



Technical Document

GSM PROTOCOL STACK

G23

MUX_HLS-UART MULTIPLEXER SYSTEM

DESIGN

HIGH LEVEL DESIGN SPECIFICATION

Document Number:	8415.092.00.002
Version:	0.3
Status:	Draft
Approval Authority:	
Creation Date:	2000-Dec-06
Last changed:	2015-Mar-08 by XINTE GRA
File Name:	Uart_mux_hls.doc

Important Notice

Texas Instruments Incorporated and/or its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products, software and services at any time and to discontinue any product, software or service without notice. Customers should obtain the latest relevant information during product design and before placing orders and should verify that such information is current and complete.

All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment. TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI products, software and/or services. To minimize the risks associated with customer products and applications, customers should provide adequate design, testing and operating safeguards.

Any access to and/or use of TI software described in this document is subject to Customers entering into formal license agreements and payment of associated license fees. TI software may solely be used and/or copied subject to and strictly in accordance with all the terms of such license agreements.

Customer acknowledges and agrees that TI products and/or software may be based on or implement industry recognized standards and that certain third parties may claim intellectual property rights therein. The supply of products and/or the licensing of software does not convey a license from TI to any third party intellectual property rights and TI expressly disclaims liability for infringement of third party intellectual property rights.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products, software or services are used.

Information published by TI regarding third-party products, software or services does not constitute a license from TI to use such products, software or services or a warranty, endorsement thereof or statement regarding their availability. Use of such information, products, software or services may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

No part of this document may be reproduced or transmitted in any form or by any means, electronically or mechanically, including photocopying and recording, for any purpose without the express written permission of TI.

Change History

Date	Changed by	Approved by	Version	Status	Notes
2000-Dec-06	STW et al.		0.1		1
2000-Dec-19	MS et al.		0.2		2
2003-Jun-03	XINTEGRA		0.3	Draft	

Notes:

1. Initial version
2. New Template/English Check

Table of Contents

3.1 Service Access Points	5
3.2 Function Interface	5
4.1 Non-multiplexed Mode.....	6
4.2 Multiplexed Mode.....	6
A. Acronyms	7
B. Glossary	7

List of Figures and Tables

List of References

- | | |
|-----------------|---|
| [ISO 9000:2000] | International Organization for Standardization. Quality management systems - Fundamentals and vocabulary. December 2000 |
|-----------------|---|

1 Introduction

The present document is the high-level system design of the UART entity. The document is to be regarded as last step in the development process before drawing the first SDL diagrams given the implemented design and is therefore intended to hold the information not visible in the SDL diagrams.

The environment of the UART entity is illustrated in Figure 1.

