>> Kontron Configuration Guide <<

CG1200 Carrier Grade Server

Document Revision 1.4

Revision History

Revision	Date	Comments
0.1	12/13/2012	Initial Release
1.1	01/13/2014	Adding Intel® Xeon® processor E5-2400 v2 product family
1.2	08/05/2014	Adding Kontron part number for Intel® Xeon® processor E5-2400 v2 product family
1.3	09/09/2014	Removing CG2200 as a supported product for CG2100-TAMMODULE
1.4	09/17/2014	Adding top cover replacement kit

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I. Introduction

Product Description:

The CG1200 Carrier Grade Server is the 4th generation of Kontron's 1U Carrier Grade Server products. The CG1200 supports Intel® Xeon® processor E5-2400 v2 product family, coupling high performance with power efficiency to provide improved performance-per-watt over previous-generation rack-mount servers.

The CG1200 is a NEBS-3 and ETSI compliant product which is suited for a host of applications in the telecom Central Office and industrial environment. The server is targeted to OSS (Operations System and Support), Billing, Provisioning, Softswitch, Media Server, Wireless and Unified Messaging, Call Center and many other applications. It can also support manufacturing, industrial, oil & gas, utility and even military applications where a rugged, highly reliable server is required for harsh environments such as dust, high altitude, fire hazard, earthquake propensity, and high ambient temperatures.

To add to the many recognized benefits of Kontron's Carrier Grade Server family, the CG1200 introduces several new important features such as support of PCI-E Gen3, Power Management Bus, DDR3 memory, SD flash storage, and increased memory capacity.

More detailed product information on the CG1200 is available on Kontron's website at:

http://us.kontron.com/products/systems+and+platforms/communication+rackmount+servers/carrier+grade+servers/cg1200+carrier+grade+server.html

Purpose of this Document:

This document serves as an ordering reference guide, providing details on what parts are available from Kontron for the CG1200 Carrier Grade Server and its associated accessories and spares. Included are the necessary order codes and other important configuration information related to the ordering of the product.

Supported third-party components are not covered by this document, and may be found in the Tested Hardware and Operating System List (THOL) for this product.

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General Flow for Configuring a CG1200 System

Step	Implication	Reference info
A. Select Base System	AC or DC base System	
B. Select Redundant power supply	Redundant or non-redundant	Non-redundant as shipped
C. Select Number and Type of CPUs	Impacts Performance	Technical Product Specification
C.2. Memory	DIMM slots depend on number of CPUs	- Technical Product Specification, - Refer to Tested Memory List for list of validated DIMMs - Refer to Installation & Maintenance Guide for installation instructions
D. Heatsink	Required for each CPU	
E. Select RAID	RAID Choices	- RAID 0/1/10 included - Additional offerings
F. Select Hard Drives		Refer to Installation & THOL for tested Hard Drives
G. Select Remote Management	Dedicated server management NIC port	
H. Personality Modules		
I. Select system mounting	Rack mount kits	Appendix A
Section III. Serviceable Items	List of spare items used for repair	Section III.

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II. Ordering CG1200 Systems

This section includes important information regarding how to order CG1200 systems. Please be familiar with each of these areas before placing an order.

A. Select CG1200 Base System

The **CG1200 Base System SKUs** are listed in the table below:

Product Code	Description	Min. Order Qty.
CG1200A-00	CG1200 Carrier Grade Server Base Model 0 with **AC Power Supply**	1
CG1200D-00	CG1200 Carrier Grade Server Base Model 0 with **DC Power Supply**	1

The CG1200 system SKUs are ordered using the Product Code as the order number. The CG1200 is offered as either an AC or DC version—as indicated by the 7th digit of the product code ("A" for AC or "D" for DC).

The above SKUs are "Base Model 0" SKUs—meaning they do not include processors, heat sinks, memory, hard drives, power cord, operating system, or plug-in adapters. Those components should be ordered separately as Accessories from Kontron or from third party vendors listed in the Tested Hardware and Operating System List (THOL).

See the **CG1200 Base Model 0 Configuration** table below for a list of components included in each base model 0 SKU. Notice that there are a number of optional accessory items which must be ordered separately.

