



# Customer Release Notes

## Linux QMI Drivers



**SIERRA**  
WIRELESS®

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## Contact Information

Sales Desk:	Phone:	1-604-232-1488
	Hours:	8:00 AM to 5:00 PM Pacific Time
	Contact:	<a href="http://www.sierrawireless.com/sales">http://www.sierrawireless.com/sales</a>
Post:	Sierra Wireless 13811 Wireless Way Richmond, BC Canada V6V 3A4	
Technical Support:	<a href="mailto:support@sierrawireless.com">support@sierrawireless.com</a>	
RMA Support:	<a href="mailto:repairs@sierrawireless.com">repairs@sierrawireless.com</a>	
Fax:	1-604-231-1109	
Web:	<a href="http://www.sierrawireless.com/">http://www.sierrawireless.com/</a>	

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# Document History

Version	Date	Updates
1.0	July 21, 2014	Creation
1.1	July 22, 2014	Add SierraLinuxQMIdriversS2.20N2.25
1.2	Oct 17, 2014	Add SierraLinuxQMIdriversS2.20N2.26
1.3	Oct 20, 2014	Add SierraLinuxQMIdriversS2.20N2.27
1.4	Dec 10, 2014	Add SierraLinuxQMIdriversS2.21N2.28
1.5	Dec 17, 2014	Update SierraLinuxQMIdriversS2.21N2.28
1.6	Feb 03, 2015	Add SierraLinuxQMIdriversS2.22N2.29
1.7	Feb 03, 2015	Add supported platform in section 1
1.8	Mar 09, 2015	Add SierraLinuxQMIdriversS2.23N2.30
1.9	Apr 08, 2015	Add SierraLinuxQMIdriversS2.23N2.31
1.10	May 14, 2015	Add SierraLinuxQMIdriversS2.24N2.32
1.11	July 09, 2015	Add SierraLinuxQMIdriversS2.24N2.33
1.12	Aug 27, 2015	Add SierraLinuxQMIdriversS2.25N2.34
1.13	Sep 15, 2015	Update auto suspend issue fixed in SierraLinuxQMIdriversS2.25N2.34
1.14	Oct 26, 2015	Add SierraLinuxQMIdriversS2.25N2.35
1.15	Dec 08, 2015	Add SierraLinuxQMIdriversS2.25N2.36
1.16	Jul 12, 2016	Add SierraLinuxQMIdriversS2.25N2.37
1.17	Sep 28, 2016	Add SierraLinuxQMIdriversS2.26N2.38
1.18	Nov 07, 2016	Add SierraLinuxQMIdriversS2.26N2.39
1.19	Dec 01, 2016	Add how to disable qcserial/qmi_wwan kernel modules
1.20	Jan 05, 2017	Add SierraLinuxQMIdriversS2.27N2.40
1.21	Feb 28, 2017	Add SierraLinuxQMIdriversS2.27N2.41
1.22	Apr 10, 2017	Add SierraLinuxQMIdriversS2.28N2.42
1.23	May 24, 2017	Add SierraLinuxQMIdriversS2.28N2.43
1.24	July 06, 2017	Add SierraLinuxQMIdriversS2.28N2.44
1.25	August 18, 2017	Add SierraLinuxQMIdriversS2.29N2.45
1.26	September 4, 2017	Add SierraLinuxQMIdriversS2.29N2.46



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# 1. Overview

This document captures all technical changes to the Sierra Wireless Linux QMI driver release package.

## 1.1. Naming Convention

The release name uses the following naming convention:

**SierraLinuxQMIdriversSa.bNc.d**

Where:

- S refers to the serial driver GobiSerial
- N refers to the network driver GobiNet
- a.b is the release version of the serial driver
- c.d is the release version of the network driver

These drivers are based on the open source drivers posted at:

<https://www.codeaurora.org/patches/quic/gobi/Gobi3000/>

The output provided by executing the **modinfo** shell command for either the serial or the network driver is to be interpreted as follows:

