

EFS - Data Centre Solutions



EFS
THE SOLUTION PROVIDER

Our Capabilities



EFS Limited has over 25 years of experience in providing engineered solutions for Data Centres. Throughout this time, we have witnessed the constant change in IT equipment that puts additional demands on the physical infrastructure of a Data Centre. Data Centres are designed to last 20 plus years, however IT upgrades will necessitate major changes are regularly made during this time. The following guide brings together all of our standard Data Centre solutions in a way that matches the business needs of the diverse range of Data Centre customers.

EFS Limited Business has a comprehensive range of products that address the needs of all types of Data Centres businesses from small data closets to large multi megawatt facilities.

As there is no such thing as a standard Data Centre, The EFS standard is to meet the challenges of most Data Centre needs. However, should you require a product or solution not specifically shown in this guide, please contact us to arrange a call with one of our certified Data Centre experts

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‘To provide responsive, safe, and trusted solutions to our clients with the highest-quality, most dependable, value engineered, design and manufactured products.’



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F-Range - Features Rack

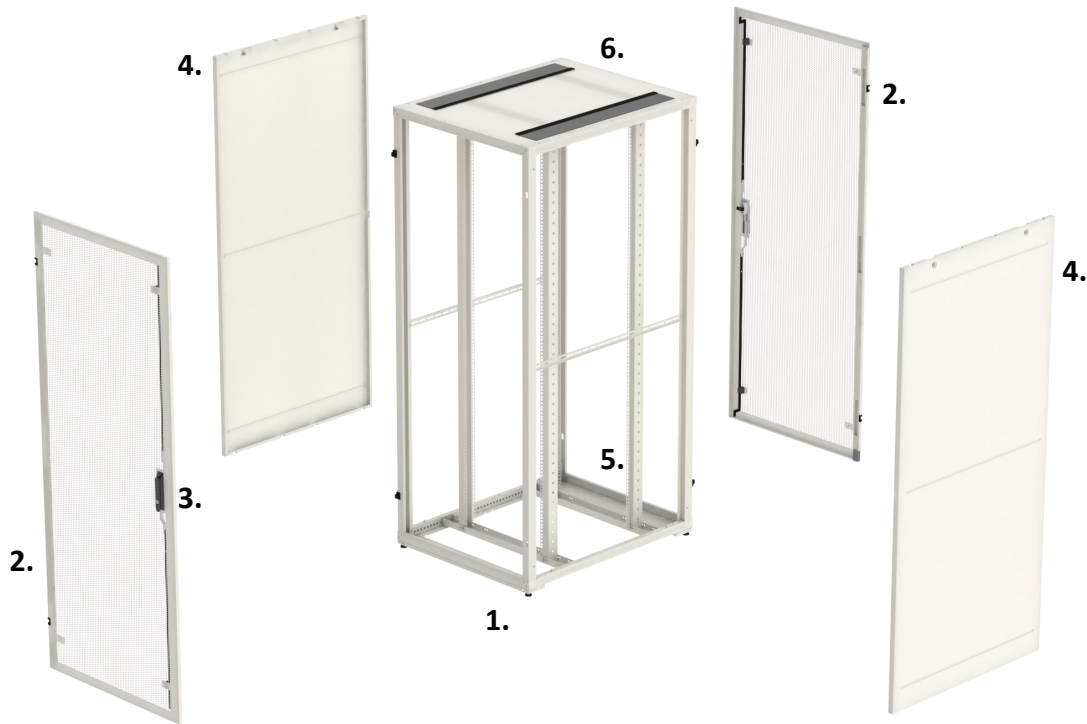


Today's competitive data market requires featured and effective solution. EFS Features Range Rack System (F-Range) is a fully featured, Data Centre compliant, 4-post rack designed to provide a customer solution while meeting the demands of most data room applications.

Features and options

- 4-post corner design
- Bolt together construction with flat packed options
- Static load rating 1500kg
- Supplied with two pairs of 19" mounting rails
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Jacking feet fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1
- Various door options to suit application
- Brush access top panel full depth
- Available in standard light grey or black

F-Range - Features Rack



1. Open frame structure

- Bolt together construction
- Load rating 1,500kg
- IP20 environmental rating
- Available assembled or flat packed
- Quick to assemble and easy to adjust
- Standard heights 42U, 45U, 47U, 48U and 52U
- Width 600mm , 750mm, 800mm

2. Door Features

- 2 Point hinging
- Single and double door variants
- Vented doors incorporate 80% perforated open area

3. Locking options

- 2 point locking
- Upgrade options include:
 - Individually keyed locks
 - Mechanical combination locks
 - Electronic locking
 - Network configurable intelligent locking

4. Side panel Features

- Key locking
- Lift off
- Upgrade options include:
 - Brush entry
 - Vented

5. Mounting Rails

- 19" square rails
- 23" mounting option in 800W racks
- Adjustable rail positions
- Fully EIA-310-E complaint

6. Top Panel options

- Brush entry both sides full depth
- Fully customer configurable

F-Range - Co-Locate & Multi hosting racks



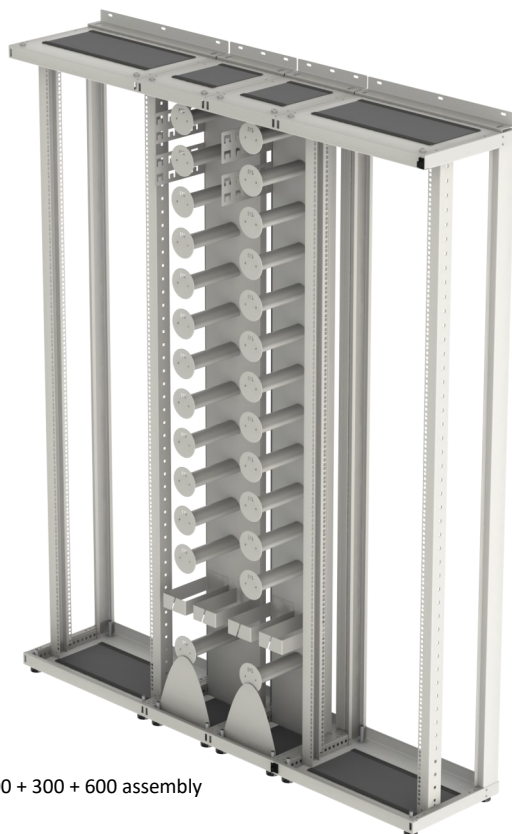
The F-Range Co locate / Multi Hosting rack provides the perfect space saving solution, allowing either two or four conventional rack spaces to be housed within a single rack foot-print. With individually keyed bays the Co locate rack offers the additional benefit of allowing tiered access control. By controlling the issue of keys administrators can limit users to either individual or groups of bays. This functionality can be further enhanced with EFS's programmable electronic locking solution.

