IBM Tivoli Monitoring Active Directory Option

Release Notes

Version 5.11 FX02
IBM Tivoli Monitoring Active Directory Option

Release Notes

Version 5.11 FX02
Note: Before using this information and the product it supports, be sure to read the general information under “Notices” on page 35.


This edition applies to version 5 release 1 modification level 1 of IBM Tivoli Monitoring Active Directory Option and to all subsequent releases and modifications until otherwise indicated in new editions.

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Release Notes

This Release Notes document provides important information about IBM Tivoli® Monitoring Active Directory Option Version 5.1.1, FX02, hereafter referred to as the Feature Option for IBM Tivoli Monitoring Active Directory Option. These notes are the most current information for the product and take precedence over all other documentation.

Please review these notes thoroughly before installing or using this product.

These release notes include the following topics:

- “About this document”
- Features and Benefits
- System Requirements
- Installation Notes
- Known Product Defects, Limitations, and Workarounds
- Documentation Changes

About this document

This section provides general information about this document and about support options.

Accessing publications online

The documentation CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli software information center by first going to the Tivoli software library at the following Web address:


Scroll down and click the Product manuals link. In the Tivoli Technical Product Documents Alphabetical Listing window, click M to access all of the IBM Tivoli Monitoring product manuals.

Note: If you print PDF documents on other than letter-sized paper, set the option in the File ➤ Print window that allows Adobe Reader to print letter-sized pages on your local paper.

The IBM Software Support Web site provides the latest information about known product limitations and workarounds in the form of technotes for your product. You can view this information at the following Web site:

http://www.ibm.com/software/support
Ordering Publications

You can order many Tivoli publications online at the following Web site:


You can also order by telephone by calling one of these numbers:

• In the United States: 800-879-2755
• In Canada: 800-426-4968
• In other countries, for a list of telephone numbers, see the following Web site:
  http://www.tivoli.com/inside/store/lit_order.html

Providing Feedback about Publications

IBM wants to hear about your experience with Tivoli products and documentation, and welcomes your suggestions for improvements. If you have comments or suggestions about products and documentation, contact us in one of the following ways:

• Send an e-mail to pubs@tivoli.com.
• Complete our customer feedback survey at the following Web site:
  http://www.tivoli.com/support/survey/

Support information

“Support information” on page 31 describes the following options for obtaining support for IBM® products:

• “Searching knowledge bases” on page 31
• “Obtaining fixes” on page 31
• “Contacting IBM Software Support” on page 32

Features and Benefits

Tivoli Monitoring Active Directory Option Version 5.1.1 FX02 has the following features and benefits:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
</table>
| Integration with Tivoli Framework and IBM Tivoli Monitoring | • Tivoli environment and infrastructure  
• Familiar user-interface  
• Ability to monitor Windows 2000/2003 domain controllers as Tivoli endpoints  
• Ability to monitor Windows 2000/2003 Domain Name System (DNS) and Windows 2000 Dynamic Host Configuration Protocol (DHCP) servers as Tivoli endpoints  
• Ability to send events to the Tivoli Enterprise Console  
• Ability to send events to the Tivoli Business System Manager console  
• Ability to log data for analysis and display  
• Ability to view online and historical data on the Web Health Console  
• Ability to set thresholds  
• Ability to use new resource models together with existing Tivoli Monitoring resource models, such as resource models in the System category.  
• Ability to restart Windows services through built-in actions |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource models tailored to Active Directory</td>
<td>Ability to monitor the performance, availability, and health of Active Directory Option key services and objects such as:</td>
</tr>
<tr>
<td>Option</td>
<td>- Domain controllers</td>
</tr>
<tr>
<td></td>
<td>- Allocation of Flexible Single Master Operations (FSMO) roles</td>
</tr>
<tr>
<td></td>
<td>- Replication efficiency within and between multiple sites</td>
</tr>
<tr>
<td></td>
<td>- Windows DHCP server</td>
</tr>
<tr>
<td></td>
<td>- Windows DNS server</td>
</tr>
<tr>
<td>Error-handling capability</td>
<td>Ability to display error messages on the Web Health Console about the following:</td>
</tr>
<tr>
<td></td>
<td>- Missing prerequisites on endpoints</td>
</tr>
<tr>
<td></td>
<td>- The status of resource models</td>
</tr>
<tr>
<td></td>
<td>- Configuration errors that can cause resource models to stop</td>
</tr>
</tbody>
</table>


Table 1 summarizes the updates in product functionality that Feature Options 1 and 2 provide. "Documentation Changes" on page 11 describes details of the new functionality.

Table 1. Updates to product functionality

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>support</td>
<td>Uninstall</td>
</tr>
<tr>
<td></td>
<td>Uninstall of the upgrade. The <strong>wuninstall</strong> command and a shell script are available for the uninstall of the Version 5.1.1 FX02 of the product.</td>
</tr>
<tr>
<td></td>
<td>Uninstall</td>
</tr>
<tr>
<td></td>
<td>Support for installing the product onto a Linux Tivoli management region was added. This new feature is described in &quot;Documentation Changes&quot; on page 11.</td>
</tr>
<tr>
<td></td>
<td>New tasks</td>
</tr>
<tr>
<td></td>
<td><strong>List Default First Servers task</strong> lists domain controller objects in the Default-First-Site indicating that the domain controller has not been assigned to a site.</td>
</tr>
<tr>
<td></td>
<td><strong>List Orphaned Objects task</strong> detects objects that have been orphaned.</td>
</tr>
<tr>
<td></td>
<td>See &quot;Documentation Changes&quot; on page 11 for details.</td>
</tr>
</tbody>
</table>

**Resource models**

| General updates       | **Updated deprecated service methods:** There were deprecated APIs within all the resource models for logging and events. These resource models have now been updated. |
|                       | **Deprecated functions:** This release of Tivoli Monitoring Active Directory Option updates deprecated functions within the resource models. |
|                       | **Serviceability updates:** Tracing entry and exit of all resource model functions was added to allow more accurate and complete function tracing capabilities. |

| Enhanced the Active Directory Integrated DNS resource model (Internal name: TMW_DNSADIntegrated) | Include the Windows 2003 DomainDNSZones and ForestDNSZones partitions in addition to the original win2k Domain, Schema, and Configuration Partitions. The resource model now monitors the AD Integrated zone data when stored in any of the Active Directory partitions available for zone data. |
Table 1. Updates to product functionality (continued)

