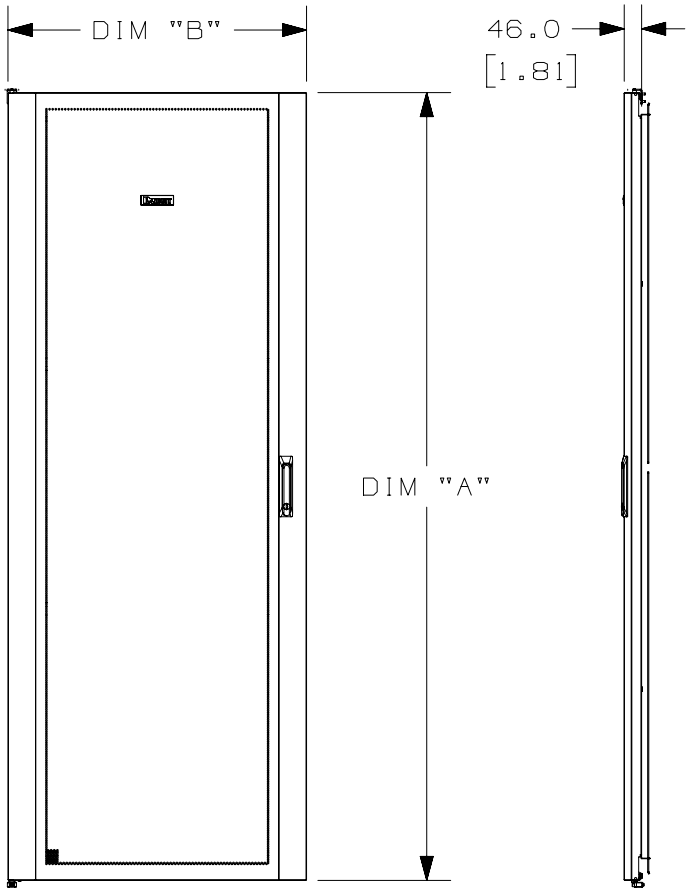
THIS COPY IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF PANDUIT CORP.



FRONT SIDE

PANDUIT P/N	DESCRIPTION	"A"	"B"
N82SHD*	N-TYPE 800MM X 42RU FRONT PERFORATED SINGLE HINGE DOOR	1951.0 [76.01]	790.0 [31.10]
N85SHD*	N-TYPE 800MM X 45RU FRONT PERFORATED SINGLE HINGE DOOR	2084.4 [82.06]	790.0 [31.10]
N88SHD*	N-TYPE 800MM X 48RU FRONT PERFORATED SINGLE HINGE DOOR	2217.7 [87.31]	790.0 [31.10]
N81SHD*	N-TYPE 800MM X 51RU FRONT PERFORATED SINGLE HINGE DOOR	2351.0 [92.60]	790.0 [31.10]

* DENOTES COLOR
"B" = BLACK
"W" = WHITE

REV	DATE	BY	CHK	APR	DESCRIPTION	ECN
01A	7-12-18	LEE	BRAP	ELE	A. ADDED 51RU	V09001SM
00A	6-2-15	PBS	RAMA	TCN	RELEASED TO PRODUCTION	V09000KJ

D10100DA/16

TITLE
N8*SHD* NET-ACCESS N-TYPE 800mm WIDE FRONT PERFORATED SINGLE HINGE DOOR
CUSTOMER DRAWING

ITEM REVISION NAME: 13V399AH/01
DATASET FILE NAME: 13V399AH_DC/01A

PANDUIT

MATERIAL: N/A

THIRD ANGLE PROJECTION

DRAWING NUMBER: 13V399AH-DC

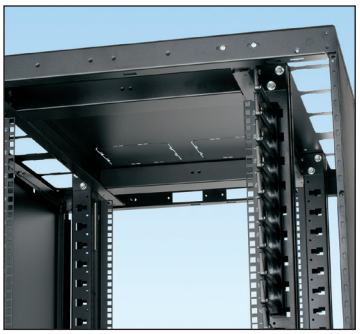
DRAWN BY	DATE	CHK	SCALE	SHT 2 OF 2	SIZE
PBS	6-2-15	RAMA	NONE		A

Net-Access™ N-Type Cabinets

Optimum Accessibility and Cable Management for High Density Applications

Net-Access™ N-Type Cabinets are the first choice for data center managers and systems integrators specifying high density network, storage and compute applications that require optimal thermal management and the capacity to manage high cable densities.

Integral cabinet air seal features and integration with passive hot and cold air containment components drive efficient utilization of cooling capacity and reduce cooling energy consumption. The Net-Access™ inset frame design efficiently manages large quantities of cables and provides space for unmatched access reducing operational costs. This industry leading design also maximizes airflow and provides easy access to equipment for ongoing operational efficiencies, providing exceptional value in a 800mm (31.5") wide enclosure.

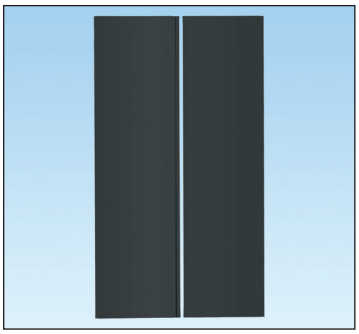


Inset frame provides up to 10% more space for cable management and cooling airflow
Industry leading inset cabinet frame posts create a large area for airflow to provide proper heat dissipation and enable easy access to equipment, in-cabinet ducting and cabling, speeding deployments and reducing operational costs.

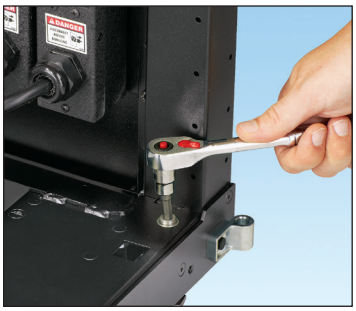
Dual hinged doors speed deployments and moves, adds, and changes up to 30%
IT staff is scarce, downtime is expensive. For a 120 rack dynamic data center, our cabinets save you up to an hour a day, adding up to $18,250 per year savings for your staff.

Efficiently manage high cable densities
Modular snap in fingers align with rack spaces to simplify cable management, providing proper bend radius control and organizing cables for faster moves, adds and changes and installations.

Open rail mounting creates more cable management space and equipment positioning flexibility
High strength frame eliminates need for support members between rails, providing unobstructed space between the frame and the side panels.



Vertical split side panels enable fast access to equipment
Innovative vertical split side panels and optional vertical split hinged side panels allow fast easy access to end of row network equipment and cabling, eliminating time consuming handling.



Innovative Leveling Feet Design Reduces Cabinet Installation Time up to 80%
Heavy duty, M14 thread top drive leveling feet are easily accessed and allow cabinets to be leveled in less time than typical leveling feet.

Bond cabinets to the telecommunications grounding infrastructure with single connection, reducing installation time
Entire cabinet is fully electrically bonded, requiring no grounding whips to doors or side panels for protection of equipment and personnel.

Net-Access™ N-Type Cabinets

Net-Access™ N-Type Cabinets are ideal for network applications that requires optimal thermal management and the capacity to manage high cable densities of switch applications.

- Front dual or single hinge doors with 69% open perforation
- Dual hinge front door allows door to open to the left or right
- Rear perforated split doors with 69% opening
- Inset frame for improved cable management
- Single point bonding at top and bottom of cabinet
- Static load rating - 3000 lbs. and rolling load rating - 2500 lbs.
- Fully integral bonded without the use of grounding wires - equipment rails, door and side panels
- Cable management fingers included (2 sets – SN25F)
- Adjustable rear rails
- Standard #12-24 tapped equipment rails

Net-Access™ N-Type Standard Configured Cabinets

Series	Width	Height	Depth	Side Panels	Colors	Standards Options (Select Only One)
N	8 = 800mm	2 = 42RU 5 = 45RU 8 = 48RU	1 = 1070mm 2 = 1200mm	2 = 2 side panels 9 = No side panel	B = Black W = White	C = Cage Nut Rails E = Single Hinge Front Door and Cage Nut Rails U = Vertical Blanking and Cage Nut Rails Blank or None = No Options

Standard Configurations have 6 characters with only one standard option suffix.

