

TITAN ROUTER Application Note 69

Sending data to the eSight platform

www.webdyn.com

Sending data to the eSight platform

1. Scenario Details

TITAN routers have all the typical functionalities of 4G/3G/2G routers, as well as a series of added features that make them one of the most feature-packed routers on the market.

One of the added features is the datalogger, where the TITAN router can store a number of types of records in its non-volatile memory in JSON format. These records can come from MODBUS readings, SERIAL data captures via the RS232 / RS485 ports, or GPS positions, etc. These JSON-type records are stored in the TITAN router's internal non-volatile memory and can subsequently be sent to remote platforms via protocols such as HTTP, HTTPS, MQTT, MQTTS, FTP and FTPS.

As mentioned, the TITAN router stores the JSON registers in its internal memory in a proprietary format by default. This can sometimes be a problem when communicating with platforms that expect to receive information in a certain format (i.e. a format other than JSON, the one used by the TITAN router).

In this application note, we will guide you through an entire example of how send to data to the well-known MRI eSight platform (https://www.mrisoftware.com/products/esight-energy-management-software).

In this particular case, we will assume that 2 registers are to be read from 2 PLCs with Modbus communications connected to a Webdyn - EasyTunnel via their RS485 port.



More specifically, the aim is for the WebDynEasytunnel device to read the Modbus registers with addresses 40000 and 40001 of PLC1, and registers 40000 and 40001 of PLC2 every minute. In both PLCs, register 40000 corresponds to the measured temperature, and register 40001 to the humidity level. The readings taken must be stored in the internal non-volatile memory of the Webdyn EasyTunnel (in its datalogger), which must send the read data to the MRI eSight platform whenever possible (coverage, IP connectivity, etc.). Communication with the PLCs is carried out via an RS485 bus with a 9600,8,N,1 configuration.

2. WAN mobile configuration

The Webdyn EasyTunnel must communicate with the MRI eSight platform via 4G/3G/2G communications, so the "Mobile>Basic Settings" section must be configured correctly according to the SIM card used.

Basic Skitings	Mobile WAll	Enabled (IP active)	.*	Enable Winnless WAN Interface
out on the	tilm Mode	SIM1	×	the selection
hernet Fasic Sattings				
and a second	SEM1 APR	movislar es	3	SEDY Card 1 APN
Lutterized (Pc	82M1 Username:	WOVISTAR	1	SDH Carll 1 usemione
al Settings	SIM1 Received:		5	SIN Cant 1 parment
ental Ports #5232	SPACE PROCESSION	1	1	MPCOARD, PIN C
SL Cartilicatas	5011 4401	how	*	5tH card 1 authentication
ternal Devices appr configuration sources tenene Social Device tenene Social Device tenene Social Device tenene Social Device tenene Social Device Table Social Social Device tenene tenene	SDH2 APHL SDH2 Username SDH2 Rassword) SDH2 Rath	Auto	,	SIM Card 2 APN SIM Card 2 assemance SIM Card 2 password SIM Card 2 PIN SIM card 2 PIN SIM card 2 authoritication
11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1		19270		
t Command ysDrix wate DynDra	network selection:	Aute (49/39/26)	*	Instacrs polecter
ma control modic Autoream	DNS selection:	Get CNS 9am Operator	¥	
ee Severa	0451	1813	1	Professed DND1
ATTITUTE CONTRACTOR				256 - 250 C 252 - 25

3. Configuring the RS485 serial port

The two PLCs will connect to 9600,8,N,1 via the RS485 serial port, so the "Serial Settings> Port2-RS485" section must be configured by setting the parameters as shown below.

