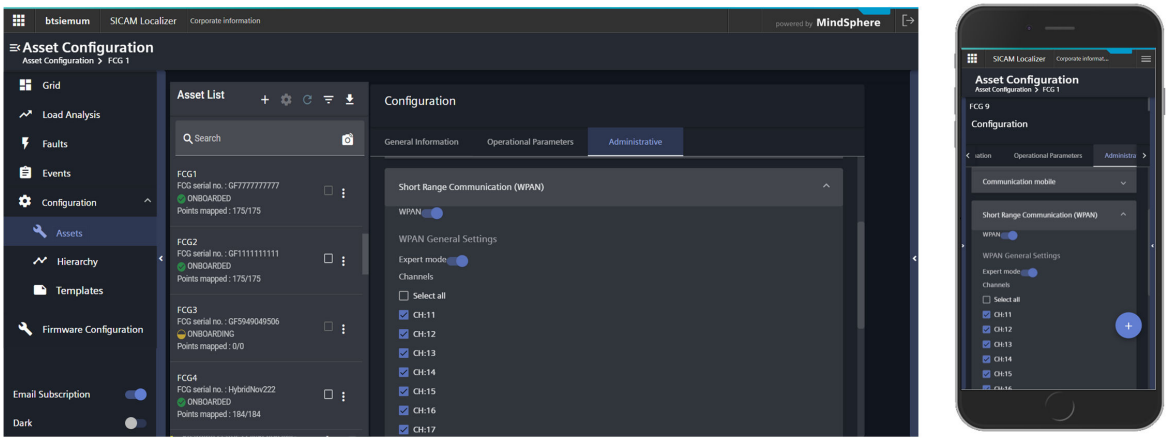
[dw_slocal_asset_config_admin_mobping, 4, en_US]

Figure 3-35 Configuration – Assets Administrative (Mobile Communication)

Table 3-10 Mobile Ping Supervision Settings

Parameter	Default Setting	Setting Range
Mobile ping supervision enabled	No	No: ping supervision is disabled Yes: ping supervision is enabled
Peer host 1	(none)	IPv4 address or FQDN
Peer host 2	(none)	IPv4 address or FQDN
Ping interval (s)	60	60 to 65535
Action after ping failure	Logging only	Logging only Mobile connection re-establishment Mobile module restart Device reboot
Number of fails before action	5	2 to 100
SMS settings	(none)	Format: +(country code) (mobile number) Maximum character length of mobile number is 80.
Recipient 1, 2, 3	(none)	Format: +(country code) (mobile number) Maximum character length of mobile number is 80.
Multiple events per SMS	3	1 to 10
Maximum wait time (minutes)	1	1 m to 3 600 m

- If you do not want to change any other settings, click **Next** to proceed with Short-range communication settings.
- If you want to change the parameters for the short-range radio communication, enable WPAN. All parameters are shown with their default values.
- Update the short-range communication (WPAN) and general settings as per *Table 3-11*. Click **Save**.



Desktop Environment

Mobile Environment

[dw_slocal_asset_config_admin_shortran, 4, en_US]

Figure 3-36 Configuration – Assets Administrative (Short-Range Communication)

Table 3-11 Settings of the Short-Range Communication

Parameter	Default Setting	Setting Range
Short-range communication (WPAN)		
Short-range radio enable	No	No Yes
Short-range radio general settings		
Expert mode	No	No Yes
Channels	All channels	CH: 11 to CH: 26 (in increments of 1 channel)
RF output power	EU	India U.S.A Brazil China Russia EU

Table 3-12 RF Output Power Values (EIRP) Used by SICAM FCG Per Country/Region

Country/Region	RF output power
Brazil	50 mW (17 dBm)
China	10 mW (10 dBm)
EU	10 mW (10 dBm)
India	250 mW (24 dBm)
Russia	10 mW (10 dBm)
U.S.A	250 mW (24 dBm)

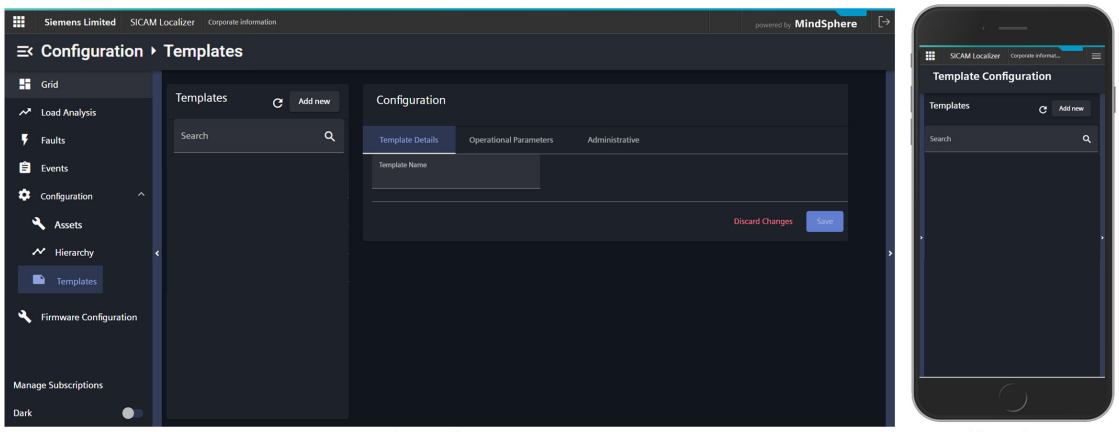
- If you want to review the entire parameter setting list in report format once the parameter configuration is completed, enable **Email Subscription**, see *Figure 2-4*.

Creating Templates to Configure Multiple Assets

NOTE

All the operational parameters and administrative properties are common for all FSI hardware versions, except the user has to fill cable type and cable diameter for 2 groups of FSI hardware versions individually.

- On **Asset** page click on **Templates**, then following default screen appears to create templates.

