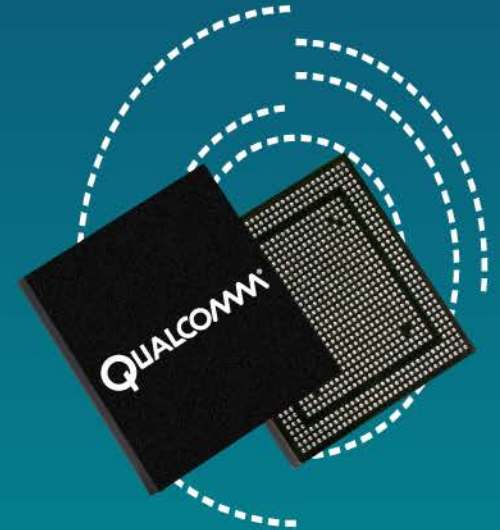


QUALCOMM®  
zhangnan@hipad.com



## QXDM Overview and Linux Introduction

80-NN641-1 A

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U.S.A.

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# Revision History

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Revision	Date	Description
A	Jun 2014	Initial release

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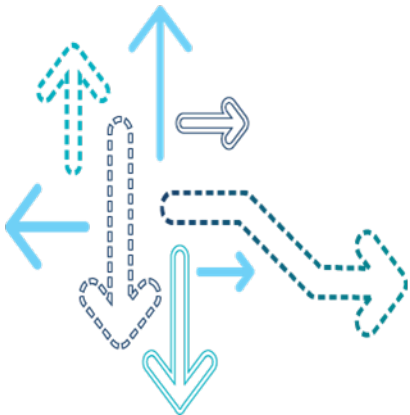
# Contents

---

- Windows QXDM Overview
- Linux QXDM Overview
- Windows vs Linux Comparison
- Support/Resources
- References
- Questions?