< Open source driver version > / < Sierra driver version >

## 1.2. USB Interface Numbering for Supported Devices

Interface	MC77xx/MC73xx	MC83xx
DM	0	1
NMEA	2	3
MDM	3	2
NET	8	0

## 1.3. Supported Platforms

Generic QMI 9x50 with VID\_1199 PID\_90b0

Generic QMI 9x50 with VID\_1199 PID\_90b1

Generic QMI 9x30 with VID\_1199 PID\_9070

Generic QMI 9x30 with VID\_1199 PID\_9071

Generic QMI 9x15 WP7102-51 with VID\_1199 PID\_68A2

Generic QMI 9x15 AR with VID\_1199 PID\_9100

Generic QMI 9x15 AR with VID\_1199 PID\_9102

Generic QMI 9x15 AR with VID\_1199 PID\_9110  
Generic QMI 9x15 WP with VID\_1199 PID\_9056  
Generic QMI 9x15 MC73xx with VID\_1199 PID\_68A2  
Generic QMI 9x15 MC73xx with VID\_1199 PID\_68C0  
Generic QMI 9x15 MC73xx with VID\_1199 PID\_9041  
Generic QMI 9x15 with VID\_1199 PID\_9041  
Generic QMI 9x15 with VID\_1199 PID\_9051  
Generic QMI 9x15 with VID\_1199 PID\_9053  
Generic QMI 9x15 with VID\_1199 PID\_9054  
Generic QMI 9x15 with VID\_1199 PID\_9056  
Generic QMI 9x15 with VID\_1199 PID\_9061  
Gobi 3000 Composite Device with VID\_1199 PID\_9011  
Gobi 3000 Composite Device with VID\_1199 PID\_9013  
Gobi 3000 Composite Device with VID\_1199 PID\_9015  
Gobi 3000 Composite Device with VID\_1199 PID\_9019  
Gobi 3000 Composite Device with VID\_03f0 PID\_371d  
Gobi 5000 Composite Device with VID\_1199 PID\_9060  
Gobi 5000 Composite Device with VID\_1199 PID\_9061

## 1.4. Supported Linux kernel versions

Linux kernel 2.6.32 to 4.8.x

## 1.5. Note on Kernel 3.4 onwards

The Linux distribution may have in built drivers and applications that can interfere with SDK process's execution. The below Qualcomm drivers, if present, need to be black listed.

- qcserial
- qmi\_wwan

Please black list them as below (example is for Ubuntu). Add the 2 entries to the “/etc/modprobe.d/blacklist-modem.conf” file and restart the host

```
blacklist qcserial
blacklist qmi_wwan
```



## 2. Release History

### 2.1. Release Summary

Release	Date
SierraLinuxQMIdriversS2.29N2.46	04/09/2017
SierraLinuxQMIdriversS2.29N2.45	18/08/2017
SierraLinuxQMIdriversS2.28N2.44	06/07/2017
SierraLinuxQMIdriversS2.28N2.43	24/05/2017
SierraLinuxQMIdriversS2.28N2.42	10/04/2017
SierraLinuxQMIdriversS2.27N2.41	28/02/2017
SierraLinuxQMIdriversS2.27N2.40	05/01/2017
SierraLinuxQMIdriversS2.26N2.39	09/11/2016
SierraLinuxQMIdriversS2.26N2.38	28/09/2016
SierraLinuxQMIdriversS2.25N2.37	12/07/2015
SierraLinuxQMIdriversS2.25N2.36	08/12/2015
SierraLinuxQMIdriversS2.25N2.35	26/10/2015
SierraLinuxQMIdriversS2.25N2.34	27/08/2015
SierraLinuxQMIdriversS2.24N2.33	09/07/2015
SierraLinuxQMIdriversS2.24N2.32	14/05/2015
SierraLinuxQMIdriversS2.23N2.31	08/04/2015
SierraLinuxQMIdriversS2.23N2.30	09/03/2015
SierraLinuxQMIdriversS2.22N2.29	03/02/2015
SierraLinuxQMIdriversS2.21N2.28	17/12/2014
SierraLinuxQMIdriversS2.20N2.27	20/10/2014
SierraLinuxQMIdriversS2.20N2.26	17/10/2014
SierraLinuxQMIdriversS2.20N2.25	22/07/2014
SierraLinuxQMIdriversS2.19N2.24	13/06/2014
SierraLinuxQMIdriversS2.18N2.24	30/04/2014
SierraLinuxQMIdriversS2.17N2.23	06/01/2014
SierraLinuxQMIdriversS2.16N2.23	28/11/2013
SierraLinuxQMIdriversS2.15N2.22	08/11/2013
SierraLinuxQMIdriversS2.14N2.22	28/10/2013
SierraLinuxQMIdriversS2.13N2.22	17/10/2013
SierraLinuxQMIdriversS2.12N2.21	30/09/2013
SierraLinuxQMIdriversS2.12N2.20	13/09/2013
SierraLinuxQMIdriversS2.12N2.19	30/08/2013
SierraLinuxQMIdriversS2.11N2.18	17/07/2013
SierraLinuxQMIdriversS2.11N2.17	21/06/2013
SierraLinuxQMIdriversS2.11N2.16	19/06/2013
SierraLinuxQMIdriversS2.10N2.15	02/05/2013
SierraLinuxQMIdriversS2.9N2.14	13/03/2013