Component Description	AC Model 0 Configuration	DC Model 0 Configuration
Chassis (sheet metal, top cover, PCI cages, air duct, interconnection cables, misc. parts)	1 included	
Baseboard S2400EP (Eagle Pass), power distribution board, system boards, fans, interconnect cables	Included	
AC power supply (650W)	1 included	-
DC power supply (650 W)	-	1 included
Power Distribution Board	1 included	
Filler Panel in 2nd power supply bay	1 included	
Bezel (unpainted)	1 included	
RDIMM/UDIMM memory slots (memory not included)	8 included	
Bays for hot-swap 2.5" Hard Disk Drives and drive carriers	4 included	
Rear Panel GbE NIC (Cu) ports (via Server Board)	4 included	
Power Cable	Purchase separately[1]	
SAS RAID 5 Key	Purchase separately[4]	
IOC/ROC Adapter	Purchase separately[4]	
IOC/ROC RAID cable kit	Optional Accessories[2]	
ROC Maintenance-free back-up kit (optional)	Purchase separately[4]	
Remote Management Module 4	Purchase separately[4]	
CG1200 Single slot PCI-e x16 Gen 3 passive riser	1 included	
Rack Mount Kits	Optional Accessory[3]	
SD Flash Module	Included	
Kontron Deployment Assistant on SD Flash media	Included	
Rail Enabling Kit (enables AXXBASRAIL13 and AXXHERAIL2)	Optional Accessory[3]	
Processor (refer to "Details on Ordering Processors")	Purchase separately[4]	
Heatsink	Accessory or purchase separately	
RDIMM/UDIMM Memory	Purchase separately[4]	
Hard Disk Drives (SAS or SATA SSD)	Purchase separately[4]	
eUSB Flash Drive	Purchase separately[4]	

[1]Refer to AC power cord accessory in this section
[2]Refer to "Production Spares/Accessories List" in section III
[3]Refer to "Rack Mounting Options" in the Appendix
[4]Should be purchased separately (parts not listed in this document)

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B. Select the Redundant Power supply

The CG1200 System accommodates a 2nd power supply which enables redundancy. Order the 2nd power supply to agree with either AC or DC base system. Order AC power cords to agree with the number of power supplies in the final system. Example: One CG1200A-00 base system + the 2nd power supply require 2 AC Power Cords.

Because DC power input cabling is usually custom, no DC power cord is offered. The CG1200D-00 does contain a DC input terminal block for terminating DC input power.

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
CG2200-ACPSU 	**AC Power Supply**	CG1200 and CG2200	Y (*one in AC SKU)*	1
CG2200-DCPSU 	**DC Power Supply** Includes input power connector	CG1200 and CG2200	Y (*one in DC SKU)*	1
1-340000-0 	**AC Power Cord** Should be ordered by North America customers. International customers should procure their specific power cords directly.	All CRMS servers	N	1

Power cords are not included with the Mod 0 system. For AC Power cords, order the above North American power cable using the provided product code. This power cable is RoHS-compliant.

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C. Select Number and Type of CPUs

The CG1200 is designed to support the following processor SKUs from the Intel® Xeon® processor E5-2400 and E5-2400 v2 series. The Base Model 0 CG1200 includes Zero CPUs. Customer must separately purchase CPU 1 and 2.

Intel® Xeon® Processors Supported by the CG1200:

Processor Number	Cores	Speed	TDP	Memory Speed Support	Kontron P/N	Intel P/N (tray)
E5-2448L	8 cores	1.8 GHz	70W	DDR3-1600	1052-0109	CM8062007187409
E5-2428L	6 cores	1.8 GHz	60W	DDR3-1333	1056-6912	CM8062007187509
E5-2418L	4 cores	2.0 GHz	50W	DDR3-1333	1056-6932	CM8062000911406
E5-2448Lv2	10 cores	1.8 GHz	70W	DDR3-1600	1056-6948	CM8063401293802
E5-2428Lv2	8 cores	1.8 GHz	60W	DDR3-1600	1056-6957	CM8063401293902
E5-2418Lv2	6 cores	2.0 GHz	50W	DDR3-1333	1056-6959	CM8063401294008

Notes:
- The above processors are on Intel's long life roadmap and are recommended with the CG1200 for highest performance and long availability and support.
- These processors are orderable from Intel using the indicated part numbers.
- Use of the above processors requires the purchase of a passive heatsink. See its order code below.

D. Heat Sink

Please order the number of heatsinks to agree with the number of CPUs in the system. Use the order code below.

