Install and Use Fluidmesh (FM) Monitor

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Introduction

This document describes the Cisco FM Monitor and its installation on a Ubuntu server.

Background Information

Cisco FM Monitor is a network-wide, on-premises monitoring tool, that allows any <u>Cisco Ultra-Reliable</u> <u>Wireless Backhaul</u> (URWB) user to proactively maintain and monitor one or multiple wireless Operational Technology (OT) networks. It displays data and situational alerts from every Cisco URWB device in a network, in real time. The tool is a virtual image based diagnostic and analysis interface with the virtual image provided in a Docker format.

Prerequisites

• CURWB Device Firmware:

The CURWB hardware must be on a newer firmware version for compatibility with the FM monitor tool. Refer to the latest configuration guides to determine compatibility between a specific FM monitor and the CURWB firmware version. To upgrade the Fluidmesh device firmware, refer to the "Overwriting and Upgrading the Unit Firmware" section of the CURWB Installation and Configuration guide for the specific hardware type.

• Server:

To run the Docker container for the application, you need a dedicated server with these specifications.

Operating system	Windows 7 or later	Mac OS X 10.9.x or later	Linux (32-bit or 64-bit): • Ubuntu 14.04 or later • Debian 9 or later • OpenSuSE 14.2 or later • Fedora Linux 19 or later
Docker application	Yes	Yes	Yes
Base system	Virtual machine or bare metal	Virtual machine or bare metal	Virtual machine or bare metal
Processor	Intel Core i7 or Xeon (any frequency, mandatory minimum of four cores)	Intel Core i7 or Xeon (any frequency, mandatory minimum of four cores)	Intel Core i7 or Xeon (any frequency, mandatory minimum of four cores)
RAM	16 GB minimum	16 GB minimum	16 GB minimum
Hard disk	100 GB minimum* 1 TB or greater recommended	100 GB minimum* 1 TB or greater recommended	100 GB minimum* 1 TB or greater recommended
High-speed connection to local networks and radio transceiver units	Preferred	Preferred	Preferred
Screen resolution	1024x768 minimum	1024x768 minimum	1024x768 minimum

Minimum Server Specifications

• Supported Web Browsers:

Mozilla Firefox Google Chrome Microsoft Internet Explorer Microsoft Edge Apple Safari

• Software Plugins

Software plugins are required for monitoring legacy CURWB hardware, whereas for the IW hardware, plugins are not required.

• Docker:

When Docker is installed on the server, it is essential to ensure that the servers support virtualization and second-level address translation (SLAT). Intel's version of SLAT is called EPT (Extended Page Tables)."

Installing and running the Docker container

- In this document, we primarily focus on installation on an Ubuntu server connected to the internet during the initial setup.
- Login to software.cisco.com and download the latest Monitor image file on your server.
- The next step would be to install the docker engine for your server. You can refer to the <u>Docker</u> <u>documentation</u> for more details, however, the basic steps are as follows:
 Run this command to uninstall all conflicting packages:

for pkg in docker.io docker-doc docker-compose docker-compose-v2 podman-docker containerd runc; do sudo

- Set up the Docker apt repository.
- > sudo apt-get update
- > sudo apt-get install ca-certificates curl
- > sudo install -m 0755 -d /etc/apt/keyrings
- > sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc
- > sudo chmod a+r /etc/apt/keyrings/docker.asc

```
> echo \
```

"deb [arch=\$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] https://download.dock

 $(. /etc/os-release \&\& echo "$VERSION_CODENAME") stable" |$

sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

- > sudo apt-get update
 - Install Docker Package

Please run this command to install the latest docker package:

sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin

• Verify that the Docker Engine installation is successful by running the hello-world image

sudo docker run hello-world

sudo docker images

fm-iw-moni	tor@fmiwmoni	itor-virtual-mac	hine:~\$ sudo doc	ker images
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
hello-worl	d latest	d2c94e258dcb	11 months ago	13.3kB

• Now, that the docker engine is installed, load the Cisco FM monitor image to the monitor server by using the command:

docker load -i fm-monitor-docker-v1.x.x.tar.