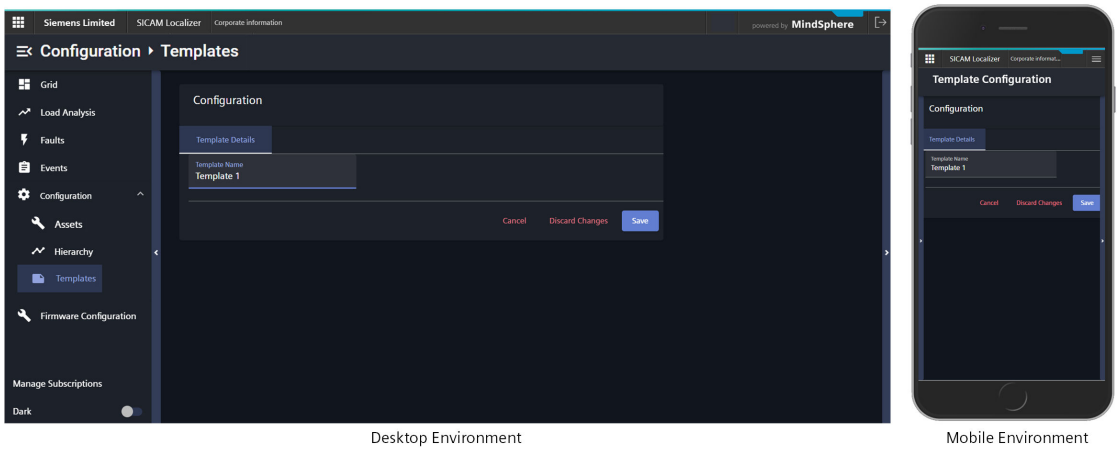


Desktop Environment | Mobile Environment

[sc_slocal_asset_config_temp1, 2, en_US]

Figure 3-37 Templates - Default Page

- Click on **Add New** button, proceed to create new **Template Name** in **Template Details** and **Save**. For example: Template 1, Template 2.

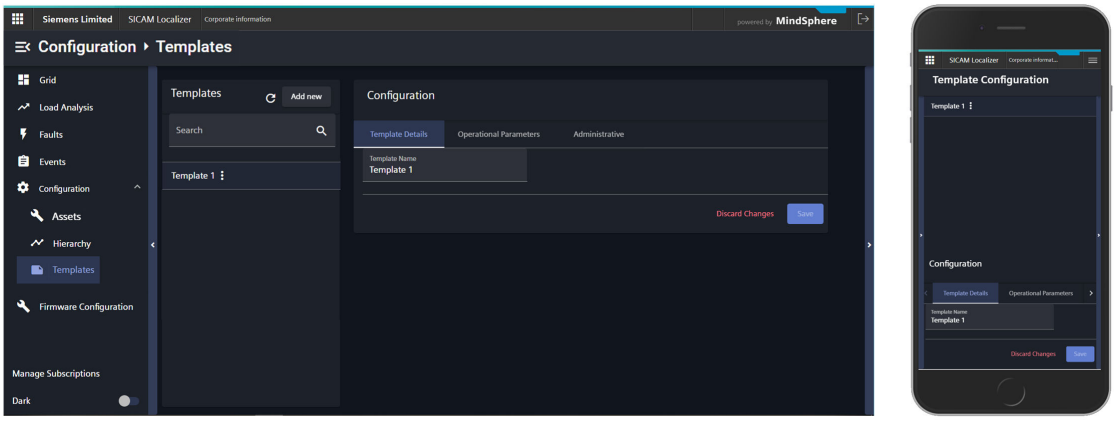


Desktop Environment | Mobile Environment

[sc_slocal_asset_config_temp2, 2, en_US]

Figure 3-38 Creating New Template Names

- Once the respective pre-filled template page opens (*Figure 3-39*), proceed to update **Operational Parameters** and **Administrative** Properties, refer to *Operational Parameters, Page 64* and *Administrative Properties, Page 71*.



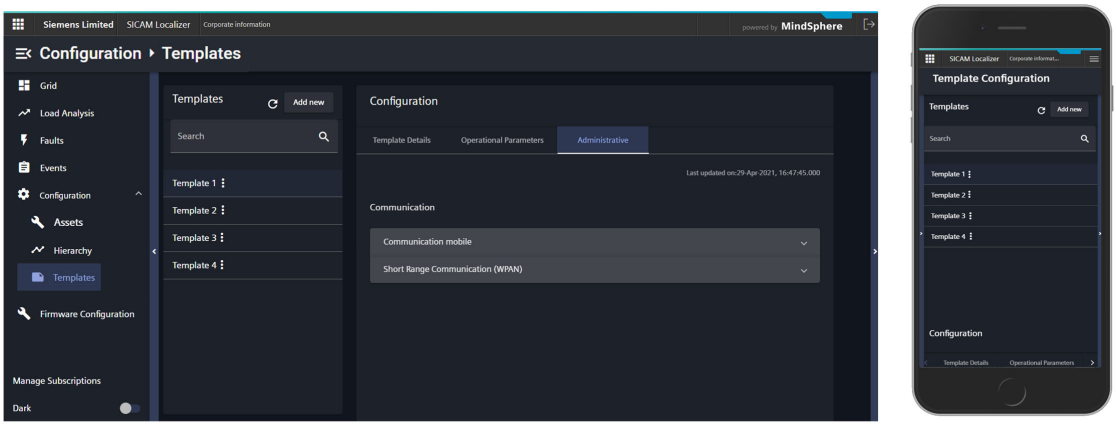
Desktop Environment

Mobile Environment

[sc_slocal_asset_config_temp3, 2, en_US]

Figure 3-39 Adding Template Operational Parameters and Administrative Properties

- Once the parameters and properties are saved, this **Template 1** can be used to configure multiple assets.
  If you want to create a new templates (Template 2), then continue the procedure above with respective operational parameters and administrative properties. Click **Save** to reflect all the saved configurations in Templates window (*Figure 3-40*).



