Memory Guide

Cisco UCS/UCSX M7 Memory Guide

CONTENTS

Introduction

The M7 Memory guide provides the detailed specifications of the M7 memory DIMMs including:

- Memory DIMMs features
- Cisco PID's description
- Memory DIMMs guidelines, mixing rules and populations
- All M7 supported DIMM configurations

The M7 Memory Guide document applies to the following Cisco M7 generation servers:

- M7 C220/C240 Racks servers
- M7 X-series X210c/X410c Compute nodes

CHAPTER 1 MEMORY ORGANIZATION CAPABILITIES AND FEATURE

The *Table 1* below describes the main memory DIMM features supported on Cisco UCS/UCSX M7 servers.

Table 1 Main Memory Features

M7 Memory DIMM server technologies	C220 M7	C240 M7	X210c M7	X410c M7
CPU Sockets	**1S or 2S**	**1S or 2S**	**1S or 2S**	**4S**
Intel® Xeon® CPU generation[1,2]	4th and 5th Gen.	4th and 5th Gen.	4th and 5th Gen.	4th Gen. Only
DDR5 memory clock speed	4th Gen. CPU: Up to 4800 MT/s 1DPC; Up to 4400 MT/s 2DPC			
	5th Gen. CPU: Up to 5600 MT/s 1DPC; Up to 4400 MT/s 2DPC			N/A
Operational voltage	1.1 Volts			
DRAM fab density	16Gb and 24Gb			
DRAM DIMM Type	RDIMM (Registered DDR5 DIMM with on die ECC)			
Memory DIMM organization	Eight memory DIMM channels per CPU; up to 2 DIMMs per channel			
Maximum number of DRAM DIMM per server	32 (2-Socket)			64 (4-Socket)
DRAM DIMM Densities and Ranks[3]	16GB 1Rx8, 32GB 1Rx4, 64GB 2Rx4, 128GB 4Rx4			
	48GB 1Rx4, 96GB 2Rx4 - 5th Gen. only			96GB 2Rx4 - 4th Gen. only
	N/A	256GB 8Rx4		
Maximum DRAM DIMMs System capacity	4TB (32x128GB)	8TB (32x256GB)		16TB (64x256GB)

Notes:
  1. 4th Generation Intel® Xeon® Scalable Processors formerly codenamed Sapphire Rapids.
  2. 5th Generation Intel® Xeon® Scalable Processors formerly codenamed Emerald Rapids.
  3. SDDC and ADDDC RAS features are unsupported with x8 DIMMs. Therefore, 16GB 1Rx8 doesn't support SDDC and ADDDC RAS features

