

# Windows Hyper-V server has a default limit of 256 dynamic MAC addresses

Applies to: [Supported versions of Windows Server](#)

This article provides a solution to an issue that occurs when you start a guest virtual machine.

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## Symptoms

Consider the following scenario:

You have a Windows Server 2012 computer that is configured with the Hyper-V role. The Hyper-V server is configured to provide Dynamic MAC addresses to the guest machines.

When you start a guest virtual machine, you may encounter the following error message:

The application encountered an error while attempting to change the state of '<Virtual machine name>'

Synthetic Ethernet Port (Instance ID CCE417C5-BDD9-4216-85CA-248620EE75C6): Failed to power on with Error 'Attempt to access invalid address'.

On a Windows Server 2008 or Windows Server 2008 R2 Hyper-V host, an Event ID 12565 from source "Microsoft-Windows-Hyper-V-Worker" is logged, as described in the [Event ID 12565 — NIC Configuration](#).

## Cause

This problem occurs because the default number of dynamic MAC addresses for virtual machines (256) has been exceeded.

Hyper-V generates the MAC address as described below (mapping MAC address to aa-bb-cc-dd-ee-ff):

- The first three octets (aa-bb-cc) are Microsoft's IEEE organizationally Unique Identifier, 00:15:5D (which is common on all Hyper-V hosts).
- The next two octets (dd-ee) are derived from the last two octets of the server's IP address.

- The last octet (ff) is automatically generated from the range 0x0-0xFF.

Because the last octet is an 8-bit value, there is a default limit of 256 possible MAC addresses.

## Resolution

Apply one of the following solutions:

- Turn off the virtual machine, allocate a static MAC Address that does not belong to Hyper-V's dynamic MAC address range, then restart the virtual machine.
- Increase the range of MAC addresses by using one of the following methods, by modifying the fifth and/or the sixth octet of the default dynamic MAC address range:

If the host is Windows Server 2008, you can modify the dynamic MAC address range via the following registry values:

- `HKLM\Software\Microsoft\Windows NT\CurrentVersion\Virtualization\MinimumMacAddress`
- `HKLM\Software\Microsoft\Windows NT\CurrentVersion\Virtualization\MaximumMacAddress`

### Note

Knowledge of the hexadecimal numbering system is helpful to modify the octets. Each octet's range is 00 - FF.

## More information

Refer to the following blog posts for additional reading on this subject:

- [Hyper-V R2: MAC Address Management](#)
- [Managing MAC Address Pools in Hyper-V R2](#)

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