# Brightlayer Utilities suite Pittsburgh User Group

# **Feeder Automation Manager**

Charlene Ericson – Product Owner Jasmin Giroux-Maltais – Product Manager



#### User Group Agenda

#### **9** 3.3R2

**Q** 4.0R1

Upgrading to 4.0R1

Upcoming 4.1R1 – End of year

#### 🕇 Roadmap

#### FAM future architecture





- 3 issues fixed
  - Fixed an issue where <u>persistence logic</u> could log an error while processing real-time data transitions coming from the Enterprise Gateway.
  - Fixed an issue where <u>persistence service of standby system</u> <u>could fail</u> to periodically synchronize with active system, momentarily losing the hot standby status.
  - Fixed an issue where after restarting a region, the aggregated automated status of a switching device shown in Visual T&D Diagram could be <u>reported as automated while it is not</u> <u>automated</u>.







- Visual T&D 5.2R4 SP1
  - Added in Visual T&D Engine the support of <u>database</u> redundancy.
  - Added in Visual T&D Manager the <u>maximum days for</u> retention in the historian.
  - Fixed an issue in Visual T&D Diagram that caused the application to crash when editing the single line diagram after <u>multiple copy and paste operations</u>.



### 4.0R1

- New name:
  - Feeder automation manager (FAM)
- Licensing with Revenera You manage your license
  - Activation ID emailed when order is received
- Create new structure
  - 3 modules
    - Communication bridge (Grid Advisors support)
    - Reliability (FLISR)
    - Power quality (VVO 2025\*TBC\*)
- Support of Windows 11 and Windows Server 2022







### Why these modifications ?

- Shared technology between two software
- Shared R&D resources
- More than just FLISR now
- Prepare for future integration of Volt/Var management



 Revenera is Eaton standard licensing platform



#### Feeder automation manager

- 3 modules
  - Communication
     Bridge Grid advisors
  - Reliability FLISR
  - Power quality -Volt/Var - Planned for 2025





#### Feeder automation manager

- 3 manuals
  - Feeder automation manager user guide
  - Communication Bridge user guide
  - Reliability user guide





#### Feeder automation manager

 Selection changed on install

🔀 Feeder Automation Manage	r 4.0.1-prerelease. 174 Setup $ \Box$ $ imes$
Changing Feeder Automat	tion Manager 4 est suits your needs FAM
Communication Bridge	Install Communication Bridge production components
Reliability (Production)	Install Reliability production components
Reliability (Simulation)	Install Reliability simulation components
Complete	Install all components
Custom	Install selected program features at a customizable location. Recommended for advanced users.
	Back Next Cancel



## Communication Bridge



- Components statuses now available in Manager
- Launch all tools from Manager
- Kafka message bus common component with Reliability

#### АРАСНЕ КАҒКА

More than 80% of all Fortune 100 companies trust, and use Kafka.

Apache Kafka is an open-source distributed event streaming platform used by thousands of companies for high-performance data pipelines, streaming analytics, data integration, and mission-critical applications.



#### Communication Bridge

💮 Feeder Automation Manager



#### System Status

Server Version: 4.0.1-prerelease.141 (4.0.1.141) Last log on: 4/4/2024 2:37:36 PM

System restored successfully on 4/3/2023 12:02:38 PM

	Component	Status
Syst	em	515105
	Message Bus	Started
	Communication Bridge	Started
	System Automation	Started
۲	Manager Service	Started
۲	VTD Engine	Started
۲	Global Site Service	Started
-	Redundancy Server	Not configured
Com	nmunication Bridge	
•	Configuration	Started
•	Transition Processor	Started
•	Data Acquisition	Started
•	Data Publication	Started
Dent	lana	





## Reliability Module

- New look
  - All path changed from Cooper Power Systems to Eaton
  - %fadir%,%falogs%,%fadata% are now pointing to new path
  - All data will be copied (if required) to new path
  - All « personalized » folder location will not be changed



## Reliability Module

- New look
  - Main icon
  - Agent icon Multiple statuses
  - Simulator
  - Playback
  - Topology Editor