Features and options

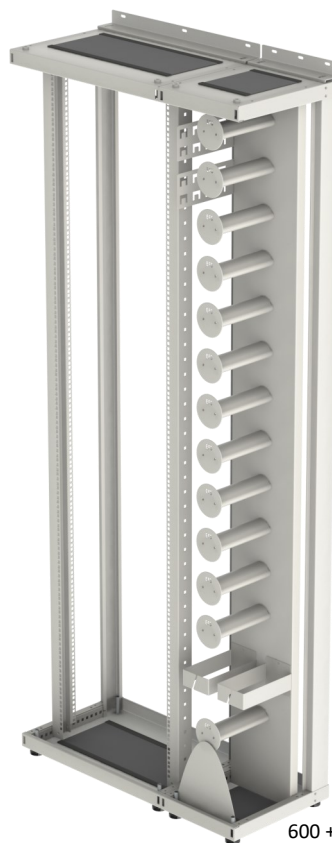
- Rack heights 42U, 47U and 52U
- Rack widths 600mm & 800mm
- Rack depths 1000mm and 1200mm
- 2-bay, 3-bay and 4 bay
- In-rack secure cable management entry top and bottom
- Bolt together construction with flat packed options
- Static load rating 1500kg
- Supplied with two pairs of 19" mounting rails in each bay
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Jacking feet fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1



F-Range - CDR



600 + 300 + 300 + 600 assembly



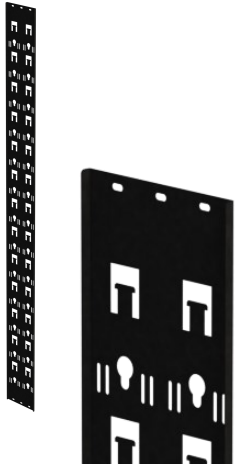
600 + 300 assembly

Our fibre optic cable management system offers fast, flexible, and future-proofed solutions for Data Centre inter-connect or cross-connect network infrastructures. The F-Range CDR systems provide a high-quality aesthetic for areas like Meet Me Rooms or Main Distribution Areas. Featuring rear-mounted 19" rails, accessing cables and equipment from the front of the racks is convenient and efficient. The doors and side panels can be easily removed without tools, making maintenance hassle-free. With tamper-proof 2-point locking, security is ensured, while the 47U of mountable area offers ample space for fiber management. The compact 300mm depth of our Cable Distribution Racks (CDRs) maximizes space utilization, allowing for more revenue-generating racks. Scalable and modular, our CDRs evolve with the evolving bandwidth demands of Data Centres

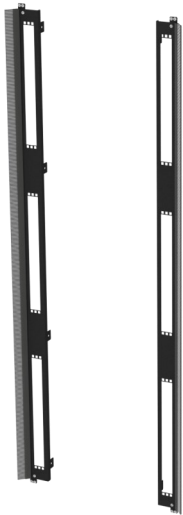
Features and options

- Rack heights 42U, 47U and 52U
- Depth of 300mm
- Frontal fibre position
- In-rack fibre cabling accessories
- Bolt together construction with flat packed options
- 600 wide Supplied with one pair of 19" mounting rails
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Jacking feet fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1

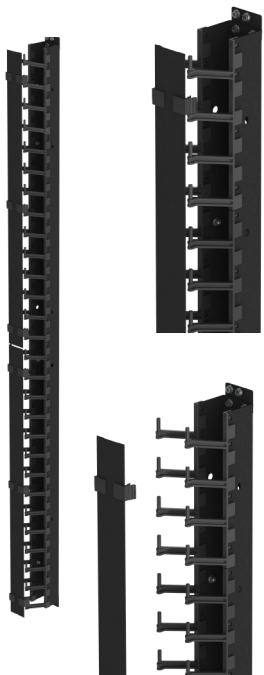
F-Range - Accessories



Cable & PDU Mount Tray		
EFS-	Tray	EFS: PDU and Cable Tray
42 CP	U-Height	42CT = 42U / 45CT = 45U / 47CT = 47U / 48CT = 48U
150W	Width	100W = 100mm Wide/ 200W = 200mm Wide/ 300W = 300mm Wide

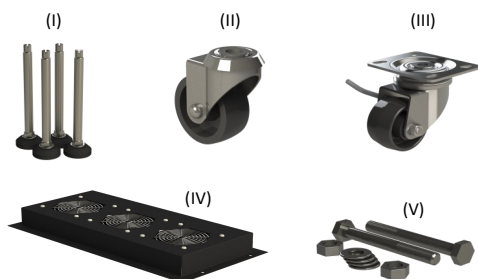


Vertical Baffle with Zero - U Mounting		
EFS-	BAFFLES	EFS: Vertical Baffle with Zero - U Mounting
42 VB	U-Height	42 = 42U / 45 = 45U / 47 = 47U / 48 = 48U / 52 = 52U
B	Colour	B = Black (ral9005) / G = Grey (ncs-1502-y)



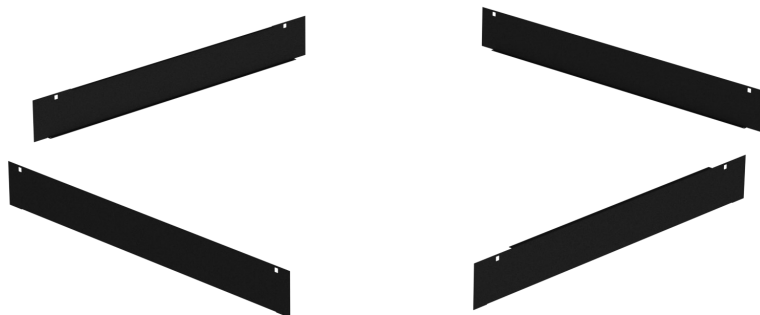
High Density Vertical Cable Manager		
EFS-	HD Manager	EFS: Vertical Cable Manager
42 HDVS	U-Height	42 = 42U / 45 = 45U / 47 = 47U / 48 = 48U / 52 = 52U
B	Colour	B = Black (ral9005)

