

# Fusion Catalyst™

## The New Standard in Display Wall Processors

The Fusion Catalyst family of display wall processors ushers in a new era of performance and flexibility for collaborative visualization applications. Employing cutting edge, second generation PCI Express technology, Fusion Catalyst processors offer up to an astonishing 320 Gbps of bandwidth. That's enough bandwidth to carry multiple ultra-high resolution video signals at a full 60 frames per second, drive ultra-high resolution monitors at a full 32 bits per pixel, and support virtually any configuration requirement.

Remember to bring your applications, because Fusion Catalyst is not just a display wall processor, it's also a PC with Intel CPUs and Windows 7. Run mission-critical apps, access data through the network, engage the information, and collaborate on a wall-sized desktop.

### Power and Flexibility

The Fusion Catalyst 8000, Fusion Catalyst 4000 and Fusion Catalyst 1000 are built to order in Jupiter's ISO 9001:2008-registered US factory to meet the specific requirements of each customer, depending on model:

- Up to 120 graphics outputs
- Up to 100 DVI, HD, or RGB inputs
- Up to 400 video inputs
- Up to 200 HD streaming video inputs
- Up to 400 SD streaming video inputs
- Up to 10 Gigabit Ethernet ports

The Fusion Catalyst 8000 and 4000 models come standard with Dual Quad Core Xeon CPUs, 8GB of RAM and a DVD-RW/CD-RW drive. The Fusion Catalyst 8000 ships with two hot-swap 128GB solid state drives (SSD) and the Fusion Catalyst 4000 ships with two hot-swap 320 GB SATA-300 hard disk drives.

The Fusion Catalyst 1000 features a Core 2 Duo CPU, 4GB RAM, one removable 320GB SATA-300 disk drive, and a DVD-RW/CD-RW drive.

## High Performance Graphics

Fusion Catalyst utilizes the most advanced graphics GPU architecture found in a display wall processor today, capable of driving two displays at up to 2560x1600 (Dual-Link DVI) digital, or up to 2048x1536 analog. With 11 Gbps of internal bandwidth and 256 MB of GDDR3 memory per card, the Fusion Catalyst can render complex application data while displaying multiple video or computer inputs simultaneously. All outputs are synchronized to eliminate "frame tearing" between displays.

## Abundant, Powerful Inputs

Fusion Catalyst display wall processors can be configured to specific direct input connection requirements. The Dual DVI-I input card handles input signals such as single-link and dual-link DVI up to 2560x1600, analog VGA inputs up to 2048x1200, and component video progressive-scan HD inputs up to 1080p60. The Octal SD Video input card handles standard definition composite and S-Video inputs through a rackmountable input panel. It uses Jupiter's motion-compensated de-interlacing and scaling engine to provide world class video quality, with scalable windows that are freely sized and placed on the display wall. Overlap, PIP, multiple PIP – virtually any arrangement is possible without performance penalty.

Both the DVI-I and Octal Video input cards employ Jupiter's proprietary communication technology, ensuring that each card can transmit input signals at full frame rate – no dropped frames regardless of output window size – while maintaining absolutely perfect visualization. In addition, each source can be placed into as many as four separately positioned and scaled windows, simultaneously.

## Uniquely Engineered for Display Walls

Jupiter Systems designs all its own software and hardware as an integrated whole, creating a tightly woven system architecture that provides the best functionality and achieves the highest possible performance. This provides Jupiter with a better foundation for supporting our products in the field – we have the sort of deep system knowledge that no integrator of 3rd party or COTS components can claim.

Jupiter's fourth generation VirtualScreen™ drivers are seamlessly integrated into the Windows environment, providing intuitive setup of display wall configurations and allowing Windows applications to freely move and scale across the entire display wall.

## Quad HD Decoder Input Card

The addition of optional Quad HD Decoder Cards provides support for the display of up to 200 HD or SD network video streams in MPEG-2, MPEG-4, H.264, and MJPEG formats. The card also supports streams from PCs, with real-time updates. Using Jupiter scaling and communication technology, dozens of streamed sources can be displayed at full frame rate, simultaneously, with digital precision throughout. Support for most popular IP cameras and encoders. Tightly integrated with Jupiter's industry-leading ControlPoint software.



