

 Signature Solutions ...

TeraFrame™ Family of Cabinets



CHATSWORTH
PRODUCTS, INC.

Optimize.
Store.
Secure.

TeraFrame™ Family of Cabinets

Imagine the ability to personalize a cabinet to meet your specific thermal and cable management needs. The TeraFrame™ Family of Cabinets from Chatsworth Products, Inc. (CPI) offer configurable solutions that allow you to choose the options and accessories that are best suited for your evolving data center.

Uniquely designed, the TeraFrame Family of Cabinets feature CPI Passive Cooling® Solutions, an innovative thermal management technique that allows you to isolate and control the flow of air throughout cabinet spaces without added cooling system units, in-row air conditioners or risky liquid cooling solutions. By meeting tiered requirements for IT equipment, confidently deploy the latest servers, switches and blade servers from HP, IBM, Dell, Juniper Networks, Brocade and Cisco with these solutions. Use the TeraFrame Family of Cabinets along with CPI Passive Cooling Solutions to reduce data center cooling costs up to 90% and save up to 40% on total data center energy costs, while maximizing cooling unit efficiency and minimizing environmental impact.

With advanced cable management solutions, the TeraFrame Family of Cabinets help simplify cable installation and maintenance, while providing maximum cable capacity. Designed and rated for fiber and Cat 6a UTP cables, these cable management options will meet your highest-density cabling requirements while supporting future growth.

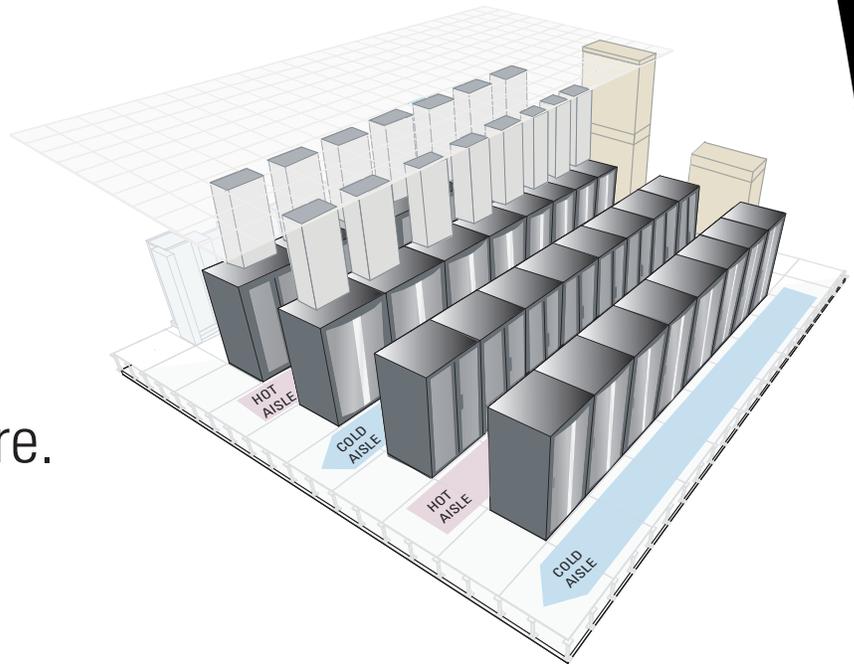


TeraFrame™

Helping you

Optimize. Store. Secure.

technology equipment ...



Innovative Cabinet Solutions

Whether you need a server cabinet for high-density thermal applications, a networking cabinet to manage fiber and Cat 6a UTP cables or a combination of both, the TeraFrame Family of Cabinets can offer the perfect solution for your present and future needs.

Choose from CPI's next generation F-Series TeraFrame™ Cabinet System that provides infinite configuration possibilities to satisfy your data centers specific thermal management needs. Or select the N-Series TeraFrame™ Network Cabinet that is precisely engineered to combat thermal challenges associated with network switches using side-to-side airflow in a hot aisle/cold aisle layout and support Cat 6a and fiber cabling applications.