Figure 1 2-socket memory organization
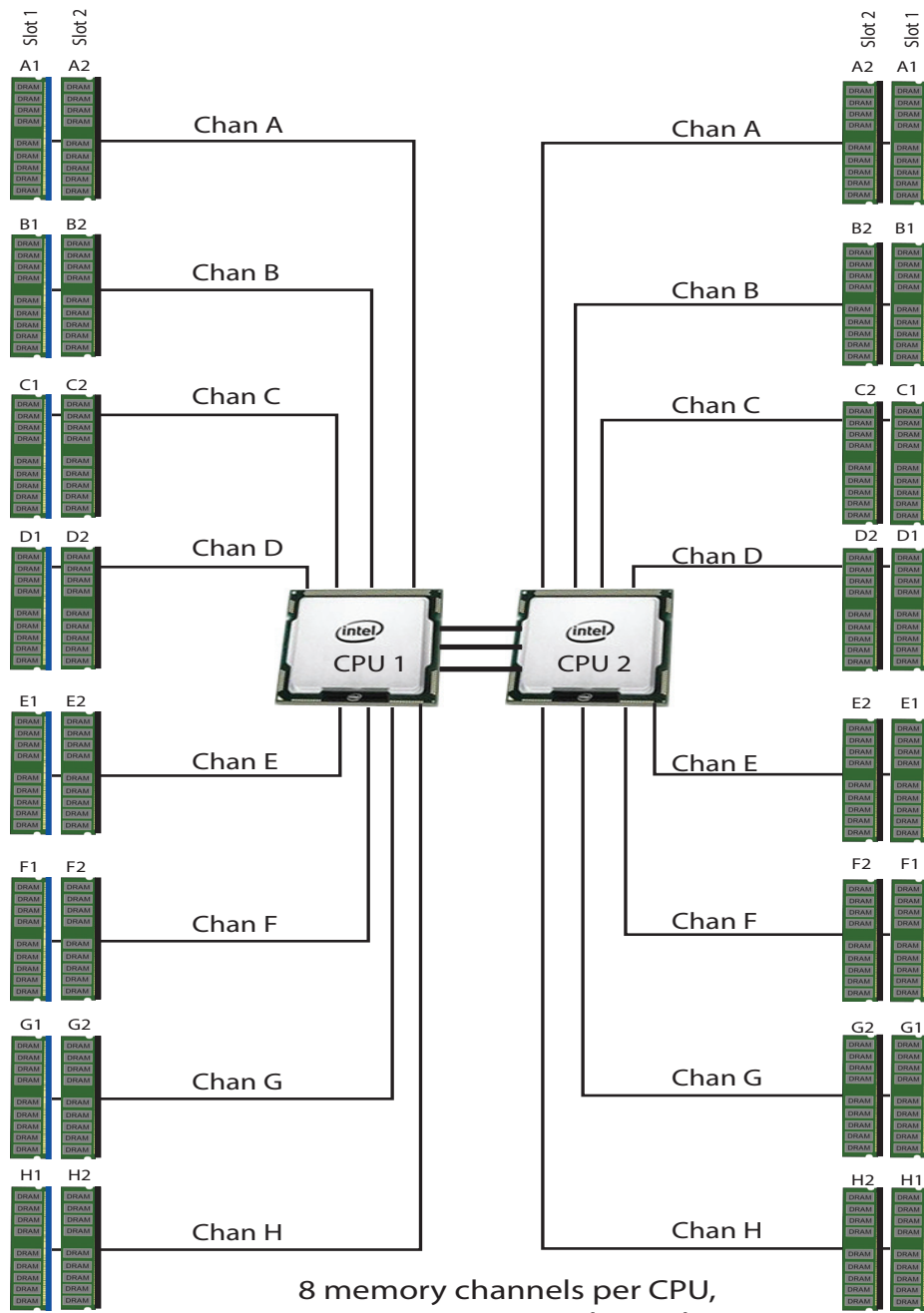
8 memory channels per CPU,
up to 2 DIMMs per channel

32 DIMMS total (16 DIMMs per CPU)

Figure 2 4-socket memory organization
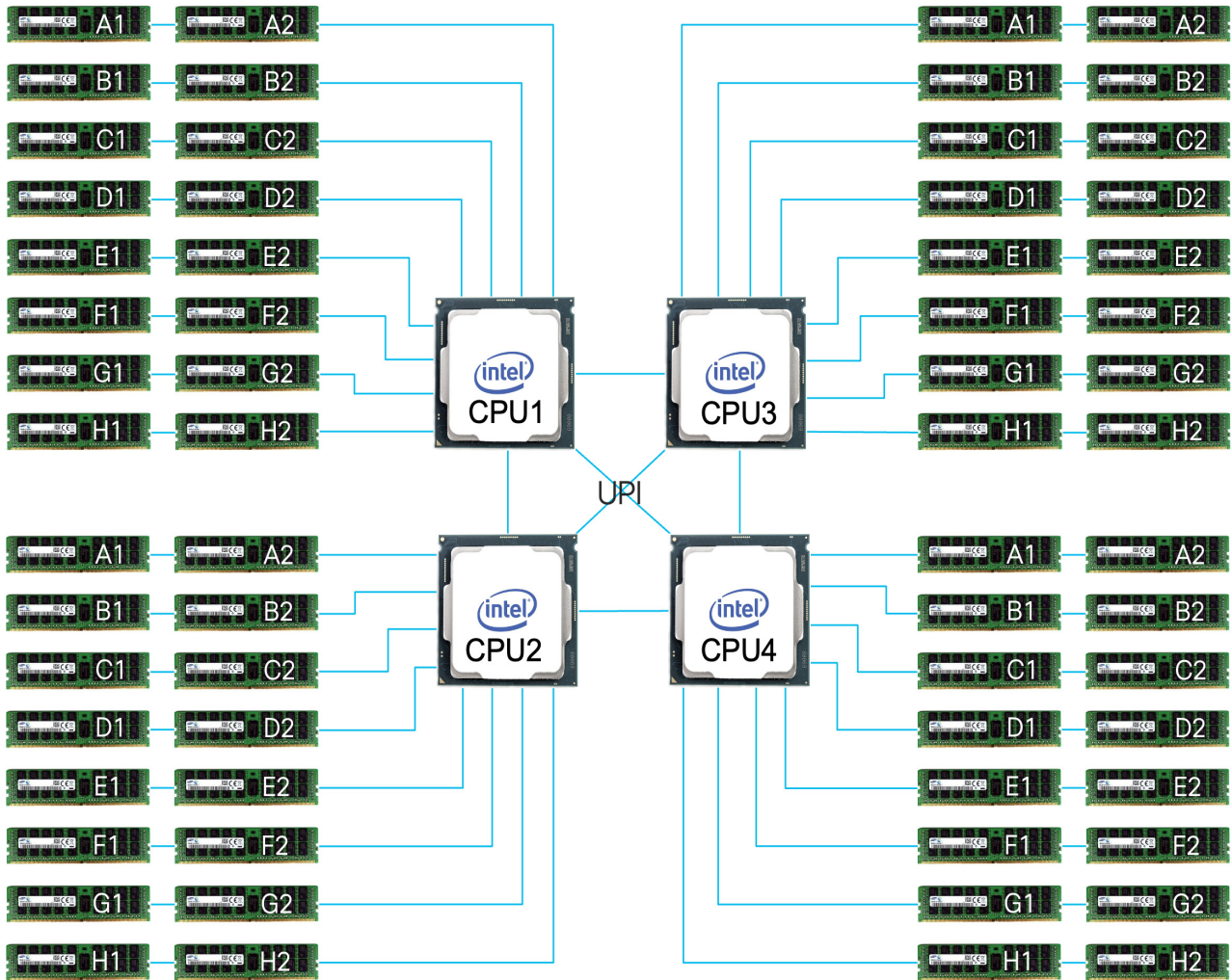
CHAPTER 2 MEMORY OPTIONS

