

SEL Data Management and Automation (DMA)

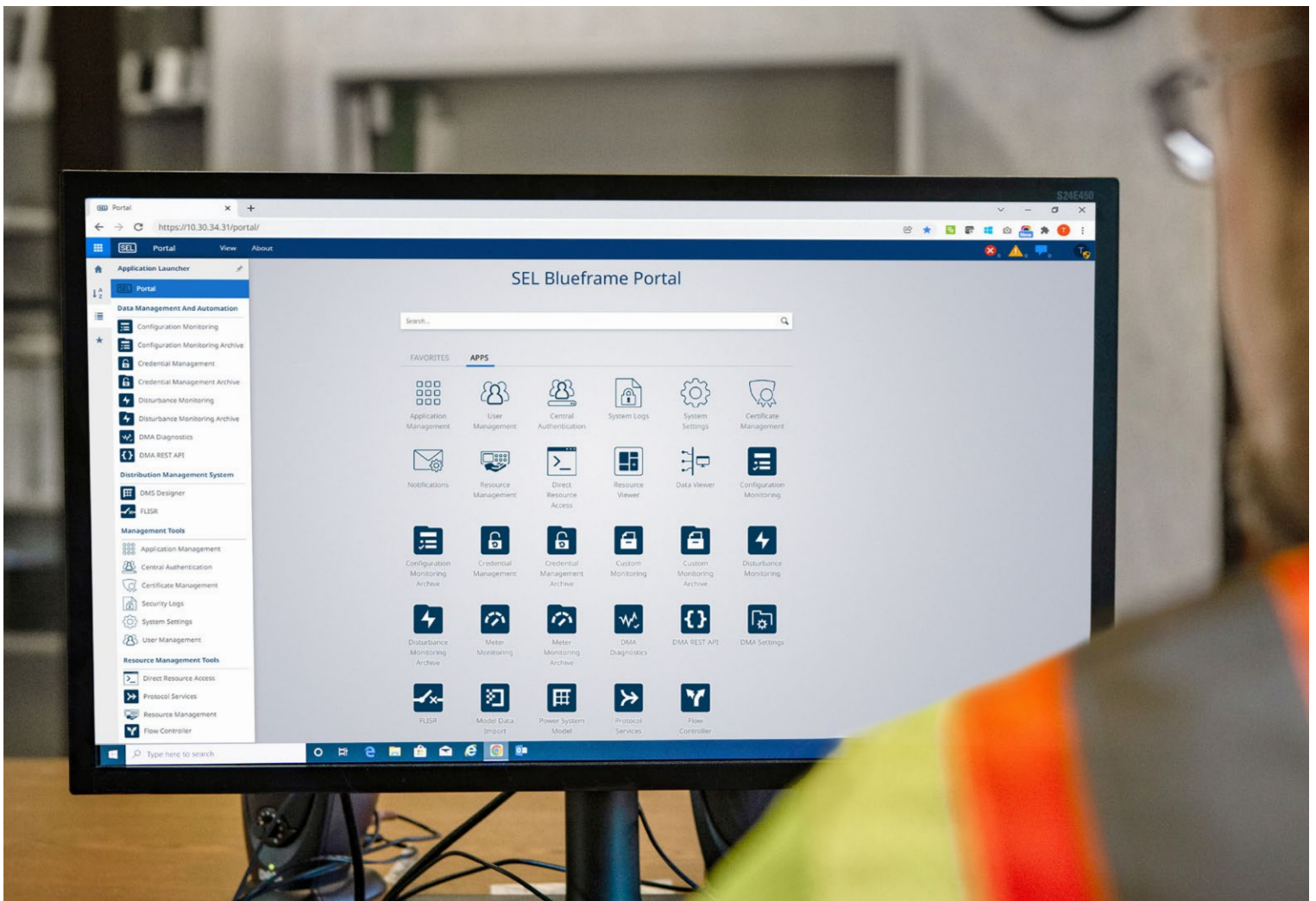
Blueframe® Application Suite



Automate data collection and streamline fleet management

- Automatically collect oscillography, Sequence of Events (SOE), device settings, property information, and other device files and reports.
- Identify device changes and simplify auditing tasks with custom data summary reports.
- Streamline device management and compliance efforts with automated password rotation.