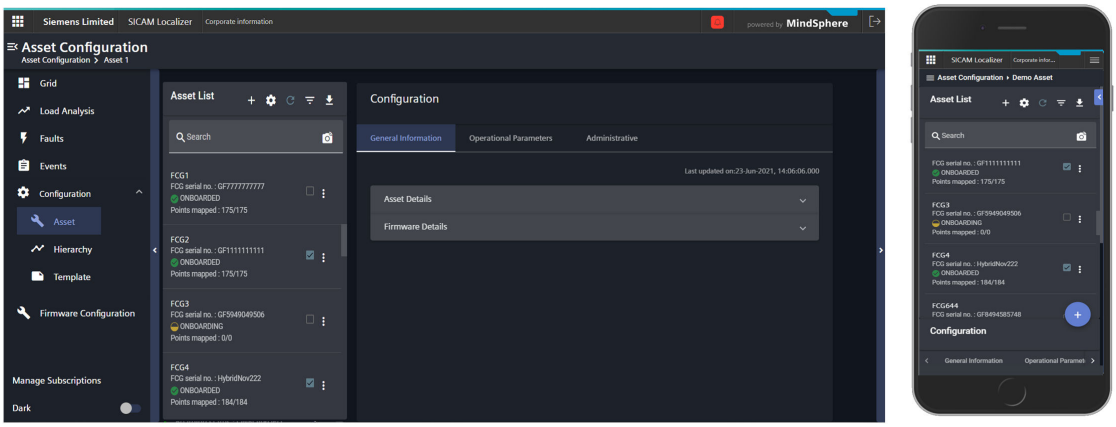
Desktop Environment Mobile Environment

[sc_slocal_asset_config_temp4, 2, en_US]

Figure 3-40 List of Configuration Templates

– Click on **Configuration** → **Asset** and check the box against each asset to assign the respective templates.

–
Once the user selects the assets, the **Configure** icon activates in the Asset List.

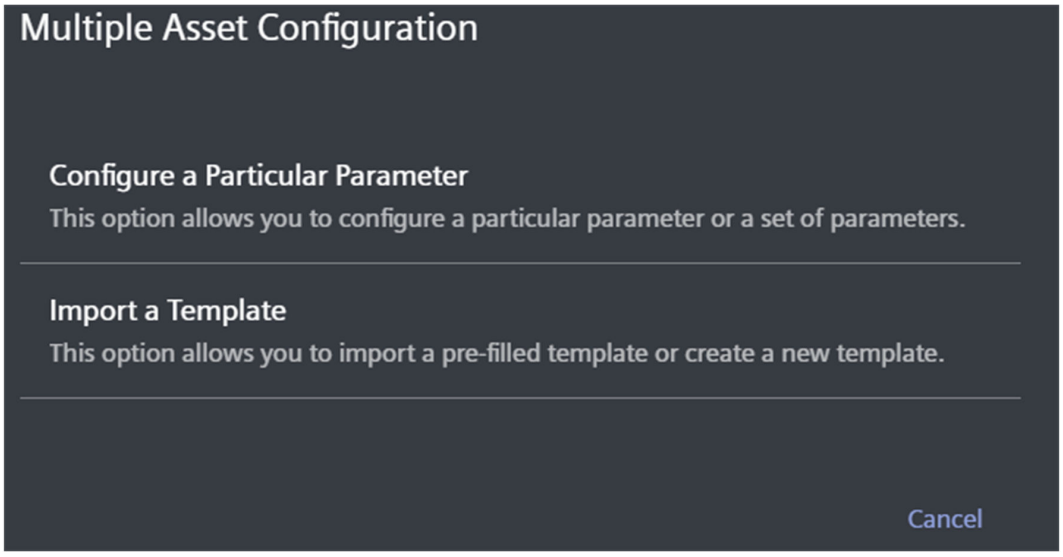


Desktop Environment Mobile Environment

[sc_slocal_asset_config_temp5, 2, en_US]

Figure 3-41 Selecting Multiple Assets to Configure Templates

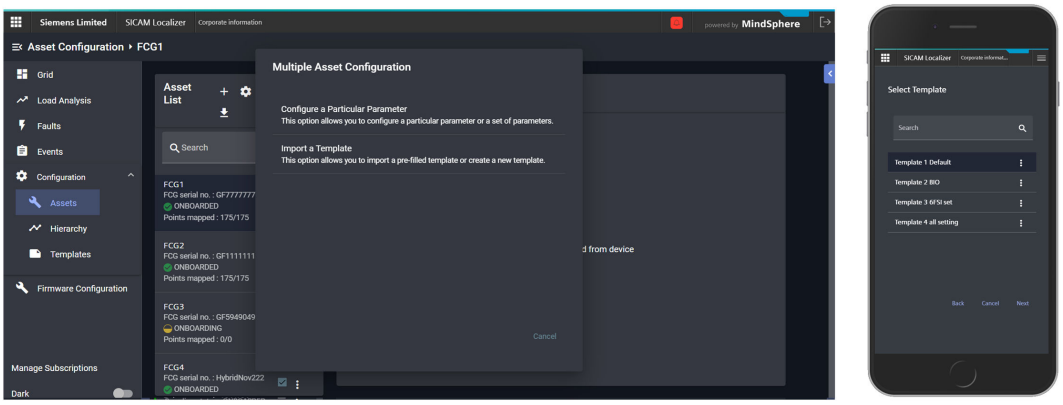
– Click on **Configure** icon to open a dialog box **Multiple Asset Configuration**.



[sc_slocal_asset_config_temp6, 1, en_US]