■ The available memory devices for UCS and X-series M7 are listed in *Table 2.0* and *Table 2.1*

■ The memory PID decoder for M7 Memory PIDs are shown in *Table 3*

NOTE:

- 256GB DIMMs are available on all C240 M7 server models, X210c M7 and X410C M7 compute nodes. They are not supported on C220 M7.
- Review the appropriate platform spec sheets for additional 256GB DIMM usage conditions.

CAUTION:

- On C240 M7, 256GB DIMMs cannot be combined with GPU cards and the ambient temperature shall be limited to a maximum of 28°C.
- On X210c M7, when populating 256GB DIMMs, the ambient temperature shall be limited to a maximum of 32°C.
- On X410c M7, when populating 256GB DIMMs, the ambient temperature shall be limited to a maximum of 32°C.

Table 2.0 Memory Options for UCS (C220, c240) and UCSX (x210c) M7

M7 Memory DIMM Densities & Cisco PIDs	C220 M7	C240 M7	X210c M7
	DDR5-4800 MT/s Cisco PID list		
16GB	UCS-MRX16G1RE1		UCSX-MRX16G1RE1
32GB	UCS-MRX32G1RE1		UCSX-MRX32G1RE1
64GB	UCS-MRX64G2RE1		UCSX-MRX64G2RE1
128GB	UCS-MR128G4RE1		UCSX-MR128G4RE1
256GB	N/A	UCS-MR256G8RE1	UCSX-MR256G8RE1
	DDR5-5600 MT/s Cisco PID list[1]		
16GB	UCS-MRX16G1RE3		UCSX-MRX16G1RE3
32GB	UCS-MRX32G1RE3		UCSX-MRX32G1RE3
48GB[2]	UCS-MRX48G1RF3		UCSX-MRX48G1RF3
64GB	UCS-MRX64G2RE3		UCSX-MRX64G2RE3
96GB[3]	UCS-MRX96G2RF3		UCSX-MRX96G2RF3
128GB	UCS-MR128G4RE3		UCSX-MR128G4RE3
256GB	N/A	UCS-MR256G8RE3	UCSX-MR256G8RE3

Notes:

1. DDR5-5600 supported on Intel® Xeon® 5th generation only.
2. 48GB and 96GB not supported on Intel 5th Gen. CPUs 3508U, 4509Y, 4510, and 4510T SKUs

Table 2.1 Memory Options for UCSX (x410c) M7

M7 Memory DIMM Densities & Cisco PIDs	X410c M7
16GB	UCSX-MRX16G1RE1
32GB	UCSX-MRX32G1RE1
64GB	UCSX-MRX64G2RE1
96GB[1]	UCSX-MRX96G2RF3
128GB	UCSX-MR128G4RE1
256GB	UCSX-MR256G8RE1

Notes:

1. Memory will operate at the maximum speed of the Intel 4th Gen. CPU memory controller, ranging from 4000 MT/s to 4800 MT/s Check Table 8.0 for details on 1DPC and 2 DPC maximum speed with 4th Gen. CPUs

Table 3 Memory PID Decoder

Identifier#1	Identifier#2	Identifier#3	Identifier#4	Identifier#5	Identifier#6	Identifier#7
Cisco Product Family UCS UCSX	Memory DIMM Type **MR:** RDIMM	DIMM Capacity (GB) X16G X32G X48G X64G X96G 128G 256G	DIMM Org. (Rank) **1R:** Single-Rank **2R:** Dual-rank **4R:** Quad-rank **8R:** Octa-rank	DDR Generation & DRAM Density **E:** DDR5/16Gb **F:** DDR5/24Gb	DIMM Speed (Mega Transfers per second) **1:** 4800 MT/s **3:** 5600 MT/s	Option/Spare DIMM **Blank:** Option =: Spare

CHAPTER 3 DRAM GUIDELINES

GOLDEN RULE: Memory on every CPU socket shall be configured identically. Therefore, the memory configuration of CPU-1 will be identical to CPU-2 for a 2-Socket system and identical to CPU-3 and CPU-4 for a 4-socket system. Unbalanced populations are unsupported.

■ DIMM Count Rules:

Table 4.0 Allowed DIMM Count for 1-CPU and 2-CPU Only[1]

Allowed DIMM Count rules	Minimum Count	Maximum Count	Allowed Count	Not Allowed Count
16GB, 32GB, 64GB, 128GB, 256GB (4th and 5th Gen. CPUs)				
DIMM count for 1 CPU	1	16	1,2,4,6,8,12,16	3,5,7,9,10,11,13,14,15
DIMM count for 2-CPU	2	32	2,4,8,12,16,24,32	6,10,14,18,20,22,26,28,30
48GB (5th Gen. CPUs Only)[2]				
DIMM count for 1 CPU	1	8	1,6,8	2,3,4,5,7,9,10,11,12,13,14,15,16
DIMM count for 2-CPU	2	16	2,12,16	4,6,8,10,14,18,20,22,24,26,28,30,32
96GB (5th Gen. CPUs Only)[2]				
DIMM count for 1 CPU	1	16	1,6,8,12,16	2,3,4,5,7,9, 10,11,13,14,15
DIMM count for 2-CPU	2	32	2,12,16,24,32	4,6,8,10,14,18,20,22,26,28,30

Notes:
1. 12 DIMMs count for 1-CPU and 24 DIMMs count for 2-CPU are only allowed when all DIMMs have the same density.
2. 48GB and 96GB not supported on Intel 5th Gen. CPUs 3508U, 4509Y, 4510, and 4510T SKUs

Table 4.1 Allowed DIMM Count for 4-CPU Only[1]

Allowed DIMM Count rules	Minimum Count	Maximum Count	Allowed Count	Not Allowed Count
16GB, 32GB, 64GB, 128GB, 256GB (4th Gen. CPUs)				
DIMM count for 4-CPU	4	64	4,8,16,24,32,48,64	12,20,28,36,40,44,52,56,60
96GB (4th Gen. CPUs Only)[2,3]				
DIMM count for 4-CPU	32	64	32,64	4,8,12,16,20,24,28 36,40,44,48,52,56,60

Notes:
1. 48 DIMMs count for 4-CPU configurations are only allowed when all DIMMs have the same density.
2. x410c server model supports only 8xDIMMs and 16xDIMMs per CPU (32xDIMMs and 64xDIMMs for 4 CPUs).
3. For x410c server model, 96GB is only supported on Intel 4th Gen. CPUs Platinum Series 8444H, 8450H, 8454H, 8460H, 8468H, 8490H SKUs.

- DIMM Population Rules:
    - Each channel has two memory slots (for example, channel A = slots A1 and A2). See **golden rule** above.
        - A channel can operate with one or two DIMMs installed.
        - If a channel has only one DIMM, populate slot 1 first (the blue slot).
    - When both CPUs are installed, populate the memory slots of each CPU identically. Fill the blue slots (slot 1) in the memory channels first according to the recommended DIMM populations in *Table 5*.0, *Table 5*.1, *Table 5*.2 and *Table 5*.3