Overview

SEL DMA applications automatically collect, store, and manage device-specific information—oscillography, SOE, device settings, property information, and other device files and reports—to simplify day-to-day fleet management and compliance efforts. Streamline device audits through custom summary reports. Deploy DMA applications across substation or regional installations or centralize them at a corporate installation, according to the number of devices and system performance requirements.

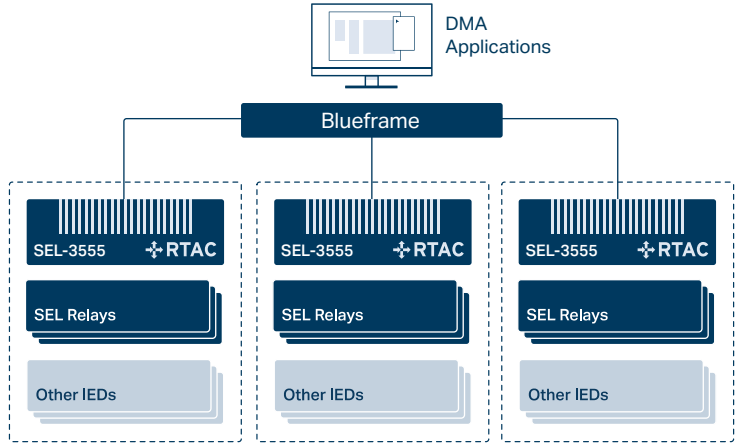
The DMA application suite currently includes multiple orderable packages: the Disturbance Monitoring package, the Configuration Monitoring package, the Credential Management package, the Meter Monitoring package (coming soon), and the Custom Monitoring package.

DMA software runs as secure, modular applications on SEL Blueframe, a specialized software platform for operational technology (OT) systems. Blueframe can be deployed on SEL rugged computing platforms (SEL-3350, SEL-3355, and SEL-3360) or virtualized on other server-grade hardware through a contract agreement. For more information about virtual deployments, contact your local support.

Deployment Options

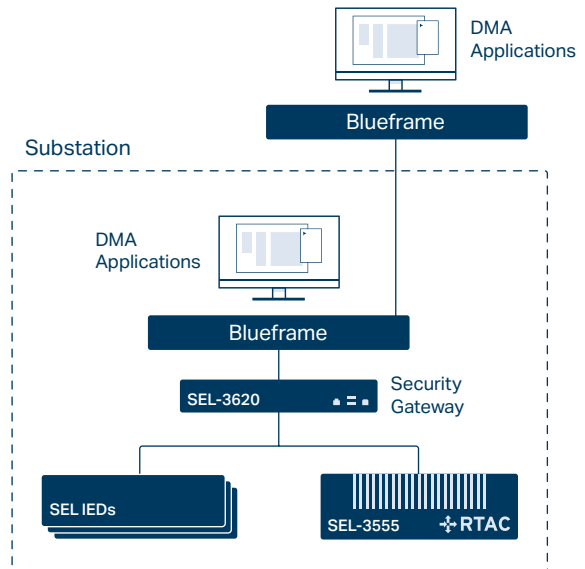
Centralized DMA

DMA is well suited to a centralized deployment and is designed to scale, making it easy to configure automated data collection from one to thousands of resources in a system. Systems that utilize SEL Real-Time Automation Controllers (RTACs) further simplify centralized deployments through aggregated data collection and improved notification efficiency between substations and the central DMA instance. DMA is designed to run on the secure Blueframe operating system, which can be deployed on SEL rugged computing platforms or virtualized on other server-grade hardware.



Regional DMA

DMA was designed to be distributable, enabling users to securely aggregate data from several resources to a local Blueframe instance and then push data from the distributed system to a central Blueframe node. This deployment is advantageous when communications between remote locations and the centralized user access point are intermittent or when SEL RTACs are not in use.



Application Packages

Disturbance Monitoring Package



Disturbance Monitoring

Define data collection plans for end-point devices. Automatically collect event oscillography and SOE data for supported resources in a common location. This facilitates streamlined initiation of fault restoration.