F-Series TeraFrame™ Cabinet System

- Designed for server applications
- Available in 612 standard sizes
- Isolates hot exhaust air from the room and eliminates re-circulation
- Adaptable for future changes and density increases
- Supports fiber and Cat 6a UTP cables
- Order with power and thermal management accessories integrated into the cabinet
- Integrated grounding and bonding
- Static load rating: up to 2,500 lb (1134 kg)
- UL® Listed cabinet and select accessories

N-Series TeraFrame™ Network Cabinet

- Designed for network applications
- Available in 110 frame sizes
- Combats challenges associated with network switches using side-to-side airflow
- Offset doors and side panels provide extra cable capacity
- Supports fiber and Cat 6a UTP cables
- T-shaped cable guides provide simple rack-mount organization
- Static load rating: 2,500 lb (1134 kg)
- Cisco, Brocade and Juniper Networks compatible versions
- Fiber compatible accessories

F-Series TeraFrame™ Cabinet System

Thermal Management

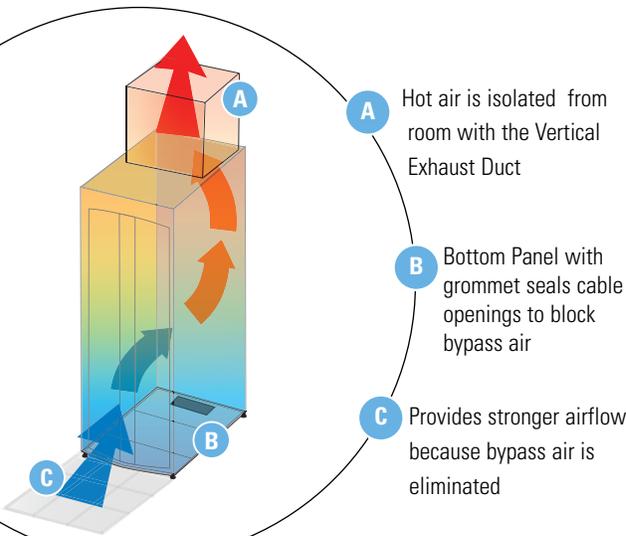
Over 80% of today's data center managers identify thermal management as their greatest challenge. This is no surprise considering the average heat load generated per cabinet by new equipment has doubled since 2000. Creating a properly configured cabinet that works with your data center's cooling system to control airflow and maximize cooling effectiveness is vital to success.

Looking for a Cabinet to Overcome Your Specific Thermal Management Needs?

CPI's F-Series TeraFrame Cabinet System allows you to control the flow of air through the cabinet to achieve 2-30 kW of cooling without the complexity or price of supplemental cooling solutions. Using isolation strategies to separate hot exhaust and cold supply air, the F-Series TeraFrame equipped with CPI Passive Cooling Solutions channels hot exhaust air away from the back of the cabinet and out of the room, eliminating bypass and re-circulation of hot exhaust air and the formation of hot spots. The one-way airflow created by this isolation produces a consistent air temperature throughout the room, allowing for higher set points and resulting in more efficient use of cooling systems.

Adaptable for increasing density requirements, various combinations of CPI Passive Cooling accessories can be configured with the F-Series TeraFrame to achieve desired cooling results. The CPI Passive Cooling Solutions for the F-Series TeraFrame are shown on the next page.

CPI Passive Cooling® Solution



Most data centers have more than two and a half times their required cooling capacity and still experience numerous hot spots.



>> Equipment Mounting Rails
Adjust in depth by sliding front-to-rear to match equipment mounting requirements. 19"W EIA-310-D. Rack-mount units are marked and numbered.

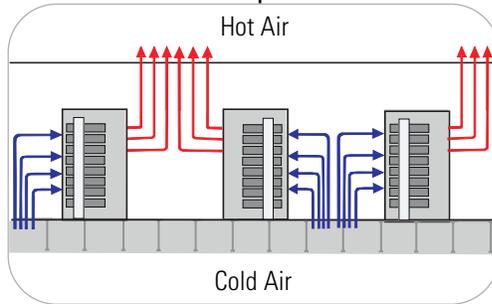
Use CPI Passive Cooling Solutions to Increase Airflow for Higher Heat Load Capacity.

Low Heat Density — 2-4 kW per cabinet

Eliminate bypass airflow through the access floor and internal re-circulation of hot exhaust air within the cabinet.

