## **GAP-145F-S7 Series**1U RUGGED SERVER

intel.

XEON XEON

FLATINUM GOLD





3<sup>rd</sup> Gen Intel® Xeon® Scalable Processors Front I/O - Rear Power Supply

















GAP is a family of rugged servers and workstations with an aluminum construction, designed for applications that require robust and qualified MIL-GRADE equipment, suitable for operations in critical environments.

GAP-145F-S7 rugged servers feature dual socket 3<sup>rd</sup> Gen Intel® Xeon® Scalable Processors (Ice Lake), a balanced architecture that delivers built-in AI acceleration and advanced security capabilities, up to 4TB DDR4-3200 RAM, 64 Iane PCIe Gen 4 and +7% higher socket-to-socket bandwidth. The integrated IPMI services support monitoring, control, and management functions sending alarm notifications in case of critical events.

GAP-145F-S7 are designed for 19" rackmounting and have a 1U chassis with a depth of 450mm.

The front I/O and rear power supply layout includes dual internal M.2 NVMe socket and a 3.5" drive bay that can host up to two removable U.2 NVMe SSD or up to three removable 2.5" SAS/ SATA SSD.

GAP-145F-S7 rugged servers host up to two OCP 3.0 compliant NIC cards with PCIe 4.0 bandwidth and a toolless, hot-swappable design, supporting GbE / 10GbE / 25GbE / 100GbE in RJ45 or SFP version. Furthemore it can accomodate two PCIe cards.

Additional boards can be provided with a dedicated retainer kit for an optimal protection against shocks and vibrations also during transport.

GAP servers are designed to meet MIL-STD-810F for temperature and shocks, MIL-STD-167-1A for vibrations. Optionally, they can conform to MIL-STD-461 for EMI /EMC. The I/O connectors and the power supply input can be provided with MIL-GRADE connectors upon request.

All units are delivered with their inventory list to ensure configuration control and reproducibility over time. Upon request, all server configurations can run specific thermal or mechanical environmental stress test.

## **FEATURES**

- 1U Rugged Server 450mm depth
- Dual Socket Motherboard
- 3rd Gen Intel® Xeon® Scalable Processors
- Front I/O connectors and rear Power Input
- Single AC or DC Power Supply
- Removable Fans
- 2 x U.2 NVMe or 3 x 2.5" SATA/SAS SSD
- Up to 2 PCle boards + 2 x OCP NIC 3.0
- Optional Conformal Coating
- MIL-STD-810G
- Optional MIL-STD-461



