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QUALCOMM®
CDMA Technologies

Interprocessor Communication Between MDM9x15/MDM9x25 and Third-Party AP

80-N5576-60 B

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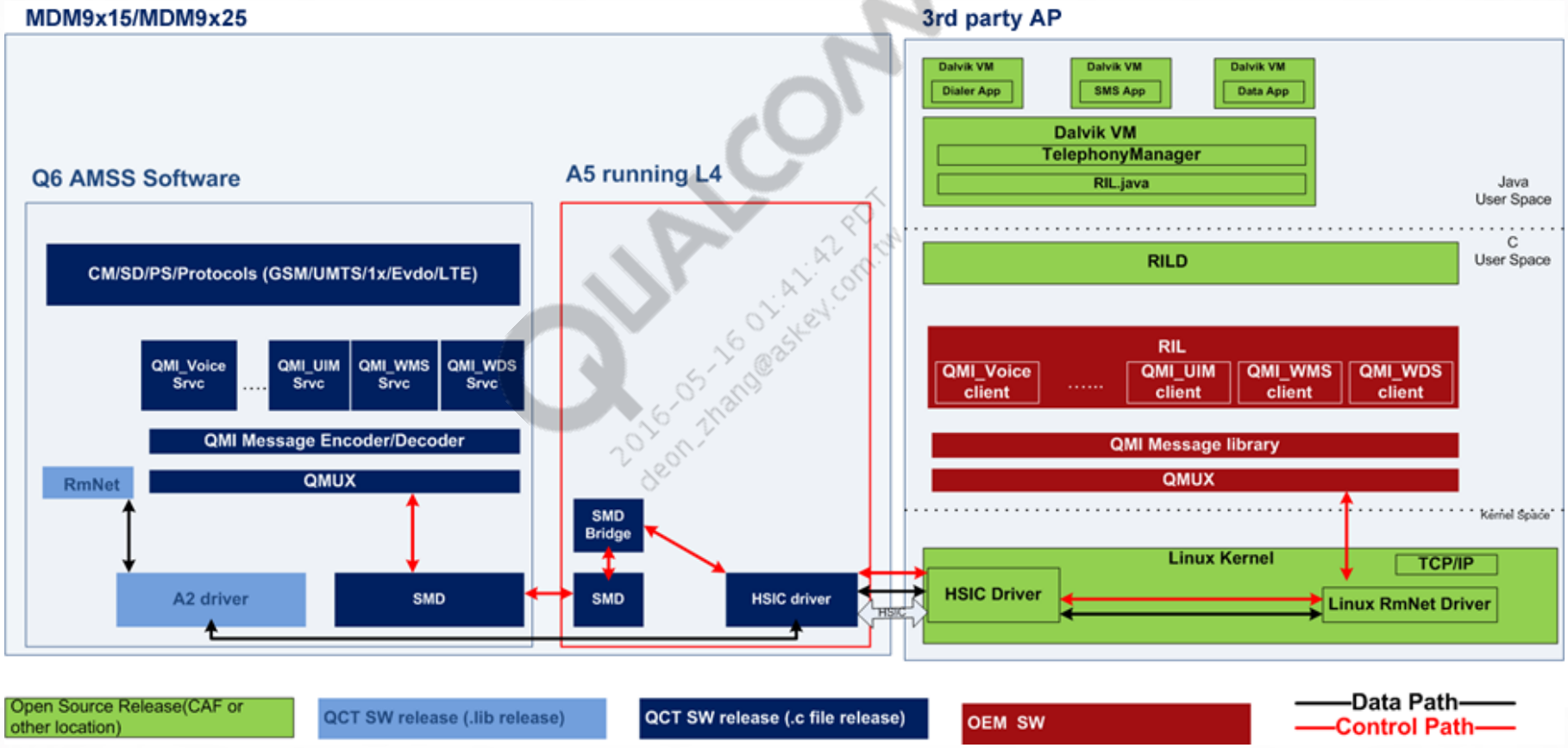
Revision History

Version	Date	Description
A	Mar 2012	Initial release
B	Aug 2012	Updated doc to be applicable to MDM9x25

Contents

MDM9x15/MDM9x25 + Third-Party AP



RIL/QMI

- RIL
  - RIL interface may depend on the different HLOSs, e.g., Android™, Windows Mobile, etc.; Android OS is the example in the diagram.
  - The communication between AP and Modem can be a QMI or an AT command, etc. We suggest that customers use QMI.
- QMI message library
  - The QMI message library is used to encode/decode QMI messages.
  - QCT provides a QMI message library for reference.
  - It does not cover all the QMI messages.
- Qmux
  - Qmux multiplexes QMI messages against different services, e.g., Voice, SMS, etc.