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced the Intra-site replication traffic resource model (Internal name:</td>
<td>Gather and analyze statistical information related to the ability to resolve all queries within the local domain. “New event for TMW_IntraSiteRepITraff resource model” on page 13 provides more details.</td>
</tr>
<tr>
<td>TMW_DCs_Trusts)</td>
<td></td>
</tr>
<tr>
<td>Enhanced the Inter- and Intra-site Replication resource models (Internal</td>
<td>• Collect additional network latency information</td>
</tr>
<tr>
<td>names: TMW_InterSiteRepl and TMW_IntraSiteRepl)</td>
<td>• Monitor NTP (Net Time Protocol) availability, time synchronization, and time settings updates.</td>
</tr>
<tr>
<td>Code logic change for Inter-site Replication resource model: Resource model</td>
<td>Resource model code functionality that existed in the initialization portion of the resource model would miss the dynamic reassignment of the BHS for a site by the Knowledge Consistency Checker (KCC) as the detection of a Sites Bridge Head Server (BHS) would only happen at Init. The code function for locating the BHS within a site has now been relocated to the Visit Tree (the code that run on each resource model cycle) to allow the discovery of dynamic BHS reassignment by the KCC after the resource model initialization.</td>
</tr>
<tr>
<td>code functionality that existed in the initialization portion of the resource</td>
<td></td>
</tr>
<tr>
<td>model would miss the dynamic reassignment of the BHS for a site by the</td>
<td></td>
</tr>
<tr>
<td>Knowledge Consistency Checker (KCC) as the detection of a Sites Bridge Head</td>
<td></td>
</tr>
<tr>
<td>Server (BHS) would only happen at Init. The code function for locating the</td>
<td></td>
</tr>
<tr>
<td>BHS within a site has now been relocated to the Visit Tree (the code that</td>
<td></td>
</tr>
<tr>
<td>run on each resource model cycle) to allow the discovery of dynamic BHS</td>
<td></td>
</tr>
<tr>
<td>reassignment by the KCC after the resource model initialization.</td>
<td></td>
</tr>
<tr>
<td>Enhanced the Domain Controller Availability resource model (Internal name:</td>
<td>Ping domain controllers to verify connectivity prior to any attempts to access the controllers remotely. Send events on FSMO Role reassignment and event on replication partners that are unreachable. See “Documentation Changes” on page 11 for details.</td>
</tr>
<tr>
<td>TMW_DCs_Avail)</td>
<td></td>
</tr>
<tr>
<td>Enhanced the Domain Controller Performance resource model (Internal name:</td>
<td>See “Network latency features” on page 18 for more information.</td>
</tr>
<tr>
<td>TMW_DCs_Perf)</td>
<td>Monitor NTDS connections. See “Documentation Changes” on page 11 for details.</td>
</tr>
<tr>
<td>Enhanced the File Replication Service Performance resource model (Internal</td>
<td>Explicitly monitor GPO replication. See “Documentation Changes” on page 11 for details.</td>
</tr>
<tr>
<td>name: TMW_FRSPerformance)</td>
<td></td>
</tr>
<tr>
<td>Created the Domain Trusts resource model (Internal name: TMW_DCs_Trusts)</td>
<td>Monitor domain trusts to report trusts that are added, dropped, or failed. See “Documentation Changes” on page 11 for details.</td>
</tr>
<tr>
<td>Note: Feature Option 2 includes the enhancements from the Feature Option 1.</td>
<td></td>
</tr>
</tbody>
</table>

System Requirements

The following sections list the software and hardware requirements for installing the Feature Option for IBM Tivoli Monitoring Active Directory Option on Tivoli servers.

Software Requirements

The Feature Option for IBM Tivoli Monitoring Active Directory Option requires the following software:

- Tivoli Management Framework, Version 3.7.1 or higher
- IBM Tivoli Monitoring, Version 5.1.1

Note: If you use Tivoli Distributed Monitoring, Version 3.7, you must migrate to IBM Tivoli Monitoring, Version 5.1.1, as described in the documentation for IBM Tivoli Monitoring, Version 5.1.1.

- IBM Tivoli Monitoring Active Directory Option 5.1.1
**Note:** All Windows 2000/2003 domain controllers on which resource models are running require the Windows 2000/2003 Support Tools component to be installed. You can install this component from the Windows 2000/2003 Server installation CD.

For the prerequisites necessary to use the resource models, refer to the appropriate section in the Tivoli Monitoring Active Directory Option Reference and the Tivoli Monitoring User’s Guide.

**Supported operating systems for endpoints**

The following list explains operating system support for IBM Tivoli Monitoring Active Directory Option endpoints that run on Windows:

- The product does not support Active Directory mixed mode, which is a limited implementation that supports both Windows 2000/2003 and NT domain controllers on the same forest environment.

<table>
<thead>
<tr>
<th>Endpoint’s operating system</th>
<th>Service Packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 2000 Server Edition</td>
<td>Service Pack 3 or later is required. Service Pack 5 recommended.</td>
</tr>
<tr>
<td>Windows 2000 Advanced Server Edition</td>
<td></td>
</tr>
<tr>
<td>Windows 2003 Standard Edition</td>
<td>—</td>
</tr>
<tr>
<td>Windows 2003 Enterprise Edition</td>
<td></td>
</tr>
</tbody>
</table>

**Installing the TMW_DCs_Perf resource model’s prerequisite:**

Microsoft database performance object

The IBM Tivoli Monitoring Active Directory Option TMW_DCs_Perf resource model uses performance counters that require that you install the Microsoft database performance object.

**Note:** This performance object is not installed by default when you install the Windows 2000 or Windows 2003 software.

More detailed info is available in the IBM Document Control Facility (DCF) item #1139002, What are the Data Providers of the ITM for Active Directory Option resource models? For information about installing the database performance object, see the following Microsoft Web site:


**Using wlcftap to enable the TMW_InterSite_Repl, TMW_InterSiteRepl_Traff, and TMW_DNS_ADIntegrated resource models**

To enable the TMW_InterSite_Repl, TMW_InterSiteRepl_Traff, and TMW_DNS_ADIntegrated resource models, you might need to run the wlcftap
command. If the domain controller to which you distributed the resource model is not a Global Catalog, you must run the following `wlctap` command on that endpoint:

```
wlctap -r domain-name/user-name
```

where `user-name` identifies a user that is a member of the Domain Users group and can log into the domain on this domain controller.

**Microsoft Hotfixes that are recommended**

It is recommended that you install the following Hotfixes from Microsoft. Consult the Microsoft Web site for further updates and recommendations.

- For Windows 2000 (contact Microsoft and ask for the fixes that go with the `Qnnnnnnnn`):
  - `Q811370_W2K_SP4_X86_EN`
  - `Q812782_W2K_SP4_X86_EN`
  - `Q819629_W2K_SP4_X86_EN`
  - `Q823210_W2K_SP5_x86_EN`
- For Windows 2003:
  - `KB837175`

**Hardware Requirements**

The following tables list the estimated disk space required for installing Tivoli Monitoring Active Directory Option on Tivoli servers. The estimated disk space includes space for the binaries (bin), Lcf_bundles, and message catalogs.

<table>
<thead>
<tr>
<th>Binaries</th>
<th>Lcf_bundles</th>
<th>Message Catalogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 KB</td>
<td>500 KB</td>
<td>60 KB</td>
</tr>
</tbody>
</table>

The minimum hardware requirements (CPU and RAM) for installing the product on Tivoli servers are the same as the minimum requirements for installing the Tivoli Management Framework.

**Installation Notes**

For information regarding the installation of the base product, Tivoli Monitoring 5.1.1, refer to the *Tivoli Monitoring User’s Guide*.

**Installing the Product**

Like its parent product, Tivoli Monitoring, you can install IBM Tivoli Monitoring Active Directory Option in the following ways:

- With the Tivoli Software Installation Service
- From the Tivoli desktop
- From the command line interface (CLI)

**Note:** CDs or downloaded images are provided for the installation of the base product. The feature option described in these release notes is provided in a `.tar` file that is available through IBM Customer Support. If you do not have a customer support contact person, see "Contacting IBM Software Support" on page 32.
### Before You Begin

Please read the following notes before you begin to install the product:

- Install this product *only* on Tivoli servers.
- Decide on which servers you are going to install the product.
- Ensure that the selected nodes meet the hardware requirements for the installation.
- Ensure that the selected nodes meet the software requirements for the installation.
- Ensure that you have administrator privileges to perform the installation.
- Back up your database before you begin to install the product.