## CatalystLink® Input Card

Optional CatalystLink cards provide additional input capability from PixelNet® nodes, including SDI, 3G-SDI, HD-SDI, and HD component inputs. PixelNet DVI inputs have an optional KM capability that provides convenient remote keyboard/mouse control of the DVI input computer over the PixelNet network. PixelNet TeamMate output nodes can be managed directly from the ControlPoint interface, allowing PixelNet-based inputs to be simultaneously displayed on the Fusion Catalyst-driven display wall and on ancillary PixelNet-driven displays.

## System Availability

Fusion Catalyst systems are designed for continuous 24/7 operation, specifically for the most demanding visualization environments where availability of critical decision support systems can literally mean life or death. To this end, the Fusion Catalyst 8000 and Fusion Catalyst 4000 feature many redundant components including hot-swappable N+1 redundant power supplies, hot-swappable system fans, and hot-swappable disk drives configured as a RAID 1 array.

The Fusion Catalyst 8000 also features hot-swappable input and output cards. Hardware and software continuously monitor key system parameters such as ambient chassis temperature, CPU temperatures, power supply voltages, fan tachometers, and ECC memory performance, automatically alerting users to conditions that require direct intervention. System events are logged both in ControlPoint software and in the standard Windows event log.



## ControlPoint™ GUI , Protocol and API

Fusion Catalyst is delivered with ControlPoint™ software standard. ControlPoint is a complete, integrated, and intuitive software solution for the control and management of the display wall processor.

ControlPoint is a client/server based system: the server resides on the Fusion Catalyst processor directly accessing hardware functionality, whereas the client is installed on a network accessible PC running Windows XP/Vista/7. ControlPoint client and server communicate over a TCP/IP connection using an open, clear-text communications protocol: the ControlPoint protocol. ControlPoint protocol and supporting APIs can be used for custom applications and control. Simple applications using JavaScript and HTML can be generated in minutes. Using the well-documented API, the complete power of the Fusion Catalyst processor is available to those who truly want a customized interface and complete control. An RS-232 gateway is provided for devices requiring serial communication.

The ControlPoint client provides a consistent user interface to start, position, size, and scale application, DVI, RGB, HD, and SD video windows remotely via a network client.

ControlPoint offers an object-based, drag and drop interface – defined objects such as DVI, RGB, HD, and Video inputs, Streaming Video inputs, web browsers, image viewers, and local and remote application windows can be dragged and dropped onto the display mimic. Setting up complex combinations of graphical and real-time data is simple, quick and intuitive. Toolbar shortcuts to commonly used functionality are provided to make adjustments to windows even more convenient.

ControlPoint provides the ability to save the state of the display wall into a layout, stored on the display processor, and to quickly recall saved layouts directly from the user interface or from user-assignable hot-keys. The number of layouts that can be stored is enormous, limited only by the size of the hard drive on the Fusion Catalyst.



## Fusion Catalyst In Action

The Fusion Catalyst Processor from Jupiter Systems is the perfect solution for control room projects requiring high performance and reliability in a cost effective, space efficient platform.

Fusion Catalyst blends seamlessly into Security Operations, Network Operation Centers, Public Utility Operations, Traffic Management Centers, Process Control Operations, Military Surveillance Systems, Classrooms, Boardrooms, Video Conference Rooms, Digital Signage installations, and more.

A Fusion Catalyst Display Wall Processor incorporates all of the visual data sources found in a control room environment and displays them in movable, scalable

windows on a virtual display comprised of multiple output devices: monitors, LCD flat panels, plasma panels, projection cubes, or a projection system.

Data sources can include local applications, remote network applications, CP Share streams, compressed network video streams, directly connected SD and HD video, VGA, and DVI inputs. All data sources are accessed from an intuitive and consistent software interface providing complete control of the video wall.

And remember, Fusion Catalyst processors are also PCs, with Intel CPUs and Microsoft Windows 7 onboard, enabling applications to be run directly on the processor.

