

Malwarebytes
**ENDPOINT
SECURITY**

**Managing Malwarebytes in Large Networks
Best Practices Guide**

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Introduction

The purpose of this guide is to provide critical information pertaining to installation, operation and maintenance of *Malwarebytes Endpoint Security* in large corporate environments.

Systems operating in these environments face challenges which are unique and certain specifications must be tuned or altered to provide better system performance under the higher load encountered on a regular basis.

Companies using *Malwarebytes Management Console* in large environments may wish to consider using one Management Server for every 10,000 endpoints to maximize system performance. The Malwarebytes Licensing Agreement allows customers to install an unlimited number of Management Servers at no additional cost. Even when multiple Management Servers are used, tuning (as explained in this guide) is recommended to achieve the best results.

Server Architecture

This section details some basic information about integration of *Malwarebytes Endpoint Security* into your environment. We will build upon this as required to get you started on the right foot.

During installation, *Malwarebytes Endpoint Security* installs two components:

- **Management Server:** This is the central component of *Malwarebytes Endpoint Security*, and controls all communication with endpoints, the SQL Server data repository, user console, Active Directory, and optionally, the Malwarebytes update servers.
- **SQL Server:** This is the repository for all information about your endpoints, users, and security status. By default, Malwarebytes attempts to use a SQL Express database for storage. SQL Express is not suitable for large system environments. You should instead utilize a dedicated SQL Server.

Servers – Physical vs. Virtual

In an enterprise environment, Malwarebytes recommends that dedicated physical machines be utilized for servers associated with *Malwarebytes Endpoint Security*. Both the Management Server and SQL Server data repository may be heavily used, and dedicated physical machines help to assure minimum latency and maximum performance.

Server Hardware Requirements

As with many aspects of a large environment, *Malwarebytes Endpoint Security* also requires ample computing power to service its users and its endpoints. This is divided into two primary areas, as follows:

Management Server

The Management Server is responsible for all communications with all endpoints, as well as communication with the SQL data repository. Based on practical usage, you should utilize a dedicated server for the Management Server. In this role, the following hardware specification ranges are recommended depending on the number of endpoints to be serviced.

- **CPU:** 2 to 4 cores
- **RAM Memory:** 6 to 8 GB
- **Disk Space:** 500 GB, more space allows larger accumulation of log files

SQL Database Server

A dedicated SQL database server should be specified for use by *Malwarebytes Endpoint Security*. The SQL database server stores all security and system data associated with *Malwarebytes Endpoint Security*, and may sometimes be placed under a heavy load. By default, the Management Server deletes data older than ninety (90) days. In this case, 50-75 GB of disk allocated for use by SQL Server would serve your needs. *Malwarebytes Endpoint Security* does not archive data to external storage as part of its functionality, however security events can also be forwarded to a syslog server. If you wish to retain data longer than 90 days, you should gauge your own disk usage and change the default settings to fit your needs. Your corporate backup solution may be able to provide continuity for any data which exceeds the storage maximum that may be automatically deleted by the program.

Server Connectivity

Large environments will cause significantly more communication between the Management Server and the SQL Server data repository than will occur in smaller environments. To help alleviate bottlenecks, it is strongly recommended that both servers be in the same physical location, and should be served by gigabit (or better) networking.

