

The Myricom ARC Series of Network Adapters with Sniffer10G

Delivering complete packet capture functionality in a cost-effective package

CSPI's Myricom® ARC Series of multi-port network adapters with Sniffer10G deliver pure packet capture with the flexibility to configure advanced functions. They lead the industry in value pricing, zero loss reliability and user-definable functionality.

Choose the Model That Matches Your Requirements

The ARC network adapters are PCIe cards with tightly-integrated Sniffer10G firmware and software libraries. Three ARC product classes (C, E and F) offer a choice of capabilities. See Page 3 for a feature comparison.

Pure Packet Capture

All ARC adapters with Sniffer10G implement pure packet capture by meeting three areas of critical requirements:

- **Zero loss:** A study from Sandia National Lab documents Sniffer10G's zero loss performance across a range of Ethernet packet sizes. This uncompromising quality results from an architecture that bypasses the kernel and sends packets directly into user space, leveraging a 'ring' that can expand to any size for rate matching with software.
- **Highly accurate timestamping:** ARC adapters meet current network requirements by supporting packet capture and timestamping at line rate and with the highest accuracy available anywhere.
- **Merge, filter and load balance:** Sniffer10G provides essential packet capture functions, including time-based merge, filtering and load balancing.



- Zero loss packet capture across the full range of Ethernet packet sizes
- Nanosecond timestamping at full line rate
- Merge and filter based on virtually any criteria
- Load balances packet delivery for up to 32 end points (e.g., CPU cores) based on user-defined rules
- Filter packets using the full Berkeley Packet Filter (BPF) syntax
- Strictly limited server overhead.
- Support for libpcap, WinPcap, PF_RING libraries and a full set of open source packet capture application tools
- PPS and 10 MHz daisy-chaining for multi-module time synchronization
- Supports Arista Networks DANZ timestamping
- Industry's best customer support

Cost-effective, high functionality and strictly limited server impact

The ARC Series network adapters are built to deliver extensive application flexibility while leaving the vast majority of server cycles available for your application. Applications benefit from full user space access to all incoming packets without requiring any intervention from the OS, while routines called by the Sniffer10G API are optimized for performance. A cost-effective design approach balances feature implementation across hardware and software, with software using either industry standard libraries (libpcap, WinPcap or PF_RING) or the Sniffer10G API. The ARC Series adapters deliver a compelling combination – high functionality, acceptable server overhead, and price leadership.

Flexible Multi-core Application Support

Using its flexible partitioning capability, Sniffer10G can involve all CPU cores in analyzing packets. Incoming TCP and UDP packet flows can be directed to multiple applications simultaneously, with each application controlling one or more cores. The adapter allows all applications to process the same packets and frees up the packets only when every application is done with them. Unique in the market, any application can be supported with its own specific data flow partitioning scheme.

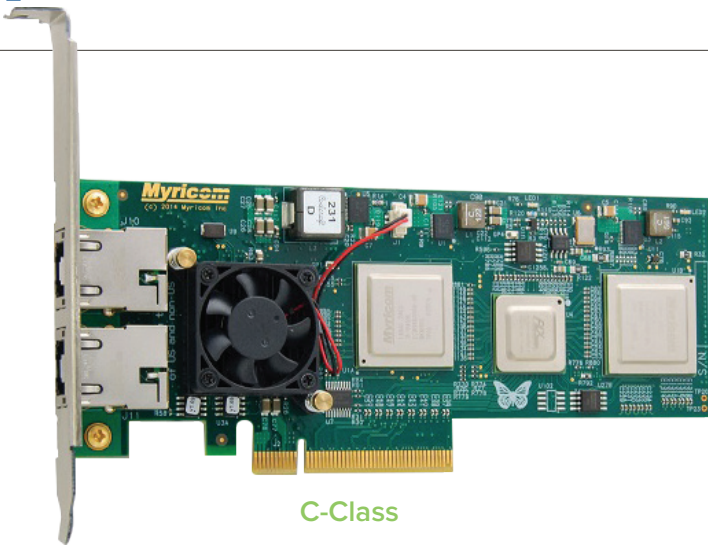
Application developers can partition the packet flow across up to 32 rings using pre-built rulesets or implement user-defined rules with the Sniffer10G API. The API allows developers to meet application needs with partitioning based on virtually any criteria. With this capability, data flows can be balanced across multiple cores such that each analyzes an equal portion of the incoming traffic. For applications that require deep packet inspection, this approach can relax the processing time constraints under high packet rate loads. Developers also have access to the complete Berkeley Packet Filter (BPF) language for filtering, unlike other adapters on the market which limit filters to a specified set of schemes.

Enhanced Timing Features

The ARC Series network adapters provide a flexible set of timing features to meet a range of application needs, including:

- **Timing synchronization:** PPS and 10 MHz connections are available (not on C-Class) to enhance timestamp accuracy by linking to external oscillators or GPS devices. One version of the F-Class offers an enhanced capability supporting picosecond accuracy.
- **PPS and 10 MHz daisy chaining (E-Class only):** Used for external time synchronization as well as synchronization across multiple modules. Daisy chaining offers a straightforward way to enhance timing accuracy for applications with complex configurations.
- **Support for Arista Networks DANZ timestamping:** Arista switches can optionally add timestamps to packet traffic flowing through the switch, using proprietary extensions to the IP standard that Sniffer10G software can decode. This allows applications to use the time packets entered a local network rather than the time they enter the network adapter.