Figure 3-42 Multiple Asset Configuration Window

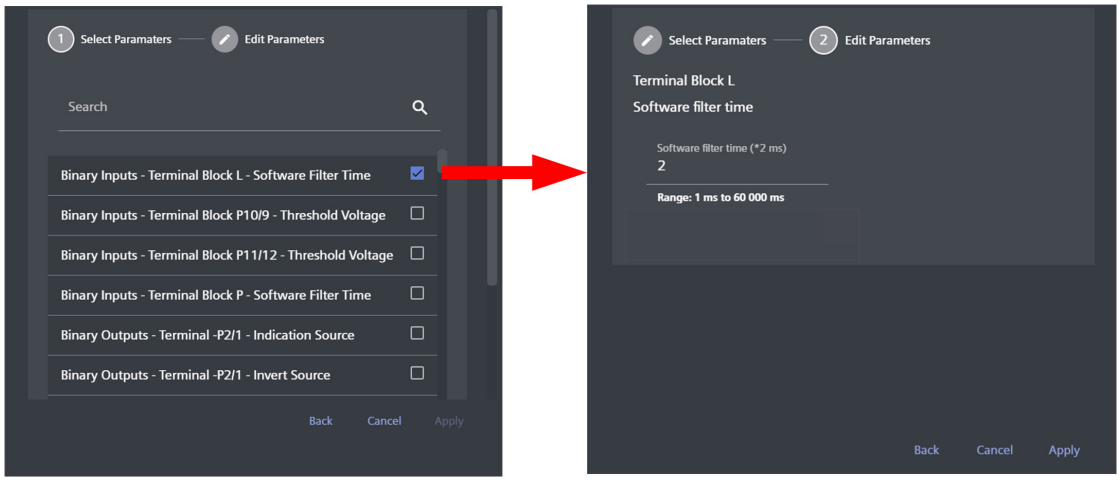
– User has an option to **Import a template**, which are already saved in **Template** page. Click on **Import a template** and select a required template from the list and click **Next**. A confirmation message pops-up as **Asset is configured successfully!**.



[sc_slocal_asset_config_temp7, 2, en_US]

Figure 3-43 Import a Template and Configuring Asset Successfully

– User also has an option to select **Configure a particular parameter** (*Figure 3-42*), edit the parameter and apply. A confirmation message pops-up as **Asset is configured successfully!**.



Desktop Environment

[sc_slocal_asset_config_temp8, 2, en_US]

Figure 3-44 Configuring a Particular Parameter

NOTE

Configuring a particular parameters does not over-right the templates of operational parameters and administrative properties.

4 Firmware Configuration

4.1 SICAM FCG and SICAM FSI Firmware Update using SICAM Localizer

Firmware Update Remotely via Cloud-based Application

When SICAM FCG is configured using Siemens managed cloud service, the firmware version associated with the device is sent to the MindSphere cloud.

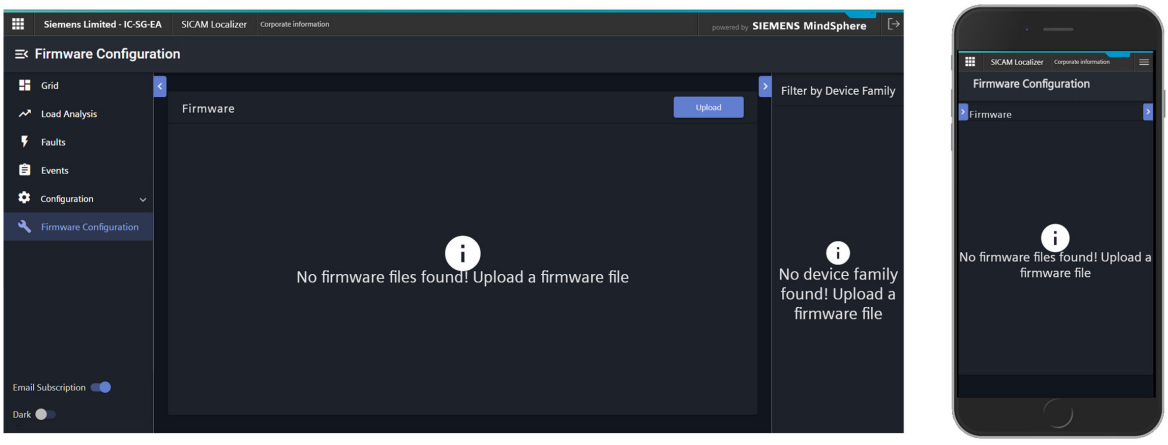
SICAM Localizer provides an option to upload and store the latest firmware versions into the application. This displays the list of SICAM FCG and FSI devices along with the selected firmware versions associated with them. These SICAM FCG and FSI firmwares are available for download from the Siemens Internet page *https://support.industry.siemens.com/cs/start?lc=en-WW* or are distributed by the Siemens customer care representative or via sales channels.

Based on the hardware version of the SICAM FCG/FSI device, the compatible firmware versions are displayed against it. This enables you to upgrade the firmware version by simply marking the required firmware version (from the compatible firmware file list available) and updating it to the device. For verifying the firmware compatibility with the respective device MLFBs, refer to respective SICAM FCG and SICAM FSI User Manuals for firmware compatibility matrix.

SICAM Localizer allows to download and delete stored firmware files as and when needed, thus enabling you with efficient file management tasks. Once the firmware update process is completed, SICAM Localizer notifies you about the firmware update status. In case of failure, it also notifies you the reason. In addition to having the default firmware files for a specific hardware version, the application also enables you to apply custom or test firmware to the respective devices.

Procedure to Upload and Save SICAM FCG/SICAM FSI Firmwares using SICAM Localizer

- In the Navigation side bar, click **Firmware Configuration**. The following default page appears:



Desktop Environment

Mobile Environment

[dw_slocal_firm_config_default, 3, en_US]