## **Technical Specifications**

CPU         3" den Intel® Xeon" Scalabile processors Dual Socket LGA-4189 (Socket P+) max 205W TDP           Memory         Up to 4TB ECC EDIMM, DDR4-3200MHz, 16 DIMM slots           Chipset         ASPEED AST3200 BMC           Organics         ASPEED AST3200 BMC           Revork Connectivity         "In Declarated PMI LAN port of Data Park Aspect of D	System	
Chipset ASPED AST/S0/0 BMC BMC ASPED AST/S0/0 BMC ASPED AST/S0/0 BMC ASPED AST/S0/0 BMC BMC ASPED AST/S0/0 BMC	CPU	3rd Gen Intel® Xeon® Scalable processors Dual Socket LGA-4189 (Socket P+) max 205W TDP
Gaphics         ASPEED AST2600 BMC           Network Connectivity         1/2 Declaración period	Memory	Up to 4TB ECC RDIMM, DDR4-3200MHz; 16 DIMM slots
Network Connectivity	Chipset	Intel® C621A
Network Connectivity   Unit or 2x Dual or Cluud port   ObE/1006/27956/E/1006/E COP. NIC 3.0 with R.J45 or SFP connectors   ObE/1006/27956/E/1006/E COP. NIC 3.0 with R.J45 or SFP connectors   Ober 1006/E COP. NIC 3.0 with R.J45 or SFP connectors   Ober	Graphics	ASPEED AST2600 BMC
Storage         2x M.2 NVMer, M. Key, 2280 1 N Disk on Module Removable: Up to 2x L2 NVMe SSD or up to 3x 2.5° SATA / SAS SSD           TPM         1x TPM Header           Motherboad I/O shield         Available on the front: 1x VGA, 2x USB 3.0, 1x IPMI LAN; 1x COM           Expansion slots         2x FCLe 4.0 x 15 FHHL           Operative Systems         Windows* 10 1or Enterprise 64bit, Windows* Server 2016 64bit; Windows* Server 2019 64bit; RHEL, 8.4 64bit Ubuntu 2004 2L TES VGA 64bit Centos, 7x 64bit           IPMI         IPMIZ 0, SPM, Watchdog: SNMP and e-mail alarms and notifications           Remote Monitoring         Monitoring, control, and management functions (fan speed, temperature, voltage, redundant power failure, power consumption disk health, raid health, and memory health)           Power Supply         C Single Power Supply DC Single Power S	Network Connectivity	Up to 2x Dual or Quad port
Motherboard I/O shield         Available on the front: 1x VGA, 2x USB 3.0, 1x IPMI LAN; 1x COM           Expansion slots         2x PCIc 4.0 x16 FHHL           Operative Systems         Windows* 10 lot Enterprise 64bit, Windows* Server 2016 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit Ubuntu 20.04.2 LTS SVR 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit; CentoS 7.9 64bit; CentoS 7.9 64bit; Windows* Server 2019 64bit; RHEL 8.4 64bit; CentoS 7.9 6	Storage	2x M.2 NVMe; M-Key, 2280 1x Disk on Module Removable:
Expansion slots         2x PCIe 4.0 x16 FHHL         Vindows* 10 IoT Enterprise 64bit, Windows* Server 2016 64bit; Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2016 64bit; Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit PML 2004 200 21 ETS SVR 64bit Cent0S 7.9 64bit Windows* Server 2019 64bit; RHL 8.4 64bit; RHL	TPM	1x TPM Header
Operative Systems     Windows* 10 IoT Enterprise 64bit, Windows* Server 2016 64bit, Windows* Server 2019 64bit, RHEL 8.4 64bit 10 Ubuntu 20.04.2 LTS SVR 64bit, CentOS 7.9 64bit 10 Centors 7.9 6	Motherboard I/O shield	Available on the front: 1x VGA, 2x USB 3.0, 1x IPMI LAN; 1x COM
Upuntu 200.42 LTS SVR 64bit CentOS 7.9 64bit     PMI	Expansion slots	2x PCle 4.0 x16 FHHL
Remote Monitoring Monitoring, control, and management functions (fan speed, temperature, voltage, redundant power failure, power consumption disk health, raid health, and memory health)  Power Supply  AC Single Power Supply  DC Single Power Supply  Mechanical  Dimensions  483 x 44 x 450 mm (W x H x D)  Material  Aluminum with surface passivation treatment  Colour  Black / RAL 9005 - Powder Coating  Mounting  DI'l 9" cakmount chassis Optional Telescopic slides  Configuration  Front I/O - Rear Power Supply  Front Panel Leds / Buttons  Power On/Off button with LED Reset button with LED Reset button with LED  Drive Bays  3 x 3.5" + 1 x 2.5" internal bay  Fans  6 x removable PWM fans  Environmental - (Design to meet)  MIL-STD-810H, Method 501.7 & 502.7  -20"C to +50"C (depending on configuration)  Storage Temperature  MIL-STD-810H, Method 501.7 & 502.7  MIL-STD-810H, Method 501.7 & 502.7  -20"C to +50"C (depending on configuration)  Storage Temperature  MIL-STD-10-11A, Type I  Not Operating Vibrations  MIL-STD-167-1A, Type I  Not Operating Stocks  Directive 2014/35/UE-ENC   Directive 2011/65/UE - RoHS	Operative Systems	
