



SYSTIMAX® Solutions

Ultra High Density Fiber Solution Guide

Meeting Today's Data Center Challenges



SYSTIMAX 360 Ultra High Density Fiber Shelf (760110999 with MPO Pre-Terminated Shelves)

- Achieves high densities beyond 48 duplex LC ports per rack unit
- Easy connector access
- Superior cable management
- Easy-to-read labeling
- Design freedom for emerging architectures
- Modular construction for pay-as-you-grow

In today's data center environment, enormous pressure rests on Storage Networking Administrators, IT Facility Managers and Data Center Managers around the world. In a detailed survey of global IT professionals, CommScope found that data centers today prioritize conserving energy, saving operations costs, reducing floor space for patching areas and minimizing downtime. As data centers face ever-increasing IT demands, cost pressures, and changing technology and architectures, Storage Networking Administrators, IT Facility Managers and Data Center Managers have been challenged with finding high-performance solutions to face all of those issues head-on.

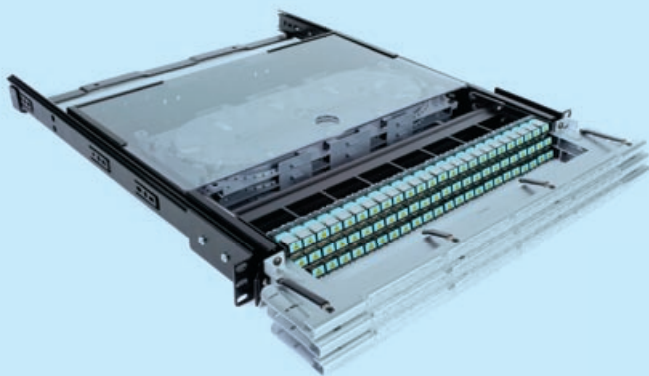
With a better understanding of the challenges, CommScope developed the SYSTIMAX® 360 Ultra High Density fiber optic solution to meet those demands and make the design, implementation and management of new, innovative Ultra High density data center architectures possible.

Managing IT Demand

With voice, video and data communications as well as building automation systems migrating onto a converged network infrastructure, data centers rush to keep pace with the increased amount of information

flooding network space. Storage area networks (SAN) alone can require patching fields to support both SAN directors and hundreds of ports resulting in wasted space in these physical locations. According to the IT survey, almost one-third of all organizations surveyed worldwide are planning or building new data centers while others must contend with finding ways to become more efficient with their current facilities.

The SYSTIMAX 360™ UHD solution is built to support high-density data center applications by innovatively configuring high-performance products into a smaller space. Designed at CommScope Labs, the solution has a 50 percent increase in usable density, allowing for more cabinet and shelf space. At the heart of the SYSTIMAX 360™ UHD solution are the 1U UHD shelf and the 2U and 4U 360G2-UHD shelves. The three shelves accept either MPO-to-duplex LC modules or MPO connector pass-through panels. The use of the modules and panels allows incremental spend as growth occurs. With the ability to fit 864 fibers in the 1U shelf, 1152 fibers in the 2U shelf, and 2304 fibers in the 4U shelf when using 12-fiber MPO connectors, the UHD family provides the high density needed in today's fiber-rich environments. These compact shelves allow data centers to use a single cabinet to house both SAN Directors and fiber cabling, a cost-saving innovation that more than doubles data center rack and storage networking space.



SYSTIMAX 360 1U Ultra High Density Fiber Shelf (760139675 with LC LazrSPEED Pre-Terminated Shelves)



SYSTIMAX 360G2 Ultra High Density Fiber Shelf (760154344)

Extending the Budget

Regardless of the economic climate, management consistently looks to cut back on capital and operational expenditures. Whether it's reducing energy consumption or becoming more efficient with the provided space, consolidation is no longer a trend, but a necessity. Choosing the right network infrastructure physical layer solutions at the outset can help data center managers keep cabling infrastructure costs to less than 5 percent of the total cost of IT operations over a 15-year period. The SYSTIMAX 360™ UHD solution enables managers to be more efficient with rack space, prolonging the need for data center expansion without sacrificing performance. Added space allows for increased airflow, reducing heat and extending the product's life expectancy.