Combine:

- F-Series TeraFrame Cabinet with:
 - Perforated Front Door
 - Perforated Rear Door
 - Solid Side Panels or Seal Kits
 - Server Top Panel
- Bottom Panel
- Air Dam Kit
- Snap-In Filler Panels
- KoldLok® Raised Floor Grommet

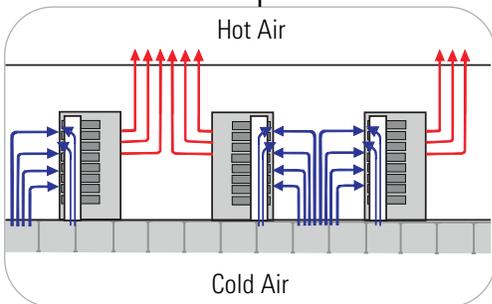


Medium Heat Density — 4-7 kW per cabinet

Substitute the Internal Air Duct for the Air Dam Kit to get more cold air to equipment within the cabinet.

Combine:

- F-Series TeraFrame Cabinet with:
 - Perforated Front Door
 - Perforated Rear Door
 - Solid Side Panels or Seal Kits
 - Server Top Panel
- Bottom Panel
- Internal Air Duct
- Snap-In Filler Panels
- KoldLok Raised Floor Grommet

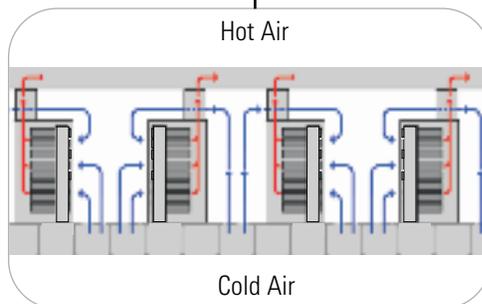


High Heat Density — Over 7 kW per cabinet*

To isolate and remove hot air from the room add a Vertical Exhaust Duct, Airflow Director and Rear Door Sealing Kit. When configuring a cabinet solution, these components are part of the Vertical Exhaust Duct System, but when adding them to an existing cabinet configuration, they must be ordered separately.

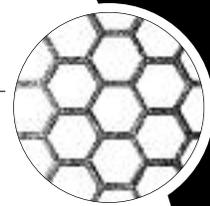
Combine:

- F-Series TeraFrame Cabinet with:
 - Perforated Front Door
 - Solid Rear Door
 - Solid Side Panels or Seal Kits
- Vertical Exhaust Duct System
 - Airflow Director
 - Rear Door Sealing Kit
- Bottom Panel
- Air Dam Kit
- Snap-In Filler Panels
- KoldLok Raised Floor Grommet



Perforated Doors >>

Allow air to flow front-to-rear through the cabinet.



Bottom Panel >>

Block airflow into and out of the base of the cabinet. UL Listed.



Patent Pending

Airflow Director >>

Direct hot air up the back of the cabinet into the Vertical Exhaust Duct. UL Listed.



KoldLok® Raised Floor Grommet >>

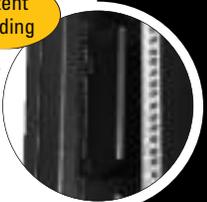
Block bypass airflow through cable holes in access floor tiles. Add or remove cables easily.



Patent Pending

Internal Air Duct >>

Deliver additional cold air to equipment at the top half of the cabinet without the added cost or noise of fans. UL Listed.



Patent Pending

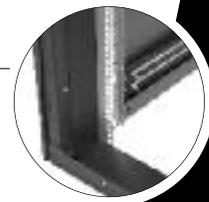
Vertical Exhaust Duct >>

Capture and remove hot air from the room. Adjustable height. UL Listed.



Air Dam Kit >>

Block airflow around the top, bottom and sides of equipment in cabinets. UL Listed.



Snap-In Filler Panels >>

Panels block airflow through open rack-mount spaces in between equipment. UL Listed.



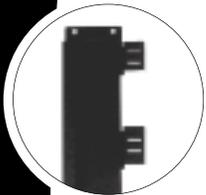
*CPI Passive Cooling® Solutions rely on proper deployment to achieve high-density cooling. For best results, consult with Chatsworth Consulting Group (C2G) or a CPI Field Application Engineer for high-density options.

F-Series TeraFrame™ Cabinet System

Cable Management, Power Distribution and Fiber Management

CPI's F-Series TeraFrame Cabinet System has network cable management, power distribution and fiber management options that are designed for fiber and Cat 6a UTP cables, meeting your highest-density cabling requirements and future network growth.

