

Rittal – The System.

Faster – better – worldwide.

▶ **WHITE PAPER: Network/Server Enclosure Standard Redefined: Rittal TS IT encompasses comprehensive approach to System installation while simplifying design.**



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



FRIEDHELM LOH GROUP

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Executive Summary...

Early in 2012, Rittal unveiled its latest development in rack systems and began redefining the global standard for network and server equipment. Tagged “TS IT” it stands for an intelligent modular system encompassing not only racks but a comprehensive range of high-performance accessories. A close look reveals a far simpler design than previous generations and tool-less, snap-in assembly technology to boost assembly and operating efficiency – while lowering costs. With the TS IT, Rittal has created a unique rack system to satisfy practically all the demands of today’s modular, flexible network and server requirements.

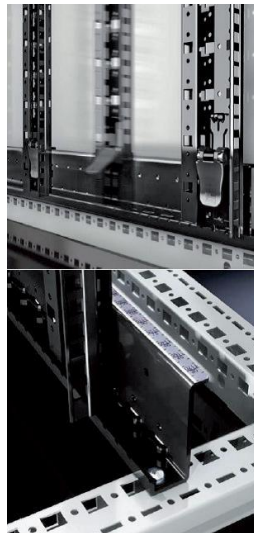
Introduction...

The ideal IT rack incorporates a wide range of properties. It's easy to deploy, provides a safe environment for servers and other components, can be modified without major outlay and offers an optimum price/performance ratio. Rittal's new TS IT System is positioned to establish a new standard in functionality and efficiency as it addresses each of these considerations. Even in its standard version, it encompasses virtually all the requirements placed on network and server enclosures and brings to the data center venue a new tool-free approach to enclosure assembly.

Tool-free Assembly...

From its original design, every aspect of the TS IT rack has been engineered to take advantage of all the advantages of tool-free assembly; making it possible for one person to complete the process quickly and efficiently. Side panels are divided and slide into place – there are no screws. Slide rails, component shelves, telescoping slides and a variety of additional accessories simply clip into place on the rear panel and are secured in front. All without tools.

Should the 19” mounting rails need adjusting, quick-release fasteners are loosened and the panels can be moved and locked into a new location.



Offset positioning allows for alternative mounting widths – 21”, 23” and 24” options on the 800 mm wide version, only. Integrated locks and internal latches maximize security, too.

Immediate benefits include:

- Reducing the complexity of design saves time right from the planning stages
- Tool-free assembly for racks and accessories makes the most of snap-in technology
- Integrated locks, latches and quick-fasteners help to make completion a one-person task

A true time-saving innovation

Assembly	TS IT	Previous Models	Time Saved
To set 19-inch rails to predefined dimensions	3 minutes	Approx. 15 minutes	80 percent
Install slide rails (depth-variable slide rail)	1:10 minutes	Approx. 4:10	72 percent
Install component shelf, static	1:10 minutes (TS IT static shelf)	7:30 minutes (1/2U depth variable)	85 percent
Install component shelf, pull-out	1:00 minute (TS IT Shelf)	15 minutes (shelf, telescopic slides and mounting kit)	93 percent
Air baffle plate	4 minutes (TS IT)	15 minutes; for front installation; 31 minutes with LCP offset	From 73 to 87 percent

Network/Server Enclosure Standard Redefined

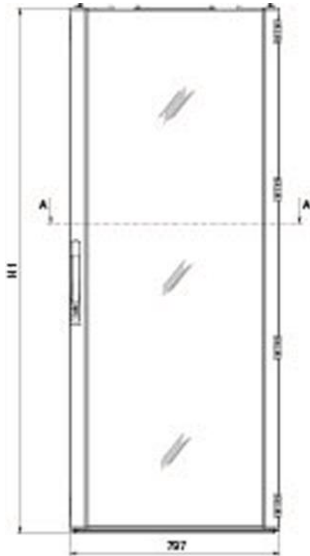
Optimum Access...

For today's data centers to remain at the cutting edge of technology, enclosure systems have to be able to adapt readily to the innovation cycles of the component industry, accommodating the latest in servers and storage systems. The exceptionally straightforward, tool-free adjustment of the 19" mounting rails and space-saving integration of relevant accessories insures that they TS IT system excels in meeting and exceeding these individual requirements.