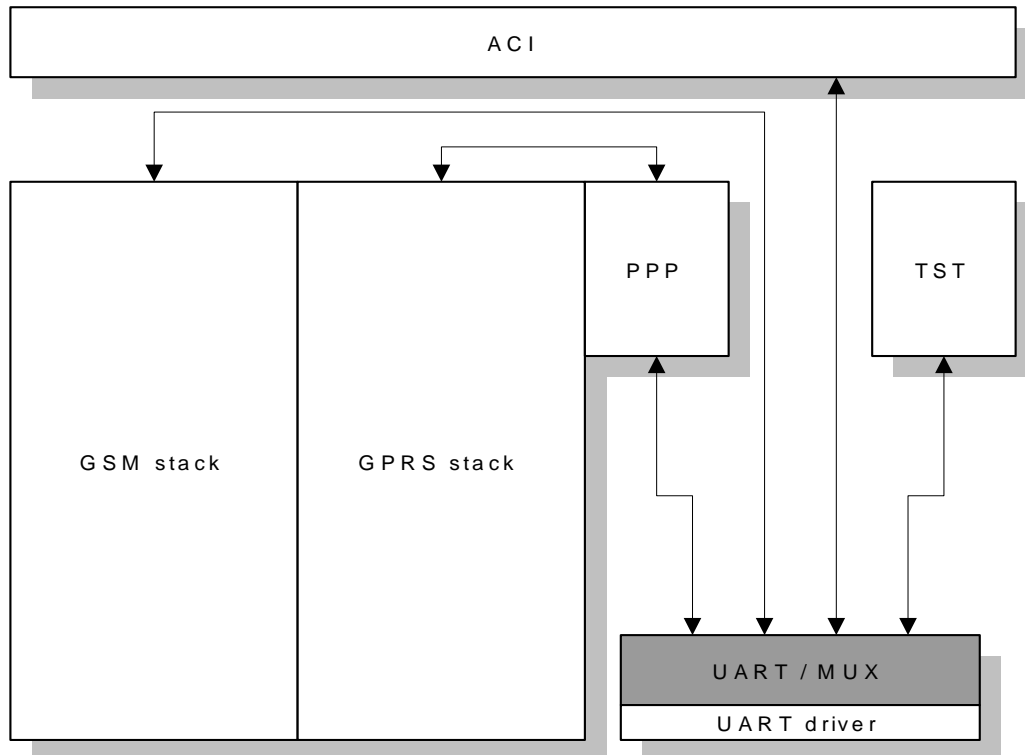


Figure 1: Block diagram of UART/Multiplexer environment

The UART entity is used to transmit information over one or more serial links. An additional multiplexer functionality is provided for each serial link. The several physical/virtual serial channels can be connected to other parts of the mobile software, i.e. ACI (AT Command Interpreter), TST (Test Interface) or GSM (circuit switched data).

The UART entity uses the UART driver to send data over a serial link.

2 Multi-instance Capability

If the UART driver can handle more than one physical serial link, the UART entity is able to run in more than one instance. Each instance is used for one physical serial link.

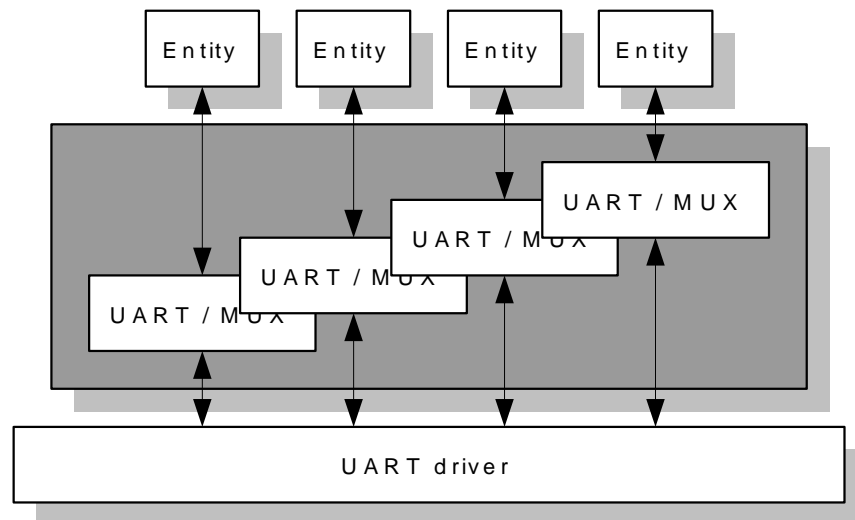


Figure 2: Multi-instance of UART/Multiplexer

3 Interfaces of UART Entity

3.1 Service Access Points

The SAPs of the UART entity are shown in the following diagram.

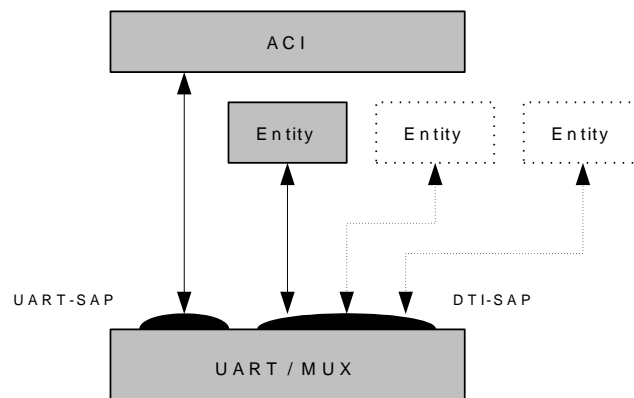


Figure 3: Service Access Points of UART/Multiplexer

The UART SAP is used for control purposes. ACI uses this SAP to set UART specific parameters and to determine to which entity the DTI SAP must connect.

The DTI SAP is used for data transfer. More than one entity can use this SAP. Each DTI link is connected to one serial channel (physical or virtual).