Table 5.0 M7 DIMM population order for 16GB, 32GB, 64GB, 128GB, 256GB

#DIMMs per CPU	DIMM Population - 16GB, 32GB, 64GB, 128GB, 256GB (4th and 5th Gen. CPUs)[1]	
	Slot 1 (Blue)	Slot 2 (Black)
1	A1	-
2	A1, G1	-
4	A1, C1, E1, G1	-
6	A1, C1, D1, E1, F1, G1	-
8	A1, B1, C1, D1, E1, F1, G1, H1	-
12[2]	A1, B1, C1, D1, E1, F1, G1, H1	A2, C2, E2, G2
16	A1, B1, C1, D1, E1, F1, G1, H1	A2, B2, C2, D2, E2, F2, G2, H2

Notes:
1. See DIMM Mixing Rules for allowed combinations across slots 1 and 2.
2. Only valid when DIMMs in blue and black slots are the same density.

Table 5.1   M7 DIMM population order for 48GB[1]

#DIMMs per CPU	DIMM Population - 48GB (5th Gen. CPUs only)[2,3]	
	Slot 1 (Blue)	Slot 2 (Black)
1	A1	-
6	A1, C1, D1, E1, F1, G1	-
8	A1, B1, C1, D1, E1, F1, G1, H1	-

Notes:
1. 48GB not supported on Intel 5th Gen. CPUs 3508U, 4509Y, 4510, and 4510T SKUs
2. 48GB DIMMs cannot be mixed with other DIMM capacities.
3. Only 1 DPC supported by 48GB.

Table 5.2 M7 DIMM population order for 96GB - C220, C240, and x210c server models only[1]

#DIMMs per CPU	DIMM Population - 96GB (5th Gen. CPUs only)[2]	
	Slot 1 (Blue)	Slot 2 (Black)
1	A1	-
6	A1, C1, D1, E1, F1, G1	-
8	A1, B1, C1, D1, E1, F1, G1, H1	-
12[3]	A1, B1, C1, D1, E1, F1, G1, H1	A2, C2, E2, G2
16[2]	A1, B1, C1, D1, E1, F1, G1, H1	A2, B2, C2, D2, E2, F2, G2, H2

Notes:

1. 96GB not supported on Intel 5th Gen. CPUs 3508U, 4509Y, 4510, and 4510T SKUs
2. 96GB DIMMs cannot be mixed with other DIMM capacities.
3. Only valid when DIMMs in blue and black slots are the same density.

Table 5.3 M7 DIMM population order for 96GB - x410c server model sonly

#DIMMs per CPU	DIMM Population - 96GB (4th Gen. CPUs only)[1],[2]	
	Slot 1 (Blue)	Slot 2 (Black)
8	A1,B1,C1,D1,E1,F1,G1,H1	-
16	A1,B1,C1,D1,E1,F1,G1,H1	A2,B2,C2,D2,E2,F2,G2,H2

Notes:

1. x410c server model supports only 8xDIMMs and 16xDIMMs per CPU (32xDIMMs and 64xDIMMs for 4 CPUs)
2. For x410c server model, 96GB is only supported on Intel 4th Gen. CPUs Platinum Series 8444H, 8450H, 8454H, 8460H, 8468H, 8490H SKUs

■ DIMM Mixing Rules:

■ Higher rank DIMMs shall be populated on Slot 1.

■ Mixing different DIMM densities in the same slot across channels is not supported. All populated slots of the same color must have the same DIMM density.

■ Mixing DDR5-4800 and DDR5-5600 memory PIDs is not allowed

■ Mixing X4 and X8 DIMMs is not allowed

■ Mixing 16Gb DRAM based and 24Gb DRAM based DIMMs is not allowed. Therefore, 48GB and 96GB cannot be mixed with any other memory DIMMs

■ 48GB supports 1 DIMM Per Channel (1DPC) only

■ The DIMM mixing rules matrix is described in the *Table 6* and *Table 7*, below

Table 6 Supported DIMM mixing and population across 2 slots in each channel - 16GB, 32GB, 64GB, 128GB, and 256GB DIMMs

Channel Mixing		DIMM Slot 2 (Black)				
DIMM Slot 1 (Blue)		16GB	32GB	64GB	128GB	256GB
		1Rx8	1Rx4	2Rx4	4Rx4	8Rx4
16GB	1Rx8	Yes[1]	No	No	No	No
32GB	1Rx4	No	Yes[1]	No	No	No
64GB	2Rx4	No	Yes[2]	Yes[1]	No	No
128GB	4Rx4	No	No	No	Yes[1]	No
256GB	8Rx4	No	No	No	Yes[2]	Yes[1]

Notes:
1. For 2,4,6, 8 DIMMs count, only populate slot 1 (Blue slot). see *Table 5*.0 for details
2. When mixing two different DIMM densities, all 8 channels per CPU must be populated. Use of fewer than 8 channels (16 slots per CPU) is not supported.