Figure 4-1 Firmware Configuration – Default Landing Page

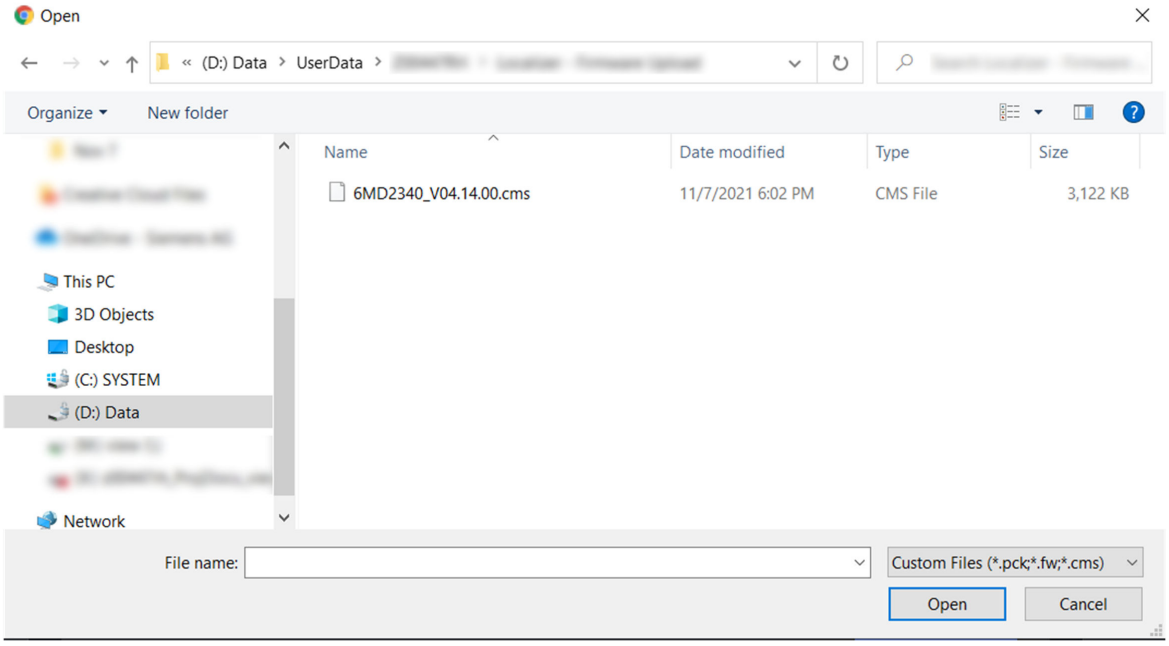
- Click **Upload** and browse to select the required SICAM FCG firmware file in the directory. Click **Open**.

NOTE

SICAM FCG firmware files use the extension **.cms**.

SICAM FSI firmware files use the extension **.cms**.

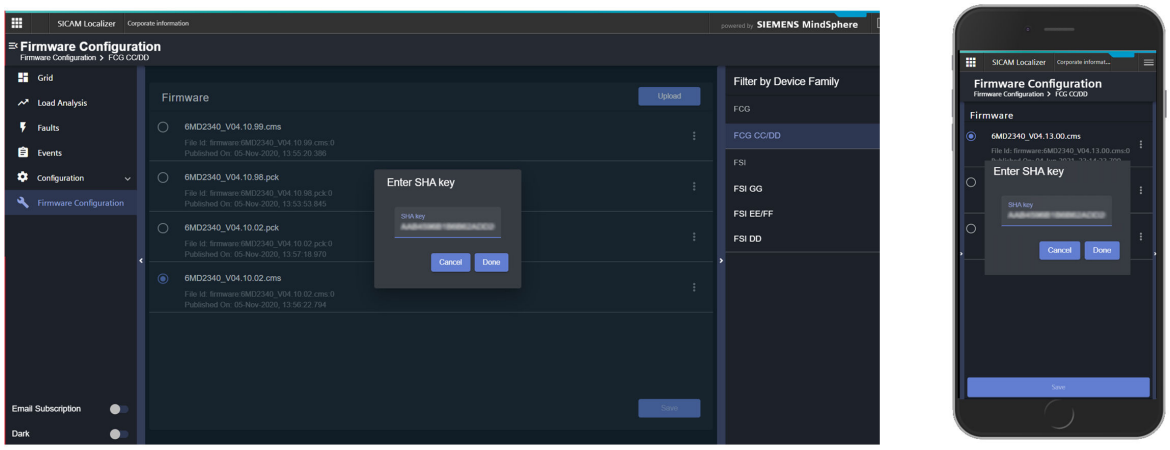
Firmware files usually have a large file size, if the upload fails due to server error, then refresh the current page and continue with firmware upload procedure.



[dw_slocal_firm_config_fcgupload, 3, en_US]

Figure 4-2 Firmware Configuration – SICAM FCG Firmware Upload Directory

- Enter the SHA key details and click **Done**.
  SHA key for FCG firmware can be downloaded from SIOS website: *https://support.industry.siemens.com/cs/products?mfn=ps&pnid=24639&lc=en-WW*.
  SHA key for FSI firmware can be downloaded from SIOS website: *https://support.industry.siemens.com/cs/products?mfn=ps&pnid=24638&lc=en-WW*



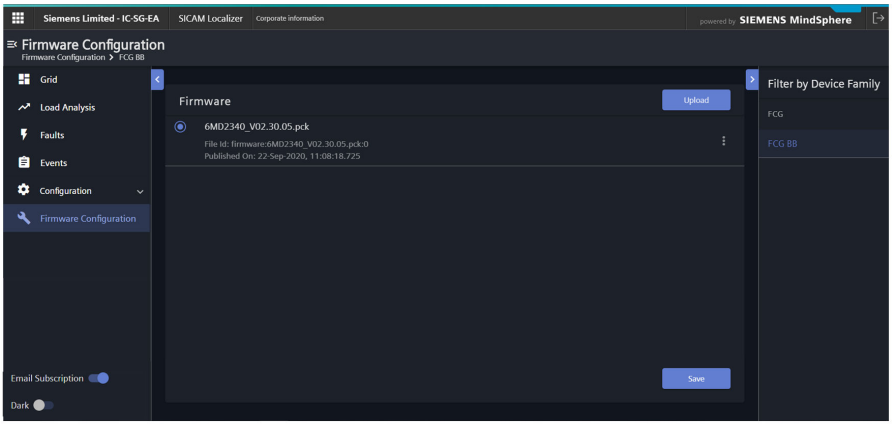
Desktop Environment

Mobile Environment

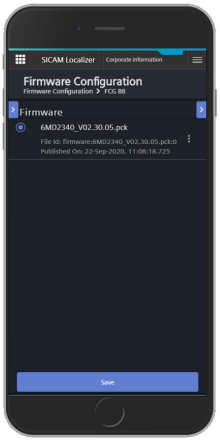
[dw_slocal_firm_config_SHAkey, 3, en_US]

Figure 4-3 SHA Key of FCG Firmware

- Once the SHA key is validated, SICAM Localizer uploads the SICAM FCG firmware file. This new firmware is automatically filtered and populated in the **Filter by Device Family** window on the right side.
- If the SHA key is failed, then try again with valid SHA key and firmware files.