### Installing with Tivoli Software Installation Service

Tivoli Software Installation Service can install multiple Tivoli products on multiple systems in parallel. This Java-based product can install more products on more systems in much less time than the Framework’s install facility. Software Installation Service performs product prerequisite checks and, if defined, user-specified prerequisite checks, ensuring as few install failures as possible. In most cases, failures occur only when machines are turned off or removed from the network.

Software Installation Service also creates an installation repository into which you can import the installation image of one or more Tivoli products. You can import only those interpreter types needed in your environment, which saves disk space and import time. The installation repository is then the source of all your Tivoli installations. You can even share a single installation repository across multiple regions.

Tivoli recommends that you upgrade the Tivoli Management Framework install facility in your current Tivoli installation by installing the Software Installation Service. If you are installing Tivoli products for the first time, install the Software Installation Service on the first managed node running an operating system that is supported by the Software Installation Service. After you have installed it, you can use the Software Installation Service product to install other Tivoli products.

For details of the operating systems on which the Software Installation Service can run, and for instructions on installing this product and using it to install other products, refer to the *Tivoli Software Installation Service User’s Guide* and the *Tivoli Software Installation Service Release Notes*.

### Installing the Feature Option from the Tivoli desktop

To use the Tivoli desktop to install the Feature Option for IBM Tivoli Monitoring Active Directory Option, perform the following steps:

**Note:** You must install IBM Tivoli Monitoring Active Directory Option 5.1.1 before you install the Feature Option.

1. Insert the product CD into the CD-ROM drive.
2. Start the Tivoli desktop.
3. From the **Desktop** menu select **Install -> Install Patch.** The Install Patch dialog opens.

**Note:** For the next step, it is assumed that you have contacted Tivoli Level 2 support staff to obtain the .tar file that contains the feature option. The readme file that comes with the .tar file gives detailed instructions for...
installation. If you do not have a contact person at Tivoli Level 2 support, see “Contacting IBM Software Support” on page 32.

4. If IBM Tivoli Monitoring, Active Directory Option, Version 5.1.1 Feature Option 2 is displayed in the Select Patch to Install scrolling list, go to step 8 —OR—

If IBM Tivoli Monitoring, Active Directory Option, Version 5.1.1 Feature Option 2 is not displayed in the Select Patch to Install scrolling list, continue with step 5.

5. Click Select Media. The File Browser dialog opens.

6. Type or select the location of the Tivoli CD in the Path Name field by completing one of the following tasks:

   • Type the complete path to the /cdrom directory in the CD in the Path Name field. (Use forward slashes to specify the path.)
   • Browse the file system by completing the following steps:
     a. In the Hosts scrolling list, select the host (or drive) on which the CD is mounted. Choosing a host updates the Directories scrolling list to show the directories (under root) of the host you selected.
     b. In the Directories scrolling list, double-click the directory that contains the install media. Choosing a directory updates the Files list.

7. Click Set Media & Close. The Install Patch dialog reopens. The Select Patch to Install scrolling list shows the products that are available for installation.

8. Select the following product from the Select Patch to Install scrolling list:

IBM Tivoli Monitoring, Active Directory Option, Version 5.1.1 Feature Option 2

9. Ensure that the appropriate host is displayed in the Clients to Install On scrolling list.

   If it is not displayed, select the server on which you want to install the selected product from the Available Clients scrolling list, and use the left arrow to move the selected server to the Clients to Install On scrolling list.

10. Click Install to begin installing the product. The Patch Install dialog opens. It provides a list of the operations to be performed and warns of any problems you might want to correct before installing.

11. Review the status information and click Continue Install. The Patch Install dialog informs you when installation is complete.

12. Click Close.

Installing the Feature Option from the Command Line

Use the wpatch command to install the Feature Option for IBM Tivoli Monitoring Active Directory Option from the command line.

Note: You must install IBM Tivoli Monitoring Active Directory Option 5.1.1 before you install the Feature Option.

For this procedure, it is assumed that you have contacted Tivoli Level 2 support staff to obtain the .tar file that contains the feature option. The readme file that comes with the .tar file gives detailed instructions for installation. If you do not have a contact person at Tivoli Level 2 support, see “Contacting IBM Software Support” on page 32.

wpatch -c path/upgrade -i index_file server

where:
path
Specifies the complete path to the /cdrom or to the /upgrade directory in the CD. (Use forward slashes to specify the path.)

index_file
Specifies the product index file, 511ADOF2.IND, from which the Feature Option is installed.

server
The Feature Option for IBM Tivoli Monitoring Active Directory Option will be installed on the server you specify.

For more information about the wpatch command, refer to the Tivoli Management Framework Reference Manual.

Uninstalling the Product
The Tivoli Management Framework provides the wuninst command to remove Tivoli applications from a specified node or from the entire region. You can use the wuninst command with the IBM Tivoli Monitoring Active Directory Option product tag to remove the product from your servers.

To uninstall IBM Tivoli Monitoring Active Directory Option, enter the following command:

```
wuninst tagname destination_target -rmfiles
```

where:

tagname
Is the registered product tag for IBM Tivoli Monitoring Active Directory Option that is provided by Tivoli:

TMNT_AD

destination_target
Is the server from which you want to remove the product.

Note: The uninstallation process removes the monitoring product, but it does not stop or remove the resource models from profiles or from endpoints. You must manually remove the resource models.

For more information about command line syntax and usage of the wuninst command, refer to the following:

- Tivoli Management Framework Reference Manual
- Tivoli Management Framework Release Notes Server, Gateway, and Endpoint.

Configuring the Web Health Console
In order to view resource model names in a descriptive form, do the following:

Note: The .class files are only available on the base installation media. For example, the files are available on the installation CD for version 5.1.1 of the product. National Language Support and translations to languages other than English are not available for the FX02 feature option.

1. Insert the product CD-ROM and switch to the HCONS0LE directory
2. Copy the .class files on the following directory on the server where the Web Health Console is installed:
3. Stop and start the Web Health Console

Configuring the Event Server

On the Tivoli Enterprise Console server, you need to input, compile, and load into the Tivoli Enterprise Console rule base that is active all baroc files included in the product. The readme that comes with the TAR file for this feature option provides detailed information about this process.

The baroc files, which are contained in the directory $BINDIR/TMNT_TEC of the Tivoli Management Region server) are:

- TMW_DCs_Avail.baroc
- TMW_DCs_Perf.baroc
- TMW_DHCPPerformance.baroc
- TMW_DNSPerformance.baroc
- TMW_DNS_ADIntegrated.baroc
- TMW_FRSPerformance.baroc
- TMW_InterSite_Repl.baroc
- TMW_InterSite_ReplTraff.baroc
- TMW_IntraSite_Repl.baroc
- TMW_IntraSite_ReplTraff.baroc
- TMW_ReplPerf.baroc
- TMW_DCs_Trusts.baroc

Patches and APARs Included

The following APARs and patches have been included in Tivoli Monitoring Active Directory Option 5.1:

Table 3. APARs for the product in Active Directory 3.7

<table>
<thead>
<tr>
<th>Tivoli Distributed Monitoring for Active Directory 3.7</th>
<th>APARs included</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7-DAD-0001 (June 27, 2002)</td>
<td>IY32073, IY25803, IY29338, IY29952, IY29984, IY29986, IY30459, IY30685, IY30997, IY31000, IY31007, IY31384, IY32440</td>
</tr>
<tr>
<td>3.7-DAD-0002E (October 30, 2002)</td>
<td>IY32681, IY32747, IY32875, IY33468, IY36087, IY35992, IY35238</td>
</tr>
<tr>
<td>3.7-DAD-0003LA (September 3, 2002)</td>
<td>IY37391, IY41781, IY45837</td>
</tr>
<tr>
<td>3.7-DAD-0004LA (October 28, 2003)</td>
<td>IY47379, IY49155</td>
</tr>
<tr>
<td>3.7-DAD-0005LA (September 3, 2003)</td>
<td>IY433210, 122755, 122860</td>
</tr>
</tbody>
</table>

Table 4. APARs for the product in Active Directory 5.1.0

<table>
<thead>
<tr>
<th>Active Directory Monitoring Option 5.1.0 (5.1.1)</th>
<th>APARs included</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.0-ADO-0003LA (May 7, 2003)</td>
<td>IY37391, IY40589, IY41781</td>
</tr>
<tr>
<td>5.1.0-ADO-0004LA (September 3, 2003)</td>
<td>IY37391, IY41781, IY45837, 116576</td>
</tr>
<tr>
<td>5.1.0-ADO-0005LA (October 23, 2003)</td>
<td>IY46370, IY47379, IY49155, 117315</td>
</tr>
<tr>
<td>5.1.0-ADO-0007LA (November 13, 2003)</td>
<td>IY37391, IY50803, IY50152, IY50231, 123519, 124712, IY50803, IY51512</td>
</tr>
<tr>
<td>5.1.0-ADO-0008LA (December 12, 2003)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. APARs for the product in Active Directory 5.1.0 (continued)

<table>
<thead>
<tr>
<th>Active Directory Monitoring Option 5.1.0 (5.1.1)</th>
<th>APARs included</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.0-ADO-0009LA (January 16, 2004)</td>
<td>IY50803, IY51512</td>
</tr>
<tr>
<td>5.1.0-ADO-0010LA (April 23, 2004)</td>
<td>IY53128</td>
</tr>
<tr>
<td>5.1.0-ADO-0011LA (April 29, 2004)</td>
<td>IY56044</td>
</tr>
<tr>
<td>5.1.0-ADO-0012LA (August 11, 2004)</td>
<td>IY59948</td>
</tr>
</tbody>
</table>

Table 5. Details regarding the contents of successive LA (Limited Availability) patches

<table>
<thead>
<tr>
<th>LA Patch</th>
<th>51ADO 01E</th>
<th>51ADO 02E</th>
<th>51ADO 0 3LA</th>
<th>51ADO 04LA</th>
<th>51ADO 05LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA Patch includes</td>
<td>51ADO 01E</td>
<td>51ADO 01E</td>
<td>51ADO 0 3LA</td>
<td>51ADO 05LA</td>
<td></td>
</tr>
<tr>
<td>LA Patch depends</td>
<td>None.</td>
<td>None.</td>
<td>None.</td>
<td>51ADO 0 3LA</td>
<td>51ADO 0 4LA</td>
</tr>
<tr>
<td>Resource model changes</td>
<td>See Note 1.</td>
<td>See Note 2.</td>
<td>See Note 3.</td>
<td>See Note 4.</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. TMW_InterSiteRepl.dm ws
2. TMW_DCs_Avail.dm ws
3. TMW_DCs_Avail.dm ws and TMW_DHCPPerformance.dm ws
4. TMW_DCs_Avail.dm ws, TMW_InterSiteRepl.dm ws, TMW_DNS_ADIIntegrated.dm ws, and TMW_DNSPerformance.dm ws

Known Product Defects, Limitations, and Workarounds

This section describes known defects in this release of Tivoli Monitoring Active Directory Option. Where applicable and known, suggested workarounds are identified. The list of defects in this section might not be complete.

- In the resource model Replication Performance the computation of percentage of outbound objects filtered may not be accurate. The problem is due to the inaccurate value of the directory service (NTDS) performance counter DRA/Outbound Objects/sec. The problem has been submitted to Microsoft.
- The documentation needs to be updated with the information provided in “Documentation Changes.”

Documentation Changes

This section provides updates that should be added to the documentation for IBM Tivoli Monitoring Active Directory Option when the documentation is revised. The following types of information are provided:

- “Documentation changes for installation issues” on page 12
- “Documentation changes for reference issues” on page 12
- “Documentation changes for problem determination” on page 20

Some changes update existing information. Other changes describe new features.

The overview section of the user’s guide should mention that IBM Tivoli Monitoring Resource Model Builder enables advanced users to create custom

**Documentation changes for installation issues**

The following changes should be added to the installation instructions at the next revision of the documentation:

**Installing the product on Linux:** Warnings are displayed when you install the product on a Tivoli management region server on Linux. The following steps describe when the warnings are displayed and how to respond:

1. As required, you upgrade the Linux-based Tivoli management region server to Version 5.1 or Version 5.1.1 of IBM Tivoli Monitoring Active Directory Option.

2. The following warning is displayed for each Linux host that is a target for installation:

   The following problems were encountered:
   Host `<hostname>`:
   - Could not find a valid Binaries media packet listed in the installation index (.IND) file for this type of platform. Check that the source directory is set correctly for what you are trying to do.
   - Could not find a valid Server Database media packet listed in the installation index (.IND) file for this type of platform. Check that the source directory is set correctly for what you are trying to do.

   This warning indicates that installation of the Feature Option is required to supply the necessary media packets.

3. Click **Continue Install** to allow the installation of the base product to complete.

4. Install the Feature Option.

**Documentation changes for reference issues**

The following changes must be made to *Tivoli Monitoring Active Directory Option Reference*:

<table>
<thead>
<tr>
<th>Type of change</th>
<th>Text of the change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updates that are included in Feature Option 01</td>
<td></td>
</tr>
<tr>
<td>Add description of enhancements to the Intra-site Replication and Inter-site Replication resource models. (Internal names: TMW_IntraSiteRepl and TMW_InterSiteRepl)</td>
<td>See “Network latency features” on page 18 for more information.</td>
</tr>
<tr>
<td>Type of change</td>
<td>Text of the change</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Add information about the Inter-site Replication Traffic resource model. (Internal name: TMW_InterSiteRepTraff) | **New event for TMW_IntraSiteRepTraff resource model**  
  - **Internal name**: TMW_HighInbRatio  
  - **Descriptive name**: High inter-site to intra-site inbound bytes ratio  
  - **Description**: Indication is sent when the number of inter-site inbound bytes compared to intra-site inbound bytes is larger than the threshold. This could indicate clients are using too many inter-site resources due to a poor active directory configuration.  
  - **Message**: High inter-site to intra-site inbound bytes ratio  
  - **Numeric attributes**: localInboundBytesPerSec and remoteInboundBytesPerSec  
  - **Default settings**:  
    - **Occurrences**: 2  
    - **Holes**: 0  
    - **Clearing Event**: FALSE  
    - **Send to TEC**: FALSE  
    - **Send to TBSM**: FALSE  
    - **Severity**: HARMLESS  

  **New threshold**:  
  - **Internal name**: interToIntraRatio  
  - **Descriptive name**: Intersite to Intrasite Ratio  
  - **Details**: The ratio of inter-site inbound bytes to intra-site inbound bytes that will cause an event to be generated.  
  - **Default value**: 0.7  

  **General details of enhancement**:  
  The Intrasite Replication Traffic resource model was updated to compare intra-site inbound bytes to inter-site inbound bytes. If the inter-site inbound bytes is consistently larger than the intra-site inbound bytes, this could indicate that your clients are using too many resources from another active directory domain. |
| Add information about the Domain Controller Availability resource model. (Internal name: TMW_DCs_Avail) | **Enhancement for the Domain Controller Availability resource model**  
  **pingTimeout** pings domain controllers to verify connectivity prior to any attempts to access the controllers remotely. You must ensure remote access to enable the product to verify remote Replication Partners, Global Catalogs, and domain controllers for Flexible Single Master of Operations (FSMO) roles in Active Directory.  