Active Directory OU Query Limitations

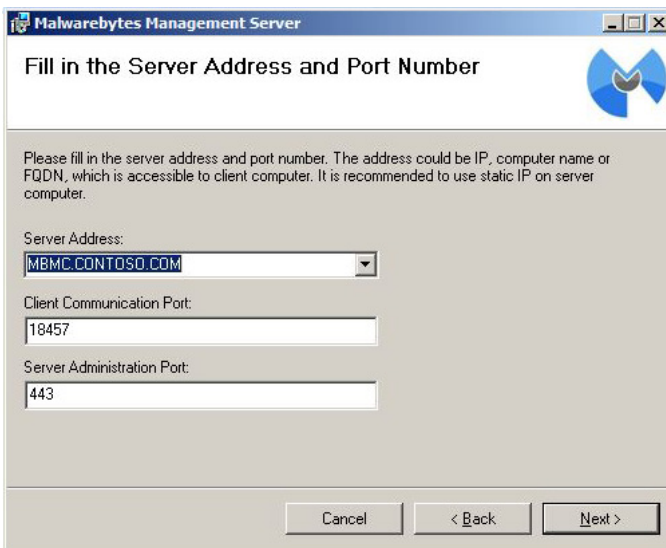
Microsoft has defined Active Directory response to LDAP queries so that no more than 5000 entries may be returned. If more than 5000 endpoints belong to a single Organizational Unit (OU), this may impact your ability to scan and/or install managed clients to the full number of endpoints based on the top-level OU. The Malwarebytes Administrator must take this limitation into account.

Server Installation

This section of the guide is limited in scope, as many installation requirements are covered in depth in the *Malwarebytes Management Console Best Practices Guide*. Only those items critical for large system deployment are covered here.

Management Server Identity

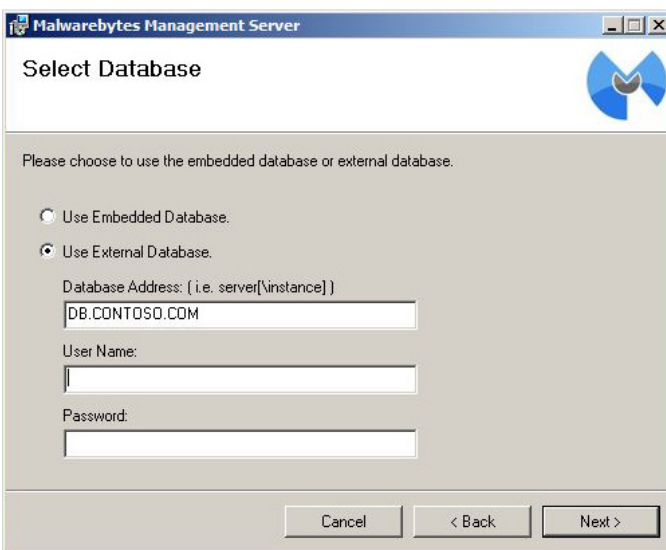
When a *Malwarebytes Anti-Malware*, *Malwarebytes Anti-Exploit*, or *Malwarebytes Anti-Ransomware* client is installed on an endpoint, the Internet identity (IP address, host name or Fully-Qualified Domain Name [FQDN]) of the Management Server is specified in configuration files. There is no built-in method to change the identity at a later time. For this reason, it is strongly recommended that the Management Server be installed on a computer which uses a Fully-Qualified Domain Name (FQDN). A host name is also acceptable, providing that the host name remains constant. The screenshot below depicts the Management Server installation step where this information is entered.



The screenshot shows a dialog box titled "Malwarebytes Management Server" with the subtitle "Fill in the Server Address and Port Number". It contains a text box for "Server Address" with the value "MBMC.CONTOSO.COM", a text box for "Client Communication Port" with the value "18457", and a text box for "Server Administration Port" with the value "443". There are "Cancel", "< Back", and "Next >" buttons at the bottom.

If this cannot be done, use of a static IP address is also acceptable. If a static IP address is used and requires modification at a future date, you must contact Malwarebytes Technical Support for instructions on re-establishing contact between client and server.

SQL Server vs. SQL Express



The screenshot shows a dialog box titled "Malwarebytes Management Server" with the subtitle "Select Database". It contains two radio buttons: "Use Embedded Database." (unselected) and "Use External Database." (selected). Below the radio buttons is a text box for "Database Address: [i.e. server\instance]" with the value "DB.CONTOSO.COM", and two text boxes for "User Name:" and "Password:". There are "Cancel", "< Back", and "Next >" buttons at the bottom.