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## Windows QXDM Overview

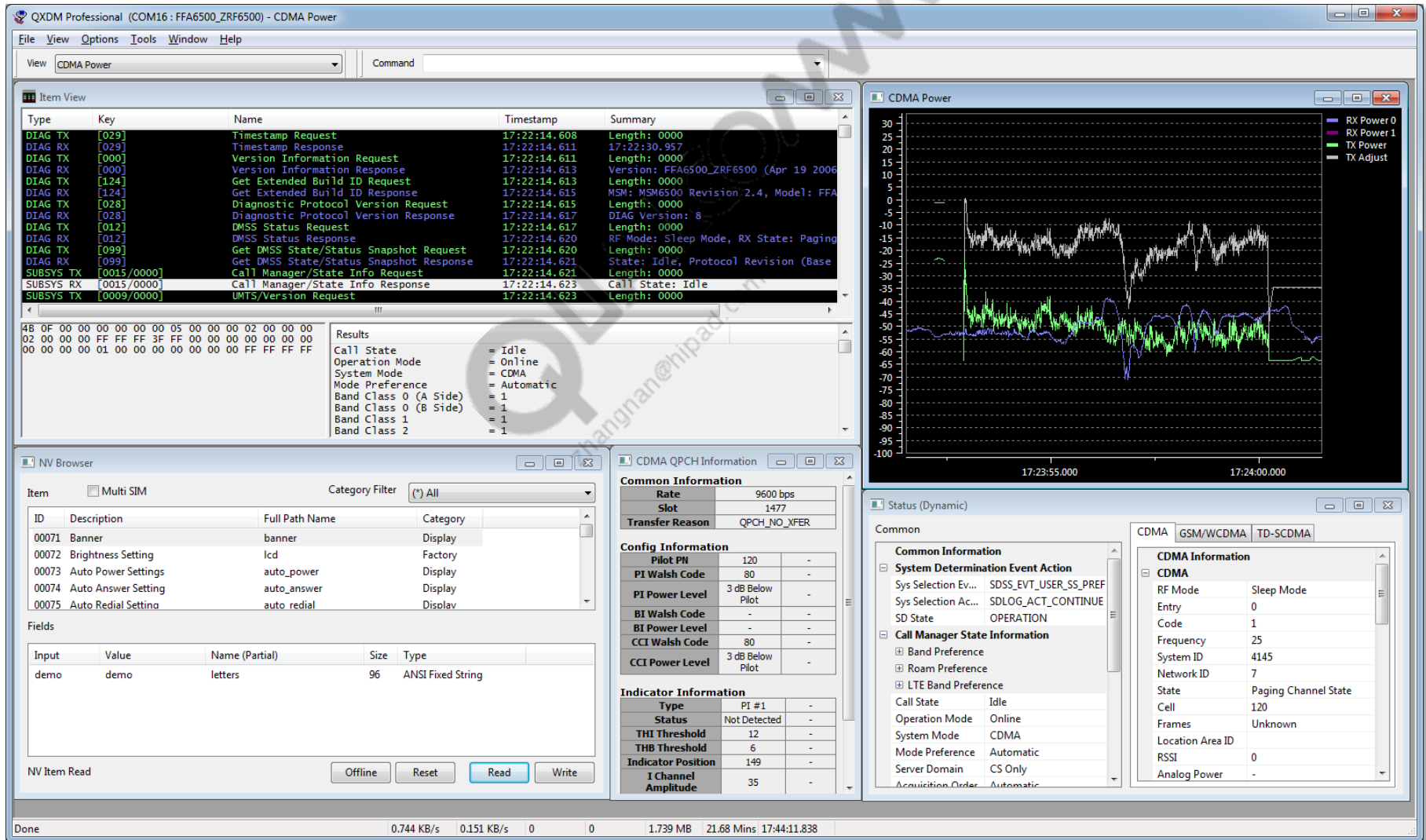


# Qualcomm eXtensible Diagnostic Monitor (QXDM)

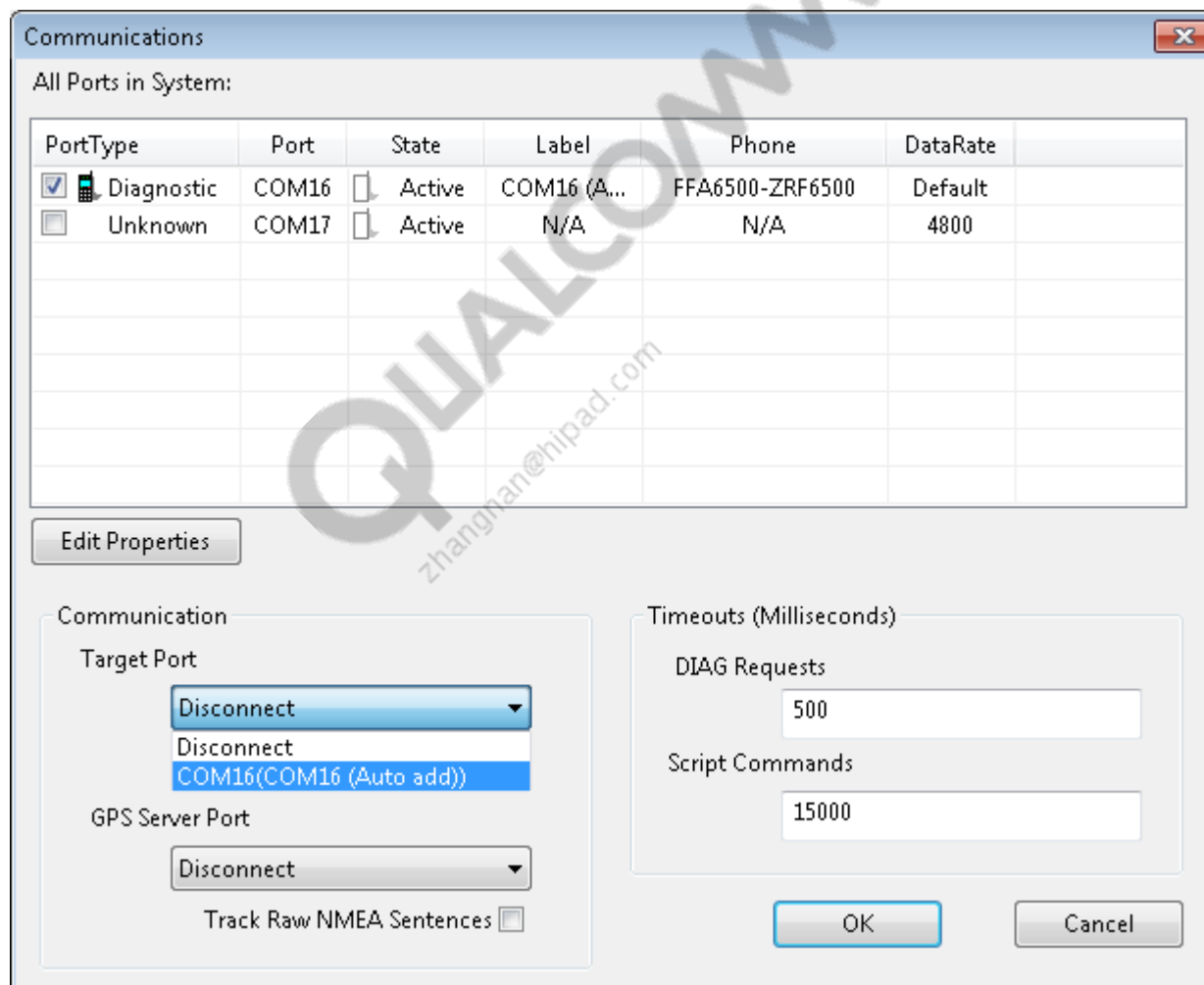
---

- Diagnostic client for mobile phones
- Data transmitted to/from device through diag packets
- Real-time analysis and logging data
- Item Store File (.isf)
- Packet/display configuration (.dmc)

