

RediGate Diagnostics Manual

▼ Elecsys Product and Support Information



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Electrostatic Discharge (ESD) Protection

These units contain devices that could be damaged by the discharge of static electricity. At all times, please observe industry standard ESD precautions when handling the unit.



WARNING: DO NOT CONNECT OR DISCONNECT CABLES WHEN ENERGIZED, UNLESS POWER HAS BEEN REMOVED FROM THE EQUIPMENT OR THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS OF FLAMMABLE SUBSTANCES.

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Introduction

This manual describes diagnostic capabilities and some troubleshooting information for the RediGate industrial data gateway products, including:

- RediGate MMI user diagnostic menus
- Linux console commands
- UBoot, Bootloader, and startup sequence

The Elecsys gateway products are multi-function communication interface devices, which can be configured for many different types of applications such as protocol conversion, data concentration, and report-by-exception of data. Diagnostics are available to diagnose communication problems and to verify proper operation of every aspect of the system.

Some features described herein may only be available on more recent software releases of the gateway device. Variations between different product models will be distinguished where needed.

Configuration Requirements

This document refers to the gateway configuration or "ACE configuration," which is created and uploaded to the RediGate using the ACE Configuration Editor. See the article [Installing ACE](#) and the <http://partner.elecsyscorp.com/manuals> page for documentation on using ACE to configure the RediGate.

Serial Diagnostics

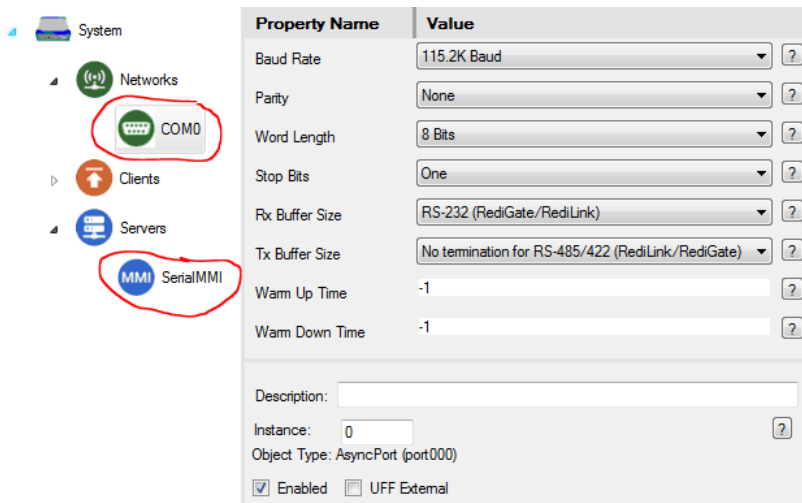
The RediGate typically uses **COM0** for a local serial diagnostics port. When the RediGate is powered on, it sends startup messages to its COM0 port. A terminal program must be set up with communication parameters configured for a baud rate of 115,200, no parity, 8 bits, 1 stop bit.

RediGate 100 series: COM0 is available via the Micro-USB port on the front of the device. See the article [Installing USB Driver](#) for installing the required USB serial driver in Windows.

RediGate 400 series: COM0 is a DB-9 RS-232 port. Pinout is: pin 3–TX, pin 2–RX, pin 5–GND (use a null modem serial cable to a configuration computer).

In order to use the serial diagnostics (MMI or Linux console) after startup, the following objects are **required** in the RediGate configuration:

- **COM0** (AsyncPort instance 0, under Networks) - Should have 115.2K baud, and -1 for Warm Up and Warm Down Time.
- **Serial MMI** (under Servers) - Should have COM0 selected for Com Port.



Network Diagnostics

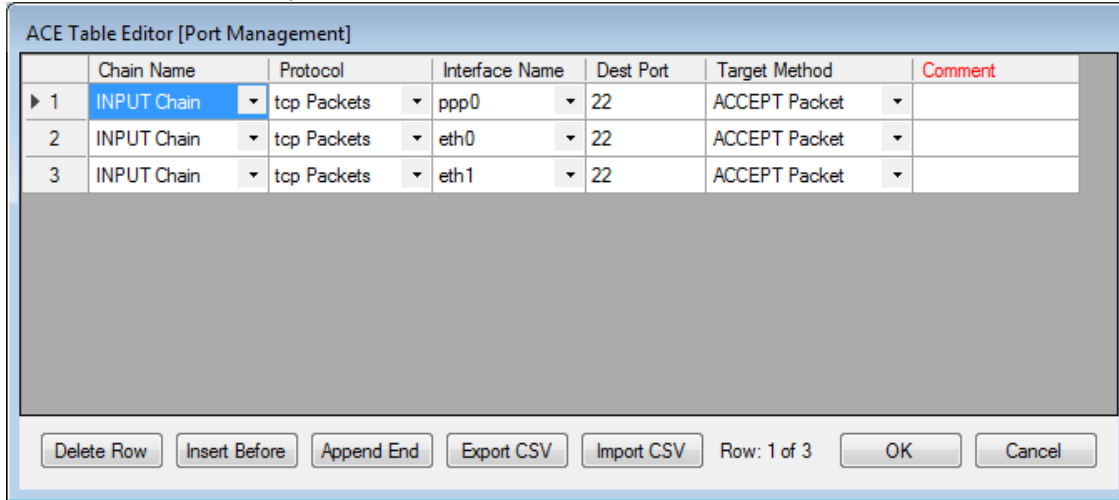
Diagnostics are available through a network connection via a secure shell (SSH) login, typically using IP port 22.

In order to use network diagnostics, the following things are required in the RediGate configuration:

- A RediGate with Ethernet must have an **IP address** configured to an Ethernet port;
- and/or, the RediGate must have the **cellular modem** configured, and have an activated cellular account that allows *mobile-terminated* connections.

(NOTE: Some cellular account activations do not allow SSH connections to be made to cellular device. Check with your account provider for information on this.

- The **Firewall** configuration must allow a user to make an SSH connection to the RediGate. In the Port Management table, include one or more entries to ACCEPT TCP port 22, such as:

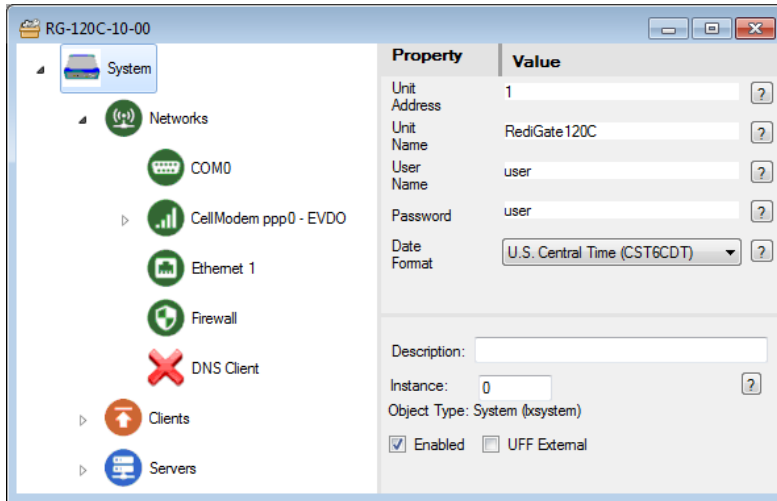


User Accounts

The RediGate has three different user accounts that can be logged into for different purposes.

User Account	Password	File Transfer	User Menu Login	Linux Command Prompt
user (depends on ACE System object configuration)	user (depends on ACE System object configuration)	COM0 <u>ONLY</u> No file transfer over TCP (SSH)	YES COM0 or TCP (SSH)	NO
Dirupld	user (depends on ACE System object configuration)	TCP (SSH) <u>ONLY</u> No file transfer over COM0	NO	Yes (limited permissions)
root	(contact Elecsys for default password)	TCP (SSH) <u>ONLY</u> No file transfer over COM0	NO (but can use 'su user' to start the MMI)	YES COM0 or TCP (SSH)

- **User Account:** Provides access via a terminal console to the RediGate MMI diagnostic menus, described in this document. The User account is also needed to load configurations or other files through the COM0 serial port. The User account is configured in the System object of ACE. The default values for name / password are: **user / user**



When loading files with the User account, they are stored in the /home/director folder until being installed.

NOTE: Do not use the User account when loading files over the network.

- Dirupld (file upload) Account:** Allows a non-root user to load files to the RediGate over the network. The Upload account has a username of **Dirupld** (all lowercase except the first "D", next to last letter is lowercase "L"). The password is the same as the User Account. When loading files with the Upload account, they are stored in the /home/Dirupld folder until being installed.
- Root Account:** Provides administrative access to the Linux operating system and allows loading configurations or other files over the network. The Root account is not configured through ACE for security reasons (see the article [Changing the Root Password](#)). The user name is typically **root** and you can contact Elecsys by email idc-support@elecsyscorp.com for the default root password. Loading files with the Root account allows files to be stored into either the /home/director or /home/Dirupld folder.

NOTE: Do not use the Root or Dirupld accounts when loading files through the serial diagnostics port.

Setting Up Terminal Program

The RediGate diagnostics menu and console are accessed using a terminal program over serial or SSH. There are several terminal programs you can use.

Tera Term: The ACE Configuration Editor (as of version 3.5) includes a built-in option to "Connect to Device." See this article for details: [ACE 'Connect to Device' Menu](#)

PuTTY: See these articles for installing and setting up PuTTY:
[Setting Up Putty for USB Connection](#) (for RediGate 100 series)
[Setting up PuTTY for Serial Communication](#) (for RediGate 400)
[Setting up Putty for Network Communication](#)

ExtraPuTTY: Similar to PuTTY, but with additional options such as serial and network file transfer options. Download ExtraPuTTY from <http://www.extraputty.com/download.php>

RediGate User MMI

Log in to the RediGate using the User account to access the user MMI menus. The following sub-sections describe the diagnostic options for each menu in the user MMI.

Main Menu

After logging in to the MMI, the Main Menu is displayed.

```
===== Main Menu ===== ElecSys(V:5.7.2017-07-24-1300) Wed Jul 26 22:20:20
2017 UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb -----
----- 1) System Services 2) Directory Services 3) Diagnostics Services

99 Log Off

Make selection:
```

The current software version (tarball version, 2017-07-24-1300) is shown in the first line of each menu. On the second line is the Unit Name (Unit Name), Unit Number (1), and Ethernet 0 IP address (192.3.1.10) which are set in the ACE configuration. The second line also includes the serial number (40170-0118), which is unit-specific.

The four menu items under the Main Menu are:

- **System Services** – Enable or disable various RediGate system services.
- **Directory Services** – View or change system files used by in the RediGate MMI.
- **Diagnostics Services** – Enable or disable diagnostics and view diagnostic messages.
- **Log Off** – Close this MMI session and log off the RediGate.

Menus are selected by typing the number next to the item and pressing Enter. Pressing Enter at any menu (except the Main Menu) will return to the next higher menu.

1- System Services Menu

[Main Menu](#) [System Services](#)

The System Services menu is used to restart the system, change the system clock, view the status or enable/disable certain RediGate processes.

Enter 1 at the Main Menu for the System Services menu.

```
===== System Services =====
ElecSys(V:5.7.2017-07-24-1300) Wed Jul 26 22:47:52 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb -----
-----
1) Boot/Reconfigure      2) Set Clock
3) Channel Status       4) Channel Enable/Disable
5) Channel Scan         6) Single Poll
7) RTU Enable/Disable   8) RTU Scan
9) RPN Calculator       10) New Master Key
11) Read Handshake Pins 12) Write Handshake Pins
13) Run Custom Utility  14) MQTTClient to Next Broker
15) Cell Modem Diags

Make selection:
```

1- Boot/Reconfigure

[Main Menu](#) [System Services](#) [Boot/Reconfigure](#)

Use this option to restart the RediGate or to reconfigure it after loading a new configuration or firmware update (the ACE program's upload menu will automatically reconfigure if the "Deploy immediately" box is checked).

Enter 1 for Boot/Reconfigure, and then either: **Y** to confirm the reboot, **N** to cancel, or **R** to reconfigure. The Reconfigure option stops and restarts the RediGate software, whereas the Reboot option restarts the entire Linux operating system.

If a new configuration and/or firmware file has been loaded to the RediGate, it will be installed when the system restarts.

```
===== Boot/Reconfigure Director =====
ElecSys(V:5.7.2017-07-24-1300) Wed Jul 26 23:04:38 2017
```

```
UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb
```

```
-----  
WARNING! Restarting unit will terminate all polling!  
Non Auto-Start Channels must be individually restarted!  
Enter 'Y' or 'N' to reboot, or 'R' to reconfigure.
```

```
Restart Unit (Y/N/R) ? r
```

2- Set Clock

[Main Menu](#) [System Services](#) [Set Clock](#)

Manually set the RediGate date and time. In systems where the RediGate has NTP (Network Time Protocol) configured, or is connected to an HCP, or is configured to get time through GPS, the clock should be automatically updated, so there is no need to set it through the MMI.

Enter **2** for Set Clock, then enter the new date and time of the system using the following format: **MMDDhhmmYYYY.ss** where MM=month, DD=day, hh=hour (00 to 23), mm=minute, YYYY=year, and (optional) ss=seconds.

```
Set Date & Time? (Y/N) y  
Mon Jul 31 11:02:26 UTC 2017  
  
Note: MMDDhhmmYYYY ...includes leading zeros  
(Examp. New Years Eve of 2015 : 123123592015) :  
(Examp. Two seconds til 2016 : 123123592015.58) : 073112002017  
Mon Jul 31 17:00:00 UTC 2017  
  
Write to Hardware clock (Y/N) ? y  
  
Wrote system time to hardware clock  
  
Press ENTER to continue
```

3- Channel Status (System)

[Main Menu](#) [System Services](#) [Channel Status](#)

List status of each Master Channel.

