

In today's increasingly complex and multi-tiered data centers, space and energy are at a premium while performance is an ever-present worry. Data center solution vendors must address concerns about footprint, management overhead, and performance bottlenecks. Crescendo Networks can help.

Crescendo's AppBeat Solution Suite streamlines data center infrastructure while accelerating application performance. Deployed on the purpose-built Maestro Platform, the solution leverages dedicated hardware to deliver load balancing, TCP and SSL offloading, compression, and application transaction management in parallel from a single device.

For strategic partners that want to leverage these capabilities in their own solutions, Crescendo Networks offers the Maestro Platform in a blade form factor. The Maestro Blade adds multi-tier application delivery functionality without increasing the footprint, and integrates easily into a wide range of devices.

Testimonials

"With the rapid evolution of enterprise data centers, we saw a compelling reason to evolve our Giga Ethernet Data Center solutions into a multi-layer discipline. Crescendo Networks' Maestro architecture was well suited to help boost overall application performance which we believe will translate into greater and more predictable business productivity for our customers."

Henry Tso
Chief Technology Officer
H3C



Key Benefits

Improved End User Experience

Users benefit from fast, consistent and reliable performance, even during heavy load. Compression, offloading and TCP optimization techniques improve the performance delivered to end users by 30-70%.

Reduced Data Center Expenditures

Maestro Blade consolidates critical functions in a single appliance for optimal data center efficiency and immediate ROI. By offloading server processing, available server capacity can be increased by 300-500% and server hardware requirements reduced by up to 50%. In addition, hardware-based compression reduces bandwidth requirements by up to 85%.



Multi-tier Application Acceleration

Maestro Blade operates at multi-gigabit throughput rates. With powerful, purpose-built hardware and innovative technologies, the Maestro Blade can execute multiple features concurrently, providing unmatched performance even under heavy load.

Increased Security and Application Assurance

The Maestro Blade shields servers from malicious attacks and mediates flash crowd events, ensuring consistent application availability and security.

Fast Time to Market

With a blade form factor and open interfaces, Maestro Blade integrates easily into complementary networking solutions for quick time to market and competitive performance advantage. Maestro Blade can support the largest service providers, media sites, Web properties and SaaS vendors.

Core Technologies

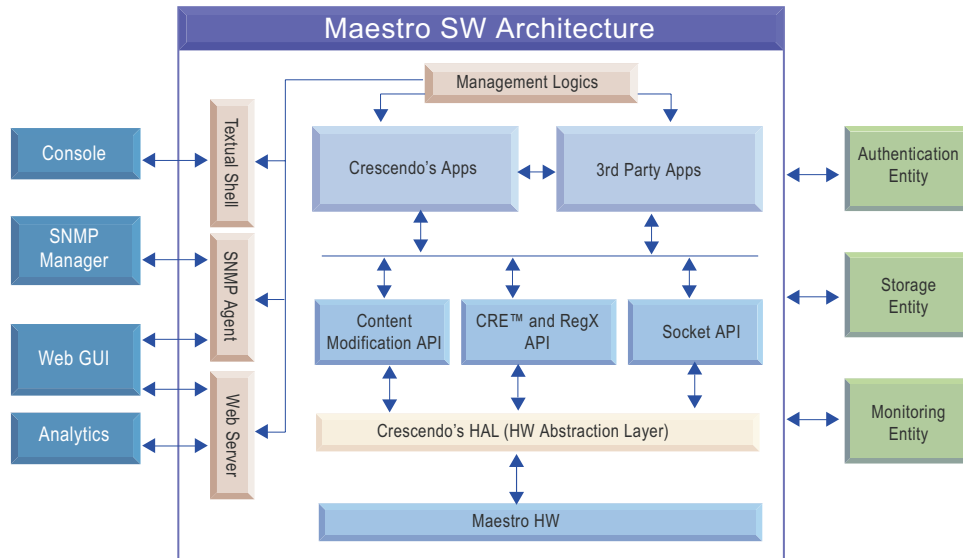
Maestro Architecture

The underlying hardware for AppBeat DC, the Maestro platform, is the only industry solution to implement Layer 2-7 functionality in dedicated hardware with TCP termination/optimization, load balancing, compression, and SSL acceleration. Each function runs on a separate, purpose-built engine with dedicated CPU and memory resources. As a result, AppBeat DC can enable all of the functions at the same time without any performance slow-down. This feature concurrency distinguishes AppBeat DC from other application acceleration solutions that slow down as more features are enabled.