## PCI Express Switch Fabric: Critical for Control Room Applications

Fusion Catalyst display wall processors feature Second Generation PCI Express technology, creating a true non-blocking communication infrastructure within each chassis. With at least double the bandwidth found in its

competition, Fusion Catalyst display wall processors provides more expandability, faster graphics, real time SD/HD/DVI/RGB frame rates, and better overall system performance, regardless of configuration size.

## ControlPoint Security: User Access Control for Fusion Catalyst

Fusion Catalyst processors ship with ControlPoint Security, airtight security tools indigenous to Jupiter's ControlPoint wall management software suite.

ControlPoint Security features LDAP integration, providing secure login with the standard user name and password controlled by the customer's IT department.

With security defined at the object level, managers can create discrete management and access permissions for wall segments, layouts, inputs, applications, and remote cursor control.

User activity and event logging is performed at sub-second resolution, allowing thorough forensic analysis.

## With a Jupiter Display Wall Processor, the Whole Is Truly Greater than the Sum of its Parts

- **PCI Express Switch Fabric with up to 320 Gbps bandwidth**
- **FC8000 & FC4000: Dual Intel Quad Core Xeon 2.33Ghz CPUs**
- **FC1000: Single Core 2 Duo 2.0Ghz CPU**
- **Up to 64GB of ECC-protected RAM**
- **Windows 7 64-bit standard**
- **FC8000: Up to 80 x4 PCIe 2.0 slots**
- **FC4000: 16 x4 PCIe 2.0 slots (up to 48 slots with two optional expansion chassis)**
- **FC1000: 10 x4 PCIe 2.0 slots**
- **16 Gbps per slot, non-blocking bandwidth**
- **ControlPoint™ software**
- **First processor with Dual-Link DVI in and out**
- **Up to 400 video inputs with octal video cards**
- **Up to 400 SD video streams supported**
- **Up to 200 HD video streams supported**
- **Up to 100 DVI/RGB/HD input channels**
- **Up to 120 output display channels**
- **256MB graphics memory on each output card**
- **32 bits per pixel color depth**
- **Many hot-swappable components**

# Fusion Catalyst Specifications



(rear panel of the Fusion Catalyst 4000)

## Main Chassis

### CPU Board

#### Processor

FC8000 & FC4000: 2 Intel Quad Core Xeons, 2.33GHz  
FC1000: Single Core 2 Duo, 2.0GHz

#### System memory

FC8000 & FC4000: 8GB RAM; Optional 16, 32, 64GB  
FC1000: 4GB RAM

#### Expansion slots

FC8000: All expansion slots are in Switch Fabric Chassis (80 max with four 20-slot Switch Fabric Chassis)  
FC4000: 16 PCI Express 2.0 x4 slots (48 max with two 16-slot FC4000 Expansion Chassis)  
FC1000: 10 PCI Express 2.0 x4 slots (no expansion)

#### Other slots

FC8000 CPU Chassis: Four PCI Express 8-lane slots for peripheral cards (Ethernet, Audio, RAID 5)

### PCI Express 2.0 Switch

Non-blocking architecture, PCI Express 2.0

### Disk Storage

#### Hard disk

FC8000: 2 hot-swap 128GB solid state drives (SSD), RAID 1 (3rd drive, RAID 5, HDD optional)  
FC4000: 2 hot-swap 320GB, SATA-300, 7200 RPM, RAID 1 (3rd drive, RAID 5 optional)  
FC1000: 1 removable 320GB, SATA-300, 7200 RPM

#### Optical Storage

DVD-RW/CD-RW

### Network Interface

#### Ethernet

Dual 10/100/1000 Mbps RJ45 ports; more optional

### Input Devices (USB)

FC8000: Wireless 104-key keyboard & laser mouse  
FC1000 & FC4000: Wired 104-key keyboard & mouse

### Touch Panel Support

IP control protocols

### Connection to External Chassis

FC8000: 4 x16 slots for links to Switch Fabric Chassis  
FC4000: 2 x8 slots for links to Expansion Chassis

## Expansion Chassis

### FC8000 Switch Fabric Chassis

#### PCI Express Input

16-lane PCI Express 2.0 inter-chassis connection

#### Expansion slots

20 slots in each Switch Fabric Chassis  
Add up to 4 Switch Fabric Chassis to a CPU Chassis