Enter **3** for Channel Status. Enter **Y** to redisplay or **L** to view a log of Enable and Disable commands that have been received. Press the Space bar to page through the log.

```
Channel Status  
  
Chan Name          Status    Rtus Time  
==== =====  
  0 Channel0       w/Errors    1 Mon Jul 31 19:38:20 2017  
  2 Master Channel Normal      1 Mon Jul 31 10:56:57 2017  
 15 Channel15     Normal      1 Mon Jul 31 10:56:57 2017  
  
Redisplay (Y/N/L where L is Log of Enables/Disables) ? L  
  
Press SPACE to advance through log. Q to Quit  
Mon Jul 31 19:37:52 UTC 2017 Channel-0: Enable  
Mon Jul 31 19:33:32 UTC 2017 Channel-0: Disable
```

See [Channel Status](#) for details on the Master Channel status information.

4- Channel Enable/Disable

[Main Menu](#) [System Services](#) [Channel Enable/Disable](#)

Enable or disable all polling on a Master Channel.

Enter **4** for Channel Enable/Disable. Enter the channel number, then either **0** to Disable or **1** to Enable the channel polling.

```
Channel Enable/Disable  
  
Chan Name          Status    Rtus Time
```

```

=====
0 Channel0      w/Errors      1 Sun Aug 13 08:06:11 2017
2 Master Channel Normal        1 Sun Aug 13 08:03:41 2017
15 Channel15   Normal        1 Sun Aug 13 08:03:41 2017

Channel 0-15 0

0=Disable 1=Enable ? 0

Channel(0) Disable sent

```

See [Channel Status](#) for details on the Master Channel status information.

When a channel is disabled, it will have a status "Suspended" and its Field Units will typically have the status "Stopped."

```

===== Rtu Status =====
ElecSys(V:5.7.2017-08-07-1200) Sun Aug 13 08:16:05 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Chan Name          Status      Rtus Time
=====
0 Channel0        Suspended   1 Sun Aug 13 08:15:58 2017
2 Master Channel  Normal     1 Sun Aug 13 08:03:41 2017
15 Channel15     Normal     1 Sun Aug 13 08:03:41 2017

Enter Channel (0 to 15, -1 for all) ? 0

-----RTU-----      -----POLL-----      -----ERRORS-----
Addr Name          Protocol Status      Time      Count  TimOut  BadData  Frame
-----
1 Modbus01         MBMAST00 Stopped    08:15:58      0     656      0      0

```

5- Channel Scan

[Main Menu](#) [System Services](#) [Channel Scan](#)

Trigger one complete scan of a Master Channel, regardless of its enable/disable status or the length of the configured Scan Periods. Scanning the channel will put it back into Enabled mode.

Enter **5** for Channel Scan. Enter the Master Channel number, and **Y** to trigger the scan.

```

Channel Scan

Chan Name          Status      Rtus Time
=====
0 Channel0        Suspended   1 Sun Aug 13 08:15:58 2017
2 Master Channel  Normal     1 Sun Aug 13 08:03:41 2017
15 Channel15     Normal     1 Sun Aug 13 08:03:41 2017

Channel 0-15 0
Scan Channel-0 (Y/N) ? Y

Channel(0) sent scan all

```

6- Single Poll

[Main Menu](#) [System Services](#) [Single Poll](#)

If you have a long poll interval for one or more scans in a Master Channel, use the Single Poll option to execute the scan on demand.

Enter **6** for Single Poll. Enter the Master Channel number, **Y** if you want to view the Scan Table configuration, and the Index number of the scan to run immediately. The poll will be sent even if the Channel or RTU are disabled.

```

Single Rtu Poll

Chan Name          Status      Rtus Time
=====

```



```

0 Channel0          Suspended    1 Sun Aug 13 10:00:02 2017
2 Master Channel   Normal      1 Sun Aug 13 09:59:02 2017
15 Channel15      Normal      1 Sun Aug 13 09:59:03 2017

Channel 0-15 0

-----RTU-----
Addr Name          Protocol Status      Time      Count  TimOut  BadData  Frame
-----
1 Modbus01         MBMAST00 No Polls 10:00:03      0      3      0      0
Do you want to see the Scan Table? (y/n) y

Index RtuAdr  Poll  Rate(Sec)
  0     1     1    3600
  1     1     2     60

Enter Scan Index (0 to 1) 0

Channel(0) sent scan all

```

7- RTU Enable/Disable

[Main Menu](#) [System Services](#) [RTU Enable/Disable](#)

Disable polling of a single Field Unit on a Master Channel.

Enter **7** for RTU Enable/Disable. Enter the Master Channel number and the Field Unit address to disable.

Enabling an RTU does not currently work (as of 8/17/2017). Instead, use RTU Scan or Channel Scan to re-enable the device polling.

```

Rtu Enable/Disable

Chan Name          Status      Rtus Time
====
0 Channel0        Suspended    1 Sun Aug 13 10:12:25 2017
2 Master Channel   Normal      1 Sun Aug 13 09:59:02 2017
15 Channel15      Normal      1 Sun Aug 13 09:59:03 2017

Channel 0-15 0

Addr Name          Dbg? Protocol Status
-----
1 Modbus01         ON  MBMAST00 Stopped
Enter Rtu to Modify 1

0=Disable, 1=Enable ? 0

Channel(0) sent Rtu0001...Disabled

```

8- RTU Scan

[Main Menu](#) [System Services](#) [RTU Scan](#)

If you have a long poll interval for one or more scans in a Master Channel, you can force all polls to be scanned by selecting the RTU Scan option. This option can also be used to restart polling of an RTU after disabling the Channel or RTU.

Enter **8** for RTU Scan. Enter the Master Channel number and the device address to scan.

```

Rtu Scan

Chan Name          Status      Rtus Time

```

```

=====
0 Channel0      Suspended    1 Sun Aug 13 10:06:54 2017
2 Master Channel Normal       1 Sun Aug 13 09:59:02 2017
15 Channel15   Normal       1 Sun Aug 13 09:59:03 2017

Channel 0-15 0

Addr Name      Dbg? Protocol Status
-----
1 Modbus01     ON   MBMAST00 Stopped
Enter Rtu to Scan 1

Sent Scan RTU 1

```

9- RPN Calculator

[Main Menu](#) [System Services](#) [RPN Calculator](#)

Reverse Polish notation calculator utility allows several simple calculations to be performed within the RediGate menu.

Enter **9** for RPN Calculator. Enter **?** at any prompt to redisplay the menu, or **Q** to quit/exit the calculator.

The Reverse Polish notation calculator operates on numbers entered into a "stack", with the numbers entered first followed by the operator.

Use **D** to display all current values in the stack, **C** to clear all values in the stack, **E** to erase only the last (current) value in the stack.

Addition (**+**), subtraction (**-**), multiplication (*****), division (**/**), and power X^Y (**P**) operate on the two highest numbers in the stack, displaying the result and leaving the result in the next lower stack position.

Modulo (**M**) divides the previous stack value X by current stack value Y and gives the remainder as an integer in the next lower stack location.

Square root (**R**), invert $1/X$ (**I**), natural log \ln (**L**), inverse log e^X (**X**), and trig functions (**T**) operate on the highest number in the stack, displaying the result and leaving the result in the current stack position.

Sum (**S**) all values in the stack (up to 80) and leave the sum in the lowest stack position.

Analysis (**A**) shows the average value and standard deviation of all values in the stack (leaving current stack values unchanged).

Floating point math (**F**) converts either from floating point to hexadecimal, or from hexadecimal to floating point. (Note: this operation does not use the RPN stack.)

For example:

- To calculate the value of $(3 + 5) / 2$, enter: **3 5 + 2 /**
The result is a value of 4 in stack location [0].

```

Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>0 3
Stack[0] = 3
Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>1 5
Stack[1] = 5
Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>2 +
Stack[0] = 8
Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>1 2
Stack[1] = 2
Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>2 /
Stack[0] = 4
Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>1

```

- To convert a floating point number to hexadecimal, enter **F** and the number to convert. Enter **0** or **0.0** to exit the floating point calculator.
- To convert a hexadecimal number to floating point, enter **F** and some non-zero number. Then enter four hexadecimal bytes, most-significant to least-significant.

```

Value\Operator (+,-,*,/,?,I,L,M,C,Q,D,R,P,S,T,E,A,F,X) Stack>0 f
FLOATING POINT VALUES IN HEX AND VICE VERSA

```

```

Enter a Floating point value (0.0 to exit) 2.0
Hex MSB to LSB = 40 0 0 0
Now enter four Hex bytes to display in Floating point
Enter MSB first then LSB last Enter Hex Byte 3 40
Enter Hex Byte 2 80
Enter Hex Byte 1 00
Enter Hex Byte 0 00
Floating value =          4
Enter a Floating point value (0.0 to exit)

```

10- New Master Key

This is a legacy menu which is no longer used in the RediGate.

11- Read Handshake Pins

[Main Menu](#) [System Services](#) [Read Handshake Pins](#)

Diagnostic menu to read the current status of RS-232 serial port handshaking inputs (requires configuration and hardware with an RS-232 serial port).

Enter **11** for Read Handshake Pins. Enter the instance number of the serial port, and **E** if using the Elecsys serial port driver (typical) or **L** if using the Linux serial driver (normally on COM0).

```

===== Monitor /dev/acscmm?? handshaking pins =====
ElecSys(V:5.7.2017-07-24-1300) Sun Aug 13 13:00:08 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb
-----
NOTE:This might require rebooting afterwards
Enter Serial Port Index 1 to 20 (console=0) 2

E=ElecSys driver L=Linux driver e
Params=[9600 stop=1 word=8 parenb=0 pareven=0 parstick=0 mode=0 w_up=0 w_down=0]
CPU0
36:      203      SC  20  UART9
38:       19      SC  22  zeus16550
39:     1025      SC  23  pxa2xx-mci
41:        0      SC  25  DMA
42:     5833      SC  26  ost0
44:        0      SC  28  Comms Timer Tick
85:       16      GPIO 35  bt:dtr
103:       0      GPIO 53  mmc card detect
131:    1511      GPIO 81  eth0
Err:        0

Enter '1' to abort

Com-2 DCD=LOW CTS=LOW
Com-2 DCD=LOW CTS=LOW
Com-2 DCD=LOW CTS=LOW

```

The current state of Carrier Detect (DCD) and Clear to Send (CTS) inputs are shown once/second (LOW or HI). Enter **1** to stop the display.

12- Write Handshake Pins

[Main Menu](#) [System Services](#) [Write Handshake Pins](#)

Diagnostic menu to enable or disable the handshaking outputs of an RS-232 port (requires configuration and hardware with an RS-232 serial port).

Enter **12** for Write Handshake Pins. Enter the instance number of the serial port, and **E** if using the Elecsys serial port driver (typical) or **L** if using the Linux serial driver (normally on COM0).

```

===== Force /dev/acscmm?? handshaking pins =====
ElecSys(V:5.7.2017-07-24-1300) Sun Aug 13 13:09:33 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb
-----
NOTE:This might require rebooting afterwards
Enter Serial Port Index 1 to 20 (console=0) 2

E=ElecSys driver L=Linux driver e
Params=[9600 stop=1 word=8 parenb=0 pareven=0 parstick=0 mode=0 w_up=0 w_down=0]
CPU0
36:      203      SC  20  UART9
38:       95      SC  22  zeus16550
39:     1025      SC  23  pxa2xx-mci
41:       0       SC  25  DMA
42:    43630      SC  26  ost0
44:       0       SC  28  Comms Timer Tick
85:       16      GPIO 35  bt:dtr
103:      0       GPIO 53  mmc card detect
131:    13335      GPIO 81  eth0
Err:      0
RTS: 0=Low 1=High ? 0
Set COM(2) to 0
DTR: 0=Low 1=High ? 1
Set COM(2) to 1

```

Enter **1** or **0** to turn ON or OFF the Request to Send (RTS) and Data Terminal Ready (DTR) handshaking outputs.

13- Run Custom Utility

[Main Menu](#) [System Services](#) [Run Custom Utility](#)

Custom Utility menu option allows a custom shell script or utility to be run from the user menu. This option requires one or more executable scripts to have previously been loaded onto the RediGate in the /usr/director/bin/ directory, with names beginning "CustUtil" and ending with "_#" (where # is a unique integer up to 32,767).

Enter **13** to select the Run Custom Utility menu. A list of available scripts is displayed. Enter the number of the script following the last _ character.

```

Make selection: 13

CustUtil_NAT_Menu_5  CustUtil_atest_0
CustUtil_Stuff_UFF_4  CustUtil_iptables_1

Enter Index of Custom Utility 0 to N 0

Running CustUtil*_0

*****
Here is a script!
*****

```

14- MQTTClient to Next Broker

[Main Menu](#) [System Services](#) [MQTTClient to Next Broker](#)

Force an MQTT Client to walk to the next broker IP address.

If only one IP address is configured in the MQ Client (or MQ Client Extra), this will force a disconnect and reconnection to the same broker, along with all initial subscriptions and data publication. Before walking to the next broker IP, you can turn on MQTTClient diagnostics (Main Menu Diagnostic Services Task Diags). Then afterward, check the Monitor Diag's menu to view the MQTT diagnostics during the reconnection.