## Reliability module

Icon	Status
XXX	<b>Red X</b> : At least one region subscribed to system start is in error.
	Yellow Exclamation: At least one region subscribed has a warning
$\odot$	Black Circle, Black Lightning Bolt, White Interior: No region is subscribed to system start. OR No engine.exe file is found.
<b>(</b>	Green Circle: All regions subscribed to system start are started and running.
4	Yellow Circle: At least one region subscribed to system start is starting or in standby mode. OR At least one region subscribed is stopped while at least one other region subscribed is running.
$\bigcirc$	<b>Red Circle</b> : All regions subscribed to system start are stopped.
$\bigcirc$	<b>Grey Circle</b> : Status agent was not able to connect to the manager service.



### Reliability module – Revenera licensing

revenera.

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G Feeder	Automat	tion Mar	nager							-	C	) ×
ա 🕑 🗵												
-	Server	Regio	ons	Events	Health R	leports	Options					0
Restart System	Stop	Status	Report	System	Regions	Explorer (Global)	Diagram (Global)	Solar Output Estimation	🔑 View Info 🔑 Manage			
Automation	Control	Syst	tem	L	ogs	C	ients	Tools	Licensing			G
Maintenan Entitlemen Id	nce: Inact	tive			Exp	piration		Activated	On			
Activation	n											
										Online	С	)ffline
Deactivat	tion									Online	С	ffline
Response https://ea	e File (offl aton.flexn	ine) ietopera	tions.co	m/flexnet/	operation	sportal/lo	gon.do				Pi	ocess

COMPUTERNAME\Administrator @ Default (127.0.0.1)



### Reliability module – Email with license

revenera

[EXTERNAL] Subscription Activation Id for Feeder automation manager



(i) If there are problems with how this message is displayed, click here to view it in a web browser.



Feeder automation manager Entitlement Certificate

Thanks for choosing Feeder automation manager !

IMPORTANT : Please retain this document for your records. It may be required to obtain support for your product

Please find the details of your entitlement:

This entitlement is applicable to the following product(s):

- Part #: FAE-MAINT-1Y - Count: 1 - Product Name: FAE Maintenance



- Activation ID are number :
  - ActivationID: 68ff-1e40-54da-496a-8c33-e7db-d2dd-cc11

- To activate all activation ID from email
  - Drag and drop the email in License manage window





- Activation Online or Offline
- Online just click on Online button





- Offline
  - Click on Offline to create a ActivationRequest.bin file
  - Copy/paste the link in a web browser
  - Login / Create a new account





revenera.

#### • Offline

Navigate to Device > Offline Device Management.





- Offline
  - Click on Choose File
  - Select the ActivationResquest.bin file
  - Click on Upload
  - Click the link to download the **Capability response** file.

Offline Dev	<b>vice Management - F</b> le	× +		
$\leftarrow \   \rightarrow \   G$	eaton.flexne	toperations.	com/flexnet/op	perationsportal/fne/hosts/upload
FAT•N				
Home	Activation & Entitlements 🔻	Devices	Usage	Accounts & Users -
Offlin Manually upload Upload	e Device either a Capability Red type:  Generate II Upload syr	e Mai quest or Synch icense or conf inchronization h	nonization History irm license reduct nistory	Pent y Files for offline processing. The appli tion or return





#### Use the Process button Stop

Reliability module – Activation ID

to load the Capability response file in Feeder automation manager

#### Offline Feeder Automation Manager ս 🕑 🗵 🚺 Server Regions Ø lacksquareStatus License Management

Maintenance: Inactive Entitlements ld Expiration Activated On Activation IDs: 67e3-2821-088a-44c0-8c4b-221b-3989-7111 Online Deactivation Online Response File (offline) https://eaton.flexnetoperations.com/flexnet/operationsportal/logon.do

Health Reports

Options

Explorer Diagram (Global) (Global)

Events

System Regions

Logs

Report

COMPUTERNAME\Administrator @ Default (127.0.0.1)





View Info

🔎 Manage

Licensing

 $\times$ 

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Offline...