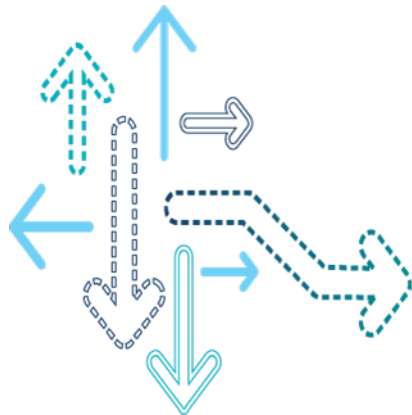
# QXDM – Windows



# Device Connection – Windows







# Linux QXDM Overview

# QXDM – Linux

- Toolbar for common tasks
- Command bar

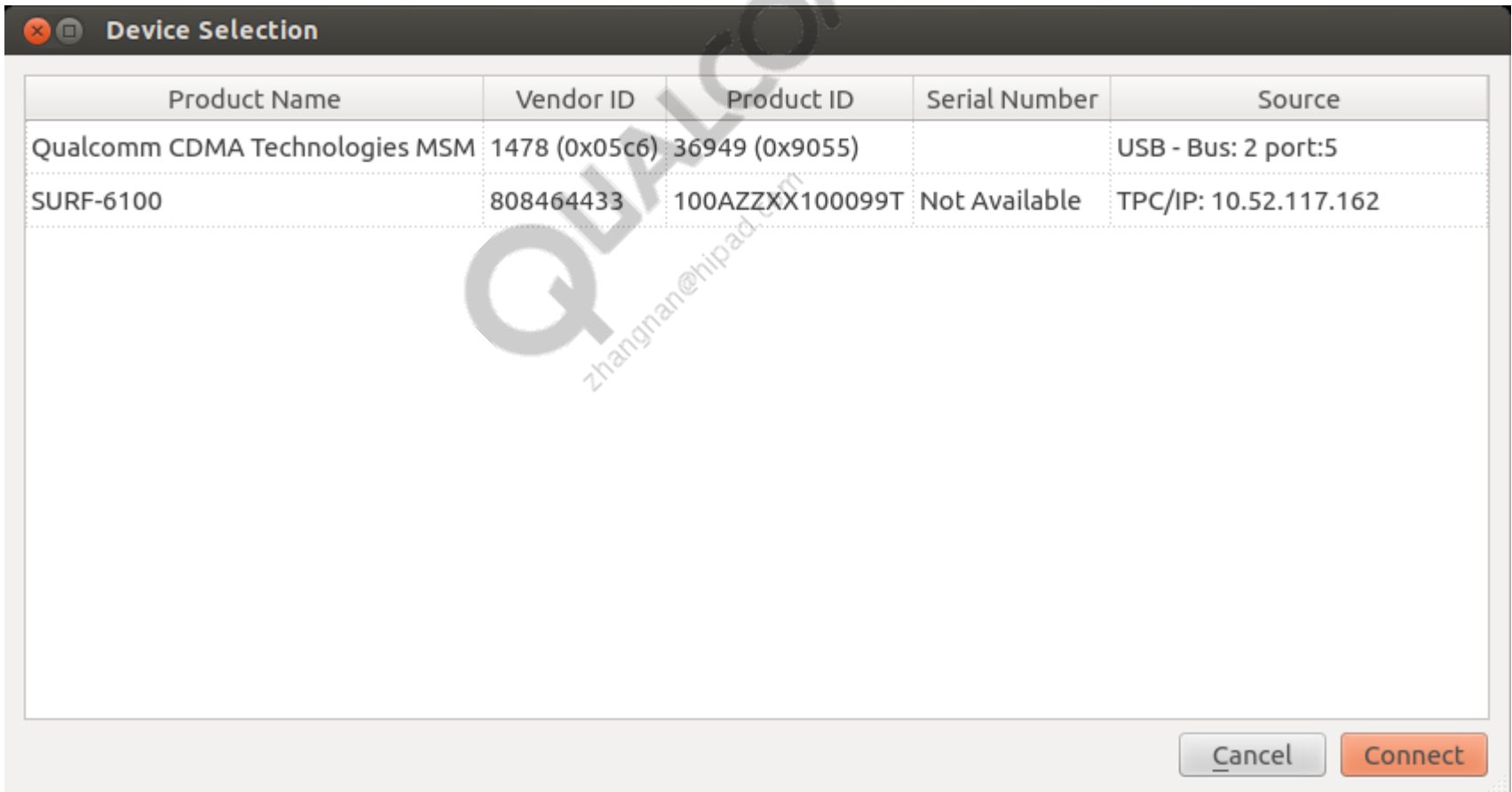
The screenshot displays the QXDM Professional - Android application interface. The main window features a toolbar with icons for file operations, playback, and settings. Below the toolbar is a command bar with a text input field and a dropdown arrow. The central area is titled 'Item View' and contains a table of diagnostic data items. The table has columns for Type, Summary, Name, Key, and Time Stamp. The data is organized into a list of items, each with a unique key and timestamp.