Listen for notifications

DMA can listen for notifications from supported resources that new data are available for collection, expediting fault retrieval.

Schedule oscillography and SOE collection

Configure DMA to communicate automatically with Blueframe resources to collect new event data.

The screenshot displays the 'Disturbance Monitoring' application interface. On the left, a sidebar shows 'Collection', 'Listening', and 'Publishing' options. The main area is titled 'Collection' and contains a table of collection plans. The 'North Bitterroot_SOE' plan is selected. To the right, a configuration panel for 'North Bitterroot_SOE' is shown, with fields for Name, Schedule, Report Type, and Resources.

Name	Schedule	Report Type	Resources
North Bitterroot_Events	Every day at 2:00 AM	Oscillography	3
North Bitterroot_SOE	Every day at 12:00 AM	Oscillography	5
South Bitterroot_Events_SOE	Every day at 12:00 AM	Oscillography & SOE	1

North Bitterroot_SOE Configuration:

- Name: North Bitterroot_SOE
- Schedule: Every day at 12:00 AM
- Report Type: Oscillography
- Resources: 3620_SEL-421-7, SEL-3530_CV_62, 3620_SEL-787, 3620_SEL-700G, 3620_SEL-411L

Publish and centralize data

Publish collected data from one Blueframe instance to another or from Blueframe instances to an HTTPS server. This supports aggregating data from dispersed Blueframe instances to a central Blueframe instance or other receiving server. Additionally, configure automated email notifications when new data are collected.



Disturbance Monitoring Archive

Visualize collected data to view past events.
Use predefined views and custom filters to select information pertinent to your task and download reports for detailed analysis in event analysis tools.

Generate reports

Configure reports to display oscillography and SOE data for selected resources to support fault analysis.

Download records

Download and save records to support incident reporting and tracking.

The screenshot displays the 'Disturbance Monitoring Archive' software interface. The main window title is 'DISTURBANCE MONITORING REPORT: 4/8/2022, 2:08:45 PM'. The interface includes a search bar, a 'Refresh Report' button, and a table of events. The table has columns for Resource, Timestamp, Event, Message, and Type. The selected event is highlighted in blue. To the right of the table is a 'Details' panel showing information for the selected event, including Resource, Timestamp, Event, Type, and Recordings. Below the details panel is a 'View Event' dropdown menu and a 'Resource ID' field.

Resource	Timestamp	Event	Message	Type
Z2_SEL-451-2 (4)	11/19/2021, 12:44:17.651 AM	Relay	Enabled	SOE
Z2_SEL-451-2 (4)	11/19/2021, 12:44:17.651 AM	Power-up	Group 1	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:56:20.231 PM	Settings changed	Class R CC	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:56:17.823 PM	Reclose Shot 0	Asserted	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:56:17.821 PM	Settings changed	Class L CC	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:56:17.821 PM	Relay	Enabled	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:56:17.764 PM	Relay	Disabled	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:55:40.650 PM	Relay	Enabled	SOE
Z2_SEL-451-2 (4)	7/23/2021, 3:55:40.650 PM	Power-up	Group 1	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:09:18.397 PM	Settings changed	Class R CC	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:09:15.851 PM	Reclose Shot 0	Asserted	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:09:15.849 PM	Settings changed	Class L CC	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:09:15.849 PM	Relay	Enabled	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:09:15.793 PM	Relay	Disabled	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:08:46.650 PM	Relay	Enabled	SOE
Z2_SEL-451-2 (4)	7/7/2021, 5:08:46.650 PM	Power-up	Group 1	SOE
Z2_SEL-451-2 (4)	4/8/2022, 2:08:24.374 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:07:21.624 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:06:29.503 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:05:26.439 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:04:21.191 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:04:16.082 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:04:15.018 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:03:14.147 PM	TRIG		Oscillography
Z2_SEL-451-2 (4)	4/8/2022, 2:01:13.030 PM	TRIG		Oscillography

SYNCHROWAVE® Event Express

View oscillography records with the included event viewing tool.