Short-Lived Transaction (SLT)

Maestro Blade includes Crescendo's patent-pending SLT technology, which provides unmatched performance for TCP termination and optimization.

Advanced connection management offloads TCP overhead by consolidating connections. Unique request processing technology buffers requests and responses during transaction flow. Response optimization technology shields servers from WAN-based TCP overhead, for maximum throughput.



Hardware and Software Interfaces

The Maestro Blade can be integrated in any blade chassis or switch architecture. By providing L2 to L7 capability in hardware, Maestro supports application layer processing using a standard Linux-based platform with minimum processing overhead. It uses the following APIs:

- Socket-Based API: data-path handling
- Multi-Layer Access API: processing any protocol at the OSI level
- Content Acceleration API: content level parsing and modification in RegEx and/or XML format

Maestro Blade Configurations

Choose from the available Maestro Blade configurations based on your target customer needs.

- **CN 7710**
Multi purpose entry-level blade platform targeted at small to medium organizations. Offers up to 1 Gbps throughput.
- **CN 7710**
Integrated blade platform targeted at medium to large organizations with high performance, multiple features and throughput needs. Offers up to 4 Gbps traffic acceleration.
- **CN 7710**
Carrier grade blade platform targeted at large web sites and service providers with massive traffic volumes requiring processing of up to 10 Gbps throughput.

AppBeat™ Solution Suite

Crescendo Networks delivers the first multi-tier application delivery solution suite that accelerates and optimizes performance across all application tiers, from the web front-end to the back-end application tiers. Using the Maestro Blade, you can integrate the AppBeat solution suite in your networking device.

AppBeat DC

AppBeat DC is a web-facing application delivery controller that provides high availability, scalability, acceleration and optimization for Web applications.

TCP Offload, Multiplexing and Acceleration

AppBeat DC reduces server processing load by offloading TCP termination, eliminating connection setup, teardown and management processes on servers.

Content Compression

With its dedicated, solid-state compression processor, AppBeat DC can compress content by up to 85%, operating at speeds of up to 3 Gbps with zero latency.

SSL Offload and Acceleration

AppBeat DC offloads SSL processing from servers, using dedicated hardware to accelerate SSL session setup and data encryption.

Comprehensive Load Balancing

Local load balancing determines the optimal server for each request based upon actual HTTP load. Global Server Load Balancing distributes traffic across geographically separated data centers.

Application Assurance and Availability

AppBeat DC maintains a normalized operating environment even under heavy loads, shielding servers from erratic client behavior, malicious attacks (DDoS) and flash crowd events.

AppBeat SC

AppBeat SC learns, manages and optimizes application transactions and business processes, offering new levels of visibility, control and acceleration across all layers of the application.

Adaptive Learning

AppBeat SC 'learns' about the application environment dynamically, without code modification or agent installation. It maps the different application transactions and creates an application-specific language. By constantly monitoring the environment, it identifies and adapts to change as it happens.

Congestion Prevention

AppBeat SC shields applications from transaction congestion during peak loads by limiting the number of transactions that compete for the same resources. It also identifies the application saturation point and uses queuing and admission control techniques to avoid saturation, eliminating bottlenecks before they happen.

Transaction Prioritization

Using AppBeat SC, businesses can prioritize application transactions according to their business value, ensuring that the most vital tasks and users are served during peak loads.

Application Performance Insight

AppBeat SC collects detailed statistics on transaction usage patterns. It provides insight into transaction response times, system activity, system load and saturation, and service level delivery.