Desktop Environment

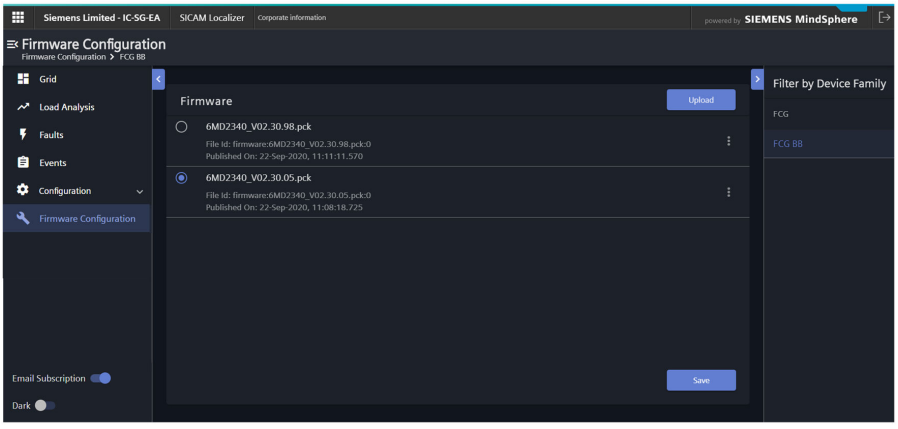


Mobile Environment

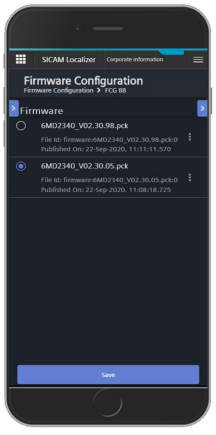
[dw_slocal_firm_config_fcgupload-filter, 3, en_US]

Figure 4-4 Firmware Configuration – SICAM FCG Firmware Uploaded and Filter Window

- Proceed to upload remaining SICAM FCG firmware files which are needed to configure various SICAM FSI hardware versions. Once the **Firmware** files are uploaded, select the specific firmware file and click **Save** to assign the SICAM FCG firmware version to the SICAM FCG hardware as follows:



Desktop Environment

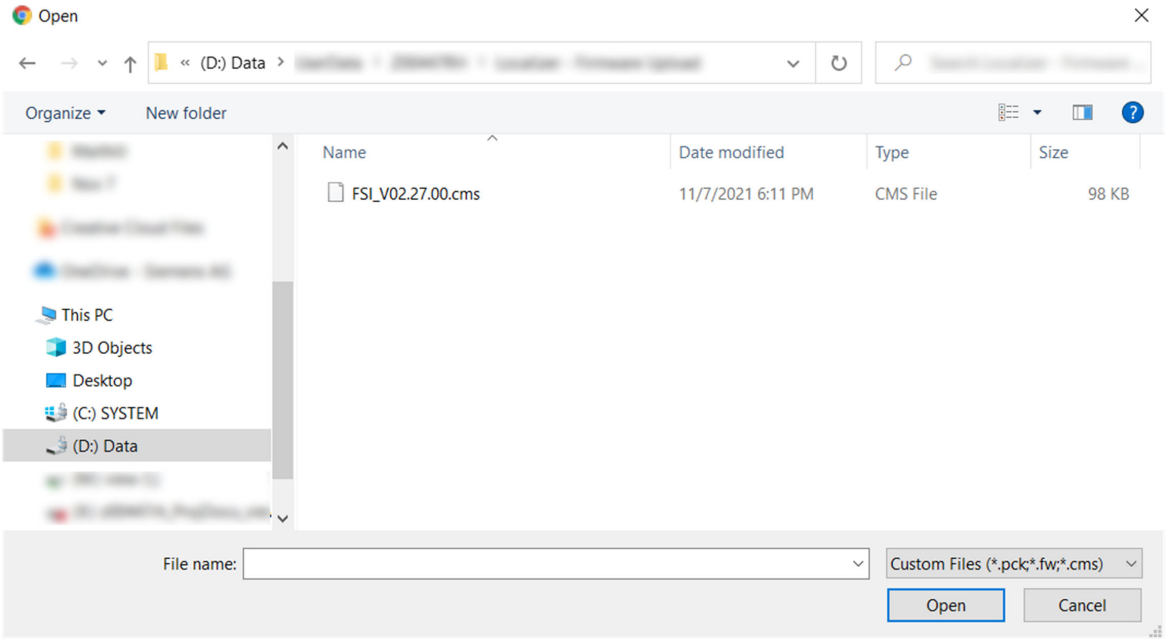


Mobile Environment

[dw_slocal_firm_config_fcgall, 3, en_US]

Figure 4-5 Firmware Configuration – SICAM FCG Firmware with Hardware Versions

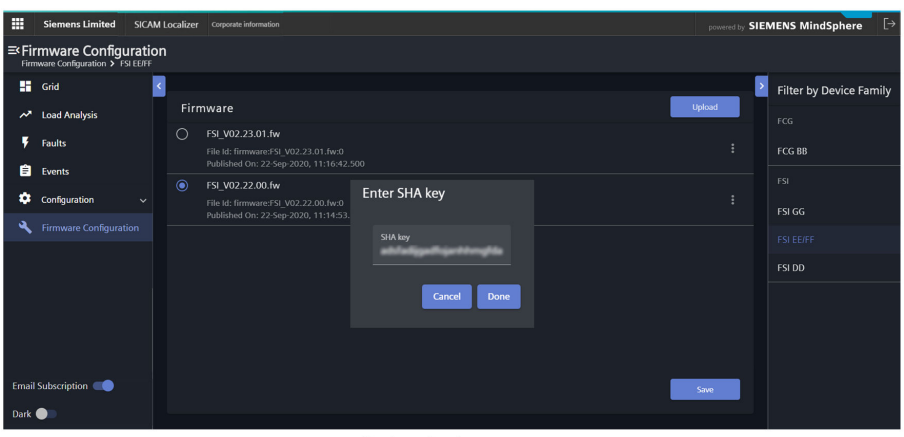
- Click **Upload** to proceed select the required SICAM FSI firmware file (extension .cms) in the directory. Click **Open**.