Table 7 Supported DIMM mixing and population across 2 slots in each channel - 48GB and 96GB DIMMs

Channel Mixing		DIMM Slot 2 (Black)	
DIMM Slot 1 (Blue)		48GB	96GB
		1Rx4	2Rx4
48GB	1Rx4	No	No
96GB	2Rx4	No	Yes[1]

Notes:
1. Only 6 or 8 channels are allowed (for 2, 4, or 8 DIMMs you would just populate 1 DPC on 2, 4, or 8 channels). see *Table 5*.1, *Table 5*.2 and *Table 5*.3 for details

- Memory Limitations:
    - Memory on every CPU socket shall be configured identically. See golden rule from page 7.
    - Refer to *Table 5*.0, *Table 5*.1, *Table 5*.2, *Table 5*.3 and *Table 6* and *Table 7*, for DIMM population and DIMM mixing rules.
    - Cisco memory from previous generation servers (DDR3 and DDR4) is not supported with the M7 servers.

- For best performance, observe the following:
    - For optimum performance, populate at least one DIMM per memory channel per CPU. When one DIMM per channel is used, it must be populated in DIMM slot 1 (blue slot farthest away from the CPU) of a given channel.
    - The maximum 2 DPC speed is 4400 MT/s, refer to *Table 8*.0 and *Table 8*.1 for the details.

Table 8.0 DDR5-4800 DIMM 1DPC and 2DPC max speed matrix - 4th Gen. CPU

4th Gen. CPU Shelves and Memory Speed	1DPC	2DPC
	All RDIMMs	All RDIMMs
Platinum Series 8	4800 MT/s	4400 MT/s
Gold Series 6	4800 MT/s	4400 MT/s
Gold Series 5	4400 MT/s	4400 MT/s
Silver Series 4	4000 MT/s	4000 MT/s
Bronze Series 3	4000 MT/s	4000 MT/s

Table 8.1 DDR5-5600 DIMM 1DPC and 2DPC max speed matrix - 5th Gen. CPU

5th Gen. CPU Shelves and Memory Speed	1DPC	2DPC
	All RDIMMs	All RDIMMs
Platinum Series 8	5600 MT/s	4400 MT/s
Gold Series 6	5200 MT/s	4400 MT/s
Gold Series 5	4800 MT/s	4400 MT/s
Silver Series 4	4400 MT/s	4400 MT/s
Bronze Series 3	4400 MT/s	4400 MT/s

CHAPTER 4 SUPPORTED DRAM DIMM CONFIGURATIONS

- *Table 9*.0 and *Table 9*.1 below shows the supported DIMM configurations with 1, 2, 4, 6, 8, 12, and 16 DIMMs per CPU.
- The rows highlighted in yellow are recommended for the best performance at a given capacity (Performance measurement is Work In Progress).
- The only DIMM mixing configurations allowed are:
    - 32GB and 64GB RDIMMs
    - 128GB RDIMMs and 256GB RDIMMs
    - DIMM mixing configurations are shown at the end of *Table 9*.0 and *Table 9*.1.

Table 9.0 Supported Memory Configurations for 4th Gen. Intel® Xeon® Scalable Processors

DDR5-4800 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
16GB RDIMMs					
16GB	32GB	64GB	1x16GB	-	1
32GB	64GB	128GB	2x16GB	-	2
64GB	128GB	256GB	4x16GB	-	4
96GB	192GB	384GB	6x16GB	-	6
128GB	256GB	512GB	8x16GB	-	8
192GB	384GB	768GB	8x16GB	4x16GB	12
256GB	512GB	1024GB	8x16GB	8x16GB	16
32GB RDIMMs					
32GB	64GB	128GB	1x32GB	-	1
64GB	128GB	256GB	2x32GB	-	2
128GB	256GB	512GB	4x32GB	-	4
192GB	384GB	768GB	6x32GB	-	6
256GB	512GB	1024GB	8x32GB	-	8
384GB	768GB	1536GB	8x32GB	4x32GB	12
512GB	1024GB	2048GB	8x32GB	8x32GB	16
48GB RDIMMs					
N/A[2]					

Table 9.0 Supported Memory Configurations for 4th Gen. Intel® Xeon® Scalable Processors