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
CG1200-HEATSNK	**Heatsink (passive)** Contents: 25.5mm Tall Passive Heatsink (copper base with aluminum fins)	CG1200	N	8

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E. Select RAID

As shipped the CG1200 Model 0 systems supports SAS Hard Drives, and RAID 0, 1, 10 only. Below are other choices for RAID which are made available by purchase of additional items.

Bandwidth	RAID Level	Additional item to purchase	Cables
3Gbit/s	RAID 0,1,10	None, RKSAS4 (Green Key) is installed on Base System	Included
	RAID 0,1,5,10,50	RKSAS4R5 (Yellow Key)	Included
6Gbit/s	RAID 0,1,10	RMS25JB040 Entry-level RAID SAS Module (IOC) * mechanical restriction	Requires CG1200-RAIDCBLKIT
	RAID 0,1,5,10,50,60	RMS25CB040 Full RAID SAS Module (ROC) * mechanical restriction	Requires CG1200-RAIDCBLKIT
		AXXRMFBU2 Maintenance Free Backup Unit with NAND Flash and SuperCapacitor	

(* mechanical restriction) Restricts PCI-e card length to half length only

Removal of the included RKSAS4 (which enables SATA functionality) is not supported.

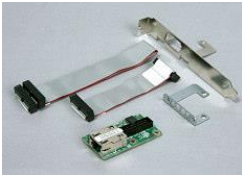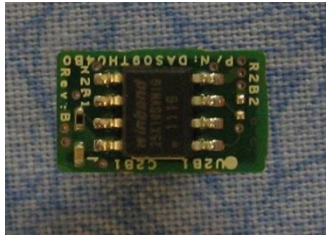When 6Bbit/s RAID is desired, you will need to order the following cable kit:

Product Code	Description	Included in Base Model (Y/N)	Included in Base Model (Y/N)	Min. Order Qty
CG1200-RAIDCBLKIT	**CG1200 RAID Cable kit** • Provides cables to support both the ROC and IOC RAID controllers (optional accessories)	CG1200	N	1

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F. Select Hard Drives

As shipped with the CG1200 Model 0 systems, there is hard drive support for up to 4 SAS hard drives or SATA SSD's. SATA rotating hard drives are not recommended and not qualified for use in this system. See the Tested Hardware and Operating System List (THOL) for complete listing of HDD's that have been validated to work in this system. The THOL is a customer-driven document. If a certain HDD is required please arrange for its testing with Kontron.

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G. Select Remote Management Module Option

There is 1 choice recommended for remote management of the CG1200. This is an optional accessory.

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
AXXRMM4	**Intel® Remote Management Module 4 kit** Contents: module, mounting brackets, long and short cables	CG1200, CG2200	N	1
AXXRMM4LITE	**Intel® Remote Management Module 4 Lite kit** Contents: module, mounting brackets, long and short cables	CG1200, CG2200	N	1

H. Personality Modules

The CG1200 physically supports one personality module. These personality modules are available from Intel.

Personality Module	
AXX10GBTWLIOM	Dual RJ-45 10GBASE-T IO Module based on Intel® Ethernet controller X540
AXX4P1GBPWLIOM	Quad port 1GbE IO Module bades on Intel® Ethernet controller I350

Please note that use of a personality module will mechanically conflict with the dedicated remote management NIC, a part of AXXRMM4.
Use of a personality module precludes the use of the AXXRMM4.

When a personality module is installed, the AXXRMM4LITE may be used.
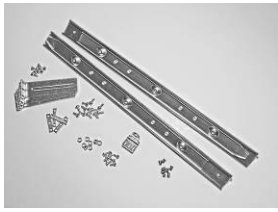
I. Select System Mounting

There are many choices for mounting of the CG1200 within rack enclosures. Depending on the application, the following rack mount kits are available. Please see Appendix A for details.

Rack mounting kits for 2-post or 4-post, 19-inch or 23-inch racks are offered for this product. These include TMLCMOUNT21, TMLPMOUNT41, TMLPMOUNT51, TMLPMOUNT52, and TMLPSLIDE01. The Rail Enabling Kit (TMLREK01) is not required for these rack mount kits.

> ➢ *Please refer to Appendix A to determine the correct options to suit your needs. For ordering details, refer to "Production Spares/Accessories List" in section III.*

If AXXBASRAIL13 or AXXHERAIL2 (from Intel) will be used, then a Rail Enabling Kit (TMLREK01) must be purchased from Kontron to enable support of these Intel rail kits.