Additionally, the UHD solution safeguards your IT investment from network and technological advancements. Tailored for SYSTIMAX LazrSPEED® and TeraSPEED® fiber technologies, the solution meets and exceeds current standards and provides a clear upgrade path from 10-40-100GbE as well as 8-16-32GFC. Backed by a 20-year warranty, data center managers can rely on the UHD solution to extend the life of their data centers as well as their IT budgets.

Improved Accessibility

From installation to moves/adds/changes, the SYSTIMAX 360™ UHD solution is engineered for ease of implementation and improved accessibility. Each component was designed by CommScope Labs for the workplace to maximize productivity and improve user interaction with the infrastructure. The simplistic movement of the UHD shelf gives installers the ability to perform faster installations with minimal downtime and gives data center operators the flexibility to increase capacity as demand grows. The pre-terminated, factory-tested trunk cables, array cords, ruggedized cables and patch cords reduce installation time and are designed to enable simple connections while the modular panels offer excellent cable management and rear access, while minimizing bulk, complexity and potential restrictions to air flow.

For those data centers not using MPO pre-terminated fiber cabling infrastructure, the UHD 1U shelf is also available in a splicing version that uses LC fiber pigtails spliced onto backbone cabling. If a LC pre-terminated infrastructure exists, the UHD 1U shelf can be used with LC pass-through panels to allow use of the existing infrastructure while obtaining the increased port density of the UHD.

For larger quantities of fiber connections in a single rack or cabinet, utilize the SYSTIMAX 360G2 UHD 2U and 4U sliding shelves. These shelves are geared for use in cross connects throughout the data center where large volumes of fiber terminate in one area.

That's the SYSTIMAX 360™ Ultra High Density fiber optic solution. It fills an essential infrastructure need in space IT can easily manage. Its fiber technologies exceed the standard for innovation today and better prepare data centers for next-generation network speeds. It's where high density, rapid deployment and modular growth all meet. Essentially, it's what data centers need – high performance in a smaller space.



SYSTIMAX 360™ Ultra High Density Solution Includes

- SYSTIMAX 360™ 1U Ultra High Density Shelf, LC/MPO Modules, and MPO pass-through panels
- SYSTIMAX 360™ 1U Ultra High Density Splice Shelf and Splice Trays
- SYSTIMAX 360G2 2U and 4U Ultra High Density Fiber Shelves with InstaPATCH 360 LC/MPO modules and distribution panels
- SYSTIMAX InstaPATCH® 360 Pre-Terminated Trunk Cables
- SYSTIMAX InstaPATCH® 360 Ruggedized Fanout Cables
- SYSTIMAX InstaPATCH® 360 Array Cords
- SYSTIMAX Fiber Optic Patch Cords

Features and Benefits of the SYSTIMAX 360™ Ultra High Density Solution



SYSTIMAX 360™ Ultra High Density Shelf and Modules

- 50% increase in usable density
- Available in LazrSPEED and TeraSPEED to support high performance applications
- Same footprint with duplex LC and MPO connections for simple migration from 10G serial to 40/100G parallel transmission
- 1U shelf supports up to (432) 10GbE, (72) 40GbE or (36) 100GbE channels when using 12 fiber MPO connectors; (864) 10 GbE, (144) 40 GbE, or (72) 100 GbE channels when using 24 fiber MPO connectors
- 2U shelf supports up to (576) 10 GbE, (96) 40 GbE, or (48) 100 GbE channels when using 12 fiber MPO connectors, or (1152) 10 GbE, (192) 40 GbE, or (96) 100 GbE channels when using 24 fiber MPO connectors
- 4U shelf supports up to (1152) 10 GbE, (192) 40 GbE, or (96) 100 GbE channels when using 12 fiber MPO connectors, or (2304) 10 GbE, (384) 40 GbE, or (192) 100 GbE channels when using 24 fiber MPO connectors
- Each 1U shelf accommodates up to three InstaPATCH 360 LC modules for 144 fiber connections; or up to three MPO pass through modules for 864 fiber connections
- The 360G2 2U shelf accommodates up to three sliding trays, each holding up to four InstaPATCH modules or Distribution panels
- The 360G2 4U shelf accommodates up to six sliding trays, each holding up to four InstaPATCH modules or Distribution panels
- Modular Design provides design flexibility and allows for a pay as you grow approach
- Allows for rack consolidation increasing space savings in densely populated network areas such as data center SAN environment
- Low Loss factory-terminated and tested module supports rapid deployment and uses OM4 fiber for extended distances
- or high bandwidth needs
- Improved cable management featuring a dedicated cord management trough per module
- 1U UHD shelf Splicing version available for non-MPO fiber infrastructure; accepts up to 144 heat shrink fusion splices combined with 72 Duplex LC ports
- 1U UHD fiber shelf available for pass-through LC connectivity; Re-use existing LC-terminated cabling plant while achieving higher UHD port densities of 72 Duplex LC ports in 1U