### FC4000 Expansion Chassis

#### PCI Express Input

8-lane PCI Express 2.0 inter-chassis connection

#### Expansion slots

16 slots in each chassis, add up to 2 Expansion Chassis

## Graphics I/O

### Dual-Link DVI-I Output Card

#### Graphics memory

256 MB per card

#### Number of outputs supported

FC8000: Up to 120  
FC4000: Up to 96  
FC1000: Up to 20

#### Resolution

Digital: 640x480 to 2560x1600 pixels per output  
Analog: 640x480 to 2048x1536 pixels per output  
Custom output modes possible in both analog and digital

#### Color Depth

32 bits per pixel

#### Output signal

DVI-I connector (supports single-link and dual-link DVI, and analog VGA with adapter)

### Dual DVI/RGB/HD Input Card (Optional)

#### Inputs

FC8000: Up to 100 inputs with optional DVI-I input cards  
FC4000: Up to 94 inputs with optional DVI-I input cards  
FC1000: Up to 18 inputs with optional DVI-I input cards

#### Format

Dual-Link DVI up to 2560x1600, Single-Link DVI up to 2048x1200, progressive scan component HD (480p, 720p, 1080p), and analog RGB with any sync type (composite, separate, sync on green) up to 2048x1200

#### Pixel rate

Digital: Up to 270 MHz  
Analog: Up to 210 MHz

#### Pixel format

32 bits per pixel

#### Windows

4 destination windows per card

### Octal SD Video Input Card (Optional)

#### Inputs

FC8000: Up to 400 inputs  
FC4000: Up to 376 inputs  
FC1000: Up to 72 inputs

#### Input format

NTSC, PAL

#### Windows

16 destination windows per card

#### Octal Video Connection Module

Dual BNC-F connectors support S-Video or Composite on 1RU 19" rackmount panel with 2 BNC sub-panels  
Each sub-panel has 16 BNC connectors for 8 Composite or 8 S-video signals

### Quad HD Decoder Input Card (Optional)

#### Integrated HD & SD video decoding

4 GigE connections, 1 per decoder  
Supports up to 200 HD or SD streams  
Supports most popular IP cameras and encoders  
Supports hi res, real-time decoding of computer streams

### CatalystLink Input Card (Optional)

#### For PixelNet integration

Each CatalystLink card features 4 PixelNet ports and supports up to 8 PixelNet Input Nodes

#### Input format

Support for all PixelNet input types

#### Windows

4 destination windows per card

## Other

### Rackmount Chassis

#### Dimensions

FC8000 CPU, Switch Fabric Chassis, FC4000:  
7" H x 19" W x 22" D  
(17.8 cm x 48.3 cm x 55.9 cm)  
FC1000: 7" H x 19" W x 21" D  
(17.8 cm x 48.3 cm x 53.3 cm)

#### Weight

FC8000 CPU, Switch Fabric Chassis, FC4000:  
51 lbs. (23.1 kg.)  
FC1000: 48 lbs. (21.8 kg.)

#### Shipping weight

All chassis: 72 lbs. (32.7 kg.)

### Operating Range

#### Temperature

Operating: 32°F – 104°F (0°C – 40°C)  
Non-operating: 14°F – 150°F (-10°C – 66°C)

#### Humidity

10-90% non-condensing

#### Altitude

Up to 10,000 feet (3,048.0 m)

### Electrical Requirements

#### Input voltage

100-240 VAC, auto-ranging power supply

#### Line frequency

50-60 Hz

#### Power consumption

FC8000 & FC4000: 600 Watts, maximum per chassis  
FC1000: 300 Watts, maximum

### Regulatory

#### United States

UL 60950 listed, FCC Class A

#### Canada

cUL CSA C22.2, No. 80950

#### International

CE Mark, CB Certificate and Mark, IEC 60950, CCC, C-Tick, VCCI



Jupiter Systems  
31015 Huntwood Avenue  
Hayward, California  
94544-7007 USA

+1 510 675 1000 tel  
+1 510 675 1001 fax  
www.jupiter.com

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# The next generation of display wall processors has arrived.