Vertical cable and power managers can be added as part of a personalized configuration to match your exact cabling requirements. CPI's Vertical Cable Managers feature patented T-shaped fingers with rounded edges and openings that align with each rack-mount unit in the cabinet. The Vertical Power Managers for the F-Series TeraFrame Cabinet allow further organization by creating space for one, two or four power distribution units (PDUs) and provide tie points for power cords. Additional Vertical Cable Managers and PDUs can be added to match your exact requirements, including single- and three-phase PDUs with various input and output combinations.



>> Fiber Module Bracket

Organize and support fiber trunk cables, patch cords and Corning Cabling Systems Plug & Play™ Universal Systems CCH Modules in the zero rack-mount space at the side of the cabinet.



>> Vertical Cable Managers

Organize cables with T-shaped cable guides and openings that align with each rack-mount space. Vertical Cable Ring Managers and Cable Lashing Brackets are also available. UL Listed.



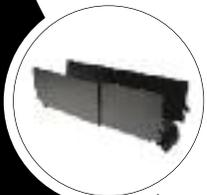
>> Rack-Mount Cable Shelf

Pass cables front-to-rear in cabinets equipped with an Air Dam Kit or Internal Air Duct. Store fiber and cable slack. UL Listed.



>> Vertical Power Managers

Support power strips or PDUs and keep network and power cable separate. UL Listed.



>> Front-to-Back Cable Managers

Create a front-to-back pathway between two Vertical Cable Managers. UL Listed.



>> Vertical Power Strips/PDUs

Distribute power to equipment in the cabinet. Many inlet/outlet configurations are available. Load metering, network monitoring and controlled outlets are also available.



Fast Fact

The F-Series TeraFrame offers a flexible solution that can be used in either a slab or access floor environment.

How to Configure Your F-Series TeraFrame™ Cabinet:

Use CPI's Product Configurator (www.chatsworth.com/configurator) to customize your F-Series TeraFrame Cabinet System and accessories. This easy-to-use online tool will guide you through the steps and selections necessary for creating your personalized cabinet solution. Choose from a variety of options and accessories that can be integrated directly into your Cabinet System, simplifying data center installation.

1

Step One : Configure Cabinet Size

- 3 Widths; 23.6" (600 mm), 27.6" (700 mm), 31.5" (800 mm)
- 12 Heights
- 17 Depths



2

Step Two : Choose Equipment Mounting Rails

- Square-Punched, Two Pairs
- Tapped, #12-24, Two Pairs



3

Step Three : Choose Front Door Style

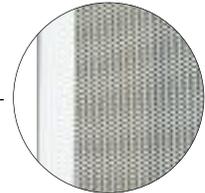
- Perforated Metal
- Solid, Tinted Lexan®
- Solid Metal
- No Front Door



4

Step Four: Choose Rear Door Style

- Solid Metal
- Perforated Metal
- Double Doors, Perforated Metal
- No Rear Door



5

Step Five: Choose Door Latches

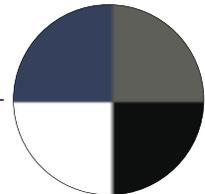
- Single-Point Slam (Spring-Loaded) Latch, Keyed Lock
- Single-Point Cam Latch, Keyed Lock
- Two-Point Cam Latch, Keyed Lock
- Single-Point Slam (Spring-Loaded) Latch, Combination Lock
- Single-Point Cam Latch, Combination Lock
- Two-Point Cam Latch, Combination Lock
- Single-Point Cam Latch, Standalone Electronic Keypad



6

Step Six: Choose Color

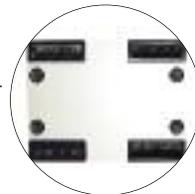
- Black
- Signature Blue
- Glacier White
- Steel Gray



7

Step Seven: Choose Top Panel Style

- Server, 2 Cable Slots
- Network, 4 Cable Slots
- Vertical Exhaust Duct System (available for 1050 mm to 1200 mm deep frames)
- No Top Panel



8

Step Eight: Choose Side Panel Style

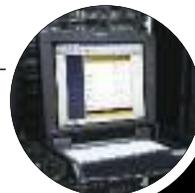
- Solid
- Vented
- No Side Panel



9

Step Eight: Choose Accessories

- Thermal Management
- Cable Management
- Fiber Management
- PDUs
- Environmental Monitoring & Security
- KVM and Software Systems



N-Series TeraFrame™ Network Cabinet

Thermal Management

The heart of your network infrastructure is based on the survival of your core network switches. When employing side-to-side airflow, network switches located in a hot aisle/cold aisle layout run the risk of consuming hot exhaust air, causing elevated equipment intake temperatures. Therefore it is important to use storage solutions with reliable thermal management so that overheating and downtime does not become an issue.