F-Range - Accessories

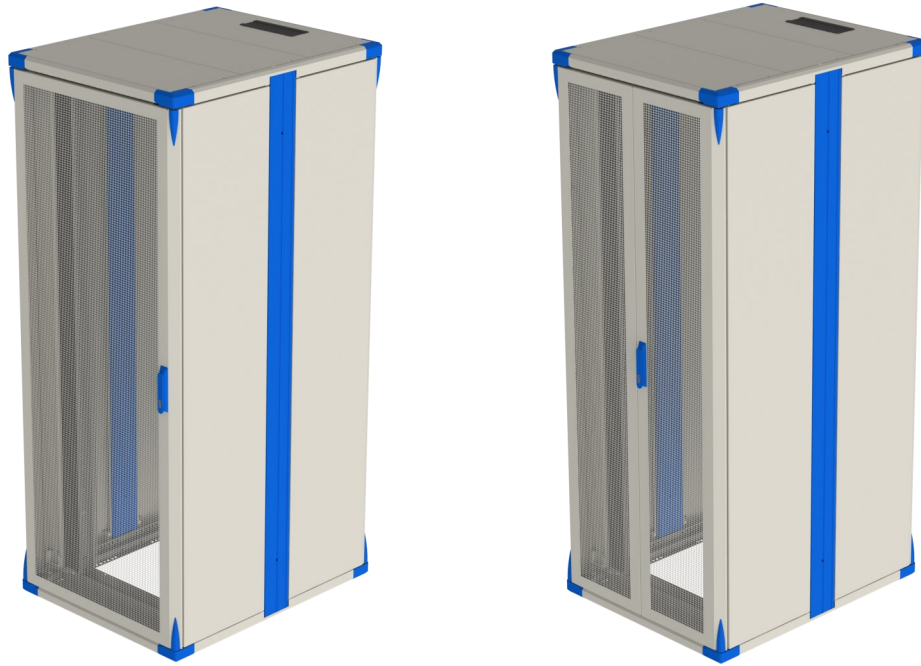


General Accessories	
(I)	EFS-JFK Jacking Foot Kit
(II)	EFS-TCK Transit Castor Kit - Load Rating 225Kg
(III)	EFS-HDCK Heavy Duty Castor Kit - Load Rating 750Kg
(IV)	EFS-2WFTK 2 Way Fan Tray Kit - Black
(IV)	EFS-3WFTK 3 Way Fan Tray Kit - Black
(V)	EFS-EBTK Baying Kit

Kick Plates		
EFS-	Kick Plate	EFS: 100mm Kick Plate Kit
8	Width	6 = 600mm / 7 = 750mm / 8 = 800mm
8	Depth	8 = 800mm / 10 = 1000mm / 12 = 1200mm / 14 = 1400mm
B	Colour	B = Black (ral9005) / G = Grey (ncs-1502-y)



Access Rack



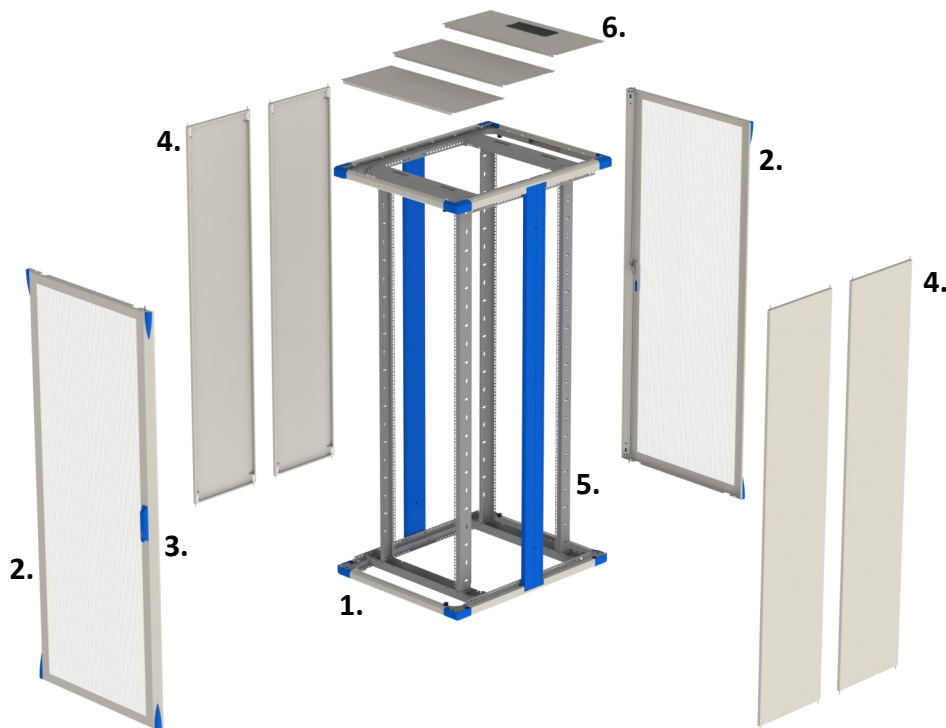
A long-established solution, EFS Ltd Access™ Rack System continues to provide the best working and cabling accessibility to optimise cabling density and minimise installation costs. Designed and manufactured in the UK, The Access Rack boasts the broadest range of solutions for Data Centres and Telecomms.

Features and options

- Centre post design
- Bolt together construction with flat packed options
- Static load rating 1000kg
- Supplied with two pairs of 19" mounting rails
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Nylon skids fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1
- Various door options to suit application
- Various roof options to suit application
- Available in standard light grey or black with black or blue trim



F-Range - Features Rack



1. Open frame structure

- Bolt together construction
- Load rating 1000kg
- IP20 environmental rating
- Available assembled or flat packed
- Quick to assemble and easy to adjust
- Standard heights 42U, 45u, 47U and 52U
- Width 600mm and 800mm

2. Door Features

- 2 Point hinging
- Single and double door variants
- Vented doors incorporate 80% perforated open area

3. Locking options

- 2 point locking
- Upgrade options include:
 - Individually keyed locks
 - Mechanical combination locks
 - Electronic locking
 - Network configurable intelligent locking

4. Side panel Features

- Standard split half depth configuration
- Easier handling
- Quick release hinges
- Secure
- Upgrade options include:
 - Brush entry
 - Vented