Type	Summary	Name	Key	Time Stamp
DIAG TX	Length: 0055	Extended M...	[0125]	2014/04/24 20:20:39.942000
DIAG RX	Length: 0055	Extended M...	[0125]	2014/04/24 20:20:39.947000
DIAG TX	Length: 0015	Extended M...	[0125]	2014/04/24 20:20:39.949000
DIAG RX	Length: 0015	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG TX	Length: 0011	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG RX	Length: 0011	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG TX	Length: 0103	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG RX	Length: 0103	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG TX	Length: 0043	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG RX	Length: 0043	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG TX	Length: 0047	Extended M...	[0125]	2014/04/24 20:20:39.980000
DIAG RX	Length: 0047	Extended M...	[0125]	2014/04/24 20:20:39.981000
DIAG TX	Length: 0051	Extended M...	[0125]	2014/04/24 20:20:39.982000
DIAG RX	Length: 0051	Extended M...	[0125]	2014/04/24 20:20:39.988000
DIAG TX	Length: 0027	Extended M...	[0125]	2014/04/24 20:20:39.989000
DIAG RX	Length: 0027	Extended M...	[0125]	2014/04/24 20:20:39.994000
DIAG TX	Length: 0011	Extended M...	[0125]	2014/04/24 20:20:39.996000
DIAG RX	Length: 0011	Extended M...	[0125]	2014/04/24 20:20:40.001000
DIAG TX	Length: 0119	Extended M...	[0125]	2014/04/24 20:20:40.002000
DIAG RX	Length: 0119	Extended M...	[0125]	2014/04/24 20:20:40.008000
SUBSYS TX	Length: 0016	EF52/DIAG ...	[0019/0002]	2014/04/24 20:20:40.009000
SUBSYS RX	Length: 0008	EF52/DIAG ...	[0019/0002]	2014/04/24 20:20:40.061000

Below the main window, a separate command bar is shown with the text 'Command: send\_data 12' and a dropdown arrow.

# Device Connection – Linux

- USB connection
- TCP/IP connection



# Item Lists

- Item View
- Filtered View

The screenshot displays the QXDM Professional - Android application interface. The main window is titled "Item View" and contains a table with the following columns: Type, Summary, Name, Key, and Time Stamp. The table lists various diagnostic and system messages, including "DIAG TX", "DIAG RX", "LOG", and "SUBSYS TX/RX".

Overlaid on the main window is a smaller window titled "Filtered View". This window also has columns for Type, Summary, Name, Key, and Time Stamp, and it displays a subset of the data from the main window, specifically focusing on "LOG" entries.

Below the "Filtered View" window, there is a section titled "All levels turned off" which lists several error codes: [09003], [09004], and [09005].

At the bottom of the interface, there is a hex dump showing memory data in hexadecimal format.

# Item Parsing

- Summary
- Full text
- Raw payload

The screenshot shows the QXDM Professional - Android application interface. The main window displays a list of items in a table format. The table has columns for Type, Summary, Name, Key, and Time Stamp. The items are categorized into DIAG TX, DIAG RX, and SUBSYS TX/RX. Below the table, there is a section for raw payload data, showing hexadecimal and ASCII representations. To the right of the raw payload, there is a section for item details, including ESN, RF Mode, MIN1, MIN2, CDMA RX State, and various frame counts.

Type	Summary	Name	Key	Time Stamp
DIAG TX	Length: 0000	Get Extende...	[0124]	2014/04/24 20:20:39.030000
DIAG RX	Length: 0038	Get Extende...	[0124]	2014/04/24 20:20:39.037000
DIAG TX	Length: 0000	Diagnostic P...	[0028]	2014/04/24 20:20:39.038000
DIAG RX	Length: 0002	Diagnostic P...	[0028]	2014/04/24 20:20:39.055000
DIAG TX	Length: 0000	DMSS Statu...	[0012]	2014/04/24 20:20:39.056000
DIAG RX	Length: 0047	DMSS Statu...	[0012]	2014/04/24 20:20:39.073000
DIAG TX	Length: 0000	Get DMSS S...	[0099]	2014/04/24 20:20:39.074000
DIAG RX	Length: 0035	Get DMSS S...	[0099]	2014/04/24 20:20:39.086000
SUBSYS TX	Length: 0000	Call Manage...	[0015/0000]	2014/04/24 20:20:39.087000
SUBSYS RX	Length: 0044	Call Manage...	[0015/0000]	2014/04/24 20:20:39.098000
SUBSYS TX	Length: 0000	UMTS/Versio...	[0009/0000]	2014/04/24 20:20:39.099000
SUBSYS RX	Length: 0022	UMTS/Versio...	[0009/0000]	2014/04/24 20:20:39.116000
SUBSYS TX	Length: 0000	GSM/Versio...	[0008/0000]	2014/04/24 20:20:39.117000
SUBSYS RX	Length: 0006	GSM/Versio...	[0008/0000]	2014/04/24 20:20:39.134000
SUBSYS TX	Length: 0000	GSM/Status ...	[0008/0001]	2014/04/24 20:20:39.135000
SUBSYS RX	Length: 0028	GSM/Status ...	[0008/0001]	2014/04/24 20:20:39.152000
SUBSYS TX	Length: 0000	WCDMA/Ver...	[0004/0000]	2014/04/24 20:20:39.153000
SUBSYS RX	Length: 0006	WCDMA/Ver...	[0004/0000]	2014/04/24 20:20:39.170000
SUBSYS TX	Length: 0000	WCDMA/Ad...	[0004/0015]	2014/04/24 20:20:39.171000
SUBSYS RX	Length: 0019	WCDMA/Ad...	[0004/0015]	2014/04/24 20:20:39.182000
DIAG TX	Length: 0007	Logging Co...	[0115]	2014/04/24 20:20:39.184000
DIAG RX	Length: 0075	Logging Co...	[0115]	2014/04/24 20:20:39.200000

Raw payload data (hex and ASCII):