Configuration Monitoring Package



Configuration Monitoring

Automate checks of active device settings, firmware versions, and device IDs. Securely move collected settings to a settings management repository for a settings version comparison analysis.

Publish and centralize data

Publish collected data from one Blueframe instance to another or from Blueframe instances to an HTTPS server. This supports aggregating data from dispersed Blueframe instances to a central Blueframe instance or other receiving server. Additionally, configure automated email notifications when new data are collected.

Schedule settings and property collection

Configure DMA to communicate automatically with Blueframe resources to collect new configuration data and identify when changes have occurred on monitored devices.

The screenshot displays the Configuration Monitoring interface. On the left, a sidebar shows 'Collection' and 'Publishing' options. The main area is titled 'Collection' and contains a table with the following data:

Name	Schedule	Report Type	Resources
3620_ChildConfig	Every day at 12:00 AM	Properties & Settings	4
3620_Config	Every day at 12:00 AM	Settings	1
RTAC_Properties	Every day at 12:00 AM	Properties	1
RTAC_Settings	Every day at 12:00 AM	Settings	1

On the right, a detailed view for '3620_ChildConfig' is shown. It includes fields for Name (3620_ChildConfig), Schedule (Every day at 12:00 AM), and Report Type (Properties & Settings). Below these is a 'Resources' section with a search bar and a 'Select Resources' button. A table lists the resources and their connections:

Resource	Connection
3620_SEL-421-7	3620CV_SSH
3620_SEL-787	3620CV_SSH
3620_SEL-700G	3620CV_SSH
3620_SEL-411L	3620CV_SSH



Configuration Monitoring Archive

View collected settings versions, firmware, and device ID variances. Identify devices that may not match company records for active configuration and require corrective action.

Download configuration

DMA gathers a full set of resource configurations, which enables full use in the respective resources' configuration software. For example, SEL RTAC settings are collected as a project file that can be opened in ACSELEATOR® RTAC SEL-5033 Software.

The screenshot displays the Configuration Monitoring Archive software interface. The main window shows a table of resources with columns for Resource, Status, Discovered Change, Last Examined, and Type. A search bar and buttons for 'Export Filtered Report' and 'Refresh Report' are visible. A 'Details' panel on the right shows information for a selected resource, including its ID and type.

Resource	Status	Discovered Change	Last Examined	Type
Z2_SEL-421-3	CHANGED	4/4/2022, 3:28:00.000 PM	4/8/2022, 2:43:16.000 PM	Properties
Z2_SEL-421-3	CHANGED	4/8/2022, 2:38:20.000 PM	4/8/2022, 2:43:10.000 PM	Settings
Z2_SEL-421-3	CHANGED	4/4/2022, 3:23:01.000 PM	4/8/2022, 2:43:10.000 PM	Settings
Z2_SEL-421-3 (2)	CHANGED	4/4/2022, 3:35:18.000 PM	4/8/2022, 2:41:23.000 PM	Properties
Z2_SEL-421-3 (2)	CHANGED	4/8/2022, 2:40:47.000 PM	4/8/2022, 2:40:47.000 PM	Settings
Z2_SEL-421-3 (2)	CHANGED	4/4/2022, 3:25:22.000 PM	4/8/2022, 2:40:47.000 PM	Settings
Z2_SEL-421-3 (3)	CHANGED	4/4/2022, 3:30:10.000 PM	4/8/2022, 2:41:50.000 PM	Properties
Z2_SEL-421-3 (3)	CHANGED	4/4/2022, 3:25:27.000 PM	4/8/2022, 2:41:02.000 PM	Settings
Z2_SEL-421-4	CHANGED	4/4/2022, 3:25:10.000 PM	4/8/2022, 2:40:10.000 PM	Properties
Z2_SEL-421-4	CHANGED	4/4/2022, 3:21:43.000 PM	4/8/2022, 2:41:47.000 PM	Settings

Details panel for Resource: Z2_SEL-421-3:
Status: Changed
Discovered: 2022-04-04T15:23:01
ArtifactID: 648518898882871298
Type: Settings
Resource ID: 00000000-0004-4000-8000-000000001044

Identify changes to settings and properties

Build a report to help identify when resource configuration has changed. Detected changes can then be evaluated to understand if they were intentional or not.