DDR5-4800 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
64GB RDIMMs					
64GB	128GB	256GB	1x64GB	-	1
128GB	256GB	512GB	2x64GB	-	2
256GB	512GB	1024GB	4x64GB	-	4
384GB	768GB	1536GB	6x64GB	-	6
512GB	1024GB	2048GB	8x64GB	-	8
768GB	1536GB	3072GB	8x64GB	4x64GB	12
1024GB	2048GB	4096GB	8x64GB	8x64GB	16
96GB RDIMMs					
N/A	N/A	N/A	1x96GB	-	1
N/A	N/A	N/A	6x96GB	-	6
N/A	N/A	3072GB	8x96GB	-	8
N/A	N/A	N/A	8x96GB	4x96GB	12
N/A	N/A	6144GB	8x96GB	8x96GB	16
128GB RDIMMs					
128GB	256GB	512GB	1x128GB	-	1
256GB	512GB	1024GB	2x128GB	-	2
512GB	1024GB	2048GB	4x128GB	-	4
768GB	1536GB	3072GB	6x128GB	-	6
1024GB	2048GB	4096GB	8x128GB	-	8
1536GB	3072GB	6144GB	8x128GB	4x128GB	12
2048GB	4096GB	8192GB	8x128GB	8x128GB	16
256GB RDIMMs					
256GB	512GB	1024GB	1x256GB	-	1
512GB	1024GB	2048GB	2x256GB	-	2

Table 9.0 Supported Memory Configurations for 4th Gen. Intel® Xeon® Scalable Processors

DDR5-4800 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
1024GB	2048GB	4096GB	4x256GB	-	4
1536GB	3072GB	6144GB	6x256GB	-	6
2048GB	4096GB	8192GB	8x256GB	-	8
3072GB	6144GB	12288GB	8x256GB	4x256GB	12
4096GB	8192GB	16384GB	8x256GB	8x256GB	16
64GB RDIMMs + 32GB RDIMMs					
768GB	1536GB	3072GB	8x64GB	8x32GB	16
256GB RDIMMs + 128GB RDIMMs					
3072GB	6144GB	12288GB	8x256GB	8x128GB	16

Table 9.1 Supported Memory Configurations for 5th Gen. Intel® Xeon® Scalable Processors

DDR5-5600 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
16GB RDIMMs					
16GB	32GB	N/A[1]	1x16GB	-	1
32GB	64GB	N/A	2x16GB	-	2
64GB	128GB	N/A	4x16GB	-	4
96GB	192GB	N/A	6x16GB	-	6
128GB	256GB	N/A	8x16GB	-	8
192GB	384GB	N/A	8x16GB	4x16GB	12
256GB	512GB	N/A	8x16GB	8x16GB	16
32GB RDIMMs					
32GB	64GB	N/A	1x32GB	-	1
64GB	128GB	N/A	2x32GB	-	2

Table 9.1 Supported Memory Configurations for 5th Gen. Intel® Xeon® Scalable Processors

DDR5-5600 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
128GB	256GB	N/A	4x32GB	-	4
192GB	384GB	N/A	6x32GB	-	6
256GB	512GB	N/A	8x32GB	-	8
384GB	768GB	N/A	8x32GB	4x32GB	12
512GB	1024GB	N/A	8x32GB	8x32GB	16
48GB RDIMMs[2]					
48 GB	96 GB	N/A	1x48GB	-	1
288 GB	576 GB	N/A	6x48GB	-	6
384 GB	768 GB	N/A	8x48GB	-	8
64GB RDIMMs					
64GB	128GB	N/A	1x64GB	-	1
128GB	256GB	N/A	2x64GB	-	2
256GB	512GB	N/A	4x64GB	-	4
384GB	768GB	N/A	6x64GB	-	6
512GB	1024GB	N/A	8x64GB	-	8
768GB	1536GB	N/A	8x64GB	4x64GB	12
1024GB	2048GB	N/A	8x64GB	8x64GB	16
96GB RDIMMs[2]					
96 GB	192 GB	N/A	1x96GB	-	1
576 GB	1152 GB	N/A	6x96GB	-	6
768 GB	1536 GB	N/A	8x96GB	-	8
1152 GB	2304 GB	N/A	8x96GB	4x96GB	12
1536 GB	3072 GB	N/A	8x96GB	8x96GB	16
128GB RDIMMs					
128GB	256GB	N/A	1x128GB	-	1
256GB	512GB	N/A	2x128GB	-	2
512GB	1024GB	N/A	4x128GB	-	4