fm-iw-monitor@fmiwmonitor-	<pre>virtual-machine:~\$ sudo docker load -i '/home/fm-iw-monitor/Downloads/fm-monitor-docker-v2.0-rc2.0.tar.gz'</pre>
8cf5d74bcf68: Loading laye	r [=======]] 134.4MB/134.4MB
bce5b7b7ae9a: Loading laye	r [=======]] 965.6MB/965.6MB
1d2e5de37b47: Loading laye	r [=======]] 3.072kB/3.072kB
72a57e173486: Loading laye	r [=======>] 26.11kB/26.11kB
eed00e336fdc: Loading laye	r [=======>] 1.633MB/1.633MB
f43525ea70c4: Loading laye	r [=======]] 17.67MB/17.67MB
54162be3e4b4: Loading laye	r [========]>] 68.47MB/68.47MB
5f70bf18a086: Loading laye	r [=======>] 1.024kB/1.024kB
ca58e150d27c: Loading laye	r [========]] 75.03MB/75.03MB
d78879eea568: Loading laye	r [=======>] 5.632kB/5.632kB
e3d74964f28f: Loading laye	r [=======>] 4.608kB/4.608kB
c6958528657a: Loading laye	r [======>] 5.12kB/5.12kB
145cbf33218d: Loading laye	r [=======>] 6.144kB/6.144kB
0786591577bc: Loading laye	r [=======>] 4.608kB/4.608kB
69c239009c34: Loading laye	r [=======>] 41.47kB/41.47kB
Loaded image: dockerhub.ci	sco.com/fm-dev-artifactory-docker/monitor:v2.0-rc2.0

• Run this command again to make sure that it is loaded. Also, make a note of the image ID:

sudo docker images

fm-iw-monitor@fmiwmonitor-virtual-machine:~\$ sudo docker	• images			
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
dockerhub.cisco.com/fm-dev-artifactory-docker/monitor	v2.0-rc2.0	3e610b47c38b	5 weeks ago	1.25GB
hello-world	latest	d2c94e258dcb	11 months ago	13.3kB

• Run the Docker container for the first time by doing these steps:

sudo docker run -d --name fm_monitor -p 8080:8080 -p 8443:8443 --restart always X

```
(Where X is the IMAGE ID value of the MONITOR Docker image.)
```

Accessing the Web UI

- Finally, access the web page from the browser of your choice. Navigate to the URL from https://X:Y where X is the IP address of the server, and Y is the configured host port number.
- Now, during the first time installation, you would need to create an offline account for the FM-Monitor by entering your name email, and password.
- Once completed you can start onboarding CURWB devices to the FM-Monitor. Make sure that the server IP address is correct.



🔯 (3) IoT lab RTP U 🗙 🔯 (3) RTP - IoT Lab Ir 🗴 🗰 C	isco URWB IW91: x 🚔 Cisco FM-QUADR: x 🚔 Cisco FM-QUADR: x 🚔 Cisco URWB IW91: x 🚔 Cisco URWB IW91: x	vi: x 🗰 Cisco Ultra Reliabii x + 🗸 🗸
← → C O Not Secure https://10.122.136.8:8443	Wizard	* 🗊 🖸 🖬 😩 🗄
🗅 Cisco 🖪 V4.9.5.1000 - Rel 😰 CURWB 🗮 Spaces Adm	in 🍼 Cisco Certified De 🛃 CART - SearchiRe 🗅 Birds 🟥 Cisco Catalyst IW Ce. JSON Fixer Online W WireGuard - Wikip 🏥 IW9167E Heavy D.	💶 IoT Learning Serie 🙆 Shift 🛛 🔉
E MONITOR C V v2.0-re2.0 Dashboard Table View	Analysis Topology Log	© - 1 diale
	1. Welcor	
	Attach report	
Devi	Port 8443	
G	Search Ta	
	showed	
	No. Status	
	TN Previo	
C	•	
C	• •	
C	Ci If you're still having issues please contact support_fm@cisco.com	
3 Re	cords Close 0 > >>	
	Next	

• Once all radios are added to the FM Monitor, you are able to see all of your radios on the home screen of the dashboard.

