

NetComm Software Release Notes

Overview

This document describes the main features added to the NetComm Software (NCSW) version 3.1 [and the 3.1.1 patch](#), which integrates the New microcode packages, NetComm Device Drivers (NCDD) release 3.1.1 and the CommExpert.

This release includes a complete set of device drivers supported along with the CommExpert. Using CommExpert, one can generate a C source file containing the initialization NetComm Application Programming Interface (API) calls that, together with the drivers, can be compiled and run on the hardware.

MPC8349 support will be handled in revision 2.3 of the software. This release includes also the 2.3 tree.

MPC837x is supported by the 3.1 NCDD but not in the 3.1 CommExpert. CommExpert support for this device is handled in revision 2.3.

[Patch 3.1.1 supports Freescale's MPC8569E processor only adding IP Reassembly and 32 E1 IMA links.](#)

The device drivers package consists of a set of powerful and flexible drivers for various peripherals and protocols.

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Following are the main features of the drivers package:

- Modular system and peripheral drivers, supporting the majority of device functionality
- Memory management for multiple memory types and buses
- Statistics gathering
- Protocol interworking
- Drivers support both default (simple) configuration for quick setup, and advanced (detailed) configuration for fine-tuned applications
- MDS board support

NOTES:

1. Before using NCSW package, read the errata (NCDDerrata.pdf) and set up the recommended environment.
2. Updates related to the 3.1.1 patch are marked as blue throughout the document.
3. CommExpert support for the NCDD changes in patch 3.1.1 will be added in the next patch.

1 Package Contents

Below is a hi-level structure of the contents:

- <INSTALLDIR>\ - Root folder with common documentation
- <INSTALLDIR>\NetCommSw\ - NCDD tree
- <INSTALLDIR>\NetCommSw\doc\ - NCDD documentation
- <INSTALLDIR>\NetCommSw\doc\QE_UCode - Microcode documentation
- <INSTALLDIR>\CommExpert\ - CommExpert tree
- <INSTALLDIR>\CommExpert\doc\ - CommExpert documentation

Below is a breakdown of the contents:

- General documentation (located at <INSTALLDIR>\)
 - NCSW Release Note (this document)
 - NCDD Errata (NCDDerrata.pdf)
 - CommExpert Use Cases Description (Use Cases Description.pdf)
- CommExpert documents (located at: <INSTALLDIR>\CommExpert\doc\)
 - CommExpert Quick Reference Guide (CommExpert Quick Reference Guide.pdf)
 - CommExpert User Guide (CommExpert User Guide.pdf)
 - Processor reference manual (MPC8xxxERM.pdf)
 - QUICC Engine Block Reference Manual with Protocol Interworking (QEIWRM.pdf)
- CommExpert binaries and related files (located at: <INSTALLDIR>\CommExpert\bin)
- Device drivers license agreement (located at: <INSTALLDIR>\NetCommSw\License)
- General device drivers documents (located at: <INSTALLDIR>\NetCommSw\doc)