QMI Control Path

- QMI control path
  - QMI on third-party AP↔HSIC driver on third-party AP↔HSIC driver on A5↔SMD bridge on A5↔SMD on Q6↔QMI services on Q6
- AP side HSIC driver
  - There is open source HSIC/HS-USB driver for QCT hardware platform

RmNet Data Path

- Data path
  - Data app on Third-Party AP↔HSIC driver on Third-Party AP↔BAM driver on A5↔A2 driver on Q6↔RmNet on Q6
- HSIC driver
  - There is open source HSIC/HS-USB driver for QCT hardware platform

RIL/QMI Implementation Guide

- RIL
  - Assume that OEMs are working on Android as third-party AP
  - Two sets of RIL commands
    - Solicited commands are originated by RIL lib, such as DIAL and HANDUP
    - Unsolicited responses are originated by baseband, such as CALL_STATE_CHANGED and NEW_SMS
  - QMI clients are used to communicate with QMI services, e.g., Voice, SMS, etc., on modem side
  - Initialize RmNet data path for data call
- QMI Message Library
  - QMI message format specs are available for customers
  - Encode/decode QMI message
- Qmux
  - Qmux header format specs are available for customers
  - Using Service ID to multiplex QMI messages
  - Encode/decode Qmux header

QMI Documents

Platform-dependent	
General	
Qualcomm MSM™ Interface (QMI) Architecture	80-VB816-1
QMI Global Constant Definitions	80-VB816-2
QMI_CTL - QMI Control	80-VB816-3
Multimode	
DMS - Device Management	80-VB816-4
NAS - Network Access	80-VB816-6
WMS - Wireless Messaging (SMS)	80-VB816-9
Voice - CDMA/UMTS/Supplementary Services	80-VB816-10
Data	
WDS - Wireless Data	80-VB816-5
QoS - Quality of Service	80-VB816-7
UIM	
CAT - Card App (SIM Toolkit)	80-VB816-11
UIM - User Identity Module (SIM)	80-VB816-12
PBM - Phonebook Manager	80-VB816-15

HSIC Host Driver Implementation Guide

- Qualcomm uses Linux open source EHCI driver for HSIC host mode
- 99% same as open source
- QCT MSM8960 change code can be found in the Commit ID shown in the table below
  - GPIO/configuration changes are required for porting to third-party AP

Commit ID	Description	Comments
39025	▪ SB: EHCI: msm ▪ Add support for HSIC-based host controller	▪ This patch adds support for EHCI-compliant USB host controller present in MSM™ chips. ▪ This controller uses an HSIC PHY, which communicates with downstream devices using STROBE/DATA lines.
e3316	▪ USB: EHCI: msm ▪ Configure GPIOs for HSIC strobe and data lines	Need to configure GPIO150 and GPIO151 pins for HSIC strobe and data lines.
14238	▪ Defconfig: msm8960 ▪ Enable HSIC host support	MSM8960 – Enable HSIC host support in config file
2b592	▪ USB: EHCI ▪ Configure HSIC host↔hub↔ conventional USB devices	Need to configure proper hardware configurations for HSIC to work well.

References

Ref.	Document	
Qualcomm		
Q1	*Application Note: Software Glossary for Customers*	CL93-V3077-1
Q2	*Qualcomm MSM® Interface (QMI) Architecture*	80-VB816-1
Q3	*QMI Global Constant Definitions*	80-VB816-2
Q4	*QMI Control Service (QMI_CTL)*	80-VB816-3
Q5	*QMI Device Management Service*	80-VB816-4
Q6	*QMI Wireless Data Service*	80-VB816-5
Q7	*QMI Network Access Service (QMI_NAS)*	80-VB816-6
Q8	*QMI QoS Service (QMI_QOS)*	80-VB816-7
Q9	*QMI Wireless Message Service (QMI_WMS)*	80-VB816-9
Q10	*QMI Voice Service (QMI_VOICE)*	80-VB816-10
Q11	*QMI Card Application Toolkit (QMI_CAT)*	80-VB816-11
Q12	*QMI User Identity Module (QMI_UIM)*	80-VB816-12
Q13	*QMI Phonebook Manager Service (QMI_PBM)*	80-VB816-15

Questions?

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