N	8	2	1	2	B	

Net-Access™ Dynamic Cabinets

The Net-Access™ Dynamic Cabinet is designed to allow the cabinet to be installed with equipment at one facility and safely shipped to another location. This is the ideal cabinet for System Integrators or Value Added Resellers as it allows the equipment to be pre-installed, cabled and ready for quick deployment. The heavy duty reinforced frame has been tested and approved to support the additional weight of equipment. A heavy duty shock pallet allows the cabinet to be shipped with equipment. The optional reusable ramp allows the cabinet to be easily unloaded from the pallet.

- Outset post design
- Welded and assembled steel frame construction
- Easy maintenance powder coat finish
- Adjustable rear equipment rails with continuous positioning
- Fixed front equipment rails
- Integral vertical airdams with covered cable pass-through openings
- Large cable entry/cable access
- Single hinge perforated front door with keyed swing handle
- Split hinge perforated rear door with keyed swing handle
- Optional split side panels on both sides with dual latches and keyed lock
- Two sets of PDU mounting brackets
- High density cable management fingers (SN25F)
- Select cable entry holes are equipped with plastic sealing plugs, others have cutouts
- Static load of 1,361kg (3,000 lbs.)
- Rolling load of 1,136kg (2,500 lbs.)
- Dynamic shipping load of 907kg (2,000 lbs.)
- EIA-310-E compliant
- Fully integral bonded without the use of grounding wires - equipment rails, door and side panels
- Hardware kit: M6 screws and cage nuts
- Factory installed casters, swivel in the rear and fixed in the front
- Adjustable leveling legs
- Single point grounding locations at bottom of cabinet

Part Number	Nominal Width mm	Height	Nominal Depth mm	Side Panels	Color	Ramp
S7222BDHRSP	700	42 RU	1200	2	Black	Yes
S7222BDHSP						No
S7229BDHRSP				0		Yes
S7229BDHSP						No

Net-Access™ S-Type Cabinets

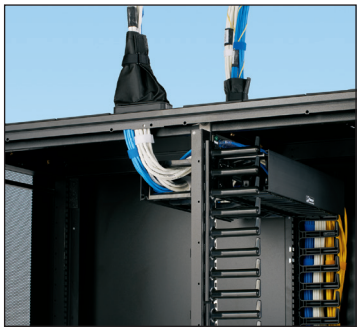
Cost Effective and Versatile Cabinets for all Data Center Applications and Facilities Designs

Net-Access™ S-Type Cabinets provide data center managers and systems integrators an unprecedented range of features in a cost effective cabinet platform for server, network, and pre-configured cabinet applications.

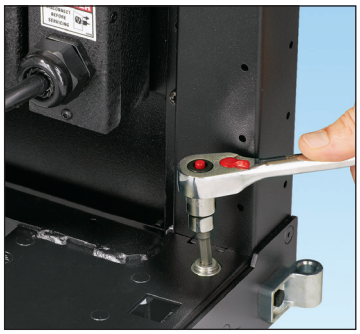
Integral cabinet air seal features and seamless integration with passive hot and cold air containment components provide efficient utilization of cooling capacity, and contribute to reduced cooling energy consumption. An innovative frame design maximizes RU utilization saving as much as 15% of the floor space while safely accommodating equipment loads. Offered in a variety of widths, heights, and depths, they can be specified for a variety of applications in any facility to meet the diverse application needs of today's data centers.

Large selection of standard cabinet widths, heights, and depths offered in:

- 600mm (24"), 700mm (28"), and 800mm (31.5") Widths
- 1070mm (42") and 1200mm (48") Depths
- 42 RU, 45 RU, and 48 RU Heights
- Black and White Color Option
- Static Load Rating 1,364kg (3,000 lb.)
- Rolling Load Rating 1,136kg (2,500 lb.)



Out-Set Cable Entry Improves Floor Space Utilization up to 5%
Network cable entry locations are outside of equipment area, allowing top 2 RUs to be used, optimizing cabinet utilization and saving floor space.



Innovative Leveling Feet Design Reduces Cabinet Installation Time by 80%
Heavy duty, M14 thread top drive leveling feet are easily accessed and allow cabinets to be leveled in less time than typical leveling feet.

A **15% savings in floor space** means you can build a 420 server POD with 10 server cabs **versus a competitors' cabinet that would require 12 server cabinets to hold equivalent amount of servers. CapEx** savings[10] **$900/ft^2 x 16ft^2 = $14,400 capital savings per POD.**

10) Cost Model: Dollars per kW plus Dollars per Square Foot of Computer Floor, Uptime 2008

Net-Access™ S-Type Cabinets

Net-Access™ S-Type Cabinets are ideal for server applications where high density RU utilization and cable management are required.

- Front single hinge door and split perforated rear door with 69% open perforation
- Vertically split hinged side panels (if applicable)
- Vertical blanking panel
- Heavy-duty leveling legs
- Ganging brackets
- Rear equipment rails accommodate cable management fingers (finger sold separately)
- Fully integral bonded without the use of grounding wires – equipment rails, door and side panels
- Static load rating – 3000 lbs. and rolling load rating – 2500 lbs.
- Casters
- PDU brackets included
- Cage nut rails
- Adjustable rear equipment rails

Net-Access™ S-Type Standard Configured Cabinets

Series	Width	Height	Depth	Side Panels	Colors	Standards Options (Select Only One)
S	6 = 600mm 7 = 700mm 8 = 800mm	2 = 42RU 5 = 45RU 8 = 48RU	1 = 1070mm 2 = 1200mm	2 = 2 side panels 9 = No side panel	B = Black W = White	F = Vertical Cable Management Fingers Blank or None = No option

Standard Configurations have 6 characters with only one standard option suffix.

S	6	2	1	2	B	

Net-Access™ S-Type Universal Cabinets

Net-Access™ S-Type Universal Cabinets are ideal for network or server application that provides effective thermal management, high density cable management and RU utilization.

- Front single hinge door and split perforated rear door with 69% open perforation
- Vertically split hinged side panels (if applicable)
- Ganging brackets included
- Heavy-duty leveling legs
- Adjustable front and rear cage nut equipment rails
- Top and bottom rail position markings
- Front and rear equipment rails accommodate cable management fingers (includes 1 set of fingers)
- Fully integral bonded without the use of grounding wires – equipment rails, door and side panels
- Static load rating – 3000 lbs. and rolling load rating – 2500 lbs.
- Casters
- PDU brackets included

Net-Access™ S-Type Universal Standard Configured Cabinets

Series	Width	Height	Depth	Side Panels	Colors	Designation for Universal Cabinet
S	6 = 600mm 7 = 700mm 8 = 800mm	2 = 42RU 5 = 45RU 8 = 48RU	1 = 1070mm 2 = 1200mm	2 = 2 side panels* 9 = No side panel	B = Black W = White	U = Universal Frame

*Standard side panel.