a Rasic Settings	Raudrotet	9600 W		Randrate of certal port		
 Keep Ordine 	Data bitar	0,	~	Number of data bit		
Ethernet	Failty:	nene	~	Parity		
Contract of the last	Stop bits:	1		number of stop sits		
e Authorized Ins	Timeout ma:	50	1	misse without sartal data hafner seveling (default: 50)		
Serial Settings						
Serial Purt2-RS485	Allow local embed	led AT command	Ex.: <mtxtunnel>AT</mtxtunnel>			
e not commune	Allow remote emb	dded AT comm	EX.: <mtcturnelrsat< mtxturnelrs<="" td=""></mtcturnelrsat<>			
External Devices	Allow incoming GS	M call (CSD Dal	Only TCP Server and TCP Client functions Nothing, 25 (CSU) network required.			
Hudbus Devices Genetic Settal Device Temperature Sensor IEC102 Meter	Tunction: Nothing	or used by Exte	mal Device (er Script		
Hudbus Devices Generic Serial Device Temporature Sensor EC102 Meter CPS Receiver	• Function: Nothing	or used by Exte IP Galewey (TC	rnal Dovice (P Server)	ir Script		
Hudbus Devices Generic Sertal Device Temporature Sensor EC102 Hebr GPS Receiver Plugues Generic	Tunction: Nothing O Function: Seriel - TOP Local Port:	or used by Exte IP Galeway (TC 20011	mal Dovice (P Server)	e Script		
Nudbus Device Generic Serial Device Temporature Sensor TEC102 Motor GES Receiver Plugins Generic Other	Function: Nothing O Punction: Serial - TOP Local Port: Iemsoral client RS232	or used by Este IP Galeway (10 2001	rnal Dovice (P Server)	e Script Listening TCP Part (1 63333) Check F you meet a terriporal TCP Client whe		
Hudbar Devices Generic Settal Device Temperature Sensor Settal Veter CPS Receiver Plagns Generic Other AT Command Ancher	Tunction: Nothing O Punction: Serial - TCP Local Port: Isenporal client RS232 Tamporal client Wakaup	or used by Este	rnal Dovice (P Server)	Listening, TCP Port (1, 65333) Chack IF you need a temporal TCP Client who data is present at sorial poir. DDHRMM, Example: XX200 starts a tempor plent severy day at 2210		
Hudbas Devices Generic Settal Device Temperature Sensor EC029 Meter EC029 Meter EC039 Receiver Plagns Generic Other AT Command DynDox Entrate DynDox	Tunction: Nothing O Punction: Seriel - TCF Local Port: Isingoral client RS232 Tomporal client Wakeup Temporal client time:	or used by Exto IP Galeway (10 2001)	P Server)	Listening, TCP Port (165333) Check IF you need a temporal TCP Client who data is present at sorial port. DDHIMM, Example: XX2208 starts a tempor elemit severy day at 22100 Seconds for temporal client		
e Hudbas Devroes • Generic Settal Devroe Temperature Sensor • EC102 Meter • CPS Receiver Pluges • Generic Other • AT Command • DysDos • Frivals DysDos • Sme control • Sme control	Tunction: Nothing O Punction: Seriel - TCP Local Port: Iemporal client RS232 Temporal client time: Temporal client time:	or used by Exte IP Gateway (TC 20011 GC GC 0	mal Dovice (Listening, TCP Port (1, 65533) Check IF you need a temporal TCP Client whe data is present at sorial port. DDHIMM Example: XX200 starts a tempor client every day at 2210 Seconds for temporal client Seconds Random time for temporal client Weakno.		

4. Logger configuration

The next step is to configure the internal datalogger of the WebDyn EasyTunnel. Go to the "External Devices > Logger configuration" menu. The configuration should be similar to the one shown in the screenshot below:

Status Basic Settings	ID:	ID000	Optional. Device identification			
Keep Online	Send mode:	FIFO	Send mode (normally FIFO)			
Ethernet	Time format:	std (dd/mm/yyyy HH:mm:ss)	Time format used in timestamp logger data			
Basic Settings DHCP Server	Use script:	0	Check for customized json using 'Json Transformer, Script' in Script section			
wifi	Use array:	0	Check if you want to send more than one ISON per transmition			
Basic Settings DHCP Server	Check date:		Save data in Logger only if date has been (check Time Servers)			
Firewall o NAT o Authorized IPs	Communication mo Enabled:	de: WEB PLATFORM (HTTP	REST) Communication mode HTTP enabled			
Firewall O NAT O Authorized IPs O MAC Filter O Routes	Communication mo Enabled: Mode:	de: WEB PLATFORM (HTTP	Communication mode HTTP enabled			
Firewall • NAT • Authorized IPs • MAC Filter • Routes Serial Settings • Serial Port1-RS232 • Serial Port2-RS232	Communication mo Enabled: Mode: Custom header1: Custom header2:	de: WEB PLATFORM (HTTP	REST) Communication mode HTTP enabled Method of sending data Optional. Custom header1. For example: Content-type;application/json Optional. Custom header2. For example: IDENTITY_KEY;YOUR_KEY			
Firewall NAT Authorized IPs Authorized IPs Authorized IPs Authorized IPs Authorized IPs Serial Settings Serial Settings Serial Port1-RS232 Serial Port2-RS485 SEL Certificates	Communication mo Enabled: Mode: Custom header1: Custom header2: Custom header3:	de: WEB PLATFORM (HTTP	REST) Communication mode HTTP enabled Method of sending data Optional. Custom header1. For example: Content-type;application/json Optional. Custom header2. For example: IDENTITY_KEY;YOUR_KEY Optional. Custom header3.			
Firewall NAT Authorized IPs MAC Filter Routes Serial Settings Serial Port1-RS232 Serial Port2-RS485 SSL Certificates External Devices	Communication mo Enabled: Mode: Custom header1: Custom header2: Custom header3: Server:	de: WEB PLATFORM (HTTP	REST) Communication mode HTTP enabled Method of sending data Optional. Custom header1. For example: Content-type;application/json Optional. Custom header2. For example: IDENTITY_KEY;YOUR_KEY Optional. Custom header3. Destination URL. Example: www.mydomain.com/setdata.php			
Firewall NAT NAT Authorized IPs Authorized IPs MAC Filter Routes Serial Settings Serial Settings Serial Port1-RS232 Serial Port2-RS485 SSL Certificates External Devices Logger configuration A ModBus Devices	Communication mo Enabled: Mode: Custom header1: Custom header2: Custom header3: Server: Server Username:	de: WEB PLATFORM (HTTP	REST) Communication mode HTTP enabled Method of sending data Optional. Custom header1. For example: Content-type;application/json Optional. Custom header2. For example: IDENTITY_KEY;YOUR_KEY Optional. Custom header3. Destination URL. Example: www.mydomain.com/setdata.php Optional. Blank if no server authentication required			

