

# Edge/Access and Multiservice Network Processors: APP550 and APP530

## Introduction

Agere Systems is extending its market and technology leadership with the next generation of highly integrated network processors, the APP550 and APP530.

These are standalone network processors that provide Layer 2 and above processing, segmentation and reassembly (SAR,) and traffic management functions for edge/access and multiservice applications. Agere Systems products focus on the wire-speed datapath functions and work in conjunction with physical interface devices, a low speed microprocessor, and backplane fabric offerings for networking and communication applications. Both devices provide a comprehensive, programmable solution with classification and traffic management throughput at line rates.

The architecture of Agere Systems devices provides a unique hardware and software combination that delivers high-speed processing for multiple communication protocols.

## Description

The APP550 and APP530 are both complete, programmable, single-chip network processors with classification and traffic management capabilities. Both devices 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. The APP550 and APP530 are software-compatible with other members of the APP500/APP750 product family, all of which can be programmed using software from Agere Systems.

## **System Overview**

Both the APP550 and APP530 devices use the proven Agere Systems PayloadPlus® platform to provide a complete hardware and software solution for building multiservice applications. The APP550 and APP530 provide these features:

- Layer 2 and above processing
- 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 APP550 operates at a line rate of 5Gbits/s and is well suited for both multiservice applications and edge/access applications. The APP530 provides the same features as the APP550, at a line speed of 2.5Gbits/s. The APP530 is designed for multiservice applications.

Flexible media interfaces with protocol support ranging from homogeneous Ethernet, POS, or ATM applications to full multiservice systems make the APP550 and APP530 an efficient fit on almost any platform.

You can use the APP550 and APP530 with Agere Systems framers and switch fabrics, or with other standard devices, to achieve complete system solutions for wire-speed processing in nextgeneration terabit switches and routers.

## **Features and Benefits**

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

 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)
- Wire-Rate Bidirectional AAL5 SAR

AAL5 SAR capabilities are embedded in the APP550 and APP530. This enables the flexible hardware engines to achieve bidirectional line rates without sacrificing protocol interworking flexibility.

Per-Connection Policing and Statistics

The APP550 and APP530 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 APP550 and APP530 provide complete OAM support in compliance with I.610 for ATM. In addition, the flexible and programmable OAM mechanisms in both devices 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 APP550 and the APP530 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), nonrealtime 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 deficitweighted 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.

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 APP550 and APP530 using either offthe-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. See the figure below.



## 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 an efficient and highly optimized application development model so that you can create featurerich 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:

- Protocol tunnel (IPSEC, L2TP) origination and termination
- Ethernet bridging and VLANs
- Routing and switching
- Access Control List (ACL) processing
- Link aggregation
- Monitoring
- ATM segmentation and reassembly
- IP to AAL5 segmentation and reassembly
- Interworking
- GCRA cell-based and packet-based policing
- RED buffer management, and VBR traffic shaping.

The APP550 operates at 266MHz. The APP530 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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