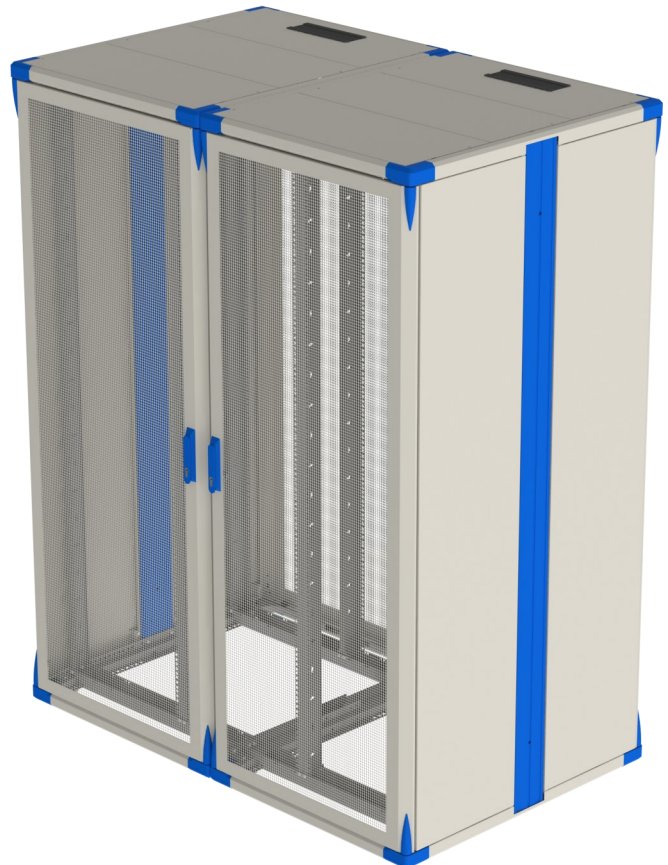
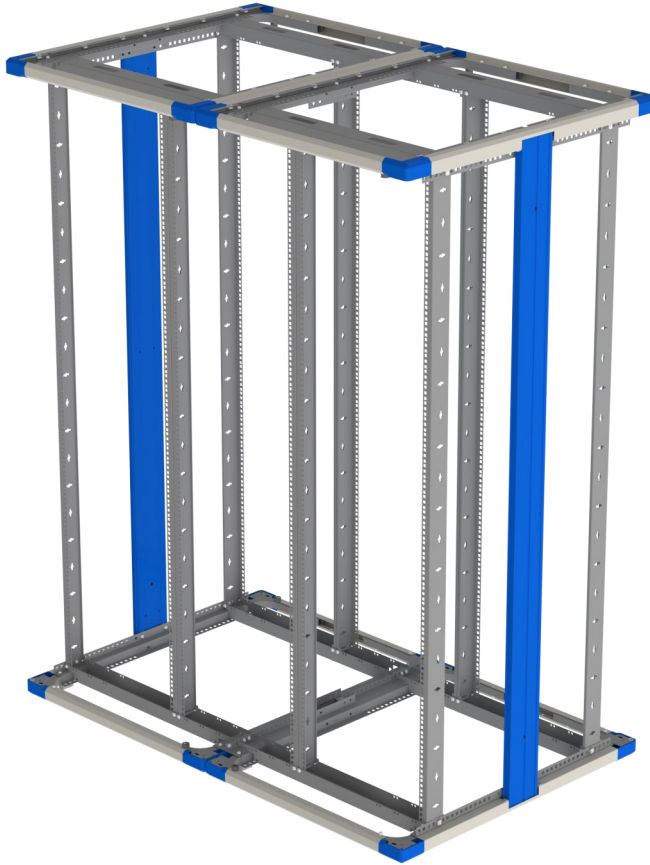
5. Mounting Rails

- 19" square rails
- 23" mounting option in 800W racks
- Adjustable rail positions
- Fully EIA-310-E complaint

6. Top Panel options

- Range of upgradable top infill panel options including vented, cable entry and fan tray configuration
- Modular top panel configuration

Access - 3 into 2



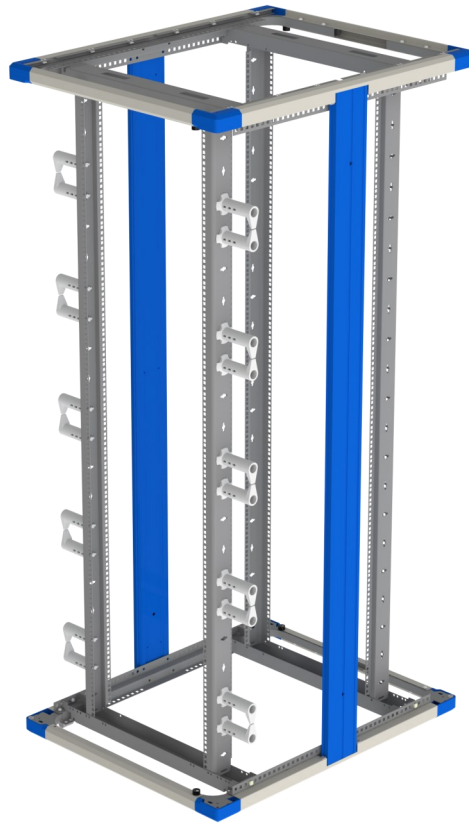
Where space is a premium, EFS offers a special solution to assist in optimising floor-space utilisation. The unique corner less construction of the Access product ranges allow 3 sets of 19" rails to be mounted inside the foot print of two 800mm bayed enclosures. While not suitable for all installations, the layout offers an 11% reduction in floor space coverage for a given amount of 'U' space. Contact our applications team to discuss 3 into 2 racks for space optimisation.

Features and options

- Centre post design
- Available in racks heights 42U, 45U and 47U
- 2 800mm wide racks
- Available in rack depths 1000mm and 1200mm
- Bolt together construction with flat packed options
- Static load rating 1000kg
- Supplied with 3 sets of 19" mounting rails
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Nylon skids fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1
- Various door options to suit application
- Various roof options to suit application



Access - Distribution Rack

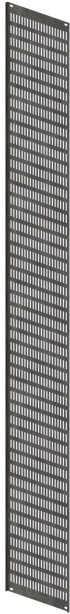


The Distribution Rack provides the perfect configuration for the copper and fibre patch frames. Providing unrivalled accessibility, the basic frame structure can be easily and quickly adjusted as required .

Features and options

- Centre post design
- Available in racks heights 42U, 45U and 47U
- Available in rack depths 875mm, 1000mm and 1200mm
- Open frame front and rear
- Open frame top and bottom
- Fitted with 20 twist and lock cable management arms
- Bolt together construction with flat packed options
- Static load rating 1000kg
- Supplied with 2 pairs of 19" mounting rails
- Unit height labels fitted to front and rear 19" mounting rails (numbered bottom to top)
- Nylon skids fitted as standard
- Earth bonding kit included as standard
- Earth bonding compliant EN60950-1
- Available in standard light grey or black with black or blue trim

Access - Accessories



Cable Tray		
ACTR	Tray	Access Cable Tray
42	U-Height	42 = 42U / 45 = 45U / 47 = 47U / 48 = 48U
150W	Width	75W = 75mm Wide/ 150W = 150mm Wide/ 200W = 200mm Wide

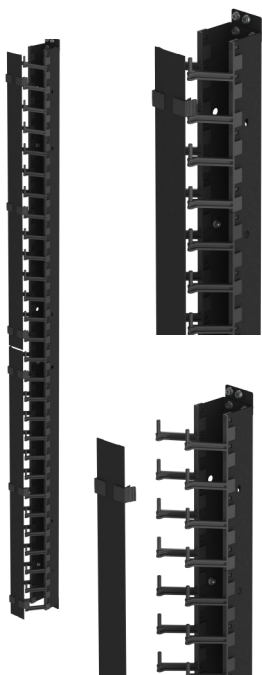
Note: Finish in Silver is as standard



800w Version

Vertical Baffle with Brush		
ACVBPA426A	Light Grey	Access - Vertical Baffle for 42u 600w rack
ACVBPA428A		Access - Vertical Baffle for 42u 800w rack
ACVBPA476A		Access - Vertical Baffle for 47u 600w rack
ACVBPA478A		Access - Vertical Baffle for 47u 800w rack