Offline...

Process...

- -

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## FAM - Upgrading to 4.0R1

- Grid server customers
- YFA customers

- Contact EATON to get an Activation ID
- Obtain the Capability response file
- Valid for 1 week



## Visual T&D - HMI

- RTM installed by default, needs to be removed if you do not want to install it
- Uninstall RTM
   previous version
   manually





- 4.1R1 Q4 2024
  - Tie device between subsystems/regions (11699)
    - Advantage: You can have smaller subsystem or region
    - **Disadvantage**: The engine will not be able to process two events in parallel anymore if a Tie is shared between two subsystems or regions. On the affected subsystems.
    - We will have a POC to get feedback



- 4.1R1 Q4 2024 (continued)
  - Allow operations to be executed in parallel on regions (11429)
  - Enhanced single phase support (11973)
    - Support of single-phase interconnection when load is unbalanced
  - Enterprise Gateway update
    - Additional Master Protocols: IEC 104, Modbus
    - Additional Slave Protocols: IEC 104



### AVVC Phase 1&2 – Volt\Var by heuristic (~2025)

- 1<sup>st</sup> Integration of Voltage Regulators
  - Support of CVR (limited to VR & LTC only)
  - Support of Voltage Management (limited to VR + LTC only)
- 2<sup>nd</sup> Integration of Capacitor Bank controller
- Supported Functionalities (same as IVVC)
  - CVR, Voltage Management, Peak reduction, Energy reduction, etc.
- Reactive to post event switching operations









- Q2 2025 TBD
- Phase 1
  - Voltage management & CVR using Voltage Regulators and LTCs







- Q4 2025 TBD
- Phase 2
  - Support of Capacitor Bank controller







- Dashboard Health and Events
  - User research still ongoing

	ishboard			
*	Location [AII]	•	Lest	ipdated: Today at 9:24 AM
	Devices Statuses (100)		5-Year Reliability Performance	
	Automated	70 ≯	SADI SAIR CAIDI Compare W	th and Without FA
0	Not Automated	10 >		
0	Bypassed	10 >	250 Min	
0	Out of Service	10 >	200 Min	
-	View All Devices	>	100 Min	-
	Ongoing Alarms (20)		50 htm	
	۵ ک	A	jan Pels Mar Apr May jun Jal Aug	Sep Oct Nov Dec
	14 3 Loss of Major	3 Minor	2020 2021 2022 2023 202	1024 Show Details ~
	Communication Health Problem	Health Problem	Events (30)	30 Days
	Loss of Communication Device Name + Feeder + Subsystem + 9:40 AM 01/05/24	Reg	✓ ✓ 10 10	10
	Major Health Problem	Deg., >	Fully Successful Partially Successful	Unsuccessful



#### Prototype - FAM Dashboard Ideas (figma.com)



- Enhanced Triple Single support (part1) (12489)
- Dynamic bus monitoring (998)
- Communication Bridge enhancements
  - Smart updates –SCADA/DMS/OMS communication remains when adding new devices





#### Future architecture

#### Feeder Automation Manager (FAM)



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### **Reconfigurable Microgrid**



#### Introductory Concepts

#### **Dynamic Standalone Power Systems with FLISR**



#### Standalone Power System (SAPS) or Microgrid/Networked Microgrids

An area power system that can operate islanded consisting of one or more Cell-Grids

#### **Dynamic Boundaries**

Tie connections between Cell-Grids or SAPS. These dynamic boundaries are managed by a modified FLISR with Eaton's Feeder Automation Manager (**FAM**)

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Dynamic boundary of SAPS managed with Feeder Automation Manager

#### **Components of D-SAPS**

#### 1) Load & DER forecast

- 2) Optimal formation of SAPS
- 3) Real-time control and operation of SAPS

4) Expand SAPS to include more loads & non-grid forming DERs

5) DER-coordinated seamless service restoration

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# **D-SAPS**

IEEE 123 Nodes distribution feeder model.