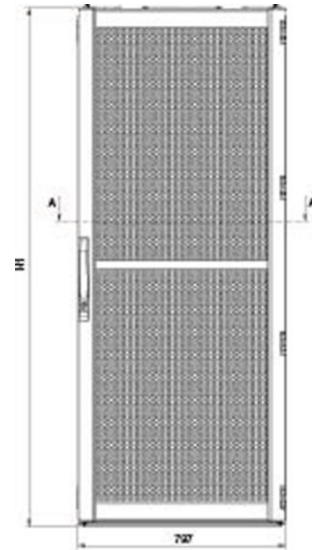
In addition, its standard divided rear door and the practical 180° hinges on both the front and rear doors provide easy, direct access to all the equipment. These are elements that combine to make optimum use of all the space available.



Door/Roof Design...



The TS IT rack stands out with its innovative solutions in enclosure roof and door designs. All doors are prepared for an assortment of locking options and come with 180°-hinges and comfort handles for both front and rear. Viewing doors are the first choice for rack climate control while perforated doors cater to room climate control – open ventilation accounts for 85% of the perforated area making previously unattainable air flow possible.



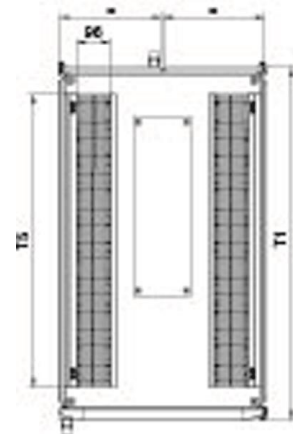
Split doors start at 38U ensure optimum space utilization.

The TS IT rack is fitted with a sufficiently tight gasket to be used in gas-based extinguisher systems.

The multifunctional roof incorporates brush strips running from front to back on both sides and down the sides of the enclosure, as well as cable clamping pieces directly behind the brush strips. A cutout for mounting a fan module or to be used for additional cable access is also standard.

Basic benefits include:

- Viewing or perforated door options
- Split doors starting at 38U
- Multifunctional roof design



Load Capacity...

The TS IT is rugged and reliable. With a load capacity of more than 3,200 pounds on its 19" mounting rails, it's ready to meet the highest stability requirements. And it provides the same commitment to reliability through its intelligent cable management system.

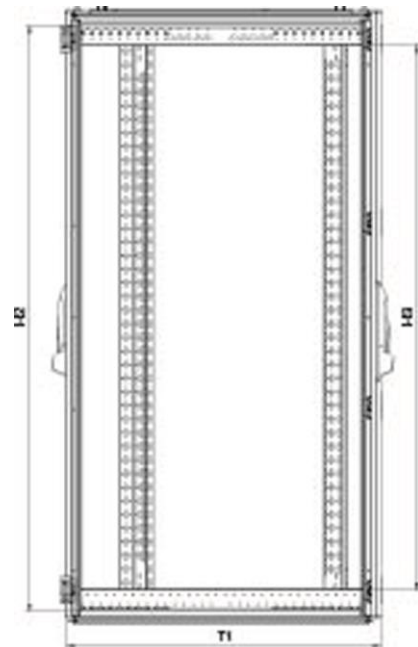
This pre-configured IT enclosure consists of a torsionally stiff, welded symmetrical frame of rolled 16-fold vertical sections connected with two horizontal frames of rolled 9-fold sections.

All frame sections have pre-punched holes on a 25 mm DIN to allow convenient installation of components. Vertical sections have two depth-recessed mounting rails.

Each enclosure can be bayed in a suite arrangement from all sides – including front, rear and at the top.

Basic benefits include:

- High load capacity of more than 3,200 pounds
- Torsionally stiff, welded frame
- Expansive range of accessories



An angle for all enclosures

A range of dimensions from 19" to 24" and asymmetric expansion can be achieved simply by adjusting the assembly angles. Specific requirements can be fulfilled quickly by selecting clearly defined accessory kits.