÷	MONITOR v2.0+rc2.0	Dashboard	o Table View	بمر Data Analysis	Topology	Log							© -1	cisco
	Real-time	monitoring												
		inable network performance chec settings > Networ	:k in k KPI.	URWB devices online	3	3 ar 3	1.17 Mbps Throughput TX	580 Kbps Throughput RX	412 Sent Packets/s	206 Received Packets/s	5.52 ms Average latency	O Edge devices	100 % Average uptime	
		05051011					Last 6 hours trend	Last 6 hours trend	Last 6 hours trend	Last 6 hours trend	Last 6 hours trend		Last 7 days	
	+ ADD	SECTION												
				You can cr	eate one or m	nore custo	om sections which will a	show information only	on those URWB dev	vices you decide to put i	nside them.			

• All of the devices that are added to the monitor can further be viewed in detail in the table view.

MONITOR v2.0-re2.0	Dashboard Table	بمر New Data Analysis	Topology Log							0	-1	cisco
Q Search	by Mesh ID, label or IP ac	ddress	Filter by status	Critical 🗌 • Warning	g 🗌 • Disco	onnected						
All sections	(3) Uncategorized	(3)										
					Uncategorize	ed (3)					^	
Status	Label	IP Address	Mesh ID	FW version		Role	Frequency	TX Power	Channel width	More		
MP	Cisco-137.250.80	10.122.136.10	5.137.250.80	17.13.0.109	R1 R2	Fluidity Infra Fixed Infra	5180 MHz 5745 MHz	17 dBm 20 dBm	20 MHz 20 MHz			
ME	Cisco-137.250.148	10.122.136.9	5.137.250.148	17.13.0.109	R1 R2	Fluidity Infra Fixed Infra	5180 MHz 5745 MHz	17 dBm 20 dBm	20 MHz 20 MHz			
MP	Cisco-246.2.120	10.122.136.11	5.246.2.120 P	17.13.0.109	R1 R2	Fluidity Vehicle Disabled	5180 MHz	22 dBm -	20 MHz			
1 - 3					« « ()	> >>						

• These devices can be removed or added from the monitor by navigating to **Settings > Devices** page.

÷	MONITOR v2.0-rc2.0	70 Dashboard	a Table View	پير Data Analysis	Topology	Log					
=	Database		« Device	s: 3							Settings Server IP: 10.122.136.8 Port 8443 0
~~	Statistics		Q, s 0 sele	earch Table	Add devices						
	Network KPI		O	Nan	10		IP Address	Mesh ID	Model	Role	Status
			0	Cis	co-137.250.80		10.122.136.10	5.137.250.80	IW9165DH-	B Fluidity Infra Fixed Infra	
٩	Account		O	Cis	co-137.250.148		10.122.136.9	5.137.250.148	IW9165DH-	B Fluidity Infra Fixed Infra	•
	Log		0	Cis	co-246.2.120		10.122.136.11	5.246.2.120	IW9167EH-E	3 Fluidity Vehicle Disabled	•
8	Devices										
†*	Upgrade										

• A large number of radios can further be grouped into smaller sections based on the location/ functionality for easier monitoring from the dashboard home page.

Type section name			
Fluidity			Info (
Select LIDWR devices			
Tick the box to add a device to this section.	Untick the box to remove the device. Devices alre	eady added in other sections are not displayed.	
Find URWB device Search by Mesh ID, label or	P address Show selected devices	only 🔽 Deselect all	
	0		
Cisco-127 250 80	Circo-127 250 148	Circo-246.2.120	
5.137.250.80 10.122.136.10	5.137.250.148 10.122.136.9	5.246.2.120 10.122.136.11	
Fluidity Infra (R1) Fixed Infra (R2)	Fluidity Infra (R1) Fixed Infra (R2)	Vehicle (R1) Disabled (R2)	
			3 selected units Cancel Confirm

luidity			
	1.57 ms	3	100 %
3 out of 3	Average latency	Edge devices	Average uptime
	Last 6 hours trend		Last 7 days

Data Monitoring

• Connectivity can be monitored in real-time or be looked for historical data and can be analyzed for troubleshooting purposes. To see the performance from a radio's perspective that specific radio needs to be selected.



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License Activation

Before FM Monitor can be used to monitor your network, you must obtain and enter an activation license from Cisco. The level of activation license you install determines the number of Fluidmesh radio transceiver devices that can be monitored. It can range from 5 to 5000 devices.

A Demo license option is also available. If activated, the Demo license stays active for three months. FM Monitor license upgrades allow you to increase the number of devices that can be monitored under a single license, from the originally licensed count.