3.2 Function Interface

The UART entity uses the function interface provided by the UART driver to transmit data over the physical serial links. Virtual channels will be handled by the Multiplexer included in the UART entity.

4 Internal Structure

There are two modes in which the UART entity can be used - multiplexed mode and non-multiplexed mode.

4.1 Non-multiplexed Mode

In non-multiplexed mode, the UART entity simply converts the function interface of the UART driver to a DTI link. The structure is shown in the following diagram.

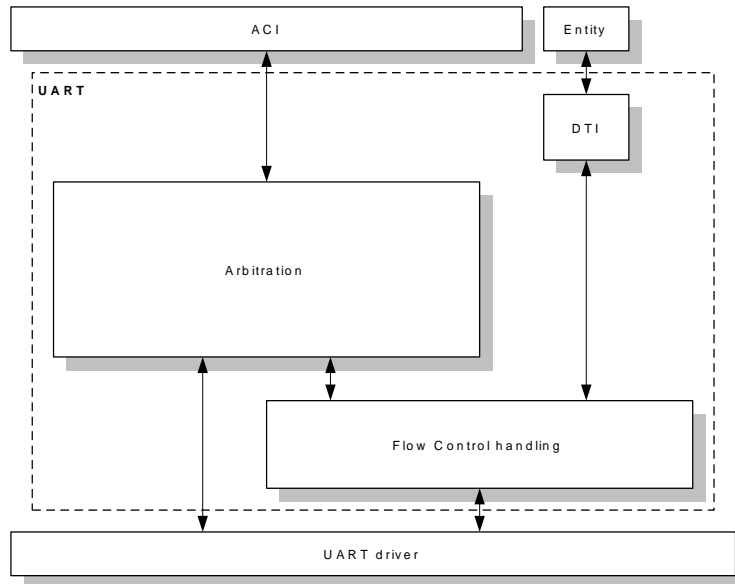
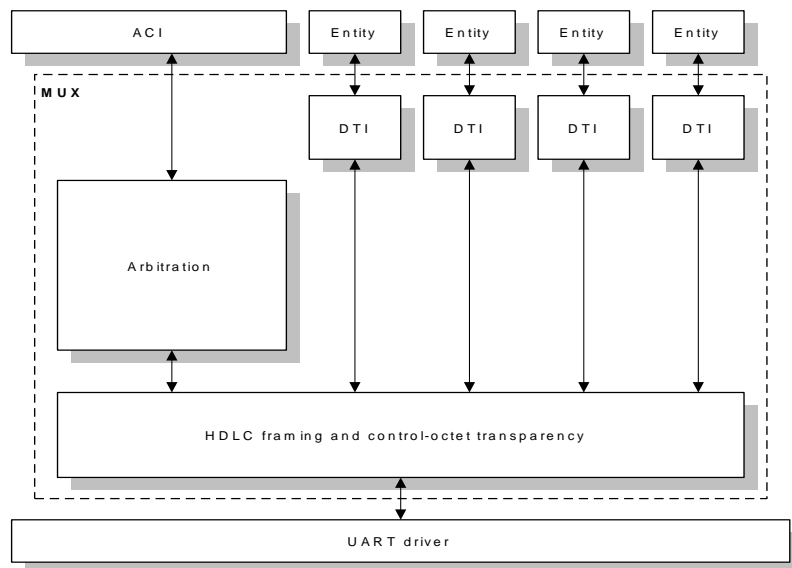


Figure 4: Structure in non-multiplexed mode

4.2 Multiplexed Mode

In multiplexed mode, the UART entity provides multiplexer functionality as described in [3G TS 27.010 V3.30]. Each virtual serial channel is connected to a DTI link. The structure is shown in the following diagram.



Figure

Appendices

A. Acronyms

DS-WCDMA	Direct Sequence/Spread Wideband Code Division Multiple Access
-----------------	---

B. Glossary

International Mobile Telecommunication 2000 (IMT-2000/ITU-2000)	Formerly referred to as FPLMTS (Future Public Land-Mobile Telephone System), this is the ITU's specification/family of standards for 3G. This initiative provides a global infrastructure through both satellite and terrestrial systems, for fixed and mobile phone users. The family of standards is a framework comprising a mix/blend of systems providing global roaming. <URL: http://www.imt-2000.org/ >
--	--