  You can select the maximum timeout value for the ping command. You can set verification to occur at one of the following intervals: 5ms, 1.5s, 15s, 1min, 3min, and 5min. Slow connections might require a longer timeout interval. The timeout value is cumulative for all connectivity verifications with a ping retry count of 3, as summarized in the following equation:  
  \[ (N \times 3 = \text{maximum timeout}) \]  

  where \( N \) is the interval that you specify. You must account for this cumulative effect when you set the cycle time for a resource model. If you set the cycle time for a resource model to be less than the cumulative ping timeout value, the currently executing resource model cycle might not have time to complete before another cycle starts. |
Table 6. Changes for the Tivoli Monitoring Active Directory Option Reference document (continued)

<table>
<thead>
<tr>
<th>Type of change</th>
<th>Text of the change</th>
</tr>
</thead>
</table>
| Add information about the Active Directory Integrated DNS resource model. (Internal name: TMW_DNS_ADIntegrated) | **Enhancement for the TMW_DNS_ADIntegrated resource model**  
  *check_4_Gc* determines whether the domain must have an instance of the Global Catalog. A best practice for Active Directory is to have an instance of Global Catalog in each domain. This resource model verifies that an instance of Global Catalog is present in the domain. The default is True. If you set this value to False, you allow validation of the Global Catalog instance to be ignored. |

| Add information about the Enable/Disable IADsTools.dll Windows Events task. | The following information about the "Enable/Disable IADsTools.dll Windows Events" task should be added to the reference documentation at the next revision:  
  **Description**  
  Enables or disables logging of events from the IADsTools.dll.  
  IADsTools.dll can generate a large number of events. These events are logged in the Windows event log. Tivoli references some of these events to discover various properties of Active Directory. Use the Enable/Disable IADsTools.dll Windows Events task to stop the IADsTools DLL from sending events to the Windows NT Event Log.  
  **Note:** If you use the Enable/Disable IADsTools.dll Windows Events task to disable IADsTools.dll events, those events stop flowing into the 'NT Event Log'. Customers who use the OS PAC Parametric Event Log resource model to monitor IADsTools events would be impacted by this action. |

  **Authorization role:**  
  senior  
  **Task location:**  
  ITM-ADO-region in the desktop of the Tivoli management region  
  **Target managed node:**  
  endpoint  
  **GUI data entry field:**  
  Yes|No radio buttons. |

| Updates that are included in Feature Option 02 | See “Monitoring the time synchronization of domain controllers” on page 17 for more information. |
| Add description of further enhancements to the Intra-site Replication resource model and Inter-site Replication resource models. (Internal names: TMW_IntraSiteRepl and TMW_InterSiteRepl) | |

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14 IBM Tivoli Monitoring Active Directory Option Release Notes
<table>
<thead>
<tr>
<th>Type of change</th>
<th>Text of the change</th>
</tr>
</thead>
</table>
| Add description of enhancements to the Domain controller availability resource model. (Internal name: TMW_DCs_Avail) | **New event for Domain controller availability resource model**  
- **Internal name:** TMW_FSMORole_Transferred  
- **Descriptive name:** FSMO Role owner has changed  
- **Description:** This indication is sent when an Active Directory FSMO role owner has been transferred from one Domain Controller to another.  
- **Message:** The @fsmoRole@ has been transferred from @origServer@ to @newServer@.  
- **String attributes:** origServer, newServer, fsmorole  
- **Default settings:**  
  - Occurrences 1  
  - Holes 0  
  - Clearing Event FALSE  
  - Send to TEC True  
  - Send to TBSM FALSE  
  - Severity Warming  
  
  **New thresholds:** None.  
  
  **General details of enhancement:** The behavior of Domain controller availability resource model has been modified for the case when a replication partner is no longer available. Formerly the resource model would go into an error state when a replication partner still defined in Active Directory was not accessible by DNS. The resource model has been modified so the indication **Unreachable replica partner** is raised and the resource model no longer goes into an error state in this situation. The Domain Controller Availability resource model was also updated to send and event when a FSMO role has been transferred from one Domain Controller to another. |
| Add description of enhancements to the File Replication Service performance resource model. (Internal name: TMW_FRSPerformance) | **New indication:** GPO Inconsistent  
**Default settings:**  
- **Occurrences** 1  
- **Holes** 0  
- **Severity** WARNING  
**New thresholds:** None.  
**General details of enhancement:** This indication is sent if an Active Directory Group Policy Object is inconsistent between local SYSVOL directory and the AD system based on GPO version number. |
| Add description of the new Domain Trusts resource model. (Internal name: TMW_DCs_Trusts) | See “Domain Trusts resource model (Internal name: TMW_DCs_Trusts)” on page 19 for more information. |
### Table 6. Changes for the Tivoli Monitoring Active Directory Option Reference document (continued)

<table>
<thead>
<tr>
<th>Type of change</th>
<th>Text of the change</th>
</tr>
</thead>
</table>
| Description of enhancements to the Domain Controller Performance resource model. (Internal name: TMW_DCs_Perf) | **New event:**  
  **High Number of NTDS Connections.** This event is sent when the number of NTDS Connection objects exceeds the threshold. The connection objects are used in the replication process. Each connection object is used to replicate inbound changes to the domain controller and the KCC manages the objects.  
  * **Message:** The current number of NTDS Connections (@ActiveConnections@) exceeds the established threshold (@ConnectionsThreshold@).  
  * **Numeric attributes:** ActiveConnections, ConnectionsThreshold  
  * **Severity:** WARNING  

**New threshold:**  
* **NtdsConnectionsThr:** Max number of NTDS Connections  
* **Description:** Replication performance is affected by the number of inbound connections that a domain controller receives data from. When this threshold is exceeded you should use the `adlb` tool to load balance the connection objects within your site.  
* **Default:** 20  

**General details of enhancement:**  
The Domain Controller Performance resource model (Internal name: TMW_DCs_Perf) is enhanced to enable monitoring of the NTDS Connection objects used during the replication process. This enhancement creates the following new threshold, event, and logging features:  

**Add description of a new task, List Default First Servers.**  
**List Default First Servers task is added to the IBM Tivoli Monitoring Active Directory Utility Tasks library**  
This task lists the servers that are a members of the default first site. The task lists all servers that are a member of the site named "Default-First-Site-Name". The first domain controller that is created in a forest ends up in this site and you must move it to the correct site after you have it set up. The domain controllers that are members of this site are likely there either for that reason or because the domain controller failed to be added to the correct site. You should run this task to make sure none of your domain controllers are in the default site.  

