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MQTT BRIDGE

INSTALLATION GUIDE

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1.0	October 9, 2019	Released	A.Panchal	Initial draft, mostly taken from customer feedback and internal process review. This MQTT Bridge Installation is intended to enable the customers to utilize the OAM features available on Tektelic NS.
2.0	December 10, 2021	Released	E.Mcmurphy	Updated to include new procedure for gateways with newer BSP's or higher (Micro 3.3.5, Macro 4.3.1, Mega 4.3.2 & Enterprise Gateways)

Table of Contents

List of Figures	4
1 Introduction	5
1.1 Overview	5
1.2 Scope	5
1.3 Install MQTT-Bridge	5
4 Configure MQTT-Bridge	6

List of Figures

Figure 1-1 Installing tektelic-mqtt-bridge	6
Figure 1-3 Entering User and Password to Complete MQTT Bridge Configuration	9
Figure 1-4 Successful MQTT-Bridge Connection 1	0

1 Introduction

1.1 Overview

This document provides an installation and configuration procedure for Tektelic MQTT Bridge software on Kona Gateway family developed by TEKTELIC Communications Inc.

1.2 Scope

The requirements for installation and configuration of the MQTT Bridge on gateways older than

- Micro BSP 3.3.X
- Micro Outdoor BSP 1.0.X
- Mega BSP 4.3.X
- Macro BSP 4.3.X

are that the gateway is connected via ethernet and the KonaFT tool is installed on a computer belonging to the same network.

For gateways newer or equal to BSPs above, the gateway will need to be connected via ethernet and SSH access to the gateway.

1.3 Install MQTT-Bridge

MQTT Bridge software package isn't installed by default even if the Kona GW is equipped with latest BSP release. For example, the latest BSP release as of November 2021 for Kona Micro GW is v3.3.5 and Kona Macro GW is v4.3.1. Thus, below procedure must be followed to install Tektelic MQTT Bridge software through KonaFT tool.

1) Go to **Board Details** and select **SW Management** tab. Click on "**Read Installable**" and Select **tektelic-mqtt-bridge**.

Short List * Read	Versions			Bsp Status Read Upgradable Read Installable Install All Install Selected		
		Component		Version		
86 python-sqlite3-tests			2.7.13-r1			
87 python-syslog			2.7.13-r1	2.7.13-r1		
88 python-termina	al		2.7.13-r1	2.7.13-r1		
89 python-tkinter			2.7.13-r1			
90 python-unittest			2.7.13-r1			
91 python-unixadr	nin		2.7.13-r1			
92 python-xml			2.7.13-r1			
93 python-xmlrpc			2.7.13-r1			
94 python-zlib			2.7.13-r1			
95 python3-pip			9.0.1-r0			
96 python3-setuptools			36.2.7-r0			
97 rdfind			1.3.4-r0	1.3.4-r0		
98 tektelic-mqtt-bridge			1.0.1-r11	E		
99 tektelic-snmp-r	nibs		0.43-r5			
Upgrade Servers				ha		
Туре	Name		Path	Read Server Config		
1 src/gz	bsp	file:///lib/firmware/bsp		E Add Entry		
2 src/gz	fe-fpga	file:///lib/firmware/te-fpga-geo				
2 src/07	gpio-fpga	gpio-fpga file://lib/firmware/gpio-fpga ~ Write Server Config				

Figure 1-1 Installing tektelic-mqtt-bridge

2) Click "Install Selected". The installation takes about 30 seconds.

4 Configure MQTT-Bridge

For Gateways with BSP's older than the BSP's outlined in the Scope

1) Click on the "**Configuration**" menu of KonaFT and in the window between the "Refresh files" and "Read" buttons type the following:

/etc/default/mqtt-bridge.conf

2) Click the "Read" button. Use the window scroll bar to scroll through the text and find gw_user and gw_password. Record the gw_user and gw_password - this information will be used for configuration on the TEKTELIC network server or TEKTELIC OAM server (if using a different vendor's network server).

