Windows 32bit - Installed memory 4 GB but only 3.5 GB or less is usable

- Parallels Desktop for Mac Standard Edition
- Parallels Desktop for Mac Standard Edition 9 and older
- Parallels Desktop for Mac Standard Edition 10
- Parallels Secure Workspace

NOTE: Be advised that **32-bit** client versions of Windows cannot address more than 4 GB of RAM.

Symptoms

In your virtual machine configuration the amount of memory is set to 4GB or higher. However, Windows only shows the amount of 3.5GB or less.

Cause

This is a known limitation.

All **32-bit** client versions of Windows (not just Vista/XP/7) have a 4 GB addressable space (**64-bit** versions can use much more).

However you can't use the entire 4 GB of addressable space. Even though you have a 4 GB address space, you can only use around 3.1 GB of RAM. That's because some of that space is used by hardware and is not available to the operating system and applications. The amount you can use varies, depending on what hardware you have installed, but can range from as little as 2 GB to as much as 3.5 GB. It's usually around 3.1 GB.

NOTE: The hardware is using the addressable "space", not the actual RAM itself. If you have a greater amount of RAM, the rest of the RAM goes unused because there is no addressable space to map it to.

Resolution

There is a possible workaround for this by performing the following steps:

- Start your Windows 7 virtual machine
- Click Start button > Run > type in **msconfig**, press Enter
- Go to Boot tab > Advanced options > and uncheck **Maximum memory**

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