Enter **14** for MQTTClient to Next Broker. If more than one MQ Client is configured, enter **0**, **1**, or **2** to select which one. Enter **Y** to force it to the next broker IP address.

```

===== MQTTClient to Next Broker =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 06:18:54 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
0 ==> MQisdP
1 ==> MQisdPX0

```

```

Could not find MQisdpx1

Which MQ Client to force? (0 to 1) 0
Are you certain you want to force it to the next broker? (y/n) y

Checking connection in 5 seconds. Enter any character to return to MENU

```

If the connection cannot be made, the last line may be repeated every 5 seconds. To exit, enter any character on the keyboard followed by Enter to return to the previous menu.

15- Cell Modem Diags

[Main Menu](#) [System Services](#) [Cell Modem Diags](#)

On a RediGate with built-in cellular modem, perform several diagnostic commands for the cellular modem. This requires not only hardware, but also an active RediGate configuration with the cellular modem configured.

Enter **15** for Cell Modem Diags.

```

Make selection: 15

===== Cell Modem Diags =====
ElecSys(V:5.7.2017-02-23-1000) Thu Mar 2 18:09:19 2017
RediGate400C_CPLX : 1 @ 10.63.192.192 REDIGATE-400 <Use System Serv Option-123>
-----
Virtual Port Numer
 73=Diag AT Cnds
 75=Auto-ATs or NMEA/GPS if HE-910
 77=NMEA/GPS if DE-910
 79=CellLEDs
or 0 to Exit? 73

```

Enter **73** or **75** for the virtual port number on which to view diagnostics (one or more of these should be configured in ACE).

After this, the RediGate will automatically request several AT commands from the modem to retrieve status and activation information.

The command outputs are described with comments below.

```

Sending AT+GMM
Received[15]-> HE910 OK

```

This is the modem model (HE910 for GSM/HSPA, or DE910-DUAL for CDMA).

```

Sending AT+CNUM
Received[37]-> +CNUM: "", "19132109122", 129 OK

```

This is the phone number associated with the account activation.

```

Sending AT#CCID
Received[37]-> #CCID: 89014104277578463113 OK

```

For the HE910 modem, this is the SIM card number. For the DE910-DUAL, this command will return an error.

```

Sending AT+CGDCONT?
Received[42]-> +CGDCONT: 1, "IP", "i2gold", "", 0, 0 OK

```

For the HE910 modem, the second item in double quotes is the APN of the cellular access point. If the SIM is not properly installed or the RediGate is improperly configured, having an incorrect APN will block cellular connections.

```

Sending AT#MEIDESN?
Received[9]-> #MEIDESN: A1000032B304F6,000000000000,00000000

```

For the DE-910-DUAL modem, this is the MEID number. For the HE910, this command will return an error.

```

Sending AT#CIMI
Received[32]-> #CIMI: 310410757846311 OK

```

This is the IMSI number.

```
Sending AT#CGSN
Received[32]-> #CGSN: 357164042289457 OK
```

For the HE910 modem, this is the IMEI number. For the DE910-DUAL modem, this is the MEID number, split with a comma.

```
Sending AT+CREG?
Received[20]-> +CREG: 0,1 OK
```

This is the mode and connection status. The first number should normally be 0 (disable unsolicited). The second number indicates registration status: 0=not registered, 1=registered/home network, 2=searching, 3=denied, 5=registered/roaming

```
Sending AT$GPSACP
Received[30]-> $GPSACP: 214127.000,3853.5898N,09447.4488W,0.9,315.4,3,12.1,7.3,3.9,310715,07
```

This is the GPS data, if a GPS antenna is connected to the modem. Otherwise, it will mostly be just commas with no data. GPS data represents:

UTC time (hhmmss.sss)
Latitude (ddmm.mmmm N/S)
Longitude (dddmm.mmmm E/W)
HDOP, Altitude (meters), Fix (0=invalid, 2=2D fix, 3=3D fix)
Course over ground (degrees), Speed over ground (Km/hr), Speed over ground (knots)
Date of fix (ddmmyy), Number of satellites in use

```
Sending AT+CSQ
Received[40]-> +CSQ: 28,3 OK
```

The first number after +CSQ is the signal strength. 99=no signal, 0-31 indicates increasing strength (0 = -113 dBm, 31 = -51 dBm, in steps of 2 dBm per CSQ number). The second number is the bit error rate (BER). 0=best, 7=worst.

Repeat? (y/n) **n**

Then press Enter to exit the modem diagnostics, or A/ to repeat the last command (AT+CSQ, signal strength). Or enter an 'AT' modem string to manually send a command to the modem.

```
Enter AT Command (Enter to Exit, 'A/' repeats last, 'A//' repeat every 2 secs) a//
Press Q<enter> to quit repeating
Sending[8]-> AT+CSQ
Received[20]-> +CSQ: 28,2 OK
```

```
Press Q<enter> to quit repeating
Sending[8]-> AT+CSQ
Received[20]-> +CSQ: 29,2 OK
```

Enter 'q' to stop the repeating AT+CSQ commands. And 'Enter' again to exit the menu.

```
Enter AT Command (Enter to Exit, 'A/' repeats last, 'A//' repeat every 2 secs)
q
```

2- Directory Services Menu

[Main Menu](#) [Directory Services](#)

The Directory Services menu is used for various file operations within the RediGate file system.

Enter **2** at the Main Menu for the Directory Services menu.

```
===== Directory Services =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 06:32:10 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
 1) Executables                2) Current Configs
 3) Download Directory         4) Put File to Remote
 5) Get File From Remote       6) Rename File
 7) Delete File in Remote      8) Delete IsaGraf Files
 9) View Zombie.log           10) IsaGraf App Info
11) Restore Previous UFF      12) View UFF Processing Details
13) View Load-Store File      14) View kernel or message logs
15) MQTT XML Information      16) View customer settings
17) ZMODEM File to Remote     18) ZMODEM File from Remote
19) View Problem.txt          20) View ModemLog.txt
21) Store-N-Forward File

Make selection:
```

1- Executables

[Main Menu](#) [Directory Services](#) [Executables](#)

View list of files contained in the /usr/director/bin folder, mainly executable files.

Enter **1** for Executables. File sizes are rounded to 1Kb; thus some entries listed as zero are not actually empty files.

```
Make selection: 1

===== Executable Directory =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 08:23:01 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
 12 ArClock*                72 IButton*                100 TeleGyrMast*
  0 ArFunc.so@              4 IsaFind_1st.sh*          72 Term1Serv*
  0 ArFunc.so.1@            12 IsagInfo*                72 TermServd*
 60 ArFunc.so.1.7*          84 JSON_Rbe*                24 UdpHandler*
  8 ArcomUpdate.sh*         8 LinuxSys.sh*             52 UdpServ*
336 BACnetIpMast*          60 MELSECMast*              8 UffUpdate.txt
336 BACnetIpSlave*         4 MMI*                       268 VirtMast*
```

2- Current Configs

[Main Menu](#) [Directory Services](#) [Current Configs](#)

Show diagnostic information related to the current configuration files in the RediGate.

When an XML configuration is uploaded to the RediGate, it is converted into a UFF file (or the UFF file may be loaded from ACE directly). The configuration is then broken into various components and stored in the /usr/director/configs folder.

Enter **2** to show Current Configs. Enter **Y** to see additional information about the current configuration.

The first two parts of the display show the current UFF filename and the internal component configurations stored in the RediGate.

```
===== Configuration Directory =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 08:28:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Contents of /usr/director/config
-rw-r--r-- 1 root director 12347 Aug 17 06:17 /usr/director/config/RG-110E.uff

Show RediGate Linux Config Files (Y/N) Y
/usr/director/config/Channel00.1.cfg
/usr/director/config/Channel02.1.cfg
/usr/director/config/Channel15.1.cfg
/usr/director/config/DiagManual_Configuration.xml.gz
/usr/director/config/Director.0.cfg
```

```

/usr/director/config/IsaGraf02.1.cfg
/usr/director/config/Launch.conf
/usr/director/config/MQRbePr.1.cfg
/usr/director/config/MQXRbePr0.1.cfg
/usr/director/config/MQisdP.1.cfg
/usr/director/config/MQisdPX0.1.cfg
/usr/director/config/ModSlTcP00d.7.cfg
/usr/director/config/ONE_BAD_POLL.txt
/usr/director/config/RG-110E.uff
/usr/director/config/TS32.txt
/usr/director/config/Watchdog.1.cfg
/usr/director/config/css.000
/usr/director/config/customer
/usr/director/config/findfirst
/usr/director/config/uff2lnux.dbg
/usr/director/config/watchdog

/usr/director/config/Channel00:
DBM.1.cfg          ModMast00002.1.cfg  Tags00001.1.cfg    Tags00002.1.pub
Launch.conf        ModMast00003.1.cfg  Tags00001.1.pub    Tags00003.1.cfg
ModMast00001.1.cfg SCAN.1.cfg          Tags00002.1.cfg    Tags00003.1.pub

/usr/director/config/Channel02:
DBM.1.cfg          Launch.conf         ModMast00001.1.cfg  SCAN.1.cfg

/usr/director/config/Channel15:
DBM.1.cfg          SCAN.1.cfg Launch.conf         VirtMast00003.1.cfg

/usr/director/config/init.arcom:
IsaPlc02.sh        gateway             inittab.Port0      inittabMMI-grep
S89runIO200port    hosts.modname       inittab.Port2      networks
SerialMMI.sh       hosts.modsh         inittab.Port64
eth0               inittab-modmmi     inittab.Port65
eth0_1             inittab-no-mgetty  inittab.Port79

```

Do you want to debug the UFF file? (Y/N) ? **y**

If you have entered **Y** for the two prompts, you will then be given the uff2lnux diagnostic, which shows in detail the ACE objects and property values contained in the current configuration.

At the next four prompts, press **Enter**. The following output is typical of what might be seen in a configuration diagnostic view.

```

Just keep pressing ENTER until finished...

=====

uff2lnux
Revision    $Revision: 1.91 $

Usage
uff2lnux          -> Program will prompt you
uff2lnux -f *     -> Read *.UFF files
uff2lnux -f Apex -a 1 -> Read Apex.UFF, Abbreviated report
uff2lnux -f * -p  -> Read *.UFF files, Pause after each object
uff2lnux -f Apex -N -> No Bootloader files created
uff2lnux -f * > text -> NOTE: use the MS-DOS redirect symbol '>' to
                        redirect the output to a text file
uff2lnux -c plus any cmd -> Create individual download files

Enter UFF file name without UFF extension (wildcards ok)
APEX          08/17/117 08:28:21
=====

Pause after each Object Entry? y/n
y              08/17/117 08:28:22
=====

Create Individual Download Files? y/n
N
=====

```



```
Abbreviated Report? (Mostly Network Info) y/n
NNo Leading minus sign!117 08:28:23
```

```
Customer: RediGate
```

```
COM3_STOP_ECHO=1
ALL_16550_COMM=1
DF1_NEWPOLLTBL=1
RTU_FORCE_SCANUPD=1
DF1_DUPLEX_CTRL=1
EXTRA_TSERV_SOCKS=1
DO_PPP_OPTIONS=1
BAD_POLL_KILLS_RTU=1
BLOB_ANY_ADDR=1
HCP_32BIT_AWARE=1
POST_XML_FILE=1
TIME_STAMP_32BIT=1
UDHCPD_SERVER=1
HCP_RTC_VIA_SYSCMD=1
COMPILE_POD=1
DF1_BIN_POLLS=1
SRTP_NOT_ENRON_MAP=1
MULTI_HOME_SCRIPT=1
EXTRA_RBE_FLAGS=1
HTTP_PUT_NOT_POST=1
LINUX_3_XX=1
OPC_RELAX_RBE=1
FALCON_PROJECT=1
MSEC_TIMESTAMP=1
REDIGATE_PROJECT=1
PPP_CMUX_PTDEV=1
DIRUPLD_PASSWD=1
DELAY_HLTHECHO=1
BASH_USES_TILDE=1
=====
```

```
Opening APEX...
```

In this section, some important information is given about the configuration file, including:

- **XML filename** (if applicable, truncated to 32 characters) or **UFF filename** (if loaded directly from ACE ??? check this)
- **Configuration date** (date of the XML to UFF translation on a RediGate, or the date of original creation if UFF was loaded directly from ACE)
- **Build number** of the configuration (updated every time the configuration is saved)

```
UffVer=3 (DiagManual_Configuration.xml) 17/08/21 14:00:0
CfgVer=[1] BuildNumber=16 Machine=/ElecsysRediGate/
Number of Object Entries=40 : Size=12347
```

Each following section includes the object "filename" separated by @@, which appears in the ACE Configuration Editor after the Object Type, and all of the properties included in the UFF configuration file. The file size includes the total number of "bytes" included in the property values for the object. Enter **Q** to exit the configuration diagnostic, **B** followed by a number to back up that many sections, **S** followed by a number to skip forward that many sections, or any other key to show the next section.

```
@@cir0000@@      8 bytes @ 1080
Circuit Type: DIRECT
Primary Port: 64 Secondary : -1
Redundancy : Dedicated
; Press Any Key. Q to quit. S to skip 'N' Entries. B to Backup. [35 remain]

@@cir0001@@      25 bytes @ 1088
Circuit Type: MASTER NETWORK(s)
Server Port : 3040
ConnectDelay: 15 seconds
Server IP : 192.003.001.011
Interface : Ether0
= Press Any Key. Q to quit. S to skip 'N' Entries. B to Backup. [34 remain]

@@firewall@@     299 bytes @ 1268
Input Policy : DROP
```

```

Output Policy          : ACCEPT
Forward Policy         : ACCEPT
Port Management Chain  : INPUT  tcp   eth0          22 ACCEPT
Port Management Chain  : INPUT  tcp   eth0          3040 ACCEPT

<<< RAW CUSTOM IPTABLES>>>

iptables -A INPUT -p icmp -m state --state NEW,ESTABLISHED,RELATED -j ACCEPT
iptables -A OUTPUT -p icmp -m state --state NEW,ESTABLISHED,RELATED -j ACCEPT
: Press Any Key.  Q to quit.  S to skip 'N' Entries.  B to Backup. [33 remain]

@@lxsystem@@          155 bytes @ 1567
Apex Number : 1
Apex Name   : UnitName
User Name   : user
Password    : user
Date Enumer : 5
< Press Any Key.  Q to quit.  S to skip 'N' Entries.  B to Backup. [32 remain]

@@mastchan00@@        71 bytes @ 1722
Name        : Channel0
Type        : 993
Auto Start  : Yes
Timeout     : 200 msec
Broadcast   : 0 msec delay
Interpoll   : 0 msec delay
Scan Period : 7000 sec
Net Recover : 0 sec

      RTU    Poll  Delay(sec)
=====
      1      1    3600
      1      2     60
      2      1    3600
      2      2     60
      3      1    3600
      3      2     60
-----

; Press Any Key.  Q to quit.  S to skip 'N' Entries.  B to Backup. [35 remain]

```

3- Download Directory

[Main Menu](#) [Directory Services](#) [Download Directory](#)

Enter **3** for to show the files contained in the /home/director download directory.