Standard Universal Configurations have 7 characters

S	6	2	1	2	B	U

Net-Access™ Cable Capacity Charts

Opening Size	Top Cap Opening Cable Capacity								
	Area		Cable Capacities						
	In.²	Cm.²	Cat. 6A 0.354" (8.99mm)	Cat. 6A 0.310" (7.87mm)	Cat. 6A 0.297" (7.54mm)	Cat. 6 0.250" (6.35mm)	Cat. 5e 0.187" (4.75mm)	Fiber (3mm)	QuickNet™ Cassettes
5" x 3.5"	15.6	100.7	63	82	90	127	227	569	8
5" x 1.5"	6.5	42.2	26	34	37	53	95	239	8

Cabinet Size (mm)	Cable Pathways (Per Side)							
	Area		Cable Capacities					
	In.²	Cm.²	Cat. 6A 0.354" (8.99mm)	Cat. 6A 0.310" (7.87mm)	Cat. 6A 0.297" (7.54mm)	Cat. 6 0.250" (6.35mm)	Cat. 5e 0.187" (4.75mm)	Fiber (3mm)
N-Type (Front Side)								
800x1070	43.8	282.7	178	232	252	357	638	1599
800x1200	43.8	282.7	178	232	252	357	638	1599
S-Type (Rear Side)								
600x1070	18.5	119.4	75	98	106	150	269	675
600x1200	30.5	196.8	123	161	176	248	444	1113
700x1070	32.4	208.9	131	171	186	263	471	1181
700x1200	53.4	344.4	216	282	308	434	777	1948
800x1070	46.3	298.4	187	245	267	376	673	1688
800x1200	76.3	491.9	309	404	440	621	1110	2783

Cable Management Finger Mounting Locations

	Front Rails		Rear Rails	
	Front Side Facing the Front Door	Rear Side Facing the Rear Door	Front Side Facing the Front Door	Rear Side Facing the Rear Door
N-Type	Y	Y	Y	Y
S-Type Server	N	N	Y	N
S-Type Universal	T	N	Y	N

Net-Access™ Integral Cabinet Top Cable Routing System

Speed deployments and optimize overhead space utilization

Net-Access™ Cabinets are available with an Integral Cabinet Top Cable Routing System that protects, routes, and manages large quantities of twisted pair data cables into and out of any Net-Access™ Cabinet. This versatile system is integral to the top of the cabinet and easily integrates with other cable pathways used throughout the data center, providing up to a 30% reduction in installation costs.

Net-Access™ Integral Cabinet Top Cable Routing System deployed on Net-Access™ Cabinets.

Net-Access™ Cabinet Top Cable Routing System

- Protects, routes, and manages large quantities of twisted pair data cables into and out of any Net-Access™ Cabinet
- Available as an integral design with the cabinet or as a stand-alone accessory
- When ordered integrated into the cabinet, the cabinet top cable routing system provides up to a 30% reduction in installation costs

SN7TCDW
SN8TCDW

SN1070CREC
SN1200CREC
SN1200VCREC

Part Number	N- Type Compatibility	S-Type Compatibility	Width of Cabinet mm	Depth of Cabinet mm	Description
Integral Top Hat					
STH61B	–	X	600	1070	Top Cap
STH62B				1200	
STH71B			700	1070	
STH72B				1200	
SNTH81B	X		800	1070	
SNTH82B				1200	
SN7TCDW	–		600/700	–	Divider Wall
SN8TCDW	X		800		
SN1070CREC			–	1070	End of Row Cap
SN1200CREC				1200	
SN1200VCREC					End of Row Cap (VED)

For other colors replace suffix B (Black) with W (White).

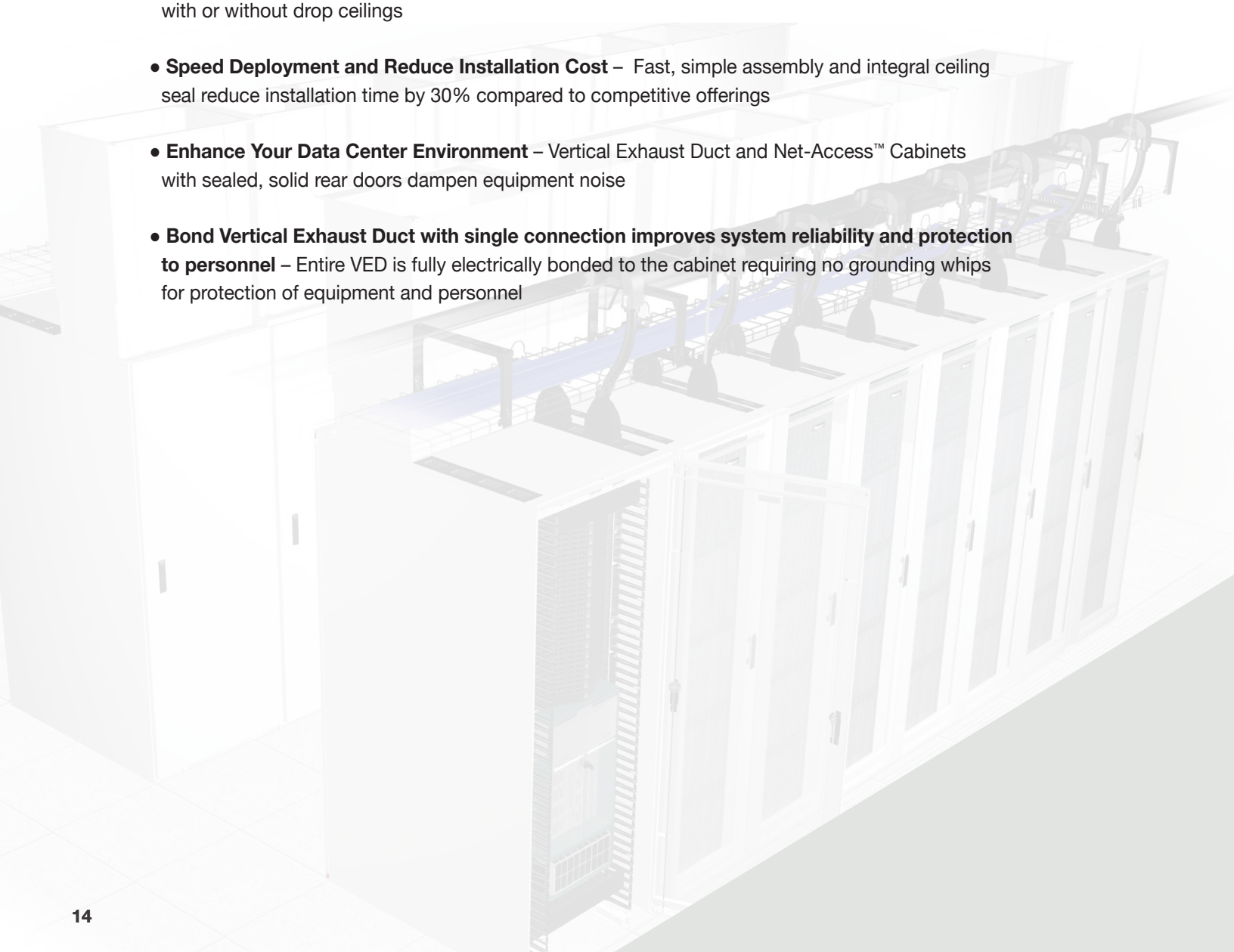
Net-Contain™ Vertical Exhaust Duct

Passive Cooling for High Density Applications

Net-Contain™ Vertical Exhaust Duct (VED) Systems optimize cooling energy utilization to support high density heat loads to enable 30kw or greater per cabinet. VEDs passively separate hot exhaust air from cooling air and direct hot exhaust air from active equipment into the Computer Room Air Handler (CRAH) air return system, allowing higher return air temperature improving CRAH and heat exchanger system efficiency up to 40% or more.

Net-Contain™ Vertical Exhaust Duct System Benefits

- **Flexibility and Versatility** – Multiple sizes, heights and adjustable height features allow system to adapt to virtually any data center structure including slab floors or raised floors and facilities with or without drop ceilings
- **Speed Deployment and Reduce Installation Cost** – Fast, simple assembly and integral ceiling seal reduce installation time by 30% compared to competitive offerings
- **Enhance Your Data Center Environment** – Vertical Exhaust Duct and Net-Access™ Cabinets with sealed, solid rear doors dampen equipment noise
- **Bond Vertical Exhaust Duct with single connection improves system reliability and protection to personnel** – Entire VED is fully electrically bonded to the cabinet requiring no grounding whips for protection of equipment and personnel



Net-Contain™ Vertical Exhaust Ducts (VEDs)

Part Number	N-Type Compatibility	S-Type Compatibility	Description
C2VEDI1626B1**	X	X	VED – Adjustable from 406mm (16") up to 660mm (26") Height
C2VEDI2638B1**			VED – Adjustable from 660mm (26") up to 965mm (38") Height
C2VEDI3866B1**			VED – Adjustable from 965mm (38") up to 1676mm (66") Height

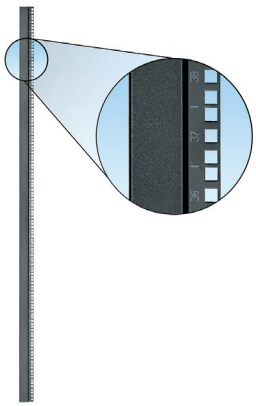
Replace** with 06 (600mm), 07 (700mm), 08 (800mm).
Also available in white, replace the "B1" with "W1".
Requires VED ready cabinet.