Note: Finish in Light Grey is as standard - Available in Black



High Density Vertical Cable Manager		
ACC-	HD Manager	Access-: Vertical Cable Manager
42 HDVS	U-Height	42 = 42U / 45 = 45U / 47 = 47U / 52 = 52U
B	Colour	B = Black (ral9005)

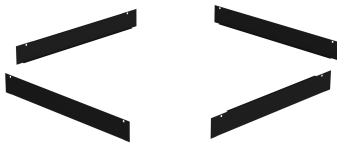
Note: Finish in black is as standard

Access - Accessories



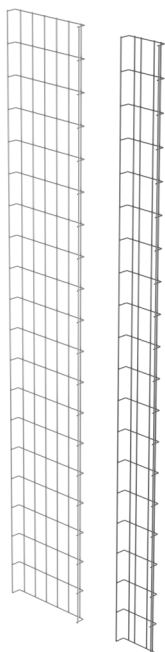
General Accessories

(i)	AJF	Access Jacking Foot Kit
(ii)	ATB	Access Bolt Together Kit
(iii)	ACK	Heavy Duty Castor Kit - Load rating 250kg
	APKCPK	Access Corner adaptor plates (set of 4) Allows castors, Jacking feet and kick plates to be fitted



Kick plates

APKP-	Kick Plate	Access -: 100mm Kick Plate Kit
8	Width	6 = 600mm / 8 = 800mm
8	Depth	8 = 875mm / 10 = 1000mm / 12 = 1200mm
B	Colour	B = Black (ral9005) / G = Grey (ncs-1502-y)



Cable Basket

ABS-	Basket	Access Basket
42	Rack Height	42U / 45U / 47U
150	Width	150mm / 300mm

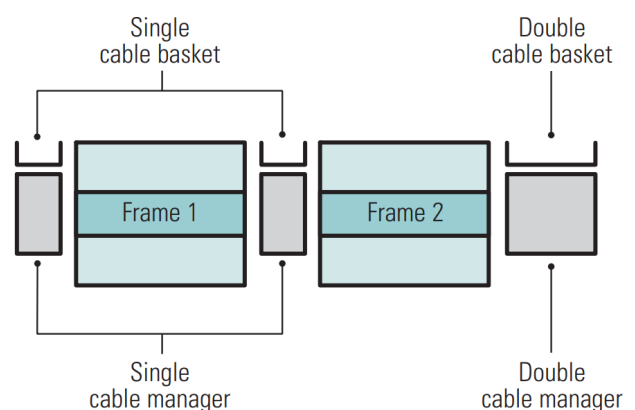
2-Post rack system



A simple mounting frame solution to house IT equipment and provide maximum cabling access and capacity. EFS range of open frames are ideally suited to telecommunications rooms for copper/fibre patching. The open access design allows for ease of installation and provides a secure connectivity solution for CAT 6A and CAT 7 cabling. The EFS 2 post rack system can come fitted with a proven range of cable management to provide maximum flexibility and support for any style of cable entry design

Features and options

- Bolt together construction
- 42U, 45U, 47U and 52U standard heights
- Range of vertical cable management options and configurations
- Robust pre-drilled floor mounting base (no bolts supplied)
- Pre-drilled top frame for mounting cable trays and baskets
- Black finish
- Supplied in simple kit form for easy on-site assembly



Sample Frame layout

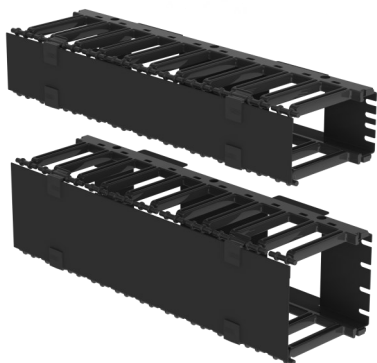
2-Post rack system



The open rack vertical cable managers are available in a range of unit heights and in two standard widths. The managers are designed to bolt to the sides of the 2 post rack frames and can be configured either in single or double configurations. Units are supplied complete with dual hinged split covers for ease of operation and improved cable management.

Features and options

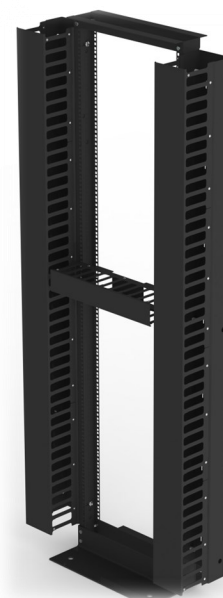
- 1 x vertical manager
- 2 x dual hinged covers
- Mounting instructions and fixings
- Black finish
- Supplied in simple kit form for easy on-site assembly



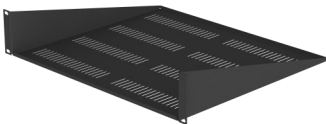
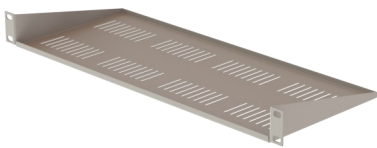
Horizontal cable supports are available in 1U, 2U or 3U heights, providing added cable routing options

Features and options

- 2 x dual covers fingers
- Mounting instructions and fixings
- Black finish
- Supplied in simple kit form for easy on-site assembly

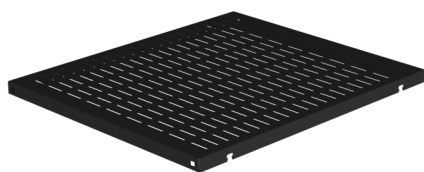


Rack - Accessories



Cantilever Shelves		
EFS-CS190B	BLACK	1U - 190mm Deep - Load rating 35kg
EFS-CS300B		1U - 300mm Deep - Load rating 35kg
EFS-CS400B		1U - 400mm Deep - Load rating 35kg

Note: Finish in black is as standard - Available in Grey



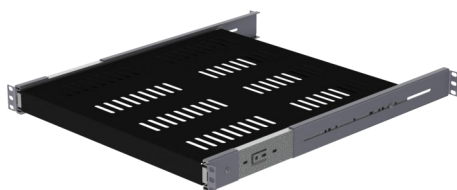
Fixed Shelves		
EFS-FS450B	BLACK	450mm Deep - Load rating 35kg
EFS-FS580B		580mm Deep - Load rating 35kg
EFS-FS620B		620mm Deep - Load rating 35kg
EFS-FS720B		720mm Deep - Load rating 35kg

