3.9.3 Memory Troubleshooting Facts

The following are common signs that a computer needs additional memory:

Symptom	Description
High Disk Usage	Some operating systems send data to the hard disk drive if there is not enough physical memory available. If you hear the hard drive constantly operating as you work, or if the hard drive light on the front of the system case stays illuminated for long periods of time, you may need to add more physical memory to the computer.
Not Enough Memory Errors	If you receive Not Enough Memory or Out of Memory errors when you try to open and use more than one program at a time, you may need more physical memory.

Memory problems usually are found in one of the following categories:

- Either more memory is installed than the system supports or the CMOS settings are incorrect
- Incompatible or broken modules
- Improperly installed modules or dirty or defective sockets

You should be able to identify memory problems and meanings based on the following errors:

Error	Description
The system boot fails and sounds a beep code	Either no memory is installed or the memory was not detected.
The system boots, but the display remains blank	Either a card or memory module is not seated, or the system includes unsupported memory. Non-parity RAM is incompatible with ECC memory and SDRAM is incompatible with EDO memory.
The system boots, but the memory count is incorrect	The POST failed to recognize all of the memory. This can happen with incompatible memory installation. Remember to avoid combining dual-bank with single-bank memory. If any problem is detected during system boot, check the BIOS settings. The system will check only for memory installed in memory slots on the motherboard. Memory that is on expansion cards or installed on other devices will not be counted and tested.
Error Messages	Memory error usually indicate a failing module or discrepancies between new and old memory. Avoid the latter problem by not mixing new and old memory. Ensure that the memory is functioning properly and is compatible with the system. If the memory is good and fully compatible, these error messages could mean that the motherboard has a problem. The following are some common error messages you may encounter: - Memory mismatch error - Memory parity interrupt at *x* - Memory address error at *x* - Memory failure at *x*, read *y*, expecting *z* - Memory verify error at *x*
Software-generated memory problems	Software errors include: - Registry error - Parts of the registry are written to faulty sections of RAM. - Exception error - A software bug can cause this type of error. - General-protection fault - A software bug can cause this type of error. - Page fault - A software bug can cause this type of error. For software errors, check to see if the memory address indicated in the error is consistently the same. If so, check the memory. Otherwise, reboot the system or update the software.
Intermittent problems	One of the tougher detection challenges is the intermittent occurrence of error messages, crashes, or sudden reboots. The trouble in diagnosing this situation is the number of potential problems, including timing, heat, corrosion, fluctuating power, loose connections, EMI, or a combination of these problems.

You should be familiar with this list of critical times when memory problems manifest themselves:

- First boot of a new computer. Memory is not properly seated, missing, or the motherboard is defective.
- After a memory upgrade. Ensure that the memory is compatible and was installed and configured properly.
- After software installation. New software requires more memory and can cause problems.
- After hardware installation or removal. Incompletely or improperly installed hardware can cause errors that appear to be memory related.