Contact Panduit for a VED Ready N-Type or S-Type cabinet.

Net-Access™ Cabinet Accessories

Part Number	N- Type Compatibility	S-Type Compatibility	RU	Width of Cabinet mm	Description
Doors					
N8*DHDB	X	—	42,45,48,51	800	Dual Hinge Front, Black
N8*SHDB					Single Hinge Front, Black
S6*SHDB	—	X		600	
S7*SHDB				700	
S8*SHDB				800	
S6*SDB				600	Split Perforated Rear, Black
S7*SDB				700	
SN8*SDB	X			800	
S6*SSHDB	—			600	Solid Rear, Black
S75SSHDB				700	
S78SSHDB					
SN8*SSHDB	X			800	

Part Number	N- Type Compatibility	S-Type Compatibility	RU	Depth of Cabinet mm	Description
Cabinet Side Panels					
N*1SPS	X	—	42,45,48,51	1070	Split, Black
N*2SPS				1200	
S*1SPSE	—	X		1070	Split Hinged, Black
S*2SPSE				1200	
S*1SPD2B				1070	Day 2, Post Cabinet Installation, Black
S*2SPD2B				1200	
SPSPNL				1070 or 1200	Partial Side Panel, Black



SN5RC

Part Number	N-Type Compatibility	S-Type Compatibility	RU	Description
Equipment Rail Sets				
SN*RC	X	X	42,45,48,51	1 Set of REAR Rails - Cage Nut
N*RT		—		1 Set of REAR Rails - Tapped
N*RTFR				Front and Rear Rail Kit - Tapped
N*RCFR				Front and Rear Rail Kit - Cage Nut
S*RP	—	X		For 600mm Cabinets - Vertical Patch

*2 = 42RU, 5 = 45RU, 8 = 48RU, 1 = 51RU.
Parts reflect Black; may also be available in White.

Net-Access™ Cabinet Accessories (continued)

NVPDUBE

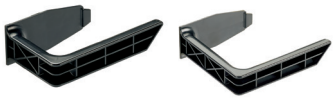
SN15F

SPDUBRK

S2BRK6 S2BRK12 SN7VCM and SN8VCM

SN8FBB

S1DR S2DR


S1LR S2LR

NACSS NERSS

S7VPPB SN8VPPB

Part Number	N-Type Compatibility	S-Type Compatibility	Description
PDU Brackets and Cable Management			
SN15F	X	X	Finger Kit (100mm Deep) 42-45 RU Cabinets
SN25F			Finger Kit (150mm Deep) 42-45 RU Cabinets
SN18F			Finger Kit (100mm Deep) 48 RU Cabinets
SN28F			Finger Kit (150mm Deep) 48 RU Cabinets
SN11F			Finger Kit (100mm Deep) 51 RU Cabinets
SN21F			Finger Kit (150mm Deep) 51 RU Cabinets
NVPDUBE		—	PDU Bracket - Sold in Pairs
SPDUBRK	—	X	
S2BRK6			Combination PDU/Cable Management Bracket - 6" Wide
S2BRK12			Combination PDU/Cable Management Bracket - 12" Wide
SN7VCM			Vertical Cable Management Bracket - 700mm Wide Cabinets
SN8VCM	X		Vertical Cable Management Bracket - 800mm Wide Cabinets
SN8FBB			Front to Back Cable Management Bracket
S1DR	—		1 RU D-Ring Kit to be used with S2BRK6, S2BRK12, SN7VCM and SN8VCM
S2DR			2 RU D-Ring Kit to be used with S2BRK6, S2BRK12, SN7VCM and SN8VCM
S1LR			1 RU L-Ring Kit to be used with S2BRK6, S2BRK12, SN7VCM and SN8VCM
S2LR			2 RU L-Ring Kit to be used with S2BRK6, S2BRK12, SN7VCM and SN8VCM
Slack Spools			
NERSS	X	—	End of Row Slack Spool
NACSS			Adjustable Center Slack Spools 210mm (8.3") to 267mm (10.5")
Vertical Patch			
S7VPPB	—	X	Vertical Patch Bracket for 700mm Wide Cabinets
SN8VPPB	X		Vertical Patch Bracket for 800mm Wide Cabinets

Net-Access™ Cabinet Accessories (continued)

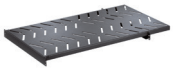
NCSTR4

SCSTR4

NAKOSHPD

SAKOSHPD

CCL3


RSHLF

Part Number	N-Type Compatibility	S-Type Compatibility	Description
Casters			
NCSTR4	X	—	2 Fixed Casters for Front - 2 Swivel Casters for Rear
SCSTR4	—	X	
OSHPD Brackets			
NAKOSHPD	X	—	Oshpod Bracket for N-Type Cabinet
SAKOSHPD	—	X	Oshpod Bracket for S-Type Cabinet
Locks			
CCL3	X	X	3-digit Combination Locks with Key Over-ride for Single Hinge or Split Doors
Shelves			
RSHLF23	X	X	Shelf Kit - 44mm H x 483mm W x 584mm D Load Rating 275 lbs.
RSHLF			Shelf Kit - 44mm H x 483mm W x 762mm D Load Rating 275 lbs.