Flexible base

The IT rack also comes with the option of a Flex Block base, which can be fitted without tools and is distinguished by its quick assembly technologies. All of these properties make the TS IT rack a flexible and cost-effective way to respond to the changing requirements of the IT environment.

Network/Server Enclosure Standard Redefined

Cable Management...

With its comprehensive list of standard features, the TS IT comes equipped to meet practically all the demands placed on network and server enclosures. For example, the TS IT features integrated pitch patterns that permit direct determination of the level spacing for simple component positioning. And, the rack has front and back height unit labeling that's readable from the front – and added convenience and time-saver.

Patch cables are easily handled via options ranging from a single shunting ring to cable ducts for targeted cable routing for a specific height unit. The rail systems for interior installation enable rear cable clamping and strain relief using nylon loops, clips and cable ties. The intelligent system assigns every cable to its proper place.

The TS IT via its flexible compartmentalization for rack, suite and room climate control, along with variable termination options with its all-around brush strips, can prove to be extremely energy-efficient.

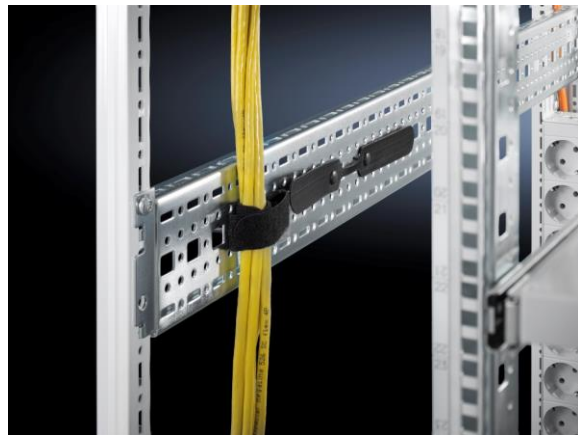
Compartmentalization can also provide additional mounting space for up to 6 U.

Basic benefits include:

- Comprehensive lineup of standard features
- A lengthy list of value-adding extras
- High energy efficiency
- Engineered solutions to cable routing and management

Accessories for vertical, horizontal and front/rear installations include:

- Cable routing bars
- 2U cable management panel
- Cable routing wall
- Quarter turn fasteners, cable claw and D-rings
- Cable entry and cable management panels



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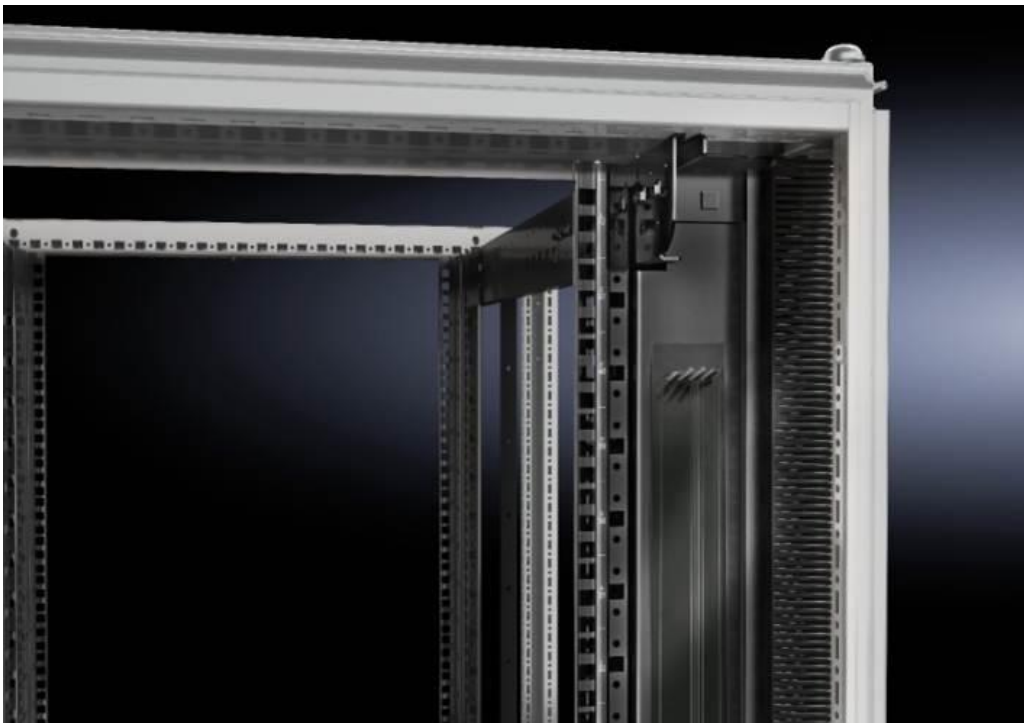
Maximize Air Flow...