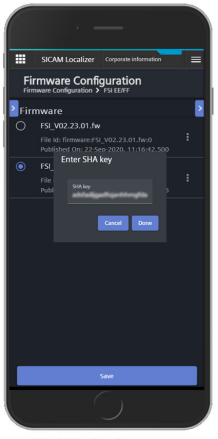
[dw_slocal_firm_config_fsiupload, 2, en_US]

Figure 4-6 Firmware Configuration – SICAM FSI Firmware Upload Directory

- Enter the SICAM FSI SHA key details and click **Done**.



Desktop Environment

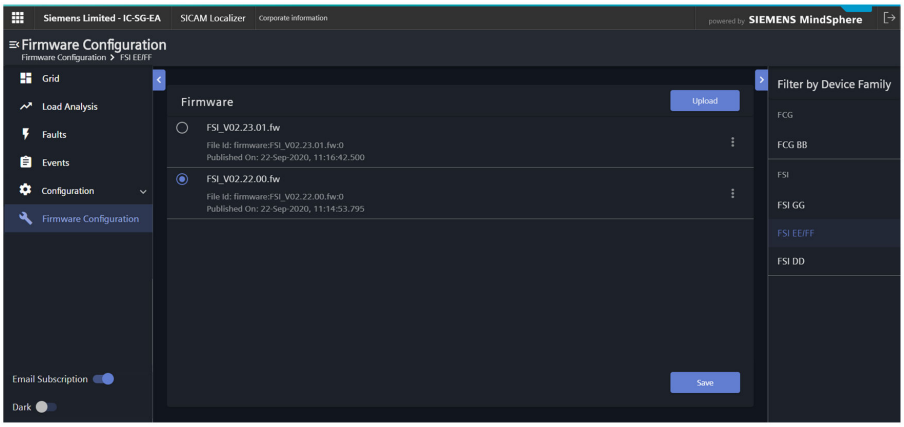


Mobile Environment

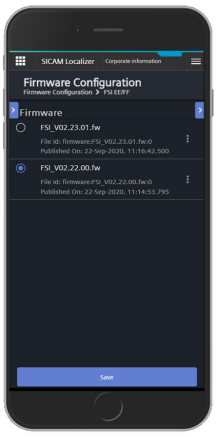
[dw_slocal_firm_config_fsiSHA, 3, en_US]

Figure 4-7 SHA Key of FSI Firmware

- Once the SHA key is validated, SICAM Localizer uploads the SICAM FSI firmware file. This new firmware is automatically filtered and populated in the **Filter by Device Family** window on the right side.
- Proceed to upload remaining SICAM FSI firmware files which are needed to configure various SICAM FSI hardware versions. Once the **Firmware** files are uploaded, select the specific firmware file and click **Save** to assign the SICAM FSI firmware version to the SICAM FSI hardware as follows:



Desktop Environment

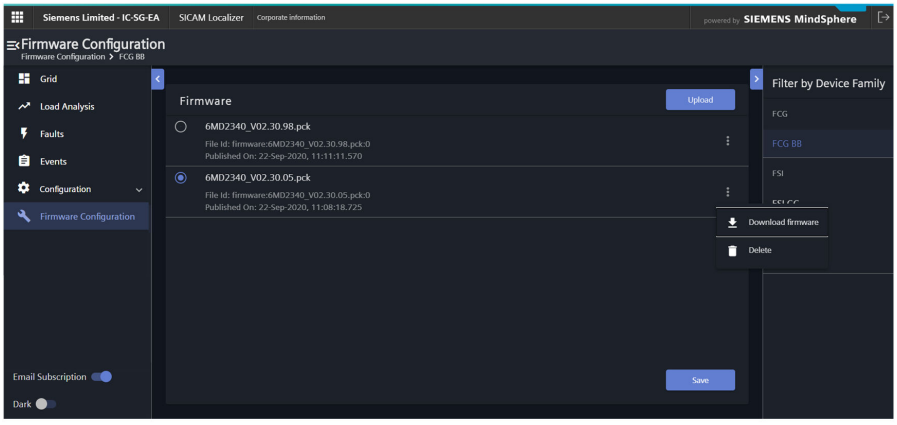


Mobile Environment

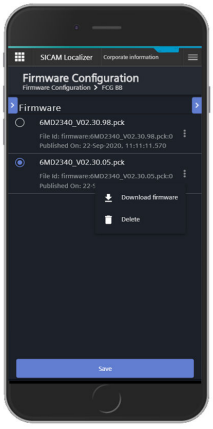
[dw_slocal_firm_config_fsiall, 3, en_US]

Figure 4-8 Firmware Configuration – SICAM FSI Firmware with Hardware Versions

- This completes the SICAM FCG/SICAM FSI firmware configuration. SICAM Localizer automatically reads the firmware and hardware versions and assigns firmware to compatible hardware. Based on this feature the firmware details in *Figure 3-25* and *Figure 3-31* are assigned and populated.
- You can download the firmware files and save them in your directory as follows:



Desktop Environment



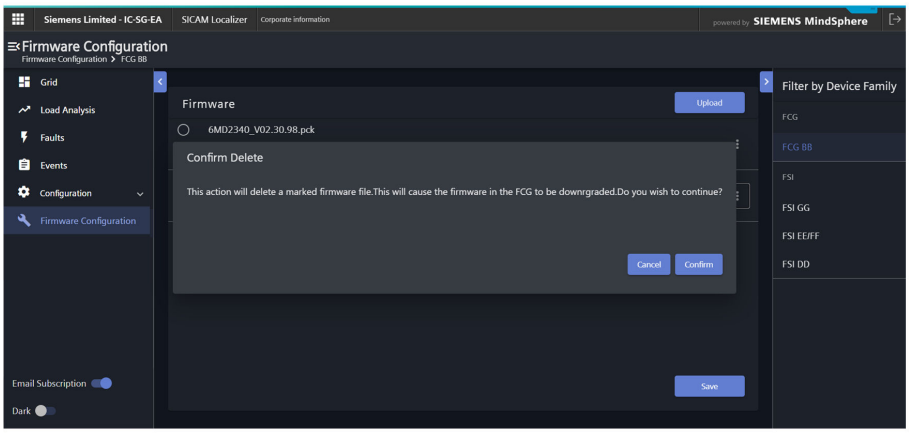
Mobile Environment

[dw_slocal_firm_config_down_delete, 3, en_US]

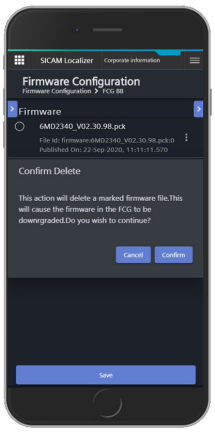
Figure 4-9 Firmware Configuration – Download Firmwares

NOTE

If the firmware file is not intended for assigning to assets, click **Delete**. During this process, SICAM FCG picks the active firware version from the firmware configuration.