SYSTIMAX InstaPATCH® 360 Pre-Terminated Trunk Cables

- Available in LazrSPEED 550, LazrSPEED 300 and TeraSPEED Solutions
- 12 fiber MPO connector-based modular design enables simple connections
- Factory terminated and tested trunk cables for instant field connections and guaranteed quality and performance
- Designed for administrative convenience—guaranteed transmit-to-receive connectivity
- Supports easy reconfiguration for moves, adds and changes
- Easy upgrade path to parallel transmission and associated applications, while preserving the initial investment



SYSTIMAX InstaPATCH® 360 Ruggedized Fanout Cables

- 12 fiber MPO connector based modular design enables simple connections
- Ruggedized fanouts are constructed with LazrSPEED 550, LazrSPEED 300 or TeraSPEED fibers
- Factory terminated and tested for instant field connections and guaranteed quality and performance
- Designed for administrative convenience—guaranteed transmit-to-receive connectivity
- No special or non-standard polarity components

SYSTIMAX Fiber Optic Patch Cords

- Duplex zipcord construction provides better mechanical performance with less risk of damage from crimping
- Rugged 1.6 mm or 3.0 mm cordage for durable and easily handled connections
- Outer jacket colored for easy identification



SYSTIMAX InstaPATCH® 360 Array Cords

- 12 fiber MPO connector based modular design enables simple connections
- Array cords are constructed with LazrSPEED 550, LazrSPEED 300 or TeraSPEED fibers
- Factory-terminated and tested for instant field connections and guaranteed quality and performance
- No special or non-standard polarity components
- MPO-LC/SC/ST Array fanouts are constructed with 1.6 mm reinforced zipcord furcation tubing for outstanding durability and dependability
- Array Fanout assemblies are available in fanout length of 48" for cables over 10 feet; Cables 3-9 feet, 24 inch fanout; Cables 2 feet, 12 inch fanout



SYSTIMAX InstaPATCH® 360 Modular Panels

- 1U and 4U versions
- 1U accommodates 4 InstaPATCH 360 modules allowing up to 96 fibers in 1 rack unit when utilizing LC-LC patching
- 4U accommodates 16 InstaPATCH 360 Modules, allowing up to 384 fibers in 4 rack units when utilizing LC-LC patching
- Modules and panels are mounted in a horizontal orientation
- When utilizing the 360DP MPO pass through panels, fiber density can reach 1536 fibers in 4 rack units (for 1U version, can reach 384 fibers in 1 rack unit)
- MPO pass through panels available with 2, 4, 6, and 8 MPO adapters to accommodate various configurations
- Offer excellent cable management and rear access, without restricting air flow
- By eliminating the rear enclosure found on a full shelf, the weight is substantially reduced
- Full-feature cable and cord management on the front side



SYSTIMAX 360 UHD 1U Fiber Shelf

Physical Specifications:



**InstaPATCH 360 UHD
Module 48f LC LazrSPEED**

Overall Height (closed) and Width	1.75 in h x 19 in w (44 mm x 483 mm)
Shelf Depth (including trough)	Shelf Depth 21 in from front rail Fiber management trough extends 4.5 in from front rail
Extension (dual stop)	Shelf slides 10 in from rail during normal operation Shelf slides 14.75 in from rail for installation and maintenance
Weight	Shelf: 6.8 lbs LC – module: 2.6 lbs MPO – module: 1.4 lbs
Capacity	InstaPATCH 360 UHD Module – 24 duplex LC, 48 fibers UHD Adapter Panel – 24 MPO, 288 fibers
Cable Entry	Rear trunk cable entry, Front patch cabling
Termination Types	LC, MPO

Ordering Information:



**3603D-1U-UP w(3)
3603M-48LC-LS A**

Material ID	Product Number	Description
760110999	3603D-1U-UP	UHD Fiber Shelf, 1U, Empty
760111013	3603M-48LC-LS	InstaPATCH 360 UHD Module 48f LC LazrSPEED
760111039	3603M-48LC-SM	InstaPATCH 360 UHD Module 48f LC TeraSPEED
760111153	3603P-24MPO	UHD Adapter Panel, 24 x MPO
760112003	CMS-2-02	Fiber Cord Management Sleeve
MPO Pre-terminated Shelves		
760136457	3603D-1U-144LC-LS-A	UHD Fiber Shelf with 3 InstaPATCH 360 Ultra High Density Modules, 48 fiber, LC, LazrSPEED, Polarity A
760136465	3603D-1U-144LC-LS-B	UHD Fiber Shelf with 3 InstaPATCH 360 Ultra High Density Modules, 48 fiber, LC, LazrSPEED, Polarity B
760136432	3603D-1U-144LC-SM-A	UHD Fiber Shelf with 3 InstaPATCH 360 Ultra High Density Modules, 48 fiber, LC, TeraSPEED, Polarity A
760136440	3603D-1U-144LC-SM-B	UHD Fiber Shelf with 3 InstaPATCH 360 Ultra High Density Modules, 48 fiber, LC, TeraSPEED, Polarity B
760136473	3603D-1U-72MPO	UHD Fiber Shelf with 3 InstaPATCH 360 24-Port MPO Adapter Panels
Pre-Loaded Shelves for LC Trunks		
760139675	3603D-1U-144LC-LS-P	SYSTIMAX 360™ Ultra High Density Fiber Shelf, 1U, with three Ultra High Density Adapter Panels (48 fiber, LC, LazrSPEED)
760139683	3603D-1U-144LC-SM-P	SYSTIMAX 360™ Ultra High Density Fiber Shelf, 1U, with three Ultra High Density Adapter Panels (48 fiber, LC, TeraSPEED)
760111088	3603P-48LC-LS	SYSTIMAX 360 Ultra High Density Adapter Panel, 48 fiber, LC, LazrSPEED
760111104	3603P-48LC-SM	SYSTIMAX 360 Ultra High Density Adapter Panel, 48 fiber, LC, TeraSPEED
Splicing Shelves		
760149054	3603D-1U-144LC-TS-DP	UHD Splicing Shelf with 3 LC pass-thru panels and
760149062	3603D-1U-144LC-LS-DP	UHD Splicing Shelf with 3 LC pass-thru panels and
760148502	360-LP-STACK-SPT	Fusion Splice Tray Kit, stackable, large format
760148536	360-SPLICE-24-FUS	Fusion Splice Holder Kit, stackable
760148734	3603D-STBLZR	Shelf Stabilizer Kit



**CMS-2-02 Fiber Cord
Management Sleeve**

SYSTIMAX 360G2 UHD Fiber Shelves

Physical Specifications:

Overall Height (closed) and Width		(2U)= 3.50 in H x 19 in W (44 mm x 483 mm) (4U)= 7.00 in H x 19 in W (88 mm x 483 mm)
Shelf Depth		18.4 in (46.8 cm)
Extension (positive stop)	forward rear	5 inches 5 inches
Weight	2U 4U	12.5 lb (5.7 kg) 25.0 lb (11.4 kg)
Capacity	2U 4U	Twelve InstaPATCH MPO/LC modules or Distribution panels 24 InstaPATCH MPO/LC modules or Distribution panels
Cable Entry		Rear trunk cable entry; Front patch cords/fanouts
Termination Types		LC, MPO



360 1U Modular Panel



InstaPATCH 360G2 4U UHD Shelf

Ordering Information:

Material ID	Product Number	Description
Shelves		
760154344	360G2-4U-MOD-UHD	360G2 4U Sliding Shelf, Accepts 24 InstaPATCH Modules
760157750	360G2-2U-MOD-UHD	360G2 2U Sliding Shelf, Accepts 12 InstaPATCH Modules
InstaPATCH Modules		
760109884	360DM-24LC-LS	InstaPATCH® 360 360DM-24LC-LS Module
760109892	360DM-24LC-SM	InstaPATCH® 360 360DM-24LC-SM Module
760109942	360DM-12LC-MM	InstaPATCH® 360 360DM-12LC-MM Module
760109934	360DM-12LC-SM	InstaPATCH® 360 360DM-12LC-SM Module
360DP-MPO Adapter Panels		
760107524	360DP-8MPO	360 Distribution Panel 8 MPO
760107516	360DP-6MPO	360 Distribution Panel 6 MPO