**Authorization role:** senior  
**Task location:** ITM-ADO-region in the desktop of the Tivoli management region  
**Target managed node:** endpoint  
**GUI data entry field:** None.
Table 6. Changes for the Tivoli Monitoring Active Directory Option Reference document (continued)

<table>
<thead>
<tr>
<th>Type of change</th>
<th>Text of the change</th>
</tr>
</thead>
</table>
| Add description of a new task, List Orphaned Objects. | List Orphaned Objects task is added to the IBM Tivoli Monitoring Active Directory Utility Tasks library  
This task lists the objects whose containers were deleted at the same time that the object was created. If an object has been created or moved to a location that was deleted after replication, the lost object is added to the LostAndFound container.  
You run this task to determine whether you need to restore to a new location any of the objects in the LostAndFound container. If you continue to want the objects listed, you should restore them, otherwise delete them.  
**Note:** The replication resource model creates an object in the lost and found container to measure replication performance. The List Orphaned Objects task ignores those objects which have a name `<servername>`(intra) or `<servername>`(inter). |

| Authorization role: |
| senior |

| Task location: |
| ITM-ADO-region in the desktop of the Tivoli management region |

| Target managed node: |
| endpoint |

| GUI data entry field: |
| None. |

**Monitoring the time synchronization of domain controllers**

The following new threshold and new events are provided as enhancements for the Inter- and Intra-site Replication resource models (Internal names: TMW_InterSiteRepl and TMW_IntraSiteRepl):

**New events**

The following new events are available:

**Blocked Net Time Protocol Connection**

This indication is sent if Net Time cannot properly synchronize with the designated network time protocol server. The resource model queries the Windows NET TIME command for status. The behavior of Net Time is the domain controllers attempt to contact the domain controller that holds the primary domain controller (PDC) Flexible Single Master Operation (FSMO) role. The domain controller that holds the PDC FSMO role can query an external time source to set the time. If the Net Time command indicates an error the indication is raised and the error code is captured. The event severity is Warning by default. Default configuration is 1 occurrence and 0 holes.

**Note:** The event for Blocked NTP connection does not occur while there is any server within the forest that provides a time sync source, keeping the forest time synchronized.

**Partner time not synchronized**

The indication compares server time on the local server with the server time of all replication partners. If the time difference is not within the threshold Clock Delta Threshold the indication is raised.
If Clock Delta Threshold is set to 0, the indication is disabled. The event severity is Warning by default. Default configuration is 1 occurrence and 0 holes.

**Server Clock Change**

The indication signals a change in local server time by comparing the local server time against replication partners. If the time has changed relative to all replication partners, the indication is raised. The event severity is Minor by default. Default configuration is 1 occurrence and 0 holes.

**Note:** This indication is designed to be viewed with TEC as it is only available for one cycle following a clock change. A clearing event has not been defined.

**New threshold: Clock Delta Threshold**

A new threshold has been added, Clock Delta Threshold, and applies to the indication Partner time not synchronized.

**Network latency features**

Existing resource models TMW_InterSiteRepl and TMW_IntraSiteRepl have been modified to collect additional network latency information.

Each resource model creates an object to represent a local endpoint that is running the resource model. The object is placed in the lost and found directory of the default domain on the local domain controller. The object has only two attributes and is therefore limited in size.

**Intra-site replication resource model**

Creates an object <servername>(intra) where servername is the local endpoint running the resource model. (Internal name: TMW_IntraSiteRepl)

**Inter-site replication resource model**

Creates an object <servername>(inter) where servername is the local endpoint running the resource model. (Internal name: TMW_InterSiteRepl)

**New events**

The following new events have been created to report when the measured replication latency between replication partners exceeds the specified Replication Latency Threshold (ReplicationLatencyThreshold):

- For intra-site replication latency: TMW_IntraSiteRepl_Latent
- For inter-site replication latency: TMW_InterSiteRepl_Latent

The event is generated by default on 1 occurrence and 0 holes and has the severity Warning.

**Note:** Reported ReplicationLatency provides the current measure of replication latency. If a replication with a specific partner has not occurred, the ReplicationLatency can continue to grow each cycle until consistency is met. At that point, ReplicationLatency persists until Latency Frequency expires.

**New thresholds**

The following new thresholds have been created:

**Replication Latency Threshold**

Replication Latency Threshold (ReplicationLatencyThreshold), has been created and behaves as follows:
**For intra-site replication:** When measured replication latency for an Intra-site replication partner exceeds the specified Replication Latency Threshold, the event Intra-site replication latent (TMW_IntraSiteRepl_Latent) is generated.

**For inter-site replication:** When measured replication latency for an Inter-site replication partner exceeds the specified Replication Latency Threshold the event Inter-site replication latent (TMW_InterSiteRepl_Latent) is generated.

New parameter
A new parameter, Latency Frequency (latencyFrequency), has been created. Latency Frequency determines how often latency is measured, in minutes. By default Latency is not measured every cycle to minimize network traffic. The default frequency is 60 minutes, meaning that after 60 minutes, the network latency of the next resource model cycle is measured.

Note: The last reported network latency value persists until a new measurement is started. For example, provided a 60 minute Latency Frequency and a 300 second Intra-site Network Latency the value, the event Intra-site replication latent continues to report ReplicationLatency = 300 each cycle until the expiration of 60 minutes when a new measure is taken.

**Domain Trusts resource model (Internal name: TMW_DCs_Trusts)**
This resource model verifies Trust relationships and send events regarding added trusts, dropped trusts and failing trusts. For all existing trust relationships, the resource model confirms the following:
- Is the existing trust relationship active?
- Is the secure channel with the parent domain available?

You deploy the Domain trusts resource model at least once in a domain to monitor trust relationships. You can deploy multiple instances of this resource model in a single domain. For example, when a domain spans geographical sites, you can deploy this resource model to every geographical site encompassed by the domain.

The resource model monitors each existing trust among domains. To do this the resource model verifies the following:
- All trust relationships are active.
- Security channels are working properly.

New events
The following events are available:

**TMW_Dropped_Trusts**
Domain trust has been dropped. This event is sent when a previously detected trust is no longer available. The default severity is Warning.

**TMW_Added_Trust**
Domain trust has been added. This event is sent when a new Trust has been added to the domain. The default severity is Warning.

**TMW_Trusts_Failing**
Trust verification failed. This event is sent when attempts to verify the domain trust have failed. The trust is not functional. The default severity is Critical.
**New thresholds**

None.

**New parameter: Dynamic_Trust_Updates (checkbox enable/disable)**

Enablement of this Parameter allows the resource model to dynamically update the monitored Trusts. Only one event will be sent to notify the user that a trust has been added or deleted when detected. The monitored trust information will be updated to not report this added or deleted trust event again.

Disabling this parameter stops the resource model from dynamically updating the monitored Trusts. For each resource model cycle, events continue to be sent to notify the user of the added or deleted Trusts.

**Documentation changes for problem determination**

The following topics are derived from a Tech Note and should be included in the next revision of the documentation:

- General troubleshooting
- Active Directory resource model summary and configuration tips
- Error handling

**General troubleshooting**

Use the following methods to verify whether a resource model is running correctly.

**Using the wdmlseng command**

To verify that the status of the resource model is "Running," run the following command:

```
wdmlseng -e <ep_label> -verbose
```

where `<ep_label>` is the name of the endpoint on which the resource model is running.

The command returns the resource model internal name of the resource model. [Table 7 on page 21] lists resource model names with the corresponding internal resource model names.

**Using Tivoli Enterprise Console**

Check for an error status for a resource model by looking for the Tivoli Enterprise Console (TEC) event from IBM Tivoli Monitoring Heartbeat which shows "RMInError" for this resource model on one or more endpoints. Tivoli Enterprise Console displays the internal name of the resource model. [Table 7 on page 21] lists resource model names with the corresponding internal resource model names.