Desktop Environment



Mobile Environment

[dw_slocal_firm_config_delete_conf, 3, en_US]

Figure 4-10 Firmware Configuration – Delete Firmware Confirmatiion

A Onsite Commissioning and Configuration

A.1 Commissioning and Configuration of SICAM FCG and SICAM FSI using SICAM Localizer

This section describes the recommended procedure and requirements for commissioning and configuring SICAM FCG and SICAM FSI using SICAM Localizer.

NOTE

Before performing the procedure below, it is recommended to thoroughly understand the commissioning and configuration procedure from the user manuals of SICAM FCG, SICAM FSI, and SICAM Localizer.

Pre-Commissioning Steps

- The commissioning engineer must obtain the Single Line Diagram (SLD) of feeder/s before planning the site locations for installation. Refer to *3.2.2 Set Hierarchy – Procedure*.
- Create new assets in SICAM Localizer for the respective SICAM FCG and SICAM FSI devices that will be commissioned. For detailed information on creation of new assets in SICAM Localizer, refer to *3.2.1 Creating Assets in SICAM Localizer*.
- Once the assets are created in SICAM Localizer, download the Onboarding Information for the assets created from the SICAM Localizer application. Store these files in a PC or laptop computer before proceeding. Refer to *3.3 Updating Assets in SICAM Localizer*.

Commissioning Steps during Site Installation of Devices

- Insert the SIM card with 2G internet access into the SICAM FCG. Refer to section **Installing and Changing the SIM Card** from SICAM FCG user manual.
- Perform installation of SICAM FCG on the site location. Refer to section **Getting Started** from SICAM FCG user manual for detailed procedure on device installation.
- Perform installation of SICAM FSI on the site location. Refer to section **SICAM FSI Installation** from SICAM FSI user manual for detailed procedure on device installation.
- Open the Web browser and enter the default IP address (192.168.0.55) of SICAM FCG. It is mandatory to configure following parameters in SICAM FCG WebGUI and is a prerequisite procedure to update the parameters remotely from SICAM Localizer.
  - Navigate to **Configure tab** → **Administrative** → **Time Synchronization**. Select **NTP** for the parameter Source time synchronization and select valid NTP servers. Refer to section **Time-Synchronization Setting** from SICAM FCG user manual for more details.
  - Navigate to **Configure tab** → **Communication** → **Ethernet and Protocols**. Select **Bus Protocol** as MindConnect Protocol. Upload Root CA certificate and Onboarding key. Refer to section **MindConnect Library Protocol Configuration** from SICAM FCG user manual for more details.
  - Navigate to the **Configure tab** → **Operational parameters** → **Process connections** → **FSIs**. Enter the stored FSI QR code values.
  - Navigate to **Configure tab** → **Administrative** → **Communication** → **Communication mobile**. Enable **Communication Mobile** and perform the required configuration. Refer to section **Communication Mobile Settings** from SICAM FCG user manual for more details.
  - Navigate to **Configure tab** → **Administrative** → **Communication** → **Short-range communication (WPAN)**. Enable **Short-range communication (WPAN)** and perform the required configuration. Refer to section **Short-Range Radio Communication Settings** from SICAM FCG user manual for more details.

- Finish the configuration by activating the new settings. Refer to section **Finish Configuration** from SICAM FCG user manual for more details.
- Perform self test on the SICAM FSI using the magnetic adaptor and verify whether SICAM FSI is communicating with SICAM FCG in the Value view page. Refer to sections **Value View** from SICAM FCG user manual for checking the FSI measured values and ensuring communication is established. Also refer to section **Diagnosis SICAM FSI** from SICAM FCG user manual for verification of SICAM FSI and SICAM FCG association.

Configuration of SICAM FCG and SICAM FSI using SICAM Localizer Post Commissioning

If you want to update the parameters remotely even after configuring mandatory parameters in SICAM FCG WebGUI as mentioned above, then proceed with following procedure:

- Access SICAM Localizer. Configure the **Binary Inputs**, **Binary Outputs**, and **LED** settings as per site requirements.
- Configure FSI parameter settings, WPAN settings for different faults and indications.
- Configure SMS and Mobile ping supervision settings.
- Configure Time-Syncronization and DNS server.

Refer to *3.4 Configurating SICAM FCG and SICAM FSI Parameters* for the complete procedure to configure the SICAM FCG and SICAM FSIs parameters.

B Assets Configuration - Sample Report

Report Format

The following report format is a summarized list of feeder name, asset and group details. This MS Excel report (.xls) is only available once you complete asset configuration and its parameters. Refer to *3.3 Updating Assets in SICAM Localizer* for download report description.

- A maximum of 9 FSIs details are generated for each asset.
- A maximum of 9 group details are generated for each asset.

NOTE

If the assets does not communicate, then downloaded report does not reflect device variant and current firmware details.

If the asset is FCG BB hardware, then downloaded report does not reflect device variant and current firmware details.

If the asset firmware is updated but the asset has not yet communicated to MindSphere cloud, then downloaded report reflects last communicated firmware version.

Table B-1 Consolidated Assets Configuration Report - Sample

Asset name	Serial No	Land-mark	Latitude	Longi-tude	Asset Details					
					FCG		FSI1		FSI2	
					Device variant	Current firm-ware version	Device variant	Current firm-ware version	Device variant	Active firm-ware version