Credential Management Package



Credential Management

Automatically rotate IED passwords on custom-defined schedules, either directly or through SEL security gateways. Ensure device access security with more control over when passwords are rotated with random and complex passwords.

Schedule password rotation

Configure DMA to communicate automatically with Blueframe resources to rotate passwords to a randomly assigned password.

Select method of password rotation

Configure plans to either rotate passwords directly or initiate password rotation and collect proxy reports through SEL security gateways.

The screenshot displays the SEL Credential Management interface. On the left, a table lists existing credential plans. On the right, a configuration window for a '3XX Rotation' plan is open, showing various settings such as name, type, schedule, password type, resources, and exceptions.

Credential Plan	Type	Schedule	Resources	Exceptions
3XX Rotation	SEL Devices - Direct Password Rotation	Every day at 11:00 AM	1	2
Recloser Rotation	SEL Devices - Direct Password Rotation	Every 9 months on the 17th at 12:00 AM	50	0

3XX Rotation Configuration:

- Name: 3XX Rotation
- Type: SEL Devices - Direct Password Rotation
- Schedule: Every day at 11:00 AM
- Password Type: Random - Per Resource
- Resources: SEL-300G
- Connection: Pass Through
- Exceptions: level1, level2



Credential Management Archive

View Credential Management reports to verify that scheduled resource passwords have been changed to support audit compliance efforts. Additionally, access resource credentials securely to aid emergency restoration efforts.

Restrict access to view passwords

Define which roles can view active passwords and which roles can audit when passwords were changed.

Generate password reports

Generate a report with active resource passwords to support emergency restoration efforts.

Credential Management Archive | View | Permissions | About

Password Audit Report: 12-1-2022, 1:08:04 PM | Resources: 50 | Time Period: 11-30-2022, 1:07:55 PM - 12-1-2022, 1:07:55 PM

Search... | Export Filtered Report | Refresh Report

Resource ↑	Plan	Last Changed	Status	Exceptions
North_651R_1	651R Rotation	12-1-2022, 11:22:36 AM	Changed	level1, level2
North_651R_2	651R Rotation	12-1-2022, 11:22:37 AM	Changed	--
North_651R_3	651R Rotation	12-1-2022, 11:22:37 AM	Changed	--
North_651R_4	651R Rotation	12-1-2022, 11:22:37 AM	Changed	--
North_651R_5	651R Rotation	12-1-2022, 11:22:37 AM	Changed	--
North_651R_6	651R Rotation	12-1-2022, 11:22:37 AM	Changed	--
North_651R_7	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_8	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_9	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_10	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_11	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_12	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_13	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_14	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_15	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_16	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_17	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--
North_651R_18	651R Rotation	12-1-2022, 11:22:38 AM	Changed	--

North_651R_1

Execution Details

Plan: 651R Rotation

Last Changed: 12-1-2022, 11:22:36 AM

Status: Changed

Exceptions: level1, level2

[Open in Resource Management](#)

Resource ID: 47b6c4b2-9b86-4b38-a2d4-405a9043016

Meter Monitoring Package (Coming Soon)



Meter Monitoring

Streamline voltage sag, swell, and interruption (VSSI) and load data profile (LDP) data collection and centralize data storage with the DMA Meter Monitoring application.

Publish and centralize data

Publish collected data to a central Blueframe instance or to an HTTPS server. Additionally, configure automated email notification when new data are collected.

Schedule LDP and VSSI collection

Configure DMA to communicate automatically with Blueframe metering resources to collect new LDP and VSSI data.

The screenshot displays the Meter Monitoring application interface. The left sidebar shows 'Collection' and 'Publishing' options. The main content area is split into two panels: 'Collection' and 'LDP'.

Collection Panel: A table lists existing collection plans.

Collection ↓	Type	Schedule	Resources
LDP	LDP	Every 5 minutes	1
VSSI	VSSI	Every 5 minutes	1

LDP Panel: Configuration fields for a new Load Data Profile (LDP).