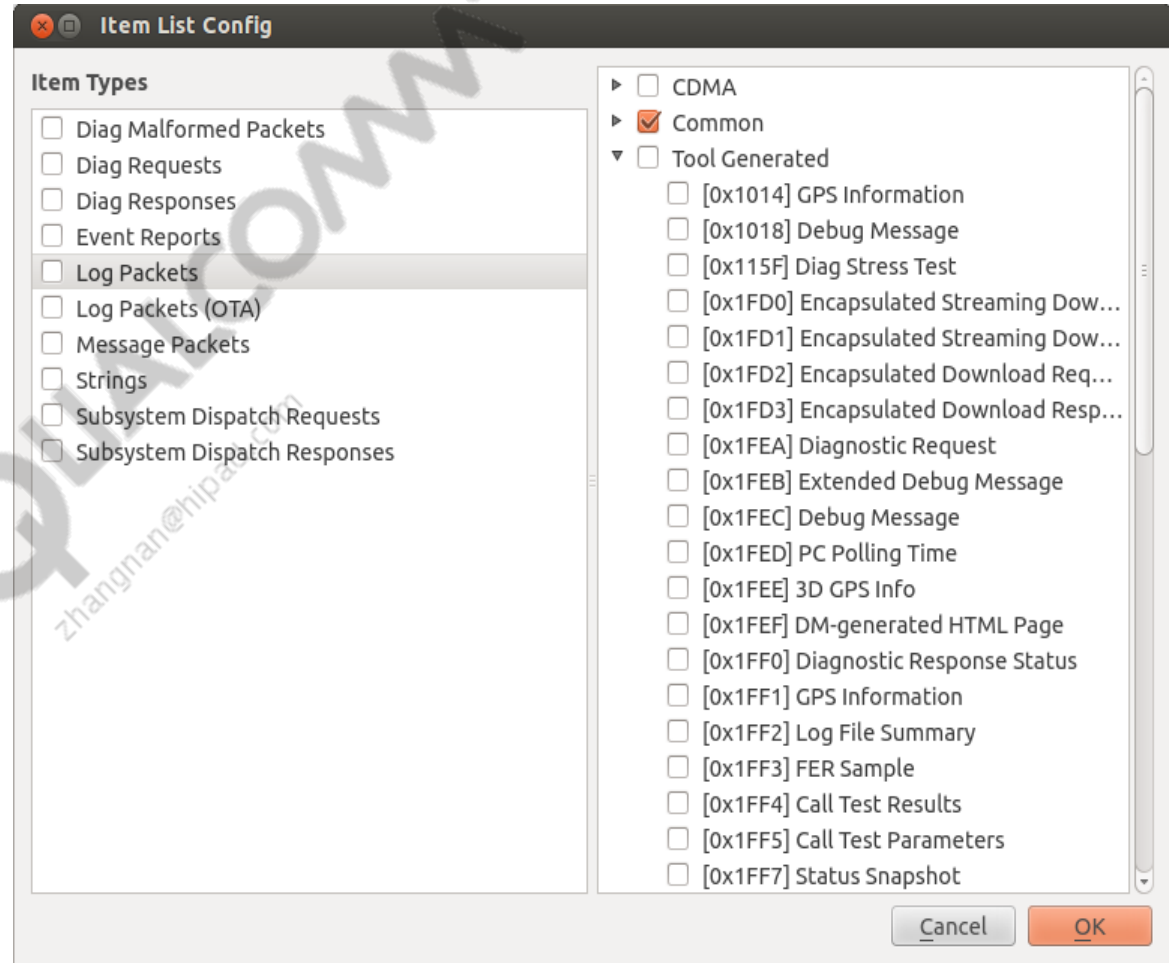
```
0C E1 00 E1 00 00 00 01 00 E7 EB F9 00 E7 EB
.a.a.....çëü.çë
F9 00 E7 03 E7 03 00 00 FF 00 00 00 00 00 00
ù.ç.ç....ÿ.....
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
.....
```

Item details:

```
ESN = 0x00000000
RF Mode = CDMA Cellular
MIN1 (Analog) = 0x00F9EBE7
MIN1 (CDMA) = 0x00F9EBE7
MIN2 (Analog) = 0x03E7
MIN2 (CDMA) = 0x03E7
CDMA RX State = Entering CDMA State
CDMA Good Frames = 255
Analog Corrected Frames = 0
Analog Bad Frames = 0
Analog Word Syncs = 0
Entry Reason = Normal CDMA Operation
Current Channel = 0
CDMA Code Channel = 0
Pilot Base = 0
SID = 0
NID = 0
LOCAID = 0
Analog RSSI = 0
```

