

ATM SAR and Traffic Manager Processor: APP550TM and APP530TM

Introduction

Agere Systems is extending its technological leadership with the next generation of ATM SAR and Traffic Manager devices, the APP550TM and the APP530TM. The APP550TM and APP530TM are standalone processors that provide AAL5 SAR and Traffic Management functions for edge/access and multiservice applications. These chips provide:

- 2.5 Gbits/sec ATM AAL5 SAR
- Control of data flow across the network
- Service-Level Agreement (SLA) enforcement
- Traffic management
- Optimization of network resources
- Provision of bandwidth delay and jitter guarantee for PDUs to transverse the network
- Complete ATM and IP interworking

Description

ATM and IP interworking is enabled through the embedded AAL5 segmentation and reassembly (SAR) functionality in the APP550TM and APP530TM.

Both chips provide integrated policing/metering and statistics functions (128k virtual channel/flows) to enable flexible billing and accounting metrics for both ATM cells and IP/Ethernet packets. Buffer management across 256k queues, hierarchical scheduling, and shaping functions for both cell and packet are also integrated into both chips.

System Overview

Both the APP550TM and the APP530TM are based on the Agere Systems PayloadPlus® platform. This proven platform provides a complete hardware and software solution for building multiservice applications. In addition to all of the *PayloadPlus* features, the APP550TM and APP530TM provide:

- Segmentation and reassembly
- Cell and packet policing/metering
- Statistics
- Advanced buffer management
- Strict ATM scheduling (including virtual channel [VC] and virtual path shaping)
- VC merge functions
- Complete I.610 Operations, Administration, and Maintenance (OAM) functionality

The APP550TM operates at a line speed of 5Gbits/s and is well suited for both multiservice applications and edge/access applications. The APP530TM provides the same features as the APP550TM, at a line speed of 2.5Gbits/s. The APP530TM is designed for multiservice applications.

Features and Benefits

Agere System's devices provide significant features and benefits as you build multiservice applications. These include:

- **Wire-Rate Bidirectional AAL5 SAR (APP550)**
AAL5 SAR capabilities are embedded in the APP550TM and APP530TM. This enables the flexible hardware engines to achieve bidirectional line rates without sacrificing protocol interworking flexibility.

■ **Per-Connection Policing and Statistics**

The APP550TM and APP530TM support packet- or cell-based policing algorithms. Policing and statistics can be managed on up to 128k VCs or packet flows.

■ **Configurable Class Buffer Management Across 256K Queues**

Programmable classes and thresholds allow you to use any standard or proprietary buffer management algorithms.

■ **Operations, Administration, and Maintenance (OAM)**

The APP550TM provides complete OAM support in compliance with I.610 for ATM. In addition, the flexible and programmable OAM mechanisms in the APP550TM can be used to support evolving OAM standards for Multiprotocol Label Switching (MPLS).

■ **Hierarchical Scheduling for ATM Cells and Packets**

The extensive scheduling capabilities of the APP550TM enable you to meet the strict scheduling requirements for ATM and packet applications. The five level hierarchical scheduling system enables traffic management at multiple levels, and ensures that both cell and packet requirements are met.

—Quality of Service (QoS) can be attained for constant bit rate (CBR), real-time variable bit rate (VBR-rt), nonreal-time variable bit rate, (VBR-nrt), and unspecified bit rate (UBR, UBR+) traffic shaping.

—Class-based scheduling, such as that used by strict priority, weighted round robin (WRR), and deficit-weighted round robin (DWRR), can be performed as a standalone scheme or in conjunction with the rate shapers.

■ **Configurable Payload Segmentation**

The flexibility of these chips allows you to support different fabric and network payload cell sizes, from 40 to 64 bytes.

■ **Integrated Ethernet MACs**

Both chips include 4x1000 and 16x10/100 integrated Ethernet MACs to accommodate applications where ATM must be terminated to an Ethernet link. These MACs can also be used to develop high port density, space-efficient Ethernet applications that support technologies such as Virtual LANS (VLANS) and bridging.

■ **Flexible Multiprotocol Support at Up to Full-Duplex Line Rates**

Agere Systems patented programmable hardware engine, the Pattern Processing Engine (PPE), enables you to support multiple protocols.

Protocols include:

- IP/ATM
- Frame Relay/ATM
- MPLS/ATM

—EFT Martini Draft “Transport of Layer 2 Frames Over MPLS” (www.ietf.org)

—FRF8.1 Service Interworking Between ATM and FR PVCs (www.ietf.org)

■ **Coprocessor Support**

Support for AAL2 SAR or a security processor is enabled through the standard SPI-3 coprocessor port. With this port, you can customize the APP550TM and APP530TM using either off-the-shelf logic or your own specific logic. Agere Systems also offers a compatible AAL2 SAR coprocessor.

Interfaces

Both chips support these standards through a 32-bit interface:

- SPI-3
- UTOPIA Level 2
- UTOPIA Level 3
- GMII (4 integrated GbE MACs)
- SMII (16 integrated 10/100 MACs)

A second SPI-3 interface can be directed to a switch fabric or coprocessor to support additional functions.

Applications

Both chips are programmable processors, and as such can be programmed to handle new protocols or applications as needed. Currently, the chips support:

Multiservice Switches	DSLAMs
ATM Switches	Broadband DLCs
Routers	Wireless Networks

Agere Systems has developed the industry’s most efficient application development model so that you can create feature-rich applications in a dramatically shortened development time. We also offer a comprehensive suite of application code and APIs for system development. Software modules available include:

- IP to AAL5 segmentation and reassembly
- Interworking
- GCRA cell-based and packet-based policing
- RED buffer management, and VBR traffic shaping.

The APP550TM operates at 266MHz. The APP530TM operates at 133Mhz.

Availability

Both devices are available now.

For additional information, contact your Agere Systems Account Manager or the following:

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