InstaPATCH 360 Module

SYSTIMAX 360 G2 Modular Panels and 360DP-MPO Adapter Panels —

Material ID	Product Number	Description
760106617	360MP-1U	360MP 1U Panel, accepts 4 360DM or 360DP components
760113001	360MP-1UA	Angled 360MP 1U Panel Angled, accepts 4 360DM or 360DP components
760120287	360MP-4U	360MP 4U Panel, accepts 16 360DM or 360DP components
760107524	360DP-8MPO	360 Distribution Panel 8 MPO
760107516	360DP-6MPO	360 Distribution Panel 6 MPO



SYSTIMAX 360G2 Adapter Panel

Note it is highly recommended to use the fiber cord management sleeves for UHD installation.

InstaPATCH® 360 TRUNK CABLES AND TRUNK EXTENSIONS

1	2	3	4	5	6	7	8	9	10	11	12	13	14 - 16
F	G	X	M	P	M	P	A	D	-	A	A	F	010
Prefix	Fiber Type	Connector 1	Connector 2	Cordage Size	Fiber Count	Jacket Color	Breakout Length	UOM	Length				
FG Trunk-Plenum FH Trunk-Plenum Armored FJ Trunk-LSZH FK Trunk-LSZH Armored	X LazrSPEED 550 Multimode Z LazrSPEED 300 Multimode H LazrSPEED 150 Multimode M OptiSPEED Multimode** W TeraSPEED Single-mode	MP MPO (Female No Pins)	MP MPO (Female No Pins) MX MPO (Male Pins)	A 12 Fiber PmP Cable D 12 Fiber PmP I/O Cable	D 12 Fiber** F 24 Fiber G 36 Fiber H 48 Fiber K 72 Fiber L 96 Fiber M 144 Fiber	A Blue B Orange C Green D Brown E Slate G Red H Black J Yellow K Violet L Rose M Aqua	A No Gland B With Gland C Pulling Grip	F Feet M Meter	10-999 Feet 3-999 Meters				
										<ul style="list-style-type: none"> • OptiSPEED standard is Slate • TeraSPEED standard is Yellow • LazrSPEED standard is Aqua 			

InstaPATCH® 360 RUGGEDIZED FANOUT CABLES

1	2	3	4	5	6	7	8	9	10	11	12	13	14 - 16
F	L	X	M	P	L	A	A	D	-	M	E	F	010
Prefix	Fiber Type	Connector 1	Connector 2	Cordage Size	Fiber Count	Jacket Color	Breakout Length	UOM	Breakout Length				
FL Rugged F/O Plenum FM Rugged F/O Plenum Armored FN Rugged F/O LSZH* FP Rugged F/O LSZH Armored*	X LazrSPEED 550 Multimode Z LazrSPEED 300 Multimode H LazrSPEED 150 Multimode M OptiSPEED Multimode W TeraSPEED Single-mode	MP MPO (Female No Pins) MX MPO (Male Pins)	LA LC Angled LC LC Standard LU LC Uniboot** SA SC Angled SC SC Standard ST STII MJ MTRJ FA FC Angled FC FC Standard	A 12 Fiber PmP Cable D 12 Fiber PmP I/O Cable	D 12 Fiber F 24 Fiber G 36 Fiber H 48 Fiber K 72 Fiber	A Blue B Orange C Green D Brown E Slate G Red H Black J Yellow K Violet L Rose M Aqua	A No Gland E 24 in Breakout No Gland F 24 in Breakout With Gland G 24 in Breakout Pulling Grip H 48 in Breakout No Gland J 48 in Breakout With Gland K 48 in Breakout Pulling Grip L 72 in Breakout No Gland M 72 in Breakout With Gland N 72 in Breakout Pulling Grip P 96 in Breakout No Gland Q 96 in Breakout With Gland R 96 in Breakout Pulling Grip	F Feet M Meter	24 in 7-999 ft 48 in 9-999 ft 72 in 11-999 ft 96 in 13-999 ft 24 in 2-999 m 48 in 3-999 m 72-96 in 4-999 m				
*Only Available in EMEA										<ul style="list-style-type: none"> • OptiSPEED standard is Slate • TeraSPEED standard is Yellow • LazrSPEED standard is Aqua 			