Release	Date
SierraLinuxQMIdriversS2.8N2.13	22/10/2012
SierraLinuxQMIdriversS2.6N2.12	26/01/2012
SierraLinuxQMIdriversS2.5N2.12	09/14/2011
SierraLinuxQMIdriversS2.4N2.9	08/19/2001
SierraLinuxQMIdriversS2.3N2.6	06/16/2011
SierraLinuxQMIdriversS2.2N2.5	06/14/2011
SierraLinuxQMIdriversS2.1N2.4	05/30/2011
SierraLinuxQMIdriversS2.0N2.3	04/27/2011
SierraLinuxQMIdriversS2.0N2.2	03/15/2011

## 2.2. SierraLinuxQMIdriversS2.29N2.46

### 2.2.1. Network Driver Changes

- QMAP Support
  - Switched to use IP alias instead of virtual adapter
    - No virtual adapter will be enumerated
  - Enable QMAP automatically according to modem configuration
  - Add ioctl to assign IP and Mux ID pair to driver
    - QMI\_SET\_IP\_ADDRESS\_IOCTL

## 2.3. SierraLinuxQMIdriversS2.29N2.45

### 2.3.1. Network Driver Changes

- QMAP Support
  - Enable by iQMUXEnable switch
    - Enumerate 8 virtual adapter with gobi-<qcqmi#>- prefix
  - Add ioctl to query QMAP support on firmware
    - IOCTL\_QMI\_GET\_QMAP\_SUPPORT
- Add support for EM7565
- Fix QMIDevice closed by child process exits

### 2.3.2. Serial Driver Changes

- Add support for EM7565

## 2.4. SierraLinuxQMIdriversS2.28N2.44

### 2.4.1. Network Driver Changes

- Fix `_PROBE_LOCK_` macro issue
- Update `iTEEnable` flag:
  - Default: no TE TLV
  - 1: TE TLV with value one (enabled)
  - 0: TE TLV with value 0 (disabled)
- Stability improvement during device disconnect

## 2.5. SierraLinuxQMIdriversS2.28N2.43

### 2.5.1. Network Driver Changes

- Fix kernel soft lockup during modem power cycle stress test
- Fix large packets drop after MTU update

## 2.6. SierraLinuxQMIdriversS2.28N2.42

### 2.6.1. Network Driver Changes

- Fix Client ID is not released when no read operation occur
- Fix USB `hard_header_len` changed in Ethernet Mode
- Add PID support for AR758x: 0x9100, 0x9102, 0x9110

### 2.6.2. Serial Driver Changes

- Add PID support for AR758x: 0x9100, 0x9102, 0x9110

## 2.7. SierraLinuxQMIdriversS2.27N2.41

### 2.7.1. Network Driver Changes

- Fix crash under power cycle test
- Fix select exit immediately
- Add Linux kernel 4.8 support

## **2.8. SierraLinuxQMIdriversS2.27N2.40**

### **2.8.1. Network Driver Changes**

- Dynamic detect between Ethernet mode & RAWIP mode
- Fix USB3 suspend/resume issue
- Disable QoS TE feature by default
- Fix first packet dropped when resume from usb autosuspend
- Enable services filter before suspend
- Fix kernel 4.4 compile warning