The following parameters are particularly important:

• "ID" will provide the register with a unique identifier. This serves as the first part of a unique identifier (eSight import code).

- "Send mode": select FIFO.
- "Time format": you must select the "std" format.
- "Check date": check the box.
- "Mode": select HTTPS POST (JSON).
- "Server": enter the server URL here and put your eSight webhook in the box.

5. Configuring the Modbus section

In this configuration section ("External Devices > Modbus Devices"), you will configure the Modbus readings to be performed on the 2 PLCs.

Keep Online	Enabled: Serial Port: Logger:		Serial Port 2 V			Enable Modbus Devices Select the connected serial port if needed Check if logger must be used Please, configure logger before using this					
Ethernet											
Basic Settings DHCP Server											
• Wili • Basic Settings • DHCP Server	SAVE CONFIG		VIEW LOG	i V		option					
Firewall o NAT	Dev. name	Addr.	Comm.	Start @	Num	1 word/bit	Reg Type	Period	-		_
Authorized IPs MAC Filter	PLC1	1	0x04	40000		2	WORD	1	Edit	Del	Tes
• Routes	PLC2	2	0x04	40000		2	WORD	1	Edit	Del	Tes
Serial Settings Serial Port1-RS232 Serial Port2-RS485 SSL Certificates External Devices	Device name / ID: Address: Command: Start: Number Words / Bits: Reg Type: Period:		PLC2 2 0x04 40000 2 WORD 1			Insert the device name or ID Modbus RTU address or IP:port address Modbus read command Address of the first register Words for command 0x03/0x04. Bits for 0x01/0x02 Type of registers for command 0x03/0x04 Read period (minutes)					

You will also enable the Modbus service by checking the "Enabled" box. You must select "Serial Port 2", since the reading will be made via the RS485 port. You must then check the "Logger" box, since the Modbus registers read from the PLCs must be stored in the internal datalogger of the Webdyn EasyTunnel.

Two devices must also be created, which we have called PLC1 and PLC2 in this example, serving as the second part of a unique identifier (eSight import code). In the "address" field, you must indicate the Modbus address of each of the PLCs, so "1" in PLC1 and "2" in PLC2. The Modbus command you will use to read registers 40000 and 40001 will be 0x04, so select 0x04 in the "Command" field. The register that will start to be read in both PLCs is register 40000, so enter 40000 in the "Start" field. The aim is to read 2 Modbus registers from each PLC (40000 and 40001), so enter 2 in the "Number Words" field. Select "WORD" for the register type ("Reg Type") and 1 for the "Period", because we want to receive readings from the Modbus registers every minute.

6. Configuration in eSight

The standard JSON format generated by the Webdyn EasyTunnel with the data read will take the following format:

{"IMEI":"869101054286683","TYPE":"MODB","TS":"2022-11-11T12:17:00Z","ID":"PLC1","A":"1","ST": "40000","N":"2","V":[225,62],"P":"ID000"},

{"IMEI":"869101054286683","TYPE":"MODB","TS":"2022-11-11T12:17:01Z","ID":"PLC2","A":"2","ST": "40000","N":"2","V":[225,62],"P":"ID000"}

You must therefore create a short script to adapt the format to the needs of the eSight platform. Here is a potential example code:

let inJSON = JSON.parse(inData);

let meter_id = inJSON.ID; let site_name = inJSON.P; let timestamp = inJSON.TS; let value = inJSON.V[0];

// May need to change/remove indexing

let r = new eS.MeterReading();
r.MeterIdentifier = site_name + "_" + meter_id;
r.Timestamp = timestamp;
r.Value = value;

outData.push(r)
// Un-comment above line when device is setup

Any questions?

Please direct your enquiries to soporte@matrix.es