Do Network Switches with Side-To-Side Airflow Compromise Your Hot Aisle/Cold Aisle Layout?

The N-Series TeraFrame Network Cabinet from CPI is precisely engineered to combat thermal challenges associated with network switches using side-to-side airflow in a hot aisle/cold aisle layout. By employing CPI Passive Cooling Solutions, the N-Series TeraFrame equipped with CPI's Network Switch Exhaust Duct removes hot air by isolating and re-directing exhaust into the hot aisle, preserving critical equipment. This process minimizes hot air re-circulation and essentially converts side-to-side airflow into a front-to-rear airflow pattern. With the ability to support exhaust from one, two or three Cisco 6500 or 9500 series network switches or Juniper Networks EX8200 Ethernet switches, CPI's Network Switch Exhaust Duct serves as a cost effective solution for high-density applications.

Four configurations are available:

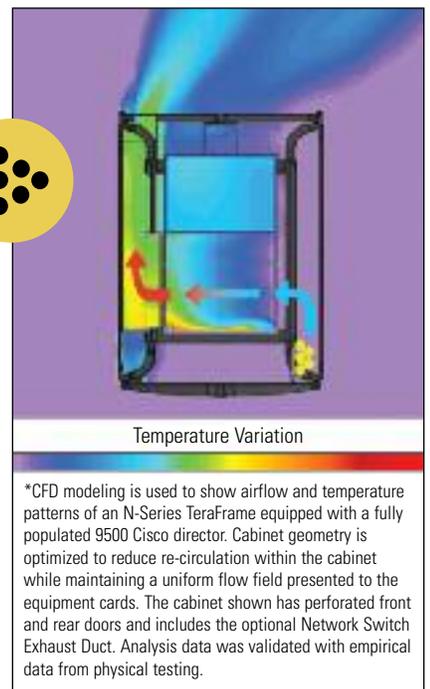
- There are two Cisco Compatible cabinets designed specifically for use with the Cisco 6500 series switches and 9500 series directors. Cisco Compatible cabinets can support up to two switches each and include a special Network Switch Exhaust Duct and power supply exhaust ducts.
- There is also a cabinet designed specifically for use with Juniper Networks EX8208 and EX8216 Ethernet switches.
- The standard Network Switch Exhaust Duct, which can support up to two network switches, is available for other equipment that requires side-to-side airflow.
- The cabinet can also be ordered without the duct for Brocade and other switches that do not require side-to-side airflow or for high-density network cabling.



Network Switch Exhaust Duct

- CPI Passive Cooling Solution
- One full length duct supports up to three switches
- Allows freedom to organize and move equipment
- Eliminate re-circulation of hot exhaust air
- Maintains hot aisle/cold aisle layout

This CFD* model demonstrates how the N-Series TeraFrame Network Cabinet, which is engineered to control side-to-side airflow for network switches, guides hot exhaust air out of the cabinet using the Network Switch Exhaust Duct.



The N-Series TeraFrame Network Cabinet completed extensive thermal testing and was found to fulfill Cisco compatibility guidelines for housing Catalyst 6500E, MDS 9500 and Cisco Nexus Series of Products.

Additionally, the N-Series was found to provide a complete storage solution for Juniper Networks EX8208 and EX8216 Ethernet switches.

N-Series TeraFrame™ Network Cabinet

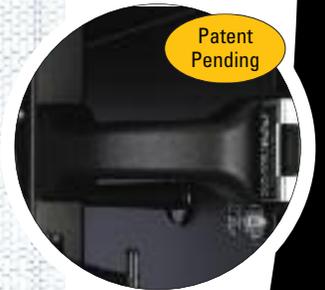
Cable Management

CPI's N-Series TeraFrame Network Cabinet features advanced cable management solutions that simplify installation and maintenance while providing maximum cable management capacity. The N-Series TeraFrame accepts cables through knockouts located on the top panel of the cabinet, while special T-shaped cable guides align with each rack-mount unit, precisely dividing and organizing cables as they enter and exit the rack-mount space.