**Active Directory resource model summary and configuration tips**

This section summarizes the names and characteristics of the Active Directory resource models and provides configuration tips.
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Distribution target &amp; purpose</th>
<th>Configuration tips</th>
</tr>
</thead>
</table>
| Domain Controller Availability | Internal name: TMW_DCs_Avail | **Distribution target:** All Domain Controllers in a forest **Purpose:** Monitor availability of the following: • DC holding FSMO roles • Key services • Global Catalogs • Direct replica partners | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed.                        |
| Domain Controller Performance | Internal Name: TMW_DCs_Perf | **Distribution target:** All Domain Controllers in a forest **Purpose:** Monitor, • NTDS counters • Client requests performance • Extensible Storage Engine (ESE) database activity | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Make sure the performance objects used by this resource model are loaded, if the wdmlseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the Microsoft database performance model's prerequisite: "Installing the TMW DCs Perf resource model's prerequisite: Microsoft database performance object" on page 5.)  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
| Replicate     | Intra-site replication traffic | **Distribution target:** All Domain Controllers in a forest **Purpose:** Monitor replication status for each replicated partition | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
|               | Internal Name: TMW_IntraSite_ReplTraffic | **Distribution target:** All Domain Controllers in a forest **Purpose:** Monitor performance of the intra site replication traffic | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Make sure the performance objects used by this resource model are loaded, if the wdmlseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW DCs Perf resource model's prerequisite: Microsoft database performance object" on page 5.)  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Distribution target &amp; purpose</th>
<th>Configuration tips</th>
</tr>
</thead>
</table>
| Inter-site replication    | Internal Name: TMW_InterSite_Repl | Distribution target: Bridgehead Server *                             | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted
• Make sure the performance objects used by this resource model are loaded, if the wdmiseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW DCs Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)
• Search in the section "Error Handling", for the corresponding number shown in the wdmiseng output for this resource model. Perform the "User Action" listed. |
|                           |                             | * If not known you should use wlcftap command to set credentials of a user that can log into the domain.                  |                                                                                                                                   |
|                           |                             | Purpose: Monitor inter site replication status for each replicated partition with the other bridgehead                  |                                                                                                                                   |
| Inter-site replication traffic | Internal Name: TMW_IntraSite_ReplTraff | Distribution target: Bridgehead Server *                             | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted
• Make sure the performance objects used by this resource model are loaded, if the wdmiseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW DCs Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)
• Search in the section "Error Handling", for the corresponding number shown in the wdmiseng output for this resource model. Perform the "User Action" listed. |
|                           |                             | * If not known you may distribute the resource model to all domain controllers: data will be collected only for the bridgehead server.  |                                                                                                                                   |
|                           |                             | Purpose: Monitor performance of the inter site replication traffic                                              |                                                                                                                                   |
| Replication Performance    | Internal Name: TMW_ReplPerf | Distribution target: All Domain Controllers in a forest              | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted
• Make sure the performance objects used by this resource model are loaded, if the wdmiseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW DCs Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)
• Search in the section "Error Handling", for the corresponding number shown in the wdmiseng output for this resource model. Perform the "User Action" listed. |
<p>|                           |                             | Purpose: Monitor performance of the replication process                                                                 |                                                                                                                                   |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Distribution target &amp; purpose</th>
<th>Configuration tips</th>
</tr>
</thead>
</table>
| FRS (File Replication Service) Performance | Internal Name: TMW_FRSPerformance | Distribution target: All Domain Controllers in a forest Purpose: Monitor performance of the file replication service process | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Make sure the performance objects used by this resource model are loaded, if the wdmlseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW_DCs_Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
• DNS service  
• Performance of DNS zone traffic and DNS update | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Make sure the performance objects used by this resource model are loaded, if the wdmlseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW_DCs_Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
| Active Directory Integrated DNS | Internal Name: TMW_DNS_ADIntegrated | Distribution target: Domain Controller hosting the DNS *  
* The resource model should be distributed to the domain controller that hosts the DNS server or to a DC sitting on the same domain. The domain controller should be a Global Catalog and wlcftap should be used to set credentials of a user that can log into the domain.  
Purpose: Monitor information and consistency of data restored into the DNS zones integrated with the Active Directory | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
• Make sure the performance objects used by this resource model are loaded, if the wdmlseng output shows "Missed Prereq" for this resource model. (For more detail, see "Installing the TMW_DCs_Perf resource model’s prerequisite: Microsoft database performance object" on page 5.)  
• Search in the section "Error Handling", for the corresponding number shown in the wdmlseng output for this resource model. Perform the "User Action" listed. |
Table 7. Active Directory resource model summary and configuration tips (continued)

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Distribution target &amp; purpose</th>
<th>Configuration tips</th>
</tr>
</thead>
</table>
| DHCP     | Windows 2000 DHCP           | **Distribution target:** Windows 2000 DHCP and Windows 2003 DHCP Server  
|          | Server performance and     | **Purpose:** Monitor DHCP service and Performance of DHCP traffic                              | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
|          | Windows 2003 DHCP           |                                                                                                 | • Make sure the performance objects used by this resource model are loaded, if the wdmiseng output shows "Missed Prreq" for this resource model. (For more detail, see "Installing the TMW_DCs_Perf resource model's prerequisite: Microsoft database performance object" on page 5)  
|          | Server performance          |                                                                                                 | • Search in the section "Error Handling", for the corresponding number shown in the wdmiseng output for this resource model. Perform the "User Action" listed. |
|          | Internal Name:              |                                                                                                 |                                                                                                                                                     |
|          | TMW_DHCPPerformance         |                                                                                                 |                                                                                                                                                     |
|          |                             |                                                                                                 |                                                                                                                                                     |
| Trusts   | Domain Trusts               | **Distribution target:** one or more domain controllers per domain  
|          | Internal name:              | **Purpose:** Verify Trust relationships and send events regarding added trusts, dropped trusts, and failing trusts | • Make sure the endpoint being distributed to, is the right one for the Domain Controller targeted  
|          | TMW_DCs_Trusts              |                                                                                                 | • Search in the section "Error Handling", for the corresponding number shown in the wdmiseng output for this resource model. Perform the "User Action" listed. |

**Error handling**

This section lists error codes that resource models can generate when they are not in a "Running" state. Table 10 on page 25 the error conditions and user actions to resolve these conditions.

**Error handling functionality:** When a resource model is run through the Tivoli Monitoring application, the action the engine can take depends on the state of the resource model. The possible states are either assigned automatically by the engine, or specified by the user in the monitoring algorithm script. The resource model states are displayed together with the monitoring results, by the command line, Tivoli Monitoring Web Health Console, or Tivoli Business Systems Manager, when enabled. The following table shows the states that the engine automatically assigns, the external causes from which the states result, and the related actions that the engine takes.