Table 9.1 Supported Memory Configurations for 5th Gen. Intel® Xeon® Scalable Processors

DDR5-5600 Total System Capacity			Capacity Per CPU (GB)		Total DIMMs Per CPU
1-CPU	2-CPU	4-CPU	Blue Slots A1 to H1	Black Slots A2 to H2	
768GB	1536GB	N/A	6x128GB	-	6
1024GB	2048GB	N/A	8x128GB	-	8
1536GB	3072GB	N/A	8x128GB	4x128GB	12
2048GB	4096GB	N/A	8x128GB	8x128GB	16
256GB RDIMMs					
256GB	512GB	N/A	1x256GB	-	1
512GB	1024GB	N/A	2x256GB	-	2
1024GB	2048GB	N/A	4x256GB	-	4
1536GB	3072GB	N/A	6x256GB	-	6
2048GB	4096GB	N/A	8x256GB	-	8
3072GB	6144GB	N/A	8x256GB	4x256GB	12
4096GB	8192GB	N/A	8x256GB	8x256GB	16
64GB RDIMMs + 32GB RDIMMs					
768GB	1536GB	N/A	8x64GB	8x32GB	16
256GB RDIMMs + 128GB RDIMMs					
3072GB	6144GB	N/A	8x256GB	8x128GB	16

Notes:
1. N/A= Not Available
2. 48GB and 96GB not supported on Intel 5th Gen. CPUs 3508U, 4509Y, 4510, and 4510T SKUs.

NOTE:

- 256GB DIMMs are available on all C240 M7 server models, X210c M7 and X410C M7 compute nodes. They are not supported on C220 M7.

- Review the appropriate platform spec sheets for additional 256GB DIMM usage conditions.

- DDR5-5600 supported on Intel® Xeon® 5th Gen. CPUs only, except 96GB supported on x410c.

- When DDR5-5600 96GB is populated on x410c, the memory will operate at the maximum speed of the Intel 4th Gen. CPU memory controller, ranging from 4000 MT/s to 4800 MT/s.

- X410c server model, a 4-Socket system, doesn't support 5th Gen. CPUs.

CHAPTER 5 INSTALLING a DIMM or DIMM BLANK

To install a DIMM or a DIMM blank into a slot on the blade server, follow these steps.

## Procedure

Step 1 Open both DIMM connector latches.

Step 2 Press evenly on both ends of the DIMM until it clicks into place in its slot

Note: Ensure that the notch in the DIMM aligns with the slot. If the notch is misaligned, it is possible to damage the DIMM, the slot, or both.

Step 3 Press the DIMM connector latches inward slightly to seat them fully.

Step 4 Populate all slots with a DIMM or DIMM blank. A slot cannot be empty.

Figure 3 Installing Memory
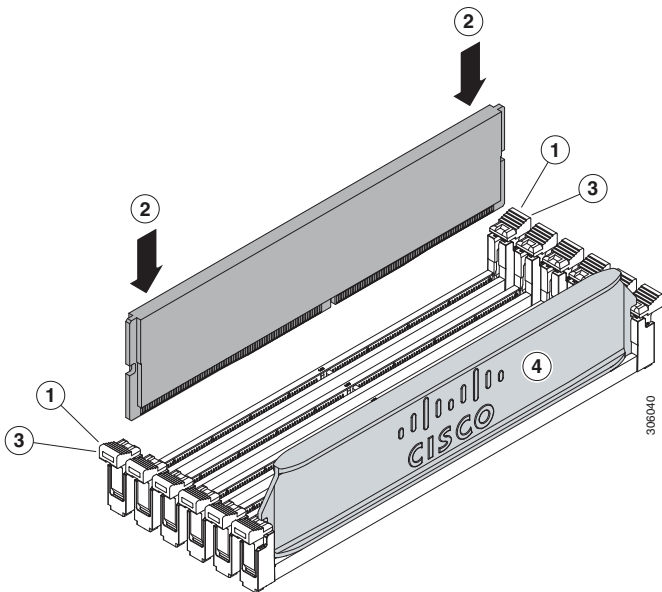
Change log

Please find the below table for the recent changes happened in the document.

Table 10 Change log

Publication Date	Revision
Updated on March 2024	Adding 96GB support for x410c
	Adding x410c block diagram
	The DIMM count rules, population rules and mixing rules tables are updated for the X410c M7
Updated on May 2024	256GB now orderable.

Cisco UCS/UCSX M7 Memory Guide