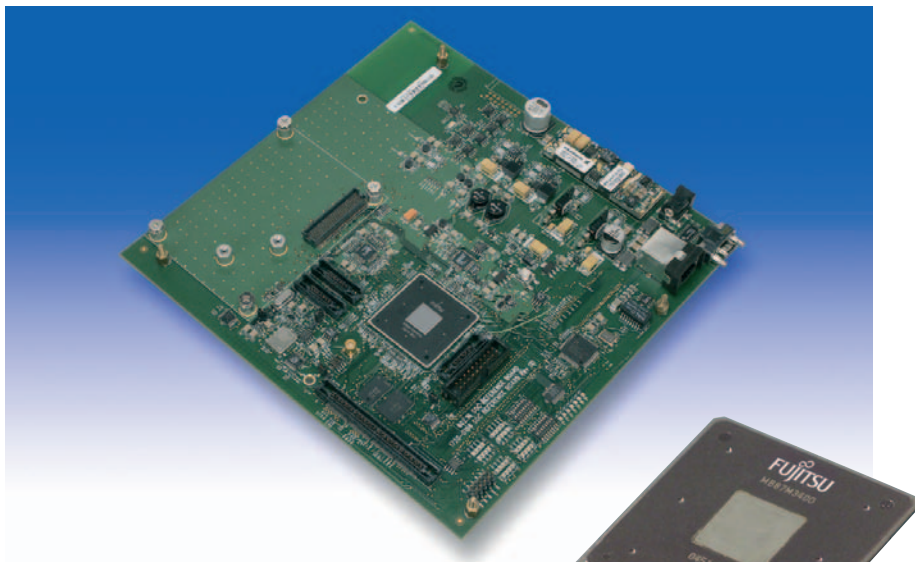


## NETWORKING FACTSHEET

# NETWORKING ASSP SOLUTIONS



Reference board based on the Fujitsu WiMAX SoC.

## Overview

Broadband communication is a dynamically growing market with many new applications and services. These include local area TV on demand, digital library access, video conferencing, entertainment, and fast wireless Internet access, with more in the 'pipeline'. Moreover, packet-based Internet technologies will also be used for traditional services like telephone and television in the future. Whereas VoIP is already a well-established technology on the market, applications like high quality video streaming over partially wireless IP networks is an emerging market. Cost savings achieved by using the high integration and flexibility of Fujitsu's communication ASSPs allows the design of new products that enable FME customers to take advantage of the expanding IP-based networking and communication market.

## WiMAX

### 802.16-2004 SoC

- Interoperable
- High performance OFDM (256 FFT, 64 QAM) based transmission
- Metropolitan orientation, later improved mobility (16e)
- Compliance with IEEE 802.16-2004 standard specification
- One chip to support SS and BS
- Data encryption in hardware
- LMAC provided as firmware
- Industry standard processors:
  - ARM 9 based for SS/CPE type of applications
  - External PowerPC for BS type of applications



