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MEMLOG

Software Design Specification (SDS)

Revision A

QRSA000XXXX

July 20, 2015

Revision Record	
Document Title: **Software Design Specification**	
Revision	Description of Change
A	1. Initial Release
	2.

Note: Be sure the Revision of this document matches the QRSA record Revision letter. The revision letter increments only upon approval via the Quality Record System.

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1 Scope

This document describes the functionality, and operation of the Memory logging library (MEMLOG).

2 References

The following references are related to the feature described in this document and shall be consulted as necessary.

No	Referenced Document	Control Number	Description
1	Syslib User Guide		SYSLIB User Guide

Table 1. Referenced Materials

3 Definitions

Acronym	Description
API	Application Programming Interface
DSP	Digital Signal Processor
MSGCOM	Message Communication Library

Table 2. Definitions

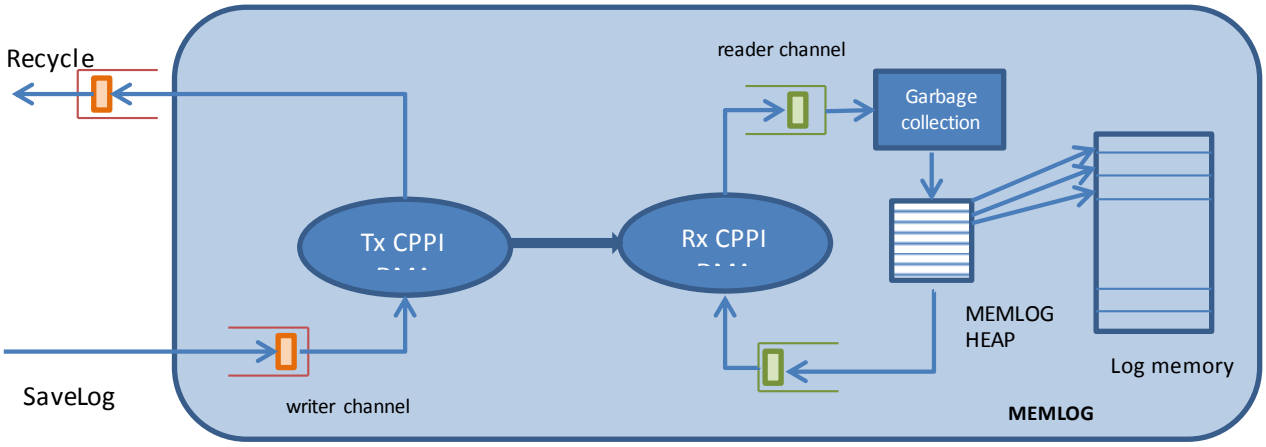
4 MEMLOG

4.1 Introduction

The memory logging module was developed to save logging buffers in memory directly. It utilizes MsgCom Queue DMA channel to copy the log buffer in a memory region provided to MEMLOG during MEMLOG channel creation. The log buffers in this memory region works in a circular manner, post process script is used to recover the proper sequence of log buffers.

One MEMLOG channel creates one MsgCom QueueDMA writer channel and one MsgCom QueueDMA reader channel. The writer channel is used when pushing logs to memory. The reader channel is used to collect descriptor and buffers after copy is done. Then the descriptor is relinked with the next available buffer in the chain and pushed back to the MEMLOG heap

free Queue. The following diagram shows how the MEMLOG saves buffers through MsgCom CPPI DMA channel.



In this diagram, MEMLOG heap is created internally and managing the log memory.

4.2 MEMLOG Log Memory

Log Memory is pre-allocated by application and provide to MEMLOG by memory base address and memory size. MEMLOG module will allocate packet descriptor from the given memory Region and attach the descriptor to the fixed size log buffer dynamically. Log Memory info is saved in Named database that can be retried through MEMLOG controller.

4.3 MEMLOG channel

MEMLOG channel can be created/deleted on the DSP core/ARM thread that logs need to be saved into memory. To create MEMLOG channel, application provides a memory block, memory region to allocate descriptors, fixed buffer size and number of packet descriptors. The MEMLOG channel handle can be passed to DAT producers to save producer buffers.

4.4 MEMLOG Controller

MEMLOG controller runs on ARM and is responsible for the following:

1. Retrieve Memory logging memory info from Named database
2. Start/Stop Memory logging to prevent buffer corruption when saving memory buffer content to a file.
3. Save Memory logging meta information in a given file for post processing.

4.5 Post processing

Post processing is needed to find out the start of the log buffer by using time stamp information provided in log buffers. For example, UIA logs uses Local timestamp in UIA event header added by UIA runtime module. For FAPI log, an additional timestamp can be added at the beginning of the log buffer which can be used to sort the packet by timestamp.