Rack Mount Kits *(refer to Appendix A for additional details)*

Product Code	Description	Included in Base Model (Y/N)	Min. Order Qty
TMLCMOUNT21	**Rack Mount Kit TMLCMOUNT21** Used for mounting servers on a 19-inch wide, 2-post rack	N	10
TMLPMOUNT41	**Rack Mount Kit TMLPMOUNT41** Used for mounting servers on 19-inch wide, 2-post or 4-post racks	N	10
TMLPMOUNT51	**Rack Mount Kit TMLPMOUNT51** Used for mounting servers on 19-inch wide, 2-post or 4-post racks	N	1

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TMLPSLIDE01	**Universal Front Mounting Brackets** Accessory kit designed for use in conjunction with slide rails. Each kit contains two Universal Front Mounting Brackets that secure the server to the front of the rack.		N	10
AXXBASRAIL13	**Basic Slide Rail Kit** *NOTE: Does not support Cable Management Arm.* *NOTE: Requires TMLREK01 to attach to CG2200 chassis* *(orderable from Intel only –MM# 899080)*		N	1
AXXHERAIL2	**Full extending Slide Rail Kit** *NOTE: Requires TMLREK01 to attach to CG2200 chassis* *(orderable from Intel only – MM# 901082)*		N	1
AXXRACKARM2	**Cable Management Arm** *NOTE: To be used with AXXHERAIL2 only* *(orderable from Intel only – MM# 901084)*		N	1
TMLREK01	**Rail Enabling Kit** *Enables AXXBASRAIL13 and AXXHERAIL2 on CG2200*	Each kit includes: • rackmount ears (2) • rackmount shoulder screws (4) • screws (2)	N	10 *(order in multiples of 10)*

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J.   Additional Notes on the CG1200 Configuration & Options

Please review the following important notes regarding certain accessories and configuration options for the CG1200.

- **Flash Drives**
    - A single front accessible SD memory slot is provided. This SD memory is bootable, and may be used for software update or logging purposes.
    - Refer to the THOL for SD-Flash devices that have been validated for use on this system.
    - An internal optional eUSB Drive is supported.

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III. Ordering CG1200 Serviceable Items

The table below lists all of the Serviceable Spares items that may be ordered for the CG2100 system. Generally these are items that could potentially fail or need replacement over the life of the product. These items are made available so that customers might stock their service depots and repair centers. Please read the following notes regarding this parts list.

- **3rd Party Accessories:** For a listing of compatible 3rd party accessories, please refer to the Tested Hardware and Operating System List (THOL) document.

Riser:

Product Order Code	Description	Products Supported	Included in Base Model (Y/N)	MOQ
CG1200-RISERPCIE	CG1200 Single slot PCI-e x16 Gen 3 passive riser	CG1200	Y	1
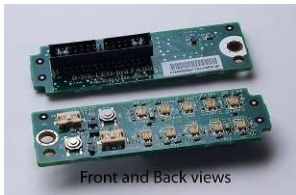
Hard Drive Carriers:

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
NSNSASHDDCARQ	**SAS HDD Carrier** • Contents: Carrier, black plastic filler, screws (4)	CG1200, CG2200, CG2100, NSN2U	Y *(four included)*	12 *(order in multiples of 12)*

Bezels:

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
CG1200-BEZEL	**CG1200 Bezel (Unpainted)**	CG1200	Y *(one bezel)*	12 *(order in multiples of 12)*

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Other Service Items:

Product Code	Description	Products Supported	Included in Base Model (Y/N)	Min. Order Qty
BBS2400EP4KT	Intel Server Board S2400EP (Eagle Pass) Available from Intel	CG1200	Y	1
NSNLEDSWITCHBDQ Front and Back views	**LED / Switch Board**	CG1200, CG2200, CG2100, NSN2U	Y	1
CG1200-PWRDISBD	**Power Distribution Board**	CG1200	Y	1
CG1200-FPIOBD	**Front Panel IO board**	CG1200	Y	1
CG1200-FANSET	**Fan Assembly (5 fans)** Contents: Five 40mm x 56mm fans.	CG1200	Y	1