C-Class



C-Class

Features

- Industry's lowest cost pure packet capture device
- Available in multiple form factors: low-profile PCIe, BladeCenter and PC/104
- One or two 10G ports in either SFP+ or 10GBASE-T or XFP or CX4, the broadest range of 10G options on the market

E-Class

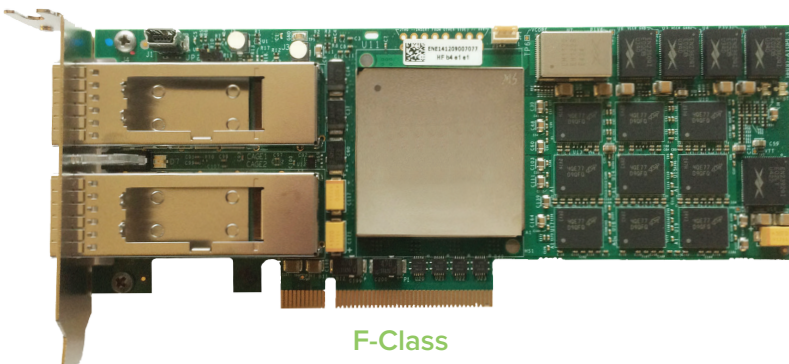


E-Class

Features

- Standard timing synchronization capability with nanosecond accuracy
- Large FPGA to enable a stream of future enhancements from CSPi
- Two or four 10G ports in either SFP+ and SFP configuration

F-Class



F-Class

* Specifications not included on page 4

Features

- Standard timing synchronization capability, with one board version reaching ± 500 picosecond accuracy
- Larger FPGA to leave room for your own IP
- On-board memory subsystem
- One board version supports load balancing between servers, as well as between cores
- 25/40/50/100 GbE capable
- Four 10G ports
- or
- One 100G port and twelve 10G ports

ARC NETWORK ADAPTER FAMILY

- KEY SPECIFICATIONS (F-Class not included)

Bus Interface	PCI Express Gen 3, 8 lanes wide (dual port adapters) PCI Express Gen 3, 8 lanes wide (quad port adapters)
Form Factor	All ARC adapters offer a low-profile PCI Express x8 add-in cards that ship with a standard height faceplate installed and a low profile faceplate in the box. C-Class available in BladeCenter and PC-104 form factors.
Electrical Power	25 watts or less for all models
Environmental	CSPI recommends that adapters be installed into servers that provide some air flow over the PCIe slots (very common). Use in an office or computer room environment.
Throughput	Sniffer10G provides 100% lossless packet capture and injection for all Ethernet packet sizes. Supports the maximum possible 10G packet rate of 14.8 million packets per second.
Timestamp Stability	Timestamp stability is determined by the on-board oscillator (a Vectron VT 804 TCXO) or by any optional, user-provided 10 MHz clock. The adapter has a 10 MHz input and repeater for connection with other modules.
IEEE 1588	Myricom time stamps are captured in a manner that allows IEEE 1588 software implementations to deliver highly accurate, synchronized time.
Software Support	The Sniffer10G packet capture capabilities can be leveraged through the popular Libpcap (Linux) or WinPcap (Windows) library or directly through the Sniffer10G SNF API, which is available as a set of C programming language functions. Using a SNF-aware libpcap/WinPcap, users reference a Myricom ARC Series 10G network adapter through its Ethernet interface name and then can run existing libpcap/WinPcap-dependent applications, relying on libpcap/WinPcap's portable interface. For more advanced usage, the SNF API can be directly targeted by user applications. In both usage cases, network access via the SNF interface to the ARC Series 10G network adapter, rather than via the standard kernel access, provides higher performance.
Connections	C-Class: Dual SFP+ 10GbE ports; 10GBase-T, XFP and CX4 available on some versions E-Class: Dual or Quad SFP+ 10GbE ports

REGULATORY APPROVALS, COMPLIANCE

Emissions	Emissions and safety authorities do not certify board-level products. They certify complete systems with all boards installed. To minimize risk for OEM customers, CSPI uses a third-party certification organization to test its Myricom adapters installed into a generic PC. Final test reports are available to customers. We meet US, Canadian, and European emissions, Class A.
Compliance	RoHS (Reduction of Hazardous Substances)
Country of Origin	USA

OTHER DETAILS

Cables and transceivers	Contact your Account/Sales representative for more information on cables and transceivers that are compatible with each adapter.
Warranty and add-on support	One year for hardware defects and 90 days for software defects. 90 days of "getting started" telephone and email support as well as any software upgrades shipped within that window. Refer to the support datasheet for options extending the 90-day window.

Software Configuration Flexibility

In addition to using the Sniffer10G API, ARC Series packet capture capabilities can be leveraged through the industry standard libpcap/WinPcap libraries. To simplify these implementations, Sniffer10G-capable libpcap and WinPcap libraries are included with the Sniffer10G software distribution. PF_RING is supported for Linux distributions.

Sniffer10G is also enabled with support for open source packet capture application tools, including:

- BRO IDS
- Suricata
- Wireshark
- Tcpdump
- Snort
- nprobe

User documentation includes configuration details for running these tools with the Sniffer10G software.

The industry's most reliable and responsive customer support

At every level of our organization, CSPI is committed to customer success. We respond quickly, providing information to address most questions without delay. For complex situations, we'll do whatever it takes to solve your technology issue.

Summary

The Myricom ARC Series network adapters with Sniffer10G deliver pure packet capture capability with zero loss, highly accurate timestamping at full line rate speeds and essential packet capture functions, including time-based merge, filtering and load balancing. Multi-core application support is enabled by a uniquely flexible partitioning capability. Impact on server performance is strictly limited. Enhanced timing features are supported as are industry standard libraries and open source application tools.

About CSPI

CSPI (NASDAQ: CSPI) is a global technology innovator driven by a long history of business ingenuity and technical expertise. A market leader since 1968, we are committed to helping our customers meet the demanding performance, availability, and security requirements of their complex network, applications and services that drive success.

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