Files with a ".run" extension are shortcuts to the current configuration files, and after the arrow (->) is the actual location of the file. If there is an .xml.gz or .uff file without the .run extension, it indicates a configuration file that has been loaded but not deployed. (See [Configuration Not Updating on RediGate](#) for fixing a problem if there is more than one un-deployed configuration file.)

```

===== Download Directory =====
ElecSys(V:5.7.2017-07-24-1300) Mon Aug 14 11:54:25 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <40170-0118>-SerialNumb
-----total 8
-rw-r--r--  1 root    root          64 Aug 13 12:59 AceConfigName.txt
-rw-r--r--  1 root    root           6 Jul 23  2014 CoreMSQID
lrwxrwxrwx  1 root    root          53 Aug 13 12:59 DiagManual_Configuration2.xml.gz.run
-> /usr/director/config/DiagManual_Configuration2.xml.gz
lrwxrwxrwx  1 root    root          32 Aug 13 12:59 RG-110E.uff.run ->
/usr/director/config/RG-110E.uff
-rw-r--r--  1 root    root           0 Aug 13 12:59 UnitName.nam
lrwxrwxrwx  1 root    root          28 Aug 13 12:59 is1500000.run ->
/usr/director/bin/is1500000

Press ENTER to continue

```

4- Put File to Remote

Load a file to the RediGate through the COM0 console port using YMODEM protocol. (This option requires using a terminal program that supports the YMODEM file transfer protocol.)

Enter **4** for Put File to Remote. After selecting the menu, a series of "C" characters will be displayed for 40 seconds.

In the serial terminal program, select the option to send a file using YMODEM protocol.

- In Tera Term or ExtraPUTTY, select File Transfer YMODEM Send
- In HyperTerminal, select Transfer Send File, and select the YMODEM protocol

YMODEM timeout

The file must begin transferring within about 40 seconds, or the RediGate will time out. If this happens, just select option 4 in Directory Services to try again.

After the transfer is complete, the file will be in the /home/director folder. Use Directory Services option 3 to view contents of the Download Directory.

```
Make selection: 4

===== Put File to Remote =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 13:33:54 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Ready to receive file.../dev/yodem.dbg=-1
STARTINGCC
Press ENTER to continue
```

5- Get File From Remote

Retrieve a file from the RediGate's /home/director folder through the COM0 console port using YMODEM protocol. (This option requires using a terminal program that supports the YMODEM file transfer protocol.)

Enter **5** for Get File From Remote. Enter the exact file name to retrieve (case-sensitive). If the filename is not entered, it will time out in 40 seconds.

If you download a ".run" file (which is a shortcut to an actual file), it will download the original file, but you will need to rename in Windows to remove the ".run" extension.

```
Make selection: 5

===== Get File from Remote =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 14:57:01 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----total 172
-rw-r--r-- 1 root root 63 Aug 17 09:51 AceConfigName.txt
-rw-r--r-- 1 root root 6 Jul 23 2014 CoreMSQID
-rw-r--r-- 1 user director 73421 Aug 17 13:34 DefaultTemplate.xml.tmp.gz
lrwxrwxrwx 1 root root 52 Aug 17 09:55 DiagManual_Configuration.xml.gz.run
-> /usr/director/config/DiagManual_Configuration.xml.gz
lrwxrwxrwx 1 root root 32 Aug 17 09:55 RG-110E.uff.run ->
/usr/director/config/RG-110E.uff
-rw-r--r-- 1 root root 0 Aug 17 09:55 UnitName.nam
lrwxrwxrwx 1 root root 28 Aug 13 12:59 is15000000.run ->
/usr/director/bin/is15000000
-rw-r--r-- 1 root root 166 Dec 4 1999 ppp0.log

Enter name if File to Receive DiagManual_Configuration.xml.gz.run
/dev/yodem.dbg=-1
AceConfigName.txt RG-110E.uff.run@
CoreMSQID UnitName.nam
DefaultTemplate.xml.tmp.gz is15000000.run@
DiagManual_Configuration.xml.gz.run@ ppp0.log

Press ENTER to continue
```

6- Rename File

[Main Menu](#) [Directory Services](#) [Rename File](#)

Enter **6** to rename a file in the /home/director folder. Enter the exact existing and new filenames (case-sensitive).

7- Delete File in Remote

[Main Menu](#) [Directory Services](#) [Delete File in Remote](#)

Enter **7** to delete a file in the /home/director folder. Enter the exact existing filename (case-sensitive) to be deleted.

```
Make selection: 7

===== Delete File =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 17:38:58 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
AceConfigName.txt          RG-110E.uff.run
CoreMSQID                  UnitName.nam
DiagManual_Configuration.xml.tmp.gz.run is15000000.run
NewConfiguration.xml.gz    ppp0.log

There is no need to delete a file ending in '.run' or '.nam'
These are only softlinks to the actual running files.
Enter File Name to delete NewConfiguration.xml.gz

Press ENTER
-rw-r--r-- 1 root root 63 Aug 17 09:51 /home/director/AceConfigName.txt
-rw-r--r-- 1 root root 6 Jul 23 2014 /home/director/CoreMSQID
lrwxrwxrwx 1 root root 52 Aug 17 09:55
/home/director/DiagManual_Configuration.xml.tmp.gz.run ->
/usr/director/config/DiagManual_Configuration.xml.gz
lrwxrwxrwx 1 root root 32 Aug 17 09:55 /home/director/RG-110E.uff.run ->
/usr/director/config/RG-110E.uff
-rw-r--r-- 1 root root 0 Aug 17 09:55 /home/director/UnitName.nam
lrwxrwxrwx 1 root root 28 Aug 13 12:59 is15000000.run ->
/usr/director/bin/is15000000
-rw-r--r-- 1 root root 166 Dec 4 1999 /home/director/ppp0.log
```

8- Delete IsaGraf Files

[Main Menu](#) [Directory Services](#) [Delete IsaGraf Files](#)

Enter **8** to remove an ISaGRAF logic file (such as is15000000) from the /usr/director/bin folder.

```
Make selection: 8

===== Delete IsaGraf Files =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 17:52:33 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
-rw-r--r-- 1 root director 88972 Aug 17 13:41 is15000000

Enter File Name to delete is15000000
```

9- View Zombie.log

[Main Menu](#) [Directory Services](#) [View Zombie.log](#)

Enter **9** to view the Zombie.log file, if it exists. The Zombie.log file is created in /home/director if a RediGate process dies unexpectedly (Linux calls this a "Zombie" process). Certain diagnostic information is stored in the file, and then shortly afterward the RediGate will automatically reboot. The hope is that if the process died as the result of a one-time anomaly, the system will automatically recover itself.

When no Zombie.log file exists and a process dies, the RediGate will reboot relatively quickly (within a minute). If the Zombie.log file exists when the event occurs, such as a persistent condition (bad configuration setting, etc.), the reboot will be delayed longer (up to 9-10 minutes) to allow a technician to intervene, obtain log files from the RediGate, reconfigure it, etc., in order to remove the condition causing the Zombie process to

occur. Press the Space bar to page through to the end of the file. Newest entries are at the bottom. The Zombie.log shows the **process name** (which process died) and the **date/time** and other system conditions when it was detected.

The Zombie.log file is never deleted automatically, but it can be deleted manually through the Delete File in Remote option, or through the command line or an FTP deletion.

```
Make selection: 9

Press SPACE BAR for more pages...
Fri Aug 18 07:53:07 CDT 2017
Discovered [Z [DirectorScan]] zombie 17123
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:ssh             0.0.0.0:*               LISTEN
tcp        0      0 localhost:1883         0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:3040          0.0.0.0:*               LISTEN
tcp        1      0 UnitName:42636        192.3.1.11:3040        CLOSE_WAIT
tcp        0      0 :::ssh                :::*                     LISTEN
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags               Type           State         I-Node Path
unix    20     [ ]                 DGRAM          2934 /dev/log
unix    2      [ ]                 DGRAM          115113
unix    2      [ ]                 DGRAM          16168
unix    2      [ ]                 DGRAM          115115
```

10- IsaGraf App Info

[Main Menu](#) [Directory Services](#) [IsaGraf App Info](#)

Enter **10** to show information about any ISaGRAF logic files that may exist on this RediGate. This shows the ISaGRAF **filename**, **project name** and **build number**.

Note that the ISaGRAF logic file is not automatically operational just because of being resident on a RediGate. In order to use ISaGRAF, the configuration must also include a Virtual Circuit and ISaGRAF Field Unit configured under an Internal Channel with an instance number that matches the first two digits of the ISaGRAF filename (e.g., Internal Channel 15 for the example below).

```
Make selection: 10

===== IsaGraf App Info =====
ElecSys(V:5.7.2017-08-07-1200) Thu Aug 17 17:50:39 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----

FileName=is15000000    -> IsaGraf-Project=wdpub06 : Version=251

Press ENTER...
```

11- Restore Previous UFF

[Main Menu](#) [Directory Services](#) [Restore Previous UFF](#)

Enter **11** to restore the previous RediGate configuration. The RediGate keeps only one previous backup configuration that was running before the current configuration. This menu option allows the system to be reverted back to the previous.

After being prompted, enter **Y** to confirm rolling back the configuration (with an automatic reconfigure and possibly reboot if needed), or **N** or **Enter** to keep the current.

```
Make selection: 11

===== Restore Previous UFF Configuration =====
ElecSys(V:5.7.2017-08-07-1200) Fri Aug 18 14:17:58 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
-rw-r--r--    1 root    director    5450 Aug 17 09:51
/usr/director/backup/DiagManual_Configuration.xml.gz
-rw-r--r--    1 root    director    12347 Aug 17 09:51 /usr/director/backup/RG-110E.uff

Do you want to RESTORE with REBOOT this UFF or XML file? (y/n) y
```

12- View UFF Processing Details

[Main Menu](#) [Directory Services](#) [View UFF Processing Details](#)

Enter **12** to view details of the RediGate's processing of the UFF configuration file. Press **Enter** to begin viewing the details.

When a .uff file is loaded directly, or created from an .xml.gz configuration file, the RediGate processes the UFF file in order to start up all its processes. The UFF Processing Details give some detailed diagnostic information about how the new configuration was handled. The following lines show some excerpts from a typical diagnostic output.

```
Make selection: 12

===== View UFF Processing Details =====
ElecSys(V:5.7.2017-08-07-1200) Fri Aug 18 14:21:59 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Press the SPACE bar to view the next page or ENTER to advance one line

Rtdb 0 has 4 Fields 96 bytes
Rtdb 0 has 4 Fields 96 bytes
Rtdb 1 has 4 Fields 96 bytes
Rtdb 0 has 0 Fields 0 bytes
Rtdb 0 has 5 Fields 120 bytes
Customer is RediGateBuild Directory is .
Director System V-1.001
Comm Port V-1.001

Ethernet V-1.001
Rx_Tx_SerialComm00 232 0
Rx_Tx_SerialComm02 232 0
Rx_Tx_SerialComm64 232 0
Rx_Tx_SerialComm65 232 0
Rx_Tx_SerialComm79 4095 4095
Found Primary COM64 for Circuit0000
Found Primary COM79 for Circuit0200
Found 3 Master Channels
Building Chann00 (Channel0)
Match Chann-Rtu (Modbus02) Addr=2
Match Chann-Rtu (Modbus01) Addr=1
Match Chann-Rtu (Modbus03) Addr=3
MQttClientPort=1883
Count of RtuRBE=16
DELAY_HLTHECHO=1
REDIGATE_400=1
CCM2_NOT_ENRON_MAP=1
BASH_USES_TILDE=1

Finished... Press ENTER
```

13- View Load-Store File

[Main Menu](#) [Directory Services](#) [View Load-Store File](#)

Enter **13** to view the contents of a LoadStore file, and (if present) enter the name of the file to view.