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CG1200-INTCBLKIT	**CG1200 System Interconnect Cable Kit** Contents: Includes all Every Unit item cables.	CG1200	Y	1
CG1200-SASBKPLN	**CG1200 SAS Backplane**	CG1200	Y	1
CG2100-TAMMODULE	**TAM Module for multiple systems**	CG1200, CG2100	Y	1
CG1200-CHASSISKIT	**CG1200 Chassis Parts kit** ▪ Various items that often get lost ▪ Replacement screws, ties, and other loose items.	CG1200	N	1
CG1200x Cover Spare Kit (10x)	**CG1200 top cover spare parts (10x)**	CG1200	N	1

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Appendix A. Rack Mounting Options for 1U and 2U Communications Rack Mount Servers

Rack mounting kits for 2-post or 4-post, 19-inch or 23-inch racks are offered for this product. For ordering details, refer to "Production Spares/Accessories List" in section III. Please refer to the tables below for the correct options to suit your needs.

Although these mounts have been designed for industry standard racks, please consult with your Field Application or Sales Engineer before selecting racks for these servers. Compatible rack mounting kits can also be obtained from 3rd party suppliers.

All rack mount kits listed are suitable for 1U and 2U Communications Rack Mount Servers. Installation instructions are included in each kit.

2-post Rack Mounting Kit Options							
Applicable kits:	Rack width		Post depth		Rack fastener hole spacing		
	19 inch	23 inch	3 inch	5 inch	EIA-Wide	EIA-Universal	ETSI
TMLCMOUNT**21**	√		√	√	√	√	
TMLPMOUNT**41**	√		√	√		√	
TMLPMOUNT**51**	√		√	√	√	√	
TMLPMOUNT**52 (obsolete)**		√	√	√	√	√	√

4-post Rack Mounting Kit Options							
Applicable kits:	Rack width		Front-post to rear-post distance		Rack fastener hole spacing		
	19 inch	23 inch	Min (inches)	Max (inches)	EIA-Wide	EIA-Universal	ETSI
TMLPMOUNT**41**	√		20	24		√	
TMLPMOUNT**51**	√		20	24	√	√	
TMLPMOUNT**52 (obsolete)**		√	20	24	√	√	√
TMLP**SLIDE01**[†]	√		22.5	28 or **34**[††]		√	

[†]The **TMLPSLIDE01** kit contains server securing brackets.
[††]**34-inch** span requires the optional Accuride "Long Bracket" kit.

TMLCMOUNT21

The TMLCMOUNT21 kit mounts Communication Rack Mount Servers to a 2-post, central office type, 19-inch wide rack. This kit consists of L-shaped brackets that fasten to the sides of the server and to the rack.

TMLCMOUNT21

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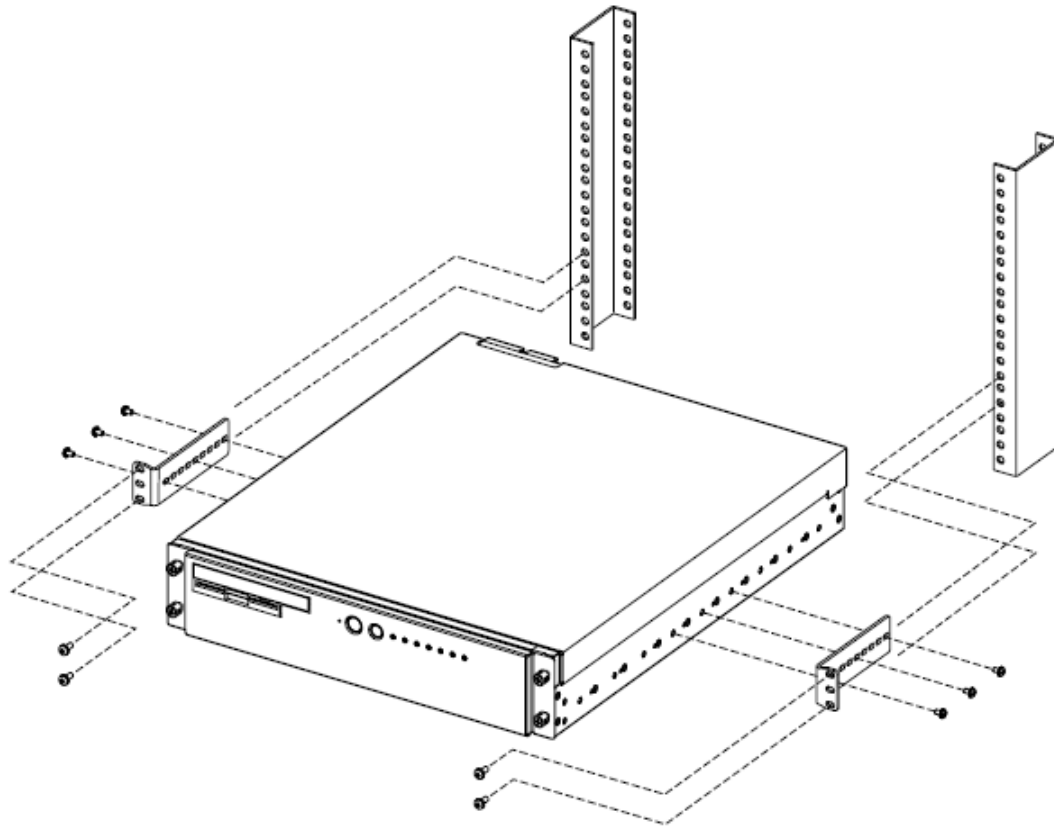
TMLPMOUNT41, TMLPMOUNT51 and TMLPMOUNT52