In order to route and manage large quantities of cable, the N-Series TeraFrame includes Standoff Brackets that support offset doors and side panels to create added space between the cabinet frame, side panels and doors. Cabinet doors and side panels are easy to remove and provide full access to equipment and cabling, while the ability to route cables around the frame instead of through it offers a simple way to trace cables during moves, adds and changes.

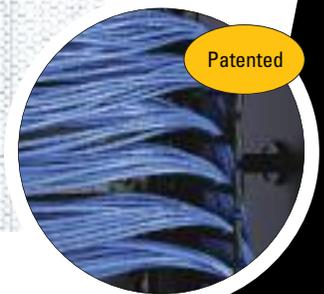


Top Panel with knockouts



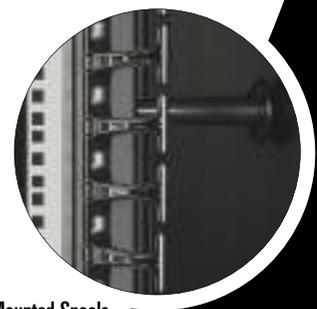
Patent Pending

Standoff Bracket



Patented

T-Shaped Cable Guides



Side-Mounted Spools

- Offset doors and panels provide extra cable space
- Easy access for moves, adds and changes
- Manage 24 Cat 6a UTP cables per rack-mount unit
- Patented 1U cable management fingers
- Side-mounted spools guide cables

Fast Fact



For more information about the N-Series TeraFrame Network Cabinet, read CPI's white paper at www.chatsworth.com/n-series.

N-Series TeraFrame™ Network Cabinet

Fiber Management

CPI's Fiber Management System, used with the N-Series TeraFrame Network Cabinet is designed to support Corning Cable Systems LANscape Pretium Zero-U System, a complement to Plug & Play™ Universal Systems. CPI Fiber Management components provide easy attachment and strain relief for trunk cables and simple mounting of modules and/or high-density MTP adapter panels in the zero rack-mount space located between the N-Series TeraFrame Cabinet frame and side panels. By addressing cabling challenges of Brocade, Juniper and Cisco equipment, these solutions greatly reduce the amount of space occupied by cabling in cabinets, accelerate the deployment for high-density Storage Area Networks (SANs), improve air circulation and simplify future moves, adds and changes.

Together CPI Fiber Management System components and Corning LANscape Pretium Zero-U System provide TIA-942 compliant infrastructure and connectivity for N-Series TeraFrame Network Cabinets containing high-density modular switches via cross-connections in the data center's main distribution area.



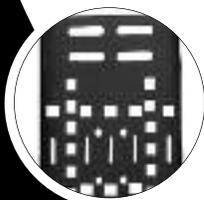
>> Universal Accessory Rail
Mount to the front of the cabinet and provide attachment points for high-density fiber connections and Swivel Cable Spools.



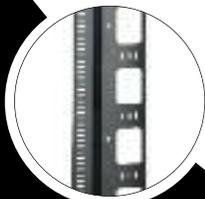
>> Swivel Cable Spools
Manage fiber harness and jumper cables at the front of the cabinet.



>> Fiber Module Adapter
Attach a Corning CCH Module to the Universal Accessory Rail for low-density fiber connections.



>> Vertical or Horizontal Furcation Brackets
Provide multiple attachment points for the ends of fiber trunk cables.



>> Fiber Trunk Cable Manager
Manage and store fiber trunk cables at the back of the cabinet.



Front view of cabinet with Brocade switch



Side angle view of cabinet with Cisco switch

How to Configure Your N-Series TeraFrame™ Network Cabinet:

Use CPI's Product Configurator (www.chatsworth.com/configurator) to customize your N-Series TeraFrame Network Cabinet and accessories. This easy-to-use online tool will guide you through the steps and selections necessary for creating your personalized cabinet solution. Choose from a variety of options and accessories that can be integrated directly into your Cabinet System, simplifying data center installation.