The LoadStore object is used as part of an ISaGRAF logic program, with default values that may be configured in the LoadStore child object under the ISaGRAF Field Unit. Values in the LoadStore file are stored in permanent memory in /usr/director/bin (e.g. Is02000000 in the example below). Values may be updated during runtime of the ISaGRAF program. The LoadStore file contains 16 columns by a **variable number of rows** ("Boards"). The View Load-Store File option shows the data one row (**16 integer values**) at a time. Press **Enter** to continue displaying each row, or **Esc Enter** to quit.

```
Make selection: 13

===== Display Load/Store File =====
ElecSys(V:5.7.2017-08-07-1200) Fri Aug 18 16:27:52 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
-rw-r--r-- 1 root director 64 Aug 18 14:32 Is02000000

Enter Isagraf LS File to display Is02000000
```

```

Load-Store Board 1
0 : 0x00000001      1
1 : 0x00000002      2
2 : 0x00000003      3
3 : 0x00000004      4
4 : 0x00000005      5
5 : 0x00000006      6
6 : 0x00000007      7
7 : 0x00000008      8
8 : 0x00000009      9
9 : 0x0000000a     10
10 : 0x00000000      0
11 : 0x00000000      0
12 : 0x00000000      0
13 : 0x00000000      0
14 : 0x00000000      0
15 : 0x00000000      0
Press ENTER to Continue : ESC to quit

```

14- View kernel or message logs

[Main Menu](#) [Directory Services](#) [View kernel or message logs](#)

Enter **14** to view the Linux log files, then enter **1** for the 'kernel' log or **2** for the 'message' log.

Press the **Space** bar to page through the log file until the end, or **Enter** to scroll one line at a time.

```

Make selection: 14

===== View KERNEL or MESSAGE Logs =====
ElecSys(V:5.7.2017-08-07-1200) Sun Aug 27 16:14:04 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
1=/var/log/kernel  2=/var/log/message
Enter 1 or 2 2

Press SPACE BAR to advance screen...Q to Quit

```

15- MQTT XML Information

Option **15** on the Directory Services menu is a legacy option that is not used for most customers.

16- View customer settings

[Main Menu](#) [Directory Services](#) [View customer settings](#)

Enter **16** to view the settings contained in the "customer file." The first line contains the customer or product name, such as "RediGate_400". On the RediGate 100 or 400 products, these settings will typically be identical according to the standard tarball (firmware) release. (On some systems, the customer settings may contain some alternative values that enable various processes to act in a different, customer-specific manner.)

```

Make selection: 16

===== View CUSTOMER settings =====
ElecSys(V:5.7.2017-08-24-1000) Fri Dec 3 23:02:54 1999
DNPMastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Press the SPACE bar to view the next page or ENTER to advance one line
RediGate_400
RTU_CMD_STATS=0
RTU_PASS_STATS=0
RBE_ALL_DATA=1

* * *

Finished... Press ENTER

```

17- ZMODEM File to Remote

[Main Menu](#) [Directory Services](#) [ZMODEM File to Remote](#)

Load a file to the RediGate through the COM0 console port using ZMODEM protocol. (This option requires using a terminal program that supports the ZMODEM file transfer protocol.)

Enter **17** for ZMODEM File to Remote. After selecting the menu, a series of characters will be displayed for 2 minutes and 40 seconds.

In the serial terminal program, select the option to send a file using ZMODEM protocol.

- In Tera Term or ExtraPUTTY, select File Transfer ZMODEM Send
- In HyperTerminal, select Transfer Send File, and select the ZMODEM protocol

ZMODEM Transfer

After the transfer is complete, the file will be in the /home/director folder. Use Directory Services option 3 to view contents of the Download Directory.

```
Make selection: 17

===== ZMODEM Put File to Remote =====
ElecSys(V:5.7.2016-05-02-1600) Sat Dec 18 10:13:44 1999
PoT-Field-Device : 1 @ 192.3.1.10 REDIGATE-400 <45743-0002>-SerialNumb
-----

Ready to receive file...
Press ENTER to continue
```

18- ZMODEM File from Remote

[Main Menu](#) [Directory Services](#) [ZMODEM File from Remote](#)

Retrieve a file from the RediGate's /home/director folder through the COM0 console port using ZMODEM protocol. (This option requires using a terminal program that supports the ZMODEM file transfer protocol.)

Enter **18** for ZMODEM File From Remote. Enter the exact file name to retrieve (case-sensitive). If the filename is not entered, it will time out in a minute and 40 seconds.

Depending on the serial terminal program, you may have to start the ZMODEM file receive through a menu option.

If you download a ".run" file (which is a shortcut to an actual file), it will download the original file, but you will need to rename in Windows to remove the ".run" extension.

19- View Problem.txt

[Main Menu](#) [Directory Services](#) [View Problem.txt](#)

View Problem.txt file in /home/director download directory, if it exists. The Problem.txt file is created if there was a problem during a reconfiguration or software update, such as loading two different configuration files or loading the wrong tarball type (RG-100 vs. RG-400 series).

Enter **19** for View Problem.txt. If there is a file present, its **contents** will be shown. The file is cumulative (until deleted manually), so it may indicate multiple failed update attempts.

```
Make selection: 19
Press 'Q' to quit, SPACE-BAR for next page
Sun Aug 27 15:44:48 CDT 2017

Multiple .xml.gz files cannot be translated
test1.xml.gz and test2.xml.gz
```


21- Store-N-Forward File

[Main Menu](#) [Directory Services](#) [Store-N-Forward](#)

View the stored contents of a "Store and Forward" data log file. This feature depends on having Store & Forward configured in the RediGate and having a file containing stored historical data.

Enter **21** for Store-N-Forward File.

Enter **0** for the /tmp/sdcard1 device (this will normally be the built-in SD memory card. If a memory card is not present, this device will be in a RAM drive).

Enter the folder containing Store & Forward data. Folders are named "SNFxx_yyyyy", where **xx** is the Master Channel number, and **yyyyy** is the Field Unit address (such as SNF15_00001).

Then enter the file name of the data to view. Data is stored in .csv files, one for each device and for each day on which historical data was stored. The filename is case-sensitive and must be entered exactly.

```
Make selection: 21

===== Store and Forward Files =====
ElecSys(V:5.7.2017-08-24-1000) Wed Sep 6 16:35:43 2017
RediGate120E : 1 @ 0.0.0.0 REDIGATE <46247-0002>-SerialNumb
-----
0=/tmp/sdcard1 : 1=/tmp/usb1 : 2=Edit Last Reported Times

Select folder (0,1)? 0
```

Enter 0 to select the /tmp/sdcard1 location, then enter the folder name containing the archive files.

```
Gateway.json SNF14_00003 SNF15_00003 SNF_HELP.txt
SNF00_00001 SNF15_00002 SNF15_00004

Enter Directory name (e.g. SNF00_00001) SNF00_00001
-rwxr-xr-x 1 root root 241 Oct 4 2016 CHAN00~RTU-1~20161004.csv
-rwxr-xr-x 1 root root 16021 Oct 6 2016 CHAN00~RTU-1~20161006.csv
-rwxr-xr-x 1 root root 428984 May 22 20:35 CHAN00~RTU-1~20170522.csv

Enter name if File to View CHAN00~RTU-1~20170522.csv
```

After entering the file name, the file will be displayed one page at a time. Press the **Space** bar to page through the file, or enter **Q** to quit the display.

Comma-separated values are shown, following a CSV header. The header columns are:

- **EpochTime** is the timestamp of data in seconds since 1/1/1970 (32-bit integer, based on the system clock at the time); or if the Pacing is set to 0, the column will be **EpochTimeMS** (a 64-bit integer containing milliseconds since 1/1/1970).
- **RegAddr_OR_TagName** is either the RTDB register number, or the Tag name if configured for that register.
- **Delivered** is 1 if the data has already been published to MQTT, or 0 if not published.
- **GoodQuality** is 1 is the point quality status at the time it was logged (1=online, 0=offline).
- **DataType** is the type enumeration of the register (1=Boolean, 2=CHAR, 3=UINT8, 4=SINT16, 5=UINT16, 8=SINT32, 9=UINT32, 10=REAL32, 11=STRING-32, 12=STRING-256, 15=REAL64, 16=SINT64, 17=UINT64).
- **Value** is the register value at the time it was logged. String data might include commas, which would appear as additional CSV columns.

Below is an example of the content of the CSV file containing historical values using EpochTime (seconds).

- The data header is stored in the CSV file every time the connection goes from connected to disconnected state.
- This example shows tag names CycleCount, TankLevel, and PumpStatus, and an untagged register address 40001.
- The Delivered column is 1=Published or 0=Unpublished. (This value is only saved at the time the data originally stored and is not updated once the historical data is subsequently published.)
- The GoodQuality column indicates the Quality flag of the RTDB register at the time it was stored.
- The DataType column is 1=Boolean, 5=UINT16, 9=UINT32, 10=REAL32.
- The Value column shows the value in the data type. Boolean values are 0 or 1.

```
EpochTime,RegAddr_OR_TagName,Delivered,GoodQuality,DataType,Value
1495429200,CycleCount,1,1,9,910722733
1495429214,40001,1,1,5,65535
1495429220,TankLevel,1,1,10,4.0
1495429224,CycleCount,0,1,9,910729218
1495429229,CycleCount,0,1,9,910731378
1495429235,PumpStatus,0,1,1,1
```

Below is an example with the content of the CSV file containing historical value using EpochTimeMS (milliseconds).

```
EpochTimeMS,RegAddr_OR_TagName,Delivered,GoodQuality,DataType,Value
1529675863415,40001,0,1,8,1529675863
1529675863415,40002,0,1,8,367
```

The Store & Forward process keeps track of the date of the last-reported historical record value. Upon reconnected link status of the monitored process, it will begin at this timestamp to publish additional historical values.

You can change the last-reported time to skip forward and not publish some records, or to skip backward and republish older historical records.

From the Directory Services menu option 21, select **2** to Edit Last Reported Times.

```
Make selection: 21

===== Store and Forward Files =====
ElecSys(V:5.7.2017-08-24-1000) Wed Sep 6 16:35:43 2017
RediGate120E : 1 @ 0.0.0.0 REDIGATE <46247-0002>-SerialNumb
-----
0=/tmp/sdcard1 : 1=/tmp/usb1 : 2=Edit Last Reported Times

Select folder (0,1 or 2)? 2
```

Enter the Channel Number and Field Unit Address of a unit to change the Store & Forward last-reported date/time.

```
Chan Name          Status      Rtus Time
=====
 0 CHAN00          Normal      2 Mon Jul 23 12:27:10 2018
 2 Master Channel  Normal      1 Thu Jul 19 15:16:14 2018
Enter Channel Number (0-15) 0

-----RTU-----      -----POLL-----      -----ERRORS-----
Addr Name          Protocol Status      Time      Count  TimOut  BadData  Frame
-----
 1 RTU-1            SOSMST00 PollDone 12:27:14 57304   0       0       0
Enter Rtu Address (0 - 65535) 1
```

Enter a **number of days** (positive or negative) to adjust the current last-reported time for this Field Unit. Enter a whole number of days, or a fraction (such as -0.5 to skip backward half a day, or 0.04167 to skip forward one hour).

Enter **Y** to accept the adjusted last-reported time.

```
Last CSV Time ==> 2018-10-28 12:00:04 LOCAL
Days forward (positive) or backward (negative) to adjust (e.g. 0.5 days) 0.04167
New CSV Time ==> 2018-10-28 13:00:04 LOCAL
Is this acceptable as the new reporting time? (y/n) y
```

3- Diagnostics Services Menu

[Main Menu](#) [Diagnostics Services](#)

The Diagnostics Services menu provides real-time diagnostics about various network and protocol processes running in the RediGate. Options are provided to help diagnose system problems, communication errors, view data obtained from field devices, etc.

Enter **3** at the Main Menu for the Directory Services menu.

```
===== Diagnostic Services =====
ElecSys(V:5.7.2017-08-24-1000) Wed Sep 6 19:31:54 2017
RediGate120E : 1 @ 0.0.0.0 REDIGATE <46247-0002>-SerialNumb
-----
 1) System Status          2) Network Interfaces
 3) Run Time and Loading   4) System Resources
 5) Task Status            6) Task Diags
 7) Channel Status        8) Channel Diags
 9) Rtu Status             10) Rtu Diags
```

```

11) Rtu Clear          12) Slave Diags
13) IP Route Table    14) Ping Service
15) RTDB Status       16) RTDB Diags
17) MQTT Status       18) RTDB Data Dump
19) Dial Backup       510) Trend a Point
535) View Custom Rpt

          99) Monitor Diag's

```

Make selection:

Debug Levels

Menu options 6, 8, 10, 12, and 16 are used to enable or disable various RediGate task diagnostics to a certain level of detail. Use option 99 (Monitor Diagnostics) to view the real-time activity based on the task diagnostic levels that have been set. If a certain event in the system occurs which is at or below the current Debug Level for that task, the message will appear in the diagnostics display. Menu option 5 shows the current list of Debug Level for all tasks.

Following is a description of the diagnostic Debug Levels:

- **0 = Fatal Errors** – This is the *least detailed* type of debugging that can be selected. Such an event is fatal to system operation, effectively ending task operation.
- **1 = General Errors** – These are operational or system errors that are not fatal in nature.
- **2 = Status Messages** – (default) These are informational messages which describe important task status changes, etc.
- **3 = Data Displays** – Somewhat more detailed display of protocol message headers or system events.
- **4 = Data Dumps** – This is the *most detailed* level of diagnostic logging. All events relating to the system task are displayed in Monitor Diagnostics when this option is selected. For some tasks, this includes hex dumps of bytes sent or received.