When *Malwarebytes Endpoint Security* is installed, the default SQL data repository is Microsoft SQL 2008 Express. This is **not** suitable for a large system deployment **under any circumstances**. As mentioned previously, you should use a dedicated SQL server for *Malwarebytes Endpoint Security*. You may use Microsoft SQL Server 2008, SQL Server 2012 or SQL Server 2014, but please steer clear of SQL Express.

Policy Configuration

When it comes to *Malwarebytes Endpoint Security*, a significant amount of your network communications is directly related to endpoint policies, and the behavior dictated by those policies. The following guidance will help you to cut down on communication requirements.

Planning Your Endpoint Configurations

Every managed endpoint utilizes a policy to define its behavior, and that policy is set up and distributed by the Management Server. Every time a policy is updated and/or saved, it is distributed to endpoints governed by that policy. That results in network traffic. For this reason, we recommend that you read about policies, become familiar with the various policy screens, and if possible, define a cluster of endpoints which can serve as a testbed for policy experimentation. By doing this, you can make every policy change count and still maintain the highest network throughput possible.

Reducing Database Update Bandwidth

Definition updates provide the most updated protection for *Malwarebytes Endpoint Security* to use on your endpoints. There are two policy-driven methods of providing updated definitions to your endpoints. The default method is to receive incremental updates (roughly 3 kilobytes, *1/3000th the size of a full database update*) directly from the Internet update server. By assuring that only new definitions are downloaded, network bandwidth is significantly reduced. The second method is to receive updates from the Management Server, but that mode is limited to full database updates. The size of the full database update (approximately 9-12 megabytes) is magnified by the number of endpoints which must receive the update.

Endpoint Check-In Intervals

Policies dictate when endpoints check in with the Management Server for policy updates, definition updates, and commands issued via the Management Server. Default check-in times are variable based upon the number of endpoints, but these defaults are designed with small and medium networks in mind. The following settings are recommended minimum check-in intervals for larger and distributed network environments.

Endpoints Serviced	Recommended Interval
2,501 – 5,000	30 minutes
5,001 – 10,000	360 minutes
10,001 – 20,000	480 minutes
20,001 – 30,000	720 minutes
30,001 – 50,000	1080 minutes
50,001 – 75,000	1440 minutes
75,001 – 100,000	2880 minutes
Over 100,000	4320 minutes

Emergency Maintenance

The purpose of this section is to highlight maintenance requirements which are brought on by unusual circumstances, and are exacerbated by the number of endpoints being serviced.

Management Server

During normal *Malwarebytes Endpoint Security* operations, there are numerous ongoing communications between the Management Server, protected endpoints, and the SQL Server data repository. Typical communications include policy distribution to endpoints, endpoint check-ins for policy and definition updates and endpoint event reporting, and SQL database updates. When more requests are made than can be serviced, the connection is dropped and an error is logged. In large installations, the sheer volume of errors which may be logged can compromise available disk space on the Management Server. Those log files can be found in the following folder:

```
c:\Windows\System32\LogFiles\HTTPERR
```

It is critical that the system administrator be aware of this Windows behavior and monitor this directory for rapidly accumulating log files, so that available disk space is not compromised. This data should be managed at your discretion.

SQL Database Server

A large-scale *Malwarebytes Endpoint Security* deployment will always result in significant disk space usage on your SQL Server database instance. We strongly recommend that system administrators periodically observe actual disk usage and record their findings for later comparison. By monitoring your actual usage – particularly the *TBL_ClientSecurityLog* table which keeps records of all detections on the endpoints – you can stay aware of conditions which may require intervention.