### **2.8.2. Serial Driver Changes**

- Fix kernel 4.4 compile warning

## **2.9. SierraLinuxQMIdriversS2.26N2.39**

### **2.9.1. Network Driver Changes**

- Improve stability when device disconnect

## **2.10. SierraLinuxQMIdriversS2.26N2.38**

### **2.10.1. Network Driver Changes**

- Fix issue after hibernate for 9x30
- Remove QOS\_MODE

### **2.10.2. Serial Driver Changes**

- Delay & failure handling when sending GPS\_START

## **2.11. SierraLinuxQMIdriversS2.25N2.37**

### **2.11.1. Network Driver Changes**

- Fix compilation on 4.4 kernel
- Fix suspend/resume issue on USB 3.0

## **2.12. SierraLinuxQMIdriversS2.25N2.36**

### **2.12.1. Network Driver Changes**

- Fix compilation on 3.12 kernel

## **2.13. SierraLinuxQMIdriversS2.25N2.35**

### **2.13.1. Network Driver Changes**

- Support TE flow control for QoS default bearer
- Add support for URBMonitor on 3.12 kernel

## **2.14. SierraLinuxQMIdriversS2.25N2.34**

### **2.14.1. Network Driver Changes**

- Fix driver crash during auto suspend stress test
- Add support for AR7554RD
- Fix driver not cleanup during module reset
- Fix auto suspend issue

### **2.14.2. Serial Driver Changes**

- Fix driver crash during auto suspend stress test
- Fix driver not cleanup during module reset
- Fix auto suspend issue

## **2.15. SierraLinuxQMIdriversS2.24N2.33**

### **2.15.1. Network Driver Changes**

- Improve IPv6 RawIP support, no kernel's usbnet.c change required
- Print usb connection speed

## **2.16. SierraLinuxQMIdriversS2.24N2.32**

### **2.16.1. Network Driver Changes**

- Fix kernel crash and hang in deregistration

- Add ioctl modem & host mtu synchronization
- Fix IPv6 issue on RAWIP mode
  - On 2.6.3x kernel, please make sure skbuff in usbnet.c of kernel have enough headroom
  - You can modify skb\_reserve from NET\_IP\_ALIGN to ETH\_HLEN

## 2.16.2. Serial Driver Changes

- AT port support for AR7558

## 2.17. SierraLinuxQMIdriversS2.23N2.31

### 2.17.1. Network Driver Changes

- Fix enumeration issue on PowerPC
- Fix Ethernet adapter shows as hidden before data call is up

## 2.18. SierraLinuxQMIdriversS2.23N2.30

### 2.18.1. Network Driver Changes

- Fix DHCP failure on data call right after modem reset
- Fix proc node removal issue
- Fix compatibility with Centos 6.6 kernel 2.6.32

### 2.18.2. Serial Driver Changes

- Support USB PID 0x9070
- Fix compatibility on kernel 3.5

## 2.19. SierraLinuxQMIdriversS2.22N2.29

### 2.19.1. Network Driver Changes

- Enhance QMI read/write
  - Implement read URB timeout
  - Retry on write URB
  - Log read/write URB recoveries at procs
- Fix memory leak at QMICTLSyncProc
- Add support for MDM9x30 modem, e.g. EM7455
- Fix Klocwork reported issues

## 2.19.2. Serial Driver Changes

- Blacklist ADB interface
- Reduce GPS\_START/STOP bulk message to 100ms from 1s

## 2.20. SierraLinuxQMIdriversS2.21N2.28

### 2.20.1. Network Driver Changes

- Fix URB\_monitor to support kernel 2.6.35, 3.0.6, 3.10.21 and 3.10.39
- Fallback to usbnet packet counter statistic
- Update to use usb\_control\_msg for writing QMI request to modem
- Support adapter rename
- Persistent Mac address across reset
- Update interrupt endpoint interval to 4ms on usb high speed

### 2.20.2. Serial Driver Changes

- Remove incorrect warning message
- Fix Klocwork detected errors

## 2.21. SierraLinuxQMIdriversS2.20N2.27

### 2.21.1. Network Driver Changes

- Fix URB\_monitor on multiple PDN
- Fix URB\_monitor(false) not called when freeing URB