1- System Status

[Main Menu](#) [Diagnostics Services](#) [System Status](#)

View certain system condition of the RediGate operating code, including the Linux build information and current message queues.

Enter **1** for the System Status menu, and press Enter through the following sets of information.

The Message Queues include message queue ID, owner and permissions of the task, and the number of used bytes and messages. For most users, this information is low-level and not too useful, but occasionally it can be informative of problems if one task is taking up a growing number of used bytes, or if the list of message queues continues to grow longer.

Make selection: **1**

```

===== System Status =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----

```

```

Linux UnitName 3.15.10-00073-ge03f088 #0 PREEMPT Thu Nov 20 10:42:18 CST 2014 armv5tel
GNU/Linux

```

Press ENTER to continue

```

----- Message Queues -----

```

key	msgid	owner	perms	used-bytes	messages
0x00000290	0	root	666	0	0
0x00002dc8	1409025	user	666	0	0
0x00000bed	720899	root	666	0	0
0x00000bf2	753668	root	666	0	0
0x00000bf6	786437	root	666	0	0
0x00000bfa	819206	root	666	0	0
0x00000bff	851975	root	666	0	0
0x00000c05	884744	root	666	0	0
0x00000c06	917513	root	666	0	0
0x00000c07	950282	root	666	0	0
0x00000c09	983051	root	666	0	0
0x00000c0c	1015820	root	666	0	0
0x00000c0e	1048589	root	666	0	0
0x00000c0f	1081358	root	666	0	0
0x00000c10	1114127	root	666	0	0
0x00000c12	1146896	root	666	0	0
0x00000c14	1179665	root	666	0	0

```

0x00000c16 1212434 root 666 0 0
0x00000c18 1245203 root 666 0 0
0x00000c19 1277972 root 666 0 0
0x00000c5f 1376277 root 666 0 0
0x00000c1a 1310742 root 666 0 0
0x00000c1b 1343511 root 666 0 0

```

Press ENTER to continue

2- Network Interfaces

[Main Menu](#) [Diagnostics Services](#) [Network Interfaces](#)

View IP addresses of network interfaces and socket status information (Linux commands `ifconfig` and `netstat`).

Enter **2** for Network Interfaces, then enter **Y** to view the socket statuses.

NOTE that in older RediGate tarballs prior to September 2017, this menu only worked if you logged in as 'root' first, then superuser to the user account.

Make selection: **2**

```

===== Network Interfaces =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
eth0 Link encap:Ethernet HWaddr 82:49:22:2B:82:A6
inet addr:10.63.191.28 Bcast:10.63.255.255 Mask:255.255.0.0
inet6 addr: fe80::8049:22ff:fe2b:82a6/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:19565659 errors:0 dropped:83411 overruns:0 frame:0
TX packets:77491 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:1376149850 (1.2 GiB) TX bytes:6030078 (5.7 MiB)

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:412 errors:0 dropped:0 overruns:0 frame:0
TX packets:412 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:37684 (36.8 KiB) TX bytes:37684 (36.8 KiB)

ppp0 Link encap:Point-to-Point Protocol
inet addr:10.12.0.15 P-t-P:10.12.0.15 Mask:255.255.255.255
UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1
RX packets:11 errors:0 dropped:0 overruns:0 frame:0
TX packets:5 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:3
RX bytes:424 (424.0 B) TX bytes:61 (61.0 B)

Do you want to see Socket Statuses (Y/N) ? y

Press SPACE to page forward...
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address Foreign Address State
tcp 0 0 0.0.0.0:22 0.0.0.0:* LISTEN
tcp 0 0 10.63.191.28:22 10.242.3.2:65199 ESTABLISHED
tcp 0 0 :::22 :::* LISTEN
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags Type State I-Node Path
unix 14 [ ] DGRAM 2214 /dev/log

Press ENTER to continue...

```

3- Run Time and Loading

[Main Menu](#) [Diagnostics Services – Run Time and Loading](#)

View the amount of time the Linux system has been running (in **days** and **hours:minutes**) and the state of processor loading (Linux command `uptime`).

Enter **3** for Run Time and Loading.

```
Make selection: 3

===== Run Time =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----

Local_Time      Up_Time      0.0=IDLE =>  1 min 5 min 15 min  <= 1.00=BUSY
-----
 18:47:04 up 11 days, 12:47,  load average: 2.89, 3.35, 3.43

Press ENTER to continue
```

4- System Resources

[Main Menu](#) [Diagnostics Services](#) [System Resources](#)

View the amount of RAM and Flash memory that is used and free (Linux commands `free` and `df`).

Enter **4** for System Resources.

```
Make selection: 4

===== System Resources =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----

System RAM (1k-blocks)
      total      used      free      shared      buffers
Mem:    253988    23296    230692         0         0
-/+ buffers:    23296    230692
Swap:         0         0         0

System FLASH

Filesystem      1K-blocks      Used Available Use% Mounted on
ubi0:rootfs      57476      22804    34672    40% /
devtmpfs         126872         0    126872     0% /dev
tmpfs            126992         0    126992     0% /dev/shm
tmpfs            126992      152    126840     0% /tmp

Press ENTER to continue
```

5- Task Status

[Main Menu](#) [Diagnostics Services](#) [Task Status](#)

View the Debug Level for all running processes in the RediGate code. The Debug Level is used for RediGate task logging and can be set using menu option 6 and others. Real-time diagnostics can be viewed using menu option **99 - Monitor Diagnostics**.

Enter **5** for Task Status.

The tasks are numbered sequentially (referred to as "slot numbers"), starting from 0. The name following each task is the mnemonic that appears in the real-time view as events occur.

The word following the task name (Status, Display, Dump, etc.) indicates the current Debug Level of the task (see [Debug Levels](#)).

Tasks are marked with All, None, or Some, to indicate whether debugging is enabled/disabled for all or part of the units associated with that task.

```
Make selection: 5
```

```

===== Task Status =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
                13 PROCESSES

    0 - WATCHDOG Status ( All)    7 - CH01XDBM Status ( All)
    1 - CHANNL00 Status ( All)    8 - DNPMT01 Status ( All)
    2 - CHANNL01 Status ( All)    9 - CHN01SCN Status ( All)
    3 - CHANNL15 Status ( All)   10 - CH15XDBM Status ( All)
    4 - CH00XDBM Status ( All)   11 - VIRTMS15 Status ( All)
    5 - DNPMT00 Status ( All)   12 - CHN15SCN Status ( All)
    6 - CHN00SCN Status ( All)

Redisplay (Y/N) ?

```

6- Task Diags

Main Menu Diagnostics Services Task Diags

Set the Debug Level for a process. (You can also set Debug Levels by using option 8 for Master Channel diagnostics, 10 for Field Unit protocol diagnostics, 12 for Slave Channel diagnostics, or 16 for RTDB diagnostics.) Use option 99 - Monitor Diagnostics to observe the real-time diagnostics of each task after setting the Debug Levels.

Enter 6 for Task Diags.

```

Make selection: 6

===== Task Diagnostics =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
                13 PROCESSES

    0 - WATCHDOG Status ( All)    7 - CH01XDBM Status ( All)
    1 - CHANNL00 Status ( All)    8 - DNPMT01 Status ( All)
    2 - CHANNL01 Status ( All)    9 - CHN01SCN Status ( All)
    3 - CHANNL15 Status ( All)   10 - CH15XDBM Status ( All)
    4 - CH00XDBM Status ( All)   11 - VIRTMS15 Status ( All)
    5 - DNPMT00 Status ( All)   12 - CHN15SCN Status ( All)
    6 - CHN00SCN Status ( All)

Task Slot Number (0 to 12) ? 5

```

First, enter the Task Slot Number from the numbers that are listed. Depending on the task you have selected, you will have to enter a number of other information, starting with the new Debug Level that you wish to enable. **NOTE:** The Debug Level is GLOBAL for this task; i.e., it applies to all units (Node Addresses) associated with this task. If you wish to enable debugging for only one (or more) Field Unit or Node Address on a task, see NOTE below for Enable/Disable.

```

Task DNPMT00 Status ( All)

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)
3 - Data Display (Display)
4 - Data Dump (Dump)

Debug Level 0-4 or 'S'tats ? 4

```

If prompted, enter a Node Address within the task to which the diagnostics status will be applied. For master protocol tasks, this will be the Field Unit Address of the device being monitored. For other task types, other information will be prompted to identify the scope of the diagnostic level being applied.

```

Enter Node Address for Slot=5 (-1 for all) 1

```

If prompted, enter 1 to enable the diagnostics for the task, or 0 to disable diagnostics for the Node Address (or All).

```

Enter 0=Disable : 1=Enable [Default=1] ? 1

```

Enable/Disable

NOTE: If a task controls multiple Node Addresses (such as Field Units), diagnostics for each Node Address can be enabled or disabled separately. One or more units may have debugging enabled simultaneously—enabling diagnostics for a single unit does not automatically disable diagnostics for all the others.

For instance, to enable diagnostics for only 3 out of 10 Field Units on a master channel, first Disable diagnostics for "All" units; then select the Task Diagnostics menu multiple times to Enable diagnostics for only certain Field Unit node addresses. The last Debug Level selected applies to **ALL enabled units** controlled by this task.

After entering all information related to the task Debug Level modification, a single line output will indicate the change in status, and the list of tasks will generally be shown again.

Setting DNPST00 to Level Dump

```
13 PROCESSES

0 - WATCHDOG Status ( All)   7 - CH01XDBM Status ( All)
1 - CHANNL00 Status ( All)   8 - DNPST01 Status ( All)
2 - CHANNL01 Status ( All)   9 - CHN01SCN Status ( All)
3 - CHANNL15 Status ( All)  10 - CH15XDBM Status ( All)
4 - CH00XDBM Status ( All)  11 - VIRTMS15 Status ( All)
5 - DNPST00 Dump ( All)    12 - CHN15SCN Status ( All)
6 - CHN00SCN Status ( All)

Task Slot Number (0 to 12) ?
```

Once you have modified the Debug level for all tasks that you wish to change, press Enter to return to the Diagnostics Services menu.

7- Channel Status

Main Menu [Diagnostics Services](#) [Channel Status](#)

View the status of Master Channels.

Enter **7** for Channel Status. If any Master Channels or Internal Channels are configured in the RediGate, the following information is displayed:

- Master Channel number from configuration
- Master Channel name from configuration
- Current channel status (see [Master Channel Status Indications](#) for a list of status values)
- Number of Field Units (RTUs) configured on the channel
- System timestamp of the last event on the channel.

```
Make selection: 7

===== Channel Status =====
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Chan Name          Status      Rtus Time
=====
0 Channel0         w/Errors    1 Sat Dec 11 19:34:32 1999
1 Channell1        w/Errors    1 Sat Dec 11 19:34:33 1999
15 Channell15      Normal      1 Tue Nov 30 06:00:02 1999

Redislay (Y/N/D where D is Debug List) ?
```

If you enter 'D' for Debug List, an additional list of FieldUnit statuses will be shown:

- FieldUnit Address from configuration
- FieldUnit Name from configuration
- Status of debugging (enabled or disabled) for the FieldUnit
- Protocol enumeration as it appears in the Task List
- Status (see [RTU Status](#) for a list of these indications)

```
Redislay (Y/N/D where D is Debug List) ? d

Enter a Channel Number (0 to 15) ? 0

Addr Name          Dbg? Protocol Status
```



```
-----  
1 DNP3 Field Unit ON DNPST00 Timeout  
Press ENTER
```

Master Channel Status Indications

Values for the Master Channel status are:

- **Good** - Channel is enabled and received response from the last field device polled.
- **No Polls** - No polls are being sent. This may indicate that the Channel has been disabled, all Field Units are disabled, or no polls are configured
- **w/Error** - The channel has received an error sometime since the last time the Channel status was requested. This error may have happened a long time in the past, but if there are no further errors, the next refresh of the Channel status should show Good.
- **Fatal Er** - A fatal error has occurred, which has disabled the operation of the channel.

8- Channel Diags

[Main Menu](#) [Diagnostics Services](#) [Channel Diags](#)

Set the Debug Level for one or more Master Channels. Use option 99 to monitor live diagnostics after setting the Debug Level.

Enter **8** for Channel Diags. Enter the number of the Master Channel or Internal Channel for the FieldUnit that you want to change Debug Level. (See [Master Channel Status Indications](#) for a list of status values.)

```
Make selection: 8  
  
===== Channel Diags =====  
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017  
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb  
-----  
Chan Name          Status      Rtus Time  
=====          =====  
 0 Channel0        w/Errors    1 Tue Dec 14 09:37:32 1999  
 1 Channel0        w/Errors    1 Tue Dec 14 09:37:31 1999  
 15 Channel115     Normal      1 Tue Nov 30 06:00:02 1999  
  
Enter Channel (0 to 15) ? 0
```

Enter the new Debug Level that you wish to enable for this FieldUnit.

```
Valid Debug Level:  
0 - Fatal Errors (Ending)  
1 - General Errors (Error)  
2 - Status Messages (Status)  
3 - Data Display (Display)  
4 - Data Dump (Dump)  
  
Debug Level 0-4 ? 4
```

Enter the FieldUnit Address to which the diagnostics status will be applied, or -1 to apply this change to all FieldUnits on the channel.