Note: Finish in black is as standard - Available in Grey



Fixed Adjustable Depth Shelves		
EFS-1UADS45B	BLACK	1U - 19" 450mm - 750mm - Load rating 100kg
EFS-1UADS65B		1U - 19" 650mm - 950mm - Load rating 100kg
EFS-1UADS45B		1U - 19" 450mm - 750mm - Load rating 250kg
EFS-1UADS65B		1U - 19" 650mm - 950mm - Load rating 250kg

Note: Finish in black is as standard - Available in Grey



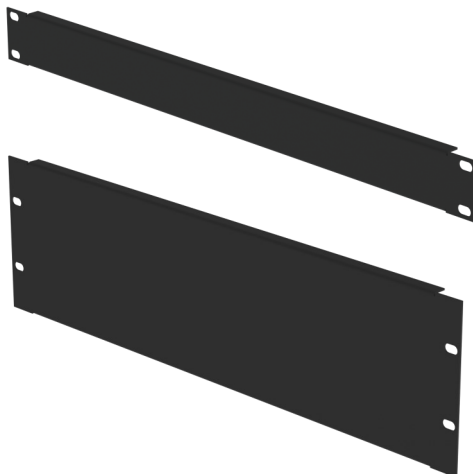
Sliding Shelves		
EFS-1USS450D	BLACK	1U - 19" 450mm - Load rating 100kg
EFS-1USS550D		1U - 19" 550mm - Load rating 100kg
EFS-1USS700D		1U - 19" 700mm - Load rating 100kg

Note: Finish in black is as standard - Available in Grey

Rack - Accessories

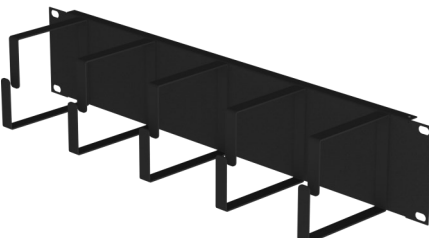


Chassis Runners		
EFS-CHR390	SILVER	390mm Deep - pairs - Load rating 35kg
EFS-CHR450		450mm Deep - pairs - Load rating 35kg
EFS-CHR580		580mm Deep - pairs - Load rating 35kg
EFS-CHR620		620mm Deep - pairs - Load rating 35kg



19" Plain Steel Blanking Panels		
EFS-1UBPB	BLACK	1U - 19" Blanking Plate
EFS-2UBPB		2U - 19" Blanking Plate
EFS-3UBPB		3U - 19" Blanking Plate
EFS-4UBPB		4U - 19" Blanking Plate
EFS-5UBPB		5U - 19" Blanking Plate

Note: Finish in black is as standard - Available in Grey

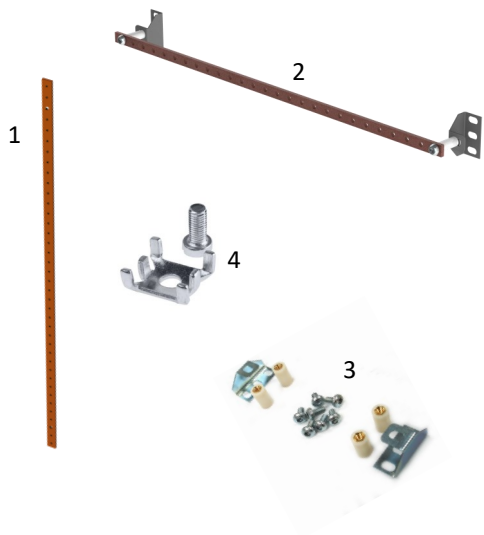


19" Horizontal cable management		
EFS-1UC4RMH	BLACK	1U - 19" - 4 x 65mm Cable manager
EFS-2UC4RMH		2U - 19" - 4 x 65mm Cable manager
EFS-1UC4100RMH		1U - 19" - 4 x 100mm Cable manager
EFS-2UC4100RMH		2U - 19" - 4 x 100mm Cable manager

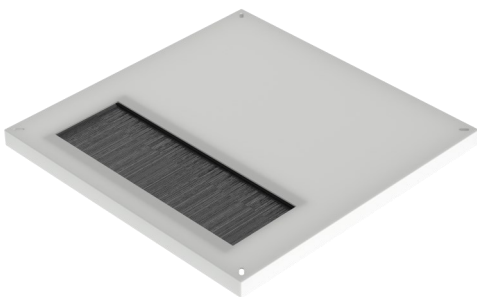
Rack - Accessories



Unit Height Labels		
EFS-UHLTTB	BLACK	Numbered 1 at the Top and 52u at the bottom (pair)



Earthing		
1	EFS-1MEB	1 Meter Cooper Earth Bar - M5 Tapped
1	EFS-2MEB	2 Meter Cooper Earth Bar - M5 Tapped
2	EFS-19EBK	1U 19" Cooper Earth Bar Kit - M5 Tapped
3	EFS-EBMKIT	Earth Bar Mount Kit (2 Pieces per kit)
4	EFS-EBC20	Earth Bar Clamp Kit (20 Pieces per kit)



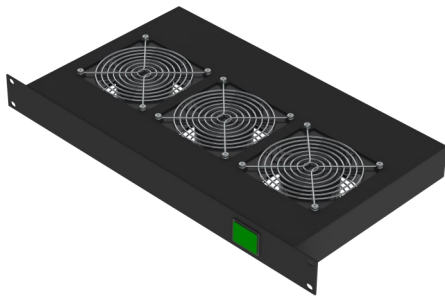
EFS offer a quick change floor tile for an alternative to cutting raised floor tiles. The Tile comes packed with features and comes in single or double tiles.

Features and options

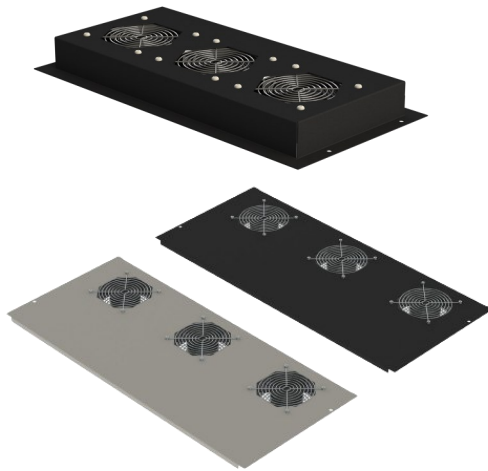
- Brush fitted
- No Cutting tiles
- Different depths to suit all raised floor tiles

Contact the team for more information.