TMLPMOUNT**41/51/52** series mounts Communication Rack Mount Servers to 2-post or 4-post racks.

TMLPMOUNT**41** and TMLPMOUNT**51** are used for mounting servers on 19-inch wide racks. These racks are considered standard EIA (universal hole spacing) racks.

TMLPMOUNT**52** is used for mounting servers on 23-inch wide racks. These racks could be standard EIA (universal or wide hole spacing) or ETSI (European) racks.

TMLPMOUNT**41/51/52** series are designed with a slide-in rail-type system. Although the mounts are designed as rails, they are not sliding rails. This means the servers can be slid into the racks for installation purpose, but the rails are not designed to support a mounted server during service.

| TMLPMOUNT4x/5x Feature Comparison						
	Slide pull-out locking feature	Slide interface material	4-post rack hole spacing	2U-tall nut bar	2-post chassis securing screw location	"HP Mulan rack interference"
TMLPMOUNT**41**	No[1]	Plastic strips[2]	EIA-Universal	Not included	Side access[6]	Interference
TMLPMOUNT**51**	Yes	Xylan coating[3]	EIA-Wide or EIA-Universal[4]	Included[5]	Front access	No Interference
TMLPMOUNT**52**	Yes	Xylan coating[3]	EIA-Wide, EIA-Universal or ETSI	Included[5]	Front access	N/A

Notes:
1. Extra care must be exercised with TMLPMOUNT41 to securely hold the server with one's hands when sliding it out of the rack; otherwise, the server could fall to the ground as it is being removed.
2. Plastic strips on TMLPMOUNT41 have peeled off in some customer installations. The result of this is that the parts are usable, but the server could have somewhat of a "scrape-in feel" rather than "slide in". Also, the rails will fit sloppier, so the side-located chassis securing screws could be difficult to align in 2-post installations. Replacement material is available from the plastic strip manufacturer.
3. Xylan is a tough, low-friction coating similar to Teflon.
4. EIA-Wide spacing doesn't have the interstitial hole that is present in EIA-Universal. TMLPMOUNT51 contains an adapter bracket to overcome this EIA-Wide issue.
5. This component (2U Nut Bar) enables installation of a rail kit into a 1U rack slot when there is already equipment installed both above and below that open slot.
6. The sides of the server must be accessible when using TMLPMOUNT41 in 2-post racks.

