NAT-MCH-G4 Base Overview

	NAT-MCH-G4	NAT-MCH-S4
Form Factor	single-width / full-size	double-width / full-size
Support AMC	12 (+1 for non-redundant operation, Fabric A only)	12 (+1 for non-redundant operation, Fabric A only)
Support µRTM	n/a	12 - optional, via Zone3 connector **NAT-MCH-RTM**
Support PM	1-4	1-4
Support CU	2	2
Support PTM	2	2
Support JSM	1	1
Support NAT-MCH-RTM	n/a	optional, via Zone3 connector **NAT-MCH-RTM**
Update to 2nd NAT-MCH-G4	yes	yes
Fabric A (Base Fabric)	1G / 2.5G / 10G to 12 AMCs	1G / 2.5G / 10G to 12 AMCs
Fabric D-G (Fat Pipe Fabric)	via HUB-Module	via HUB-Module
Front Panel Base Ethernet	4x 1-25G optical via SFP-28-DD (depending on plug-in module) 2x 1-10G via ix or RJ45	4x 1-25G optical via SFP-28-DD (depending on plug-in module) 2x 1-10G via ix or RJ45

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NAT-MCH-G4 Clock Overview

	NAT-MCH-G4-CLKP	NAT-MCH-G4-CLKT
Form Factor	single-width	single-width
Support AMC	12	12
CLK1	Telecom Clock to 12 AMCs	Telecom Clock to 12 AMCs
CLK2	Telecom Clock to 12 AMCs	Telecom Clock to 12 AMCs
CLK3	PCIe Reference Clock	Telecom Clock to 12 AMCs
Update CLK to 2nd NAT-MCH-G4	yes	yes
Clock Source	Stratum 3 PLL	Stratum 3 PLL
Precision Timing	GPS receiver + OCXO - assembly option	GPS receiver + OCXO - assembly option
Front Panel Interfaces	2x Reference CLK IN / OUT via SMA GPS_PPS via SMC (optional)	2x Reference CLK IN / OUT via SMA GPS_PPS via SMC (optional)

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NAT-MCH-G4 HUB Overview

	NAT-MCH-G4-HUB-EX	NAT-MCH-G4-HUB-Px52	NAT-MCH-G4-HUB-Px84
Form Factor	single-width	single-width	double-width
Support AMC	12	12	12
Fabric D-G (Fat Pipe)	40G Ethernet	PCIe Gen4	PCIe Gen5
Fat Pipe Front Panel Uplink Configuration	1x QSFP-DD Front Uplink with eight 1-25G: Optical Short Range (100-300m) Optical Long Range (2-40km) Copper Can be operated as e.g.: 2 x4 ports with up to 100GbE 8 x1 ports with up to 25GbE	1x PCIe Gen4 x4 Front Uplink via QSFP: Optical Short Range (100-300m) Optical Long Range (2-40km) Copper	2x PCIe Gen4 x8 via 2x QSFP-DD Optical Short Range (100-300m) Optical Long Range (2-40km) Copper Can also be operated as 1x PCIe Gen4 x16 Front Uplink
Fat Pipe Backplane Interconnect	x4 ports with 40GbE to each AMC x4 ports with 10GbE (XAUI) to each AMC 4 x1 ports with 1-10G to each AMC Protocol can be set for each AMC independently 10GbE / 40GbE update to 2nd **NAT-MCH-G4** (no XAUI)	PCIe Gen4 x4 to each AMC PCIe x8 Gen4 for up to six AMCs (if supported by backplane)	PCIe Gen5 x4 to each AMC PCIe x8 Gen5 for up to six AMCs (if supported by backplane)
RTM Support	n/a	n/a	1x PCIe Gen5 x16 to **NAT-MCH-RTM** (via **NAT-MCH-S4** base board)
PCIe Clustering	n/a	multiple independent clusters with own Root Complex each	multiple independent clusters with own Root Complex each
Front Panel Interfaces	Front Uplink 8x Fat-Pipe Status LED	Front Uplink 8x Fat-Pipe Status LED	Front Uplink 8x Fat-Pipe Status LED

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NAT-MCH-G4 Compatibility Matrix

	NAT-MCH-G4	NAT-MCH-S4	NAT-MCH-G4-CLKP/ -CLKT	NAT-MCH-G4-HUB-EX	NAT-MCH-G4-HUB-Px52	NAT-MCH-G4-HUB-Px84
NAT-MCH-G4		-	✓	✓	✓	-
NAT-MCH-S4	-		✓	✓	✓	✓
NAT-MCH-G4-CLKP/ -CLKT	✓	✓		✓	✓	✓
NAT-MCH-G4-HUB-EX	✓	✓	✓		-	-
NAT-MCH-G4-HUB-Px52	✓	✓	✓	-		-
NAT-MCH-G4-HUB-Px84	-	✓	✓	-	-	

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NAT-MCH-SCI for Science

	NAT-MCH-SCIxE	NAT-MCH-SCIx52	NAT-MCH-SCIx84
Base Board	**NAT-MCH-S4-0**	**NAT-MCH-S4-0**	**NAT-MCH-S4-R**
Clock Mezz	**NAT-MCH-G4-CLKP**	**NAT-MCH-G4-CLKP**	**NAT-MCH-G4-CLKP**
HUB Module	**NAT-MCH-G4-HUB-EX**	**NAT-MCH-G4-HUB-Px52**	**NAT-MCH-G4-HUB-Px84**
Front Uplink	1x QSFP-DD Front Uplink with eight 1-25G: Optical Short Range (100-300m) Optical Long Range (2-40km) Copper Can be operated as e.g.: 2 x4 ports with up to 100GbE 8 x1 ports with up to 25GbE	1x PCIe Gen4 x4 Front Uplink via QSFP: Optical Short Range (100-300m) Optical Long Range (2-40km) Copper	2x PCIe Gen4 x8 via 2x QSFP-DD Optical Short Range (100-300m) Optical Long Range (2-40km) Copper Can also be operated as 1x PCIe Gen4 x16 Front Uplink
RTM Support	n/a	n/a	via Zone3 connector **NAT-MCH-RTM**
Fabric D-G (Fat Pipe)	x4 ports with 40GbE to each AMC x4 ports with 10GbE (XAUI) to each AMC 4 x1 ports with 1-10G to each AMC Protocol can be set for each AMC independently 10GbE / 40GbE update to 2nd **NAT-MCH-G4** (no XAUI)	PCIe Gen4 x4 to each AMC PCIe x8 Gen4 for up to six AMCs (if supported by backplane)	PCIe Gen5 x4 to each AMC PCIe x8 Gen5 for up to six AMCs (if supported by backplane)
Front Base Ethernet	4x 1-25G optical via SFP-28-DD (depending on plug-in module) 2x 1-10G via ix or RJ45	4x 1-25G optical via SFP-28-DD (depending on plug-in module) 2x 1-10G via ix or RJ45	4x 1-25G optical via SFP-28-DD (depending on plug-in module) 2x 1-10G via ix or RJ45

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