*Please note that the OAM server is designed for use with third party network servers and cannot be used in conjunction with the Tektelic NS.

*Please note that unused files should be commented out. For example, if you are using Tektelic NS and are not using Geolocation or OAM, the fields within the mqtt-bridge.conf file should be commented out. These fields are **oam_host**, **gw_oam_user** and **gw_oam_password**.

II KonaFT	
Preferences Tools	
General Board Details Utilities Configuration Firewall Wireless Modem HM Alarm Log	
Factory Denaut Kettesh mes /etc/denaut/mgtt-onoge.com • Kead write	Delete
and the second s	^
den ju te jinit junge	
## Value bare is provided only for a reference. When running real gateway,	
## one must place nere _rea_gateway mak value. ##	
gateway_mac 64/HJAFHE006996	
## Network Server host address. Required. ## Value here provided only for a reference. When running in real environment,	
## one must place here _real_NS address. ##	=
## It takes the form protocol://hostport. ## Currently, protocol can be top or soi. When no protocol is given, TCP is used.	
## When port is not given, default 1883 is used. ##	
## For example, to connect to the secure instance of the Network Server, ## where secure MQTT is running on port 8883, use:	
## ## ssi://ns.textelc.com:8883	
## tek-ns-us.thinasboard.jo	
## Network Server type, Optional. Default value is "tektelic".	
## Value here provided only for a reference. When running in real environment, ## one must place here real_NS type.	
## ## Droschle values are: "hettels" ("Trocas"	
## could take are to bread + ## ns tune taktelir	
** The asterior uncertained from the Network Server, Ontional	
## Value here provided only for a reference. When running in real environment, ## endow must have here used. When teresting when running in real environment,	
## dic inde place here to decinance.	
##	
## The governing particle relation of the reference! When running in real environment, ## Value here provided only for a reference! When running in real environment, ## one particulars because real. NS second	
	*
IP Address 10.7.7.103 SNMP V2c V	
Port 161 Stop Initialized Reboot LORA IEKIE	LIC
Host IP Auto V Update Host IP Pol Now Do Not Pol	tions
GUI S/W v0.30 GPIO FPGA v 0x5007.24 BSP v 2.2	2.1 Agent v.0.43

Figure 1-2 MQTT-Bridge Configuration (Up to 3.0.4 Micro, 4.0.3 Macro and 4.0.2 Mega): Read gw_user and gw_password (B)

For Gateways with BSP's equal to or newer than the BSP's outlined in the scope:

- 1) Using SSH access, connect to the gateway and navigate to */etc/default*. Here you will find the following configuration files:
 - a. tektelic-bridge.geo.toml (Geolocation Config File)
 - b. tektelic-bridge.ns.toml (Network Server Bridge Config File)
 - c. tektelic-bridge.oam.toml (OAM Config File)
 - d. tektelic-bridge.toml (Gateway Bridge Config File)

*Please note that the OAM server is designed for use with third party network servers and cannot be used in conjunction with the Tektelic NS. *Please note that unused files should be commented out. For example, if you are using Tektelic NS and are not using Geolocation or OAM, the fields within **tektelic-bridge.geo.toml** and **tektelic-bridge.oam.toml** should be commented out.

- 2) Run the command below to view and edit the desired configuration file:
 - a. vi tektelic-bridge.ns.toml (View & Edit Network Server Bridge Config File)
 - b. Scroll through this file and find the gw_user and gw_pass fields. Record the gw_user and gw_pass this information will be used for configuration on the TEKTELIC network server or TEKTELIC OAM server (if using a different vendor's network server).

*Note, Because Tektelic NS is being used, we will not be using OAM server and as such, the **tektelic-bridge.oam.toml** file should be commented out.

*Note SSH Login credentials for the Enterprise Gateways will use the username "**admin**" instead of "root" as root access is disabled on Enterprise Gateways. "sudo" must be added as a prefix to the vi command.