NetAccess™ Cabinet Thermal Management Accessories

NVBP

S8VPBNE

N2EOR1BA1070B1
N2EOR1CA1200B1

C2FAB**A1200B1

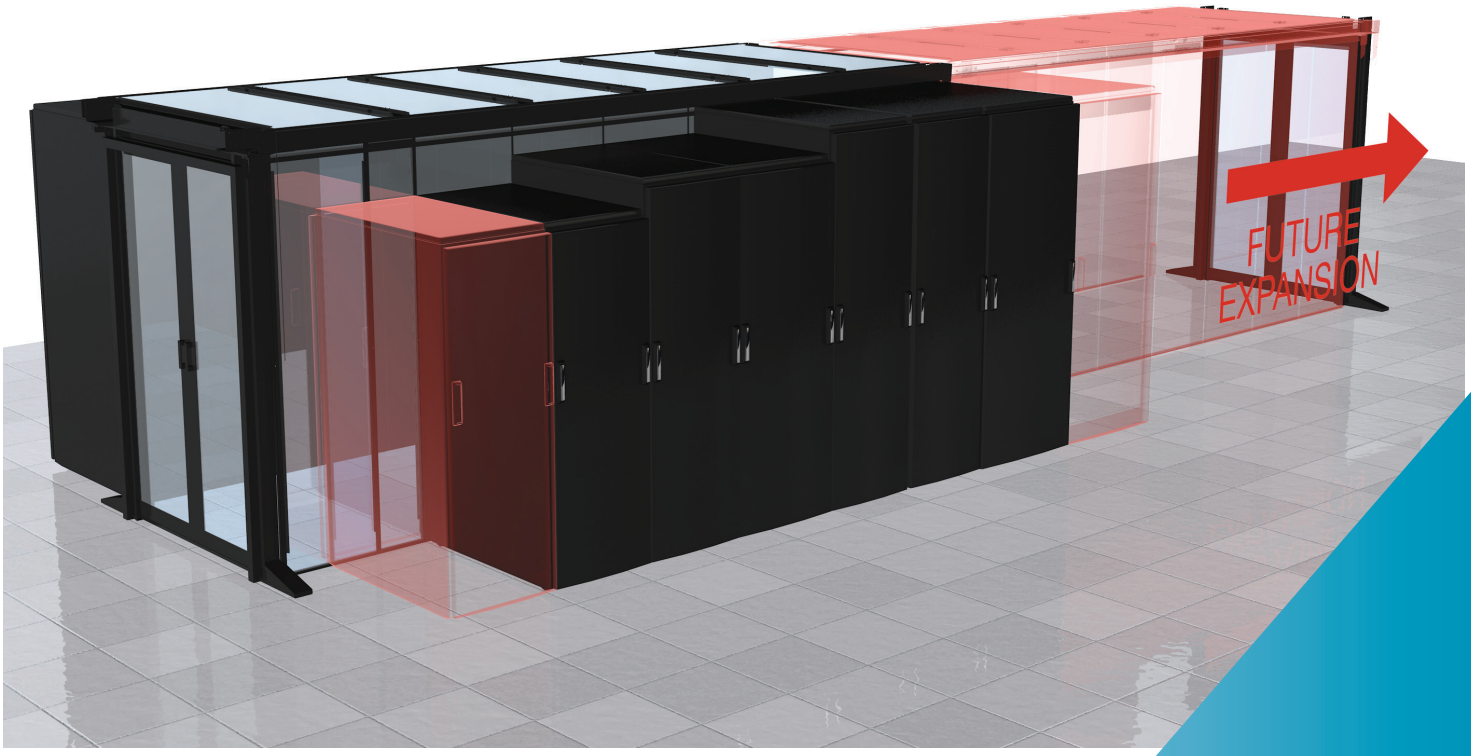
Part Number	N-Type Compatibility	S-Type Compatibility	Description
Vertical Blanking Panels			
NVBP	X	—	Vertical Blanking Panels with Pass Thru Openings for 42-48 RU
S6VBPN	—	X*	Vertical Blanking Panels (No Pass Thru Openings) S6VBPN used with 600mm and S7VBPN used with 700mm cabinets
S7VBPN			
S8VBPN			Vertical Blanking Panels with 1x5 Knockouts S8VBPN and S8VBPNE used with 800mm cabinets
S8VBPNE			Vertical Blanking Panels with 19" 1 RU Pass Thru Openings
Floor Seals			
N2EOR1BA1070B1	X	—	End of Row Floor Seal for 1070mm Deep Cabinets
N2EOR1CA1200B1			
S2EOR1BA1070B1		X	
S2EOR1BA1200B1			End of Row Floor Seal for 1200mm Deep Cabinets
C2FAB06A1200B1			Front or Back Floor Seal
C2FAB07A1200B1			
C2FAB08A1200B1			

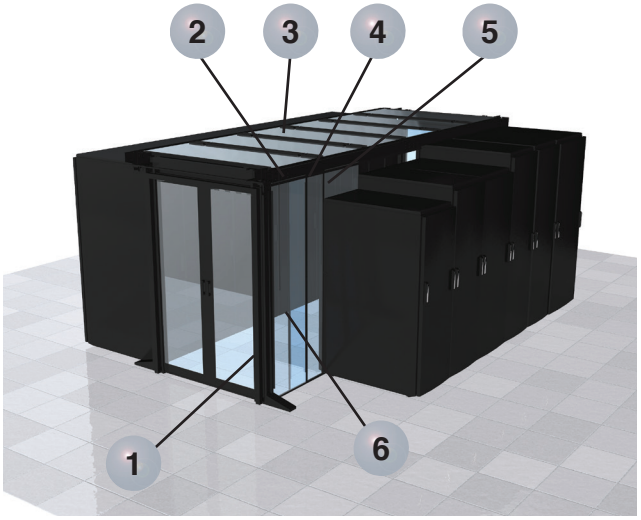
*S-Type Universal Cabinets only.

Net-Contain™ Universal Containment System

The Universal Containment System allows user to go back and reclaim underutilized cooling capacity, reduce energy expense and redue OpEx by retrofitting the existing data center with an innovative containment system. The system includes independent support structure, sliding doors, vertical blanking panels, and roof structure.

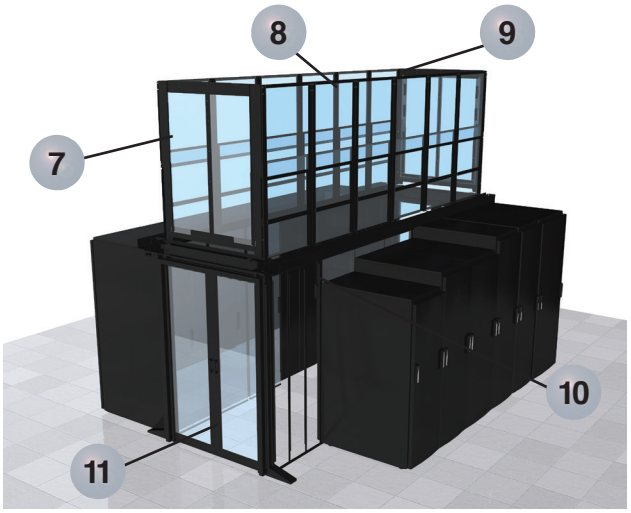
This offering can be configured in Vertical Wall (HotAisle Containment) and Roof Containment (Cold Aisle Containment) and allows the addition of cabinets (Panduit or non-Panduit) of varing sizes and design as needs dictate, reducing deployment time and capital investment.





Roof Containment

Typically used for Passive Cold Aisle Containment; deployed either on raised floor or within-row cooling.



Vertical Wall Containment

Typically used for Passive Hot Aisle Containment or Ceiling Discharge Cold Aisle Containment.

	Part Number	Description
1	CUEFRT**^^	End of row frames form the Universal Aisle Containment structure at each end of a containment pod.
2	CUWBPS**ST02^^	Wall beam used to help create the UAC frame; configurations of 4 available wall beams will allow all aisle lengths to be contained.
3	CUSMPR52ST01^^	Mid-span post that provides structural support to the UAC frame; required for every 2400 mm on partially populated row.
4	CURFS06F**HB^^	Integral ceiling structure used for aisle containment and mounted onto the top of the UAC frame.
5	CUTBPR0610HBN1	Top of cabinet blanking panel used to fill gaps above cabinets; needed when cabinet height is less than UAC frame size.
6	CUFBPR**06HB^^	Full blanking panel used to fill gap in containment where cabinets have not been deployed; mount directly under UAC frame.
7	C2HACERI1626^^	End of row adjustable vertical wall used to seal at the end of the UAC and mounted above end of row frame for aisle containment.
8	C2HAC**I1626^^	Adjustable vertical wall mounted onto UAC frame to seal gap up to ceiling plenum in aisle containment.
9	CUVWB12S12ST^^	Vertical wall brace is mounted across the aisle between wall beams to provide extra stability in aisle containment.
10	CUVWA**S**ST^^	Vertical wall adapter used to mount Vertical Walls to UAC frame in aisle containment.
11	CUD*SD^1	Dual sliding doors provide thermal seal at the end of the row and attach to the end of row frames.

^^B1 = Black, W1 = White.
**Please reference www.panduit.com for information on the Net-Contain Universal Containment System.

Net-Contain™ Universal Aisle Containment and Single Aisle Containment

CUEFRT8F06STB1

End of Row Frames

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	RU	UAC/USRC
CUSREFRT8B1*	X	X	900	42 RU to 45 RU	USRC
CUSREFRT9B1*				48 RU to 52 RU	
CUEFRT8W04B1			1200	42 RU to 45 RU	UAC
CUEFRT9W04B1				48 RU to 52 RU	
CUEFRT8W06B1		—	1800	42 RU to 45 RU	
CUEFRT9W06B1				48 RU to 52 RU	

*Used with CUEFRCKITB1 conversion kit for applications with 2 rows of cabinets.
USRC represents Universal Single Row Containment.
UAC represents Universal Aisle Containment.

