



Running DME on VMware ESX

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Applies to: DME Server 2.0 and above

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Requirements for supporting a DME server on VMware ESX

For small to midsize DME servers, DME supports running the DME server on VMware ESX. When sizing the server, count on a 10% performance loss due to virtualization overhead. See a warning about the impact of virtualization on performance at the end of this document.

The load on the DME Server or DME Connector is determined by the following parameters:

- The number of terminals (devices) to connect to the server, sync with the Connector
- How the DME notification framework is configured
- Is push enabled (SMS and/or network push)
- Peak load (when the scheduled sync window starts)
- Synchronization schedule
- Number of concurrent connections
- Synchronization settings: How many days are synchronized (e-mail/calendar etc.)
- Are RSS feeds enabled (DME 3.6)
- Collaboration activity (e-mails/calendar events/day) for DME users

To support more users, a dedicated DME server is required.

The performance of a DME Server is limited by memory, processor power, network and disk system (in order of importance), which should be kept in mind when sizing the solution.

Supported versions of hypervisors

- DME is supported on VMware ESX 3.5 and later
- DME is supported on VMware ESXi 3.5 and later if Kannel/NowSMS is installed on another server (direct serial connections are not supported by VMware ESXi)
- DME is *not* supported on other VMware virtualization technologies like VMWare Workstation, VMware Player and VMware Server or other virtualization products like KVM, Citrix/Xen, MS Hyper-V etc. These products and technologies may work, but are not supported.

VMware ESX(i) Server recommended minimum requirements

- Active support agreement for VMware ESX(i)
- 8 CPU cores
- 16 GB RAM
- 2 1Gbit NICs – locked to 1Gbit and full duplex, do not use auto negotiation
- 1 serial/RS232 port, if using Kannel or NowSMS in the virtualized environment, attached to the physical server on which the virtual DME server is installed. Note that if VMotion is used to move a virtual DME server to another physical server, a modem must be attached to that server as well.

Guest OS requirements

- Active maintenance or support agreement with OS supplier or partner
- MS Windows
 - Windows 2003 Server
 - Windows 2008 Server
- GNU/Linux
 - RHEL 5

Please adjust settings if DME is installed in a 64 bit virtualized guest OS, as a 64 bit OS uses more CPU power and RAM than its 32 bit counterpart. This will affect the performance of DME, if the ESX is not scaled properly with sufficient resources to run the 64 bit OS.

DME requirements

- DME Server version 2.0 or later
- The DME database must be located on a remote database server. Either MS SQL Server or MySQL can be used, depending on guest OS type (Windows only supports MS SQL Server). Note that the remote database server should not be virtualized, as the load on the database server will impact performance of the DME Server/Connector.
- Clustering DME servers using VMware is *not* supported.

Configuring the VM for the DME server

DME VM minimum configuration for one DME server or one DME connector

- 2 CPU cores
- 3 GB RAM (2 GB extra per DME Server instance or DME Connector)
- Assign 1 GHz CPU reservation (per installed DME Server or DME Connector)
- Assign minimum 75 GB disk space and set the disk to pre-allocate space
- Enable 'Synchronize guest time with host'
- Enable 'Support VMI Paravirtualization'
- On the Resources tab, the 'Unlimited' setting must be selected for memory and CPU

If more than one DME server (instances) or DME connector is to be installed in a guest OS, add 2 GB RAM per DME server (instance) and/or DME connectors that are to be installed. For instance, 1 DME server and 2 DME connectors amount to 7 GB of RAM for one guest OS or 9 GB for 3 guest OS's.

Keeping time

Keeping the time correct on the DME Server and DME Connector is *essential* for DME to function correctly.

Two steps are required to do this:

- Configure the VMware host to keep time accurate by enabling and configuring NTP
- Install and run VMtools in the virtual server running DME
 - Enables the memory 'balloon' driver to reclaim unused memory
 - Enables time keeping functions, which are essential for DME
 - Improves GUI performance (if used)
 - Improves NIC performance
 - Do not use W32Time (Windows) or NTP (Linux) and VMtools time correction simultaneously

If the DME Server is installed on Linux, it is recommended to disable the GUI by configuring it to start in runlevel 3 ("multiuser text mode with network").

Warning

DME is a memory and CPU intensive system, and relies on exact timing. Having multiple guest servers installed on the ESX will impact the performance of the DME server.

To run DME optimally in a virtualized environment, you need as little load on the ESX(i) as possible. Virtualization does not remove the restrictions of a physical box because the hardware is virtualized. Virtualization degrades DME performance by approx. 10%, sometimes more.

The greatest weakness in a virtualized environment lies in the speed of I/O operations, which are shared between all the guest operating systems. The DBMS (MySQL or MS SQL Server) is very I/O intensive with DME (the way DME uses the database is in a ratio of approx. 10-25% CPU and 90-75% I/O, depending on the usage of DME). We therefore strongly recommend *against* installing the DBMS on the virtual server. Based on our experience we can say that this is the single, greatest bottleneck in DME systems of any size.

If support is required due to lack of performance of the DME server or connector, please move the affected DME guest OS/OS's to another server to replicate the performance problem.