FIBER OPTIC PATCH CORDS CONFIGURATOR

1 F	2 D	3 X	4 L	5 I	6 L	7 I	8 2	9 1	10 -	11 A	12 X	13 F	14 - 16 010
Prefix FD Jumper-Plenum FE Jumper-Riser FF Jumper-LSZH	Fiber Type X LazrSPEED 550 Multimode M OptiSPEED Multimode W TeraSPEED Single-mode	Connector 1 LC LC Standard SC SC Standard ST STII LA LC Angled SA SC Angled L1 LC Keyed Red L2 LC Keyed Yellow L3 LC Keyed Blue L4 LC Keyed Green L5 LC Keyed Orange L6 LC Keyed Slate L7 LC Keyed Brown L8 LC Keyed Aqua L9 LC Keyed Rose LV LC Keyed Violet LU LC Uniboot*	Connector 2 LC LC Standard SC SC Standard ST STII LA LC Angled SA SC Angled L1 LC Keyed Red L2 LC Keyed Yellow L3 LC Keyed Blue L4 LC Keyed Green L5 LC Keyed Orange L6 LC Keyed Slate L7 LC Keyed Brown L8 LC Keyed Aqua L9 LC Keyed Rose LV LC Keyed Violet MJ MTRJ FC FC Standard FA FC Angled LU LC Uniboot* LM Mini LC	Cordage Size 2 1.6mm Simplex 3 3.0mm Simplex 4 1.6mm Zipcord 5 3.0mm Zipcord	Fiber Count 1 1 Fiber 2 2 Fiber	Jacket Color A Blue B Orange C Green D Brown E Slate G Red H Black J Yellow K Violet L Rose M Aqua	Breakout Length X No Breakout	UOM F Feet M Meter	Breakout Length 2-999 Feet 1-999 Meters				

* Only Available in EMEA

INSTAPATCH® 360 ARRAY CORDS

1 F	2 Q	3 X	4 M	5 P	6 L	7 A	8 G	9 D	10 -	11 A	12 E	13 F	14 - 16 010
Prefix FQ Array Plenum FR Array LSZH	Fiber Type X LazrSPEED 550 Multimode Z LazrSPEED 300 Multimode H LazrSPEED 150 Multimode M OptiSPEED Multimode* W TeraSPEED Single-mode	Connector 1 MP MPO (Female No Pins) MX MPO (Male Pins)	Connector 2 MP MPO (Female No Pins) MX MPO (Male Pins)	Cordage Size G 12 Fiber PmP Array Cord	Fiber Count D 12 Fiber	Jacket Color E Slate J Yellow M Aqua	Breakout Length D 12 in Breakout No Gland E 24 in Breakout No Gland H 48 in Breakout No Gland L 72 in Breakout No Gland P 96 in Breakout No Gland	UOM F Feet M Meter	Breakout Length 12 in 2-999 ft 24 in 4-999 ft 48 in 6-999 ft 72 in 8-999 ft 96 in 10-999 ft 24 in 1-999 m 48 in 2-999 m 72 in 3-999 m 96 in 4-999 m				

