

Application Note:

Upgrading Cellular Firmware Using AirVantage

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Revision History

Date	Rev.	Comments
November 2022	А	Initial document.

For the latest revision of this product document, please check our online documentation at <u>www.lantronix.com/support/documentation</u>.

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Overview

This document provides instructions to upgrade cellular firmware on Sierra Wireless cellular or radio modules, used in Lantronix cellular routers, using their AirVantage portal. This includes the following:

- Obtaining device information
- Registering the device on the AirVantage portal
- Setting up the device for communication
- Upgrading the cellular firmware

Obtaining Device Information

To register your device on the AirVantage portal you will need some device information such as model, IMEI number, and serial number. To get this information do the following:

- 1. Open Windows PowerShell.
- 2. Connect to the device using SSH with IP address of the device. Use the command:

```
ssh root@ipaddress
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\rbellamkonda> ssh root@192.168.1.1
root@192.168.1.1's password:
```

3. To get the device details, use the command:

sendat ati 1

```
root@Lantronix-G527-0080A3E08944:~# sendat ati 1
Manufacturer: Sierra Wireless, Incorporated
Model: EM7431
Revision: SWI9X50C_01.13.02.00 22fdf9 jenkins 2020/06/16 16:29:59
IMEI: 350810960102935
IMEI SV: 11
FSN: 8H1095006204A1
+GCAP: +CGSM
OK
root@Lantronix-G527-0080A3E08944:~#
```

Registering Your Device

To register your device on the AirVantage portal:

1. Log into the AirVantage portal at <u>https://airvantage.net</u>. The AirVantage portal dashboard displays.

lirVantage	🖛 Register	Inventory	I Monitor	🍄 Configure	🔀 Develop	्र 🔤 剩	(
WELCOME	·					DASHBOARD Initial Dashboard	+ : :	3 ®
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Welcome to AirVan	tage							
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2. Click Register. The Registration page displays.

In a Salact custam tuna a AirDr					
 Select system type > Airst 		Register A i	irPrime RC S	Series	
AirPrime RC Series	Type Serial Number IMEI/ESN Name i	Select a System Type	-	 If you haven't yet, setup your module by following the Legato tutorial Provide the IMEI and Serial Number of your System. You can by typing at command i ati, through modern port You can use Pre-configure system / Configure Communicati the system communicate regularly Then click on Register and switch on your System 	Setup I find them on to make
		Pre-configure system			

3. Click **Select system type**. The different systems display. Scroll through the page and click required system type to select it. The selected system type displays to the left, on the device registration page.

			A period	
⊨ > Select system type	> AirPrime EM/MC74 Series	Register	AirPrime EM/N	IC74 Series
AirPrime EM/MC74 Set	Typ Serial Numbe nes IMEI/ES Name 1	e Select a System T	vpe •	Select the Type of AirPrime Module you want to register Provide the IMEI and Serial Number of your System Switch on your System In the modern check that communications with AirVantage Platform are configured. or "AT+WDSC-3.3/"(x being the frequency of connection in minutes), then The Monocol 1 I
		Pre-configure sy Register or Imp	stem xort a list	 A FWDSSE1, F 5.4 first connection the AirVantage Platform will synchronize your new system

- 4. Complete the fields in the registration form:
 - **Type** Click in the **Type** field, then select the required model (see *Obtaining device information*).
 - Serial Number (see Obtaining device information)
 - IMEI/ESN (see Obtaining device information)
 - Name Nickname to identify device (optional).
- 5. Click **Register**. Your device displays in the **Registered systems** list once the registration is successful.

4	🔆 AirVant	age 🏾 🛤 Register	linventory	III Monitor	🕸 Configure	🗶 Develop		م	. 📾 📢			
												C
					Regist	ered syst	tems					
					All systems	3 5	SS					
	Sys	em 350810960102935	a few : a	seconds I Igo	D 35081096010293	5	Type	EM7430		5	×	- 111
	C MH	pilot_RC7620	an he	our ago I	D 35363411019451	0	Туре	RC7620		C	×	
	S E21	8_RC7630	8 da	ys ago I	D 35086711010918	6	Туре	RC7630		C	×	m)
	C EM	37500	2 mor	nths ago I	D 35907306151194	9	Туре	EM7455		5	×	m
	2 x30	4_1_WP7608_1	3 mor	nths ago I	D 35291409027598	9	Туре	WP7608-1		C	×	
	C EM	68500_EM7430_1	3 mor	nthis ago I	D 35907506884593	1	Туре	EM7430		Ċ	×	

Setting Up Device for Communication

You must insert a working SIM card into your device, and it must be able to register to network and data connection.