- Name: LDP
- Type: Load Data Profile (LDP)
- Enable Plan: On Save
- Schedule: Every 5 minutes
- Resources: SEL-735 (connected to Telnet2)

Buttons for 'New Plan', 'Delete', 'Save', and 'Cancel' are visible.



Meter Monitoring Archive

Verify up-to-date collection of LDP and VSSI data. Review VSSI records, and download segments of LDP data.

Generate reports

Configure reports to display VSSI records or to verify up-to-date collection of LDP and VSSI data.

Assess and download data

Quickly assess VSSI records or download segments of LDP data.

The screenshot displays the Meter Monitoring Archive application interface. The main window shows a 'VSSI Event Summary' for resource 'SEL-735' from '1-31-2024, 9:48:28 AM'. The table lists various events with columns for Resource, Recorded On, Type, and Region. The right sidebar shows 'Execution Details' for 'SEL-735', including 'Recorded On: 1-9-2024, 5:26:19 PM', 'Type: SAG', 'Region: SAFE_FUNCTION', and 'Duration: 0.022 seconds'. Below this, a 'Voltages' table shows data for channels A, B, and C.

Resource	Recorded On	Type	Region
SEL-735	1-9-2024, 5:26:19 PM	SAG	SAFE_FUNCTION
SEL-735	1-3-2024, 12:05:01 PM	SAG	NO_DAMAGE
SEL-735	12-19-2023, 11:31:32 PM	SAG	NO_DAMAGE
SEL-735	12-13-2023, 10:31:49 AM	SAG	SAFE_FUNCTION
SEL-735	12-6-2023, 11:50:03 AM	SAG	SAFE_FUNCTION
SEL-735	11-16-2023, 12:09:41 PM	SAG	SAFE_FUNCTION
SEL-735	9-22-2023, 5:39:54 AM	SAG	SAFE_FUNCTION
SEL-735	9-6-2023, 12:41:28 PM	SAG	SAFE_FUNCTION
SEL-735	8-4-2023, 12:25:57 AM	SAG	SAFE_FUNCTION
SEL-735	7-29-2023, 8:43:11 PM	SAG	NO_DAMAGE
SEL-735	7-17-2023, 4:43:18 PM	INTERRUPT	NO_DAMAGE
SEL-735	7-17-2023, 4:43:18 PM	SAG	NO_DAMAGE
SEL-735	7-17-2023, 4:43:18 PM	INTERRUPT	NO_DAMAGE
SEL-735	7-17-2023, 4:43:18 PM	SAG	NO_DAMAGE
SEL-735	7-17-2023, 4:43:17 PM	INTERRUPT	NO_DAMAGE
SEL-735	7-17-2023, 4:43:17 PM	SAG	NO_DAMAGE
SEL-735	7-17-2023, 4:43:16 PM	INTERRUPT	NO_DAMAGE
SEL-735	7-17-2023, 4:43:16 PM	SAG	NO_DAMAGE
SEL-735	7-17-2023, 4:38:51 PM	SWELL	PROHIBITED

Channel	Base	Min	Max
A	120	85.4	120
B	0	85.4	0
C	0	85.4	0

Custom Monitoring Package



Custom Monitoring

Schedule automated collection of files or command results from supported devices. Specify which files or relay reports to collect from devices and store in an aggregated location.

Publish and centralize data

Publish collected data from one Blueframe instance to another or from Blueframe instances to an HTTPS server. This supports aggregating data from dispersed Blueframe instances to a central Blueframe instance or other receiving server. Additionally, configure automated email notifications when new data are collected.

Collect command results

Run device-supported commands to save results to a file.

Specify files for collection

Use regular expressions to specify files for collection.

The screenshot shows the 'New Collection Plan' dialog box in the SEL DMA Custom Monitoring application. The dialog is open over a background window showing 'Collection' and 'Publishing' tabs. The dialog fields include: Name* (Report Collection), Type* (File Collection), Path* (\Reports), Path Expression* (.TXT\$), Initial Plan Execution* (On Save), Schedule* (Every day at 10:00 AM), Labels (Report Collection, NorthSub), Resources (SEL-421-1, Telnet), and buttons for Create and Cancel.