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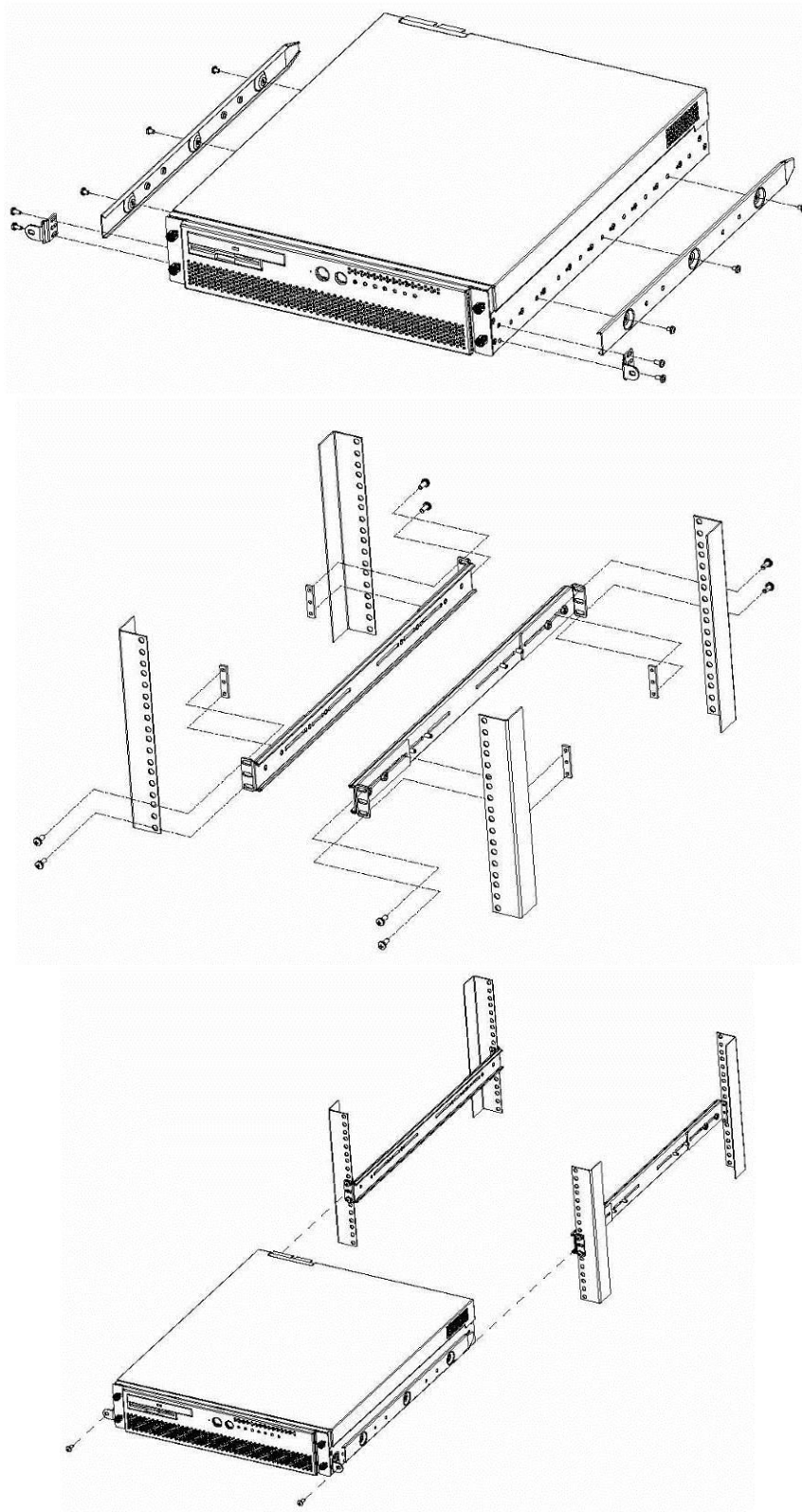
The diagrams above summarize the components and "slide-in rail-type" system of the TMLPMOUNT41. It can be adapted for a 2-post or 4-post installation.

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The main difference between the TMLPMOUNT41 and TMLPMOUNT51/52 series is that the TMLPMOUNT41 series uses a screw to lock the server in place using the Universal Mounting Bracket, whilst the TMLPMOUNT51/52 series has an additional Slide Pull-Out Locking feature.
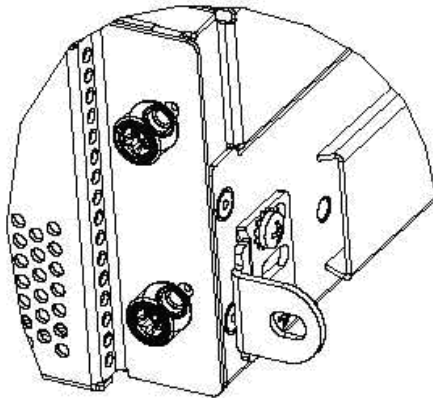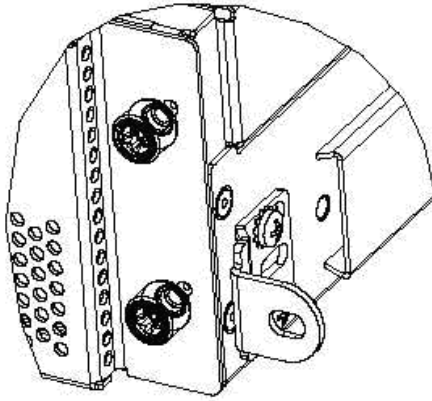