## 2.22. SierraLinuxQMIdriversS2.20N2.26

### 2.22.1. Network Driver Changes

- Fix issue when transaction id wrap over
- Add workaround to fix corrupted IPv6 Ethernet header
- Improve uplink throughput

## 2.23. SierraLinuxQMIdriversS2.20N2.25

### 2.23.1. Serial Driver Changes

- Fix mutex warning on kernel 3.12

## 2.23.2. Network Driver Changes

- Disable QOS\_MODE by default
- Fix crash in pGobiDev null check

## 2.24. SierraLinuxQMIdriversS2.18N2.24

### 2.24.1. Serial Driver Changes

- Kernel 3.11 - 3.13 supports
- Fix AT port issue when WAKEHOSTEN is set to 0x2
- Fix no NMEA for USB PID 0x9041

### 2.24.2. Network Driver Changes

- Disable scanning usb interface 11 for MDM9x15 modem
- Kernel 3.11 - 3.13 supports
- Fix 2nd PDN enumerate issue on big endian platform
- Fix usb\_kill\_urb kernel oops
- Fix QMI enumerate for MDM9x15 with PID 0x68C0

## 2.25. SierraLinuxQMIdriversS2.17N2.23

### 2.25.1. Serial driver changes

Fix non-responsive serial port for kernel version between 2.6.33 & 3.3.x.

## 2.26. SierraLinuxQMIdriversS2.16N2.23

### 2.26.1. Serial Driver Changes

- AR7 series modem support by blacklisting interface 4/5/6
- Fix double disc mutex lock in kernel 3.2
- Fix compilation on kernel 3.2

### 2.26.2. Network driver changes

- QoS traffic redirection according to DSCP mapping
  - Added wildcard DSCP 0x40 for batch mapping

## 2.27. SierraLinuxQMIdriversS2.15N2.22

### 2.27.1. Serial Driver Changes

- Fix compilation on kernel 3.5.0
- Fix no incoming data after port re-open, only affect kernel > 2.6.32
- Move bulk in completion error under debug flag
  - When bulk-in complete failed, the driver re-submit a URB to trigger the next read. The retry is only display when debug flag is on.

## 2.28. SierraLinuxQMIdriversS2.14N2.22

### 2.28.1. Serial Driver Changes

- Fix ttyUSB number keep increasing after -EPROTO handling
  - Ignore bulk-in callback at port closing, thus reduce unnecessary error prints

## 2.29. SierraLinuxQMIdriversS2.13N2.22

### 2.29.1. Serial Driver Changes

- Resume traffic when bulk-in completes with EPROTO
  - This is not supported on PowerPC platform

### 2.29.2. Network Driver Changes

- Implement IOCTL\_QMI\_DUMP\_MAPPING
- Fix multi-pdn enumeration on big endian platform

## 2.30. SierraLinuxQMIdriversS2.12N2.21

### 2.30.1. Network Driver Changes

Improve downlink throughput.

## 2.31. SierraLinuxQMIdriversS2.12N2.20

### 2.31.1. Network driver changes

- Probe time improvement
- Add ioctl for read & edit QoS mapping
- Work around Ethernet header missing in LTE

## 2.32. SierraLinuxQMIdriversS2.12N2.19

### 2.32.1. Serial Driver Changes

- Disc-mutex double lock, avoid double lock at runtime
- Add new PID 0x68c0 of MC78/AR7/WP7 support in GobiSerial

### 2.32.2. Add Network driver changes

Add new PID 0x68c0 of MC78/AR7/WP7 support in GobiNet.

## 2.33. SierraLinuxQMIdriversS2.11N2.18

### 2.33.1. Network Driver Changes

Add MC780x multiple PDN support base on PID 0x68A2.

## 2.34. SierraLinuxQMIdriversS2.11N2.17

### 2.34.1. Network Driver Changes

Update QoS mapping to support multiple PDN.