- [NCDD API Differences\(NCDDAPIDIFF.pdf\)](#)
- [NCDD Porting Guide \(NCDDPortingGuide.pdf\)](#)
- Device-specific documents (located at: <INSTALLDIR>\NetCommSw\doc\MPC8xxx)
 - [NCDD User's Guide \(MPC8xxxEDRVUG.pdf, updated for 3.1.1 patch MPC8569EDRVUG.pdf\)](#)
 - [NCDD Reference Manual \(MPC8xxxEDRVRM.chm, updated for 3.1.1 patch MPC8569EDRVRM.chm\)](#)
 - [NCDD UseCases Manual \(MPC8xxxEDRVUCM.chm, updated for 3.1.1 patch MPC8569EDRVUCM.chm\)](#)
- Complete NCDD source code, including:
 - Platform and system drivers
 - Peripheral drivers
 - Related stacks
 - Bare-board system services
 - MDS board support
 - Microcode release notes (located at: <INSTALLDIR>\NetCommSw\doc\QE_UCode)
 - [8569_RAM_package_ReleaseNote_Rev2_IRAM_1.1.0.pdf](#)
 - [AET_Type_F_RAM_pkg_Rel_0_0_0.pdf](#)
 - [ATM2Eth_Type_B_RAM_pkg_Rel_2_5_0.pdf](#)
 - [ATM2Eth_Type_G_RAM_pkg_Rel_0_0_1.pdf](#)
 - [E2E_POS_pkg_Rel_0_0_1.pdf](#)
 - [E2E_Type_D_RAM_pkg_Rel_1_1_0.pdf](#)
 - [PAE_Type_C_RAM_pkg_Rel_1_4_1.pdf](#)
 - [POS_RAM_Pkg_Rel_0_1_0.pdf](#)
 - [PPP2Eth_Type_A_RAM_pkg_Rel_2_6_0.pdf](#)
 - [PPP2Eth_Type_B_RAM_pkg_Rel_2_8_1.pdf](#)
 - [PPP2Eth_Type_E_RAM_pkg_Rel_0_0_3.pdf](#)
 - [PPP2Eth_Type_I_RAM_pkg_Rel_0_0_0.pdf](#)
 - [QE_Packages_Overview_NCDD_Rel_3.1.pdf](#)
 - [QE_IP_Reassembly_Full.pdf](#)
 - [QE_uCode_Errata.pdf](#)
 - [QE_Ucode_Loader.pdf](#)
 - [QMC_RAM_pkg_Rel_0_0_0.pdf](#)
 - [Soft_UART_Microcode_Rel_0_1_2.pdf](#)
- Example use cases—Featuring structured CodeWarrior projects for compiling and running various drivers and protocols (located at:
 - <INSTALLDIR>\NetCommSw\build\bare_8xxx_cw_build\UseCases, [updated for 3.1.1 patch](#)
 - <INSTALLDIR>\NetCommSw\build\bare_8569_cw_build\UseCases).

2 Supported Devices

The following devices are supported:

Table 1. Supported Devices

Device	NCDD	CommExpert
MPC8321	Yes	Yes
MPC8323	Yes	Yes
MPC8349*	Yes	Yes
MPC8358	Yes	Yes
MPC8360	Yes	Yes
MPC837x**	Yes	Yes
MPC8568	Yes	Yes
MPC8569	Yes	Yes

NOTE

* - MPC8349 is supported by revision 2.3 of this package.

** - MPC837x is supported by NCDD 3.1 and CommExpert 2.3.

3 Device Drivers API Changes

For a complete list of API changes in current release, please refer to the following document:

<INSTALLDIR>\NetCommSw\doc\NCDDAPIDIFF.pdf

4 Errata and Fixed Issues

For a complete list of known issues in the current release, as well as a list of fixed issues from previous releases, for both CommExpert and the Device Drivers, refer to the following document:

<INSTALLDIR>\NCDDerrata.pdf

For the list of microcode issues refer to the following document:

<INSTALLDIR>\NetCommSw\doc\QE_UCode\QE_uCode_Errata.pdf

5 New and Removed Features

5.1 Microcode

The following microcode packages were added or updated:

- MPC8569E:

Table 2. MPC8569E Microcode Package

File	Revision
iram_mpc8569_r2.0.h	1.1.0

- MPC8568E:

Table 3. MPC8568E Microcode Package

File	Revision
iw_ae_type_b_mpc8568_r1.1.h	2.5.0
iw_e2e_pos_mpc8568_r1.1.h	0.0.1
iw_e2e_type_d_mpc8568_r1.1.h	1.1.0
iw_pae_type_c_mpc8568_r1.1.h	1.4.1
iw_pe_type_a_mpc8568_r1.1.h	2.6.0
iw_pe_type_i_mpc8568_r1.1.h	0.0.0
pos_mpc8568_r1.1.h	0.1.0

- MPC8360E:

Table 4. MPC8360E Microcode Package

File	Revision
iw_ae_type_b_mpc8360_r2.1.h	2.5.0
iw_e2e_pos_mpc8360_r2.1.h	0.0.1
iw_e2e_type_d_mpc8360_r2.1.h	1.1.0
iw_pae_type_c_mpc8360_r2.1.h	1.4.1
iw_pe_type_a_mpc8360_r2.1.h	2.6.0
iw_pe_type_i_mpc8360_r2.1.h	0.0.0
pos_mpc8360_r2.1.h	0.1.0

For a list of microcode packages description by features refer to:

<INSTALLDIR>\NetCommSw\doc\QE_UCode\QE_Packages_Overview_NCDD_Rel_3.1.pdf

NOTE:

- For more details on any of the microcode packages kindly refer to the relevant release notes and QE reference manuals.