Rittal's system of air baffle plates and blanking panels make use of tool-less, snap-in technology to make it easier within a data center or within individual enclosures to make the most of free cooling by maximizing the flow of air and maintaining appropriate separation between hot and cold air sections.

These easy-to-install units can be deployed even once an enclosure is assembled.

Air baffle plates and corresponding blanking panels provide for...

- Separation of cold and warm air sections within an enclosure
- Tool-free assembly
- Solutions for room and LCP climate control
- Maximum tightness and highest flexibility thanks to all-round brush strip (chassis, C rail)
- An easy combined with cable management systems
- 6 x 1U additional mounting spaces in 800mm width



Climate Control Options...

Today's high-density data centers are populated with IT equipment that generates a lot of heat, which has to be dissipated safely. Given this, it's important to have highly energy-efficient cooling systems to ensure safe operation of today's technology with an eye toward future demands. Accordingly, Rittal is distinguishing between future rack generations based not on their areas of application, but on their climate control requirements. Enclosures are being differentiated according to climate control technology or rack and/or row climate control.



The new TS IT rack is engineered for optimum use with climate control provided by specific IT cooling systems including Rittal's liquid cooling packages (LCP). As a result, the racks have a free ventilation area of 85% designated specifically for climate control.

The LCP cooling system relies upon a series of up to six modular box-type plug-in EC high-tech fans that can be configured to provide N+1 redundancy when required. These units can provide up to 60kW of cooling in a footprint as small as four square feet.

IT-based controls provide for dynamic continuous control of water volume in the system and an ability to use higher intake water temperatures allows a data center to take full advantage of whatever free cooling may be available.

Separation of the liquid cooling system from the adjacent rack enclosures provides added protection from potential water penetration as well.

Touch-screen monitoring of the cooling functions is available and, thanks to its gasket seal, the TS IT also provides the necessary air-tightness to safely enable the use of extinguisher gas systems and meets the relevant holding times in the case of fire. These properties have been confirmed by accredited testing laboratories.

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Sensors...

With the new TS IT, nothing is left to chance. The racks adapt readily to the latest data center trends, including automatic inventory systems and systems for recording the technical features of all components.

The TS IT System supports direct integration of specific RFID (Radio Frequency Identification) sensor bars and customers can add an RFID bar at any time while the rack is in operation. The new variable mounting angles provide a range of opportunities for additional options, including cable routing aids and the space-saving integration of the new Rittal power distribution rail system PDU-i at the rear — the design conforms to the 1U standard, allowing PDU-i to be fitted directly in the Zero U space between the side panel and mounting level.



Network/Server Enclosure Standard Redefined

Summary...

Rittal is bringing to market a new rack system that represents an intelligent modular system encompassing not only racks but a comprehensive range of high-performance accessories. It embodies a far simpler design than previous generations and tool-less, snap-in assembly technology to boost assembly and operating efficiency – while lowering costs.

Every aspect of the new TS IT rack has been engineered to take advantage of all the advantages of tool-free assembly; making it possible for one person to complete the process quickly and efficiently. For example, side panels are divided and slide into place – there are no screws. Slide rails, component shelves, telescoping slides and a variety of additional accessories simply clip into place on the rear panel and are secured in front.

With a load capacity of more than 3,000 pounds on its 19” level, it’s ready to meet the highest stability requirements.

The new TS IT rack is engineered for optimum use with climate control provided by specific IT cooling systems including Rittal’s liquid cooling packages (LCP).

The new design is engineered to make the most of today’s technology and the innovations of the future to accommodate whatever the demands for server and network containment may be.



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