Power Supply  Power Supply  Rechanical  Dimensions  A8 3 x 44 x 450 mm (W x H x D)  Material  Aluminum with surface passivation treatment  Colour  Black / RAL 9005 - Powder Coating  Mounting  Di'l 9" ackmount chassis Optional Telescopic slides  Configuration  Front I/O - Rear Power Supply  Front Panel Leds / Buttons  Reset button with LED  Reset button with LED  Prive Bays  3 x 3.5" + 1 x 2.5" internal bay  Fans  Environmental - (Design to meet)  Coperating Temperatures  O"C to +50" C. 20" C to +60" C (depending on configuration)  Storage Temperature  Mill-STD-310H, Method 501.7 & 502.7 -20" C to +60" C (depending on configuration)  Storage Temperature  Mill-STD-1910H, Method 501.7 & 502.7  -20" C to +60" C (depending on configuration)  Storage Temperature  Mill-STD-1910H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Storage Temperature  Mill-STD-1910H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Storage Temperature  Mill-STD-1910H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Storage Temperature  Mill-STD-1910H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Storage Temperature  Mill-STD-210H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Storage Temperature  Mill-STD-210H, Method 501.7 & 502.7  -20" C to +50" C (depending on configuration)  Directive 2014/35/UE-ENC   Directive 2011/65/UE-RNS	IPMI	IPMI2.0, SPM, Watchdog; SNMP and e-mail alarms and notifications
Power Supply         AC Single Power Supply DC Single Power Supply DC Single Power Supply DC Single Power Supply           Mechanical           Dimensions         483 x 44 x 450 mm (W x H x D)           Material         Aluminum with surface passivation treatment           Colour         Black / RAL 9005 - Powder Coating           Mounting         10 19" rackmount chassis Optional Telescopic slides           Configuration         Front I/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset of Incommental - (Design to meet)           Environmental - (Design to meet)         0°C to +50°C MIL-STD-810H, Method 501.7 & 502.7 MIL-STD-167-1A, Type I           Not Operating Vibrations         MIL-STD-167-1A, Type I           Not Operating Vibrations         MIL-STD-167-1A, Type I           Operating Shocks         20g / 11ms - half sine MIL-STD-810H, Method 516.7 MIL-STD-810H, Method 516.7 MIL-STD-810H, Method 516.7 MIL-STD-810H, Method 510.7 MIL-STD-810H,	Remote Monitoring	
Power Supply           Mechanical           Dimensions         483 x 44 x 450 mm (W x H x D)           Material         Aluminum with surface passivation treatment           Colour         Black / RAL 9005 - Powder Coating           Mounting         10 19" rackmount chassis Optional Telescopic slides           Configuration         Front 1/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset	Power Supply	
Dimensions         483 x 44 x 450 mm (W x H x D)           Material         Aluminum with surface passivation treatment           Colour         Black / RAL, 9005 - Powder Coating           Mounting         IU 19" rackmount chassiss optional Telescopic slides potional Telescopic slides           Configuration         Front I/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset bu	Power Supply	
Material         Aluminum with surface passivation treatment           Colour         Black / RAL 9005 - Powder Coating           Mounting         IU 19" rackmount chassis Optional Telescopic slides           Configuration         Front I/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset button with LED Reset button with LED           Drive Bays         3x 3.5" + 1x 2.5" internal bay           Fans         6x removable PWM fans           Environmental - (Design to meet)         O"C to +50"C           Operating Temperatures         MIL-STD-810H, Method 501.7 & 502.7 -20"C to +60"C (depending on configuration)           Storage Temperature         40"C to +70"C MIL-STD-810H, Method 501.7 & 502.7           Humidity         5% - 95% non-condensing MIL-STD-810H 507.6           Operating Vibrations         MIL-STD-167-1A, Type I           Not Operating Vibrations         MIL-STD-167-1A, Type I           Operating Shocks         20(7) (11ms - half sine MIL-STD-810H, Method 516.7           EMC         Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS		
Colour         Black / RAL 9005 - Powder Coating           Mounting         1U 19" rackmount chassis Optional Telescopic slides           Configuration         Front I/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset button with LED Reset button with LED           Drive Bays         3x 3.5" + 1x 2.5" internal bay           Fans         6x removable PWM fans           Environmental - (Design to meet)         Core to +50°C MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)           Storage Temperatures         0°C to +50°C (depending on configuration)           Storage Temperature         3% - 95% non-condensing MIL-STD-810H, Method 501.7 & 502.7           Humidity         5% - 95% non-condensing MIL-STD-810H 507.6           Operating Vibrations         MIL-STD-10f-71A, Type I           Not Operating Vibrations         MIL-STD-810H, Method 514.8           Operating Shocks         20g / 11ms - half sine MIL-STD-810G, Method 516.7           EMC         Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Dimensions	483 x 44 x 450 mm (W x H x D)
Mounting    Tu 19" rackmount chassis Optional Telescopic slides   Configuration	Material	Aluminum with surface passivation treatment
