HP ProLiant DL380 G4 Server - Memory Configuration

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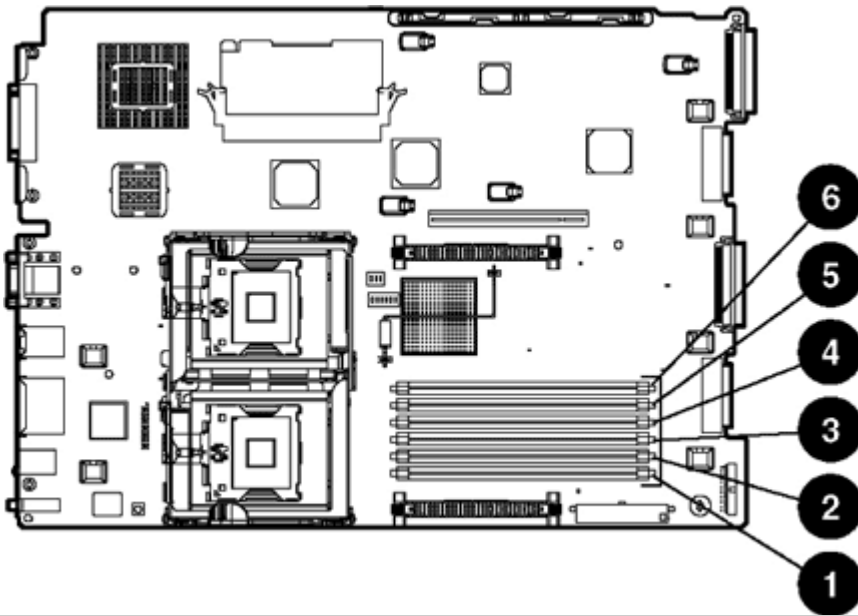
Figure 1: DL380 G4 DIMM Slots

The DL380 G4 comes standard with 1 GB of 2-way interleaved PC2-3200 DDR2 SDRAM running at 400MHz with Advanced ECC and Online Spare capabilities. The memory subsystem on the DL380 G4 provides speeds up to 400MHz to transfer data at 6.4GB/s which is twice the 3.2 GB/s speed supported by the DL380 G3. The DL380 G4 supports the latest memory technology, DDR-2.

The original double data rate (DDR) memory doubled the number of data transfers per clock cycle by sending data on both the rising and falling edge of each clock signal. The DDR-2 memory shipped with the DL380 G4 supports double the speed of original PC2100 DDR modules from 200MHz to 400MHz on PC3200 modules.

Memory is expandable to 12GB with 512MB, 1GB, and 2GB modules. If the system is configured for online spare memory, the limit of memory supported for online spare is 8GB.

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Figure 2: Slot Configuration

Item	Description
1	DIMM slot 1 Bank A
2	DIMM slot 2 Bank A
3	DIMM slot 3 Bank B
4	DIMM slot 4 Bank B
5	DIMM slot 5 Bank C
6	DIMM slot 6 Bank C

DIMM configuration requirements Top of Page

The following configuration requirements apply to single-rank and dual-rank DIMMs:

- Install only PC2-3200 Registered DDR-2 SDRAM DIMMs, 1.8 volts, 72 bits wide, and ECC.

- DIMMs must be installed in pairs.

- DIMM pairs in a memory bank must have the same HP part numbers.

- Always populate the DIMMs in sequential order per bank: Bank A, Bank B, and then Bank C.

- Dual-rank DIMMs must be populated before single-rank DIMMs (see table below).

- If dual-rank DIMMs are installed in Bank A and Bank B, no additional DIMMs may be installed in Bank C (see table below).

- The following table lists all seven (7) valid combinations of single-rank and dual-rank DIMM configurations. "Single" indicates a bank of single-rank DIMMs. "Dual" indicates a bank of dual-rank DIMMs. An invalid configuration will result in all DIMM failure LEDs lit and the system will hang. If dual-rank DIMMs are installed, online spare memory is not supported. Note that a bank contains 2 DIMMs.

Configuration	Bank A	Bank B	Bank C	Notes
1	Single			
2	Single	Single		

Configuration	Bank A	Bank B	Bank C	Notes
3	Single	Single	Single	
4	Dual			Online Spare not supported
5	Dual	Single		Online Spare not supported
6	Dual	Single	Single	Online Spare not supported
7	Dual	Dual		Online Spare not supported

- The memory configurations, including Advanced ECC or Online Spare, can be configured in RBSU. RBSU displays a warning message if the selected AMP mode is not supported by the current configuration. However, if the DIMM configuration at POST does not meet the requirements for the AMP mode selected in RBSU, the server defaults to Advanced ECC. The system indicates this by displaying a message during POST.

- If your server contains more than 4 GB of memory, consult your operating system documentation about accessing the full amount of installed memory.

Memory Configurations Top of Page

NOTE: Memory configurations listed do not apply to "Factory Integrated Models."