5.2 Device Drivers

5.2.1 Ethernet Egress Queue Selection

This feature provide the ability to select the Logical Queue and the Logical Port based on the VPri of the first VLAN Tag, the VPri of the second VLAN Tag or the IP TOS field in a frame.

5.2.2 New Hash Lookup Table for MPC8569E

Improve the performance of lookup operations for 4 ways and 8 ways lookup tables available on MPC8569.

5.2.3 PPP IW w/ 32xE1 on 2MCCs Support

The QUICC Engine firmware extends the PPP working into Interworking mode to run over up to 32E1s links on 2MCCs

5.2.4 Hash 8 Ways Lookup Table Aging Support

The Driver API allow the enabling of Aging mechanism for 8 Ways Hash Lookup tables.

5.2.5 Ethernet VP mode for MPC8569E

Virtual Port (VP) mode is a special mode of UCC Ethernet in which data is transferred by the Ethernet receiver directly to a VP instance at an early stage. This mode is especially useful for short frames burst traffic or when UCC Ethernet controller is used in IW applications implemented on top of VP package, like IPSEC or IP Reassembly.

5.2.6 Ethernet PQRL

Per queue rate limiter extends the rate limiter functionality to support rate limiting capabilities for each Ethernet Tx queue and not per the whole port or a logical port (hierarchical scheduler).

5.2.7 ATM Mini-cam VP Switching

Allows Mini-CAM address lookup mode by matching only the VPI field of cells, instead of matching the full VPI/VCI combination.

5.2.8 Interworking - IPSEC for MPC8569E

The IW IPSEC API adds IPsec capabilities to a receiving VP device. The QUICC Engine IPsec firmware is performing complex IPsec functions - encryption/decryption/authentication, using the SEC engine, and off-loading the CPU computational intensive security functions.

5.2.9 RTC83 (83xx)

A real-time clock (RTC) timer, that can be programmed to generate an interrupt every second and/or an alarm interrupt on a specific count value.

5.2.10 Interworking - IP Reassembly Full

The IW IP Reassembly Full API adds IP Reassembly capabilities to a receiving VP device. The QUICC Engine IP Reassembly firmware is performing reassembly of IPv4 protocol fragments according to RFC791. The main functionalists are listed below:

- RFC791 compliance
- Protocol stack handling - IP fragments over Ethernet with up to 6 VLAN Tags and PPPoE
- Reassembly of in order and out of order fragments
- Fragments and frames based time-out w/ accuracy support
- Error handling
- Statistics monitoring

5.2.11 IMA with 32 E1s Links

The QUICC Engine firmware extends the functionality of IMA from 31 E1s links to 32 E1s links according to AF-PHY-0086.001 specification from ATM Forum Technical Committee.

5.2.12 IPSEC Changes

Please refer to the NCDD API Diffs document.