CUEFRCKITB1

USRC to UAC Conversion Kit

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	RU	UAC/USRC
CUEFRCKITB1	X	X	900	—	UAC

Attaches to end of row frames.

CUFBPR4506HBB1

Full Height Blanking Panels

Part Number	Roof Containment	Vertical Wall Containment	Panel Width mm	RU	UAC/USRC
CUFBPR4206HBB1	X	X	600	42	UAC/USRC
CUFBPR4506HBB1				45	
CUFBPR4806HBB1				48	
CUFBPR5206HBB1				52	

CUTBPR0610HBN1

Top of Cabinet Blanking Panel

Part Number	Roof Containment	Vertical Wall Containment	Width mm	Height mm	UAC/USRC
CUTBPR0610HBN1	X	X	1000	600	UAC/USRC

Roof Sections

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Cabinet Width mm	UAC/USRC
CUSRRFS06B1	X	—	900	600	USRC
CUSRRFS07B1				700	
CUSRRFS08B1				800	
CURFS06F04HBB1			1200	600	UAC
CURFS07F04HBB1				700	
CURFS08F04HBB1				800	
CURFS06F06HBB1			1800	600	
CURFS07F06HBB1				700	
CURFS08F0HBB1				800	

CURFS08F06

Continued on next page

Net-Contain™ Universal Aisle Containment and Single Aisle Containment (continued)

CUCGF06DPB1

Drop Away Panels

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Cabinet Width mm	UAC/USRC
CUCGF03DPB1	X	–	900	–	UAC
CUCGF04DPB1			1200		
CUCGF06DPB1			1800		

CUEORF03DPB1

End of Row Kits for Drop Away Panels

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Cabinet Width mm	UAC/USRC
CUEORF03DPB1	X	–	900	–	UAC
CUEORF04DPB1			1200		
CUEORF06DPB1			1800		

CUVWA08S08STB1

Vertical Wall Adapters

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Cabinet Width mm	UAC/USRC
CUSRVWA06B1	–	X	–	600	UAC/USRC
CUSRVWA07B1				700	
CUSRVWA08B1				800	
CUVWA06S06STB1				600	UAC
CUVWA07S07STB1				700	
CUVWA08S08STB1				800	

CUSRVWBB1

Vertical Wall Brace

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Cabinet Width mm	UAC/USRC
CUSRVWBB1	–	X	900	–	USRC
CUVWB12S12STB1			1200		UAC

C2HAC0*13866B1

Vertical Wall

Part Number	Roof Containment	Vertical Wall Containment	Adjustability In.	Cabinet Width mm	UAC/USRC
C2HAC0*I1626B1	–	X	16-26	600/700/800	UAC/USRC
C2HAC0*I2638B1			26-38		
C2HAC0*I3866B1			38-66		

*For width size, use 06 (600mm), 07 (700mm) or 08 (800mm).

Net-Contain™ Universal Aisle Containment and Single Aisle Containment (continued)

End of Row Vertical Wall

C2HAC0*13866B1

Part Number	Roof Containment	Vertical Wall Containment	Adjustability In.	Aisle Width mm	UAC/USRC
CUSRVWER1626B1	—	X	16-26	1200	USRC
CUSRVWER2638B1			26-38		
CUSRVWER3866B1			38-66		
C2HACERI1626B1			16-26		UAC
C2HACERI2638B1			26-38		
C2HACERI3866B1			38-66		

Sliding Doors

CUSR1SDLHB1

CUD1SDB1

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Description	UAC/USRC
CUSR1SDLHB1	X	X	900	Single Sliding, Left Hand Opening	USRC
CUSR1SDRHB1				Single Sliding, Right Hand Opening	
CUD1SDB1			1200/1800	Double Sliding Door	UAC
CUD2SDB1				Double Sliding Door, Packaged as a Pair	

For other colors, replace B1 (Black) with S1 (Silver).

End Of Row Caps

CUEOR12CPB1

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	UAC/USRC
CUSREORCPB1	X	X	900	UAC/USRC
CUEOR12CPB1			1200	UAC
CUEOR18CPB1			1800	

Wall Beams

CUWBPS08ST02B1

Part Number	Roof Containment	Vertical Wall Containment	Length mm	Description	UAC/USRC
CUWBPS06ST02B1	X	X	600	2 Piece	UAC/USRC
CUWBPS07ST02B1			700		
CUWBPS08ST02B1			800		
CUWBPS24ST02B1			2400		
CUWBSS06ST01B1			600	1 Piece	
CUWBSS07ST01B1			700		
CUWBSS08ST01B1			800		
CUWBSS24ST01B1			2400		

Continued on next page

Net-Contain™ Universal Aisle Containment and Single Aisle Containment (continued)

CUCMSS03ST01NC

Mid-Span Cabinet Support

Part Number	Roof Containment	Vertical Wall Containment	Height mm	UAC/USRC
CUCMSS03ST01NC	X	X	300	UAC/USRC
CUCMSS06ST01NC			600	

CUSMPR52ST01B1

Mid-Span Post

Part Number	Roof Containment	Vertical Wall Containment	RU	UAC/USRC
CUSMPR52ST01B1	X	X	42-52	UAC/USRC

CUCFS06B1, CUCFS07B1, CUCFS08B1, CUCFS10B1

Cabinet to Floor Seal

Part Number	Roof Containment	Vertical Wall Containment	Cabinet Width mm	UAC/USRC
CUCFS06B1	X	X	600	UAC/USRC
CUCFS07B1			700	
CUCFS08B1			800	
CUCFS10B1			1000	

Building Column Adapter

Part Number	Roof Containment	Vertical Wall Containment	UAC/USRC
CUCAKITB1	X	X	UAC/USRC

For other colors, replace B1 (Black) with W1 (White).

Net-Contain™ Cabinet Supported Cold Aisle/Hot Aisle Containment

The Net-Contain™ Cabinet Supported Cold Aisle Containment (CAC) System provides a physical separation between the cold air and the hot exhaust air by enclosing the cold aisle. The goal of a CAC system is to supply cold air to the cold aisle where the equipment air intakes are located to optimize airflow distribution and improve cooling system thermal performance. As a result, a cold aisle system is typically used in high-density data centers because it is more efficient to direct cold air onto densely populated racks than to cool the entire room.

The Net-Contain™ Cabinet Supported Hot Aisle Containment (HAC) System provides a physical separation between the cold air and the hot exhaust air by enclosing the hot aisle. The goal of a HAC system is to capture all of the cabinet exhaust air and return it to the cooling units. HAC optimizes airflow distribution and cooling system performance. The remaining area outside of the HAC becomes a cold room with ambient air temperature close to the supply air temperature.

This integrated system is compatible with numerous Panduit product lines including; Net-Access™ N-Type and S-Type Cabinets, FiberRunner®, and Wyr-Grid® Overhead Cable Routing Systems.

Benefits

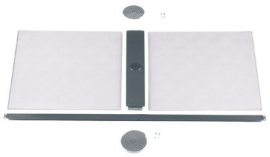
Energy Efficiency: Prevents hot spots and allows installation of high-density server cabinets close together in new builds or existing data centers, reducing the need for extra real estate and CRAH units lowering operating costs.

Optimized Airflow Distribution: Prevents mixing of cold and hot air streams; eliminates recirculation of hot air to cabinet inlets; provides uniform temperature at the inlets of IT equipment; prevents cold air bypass optimizing cool air delivery.

Improves Thermal Performance: Allows raising supply air set point temperature; higher return air temperature increases the thermal efficiency of cooling units, reducing cooling energy cost up to 30%.

Net-Contain™ Aisle Containment Systems

Panduit's Passive Cold Aisle Containment (CAC) and Hot Aisle Containment (HAC) Systems provide a physical separation between the cold air and the hot exhaust air. This integrated system is compatible with numerous Panduit product lines including; Net-Access™ N-Type and S-Type Cabinets, FiberRunner®, and Wyr-Grid® Overhead Cable Routing Systems.