Figure 1-3 MQTT-Bridge Configuration via SSH (equal or newer than BSP outlined in scope)

- 3) Log in to the TEKTELIC network server (or, alternatively, TEKTELIC OAM server) and select "Gateways Groups", and select the gateway group containing the gateway of interest.
- 4) Click on "Manage Gateways" and select the gateway of that you are configuring.
- 5) Press the "Manage Credentials" button and type in the username and password obtained by looking at the **mqtt-bridge.conf** file on the gateway. For gateway BSP's equal to or

newer than the BSP'S outlined in the scope as well as Enterprise Gateways, this username and password can be found in the **tektelic-bridge.ns.toml** file.

TEKTELIC	ᆲ Gateway groups 🛛 >	🚜 Gateways		C3 O Tom Danshin E Customer administrator
HOME	Gateways: Gateways		1830D0054 Gateway details	
CATEWAY GROUPS Cateway GROUPS Cateway GROUPS Cateway GROUPS Cateway Locs Cateway Locs Cateway Locs Cateway	Created Time 2019-03-08 14:42:45 2019-02-08 14:51:12 2019-02-09 13:51:15 2019-02-09 13:51:15 2016-10-24 11:13:20 2016-09-28 06:51:16	Name 1817x0001 1830D0054 1840D138 1830D0058 1818x0002	MOVE TO GATEWAY GROUP MANAGE CREDENTIALS DELETE C GATEWAY DETAILS LOCATION EVENTS STATISTICS CONFIGURATION COMMANDS BACKUPS COPY GATEWAY ID SPECTRAL SCAN SPECTRUM ANALYZER RADIO STATISTICS GATEWAY INFO Status Coffline Credentials X Last activity time 2019-03-13 09:47:48 Nexes Basic	FREWALL SW MANAGEMENT >
	2017-10-13 13:47:45	174100029	Owner Currentman 647FDAFFFE005070 Parameter Currentman Parameter Currentman Parameter Currentman SAVE Public Log SAVE Cancel Insactivity timeout (sac) Description Frequency land Cancel 667-869MHz 16 Ownerdit BW Up Cancel BW Up	19/18

Figure 1-2 Entering User and Password to Complete MQTT Bridge Configuration

- 6) Press the "**save**" button.
- 7) The gateway and network server should now be configured to display gateway OAM information on the network server or OAM server interface. By this time, MQTT Bridge would have been configured on the GW.
- 8) This step actually verified whether the MQTT Bridge is operating correctly. Wait two minutes and click on the "Gateway Info" button. If the MQTT Bridge is configured correctly, the gateway information should be displayed as shown below.

TEKTELIC	🝶 Gateway groups 🛛 >	🝶 Gateways		C B Tom Danshin Customer administrator
HOME	Gateways: Gateways		1830D0054	
🛃 GATEWAY GROUPS	Created Time	Name	Gateway Info ×	
DEVICE MODELS	2019-03-08 14:42:45	1817K0001	< Module Name CONFIGURATION	COMMANDS BACKUPS FIREWALL SW MANAGEMENT >
# APPLICATIONS	2019-02-21 15:18:12	1830D0054	Macro Kona Io STATISTICS	GATEWAY INFO
SUB-CUSTOMERS	2019-02-06 13:51:15	1830D0058	Start T0005131 Last activity time On 2019-03-13 11	:41:54 DISABLE
🍅 alarms	2018-09-28 08:51:16	1818K0002	Nen C 18:	
	2017-10-13 13:47:45	1741D0029	Serial Number gw. 1830D0054 647 Galerana ID	
			GATERD GATERDOSD7C GATERDOSD7C Montesettin 10.7.7.113	16/16
			Interface www.m0	
			De	
			Frequency band Channels 867-869MHz 16	
			Channel BW Up Channel B 125/250kHz 125kHz	W De

Figure 1-3 Successful MQTT-Bridge Connection