◀ *Maestro Blade integrates seamlessly into existing datacenter blades, providing multi-gigabit application acceleration.*

Maestro Blade Summary

Feature Summary

Application Acceleration

True TCP termination/offload/acceleration

- Server side: Eliminates the overhead of connection setup and tear down, handles a large number of client connections, and multiplexes requests to a controlled number of persistent server connections
- Client Side: FastTCP for transmission acceleration and packet loss prevention

Compression

- Real time compression
- Supports Gzip, Deflate (decompressed by Web browser)
- Hardware-based, zero latency

SSL

- Hardware based SSL offload for session setup and bulk data transmission
- Client side and server-side SSL functionality

Load Balancing (Layer 4 and 7)

- All decisions made at the request level
- Flexible layer 7 rules: URL, file-type, headers, etc.
- URL rewriting capabilities for requests being sent to servers
- Best server selection based on actual server load
- Application-level client persistence
- L4 load balancing with TCP acceleration
- Global server load balancing

Application Protection

Protection from DDoS attacks

- SYN Flood, Land, Teardrop, Smurf, Ping Of Death, Open/Close, ICMP Unreachable, ICMP Redirect, Looping UDP Ports, Fraggle, UDP Flood, TCP Flood

Application Assurance

- Guarantees application operation under any load

Redundancy/High Availability

- Active/Passive for hot standby
- Active/Active for load sharing
- Configuration synchronization between redundant devices

AppBeat SC Feature Summary

Automatic Behavior Learning

- Automatically learns the application flow, reducing manual configuration
- Discovers requests that impact application logical processing
- Learns the capacity of the application tiers
- Learns the impact of each transaction on the application
- Learns business processes that make up user sessions
- Adjusts performance thresholds based on normalized application behavior

Acceleration

- Recognizes the transactional "weight" (response time impact) of each application request
- Schedules transaction delivery in the most efficient manner
- Decreases the impact of process-intensive transactions on the overall performance
- Provides a significant performance boost for requests

Optimization

- Recognizes the optimal conditions for an application in terms of concurrent pending transactions (can be adaptively learned)
- Prevents the application from exceeding its capacity, which would result in performance degradation and inconsistency
- Allows the application to operate at optimal capacity, ensuring predictable performance

Analysis, Trending and Reporting

- Compliance threshold monitoring
- Historical trending
- Server-side, client-side, and end-to-end performance monitoring

Management

The AppBeat DC can be managed through a comprehensive, easy-to-use interface. Highlights include:

- Remote configuration and management
- Web GUI
- Command Line Interface (CLI)
- Telnet/SSH
- RS232 serial console
- SNMP compliant
- Event reporting through, event logs or syslog
- Dual images, multiple configurations

System Specifications

Open System

- Standard host processor, single/dual cores
- Linux OS

System Interfaces

- Up to 10x10/100/1000 copper
- Up to 10x 1 Gbps fiber
- Single 10 Gbps XAUI

Physical Dimensions

- Customizable to your chassis

Power

- AC Input
- Voltage:
 - 90-250 VAC @ +6%, -10%
 - Frequency: 50-60 Hz
- Maximum current: 3.0 A

Certifications

- EMC: ■ EN 55022 ■ EN 55024
 ■ FCC part 15, Sub-part B ■ ICES-003A
 ■ VCCI 2002

Environmental

- Operating temperature: 0° to 40° C
- Storage Temperature: -40° to 85° C
- Relative Humidity: 5% to 95% non-condensing
- Operational Altitude: 0 to 10,000 ft. (0 to 3,000m)
- Acoustic Noise: 70 dB maximum

Safety

- EN 60950 ■ IEC 60950
- UL 60950 ■ CSA CS22.2 No. 950

| Blade Performance | CN7710 | CN7740 | CN7790 |
|-----------------------------|----------|--------|---------|
| Total Connections | 500K | 1M | 4M |
| Connections/Sec | 100K | 500K | 800K |
| SSL TPS | 5000 | 20K | 40K |
| SSL New Handshakes/Sec | 5K | 10K | 20K |
| Throughput – SSL | 250 Mbps | 1 Gbps | 4 Gbps |
| Throughput – Compression | 250 Mbps | 3 Gbps | 6 Gbps |
| DoS Protection – SYN/Sec | 1M | 2M | 3.2M |
| Throughput (optim. traffic) | 250 Mbms | 4 Gbps | 10 Gbps |
| Throughput (all traffic) | 1 Gps | 5 Gbps | 10 Gbps |