NotifyMDM
Mobile Device Management

High Availability Configuration

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High Availability Configuration

Consider **Network Load Balancing** and **SQL Server Failover Cluster** setups to prevent or limit disruption should a component fail. Though it is not required that you use both setups, implementing both is recommended in order to accomplish a true High Availability environment.

Step 1: Configuring Network Load Balancing and SQL Server Failover Cluster

If you are planning on configuring a highly available *NotifyMDM* setup with Network Load Balancing and/or SQL Failover Clusters, refer to the links below. Network Load Balancing and/or SQL Failover Clusters should be configured prior to installation of the *NotifyMDM* components.

See an example of a Network Load Balancing Configuration in Appendix A.

Information and Links:

- **Configuring network load balancing in Windows Server 2008 or 2008 R2**
  http://technet.microsoft.com/en-us/library/cc754833%28WS.10%29.aspx

- **Configuring SQL Server failover cluster in Microsoft SQL Server 2008**
  http://msdn.microsoft.com/en-us/library/ms179530%28v=SQL.100%29.aspx

- **Configuring SQL Server failover cluster in Microsoft SQL Server 2008 R2**
  http://msdn.microsoft.com/en-us/library/ms179530%28v=SQL.105%29.aspx

Important Considerations

If you have configured your system with multiple web servers for Network Load Balancing, be aware that:
- If you implement a Web Garden, the feature should be adjusted on all servers running the *NotifyMDM* Web/HTTP component.
- When you upgrade *NotifyMDM*, all Web/HTTP server boxes must be updated to the same version.

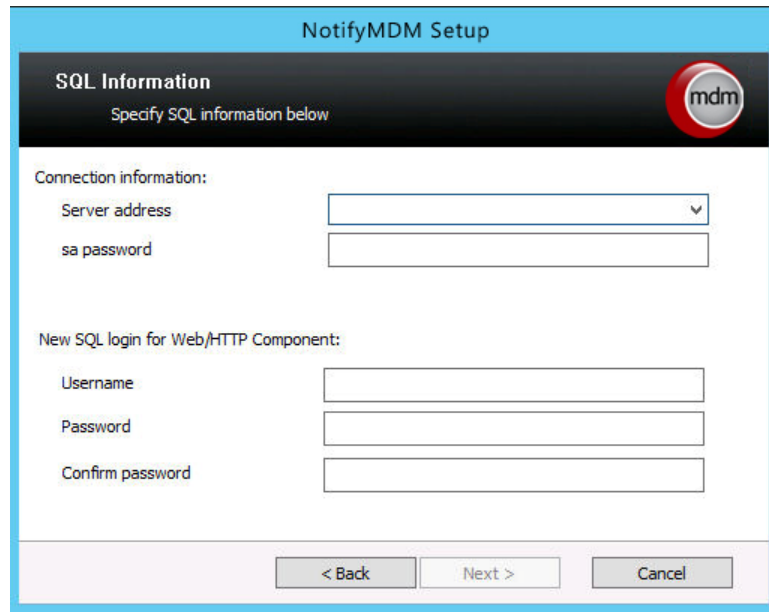## Step 2: Installing NotifyMDM in a Network Load Balanced Environment

If you are configuring servers for a Network Load Balanced setup, there are some specifics you must adhere to during the *NotifyMDM* installation. You will essentially be installing the *NotifyMDM* Web/HTTP component on two servers.

When you Install the *NotifyMDM* SQL Database Component, use the actual IP address (or domain name) when defining the location of the SQL server that will be used. Do not select the "(local)" option for the server address.

This will insure that the database and web components can communicate. You will also define the SQL server address when installing the *NotifyMDM* Web/HTTP component. Since at least one installation of the *NotifyMDM* Web/HTTP component will be housed on a separate server, it must have the actual SQL server address.

The MDM.ini file that is generated during the Web/HTTP installation contains an encrypted "ConnectionString" that includes the SQL server location.

A. During the installation of the *NotifyMDM* server components, use the actual IP address (or domain name) when defining the location of the SQL server that will be used.


