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## Mapper supports all protocols

[Bettyann Liotta](#)
[eeProductCenter](#)

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### "The Manufacturer Says:"

Fremont, Calif. — Exar Corp. launched what it claims is the industry's first universal multiprotocol framer for Ethernet-over-Sonet applications.

Exar's *EXtendAR 48M* (XRT95L53) is a universal OC-48/STM-16 multiprotocol framer that combines flexible Sonet/synchronous digital hierarchy (SDH) framer and DS3/E3 mappers with generic framing procedure (GFP), virtual concatenation (VCAT) and link capacity adjustment scheme (LCAS) functions on a single device.

This is the first in a family of multiprotocol over Sonet/SDH framers that will extend Exar into next-generation Metro core and transport network markets, said Bahram Ghaderi, vice president and general manager of Exar's Networking and Transmission Products Division.

"Deployments of these highly integrated devices are enabling the convergence of triple-play services together with data over Sonet/SDH," he said.

The device employs a unique set of flexible packet framing and encapsulation features combined with optimal Sonet transport capabilities. This makes *EXtendAR 48M* a practical solution for legacy systems as well as add/drop multiplexers, optical edge devices (OED's), multiservice provisioning platforms and edge router applications, Ghaderi said.

*EXtendAR 48M* supports GFP in combination with virtual concatenation (high order and low order) and LCAS, as well as a comprehensive suite of framing functions, which are configurable on a per channel basis.

In addition, *EXtendAR 48M* is the industry's first device to incorporate 48 DS3/E3 and fractional DS3/E3 framers on a single chip, Ghaderi said. "With this unprecedented level of integration of legacy and multiprotocol over Sonet/SDH framing functions in a single device, system vendors no longer have to implement them elsewhere in the system," he said.

### "eeProductCenter's Bettyann Liotta Says:"

Exar is expecting this mapper/framer, which is actually part Infineon Technologies AG (Munich, Germany), to jumpstart its entry into the Ethernet-over-Sonet (EoS) market.

In April, Exar purchased a significant chunk of Infineon's Optical Networking(ON) Business.

[Click here for more information about Exar's acquisition.](#)

The acquisition gave Exar additional know-how and a system engineering team that launched the company into the EoS market, said Sid Yenamandra, Exar's senior manager, Ethernet and Sonet/SDH product line.

The first device in this upcoming family of mappers (*EXtendAR 48*) is aimed at the packet portion of the optical networking arena. There are no other EoS framer packets that permit any type of packet data to be mapped and transmitted over legacy systems, according to Yenamandra. "No one else is integrating 48 channels of DS3/E3 mapping on a single chip with virtual VCAT/LCAS and legacy framing functionality," he said. In the past, this function required two framers.

The legacy market is all related to the Sonet protocol, without any Ethernet. Consequently, there are plenty of framers available for Sonet. Now, however, there is demand to map Ethernet over the legacy infrastructure to deliver triple-play applications (voice, video and data), and *EXtendAR 48* enables mapping of packet Data over Sonet, Yenamandra said.

Highly integrated devices are blossoming in the networking arena. Essentially, Exar's mapper is a system-on-chip (SoC) that is taking customers to the next level for triple-play applications.



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*ExtendAR 48M*, in addition to the Sonet interfaces, supports an OIF compliant SPI-3 interface enabling the device to interface directly to industry standard network processors, Ethernet switches or RPR MAC's. The device also supports Exar's G-header interface that provides framing and encapsulation support for Fast Ethernet, Gigabit Ethernet, RPR, MPLS or proprietary client data to be transported over Sonet.

*ExtendAR 48M* maps and de-maps data traffic between the SPI-3 interface and the standard Sonet/SDH interfaces. The device supports STS-48/STM-16 interfaces, as well as four STS-12/STS-3 interfaces on the Sonet/SDH line side and a standard OIF compliant SPI-3 interface on the system side. The device supports a flexible on-chip 4-bit serdes interface that can be configured in either STS-48 or a quad STS-12/STS-3 mode.

The device supports the mappings for any standard combination of STS-48/AU4-16, STS-12c/AU-4c or STS-3c/AU4 or STS-1/AU3, as well as STS-1/VC-3-xV or STS-3c/VC-4- xV. Also, the device provides pointer processing to accommodate timing offsets between optical interfaces. The device terminates section overhead and line overhead on OC-48/STM-16, 4xOC-12/, 16xOC-3 interfaces, and supports options to terminate and/or monitor STS path overhead (POH) and transport overhead (TOH).

A standard 16-bit microprocessor interface provides performance monitoring and alarms required by GR.253 and ANSI T1.105 and supports tandem path monitoring for network failure sectionalization.

The XRT95L53 operates at 3.3-V with 5-V tolerant I/Os over the industrial temperature range, and is available in a 780 PBGA. Samples of the part will be available within 60 days.

In 1,000 piece quantities, the XRT95L53 is priced at \$695. [Click here for the XRT95L53 data sheet.](#)

**Exar**, 1-510-668-7000, [www.Exar.com](http://www.Exar.com).



[See functional block diagram](#)

Exar's mapper is truly universal because even though it will mostly be used in Sonet infrastructures, the device can be mapped to any type of Ethernet.

In order to incorporate next generation protocol features, companies have had to remove some of the old functions to add new ones — when using the same package. Exar, however, built its architecture from scratch, and then developed protocol engines that are said to be unique in the way they incorporate all of the old and new protocol features. "We've compacted the legacy functions into highly integrated engines so we could fit both the old and new functions in the same package," Yenamandra said.

Exar's XRT94L55, for instance, which is about a year old, is a legacy framer in a 780 PBGA, which measures 37.5mm x 37.5mm. The new device, meanwhile, utilizes the same package size, but incorporates legacy features, as well as Ethernet features.

One of the key features of the new mapper is that it supports flexible mapping Ethernet and can map other traffic over Sonet too. To do this, Exar implemented a special protocol, called the G-header interface, which enables it to map any type of proprietary data into Sonet. It is a protocol that was developed using SPI-3 as the electrical interconnect. It has future proofed the EXTendAR 48M device, Yenamandra said. "Every day new protocols or another packet data comes out that needs to be mapped over Sonet. We built in a level of flexibility so if there are changes, you can input the new information using our G-header protocol," he explained.

In terms of integration, the STS-1 cross connect, which is typically an external function, is now on-chip. "We can hold 2.5 Gigabits/s worth of traffic in this device so you can groom the data down to the STS-1 level," Yenamandra said. This enables the device to add/drop data at STS-1 levels, and thereby provides superior functional performance at lower granularities.

The functional block diagram below shows three different ways to use the mapper in EoS system applications. The first one is the most cost effective for designers. The second diagram gets more into Ethernet switching and the third one is for full, triple-play services.



[See related block diagram](#)

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