5.3 CommExpert

5.3.1 Memory annotator - UCode DB

5.3.2 POS use cases support

5.3.3 MTC MCC use case support

5.3.4 ATM Mini-cam support

5.3.5 E2PPP with IPHC use cases internal traffic support

5.3.6 PPP internal traffic use cases support

6 System Configuration

Table 5. System Configuration

Candidates	MPC832x	MPC834x	MPC836x	MPC837x	MPC8568	MPC8569
Silicon Revision No.	1.1	3.1	2.1 Bin1	2.1	1.1.2	2.0 (Bin 2)
Boards	PILOT Assembly 0.3					
PB - Processor Board	MPC8323E-MD S-PB Pilot Assembly 2.0	MPC8349E-MD S-PB Rev A assembly 1.04	MPC8360EA-M DS-PB Pilot Assembly 1.1	MPC837xE-MD S-PB, Pilot Assembly 2.11	MPC8568EA-M DS-PB Pilot Assembly 2.17	MPC8569E-MD S-PB, Pilot Assembly 2.07
PQ-MDS-PIB	PILOT Assembly 0.3					
PQ-MDS-T1	Pilot 1.1	NA	Pilot 1.1	NA	Pilot 1.1	Pilot 1.1
PQ-MDS-QOC3	Assembly 1.0	NA	Assembly 1.0*	NA	Assembly 1.0*	Assembly 1.0
PQ-MDS-SGMII	NA	NA	NA	Prototype	NA	NA
PQ-MDS-SATA	NA	NA	NA	Prototype	NA	NA
PQ-MDS-PCIe	NA	NA	NA	Prototype	NA	Prototype
MPC8568 PCI (adaptor card)	NA	NA	NA	NA	Pilot assembly Rev. 2.0	NA
MPC8569-PB EUM	NA	NA	NA	NA	NA	Prototype
MPC8569-PB PEXx2 Module	NA	NA	NA	NA	NA	Prototype
PQ-MDS-16T1/E1	NA	NA	NA	NA	NA	Prototype - Assembly 1.0.2

Table 5. System Configuration

Candidates	MPC832x	MPC834x	MPC836x	MPC837x	MPC8568	MPC8569
Silicon Revision No.	1.1	3.1	2.1 Bin1	2.1	1.1.2	2.0 (Bin 2)
8XRJ45x4 Card	NA	NA	NA	NA	NA	Prototype
SRIO LPBK PC BOARD LF	NA	NA	NA	NA	Pilot	Pilot
8569-PB 1xSRIO MODULE	NA	NA	NA	NA	NA	Prototype
PQ-MDS-QOC12	NA	NA	Prototype	NA	Prototype	Prototype
CodeWarrior	CW development studio for EPPC Version 8.8.3 build 90619					
Drivers	NCDD 3.1	NCDD 2.3	NCDD 3.1	NCDD 3.1	NCDD 3.1	NCDD 3.1
Command Converter	USB TAP					
Core Freq (MHz)	264	495	666.6	599.9	1320	1066.7
QE Freq (MHz)	198	NA	499.9	NA	528	533
DDR Freq	264	396	333	399.9	528	666.6
Local Bus Freq	66	99	83	99.9	132	66.6
System Bus Freq	132	198	333	399.9	528	533
Clock In	66	66	33.3	66.6	66	66.6

*Note: POS was not tested on this board

Table 6. Minimal System Requirements

Hardware	PC with 1800 MHz Intel ® Pentium ® III - compatible processor 256 MB RAM. The PC COM port must be connected to the MDS serial port using RS-232 cable.
Operating system	Microsoft ® Windows XP SP1 and SP2
Free disk space	A total of 1.5 GB on the installation hard drive

7 CommExpert Backward Compatibility

CommExpert project files generated by Beta 1.3 and lower cannot be used with CommExpert release 3.1.

CommExpert project files generated by Release 1.0, 1.1, 1.2, 1.2.1, 1.3, 2.3 and 3.0 are supported by the CommExpert release 3.1 except for CommExpert project files containing MCC configurations (Transparent, HDLC, SS7, MTC-MCC) and IW due to major changes in the CommExpert and in the drivers package.

All CommExpert project files generated by Release 2.0, 2.1, 2.2, 2.3 and 3.0 are also supported by release 3.1.

8 CommExpert Support for Legacy Devices

In this release, legacy devices that remained unchanged since release version 2.3 are 834x and 837x.

When the user creates or opens a project for a legacy device the last up-to-date release is automatically launched (release version 2.3 in this case). The current release contains the binaries of the legacy devices, so it is not required to have the previous release installed.

This feature is available on *New Project* and *Open Project* commands. When a new project is created on a legacy device, the previous release is automatically launched and a new project is automatically created. When a project created on legacy device is opened, the previous release is automatically launched and the project is opened.

In both cases, once the legacy CommExpert IDE is launched, it can be used only for legacy devices. In order to utilize CommExpert for a non-legacy device, please close the legacy IDE and re-launch the new version.

9 Getting Support

For any issue related to CommExpert, NCDD or other NCSW package related issues, please send e-mail to support@freescale.com.

10 Revision History

Table 7. Revision History

Revision	Date	Substantive Changes
3.1	2010-02-14	Initial Document
3.1.1	2010-03-07	Adding patch 3.1.1



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