Collect device files

Collect files from a device's file system.

Label collected data

Tag collected data with a label to enable streamlined filtering of data in the archive.



Custom Monitoring Archive

Access your files, tagged with user-defined labels, for use by analysis or visualization tools.

Filter collected files
Select resources of interest to filter down collected files.

Search for data in archive
Search archive results to narrow down viewable data.

The screenshot shows the 'Custom Monitoring Archive' application. On the left, there is a 'Resources' sidebar with a tree view containing 'All Resources' and several sub-items like '.dma-credential-managemen', 'Blueframe Servers', 'Substation Adams', 'Substation Latah', and 'Substation Whitman'. The main area displays a table titled 'All Resources' with columns for 'Collected On', 'File', 'Resource', and 'Labels'. A search bar is located at the top right of the table area. A 'Download' tooltip is shown over the row where 'File' is 'BRE' and 'Resource' is 'SEL-421-1'.

Collected On	File	Resource	Labels
10/19/2022, 1:35:06 PM	STA	SEL-T401L	STATUS Command
10/19/2022, 1:35:08 PM	STA	SEL-735	STATUS Command
10/19/2022, 1:35:08 PM	STA	SEL-421-1	STATUS Command
10/19/2022, 1:35:09 PM	STA	SEL-751 (1)	STATUS Command
10/19/2022, 1:35:12 PM	BRE	SEL-421-1	BREAKER Command
10/19/2022, 1:40:04 PM	STA	SEL-735	STATUS Command
10/19/2022, 1:40:05 PM	STA	SEL-751 (1)	STATUS Command
10/19/2022, 1:40:07 PM	STA	SEL-T401L	STATUS Command
10/19/2022, 1:40:07 PM	STA	SEL-421-1	STATUS Command
10/19/2022, 1:45:04 PM	STA	SEL-735	STATUS Command
10/19/2022, 1:45:04 PM	STA	SEL-751 (1)	STATUS Command
10/19/2022, 1:45:05 PM	STA	SEL-T401L	STATUS Command
10/19/2022, 1:45:08 PM	STA	SEL-421-1	STATUS Command
10/19/2022, 1:50:04 PM	STA	SEL-735	STATUS Command
10/19/2022, 1:50:05 PM	STA	SEL-751 (1)	STATUS Command
10/19/2022, 1:50:06 PM	STA	SEL-T401L	STATUS Command
10/19/2022, 1:50:08 PM	STA	SEL-421-1	STATUS Command
10/19/2022, 1:55:04 PM	STA	SEL-735	STATUS Command
10/19/2022, 1:55:04 PM	STA	SEL-751 (1)	STATUS Command
10/19/2022, 1:55:05 PM	STA	SEL-T401L	STATUS Command
10/19/2022, 1:55:06 PM	STA	SEL-421-1	STATUS Command
10/19/2022, 2:00:04 PM	STA	SEL-735	STATUS Command
10/19/2022, 2:00:05 PM	STA	SEL-751 (1)	STATUS Command

Download collected files

DMA Tools



DMA REST API

Gain secure, authenticated programmatic access to a RESTful API (application programming interface) for integration with third-party business tools.



DMA Diagnostics

Troubleshoot resource communications and data collection processes initiated by the services that support DMA data collection.



DMA Settings

Manage global DMA settings related to hard drive storage, data retention policies, and resetting DMA-related data to a clean state.

Monitor the automation system as plans are being executed to ensure it is running as expected.

Quickly identify the cause of automation failures to return system to a successful state.