Enter 1 to enable the diagnostics for the FieldUnit, or 0 to disable diagnostics.

```
Addr Name          Dbg? Protocol Status  
-----          -----  
1 DNP3 Field Unit ON DNPST00 Timeout  
  
Enter RTU Address (-1 for all) ? 1  
  
Enter 0=Disable : 1=Enable [Default=1] ? 1
```

After entering all information related to the task Debug Level modification, a single line output will indicate the change in status, and the list of tasks will generally be shown again.

```
Setting Scan-Rtu 1 to Enable Dump  
  
===== Channel Diags =====  
ElecSys(V:5.7.2017-08-07-1200) Sun Sep 3 21:17:07 2017  
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb  
-----  
Chan Name          Status      Rtus Time
```

```

=====
0 Channel0          w/Errors          1 Tue Dec 14 09:37:57 1999
1 Channel0          w/Errors          1 Tue Dec 14 09:37:56 1999
15 Channel15       Normal           1 Tue Nov 30 06:00:02 1999

Enter Channel (0 to 15) ?

```

Once you have modified the Debug level for all FieldUnits that you wish to change, press Enter to return to the Diagnostics Services menu, or enter another channel number.

9- RTU Status

Main Menu [Diagnostics Services](#) [RTU Status](#)

List diagnostic information about Circuits and Field Units under a Master Channel.

Enter **9** for RTU Status. Enter the Master Channel number to view Channel, Circuit, and Field Unit status. Or enter **-1** to view the status for units on all channels.

(See [Master Channel Status Indications](#) for a list of status values.)

```

===== Rtu Status =====
ElecSys(V:5.7.2017-08-07-1200) Mon Aug 14 02:10:12 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Chan Name          Status      Rtus Time
=====
0 Channel0         Normal      3 Mon Aug 14 02:10:07 2017
2 Master Channel   w/Errors    1 Mon Aug 14 02:02:14 2017
15 Channel15       Normal      1 Mon Aug 14 02:02:14 2017

Enter Channel (0 to 15, -1 for all) ? 0

-----RTU-----      -----POLL-----      -----ERRORS-----
Addr Name          Protocol Status      Time      Count  TimOut  BadData  Frame
-----
1 Modbus01         MBMAST00 PollDone  02:10:07      9      2      0      0
2 Modbus02         MBMAST00 Timeout  02:09:15      0      9      0      0
3 Modbus03         MBMAST00 Polling   02:09:15      7      2      0      0

Redisplay (Y/N/E where E is Extended Info) ?

```

See [Channel Status](#) for details on the Master Channel status information.

All configured Field Units are listed with status, one per line.

- **Addr** – FieldUnit address from configuration
- **Name** – FieldUnit name from configuration
- **Protocol** – Enumeration indicating both the protocol and Master Channel instance number. For example, MBMAST00 refers to Modbus Master protocol on Channel 0. The Protocol enumeration is also used for diagnostic messages in the [Monitor Diagnostics](#) log.
- **Status** – Current state of each Field Unit.
 - **PollDone** - Device is in communication and last poll was completed successfully.
 - **Timeout** - Last poll to device timed out with no valid response.
 - **BadData** - Last poll received some data but it was not a correct expected response (including an exception code).
 - **FrameErr** - Last poll received a framing error (possibly part of the message was received but not all – ?? check with John)
 - **Stopped** - Field Unit or Channel is disabled or not being polled
 - **Polling** - Poll has been sent but response not yet received, or a response to one poll has been received but not all polls are completed, so the device status cannot be completely confirmed yet.
 - **No Polls** - No polls have been sent to Field Unit since last restart.
- **Time** – Last time the Field Unit was accessed (started, polled, command sent).
- **Count** – Number of polls which have successfully received a response.
- **TimOut** – Number of polls which have timed out after all configured retries.
- **BadData** – Number of polls which have received a bad data response.
- **Frame** – Number of polls which have received a framing error response.

If the Extended Info option is select by entering **E**, more information is displayed showing the configuration of the various port configurations (Async or Network Circuit).

```

Redisplay (Y/N/E where E is Extended Info) ? e

                          Attempts_Per_Poll
Add Unit          Dbg Circuit Last Clear  Boot  Type  Port
-----

```

```

1 Modbus01      ON CONNECT    1  1.0  1.0 TCP/IP  192.3.1.11:3040
2 Modbus02      ON CONNECT    4  4.0  4.0 DIRECT  COM02 19200 NONE
3 Modbus03      ON CONNECT    1  1.0  1.0 TCP/IP  192.3.1.11:3040
Press ENTER...

```

The Address and Field Unit name are the same as above. Other circuit information is given for each device.

- **Dbg** – ON or OFF depending on whether debugging is enabled or disabled for this unit.
- **Circuit** – CONNECT if the configured serial port can be connected to successfully, or DISCONNECT if the port cannot be accessed.
- **Last** – Number of poll attempts on the last poll to either receive a response or time out.
- **Clear** – Average number of poll attempts per poll since the poll counters were last cleared.
- **Boot** – Average number of poll attempts per poll since last reboot.
- **Type** – DIRECT for a serial connection or TCP/IP for a network circuit.
- **Port** – For serial ports, indicate the comm port number, baud rate, and parity (NONE, FULL for hardware handshaking, or TIME for timed RTS handshaking). For TCP/IP ports, indicate the IPaddress:port of the network circuit.

10- RTU Diags

Main Menu [Diagnostics Services](#) [RTU Diags](#)

Set the Debug Level for diagnostic monitoring of Master Channel protocol messages to a Field Unit. Use option 99 to monitor live diagnostics after setting the Debug Level.

Enter **10** for RTU Diags. Enter the number of the Master Channel or Internal Channel for the FieldUnit that you want to change Debug Level.

(See [Master Channel Status Indications](#) for a list of status values.)

```

Make selection: 10

===== Rtu Diags =====

ElecSys(V:5.7.2017-08-07-1200) Mon Aug 14 02:10:12 2017
UnitName : 1 @ 192.3.1.10 REDIGATE <46247-0004>-SerialNumb
-----
Chan Name          Status      Rtus Time
==== =
0 Channel0        Normal      3 Mon Aug 14 02:10:07 2017
2 Master Channel  w/Errors   1 Mon Aug 14 02:02:14 2017
15 Channel15      Normal      1 Mon Aug 14 02:02:14 2017

Enter Channel (0 to 15, -1 for all) ? 0

```

Enter the new Debug Level that you wish to set for Field Units on this Channel.

NOTE: the Debug Level applies to **all** Field Units of the same protocol under this Master Channel. (To see diagnostics for only some Field Units on a channel, you must disable diagnostics on the other units.)

```

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)
3 - Data Display (Display)
4 - Data Dump (Dump)

Debug Level 0-4 ? 4

```

Enter the FieldUnit Address to enable at the above diagnostics level, or -1 for all FieldUnits on the channel.

Enter 1 to enable the diagnostics for the FieldUnit(s), or 0 to disable diagnostics.

```

Enter RTU Address (-1 for all) ? 1

Enter 0=Disable : 1=Enable [Default=1] ? 1

```

After entering all information related to the task Debug Level modification, a single line output will indicate the change in status, and the list of tasks will generally be shown again.

```

Setting Prot-Rtu 1 to Enable Dump

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)

```

```

3 - Data Display      (Display)
4 - Data Dump         (Dump)

Debug Level 0-4 ?

```

Once you have modified the Debug level for all FieldUnits on this channel that you wish to change, press Enter to return to the Diagnostics Services menu.

11- Rtu Clear

Main Menu [Diagnostics Services RTU Clear](#)

Clear polling statistics for a Field Unit, or all Field Units on a Master Channel.

Enter **11** for Rtu Clear. Enter the Master Channel number, and either clear statistics all devices or enter the unit address to clear.

```

Make selection: 11

===== Rtu Clear =====
ElecSys(V:5.7.2017-08-24-1000) Mon Dec 6 05:15:36 1999
DNPMastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Chan Name          Status      Rtus Time
=====
  0 Channel0       Normal      1 Mon Dec 6 05:15:33 1999
  1 Channel0       Normal      1 Mon Dec 6 05:15:34 1999
 15 Channel15     Normal      1 Tue Nov 30 06:00:02 1999

Enter Channel (0 to 15) ? 0

Clear All Rtus (Y/N) ? n

-----RTU-----      -----POLL-----      -----ERRORS-----
Addr Name          Protocol Status      Time      Count      TimOut      BadData      Frame
-----
  1 DNP3 Field Unit DNP3MST00 PollDone 05:15:39 111713      30          0          0

Enter Rtu to Clear ? 1

Clearing Rtu 1 Status Counters

Clear All Rtus (Y/N) ?

```

12- Slave Diags

Main Menu [Diagnostics Services Slave Diags](#)

Set the Debug Level for a Slave Channel, or view statistics on a Slave Channel.

Enter **12** for Slave Diags. Enter the enumeration, starting from 0, for the Slave Channel you wish to view or set.

Slave Channels are identified with a short name plus the numeric instance number of the task. Network Slave Channels may either end with a 'd' (for the listening socket) or a number (for an active socket connection). Examples:

- DNPSLAV0 = DNP Async Slave Channel, instance number 0
- MBNSL00d = Modbus Network Slave Channel 'daemon' (listening socket), instance number 0. This is the task that waits for incoming connections, and then spawns a separate task handling the active socket connection. If you set the Debug Level for this task, then any future connections to the socket will inherit the same Debug Level.
- MBNSL001 = Modbus Network Slave Channel (active socket connection #1), instance number 0. Many device protocol servers allow multiple simultaneous sockets to the same port. If you set the Debug Level for this task, it only applies to the current host connection to the socket. Once the socket connection is closed, the 'daemon' process controls the Debug Level of future connections.

```

Make selection: 12

===== Slave Status/Diagnostics =====
ElecSys(V:5.7.2017-08-30-1300) Mon Dec 6 05:18:07 1999
powirv : 1 @ 10.63.191.29 ZEUS-3.12 <Use System Serv Option-123>
-----
  0 - DNPSLAV0 Status ( All)   1 - DNPSLAV1 Status ( All)
  2 - DNPSLAV2 Status ( All)   3 - DNPSLAV3 Status ( All)
  4 - MBNSL00d Status ( All)   5 - MBNSL001 Status ( All)

```

```

Task Slot Number (0 to 4) ? 0

Task DNPSLAV0 Status ( All)

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)
3 - Data Display (Display)
4 - Data Dump (Dump)

```

If you enter 'S' for Status instead of a Debug Level, the statistics for the Slave Channel will be displayed: polls received, responses sent, time of last poll, number of configured Slave Attach units, Slave address number, Channel/RTU of the attachment, and other information about the Slave Channel.

```

Debug Level 0-4 or 'S'tatus ? s

Slave Status

Poll Received=3559767
Response Sent=49964436
Last Poll @ Mon Dec 6 05:18:13 2016
Numb Attachments=1

SlaveID=1 From: Chan=15 Rtu=3
Serial Port COM0 @ 0 baud

Press ENTER

===== Slave Status/Diagnostics =====
ElecSys(V:5.7.2017-08-30-1300) Mon Dec 6 05:18:18 1999
powirv : 1 @ 10.63.191.29 ZEUS-3.12 <Use System Serv Option-123>
-----
0 - DNPSLAV0 Status ( All) 1 - DNPSLAV1 Status ( All)
2 - DNPSLAV2 Status ( All) 3 - DNPSLAV3 Status ( All)
4 - MBNSL00d Status ( All) 5 - MBNSL001 Status ( All)

```

However, if you enter a Debug Level (0 to 4) and enter '1' to Enable, the Debug Level of the Slave Channel will be configured. Use option 99 to monitor live diagnostics after setting the Debug Level.

```

Task Slot Number (0 to 4) ? 0

Task DNPSLAV0 Status ( All)

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)
3 - Data Display (Display)
4 - Data Dump (Dump)

Debug Level 0-4 or 'S'tatus ? 4

Enter 0=Disable : 1=Enable [Default=1] ? 1

Setting DNPSLAV0 to Level Dump

===== Slave Status/Diagnostics =====
ElecSys(V:5.7.2017-08-30-1300) Mon Dec 6 05:18:48 1999
powirv : 1 @ 10.63.191.29 ZEUS-3.12 <Use System Serv Option-123>
-----
0 - DNPSLAV0 Dump ( All) 1 - DNPSLAV1 Status ( All)
2 - DNPSLAV2 Status ( All) 3 - DNPSLAV3 Status ( All)
4 - MBNSL00d Status ( All) 5 - MBNSL001 Status ( All)

Task Slot Number (0 to 4) ?

```

When you are finished setting the Debug Levels, press Enter to return to the Diagnostics Menu.

13- IP Route Table

[Main Menu Diagnostics Services IP Route Table](#)

Show the network routing (Linux 'route' command).

Enter **13** for IP Route Table. The rows containing a "G" under "Flags" are gateway/router entries, and the Gateway with Destination address "0.0.0.0" is the default gateway. Note also the "Iface" (Interface) column, which indicates the Ethernet or other network interface the addresses apply to. The "Genmask" (subnet mask) column, combined with the Destination address, identifies the range of addresses defined for the route entry.