Universal Front Mounting Bracket on the TMLPMOUNT41
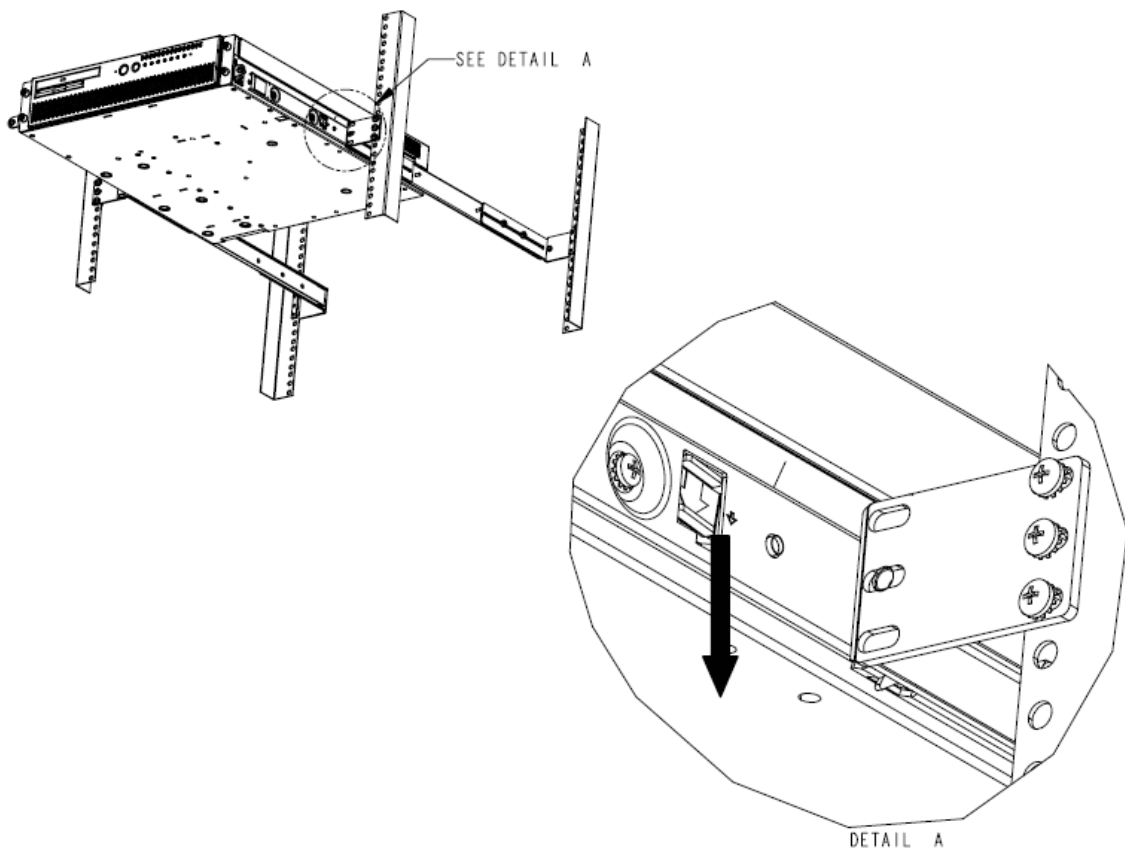
Slide Pull-Out Locking feature on the TMLPMOUNT51/52

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TMLPSLIDE01

The TMLPSLIDE01 is an accessory kit designed for use in conjunction with slide rails to produce a rack mounted serviceable server. The TMLPSLIDE01 kit contains two Universal Front Mounting Brackets that secure the server to the front of the rack. The sliding rails and optional mounting brackets required to mount the server must be purchased through the channel. For example, the Accuride 22-inch Model 305A-LR slide rails are designed to mount a server for "in-rack service." This example would also use an Accuride mounting bracket kit and the TMLPSLIDE01.

Universal Front Mounting Bracket with securing tab

Note: Using slide rails could result in non-compliance with Seismic Zone 4 requirements of NEBS-3 certification.

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