To setup the device for communication:

1. Open Windows PowerShell and connect to the device using ssh. Use the following command:

```
ssh root@ipaddress
```

2. Stop cellular connection, kill eventsms and gps applications. Use the following commands:

```
ifdown cellular
```

```
ps | grep -i "event\|gps" | grep -v grep | awk '{print $1}' |
xargs kill -9
```

- 3. Configure APN.
 - For devices using Verizon service:

```
sendat 'AT+CGDCONT=3,"IP","VZWINTERNET"' 1
```

For devices using other services:

```
sendat 'AT+CGDCONT=1,"IP","APN"' 1
```

4. Configure PDP.

- For RC and WP Series devices using Verizon: sendat 'AT+WDSS=2,3' 1
- For RC and WP Series devices using other services: sendat 'AT+WDSS=2,1' 1
- For EM Series devices using Verizon: sendat 'AT+WDSS=0, "VZWINTERNET"'
- For EM Series devices using other services: sendat 'AT+WDSS=0,"APN"'

5. Configure AirVantage FOTA parameters.

```
sendat 'AT+WDSC=1,0' 1- User agreement for package download.
sendat 'AT+WDSC=2,0' 1 - User agreement for package installation.
sendat 'AT+WDSC=3,1' 1 - To configure polling mode frequency.
sendat 'AT+WDSC=4,1' 1 - Retry mode set to 1min.
sendat 'AT+WDSC=5,0' 1 - User agreement for device reboot.
sendat 'AT+WDSS=1,1' 1 - To manually initiate first connection.
```

Upgrading Firmware

To upgrade the firmware on your device:

1. On the AirVantage Portal, click **Monitor > Systems**.

	Sy	stems			
	Cu	rrent Alerts			
📧 > Select system type > AirPrin	me EM/MC74 Series Op	erations			· · ·
		Register Al	rPrime EM/MC	74 Series	
In the second second	Type Serial Number	EM7430	•	 Select the Type of AirPrime Module you want to registe Provide the IMEI and Serial Number of your System Switch on your System In the morfern check that communications with AirVan 	r tare Platform are
AirPrime EM/MC74 Series	IMEI/ESN			configured: • "AT+WDSC=3,x"(x being the frequency of connection of the second	on in minutes),
	Name 🚺			then	
		Pre-configure system	1	 At first connection the AirVantage Platform will synchro system 	onize your new
		Register or Import a	list		

The **Systems** page displays.

AirVantage	Register	Inventory 🖽 🛙	Monitor 🎄 Cor	nfigure >	& Develop			۹ 📼	≪ [0
Everything •			Systems Cur	rent Alerts	Alert History	Operations					,
Recent activity			Communication	n status				System Operations			
Comm. Status	Last Comm. date	RSSI			2			Bulk Edit		-	2 hours ago
C E218_RC7630	a minute ago	?!!						Change System	labels		20 hours ago
System 3508109601	0 5 minutes ago	att			Em Wa	aming		Install application	n	_	4 hours ago
C EMG7500	14 minutes ago	att			Ok Un	defined		Install applicatio	n		20 hours ago
X304_1_WP7608_1	3 months ago	att			Pe Blo	nding ocked		Install applicatio	n		a month ago
CEMG8500_EM7430_	3 months ago	att				Total	13				
						10101			(Al	»)	
Filters Name		- O Nam	e	+			1	- - a	0	5 <u>4</u> 6	- 5
Company = Fargo Tel	ecom Technologies I	Pvt Ltd									
<u>×</u>									Sho	wing 1 to 13 of 13 ent	ies ()
Name Name	🗘 Last Comm. 🜲	Labels IMEI/I	SN 🗘 Serial Num	System Type	Firmware	Technology	RSSI	Current Ope	Ec/lo	Alert state	Actions
System	3 5 minutes ago	- 35081	09601. 8H10950062.	EM7430	EM7431 GENÉ	LTE	att	AIRTEL	?!!		
C OH_pile	ot	- 35363	41101. 7012068609.	RC7620		UNKNOWN	?!!		?!!		
C 2 E218_R	C7 a minute ado	- 35086	71101. 1615165396.	RC7630	RC7630 (20.03	UNKNOWN			?!!		