Mounting         Optional Telescopic slides           Configuration         Front I/O - Rear Power Supply           Front Panel Leds / Buttons         Power On/Off button with LED Reset button with LED Rese	Colour	Black / RAL 9005 - Powder Coating
Front Panel Leds / Buttons  Power On/Off button with LED Reset but	Mounting	
Pront Panel Leds / Buttons  Reset button with LED  Drive Bays  3x 3.5" + 1x 2.5" internal bay  Fans  6x removable PWM fans  Environmental - (Design to meet)  Operating Temperatures  0°C to +50°C MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)  Storage Temperature  40°C to +70°C MIL-STD-810H, Method 501.7 & 502.7  WIL-STD-810H, Method 501.7 & 502.7  MIL-STD-810H, Method 501.7 & 502.7  Deprating Vibrations  MIL-STD-810H, 507.6  Operating Vibrations  MIL-STD-810H, Method 514.8  Operating Shocks  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Configuration	Front I/O - Rear Power Supply
Environmental - (Design to meet)  Operating Temperatures  O°C to +50°C MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)  Storage Temperature  -40°C to +70°C MIL-STD-810H, Method 501.7 & 502.7  Humidity  Sw - 95% non-condensing MIL-STD-810H 507.6  Operating Vibrations  MIL-STD-167-1A, Type I  Not Operating Vibrations  1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8  Operating Shocks  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Front Panel Leds / Buttons	
Environmental - (Design to meet)  Operating Temperatures  O°C to +50°C MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)  Storage Temperature  -40°C to +70°C MIL-STD-810H, Method 501.7 & 502.7  Humidity  5% - 95% non-condensing MIL-STD-810H 507.6  Operating Vibrations  MIL-STD-167-1A, Type I  Not Operating Vibrations  1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8  Operating Shocks  20g / 11ms - half sine MIL-STD-810G, Method 516.7  EMC  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Drive Bays	3x 3.5" + 1x 2.5" internal bay
Environmental - (Design to meet)  Operating Temperatures  O°C to +50°C  MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)  Storage Temperature  -40°C to +70°C  MIL-STD-810H, Method 501.7 & 502.7  Humidity  5% - 95% non-condensing  MIL-STD-810H 507.6  Operating Vibrations  MIL-STD-167-1A, Type I  Not Operating Vibrations  1.17 Grms, 5-500 Hz  MIL-STD-810H, Method 514.8  Operating Shocks  20g / 11ms - half sine  MIL-STD-810G, Method 516.7  ENC  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS		•
Operating Temperatures0°C to +50°C MIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)Storage Temperature-40°C to +70°C MIL-STD-810H, Method 501.7 & 502.7Humidity5% - 95% non-condensing MIL-STD-810H 507.6Operating VibrationsMIL-STD-167-1A, Type INot Operating Vibrations1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8Operating Shocks20g / 11ms - half sine MIL-STD-810G, Method 516.7EMCDirective 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS		
Operating TemperaturesMIL-STD-810H, Method 501.7 & 502.7 -20°C to +60°C (depending on configuration)Storage Temperature-40°C to +70°C MIL-STD-810H, Method 501.7 & 502.7Humidity5% - 95% non-condensing MIL-STD-810H 507.6Operating VibrationsMIL-STD-167-1A, Type INot Operating Vibrations1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8Operating Shocks20g / 11ms - half sine MIL-STD-810G, Method 516.7EMCDirective 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Environmental - (Design to mee	·
Humidity 5% - 95% non-condensing MIL-STD-810H, Method 501.7 & 502.7  Operating Vibrations MIL-STD-167-1A, Type I  Not Operating Vibrations 1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8  Operating Shocks 20g / 11ms - half sine MIL-STD-810G, Method 516.7  EMC Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Operating Temperatures	MIL-STD-810H, Method 501.7 & 502.7
Operating Vibrations  MIL-STD-810H 507.6  Not Operating Vibrations  MIL-STD-167-1A, Type I  Not Operating Vibrations  1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8  Operating Shocks  20g / 11ms - half sine MIL-STD-810G, Method 516.7  EMC  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Storage Temperature	
Not Operating Vibrations         1.17 Grms, 5-500 Hz MIL-STD-810H, Method 514.8           Operating Shocks         20g / 11ms - half sine MIL-STD-810G, Method 516.7           EMC         Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Humidity	
Operating Shocks  MIL-STD-810H, Method 514.8  Operating Shocks  20g / 11ms - half sine MIL-STD-810G, Method 516.7  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Operating Vibrations	MIL-STD-167-1A, Type I
MIL-STD-810G, Method 516.7  Directive 2014/35/UE-LVD   Directive 2014/30/UE-EMC   Directive 2011/65/UE - RoHS	Not Operating Vibrations	
	Operating Shocks	
	EMC	

GAP servers and workstations are designed in accordance with the environmental specifications indicated. Some parameters depend on the configuration. Equipment may be subjected to dedicated test profiles.