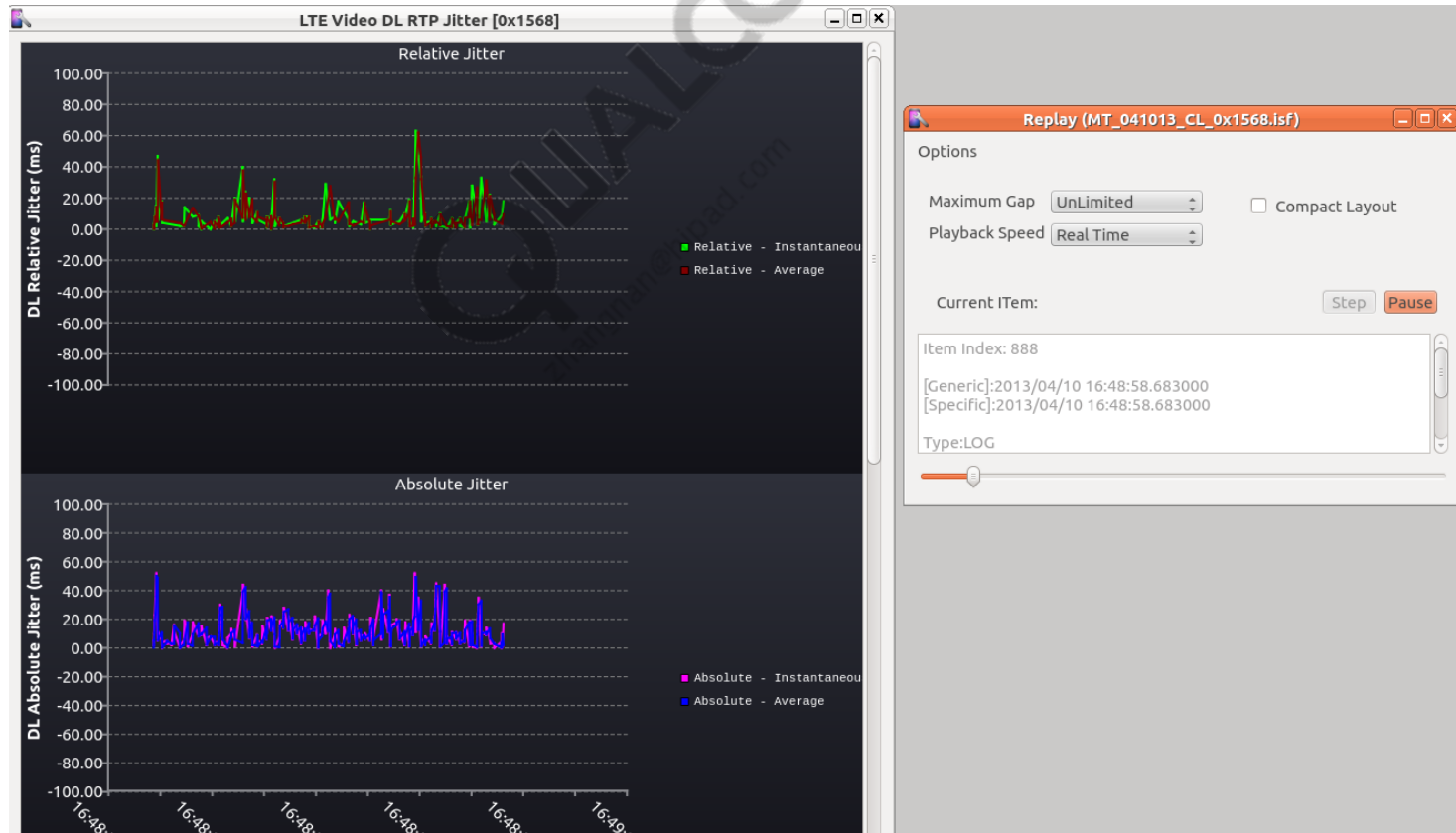
# Packet Configuration

- .dmc file
- Filtered view



# Graphic Displays

- Real-time graphics
- Replay manager



# HTML Displays

- HTML view
- JavaScript

LTE Mac Config

MAC Timer		RACH Config	
Parameter	Value	Parameter	Value
RA RSP Win Size	6	Preamble Initial Power	-104
TA Timer	65535	Power Ramping Step	4
BSR Timer	5	RA Index1	64
RETX BSR Timer	0	RA Index2	64
SR Periodicity	0	Preamble Trans Max	5
Contention Resolution Timer	48	MAX RETX MSG3	4

Active LC ID Configuration

LC ID	PBR	Priority	LC Group	Bucket Size
2	65535	3	0	3276750
5	8	4	3	2400
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-



# NV Browser

**NV Browser**

Item

☐ MultiSim
☒ No-Sleep Probe

Category Filter

Fields

ID	Description	Full Name	Category
00000	Electronic Serial Number	esn	Security
00001	Electronic Serial Number Checksum	esn_chksum	Security
00002	NV Major Version Number	verno_maj	System
00003	NV Minor Version Number	verno_min	System
00004	Station Class Mark	scm	System
00005	Slot Cycle Index	slot_cycle_index	System
00006	Mobile CAI Revision Number	mob_cai_rev	System
00007	Mobile Firmware Revision Number	mob_firm_rev	System
00008	Mobile Model	mob_model	System
00009	Configuration Checksum	config_chksum	Security
00010	Digital/Analog Mode Preference	pref_mode	System
00011	CDMA Preferred Serving System ...	cdma_pref_serv	CDMA
00012	Analog Preferred Serving System...	cdma_pref_serv	AMPS
00013	CDMA SID Lockout	cdma_sid_lock	CDMA
00014	CDMA SID Acquire	cdma_sid_lock	CDMA
00015	ANALOG SID Lockout	cdma_sid_lock	AMPS

