UNSTRUCTURED AAL1 IWF CORE

PRODUCT BRIEF

1. INTRODUCTION

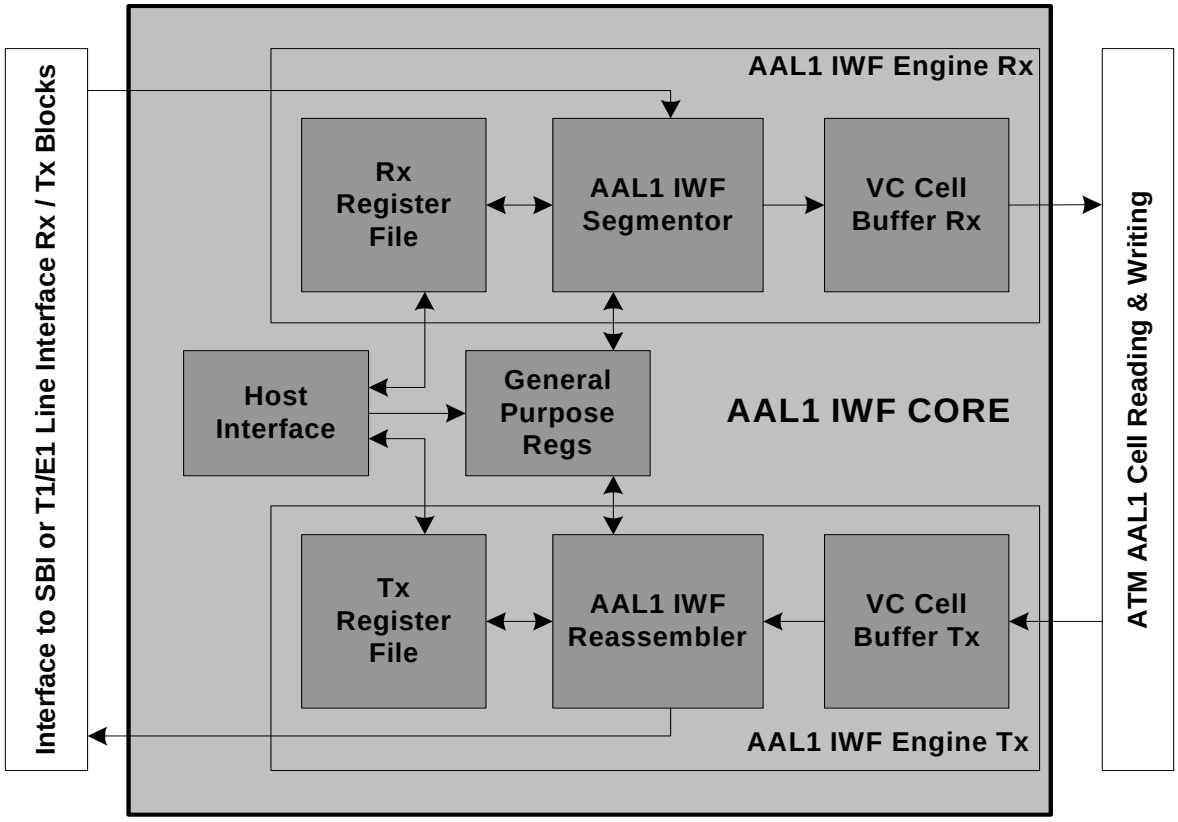
This document serves as product info for the multi-channel time-sliced AAL1 IWF core. The core is configurable for 8/16/32-lines and support unstructured mode of operation. In unstructured mode, all T1/E1 slots constitute one group. The main features of the unstructured AAL1 IWF core are illustrated below:

2. AAL1 IWF CORE FEATURES

- Supports packing (segmentation) and unpacking (reassembly) of ATM cells for 8/16/32 T1/E1 full duplex lines.
- Updates sequence number per virtual channel (VC).
- Extracts T1/E1 user data from AAL1 cells including the sequence number and checking is based upon 'Robust' or 'Fast' algorithms.
- Deep buffering of T1/E1 transmit data bytes to accommodate 16 ms of cell delay variation (CDV).
- Buffers ATM cells in both RX and TX directions.
- Generates partially filled cells for reducing assembly delay at the expense of greater cell rate in RX direction.
- TDM side of the core can either be connected to SBI interface or the T1/E1 Line Interface. On ATM side, the core can be connected to UTOPIA bus interface.

3. AAL1 IWF CORE BLOCK DIAGRAM

Illustration 1: AAL1 IWF core block diagram



4. IMPLEMENTATION SUMMARY

An estimate of the logic resources and memory utilization for the 8/16/32-lines unstructured AAL1 IWF core for different devices of Altera is shown in the following table:

Device	*Core Type*	*Speed Grade*	*Logic cells (LE)*	*Registers*	*Memory M9K*	*Performance MHz*
CYCLONE III	32 Lines	7	3408 LEs	1568	29 M4K	150 MHz
CYCLONE III	16 Lines	7	2480 LEs	1336	21 M4K	150 MHz
CYCLONE III	8 Lines	7	2013 LEs	1201	17 M4K	150 MHz

Table 1: AAL1 IWF Implementation summary

5. REFERENCES

1. ATM Forum: Circuit Emulation Service Interoperability Specification, af-vtoa-0078_000, Jan 1997.
2. Exar Corporation: *T1/E1 Essentials White Paper* by Darren Pool, Document No. XRWP00001, 2007.
3. PMC-Sierra, Inc.: PM73122 AAL1gator-32 ATM Adaptation Layer 1 Segmentation and Reassembly Processor-32 Data Sheet, Document No. PMC-1981419, Issue 8, May 2002.
4. ITU-T, Recommendation I.361, B-ISDN ATM Layer Specification, 02/99.ITU-T, Recommendation I.361-1, B-ISDN ATM Layer Specification: Type 1 AAL, 08/96.
5. ITU-T, Recommendation I.432, B-ISDN User Network Interface – Physical Layer Specification, 03/93.