HP ProLiant Model DL380 G4 Base (1P) Models

Standard memory

1 GB PC2 3200 DDR2 SDRAM running at 400MHz comes installed (2 x 512-MB SDRAM)

Standard memory plus optional memory

Up to 9-GB memory is available with the optional installation of PC2 3200 Registered DDR2 SDRAM DIMM Memory Option Kit

Standard memory replaced with optional memory

Up to 12-GB of memory is available with the removal of the standard 512-MB of memory and the optional installation of PC2 3200 Registered DDR2 SDRAM DIMM Memory Option Kit.
NOTE: Chart does not represent all possible memory configurations.

Base (1P) Model Memory Chart							
Memory		**Slot**					
		1	2	3	4	5	6
Standard	1GB	512MB	512MB	Empty	Empty	Empty	Empty
Optional	9GB	512MB	512MB	2GB	2GB	2GB	2GB
Maximum	12GB	2GB	2GB	2GB	2GB	2GB	2GB

NOTE: In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank, Online spare memory is configured through RBSU.

HP ProLiant Model DL380 G4 High Performance (2P) Model

Standard memory

2 GB PC2 3200 DDR2 SDRAM running at 400MHz comes installed (2 x 1024-MB SDRAM)

Standard memory plus optional memory

Up to 10-GB memory is available with the optional installation of PC2 3200 Registered DDR2 SDRAM DIMM Memory Option Kit

Standard memory replaced with optional memory

Up to 12-GB of memory is available with the removal of the standard 512-MB of memory and the optional installation of PC2 3200 Registered DDR2 SDRAM DIMM Memory Option Kit

NOTE: Chart does not represent all possible memory configurations.

Base (1P) Model Memory Chart							
Memory		**Slot**					
		1	2	3	4	5	6
Standard	1GB	512MB	512MB	Empty	Empty	Empty	Empty
Optional	9GB	512MB	512MB	2GB	2GB	2GB	2GB
Maximum	12GB	2GB	2GB	2GB	2GB	2GB	2GB

NOTE: In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank, Online spare memory is configured through RBSU.

Online Spare Memory Top of Page

The DL380 G4 now offers online spare memory capability which allows a memory bank with a faulty DIMM to automatically fail over to a spare bank. In an online spare configuration, the ROM automatically configures the last populated bank as the spare memory. The DL380 G4 offers 3 banks: A, B, and C. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank.

With three banks populated, the failure scenario works like this: if a DIMM in bank A or B reaches a predefined single-bit error threshold, the system management driver causes the ROM to start copying the contents of the failing bank to Bank C. During this time, the failing bank provides all read access. New data is written to both banks during the copy process. After the memory copying is complete, the ROM alerts the system management to switch to the spare bank.

At that point, no more reads or writes are made to the failing bank. All reads and writes are made to Bank C. During a scheduled shutdown, the failed DIMM can be replaced with a functioning DIMM. Then, when the server restarts, the memory banks resume their normal functions

When banks A and B are populated, the ROM automatically configures bank B to be the spare bank. If DIMMs in a non-spare bank exceed the limit for the single-bit correctable errors threshold as defined by the Pre-Failure Warranty, the system copies the memory contents of the failing bank to the spare bank. The system then deactivates the failing bank and automatically switches over to the spare bank.

For this configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank. If DIMMs in a non-spare bank exceed the limit for the single-bit correctable errors threshold as defined by the Pre-Failure Warranty, the system copies the memory contents of the failing bank to the spare bank. The system then deactivates the failing bank and automatically switches over to the spare bank.

For online spare memory support, you must observe the following guidelines:

- The ROM must be up to date.

- DIMMs installed in a spare bank must be of equal or greater capacity than the DIMMs installed in other banks.

- For example, if bank A is populated with two 256-MB DIMMs and bank B is populated with two 512-MB DIMMs, bank C must be populated with two 512-MB or greater DIMMs in order for online spare memory support to function properly.

- After installing DIMMs, use RBSU to configure the system for online spare memory support.

  NOTE: Check the part number. The DIMMs are physically very similar between the G3 and G4. The G4 will not accept the PC2100 DIMMs used on the G3. They are keyed differently.

Configure Online Memory Support Top of Page

To configure online spare memory support:

1. Install the required DIMMs

   NOTE: If the DIMM configuration does not meet the criteria for online spare memory support, the system does not allow you to configure this feature.

2. Access RBSU by pressing the **F9** key when prompted during power up.
3. Select **System Options**.
4. Select **Advanced Memory Protection**.
5. Select **Online Spare Memory Support**.
6. Press the **Enter** key.
7. Press the **Esc** key to exit the current menu or press the **F10** key to exit RBSU.

Serviceability Top of Page

The DL380 G4 only supports the PC2-3200 Registered DDR-2 SDRAM DIMMs, 1.8 volts, 72 bits wide, and ECC. It continues to support online spare memory configurations.

Other guidelines for standard (not online spare) memory configurations include:

- Populate slots 1 and 2, Bank A first

- Always install memory in pairs of two identical DIMMs.

- Install DIMMs with the same speed.

- Install DIMMs into both slots within a single bank.

- Install DIMMs in order. Upgrade memory by installing DIMM pairs into banks in sequential bank order, starting with bank B.