## 2.35. SierraLinuxQMIdriversS2.11N2.16

### 2.35.1. Serial Driver Changes

- Add usb audio support on Gobi Serial driver
- Fix disc\_mutex double lock
- Add more MDM9X15 PIDs, replace blacklist interfaces array with BITs and probe only vendor class interface (0xff)

## 2.35.2. Network Driver Changes

- Add more MDM9X15 PIDs, replace blacklist interfaces array with BITs and probe only vendor class interface (0xff)
- Bios Locking & WDA SetDataFormat
  - Replace QMI\_CTL\_SET\_DATA\_FORMAT with QMI\_WDA\_SET\_DATA\_FORMAT
  - Add Set FCC Authentication request to support Bios Locking. That is, initialize the modem to stay in Lower Power Mode (LPM)
- QoS support
  - Add ioctl for get transmit queue

## 2.36. SierraLinuxQMIdriversS2.10N2.15

### 2.36.1. Serial Driver Changes

- Add firmware download mode support for WP71xx & MC78xx (VID 0x1199, PID 0x9040)
- Compilation fix for Linux kernel 3.4.x & 3.5.x

### 2.36.2. Network Driver Changes

- Fix duplicated MAC addresses when two modem are connected
- QoS support
  - Added ioctl for IP TOS field to Qos ID mapping & header prepend
  - Added transmit queue callback mechanism to user space by signal
  - Added QoS Network support indication parsing

## 2.37. SierraLinuxQMIdriversS2.9N2.14

### 2.37.1. Serial Driver Changes

- QMI driver support for Linux Kernel 3.4 onwards.
- QMI driver – 64 bit host support.
- Add support for Gobi5K (MC73xx).

### 2.37.2. Network Driver Changes

- Gobi Net driver enhancement for code stability.
- Add support for Gobi5K (MC73xx).

## **2.38. SierraLinuxQMIdriversS2.8N2.13**

### **2.38.1. Serial Driver Changes**

Add flow control support for 9x15 device.

## **2.39. SierraLinuxQMIdriversS2.6N2.12**

### **2.39.1. Serial Driver Changes**

Resolved issue resulting in failed firmware downloads on some ARM platforms with MC77xx devices.

## **2.40. SierraLinuxQMIdriversS2.5N2.12**

### **2.40.1. Network Driver Changes**

- Kernel-2.6.39.4 support - key off of the “eth” device name, as opposed to “usb”, in order to extract the proper device <index> to use when creating the /dev/qcqmixon device.
- URB submission – In accordance with recent modifications to the Linux kernel, modified the driver such that URBs are not submitted from within a lock.
- Raw IP support – added support for Raw IP mode of operation. Refer to the readme file in the top level release directory for further details.

## **2.41. SierraLinuxQMIdriversS2.5N2.10**

### **2.41.1. Serial Driver Changes**

Merge with open source release 2011-7-29-1026.

### **2.41.2. Network Driver Changes**

Merge with open source release 2011-7-29-1026.

## **2.42. SierraLinuxQMIdriversS2.4N2.9**

### **2.42.1. Serial Driver Changes**

Function renaming to avoid duplicate name conflicts with qcserial.c when the drivers are built as part of the kernel image.

## 2.42.2. Network Driver Changes

- Merge with open source release Gobi3000Drivers1060\_06302011
- Linux kernel 3.0 support
- Function renaming to avoid duplicate name conflicts when the drivers are built as part of the kernel image.
- In line with Linux kernel drivers, the Interrupt URB resubmission rate is now also based on the value supplied in the device's endpoint descriptor as opposed to being solely hard-coded.
- Big Endian support – removed duplicate byte swapping operation in order to correctly report various driver statistics.

## 2.43. SierraLinuxQMIdriversS2.3N2.6

### 2.43.1. Serial Driver Changes

- 0x1199 VID, 0x9019 PID support
- Auto-suspend enhancement by addition of a remote wakeup flag

### 2.43.2. Network Driver Changes

0x1199 VID/ 0x9019 PID support.

## 2.44. SierraLinuxQMIdriversS2.2N2.5

## 2.45. SierraLinuxQMIdriversS2.1N2.4

## 2.46. SierraLinuxQMIdriversS2.0N2.3

## 2.47. SierraLinuxQMIdriversS2.0N2.2

## 2.48. SierraLinuxQMIdriversS2.0N2.0

## →> | 3. Reference Documents

Readme.txt - top level readme file.