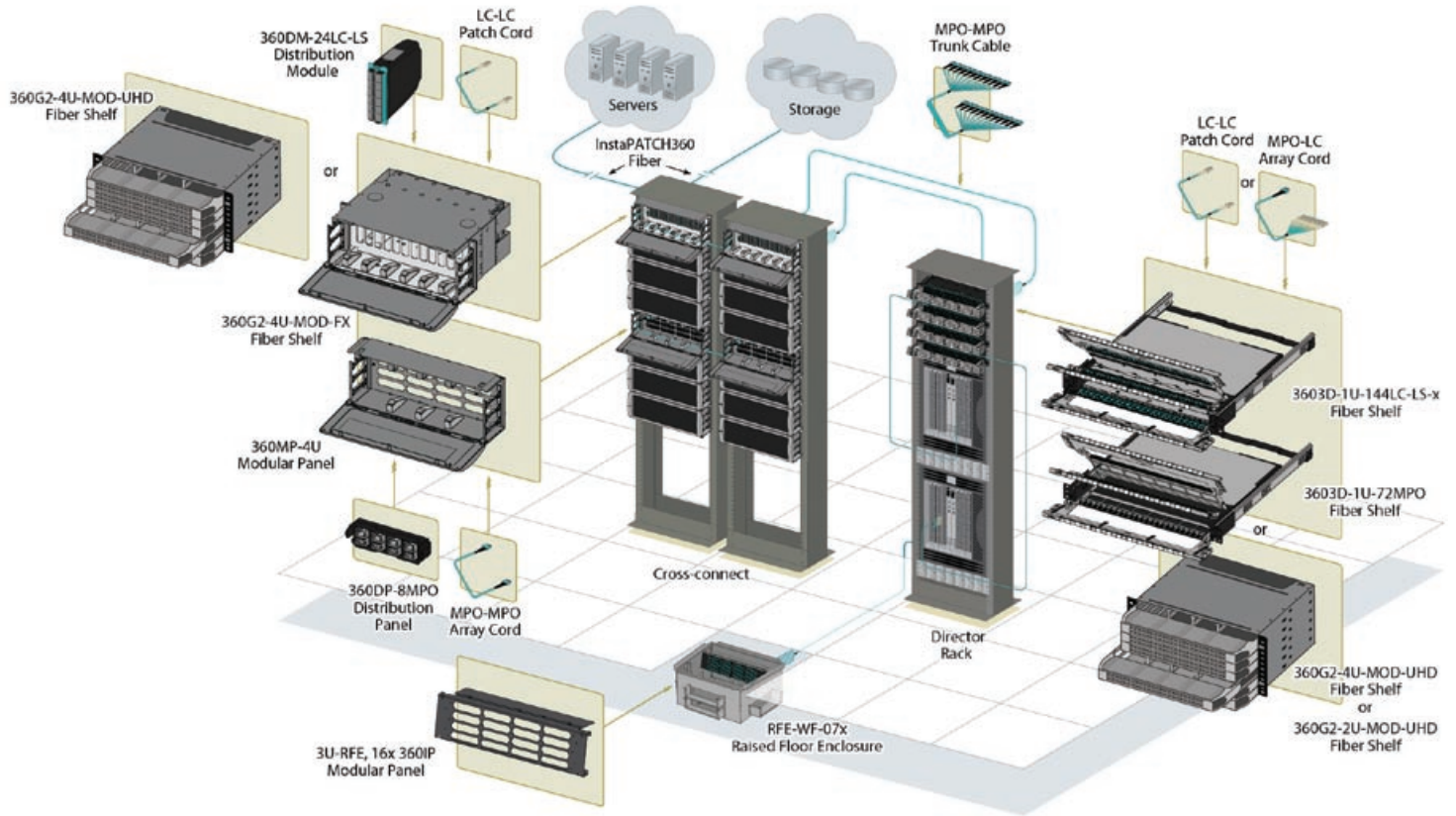
* Only Available in EMEA

- OptiSPEED only available in Slate
- TeraSPEED only available in Yellow
- LazrSPEED only avail able in Aqua

Cross-Connect Architecture using MPO Pre-terminated Trunk Cables

Data center storage and local area networks can vary in size, architecture, and platform and may be centrally located or scattered throughout a data center. The SYSTIMAX 360™ UHD solution was created to allow for maximum design flexibility while

providing modular and scalable growth. The 360 UHD Solution can support various cabling architectures such as direct-connect, inter-connect, and cross-connect channel configurations. The illustration below shows the cross-connect architecture.



Data Center Vendor Specific Networking Applications

CommScope's UHD Fiber Solutions									
Shelf	UHD-1U			360G2-2U-MOD-UHD			360G2-4U-MOD-UHD		
Port Type	Duplex LC	12-fiber MPO	24-fiber MPO	Duplex LC	12-fiber MPO	24-fiber MPO	Duplex LC	12-fiber MPO	24-fiber MPO
Number of Ports per Shelf	72	72	72	144	96	96	288	192	192
Maximum Fiber Count	144	864	1728	288	1152	2304	576	2304	4608



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