NOTE that in older RediGate tarballs prior to September 2017, this menu only worked if you logged in as 'root' first, then superuser to the user account.

```

Make selection: 13

===== Route Table =====
ElecSys(V:5.7.2017-08-24-1000) Mon Dec 20 05:07:14 1999
DNPMastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Kernel IP routing table
Destination      Gateway          Genmask         Flags Metric Ref    Use Iface
0.0.0.0          10.63.255.128   0.0.0.0         UG    0      0      0 eth0
10.53.47.0       0.0.0.0         255.255.255.0   U      0      0      0 eth3
10.63.0.0        0.0.0.0         255.255.0.0     U      0      0      0 eth0
192.168.1.0     0.0.0.0         255.255.255.0   U      0      0      0 eth1

Press ENTER to continue

```

14- Ping Service

[Main Menu Diagnostics Services Ping Service](#)

Ping a network address from the RediGate (Linux 'ping' command).

Enter **14** for Ping Service. Enter the destination address of a device to ping (IPv4 address or DNS name). When finished with the ping, press Control-C to stop the pings and see the ping statistics.

To get a ping response, the destination address must be reachable from the RediGate using its current routing configuration and not prevented by firewall rules (RediGate or other network devices). To ping a named server instead of IP address, the RediGate must have DNS configured (explicit DNS configuration if using Ethernet, or through the DNS setting on a cellular PPP network).

```

Make selection: 14

===== Ping Services =====
ElecSys(V:5.7.2017-08-24-1000) Mon Dec 20 05:22:35 1999
DNPMastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Enter Host to Ping (IP-Addr or Name) 10.63.191.29

!!!! Press CTRL-C to stop pinging !!!!

PING 10.63.191.29 (10.63.191.29): 56 data bytes
64 bytes from 10.63.191.29: seq=0 ttl=64 time=2.360 ms
64 bytes from 10.63.191.29: seq=1 ttl=64 time=1.295 ms
64 bytes from 10.63.191.29: seq=2 ttl=64 time=1.293 ms
^C
--- 10.63.191.29 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 1.293/1.649/2.360 ms

```

15- RTDB Status

[Main Menu Diagnostics Services RTDB Status](#)

View status of a Real-time Database.

Enter **15** for RTDB Status.

```

Make selection: 15

```

```

===== RTDB Status =====
ElecSys(V:5.7.2017-08-24-1000) Mon Dec 20 05:40:14 1999
DNPmastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Chan Addrs Unit          Dbg    Time    Wrote To  NumWrite  RBE(0) RBE(1)
-----
  0      1 DNP3 Field Unit   ON    1 00:00:00      0         0         0         0
  1      1 DNP3 Field Unit   ON   30 00:01:04    40001      1         0         0
  15     3 Virtual          ON    1 00:00:00      0         0         0         0

Redisplay (Y/N) ?

```

The information included in this display is:

- **Chan** - Channel number from configuration
- **Addrs** - FieldUnit address from configuration
- **Unit** - FieldUnit name from configuration
- **Dbg** - whether debugging of RTDB diagnostics is enabled or disabled for this FieldUnit
- **Time** - Time of last point update in RTDB
- **Write To** - Starting register address of last RTDB point update in the RTDB
- **NumWrite** - Number of points written to the database on the last point update.
- **RBE(0), RBE(1)** - Number of points in the RTDB that have flags set for RBE-0 or RBE-1 (RBE-2 and RBE-3 are not shown).

16- RTDB Diags

[Main Menu](#) [Diagnostics Services](#) [RTDB Diags](#)

Set the Debug Level for read and write access of the Real-time Database (RTDB) for a Field Unit.

Enter **16** for RTDB Diags. Enter the Master Channel number of the channel containing the RTDB to diagnose.

```

Make selection: 16

===== RTDB Diags =====
ElecSys(V:5.7.2017-08-24-1000) Tue Dec 21 03:54:15 1999
DNPmastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
Chan Name          Status    Rtus Time
=====
  0 Channel0       w/Errors    1 Tue Dec 21 03:54:12 1999
  1 Channel0       w/Errors    1 Tue Dec 21 03:54:15 1999
  15 Channel15     Normal      1 Tue Nov 30 06:00:02 1999

Enter Channel (0 to 15) ? 0

```

Enter the new Debug Level that you wish to enable for the RTDB on this Master Channel.

NOTE: the Debug Level applies to **all** enabled Field Units under this Master Channel. (To see diagnostics for only some Field Units on a channel, you must disable diagnostics on the other units.)

```

Valid Debug Level:
0 - Fatal Errors (Ending)
1 - General Errors (Error)
2 - Status Messages (Status)
3 - Data Display (Display)
4 - Data Dump (Dump)

Debug Level 0-4 ? 4

```

Enter the FieldUnit (RTU) Address to which the diagnostics status will be applied, or -1 to apply this change to all FieldUnits on the channel.

Enter 1 to enable the diagnostics for the FieldUnit RTDB, or 0 to disable diagnostics.

```

-----RTU-----
Addr Name          Protocol Status    Time    Count  TimOut  BadData  Frame
-----
  1 DNP3 Field Unit DNPmST00 Timeout 03:54:19      0 391487      0      0

Enter RTU Address (-1 for all) ? 1

Enter 0=Disable : 1=Enable [Default=1] ? 1

```

Setting RTDB-Rtu 1 to Enable Dump

Press ENTER

```
Valid Debug Level:
0 - Fatal Errors      (Ending)
1 - General Errors    (Error)
2 - Status Messages  (Status)
3 - Data Display      (Display)
4 - Data Dump         (Dump)

Debug Level 0-4 ?
```

When you are finished setting Debug Levels for the RTDBs on this Master Channel, press Enter to return to the Diagnostics Menu.

17- MQTT Status

[Main Menu](#) [Diagnostics Services](#) [MQTT Status](#)

View status of the current MQTT connection. This menu shows diagnostics for any MQClient and MQClientExtra (instance 0 and 1 = MQidspX0 and MQidspX1) processes configured in the RediGate.

Enter **17** for MQTT Status. If MQTT is configured in the RediGate, the following information will be displayed:

- ConnectState – "Connected" if the MQTT socket is currently established with the server.
- Broker IP Addr – Address and port number, if connected to an MQTT server. If using a TLS-encrypted tunnel, this will typically be configured as a localhost (127.0.0.1) type address. If directly connected, the actual IP address of the server will be shown. If the connection to a server is not made, the address will show 0.0.0.0.
- Number Connects, Bytes & Messages Received/Sent, QOS – Number of MQTT connections that have been made and the amount of data transferred since the last restart of the RediGate.
- Last Send/Recv Time and Topic – Time and topic name

```
Make selection: 17

===== MQTT Client(s) Status =====
ElecSys(V:5.7.2017-08-24-1000) Mon Dec 20 05:40:14 2016
DNPMastTest : 1 @ 10.63.191.28 REDIGATE-400 <38258-0025>-SerialNumb
-----
ConnectState      : Connected
Broker IP Addr    : 127.0.0.1 - 8883
Number Connects  : 20
Bytes Received    : 205
Bytes Sent        : 80121
Messages Receive : 43
Messages Sent     : 26026
QOS-0 Sent       : 472
QOS-1 Sent       : 0
QOS-2 Sent       : 0
Last Send Time   : 12/20/2016 05:39:49
Last Recv Time   : 12/20/2016 01:54:35
Last Recv Topic  : sys/GroupID/RediGate/FieldUnit1
Last Sent Topic  : RBE/GroupID/RediGate/Channel/FieldUnit1

MQidspX0 was not found...
MQidspX1 was not found...
Redisplay (y/n)?
```

18- RTDB Data Dump

[Main Menu](#) [Diagnostics Services](#) [RTDB Data Dump](#)

View the current contents of registers in the Real-time Database. This allows a user to view the last-known value of any point in an RTDB that may have been obtained through Master Channel polling or other sources of data.

Enter **18** for RTDB Data Dump. Enter the Master Channel number and RTU Address of the RTDB to view registers.

```
Make selection: 18

===== RTDB Dump =====
ElecSys(V:5.7.2017-10-25-1700) Mon Nov 6 18:19:21 2017
UnitName : 1 @ 192.3.1.10 REDIGATE-400 <38258-0025>-SerialNumb
```



```

-----
Chan Name          Status   Rtus Time
====  =====
   0 Channel0      Normal    2 Mon Nov  6 18:19:19 2017
  15 Channel15     Normal    1 Mon Nov  6 18:18:14 2017

Enter Channel Number ? 0

-----RTU-----      -----POLL-----      -----ERRORS-----
Addr Name          Protocol Status   Time      Count  TimOut BadData Frame
-----
   2 Modbus02      MBMAST00 Timeout 18:19:14      0      4      0      0
   3 Modbus03      MBMAST00 PollDone 18:19:22     384     0      0      0

Enter Rtu Address 3

```

The RTDB configuration is then shown for the Channel and RTU address. Enter the Starting Point Address and the Point Count of registers to display. Make sure that the quantity requested doesn't exceed the number of available registers.

```

Data Type   Count  Address
-----
BOOLEAN     10     1
BOOLEAN     10    10001
SINT16      5     30001
UINT16      5     40001
UINT32      5     41001
REAL32      5     42001
STRING-32   5     43001
STRING-256  5     44001

Enter Starting Point Address 1

Enter Point Count (1 to 125 or only 16 STRING-256) 50

```

After entering the Point Count, the register values will be displayed in hexadecimal format.

```

Data type is Boolean (HEXADECIMAL)
1)- 01 00 00 01 00 00 01 00
9)- 01 00 00 00 01 00 01 01
10007)- 00 01 00 01 0001 ffec 7fff f060
30005)- ffff 000a 00c8 0bb8 9c40 ffff 00002710 00030d40
41003)- 002dc6c0 02625a00 7fffffff 3f800000 c1a00000 40490fdb cc189680 5cde0b6b
43001)- 00656e6f 006f7774 65726874 72756f66 34333231 00454e4f 004f5754 45524854
44004)- 52554f46 45564946

```

Enter **Y** (Yes) to refresh the display of the register values or **N** (No) to exit the display.

Enter **F** to display the RTDB values formatted according to the data type configured for each register. In the example below, the following registers are shown:

Registers	Data Type
1-10, 10001-10010	Boolean
30001-5	SINT16SINT16S
40001-5	UINT16
41001-5	UINT32
42001-5	REAL32
43001-5	STRING32
44001-5	STRING256

```

Redisplay (Y/N/F/H/B/O/A where F=Formatted, H=Hex, B=Bin O=Online A=Auto) ? f

Data type is Boolean (FORMATTED)
1)- ON OFF OFF ON OFF OFF ON OFF
9)- ON OFF OFF OFF ON OFF ON ON
10007)- OFF ON OFF ON 1 -20 32767 -4000

```

```

30005)-      -1      10      200      3000      40000      65535
41001)-          10000          200000          3000000          40000000          2147483647
42001)-          1.00000          -20.0000          3.14159 -4.00000e+07          5.00000e+17
43001)- <one                > <two                >
        )- <three                > <four                >
        )- <1234567890123456789012345678901 >
44001)- <ONE>
        <TWO>
        <THREE>
        <FOUR>
        <FIVE>

```

Enter **H** (Hex) to show the values as hexadecimal again. Enter **B** (Binary) to show Boolean registers as "1" or "0".

Enter **O** (Online) to show the quality flag of each register.

```

Redisplay (Y/N/F/H/B/O/A where F=Formatted, H=Hex, B=Bin O=Online A=Auto) ? o

Data type is Boolean (ONLINE/offline)
  1)- ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE
  9)- offline offline ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE
10007)- ONLINE ONLINE offline offline ONLINE ONLINE ONLINE ONLINE
30005)- ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE
41003)- ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE
43001)- ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE
44004)- ONLINE ONLINE

```

Enter **A** (Auto) to automatically refresh the values of the RTDB registers using the current display format. Enter a number of Seconds for how often to redisplay.

```

Redisplay (Y/N/F/H/B/O/A where F=Formatted, H=Hex, B=Bin O=Online A=Auto) ? a
Enter Number of Seconds between updates (1 to 60) 3

Data type is Boolean (FORMATTED)      11/7/2017 1:06:36
  1)-  ON OFF OFF  ON OFF OFF  ON OFF
  9)-  ON OFF OFF OFF  ON OFF  ON ON
10007)- OFF  ON OFF  ON      1  -20 32767  -4000
30005)-      -1      10      200      3000      40000      65535
41001)-          10000          200000          3000000          40000000          2147483647
42001)-          1.00000          -20.0000          3.14159 -4.00000e+07          5.00000e+17
43001)- <one                > <two                >
        )- <three                > <four                >
        )- <1234567890123456789012345678901 >
44001)- <ONE>
        <TWO>
        <THREE>
        <FOUR>
        <FIVE>

```

Enter any of the other letter options to stop the automatic RTDB display.

Press Enter once or twice to exit the RTDB Dump menu to get back to the Diagnostics Menu.

19- Dial Backup

This is a legacy menu for the DialBackup task, which is currently not supported in the RediGate.

99- Monitor Diagnostics

[Main Menu](#) [Diagnostics Services](#) [Monitor Diagnostics](#)

View the current diagnostic messages generated by the RediGate tasks. The amount of information shown depends on what activity is occurring and the current settings of the Debug Level for each task.

Enter **99** for Monitor Diagnostics.

510- Trend a Point

535- View Custom Rpt

If one or more Custom Report is configured for this RediGate, view the contents of the report. The Custom Report is a pre-defined set of RTDB registers with a tag descriptor. This is a more convenient way to view the values of registers than option 18, and it allows registers that have been defined as read/write to be written to through the user menu.

Enter **535** for View Custom Rpt.

Bootloader and Linux Operation

Bootloader

Linux Diagnostic Commands