B. Install the *NotifyMDM* Web/HTTP component on a second server using the same information.

C. Copy the "MDM.ini" file ("Install Directory"\NotifyMDMServer\MDM.ini) from the server where the first instance of NotifyMDM Web/HTTP was installed. Paste the copy into the same directory of any subsequent NotifyMDM Web/HTTP installation on a separate server, effectively overwriting the original.

There is one entry in the NotifyMDM database for the "ConnectionString" and it is inserted in the "MDM.ini" file during the first Web/HTTP installation. Copying and pasting insures that the entry will be the same on all instances of the NotifyMDM Web/HTTP installation.

This is necessary because the "ConnectionString" is encrypted with random characters during each subsequent NotifyMDM Web/HTTP installation, so even though the data contained within the encrypted string is the same, the encrypted strings themselves would not be the same.
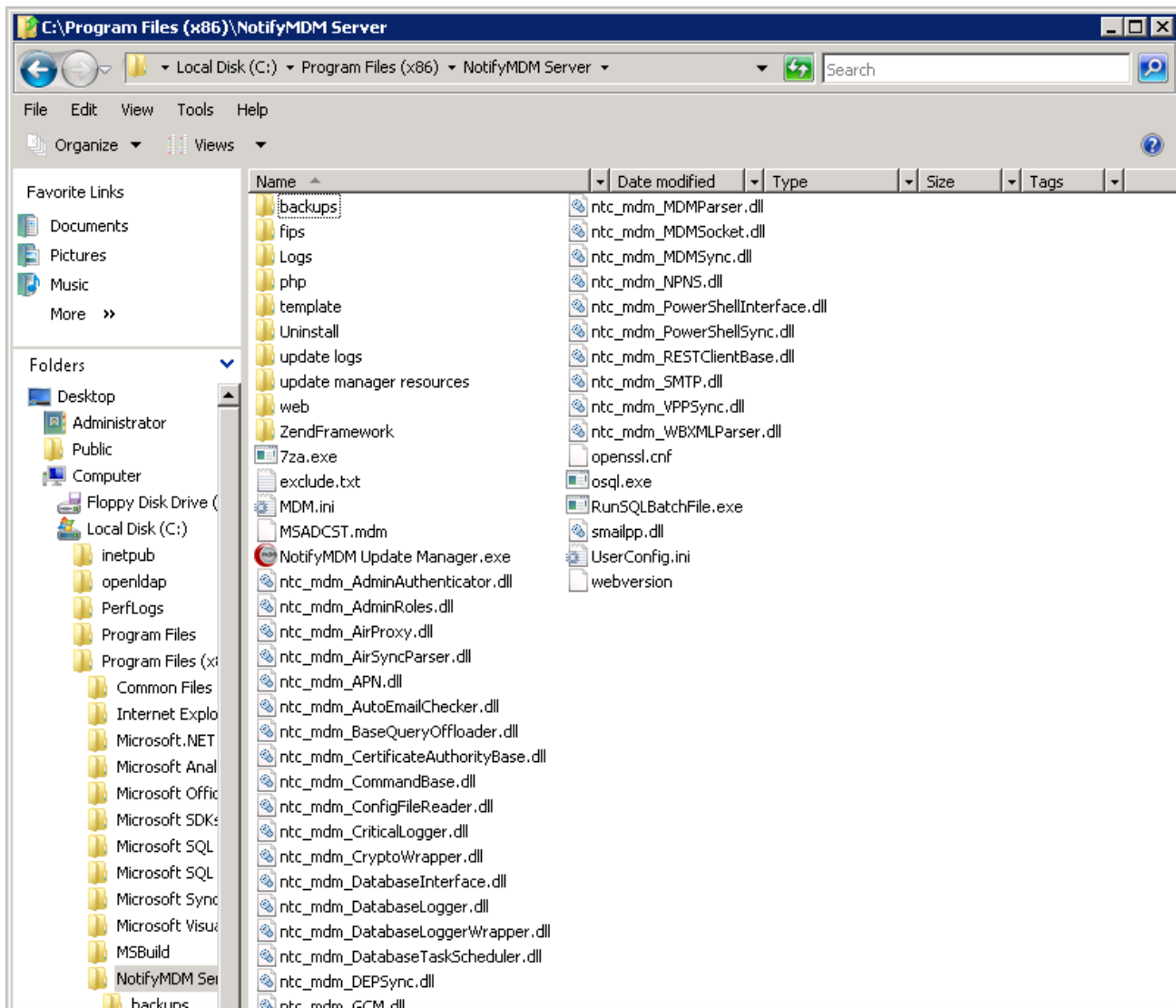
D. After you have overwritten the "MDM.ini" file on a NotifyMDM Web server, IIS will need reset on the server for the changes to take effect.