C2CAC08F04IRB1B1

C2CAC06F08WPB1

C2HAC08I1626B1

C2HACERI1626B1

Part Number	Aisle Width mm	Cabinet Width mm	Adjustability In.	RU	Compatible With CAC/HAC
Low Profile Ceiling Structures					
C2CAC06F04IRB1	1200	600	—	—	CAC
C2CAC07F04IRB1		700			
C2CAC08F04IRB1		800			
C2CAC06F06IRB1	1800	600			
C2CAC07F06IRB1		700			
C2CAC08F06IRB1		800			
Integral Roof Wall Panels					
C2CAC06F08WPB1	—	600	—	—	CAC
C2CAC07F08WPB1		700			
C2CAC08F08WPB1		800			
Row Base Cooling Blanking Panels					
C2CAC03ABWPAB1	—	600	—	—	CAC
C2CAC04ABWPAB1		700			
C2CAC06ABWPAB1		800			
Adjustable Vertical Walls					
C2HAC**I1626B1	—	600/700/800	16-26	—	HAC
C2HAC**I2638B1			26-38		
C2HAC**I3866B1			38-66		
Adjustable EOR Vertical Walls					
C2HACERI1626B1	—	600/700/800	16-26	—	HAC
C2HACERI2638B1			26-38		
C2HACERI3866B1			38-66		

Net-Contain™ Aisle Containment Systems (continued)

C2CEOR04CP2B1

End of Row Caps

Part Number	Aisle Width mm	Width of Cabinet mm	Adjustability In.	RU	Compatible With CAC/HAC
C2CEOR04CP2B1	1200	—	—	42	CAC/HAC
C2CEOR04CP5B1				45	
C2CEOR04CP8B1				48	
C2CEOR04CP1B1				51	
C2CEOR06CP2B1	1800			42	
C2CEOR06CP5B1				45	
C2CEOR06CP8B1				48	
C2CEOR06CP1B1				51	

CUD1SDB1

Sliding Doors

Part Number	Roof Containment	Vertical Wall Containment	Aisle Width mm	Description	Compatible With CAC/HAC
CUD1SDB1	X	X	1200/1800	Double Sliding Door	CAC/HAC
CUD2SDB1				Double Sliding Door, Packaged as a Pair	

For other colors, replace B1 (Black) with S1 (Silver).

C2SDT8W04DAB1

Sliding Door Adapter Frames

Part Number	Aisle Width mm	Width of Cabinet mm	Adjustability In.	RU	Compatible With CAC/HAC
C2SDT8W04DAB1	1200	—	—	42-45	CAC/HAC
C2SDT9W04DAB1				48-51	
C2SDT8W06DAB1	1800			42-45	
C2SDT9W06DAB1				48-51	

For other colors, replace B1 (Black) with W1 (White).
Single sliding doors are also available in Silver. Replace B1 (Black) with S1 (Silver).
Replace ** with 06 (600mm), 07 (700mm) or 08 (800mm).

Direct Cold Air to Where it is Needed

Net-Direct™ Inlet Ducts enable optimized containment by effectively directing airflow to improve network reliability

- Inlet duct solutions deliver cooling air directly from the cold aisle into the intake fans of switches
- Inlet ducts are completely passive, requiring no energy to operate and eliminating a point of failure
- Ensures front to back cooling airflow which enables an effective deployment of network switches with a Net-Contain™ Cold Aisle Containment deployment
- Inlet ducts enable reduced fan power energy consumption by allowing lower fan speeds, improving the reliability of the switch

Available for: Cisco^ Nexus, Catalyst and MDS Switches and Juniper Networks^^ EX Series Switches.

Direct Hot Air to Where it Needs to Exhaust

Net-Direct™ Exhaust Ducts direct hot exhaust air out of a cabinet away from adjacent devices within non-contained environments

- Exhaust duct solutions channel hot exhaust air directly to the hot aisle, away from the cold air inlet of adjacent switches
- Exhaust ducts are completely passive, requiring no energy to operate and eliminating a point of failure
- Ensures switch exhaust airflow is directed to the hot aisle enabling effective deployment of network switches with a standard hot aisle/ cold aisle configuration
- Exhaust ducts enable reduced fan power energy consumption by allowing lower fan speeds, improving the reliability of the switch

Available for: Cisco^ Nexus and Catalyst Switches.

Patented* In-Cabinet Ducting optimizes cooling system efficiency by establishing front-to-back airflow patterns through the cabinet.

^Cisco, Catalyst, and Cisco Nexus are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.
^^Juniper Networks is a registered trademark of Juniper Networks, Inc.
*Patents #8,035,965, #7,855,885 and #7,595,985 - Network Cabinet with Thermal Airflow Management System.

Net-Direct™ In-Cabinet Ducting

- Net-Direct™ Passive Cabinet Inlet Ducting directs cooling air from the cold aisle into the intake fans of switches
- Net-Direct™ Passive Cabinet Exhaust Ducting directs exhaust air from the side exhaust of the switch into the hot aisle

CDE1

CDE2

CNLTD21B2

CNLTD52A2

CNLTD142A3

CNLTD72A3

DIBBC2314S21W

DIRLC2214M21W

DIRBB2007S21W

Exhaust Ducts

Part Number	Part Description	Std. Pkg. Qty.
Air Inlet Ducting		
CDE1	Air inlet duct, 1 RU that resides below the switch provides cold aisle airflow to Cisco^ Catalyst^ 4948, 4928, and 4924. Optimized for use in server cabinet applications.	1
CDE2	Air inlet duct, 1 RU that resides in-line and below switch provides cold aisle airflow to Cisco Nexus^ N2K-C2148T-1GE, N2K-C2248TP-1GE, and N2K-C2232PP-10GE fabric extenders and Cisco^ WS-C4948E-F, WS-C4948E-F-S, and WS-C4948E-F-E. Optimized for use in server cabinet applications.	
CNLTD21B2	Air inlet duct designed for Cisco^ Catalyst^ 4900M switch. Consists of one 2 RU inlet duct and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
CNLTD52A2	Air inlet duct designed for Cisco^ Catalyst^ 6504-E switch. Consists of 2 RU top and 2 RU bottom inlet ducts and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
DIRLC2214M21W	Air inlet duct designed for Cisco^ Catalyst^ 6509-E switch. Consists of 2 RU top and 2 RU bottom inlet ducts and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
DIRBB2007S21W	Air inlet duct designed for Cisco^ Nexus^ 7004 switch. Consists of one 2 RU inlet duct and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
CNLTD142A3	Air inlet duct designed for Cisco^ Nexus^ 7009 switch. Consists of 3 RU top and 3 RU bottom inlet ducts and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
CNLTD72A3	Air inlet duct designed for Cisco^ MDS 9506 switch. Consists of 3 RU top and 3 RU bottom inlet ducts and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
DIBBC2314S21W	Air inlet duct designed for Cisco^ MDS 9513 switch. Consists of 2 RU top and 3 RU bottom inlet ducts and a side duct. Compatible with Net-Access™ N-Type Network Cabinets.	
CID1RU22-23DB1	Air inlet 1RU duct for Cisco^ Nexus^ 9372 switch, compatible with 21.5" – 23.5" switch depth.	
CID2RU16-20DB1	Air inlet duct for Cisco^ TOR switches, 2RU, depth compatible with 16" – 20" switch depth.	
DIFBA2002S00S	Air inlet duct for Cisco^ Nexus^ 9396 switch.	
DIFBA3003S00S	Air inlet duct for Cisco^ Nexus^ 93128 switch.	
DIRLC3210S17W	Air inlet duct for Cisco^ Catalyst^ 6807XL switch.	
DIRLC25S23W	Air inlet duct for Cisco^ Catalyst^ 6880X switch.	
Exhaust Ducting		
DERLCC6509A	Air exhaust duct for Net-Access™ N-Type 1070mm depth cabinets. Designed for Cisco^ Catalyst^ 6509 switch.	1
DERLCC9513A	Air exhaust duct for Net-Access™ N-Type 1070mm depth cabinets. Designed for Cisco^ MDS 9513 switch.	
DERLCC7009A	Air exhaust duct for Net-Access™ N-Type 1070mm depth cabinets. Designed for Cisco^ Nexus^ 7009 switch.	
DERLCC6513A	Air exhaust duct for Net-Access™ N-Type 1070mm depth cabinets. Designed for Cisco^ Catalyst^ 6513 switch.	