1

Step One : Configure Cabinet Size

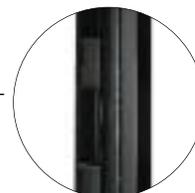
- 1 Width; 31.5" (800 mm)
- 10 Heights
- 11 Depths



2

Step Two : Network Switch Exhaust Duct - Optional Features

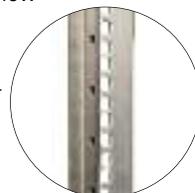
- Yes - The cabinet will support switches and directors with side-to-side airflow
- No - The cabinet will support patch panels and fiber enclosures or directors and other switches with front-to-rear airflow



3

Step Three : Choose Equipment Mounting Rails

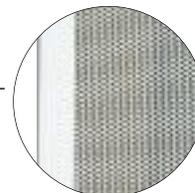
- Square-Punched, Two Pairs
- Tapped, #12-24, Two Pairs



4

Step Four: Door Styles - Standard Frame

- Perforated Metal Single Front Door
- Perforated Metal Double Rear Door



5

Step Five: Choose Door Latches

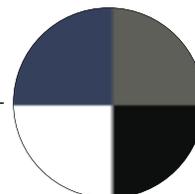
- Two-Point Cam Latch, Keyed Lock
- Two-Point Cam Latch, Combination Lock



6

Step Six: Choose Color

- Black
- Signature Blue
- Glacier White
- Steel Gray



7

Step Seven: Top Panel Style - Standard Feature

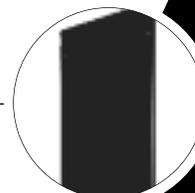
- Solid, with cable knockout ports



8

Step Eight: Choose Side Panel Style and Quantity

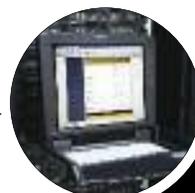
- Solid
- Vented
- No Side Panel



9

Step Eight: Choose Accessories

- Thermal Management
- Cable Management
- Fiber Management
- PDUs
- Environmental Monitoring & Security
- KVM and Software Systems



CPI Locations

USA

Corporate Office
Westlake Village, CA
818-735-6100

Chatsworth, CA Operations
818-882-8595

Georgetown, TX Operations
512-863-7800

New Bern, NC Operations
252-514-2779

Caribbean & Latin America

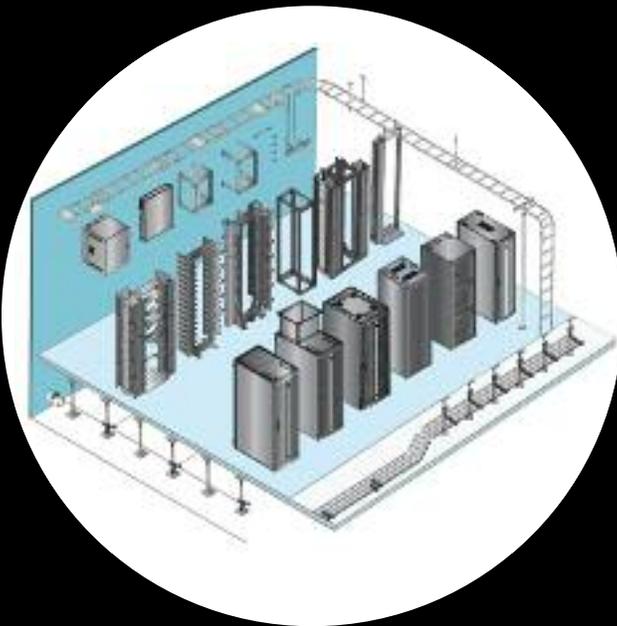
Mexico City, Mexico
+52 55 5203-7525
Toll Free 01-800-201-7592

Europe, Middle East, Africa

Buckinghamshire, England
+44-1628-524-834

Asia Pacific

Pudong, Shanghai, China
+86-21-6880-0266



The CPI Total Solution Includes:

- Equipment Support
- Cable Management
- Cable Pathways
- Grounding & Bonding
- Security & Monitoring
- Thermal Management
- Power Distribution
- Seismic Bracing

Find more information about CPI TeraFrame Cabinets at
www.chatsworth.com/teraframe

800-834-4969 (U.S. & Canada)
or techsupport@chatsworth.com



**CHATSWORTH
PRODUCTS, INC.**