Input	Value	Name(Partial)	Size (bits)
0	0	esn	32

EFS NV Probe Completed with 387 Entries

Offline

Reset

Read

Write

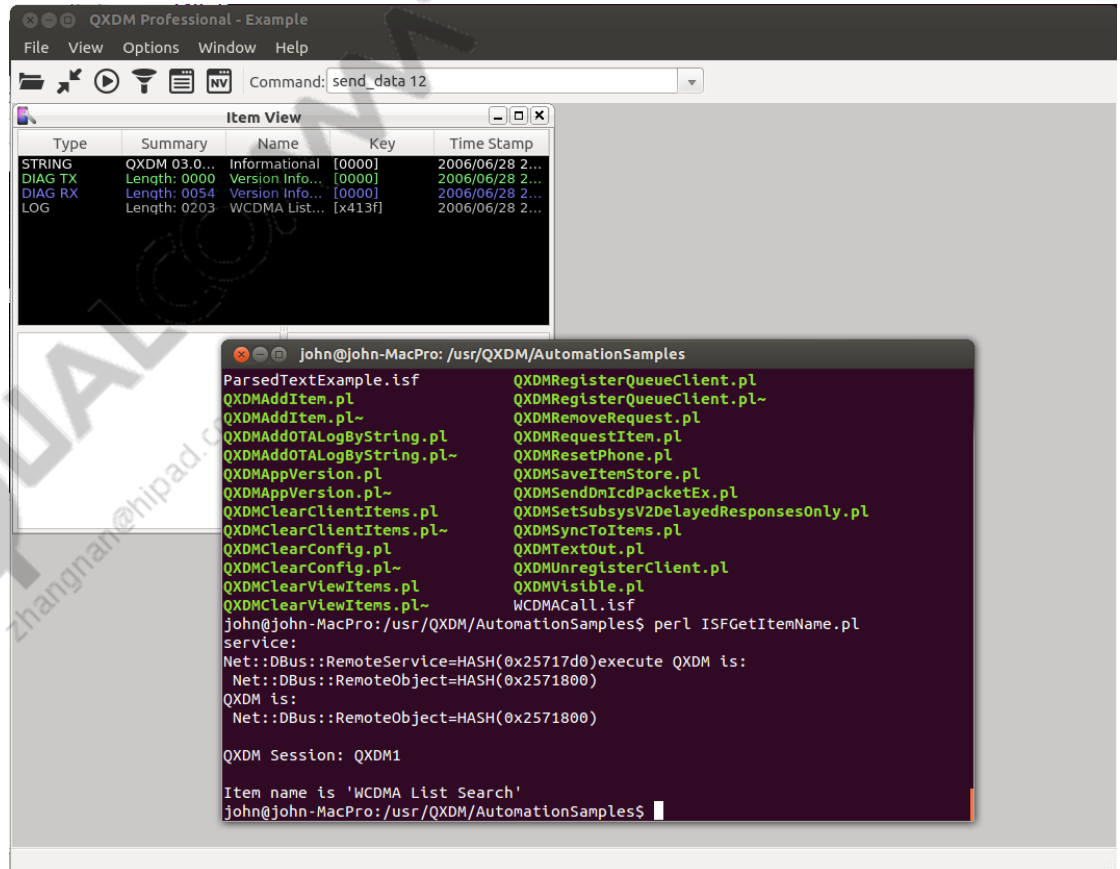
# Automation APIs

Main body of script

sub Execute

```
{  
    # Launch/connect to QXDM  
    $QXDM = QXDMInitialize();  
    if ($QXDM == null)  
    {  
        return;  
    }  
  
    # Dump the name of an item  
    DumpItemName();  
}
```

Execute();