Endpoint Log Cleanup

The Management Server has the ability to purge information from its system database, and to purge client files which have been transmitted from endpoints to the server. However there is no built-in capability to remove XML log files which build up on the endpoint itself. If an endpoint is starting to run low on disk space, the following batch file can be executed on the endpoint to purge files older than `<days>` days.

```
forfiles -p "C:\ProgramData\Malwarebytes\Malwarebytes' Anti-Malware\Logs" -s -m *.*  
/D -<days> /C "cmd /c del @PATH"
```

Substitute `echo` for `del` to see results for yourself prior to deleting any files.

PLEASE NOTE: The path listed here is specific to *Malwarebytes Anti-Malware for Business*, versions 1.75 and 1.80. These are the only releases licensed for use in a business environment.

XML log files may accumulate on the endpoint if you encounter connectivity issues between the Management Server and managed clients, and may be compounded during a malware outbreak or false positive scenario. On a heavily-used endpoint, purging logs may prevent an outage caused by lack of disk space.

Endpoint Deployment

When it comes to deployment of *Malwarebytes Endpoint Security* onto an endpoint, there are few restrictions. This section details those restrictions, where you must create special settings, and where you must avoid installation.

Endpoint Installations

In large environments, we do not recommend push installation of *Malwarebytes Anti-Malware* or *Malwarebytes Anti-Exploit* clients directly from the Management Server. Installations are performed serially, which is generally more acceptable in smaller environments. Several excellent deployment methods exist which will serve your installation needs, including SCCM, Active Directory GPO, or other third-party management frameworks.

Servers as Endpoints

Experience has shown that installation of a *Malwarebytes Anti-Malware* client onto an endpoint running certain server software carries special conditions. We **strongly** recommend against deployment of *Malwarebytes Anti-Malware* client software onto virtual endpoints built on Terminal Services, RDP or Citrix client software. In addition, [Malicious Website Blocking](#) must be disabled if *Malwarebytes Anti-Malware* is being installed on an Exchange server. **PLEASE NOTE:** *Malwarebytes Anti-Ransomware* should not be enabled on any server operating system.

Server Type	Anti-Malware Client	Anti-Exploit Client	Anti-Ransomware Client
File/Print Server	OK	OK	NO
Exchange Server	OK (*)	OK	NO
Terminal Server/RDP/Citrix	NO	OK	NO

NOTE: (*) Malicious website blocking must be disabled

Remote Clients Using Chained VPN Servers

We have noticed that when multiple clients utilize a VPN server at a remote facility to connect to a VPN server at headquarters (i.e. [VPN Server to VPN Server connection](#)), there is confusion caused by multiple hostnames (endpoints) being associated with a single IP address and/or MAC address. The identity of the remote endpoint is masked because the IP/MAC of the *remote* VPN server which provides connectivity to headquarters is instead shown. In this case, we recommend that you follow the guidance shown in the previous section (Section 6.3) to properly identify and maintain the remote endpoint. This has no negative impact on protection of the remote endpoint, and allows the Management Server to maintain an accurate record of the remote endpoint's security status.

Remote/Roaming Clients

Large corporate customers typically support users connecting to the corporate network from both internal and external connections. If the user is not directly connected to the internal network, methods must be provided which guarantee that the user can receive database updates, policy updates, and can report the security status of their endpoint back to the Management Server.

One way to achieve this is through the use of VPNs. As long as roaming clients are connected to the internal network through the VPN, they will be able to communicate with the Management Server as intended.

Another method is illustrated in the following graphic. This method does not require VPN connectivity. In this scenario, the Management Server uses *mbmc.contoso.com* as its hostname, which is sent to each endpoint when *Malwarebytes Endpoint Security* is installed. Entries exist for this hostname in both internal and external DNS servers, though the IP address mapped to this server is different depending on which DNS server you are using. When the endpoint needs to contact the Management Server, a DNS lookup yields the public IP address for the corporate firewall. The firewall grants access to incoming requests on port 18457, and utilizes NAT (Network Address Translation) to route the connection request to the designated port on the Management Server.