Appendix A: Network Load Balancing Configuration

What follows is an example of a network load balancing configuration that has been tested and proven to effectively enhance *NotifyMDM* system performance.

Information and links:

http://technet.microsoft.com/en-us/library/cc770558.aspx

http://virtuallyhyper.com/2013/04/load-balancing-iis-sites-with-nlb/

Prerequisites

You will need an IP address for each box in the web cluster. For example, if you are clustering three web servers and one database server, you will need 5 IP addresses - one IP for each server and one for the Cluster IP.

The Cluster IP is the IP that all servers in the cluster will share. It is the IP to which you will log on to view the dashboard and to which end users will enroll devices. **All hosts for the cluster will need to be on the same subnet**.

You will need an SSL certificate.

Memcached and PHP.ini

For Network Load Balancing, a tool called *Memcached* was used to support cookies working across multiple physical web servers. Sessions are saved on a central machine using *Memcached*. All servers in the cluster then access the central machine. For setup instructions, see: http://memcached.org/.

When using *Memcached*, the PHP.ini file must be configured as follows:

1. In the php.ini file, set the following: session.save_handler = memcache

2. In the php.ini file, set the following: session.save_path = "tcp://<MEMCACHE_SERVER_IP_ADDRESS>:11211"

***Note that a *NotifyMDM* upgrade may overwrite this when a php.ini change is required for the upgrade.

Using *Memcached* is one method of accomplishing efficient processing across multiple physical web servers. Alternate methods can be used.

Enable Network Load Balancing

Network Load Balancing is a feature of Windows Server. It must be added on each server that will be part of the cluster.

IIS 7/7.5 Setup

For 2008 & 2008 R2 systems:

1. Open *Server Manager*.

2. Click on **Features** in the left panel.

3. Click on **Add Features**.

4. Look for **Network Load Balancing** and enable it by checking the box next to it.

5. Click **Install**.

IIS 8/8.5 Setup

For 2012 & 2012 R2 systems:

1. Open *Server Manager*.

2. Scroll down the page until you get to the **Roles and Features** section. On the right, click on **Tasks** > **Add Roles and Features**.

3. Leaving all default values, click **Next** through the prompts until you get to **Features**.

4. Look for **Network Load Balancing** and enable it by checking the box next to it.

5. Click **Install**.

Create the Web Cluster Using Network Load Balancing Manager

1. Open the *Network Load Balancing Manager*.

2. Select **Cluster** > **New**

3. In the Host: field enter the HostName/ComputerName/IP of the first web server to be clustered. Click **Connect**.

4. After connecting, highlight the interface you will be using (typically there will only be one listed), then click **Next**.

5. At the *Host Parameters* window, leave the default and click **Next**.

6. At the *Cluster IP Addresses* window, click **Add** and enter the IP that will be used as the Cluster IP (see the *Prerequisites* section) - Subnet mask = 255.255.255.0, then click **Ok**.

7. At the *Cluster Parameters* window, leave the defaults, but verify that the **Unicast** radio button is selected. Click **Ok**.

8. At the *Port Rules* window, select **Edit**.

   - Under *Cluster IP address,* uncheck **All**.

   - Under *Protocols*, select **Both**.

   - Under *Filtering mode > Affinity,* select **None**. Click **Ok**.

This completes the first host setup. Now you will need to add more hosts to the cluster.

To add more hosts:

1. In the left panel of the *Network Load Balancing Manager*, highlight the cluster, right-click, and select **Add Host to Cluster**.

2. Repeat steps 3-8 above for each web server you add to the cluster.

3. When you are finished, you should see all the hosts in the cluster listed in the *Network Load Balancing Manager* window. Once they are configured, they will say **Converged**. This could take some time to update. If they do not converge, test the communication between hosts (ping one from another).