2. Select the device to be upgraded. The device information displays. *Note: The installed firmware version is displayed under System Info.*

AirVantage] ≖ Register	Inventory	Monitor	🕸 Configure	🔀 Develop			۹. ۲	0 📢 U	ograde Firmwa	are	0=
III > Systems > S	System 35081096	0102935			Configuration	Timeline	Data History	8	ۍ ه		¢ More	• 5
System 35	08109601	02935					Initial [Dashbo	ard		+ :	53 ®
System Communi	ication											
	Comm. Statu	IS	Last	seen		Next comm	(ETA)		5	Sync. status		
	0		a minu	te ago		13 Min. 39	Sec.			ø		
System Alerts		Yestion Date	Syste	m Operations		7 davs ar	Locatio	on		Sm	eden	
Hame	No data	Acadon Date		Install application	-	7 days as			K	Inited ngdom		Carl Ind
	NO Gata		0	Install application		7 days ag	+			Germany	Ukraine	Kozok
			٢	Install application	_	7 days a	· · ·			Not located ly		CA'
			٥	Install application	-	r uays ag	-	North tlantic Ocean		Algeria	Turkey Ir bya Egypt	aq iran Pak
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	(All »)				(All »)		uelGoog	gle	Keyboan	d shortcuts N	tap data ©2022	Terms of Use

3. Click Upgrade Firmware. The Upgrade Firmware window displays.

Note: The option **Upgrade Firmware** or **Install Bundle** may appear depending on the system type selected.

Upgrade Firmware								
Upgrade EM7431 Firmware on System 350810960102935								
Upgrade to the latest firmware EM7431 GENERIC Release 16 (9907259-002.036.001)								
O Upgrade to another f	îrmware (<i>Advanced</i>)							
Firmware S	Select a Firmware	Q, 🛨						
Advanced settings	0 ·							
	Upgrade	Firmware Cancel						

 Select the firmware upgrade option. If you select Upgrade to another firmware (Advanced), click the search icon to display the available firmware options and select the required firmware. The Upgrade Firmware window displays with the selected firmware.

Upgrade Firmware							
Upgrade EM7431 Firmware on System 350810960102935							
 Upgrade to the latest firmware EM7431 GENERIC Release 16 (9907259-002.036.001) 							
 Upgrade to another firmware (Advanced) 							
Firmware EM7431 GENERIC Release 16 (9907259 Q							
Advanced settings							
Upgrade Firmware Cancel							

5. Click **Upgrade Firmware**. The progress is shown under **System Operations**. Green line displays next to **Install application** once firmware upgrade is successful.

AirVantage	Register 🖬 Inventory	🖽 Monitor 🔹 🌣 Configure	e 🔀 Develop	् 🖾 🛒	
📰 > Systems > MH_	EM7431		Configuration	aline Data History	▲ 💠 More▼ 🔊
MH_EM7431				Initial Dashboard	+ : 🗆 👁
System Communication	n				
	Comm. Status	Last seen	Next co	omm. (ETA) Sync	: status
	0	a minute ago	Any	time now	Ø
System Alerts Name	Creation Date No data	System Operations install applicatio Synchronize Sys Reboot System Install applicatio Install applicatio	n s fev soc tem 14 min 40 min n 44 min n 44 min	Include Inc	Sundar Norway n Poland Germany Poland Germany Poland Poland Foregram Poland Pol
	(All »)		(All »)	uelGoogle Keyboard sho	Nigeria rtcuts Map data ©2022 ^o Terms of Use

6. Click **Install application** to view installation details.

Install application		
UID Created Finished Launched by Application	cfa1f05924c245058c54f287339d3027 20 minutes ago 10 minutes ago	Refresh
MH_EM7431		Details » 10 minutes ago

Advanced Settings

You can use AirVantage Portal to update device firmware at a specified time and receive notification upon completion of the upgrade.

To schedule firmware update and enable notification:

1. In the **Upgrade Firmware** window, click the arrow next to **Advanced settings**. The fields display.

Upgrade Firmwa	re		
Upgrade EM7431 Firmware on System 350810960102935			
 Upgrade to the lat EM743 	rest firmware 11 GENERIC Release 16 (9907259-002.036.001)		
Upgrade to another	er firmware (<i>Advanced</i>)		
Firmware	EM7431 GENERIC Release 16 (9907259 👻 Q		
Advanced settings	•		
Scheduling	Next connection 👻 🗰 👻		
Timeout	•		
	Send email notification when operation completed		
Select binary	Select binary		
	Upgrade Firmware Cancel		

2. In the **Scheduling** field, select **Next connection** and click the calendar tab next to it. Select the required date and time for **Next connection**. Once the connection is initiated, the firmware upgrade starts.

Use the **Timeout** option to upgrade firmware within a specific time frame. If the device is unable to establish a connection, it stops trying to initiate a connection after the specified **Timeout**.

If the firmware download or installation is still in progress at the specified **Timeout**, the process aborts.

- 3. Select the **Send Email notification when operation completed** option to receive notification.
- 4. Click Upgrade Firmware.