DMA Diagnostics

Plan Name	App Name	Plan Type	Result	Started	Completed	Duration
IED Events and SOE	Disturbance Monitoring	CollectOscillography	Error: Connection	2022-04-09T23:30:05.123816 America/Los_Angeles	2022-04-09T23:30:05.567462 America/Los_Angeles	0.443 seconds
IED Events and SOE	Disturbance Monitoring	CollectSOE	Error: Connection	2022-04-09T23:30:05.123816 America/Los_Angeles	2022-04-09T23:30:05.567462 America/Los_Angeles	0.443 seconds
IED Settings and Properties	Configuration Monitoring	CollectProperties	Error: Connection	2022-04-09T23:30:05.123816 America/Los_Angeles	2022-04-09T23:30:05.567462 America/Los_Angeles	0.443 seconds
IED Settings and Properties	Configuration Monitoring	ReadConfiguration	Error: Connection	2022-04-09T23:30:05.123816 America/Los_Angeles	2022-04-09T23:30:05.567462 America/Los_Angeles	0.443 seconds
IED Events and SOE	Disturbance Monitoring	CollectOscillography	Error: Connection	2022-04-09T23:25:05.171124 America/Los_Angeles	2022-04-09T23:25:05.567016 America/Los_Angeles	0.395 seconds
IED Events and SOE	Disturbance Monitoring	CollectSOE	Success	2022-04-09T23:25:05.171124 America/Los_Angeles	2022-04-09T23:25:05.567016 America/Los_Angeles	0.395 seconds
IED Settings and Properties	Configuration Monitoring	CollectProperties	Success	2022-04-09T23:25:05.171124 America/Los_Angeles	2022-04-09T23:25:05.567016 America/Los_Angeles	0.395 seconds
IED Settings and Properties	Configuration Monitoring	ReadConfiguration	Success	2022-04-09T23:25:05.171124 America/Los_Angeles	2022-04-09T23:25:05.567016 America/Los_Angeles	0.395 seconds

View detailed communication and troubleshooting logs.

SEL Blueframe Application Platform

Platform

DMA applications run on the SEL Blueframe application platform. Blueframe is a secure, modular system for installing SEL applications and for managing and exchanging data between supported applications. Blueframe is designed to minimize the attack surface and includes several security measures, like allowlisting, to prevent unauthorized access and attacks. It provides a scalable and customizable solution to accommodate your specific needs.

Hardware

Blueframe runs on powerful and reliable SEL computing platforms that ensure system availability in the most demanding applications and environments. Select the right hardware for your application by choosing from models that offer a variety of processing power options, drives, memory modules, expansion capabilities, and form factors. Blueframe and its specialized applications come embedded in your chosen computing platform.

Blueframe can also be deployed virtually on other server-grade hardware through a contract agreement. For more information about virtual deployments and minimum hardware requirements, contact your local support.

	SEL-3350	SEL-3355	SEL-3360S	SEL-3360E
Processor	Intel Atom x5-E3940 quad-core, 1.6 GHz	Intel Xeon quad-core, 2.0 or 2.8 GHz	Intel Xeon quad-core, 2.0 or 2.8 GHz	Intel Xeon quad-core, 2.0 or 2.8 GHz
Memory	8 GB DDR3L RAM with error-correcting code (ECC)	Up to 64 GB DDR4 RAM with ECC	Up to 64 GB DDR4 RAM with ECC	Up to 64 GB DDR4 RAM with ECC
Storage ¹	Up to 2 SSDs, 2 TB each, 2.5" SATA III (6.0 GB/s)	Up to 4 SSDs, 2 TB each, 2.5" SATA II (3.0 GB/s)	Up to 2 SSDs, 2 TB each, 2.5" SATA II (3.0 GB/s)	Up to 2 SSDs, 2 TB each, 2.5" SATA II (3.0 GB/s)
Chassis	19" rack-mount or panel-mount, 1U	19" rack-mount or panel-mount, 3U	Conductive panel-mount or standard wall-mount cooling	Conductive panel-mount or standard wall-mount cooling

¹Blueframe only supports a single drive at this time.

Specifications

General

Data Collection Capabilities	Automated polling or listening
Data Publishing Capabilities	Blueframe to Blueframe, Blueframe to HTTPS server, Blueframe to FTP server, and email notifications
Supported Protocols	SEL ASCII, SEL FTP, HTTPS, PostgreSQL, Secure Shell (SSH), MMS, Telnet, and TCP
Operating System	SEL Blueframe
Deployment Options	Embedded on SEL computing platforms or virtualized on other server-grade hardware