Rack - Accessories



Rack Mounted Fan Trays		
EFS-RMFT2WB	BLACK	19" Rack Mounted 2-Way Fan Tray (220/230V)
EFS-RMFT3WB		19" Rack Mounted 3-Way Fan Tray (220/230V)



Rack Roof Fan Trays		
EFS-2WFTKB	BLACK	F-Range - 2 Way Fan Tray Kit—220/230V
EFS-RMFT3WB		F-Range - 3 Way Fan Tray Kit—220/230V
A6FTB		Access - 2 Way Fan Tray Kit—220/230V
A8FTB		Access - 2 Way Fan Tray Kit—220/230V
A6FT3B		Access - 3 Way Fan Tray Kit—220/230V
A8FT3B		Access - 3 Way Fan Tray Kit—220/230V

Note: Finish in black is as standard - Available in Grey



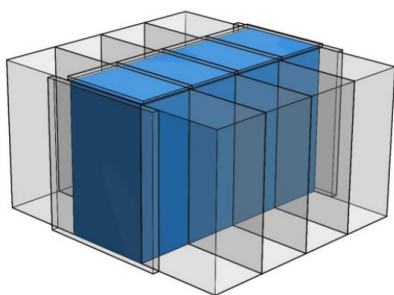
A simple, scalable solution to more effectively manage the ever increasing heat loads in today's Data Centre. This design mounts easily onto the F-Range and the Access rack systems. Combining the roof mounted return air duct with the in-rack air management ensures that the hot exhaust air, from the IT equipment, is contained in the rear of the rack avoiding recirculation. The return air duct directs the exhaust air from the rack to room air conditioners via a plenum ceiling or return duct work.

Features and options

- Retro fit
- Adjustable in height from 460mm - 840mm
- Mounting instructions and fixings

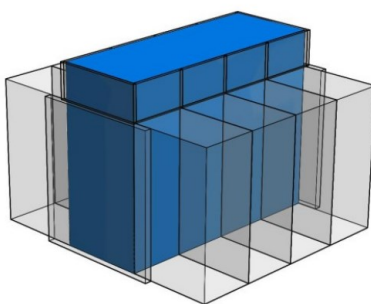
Data Centre Containment

In today's environment where technology compaction is leading to higher computing densities, the need for not only adequate but also efficient cooling systems continues to be of growing importance. At one time businesses may have considered simply reducing the number of active equipment units deployed in each rack space. With increasing energy, labour and real estate costs this is no longer an option, other solutions need to be found. What's the right solution? There is no single solution that fits every application as each site will have different constraints and demands. The one thing that each site will have in common is that by avoiding hot and cold air crossover the cooling infrastructure will run more efficiently leading to lower operational costs and / or improved densities.



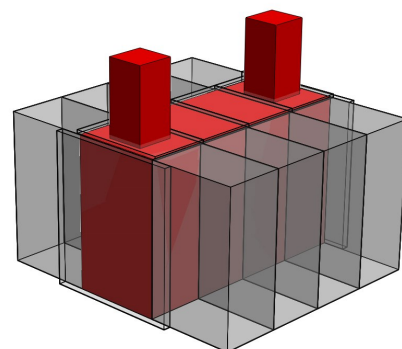
Aisle Containment:

- End of aisle doors and roof panels contain the supply air typically fed from the raise floor plenum.
- Used in conjunction with in-rack air management the supply air has to pass through active equipment mounted within the rack.



Vertical Aisle Containment:

- End of aisle doors and vertical sides to contain the supply air between the rack rows.
- Can be fed from floor or ceiling plenum.
- Can be configured in either hot or cold contained systems.
- In a cold aisle containment the return air path to the CRAC is typically ambient room environment.

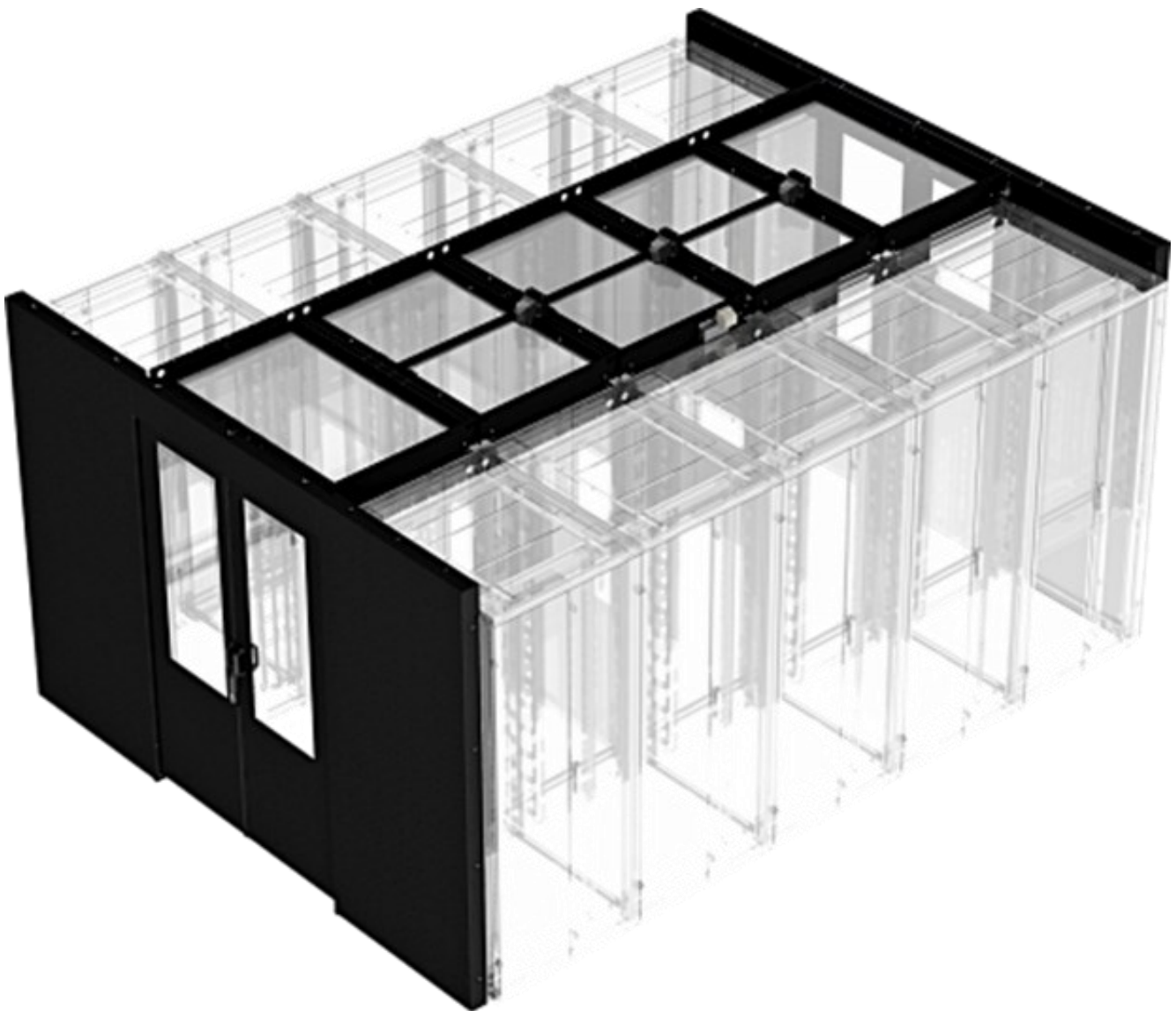


Vertical Containment & Ducts:

- End of aisle doors and roof panels contain the return air which is ducted to a plenum above the rack space or in the ceiling void connected to the computer room cooling system (Down flow CRAC)
- Vertical aisle containment can be configured to operate in the same manner.