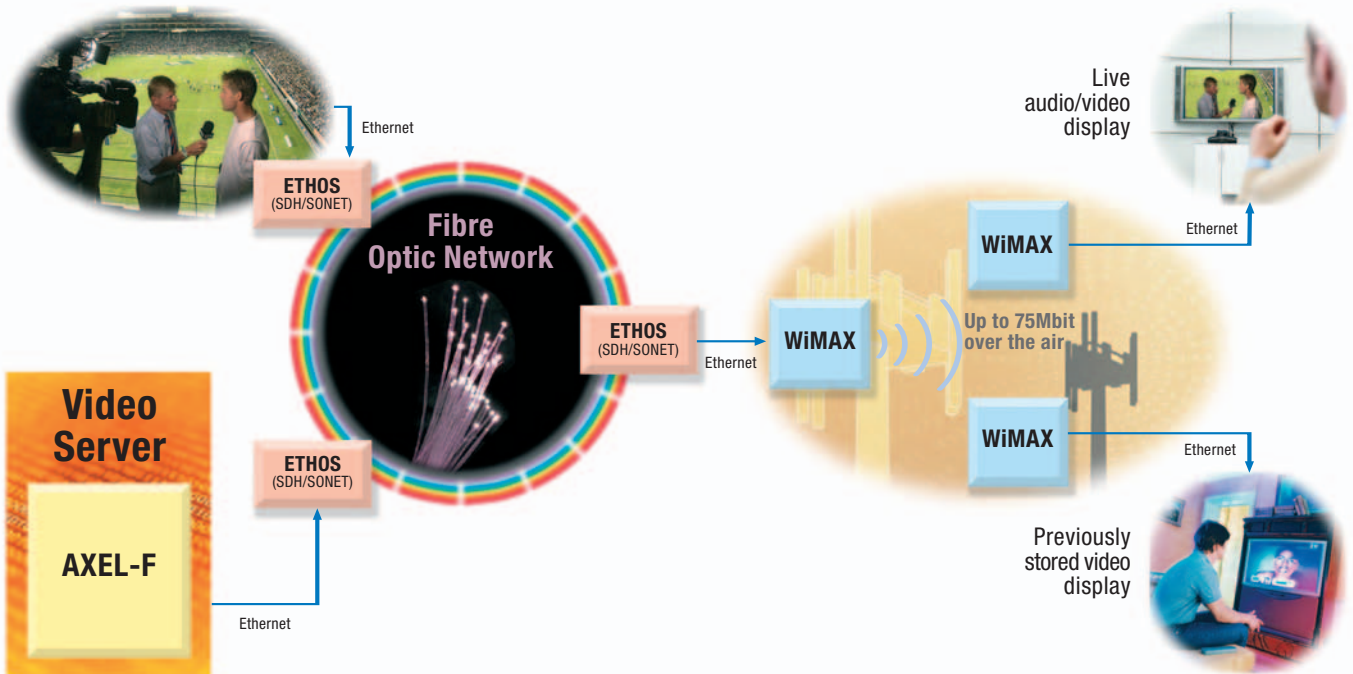
## ETHOS

- System on chip for hybrid SDH/SONET and data applications
- Interfaces:
  - Multi-rate STM-1/OC-3, STM-4/OC-12
  - 4x E1/DS1 and a TC-bus
  - Fast Ethernet
  - Synchronisation E1/DS1
- VC4/STS1 and VC-12/VC-3/VT1.5 cross connects
- 4 virtual concatenation groups with LCAS and differential delay
- GFP, LAPS and PPP mapping of Ethernet frames
- SDH/SONET/Ethernet performance monitoring and alarming
- Flow control, rate control
- Integrated timing functions, HDLC controller and CPU interface

## AXEL-F

- 12-port 10Gbps switching operation at wire speed
- 240Gbps aggregate throughput
- Integrated SERDES with XAUI (Enhanced chip will support 20m copper cable connection)
- On-chip shared memory for high throughput switching
- Cut-through routing for low latency transfer
- Jumbo frame support
- Deficit Round Robin for fair bandwidth sharing
- L2 unicast forwarding, address learning and ageing
- L2 multicast forwarding using GMRP

## NETWORKING FACTSHEET



<http://www.fujitsu.com/emea/services/microelectronics/networking>

<http://www.fujitsu.com/emea/services/microelectronics/wimax>

### Applications

The complete portfolio of cost effective, packet-based communications devices provided by Fujitsu enables customers to benefit from the technological shift towards IP networks and the related emerging applications markets

One example for an emerging, interoperable IP-based service is a high resolution video on demand application, together with live video streams, as shown above.

At the service provider, a large number of streams are generated and combined for transmission across the

network, based upon customer requests for simultaneous access to thousands of videos. In the video server, Fujitsu's leading-edge 10Gbps Ethernet switching technology, based on the AXEL-F device, allows the rapid extraction and provision of the requested content from high-capacity disk storage arrays.

The data streams are then routed across an optical fibre-based, highly-reliable Metropolitan Area Network (MAN), using Fujitsu's Ethernet-over-SDH/SONET (ETHOS) device, the most highly integrated and cost-effective product available.

From the fibre-based MAN, a further ETHOS device drops the data stream to the Fujitsu WiMAX System-on-Chip (SoC) for transmission to the subscriber across a broadband wireless interface.

The WiMAX SoC can be used for both basestation and customer premise applications, and with its highly advanced, standards-based wireless transmission capabilities, brings low cost broadband access to the customer, enabling wider subscriber coverage independent of existing or proprietary infrastructure.

<http://emea.fujitsu.com/microelectronics>

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