^Cisco, Catalyst, and Cisco Nexus are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

Thermal Sealing Accessories

FLBSIM-51

BFS100X2000

TLBP1R-V

TLBP1S-V

TLBP2R-V

BR1B

RFG*X*Y

Part Number	Part Description	Color	Std. Pkg. Qty.	Std. Ctn. Qty.
Blanking Shades				
FLBSIM-51	Full-length blanking shade blanks out 1-51 consecutive rack units on standard 19" (482.6mm) wide vertical mounting rails.	Black	1	–
Cabinet Blanking Foam Strip				
BFS100X2000	Adhesive-backed foam strips, 1/16" (1.6mm) closed-cell vinyl foam, perforated to create multiples of 1.00" x 20.00" strips.	Black	1	10
Tool-Less Blanking Panels				
TLBP1R-V	1 RU tool-less blanking panel, round hole 19" (483mm) width for tapped rails.	Black	5	–
TLBP1R-V10	1 RU tool-less blanking panel, round hole 19" (483mm) width for tapped rails.	White		
TLBP1S-V	1 RU tool-less blanking panel, square hole 19" (483mm) width for 3/8" cage nut holes (may be used with or without cage nuts installed).	Black		
TLBP1S-V10	1 RU tool-less blanking panel, square hole 19" (483mm) width for 3/8" cage nut holes (may be used with or without cage nuts installed).	White		
TLBP2R-V	2 RU tool-less blanking panel, round hole 19" (483mm) width for tapped rails.	Black		
TLBP2S-V	2 RU tool-less blanking panel, square hole 19" (483mm) width for 3/8" cage nut holes (may be used with or without cage nuts installed).	Black		
TLBP2S-V10	2 RU tool-less blanking panel, square hole 19" (483mm) width for 3/8" cage nut holes (may be used with or without cage nuts installed).	White		
TLBP1S-L	1 RU tool-less blanking panel, square hole 19" (483mm) width for 3/8" cage nut holes (may be used with or without cage nuts installed).	Black	50	
19" Mount Brush Seal Kit				
BR1B	1 RU 19" mount brush seal kit with cable pass thru.	Black	1	1
BR2B	2 RU 19" mount brush seal kit with cable pass thru.			
CoolBoot® Raised Floor Air Sealing Grommet - Integral Mount				
RFG10X8Y	Overall size of 10" x 8" (254.0mm x 203.2mm) allows for 8.2" x 6.2" (208.3mm x 157.5mm) capacity.	Navy Blue	1	10
RFG12X4Y	Overall size of 12" x 4" (304.8mm x 101.6mm) allows for 10.2" x 2.2" (259.1mm x 55.9mm) capacity.			
RFG12X8Y	Overall size of 12" x 8" (304.8mm x 203.3mm) allows for 10.2" x 6.2" (259.1mm x 157.5mm) capacity.			
RFG3DY	Overall size of 4.8" (121.9mm) diameter allows for 2.7" (68.6mm) diameter capacity.			
RFG5DY	Overall size of 6.8" (172.7mm) diameter allows for 4.7" (119.4mm) diameter capacity.			
RFG6X8Y	Overall size of 6" x 8" (152.4mm x 203.2mm) allows for 4.2" x 6.2" (106.7mm x 157.5mm) capacity.			
RFG8X8Y	Overall size of 8" x 8" (203.2mm x 203.2mm) allows for 6.2" x 6.2" (157.5mm x 157.5mm) capacity.			

Thermal Sealing Accessories (continued)

RFG*X*SMY

Part Number	Part Description	Color	Std. Pkg. Qty.	Std. Ctn. Qty.
CoolBoot® Raised Floor Air Sealing Grommet - Surface Mount				
RFG10X8SMY	Overall size of 10" x 8" (254.0mm x 203.2mm) allows for 8.2" x 6.2" (208.3mm x 157.5mm) capacity.	Navy Blue	1	10
RFG12X4SMY	Overall size of 12" x 4" (304.8mm x 101.6mm) allows for 10.2" x 2.2" (259.1mm x 55.9mm) capacity.			
RFG12X8SMY	Overall size of 12" x 8" (304.8mm x 203.2mm) allows for 10.2" x 6.2" (259.1mm x 157.5mm) capacity.			
RFG3DSMY	Overall size of 4.8" (121.9mm) diameter allows for 2.7" (68.6mm) diameter capacity.			
RFG5DSMY	Overall size of 6.8" (172.7mm) diameter allows for 4.7" (119.4mm) diameter capacity.			
RFG6X8SMY	Overall size of 6" x 8" (152.4mm x 203.2mm) allows for 4.2" x 6.2" (106.7mm x 157.5mm) capacity.			
RFG8X8SMY	Overall size of 8" x 8" (203.2mm x 203.2mm) allows for 6.2" x 6.2" (157.5mm x 157.5mm) capacity.			

Also designed for retrofit application.

CTGN1X5

CTGN3X5

CTGN6X6

Part Number	Part Description	Std. Pkg. Qty.	Std. Ctn. Qty.
CoolBoot® Cabinet Top Air Sealing Fitting			
CTGN1X5	Used to seal off 1" x 5" cabinet top openings when cables are routed through the top of a cabinet. Airtight fabric and Ultra-Cinch™ Tie close top of fabric, minimizing hot air bypass around cables to improve cooling of network equipment and reduce energy costs. For use with 600mm wide Net-Access™ Cabinets.	1	10
CTGN3X5	Used to seal off 3" x 5" cabinet top openings when cables are routed through the top of a cabinet. Airtight fabric and Ultra-Cinch™ Tie close top of fabric, minimizing hot air bypass around cables to improve cooling of network equipment and reduce energy costs. For use with 700mm, 800mm, and 1000mm wide Net-Access™ Cabinets.		
CTGN6X6	Used to seal off 6.5" x 6.5" cabinet top openings when cables are routed through the top of a cabinet. Airtight fabric and Ultra-Cinch™ Tie close top of fabric, minimizing hot air bypass around cables to improve cooling of network equipment and reduce energy costs. For use with 600mm, 700mm, 800mm, and 1000mm wide Net-Access™ Cabinets.		

CTCN1X5

CTCN3X5

CTCN6X6

CTNBZL6X6

Part Number	Part Description	Std. Pkg. Qty.	Std. Ctn. Qty.
Cabinet Top Cover and Cable Protection Bezel			
CTCN1X5	Used to seal off 1.5" x 5" cabinet top openings. Can also be used to add the CTGN1X5 to openings where the snap-on cover has been removed. For use with Net-Access™ Cabinets.	1	10
CTCN3X5	Used to seal off 3.5" x 5" cabinet top openings. Can also be used to add the CTGN3X5 to openings where the snap-on cover has been removed. For use with Net-Access™ Cabinets.		
CTCN6X6	Used to seal off 6" x 6" cabinet top openings. Can also be used to add the CTGN6X6 to openings where the snap-on cover has been removed. For use with Net-Access™ Cabinets.		1
CTNBZL6X6	Used to provide a protective edge for cables routed through the 6.5" x 6.5" cabinet top openings after knock-outs are removed. Can also be used to add the CTGN6X6 to openings where knock-out has been removed. For use with Net-Access™ Cabinets.		10

Panduit Corp.
World Headquarters
Tinley Park, IL 60487

800.777.3300

www.panduit.com

© 2020 Panduit Corp. ALL RIGHTS RESERVED. Printed in the U.S.A. **RKCB47--SA-ENG** 5/2020