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EFS are proud to offer the complete Aisle solution whether your Datacentre conditions are set for Hot Aisle or Cold Aisle. We can work with the customer to provide the right solution. Below shows a 10 cabinet pod with using the underfloor cooling solution. The End of Aisle doors supplied with a glazed viewing area, the doors can be locked out and with a slight pull on the handle the doors will close automatically. The active roof panels can be connected into the Building Management System which will allow the roof panels to activate and open for the suppressed air to fill the pod. Plain panels are available if required



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The F-Range aisle containment system provides the optimum solution to the most testing Data Centre applications. Our pods are a completely modular approach to air containment allowing racks and components to be added as a facility changes and expands. The containment system has been designed so that we can attach the sliding door assembly to any rack with the addition of brackets that will attach to any rack.

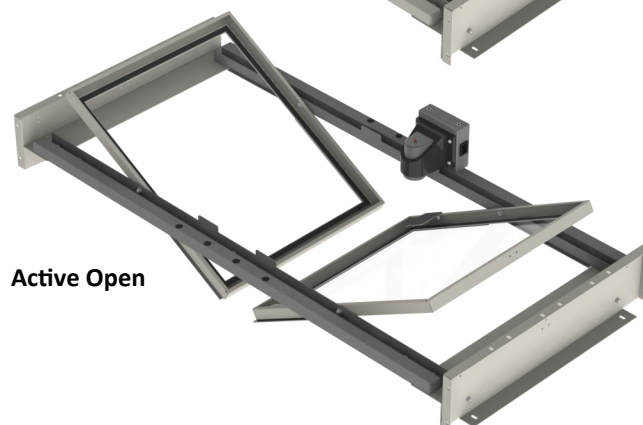
Sliding doors:

- Solid steel bolted construction,
- Dual closing doors
- Support best practice with airflow management
- Electronic locks matched to the local building access control and security systems



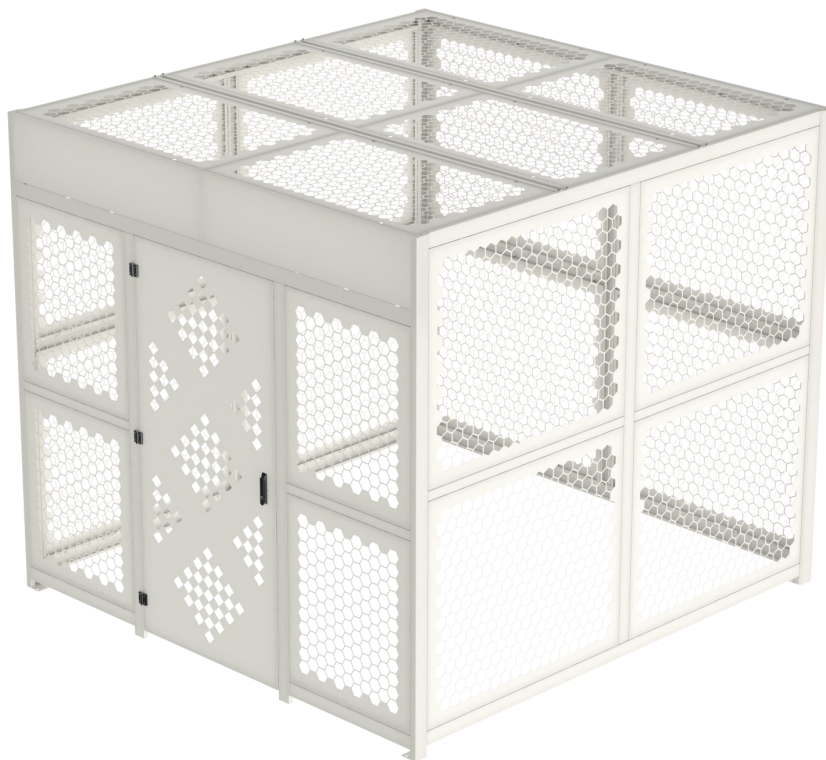
Roof Panels

- Solid steel bolted construction
- A range of panels from easy access to active panels
- Support best practice with airflow management

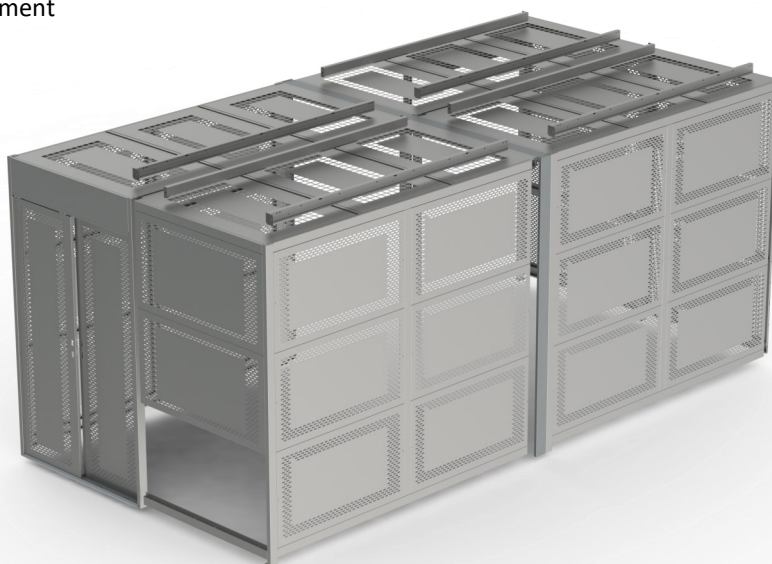


Data Centre Security Caging

EFS offers a choice of IT security cage solutions, from simple wire mesh security cages to our vented steel panel security cages. IT security cages are an ideal solution for restricting access to certain areas within a data centre or computer room and protect high value IT assets. EFS provide a full design and installation service to prevent any disruption to live environments. A site survey is carried out from which detailed plans are drawn so that the final installation can be visualised.



- Solid steel bolted construction, all bolts are security bolts
- A modular construction to allow for easy assembly on site, capable of future expansion
- Available in vented or solid steel panels
- A range of door types from hinged to sliding
- Support best practice with airflow management
- Electronic locks matched to the local building access control and security systems
- Integration with the existing hot/cold aisle containment
- Underfloor caging



Notes:

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