# Sahara Memory Dump

QXDM Professional - Android

File View Options Window Help

Command: send\_data 75 37 3 0

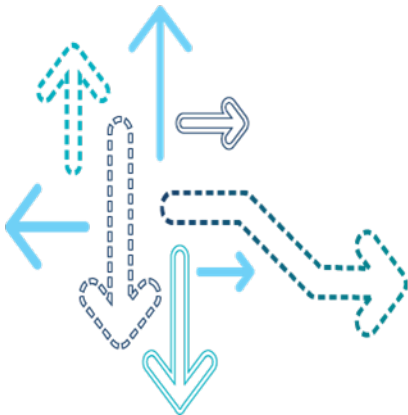
Item View

Type	Summary	Name	Key	Time Stamp
SUBSYS RX	Length: 0008	EFS2/DIAG Ope...	[0019/0002]	2014/05/21 21:26:00.868000
SUBSYS TX	Length: 0000	Debug/Simulat...	[0037/0003]	2014/05/21 21:26:08.871000
SUBSYS RX	Length: 0000	Debug/Simulat...	[0037/0003]	2014/05/21 21:26:08.877000
STRING	Device Android disconnect	Informational	[0000]	2014/05/21 21:26:12.787000
STRING	Device Android reconnected	Informational	[0000]	2014/05/21 21:26:12.803000
STRING	Sahara Hello	Informational	[0000]	2014/05/21 21:26:12.819000
STRING	Sahara Memory 32 bit Debug Start	Informational	[0000]	2014/05/21 21:26:12.819000
STRING	Downloading Entry RST_STAT.BIN size 4	Informational	[0000]	2014/05/21 21:26:12.824000
STRING	Finished: RST_STAT.BIN	Informational	[0000]	2014/05/21 21:26:12.831000
STRING	Downloading Entry load.cmm size 592	Informational	[0000]	2014/05/21 21:26:12.831000
STRING	Finished: load.cmm	Informational	[0000]	2014/05/21 21:26:12.837000
STRING	Downloading Entry MSGRAM.BIN size 16384	Informational	[0000]	2014/05/21 21:26:12.837000
STRING	Finished: MSGRAM.BIN	Informational	[0000]	2014/05/21 21:26:12.854000
STRING	Downloading Entry LPM.BIN size 16384	Informational	[0000]	2014/05/21 21:26:12.854000
STRING	Finished: LPM.BIN	Informational	[0000]	2014/05/21 21:26:12.871000
STRING	Downloading Entry OCIMEM.BIN size 34816	Informational	[0000]	2014/05/21 21:26:12.871000
STRING	Finished: OCIMEM.BIN	Informational	[0000]	2014/05/21 21:26:12.892000
STRING	Downloading Entry DATARAM.BIN size 65536	Informational	[0000]	2014/05/21 21:26:12.892000
STRING	Finished: DATARAM.BIN	Informational	[0000]	2014/05/21 21:26:12.922000
STRING	Downloading Entry CODERAM.BIN size 131072	Informational	[0000]	2014/05/21 21:26:12.922000
STRING	Finished: CODERAM.BIN	Informational	[0000]	2014/05/21 21:26:13.002000
STRING	Downloading Entry DDRC50.BIN size 134217728	Informational	[0000]	2014/05/21 21:26:13.002000

```
C0 FF FF FF 20 00 20 00 44 00 6F 00 77 00
Ayyý.....D.o.w.
6E 00 6C 00 6F 00 61 00 64 00 69 00 6E 00 67 00
n.l.o.a.d.i.n.g.
20 00 45 00 6E 00 74 00 72 00 79 00 20 00 43 00
..E.n.t.r.y...C.
4F 00 44 00 45 00 52 00 41 00 4D 00 2E 00 42 00
O.D.E.R.A.M...B.
49 00 4E 00 20 00 73 00 69 00 7A 00 65 00 20 00
I.N...s.i.z.e...
31 00 33 00 31 00 30 00 37 00 32 00 00 00      1.3.1.0.7.2...
```

Sahara Download Finished

## Windows vs Linux Comparison



# Windows vs Linux QXDM

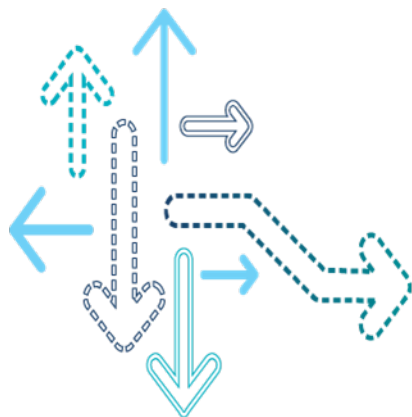
---

## Windows

- Device connection
  - *QPST (separate installation)*
  - *USB drivers (separate installation)*
- *Multiple instances*
- Packet logging/parsing
- Graphic displays
- NV items
- Automation
- *Item store settings*
- *Parsing DLLs*
- *Supplemental tools*


## Linux

- Device connection
  - *No QPST (subset included)*
  - *User-space drivers (included)*
- *Single instance, multiple sessions*
- Packet logging/parsing
- Graphic displays (*subset*)
- NV items
- Automation



# Support

- Download – <https://createpoint.qti.qualcomm.com/tools/>
- Technical support – <https://support.cdmatech.com>

 CreatePoint

Q DCN Search

Logout

DashboardChipCenter (HW)ChipCenter (SW)Hardware ComponentsToolsSupport

Tools: Choose a Tools Suite

Tools: Choose a Tools Suite

All Suites

Filter Results

Reset all Filters

qxdm

Apply

All Tools

Name ▼	Full Name ▼	Version ▼	Release Date ▼	System OS
<a href="#">QXDM.LNX.1.0 Installer</a>	Qualcomm eXtensible Diagnostic Monitor	00013.1	05-02-2014	Linux
<a href="#">QXDM.WIN.3.14 Installer</a>	Qualcomm eXtensible Diagnostic Monitor	00724	04-14-2014	Windows

# QXDM Resources

---

- Documentation
  - What is New
  - QXDM User Guide
  - ISF Processing Interface
  - Data Protocol Logging
  - QXDM User Views
  - Database Editor User Guide
- Videos
  - Basics Parts 1 and 2
  - Common Features
  - Automation
- Automation samples
  - C:\Users\Public\Documents\Qualcomm\QXDM\Automation Samples
  - /usr/QXDM/AutomationSamples
- Configuration (.dmc) samples
  - C:\Users\Public\Documents\Qualcomm\QXDM\Extensions



# References

---

Ref.	Document	
Qualcomm Technologies		
Q1	Application Note: Software Glossary for Customers	CL93-V3077-1

## Questions?

<https://support.cdmatech.com>