Table 8. States of resource models

<table>
<thead>
<tr>
<th>State</th>
<th>Cause of the State</th>
<th>Action Taken by the Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running</td>
<td>Resource model running successfully</td>
<td>None</td>
</tr>
<tr>
<td>Stopped</td>
<td>User stopped the resource mode, or it has successfully finished running.</td>
<td>None</td>
</tr>
<tr>
<td>Disabled</td>
<td>User action.</td>
<td>None</td>
</tr>
<tr>
<td>Scheduled</td>
<td>User has scheduled resource model for a later time.</td>
<td>None</td>
</tr>
<tr>
<td>Error</td>
<td>An error is preventing the resource model from running.</td>
<td>Every 3 minutes the engine automatically tries to rerun it.</td>
</tr>
<tr>
<td>Missed Prerequisites</td>
<td>Required prerequisites are missing.</td>
<td>None</td>
</tr>
<tr>
<td>State</td>
<td>Cause of the State</td>
<td>Action Taken by the Engine</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Not Compiled</td>
<td>An error in Visual Basic or Java Script code</td>
<td>None</td>
</tr>
</tbody>
</table>

It is possible to change resource model state by using return codes during the monitoring algorithm execution as well. You can program the resource model states during monitoring algorithm execution by making VisitTree(), Init() or SetDefaultConfiguration() to return a certain code. The section “Resource Model Troubleshooting” of "Workbench User Guide" describes this in detail. Depending on the state, the engine will perform a different action. The following table describes which state can be triggered by which return code ("Cause of the State" column) and the corresponding engine action:

<table>
<thead>
<tr>
<th>State code</th>
<th>Cause of the State</th>
<th>Action Taken by the Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed 1-200. The resource model has failed</td>
<td>VisitTree return code: 201-400</td>
<td>None</td>
</tr>
<tr>
<td>Failing 1-200. The resource model has an error</td>
<td>VisitTree return code: 401-600</td>
<td>The engine automatically retries every three minutes to run the resource model.</td>
</tr>
<tr>
<td>Retrying 1-200. The resource is running</td>
<td>VisitTree return code: 601-800</td>
<td>Retries 3 times in each cycle time, indefinitely, to run the resource model</td>
</tr>
<tr>
<td>Unable to start 1-200. The resource model is unable to start. Assumed missed prerequisites</td>
<td>Init, or SetDefaultConfiguration Return code: 801-1000</td>
<td>None</td>
</tr>
<tr>
<td>Recovering 1-200. The resource model is running</td>
<td>VisitTree return code: 1001-1100</td>
<td>Once per cycle, for three cycles only, tries to rerun the resource model. After three unsuccessful attempts interprets the resource model as failed.</td>
</tr>
<tr>
<td>Failed after recovery</td>
<td>The resource model failed in three successive cycles. Interpreted as failed</td>
<td>None</td>
</tr>
</tbody>
</table>

**Return codes of selected resource models:** Table 10 contains a listing of the most current resource model return codes, their description, and actions for resolving each code. The return code number is displayed in the IBM Tivoli Monitoring Web Health Console status field. You can also display it using the wdmlseng command.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Resource model</th>
<th>Status of resource model</th>
<th>User action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Operating System where the resource model is running is not a Windows 2000.</td>
<td>All</td>
<td>Unable to Start</td>
<td>Check that the endpoint where the resource model is running is a supported version of Windows. See “Supported operating systems for endpoints” on page 5. In the Tmw2k.log file on the endpoint the error messages carries the Windows version level.</td>
</tr>
<tr>
<td>2</td>
<td>Binding to rootDSE object failed.</td>
<td>All except: TMW_DNS_Perf and TMW_DHCP_Perf</td>
<td>Unable to Start</td>
<td>Check that the endpoint where the resource model is running is a supported version of Windows. See “Supported operating systems for endpoints” on page 5.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Resource model</td>
<td>Status of resource model</td>
<td>User action</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------------------------------------</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Error loading IADsTools DLL. DMfAD resource model, use the IADsTools COM object provided into Windows 2000 Support Tools Component.</td>
<td>All except: TMW_DNS_Perf and TMW_DHCP_Perf</td>
<td>Unable to Start</td>
<td>Check that Windows 2000 or 2003 Support Tools Component is installed on the Domain Controller where the resource model has been distributed.</td>
</tr>
<tr>
<td>5</td>
<td>The call DsGetSiteName, for retrieving the site name of the domain controller, failed.</td>
<td>TMW_DCs_Avail, TMW_InterSite_Repl</td>
<td>Unable to Start</td>
<td>Check DNS naming resolution from the DC target of distribution</td>
</tr>
<tr>
<td>8</td>
<td>The call GetDefaultNaming\Context, for retrieving the default naming context of the domain controller where the resource model is running, failed.</td>
<td>TMW_DCs_Avail, TMW_DNs_AD \ Integrated</td>
<td>Failing</td>
<td>- Check that the DNS server configuration is correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check the configuration of Active Directory on the domain controller where the resource model is running.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check if the Directory Service log has logged any errors on the event viewer.</td>
</tr>
<tr>
<td>9</td>
<td>The call GetNamingContexts, for retrieving the 3 default naming contexts of the domain controller on which the resource model is running, failed.</td>
<td>TMW_IntraSite_Repl, TMW_InterSite_Repl</td>
<td>Unable to Start</td>
<td>- Check that the DNS server configuration is correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check the configuration of Active Directory on the domain controller where the resource model is running.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check if the Directory Service log has logged any errors on the event viewer.</td>
</tr>
<tr>
<td>10</td>
<td>The call GetPartialNaming\Context, for retrieving the other naming contexts stored on the domain controller on which the resource model is running, failed.</td>
<td>TMW_IntraSite_Repl, TMW_InterSite_Repl</td>
<td>Unable to Start</td>
<td>- Check that the DNS server configuration is correct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check the configuration of Active Directory on the domain controller where the resource model is running.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check if the Directory Service log has logged any errors on the event viewer.</td>
</tr>
<tr>
<td>11</td>
<td>Naming resolution problems on the domain controller where the resource model is running.</td>
<td>TMW_DCs_Avail</td>
<td>Failing</td>
<td>- Check that the DNS is properly configured.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Check that nslookup can correctly resolve names when runs on the domain controller where the resource model is running.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Resource model</td>
<td>Status of resource model</td>
<td>User action</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| 12   | The call GetSiteLinks, for retrieving the number of site links in the site where the domain controller is placed, failed. | TMW_InterSite_Repl | Unable to start | - Check that the DNS server configuration is correct.  
- Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check if the Directory Service log has logged any errors on the event viewer. |
| 13   | The call GetBridgeHeads \ InSite, for retrieving the number of bridgehead servers in the site where the domain controller is placed, failed. | TMW_InterSite_Repl | Unable to start | - Check that the DNS server configuration is correct.  
- Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check if the Directory Service log has logged any errors on the event viewer. |
| 15   | The error may be issued by the Inter-site replication resource model if there is no authorization to read the requested replication state. | TMW_InterSite_Repl | Unable to start | If the resource model is the Inter-site replication resource model and you have distributed the resource model to a domain controller endpoint which is not a bridgehead server, you must run the `wlcftap` command to enable Tivoli to access the remote resources. Alternatively, you can distribute this resource model to any domain controller acting as bridgehead server in your domain. |
| 16   | The call GetDirectPartnersEx, for retrieving the number of replication partners of the server, failed. | TMW_InterSite_Repl and TMW_IntraSite_Repl | Recovering and Failed after Recovering | - Check that the DNS server configuration is correct.  
- Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check if the Directory Service log has logged any errors on the event viewer. |
| 17   | This error might be issued by the DNS Active Directory integrated resource model if a binding to the Global Catalog object and a binding to the configuration Container return a different number of domains in the forest. | TMW_DNS_AD \ Integrated | Unable to start | - Check that the DNS server configuration is correct.  
- Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check if the Directory Service log has logged any errors on the event viewer. |
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Resource model</th>
<th>Status of resource model</th>
<th>User action</th>
</tr>
</thead>
</table>
| 18   | This error might be issued by the Inter-site replication resource model if the domain controller defined to act as bridgehead server, does not have any replication partner in other sites. | TMW_InterSite_Repl | Unable to Start or Failed | - Check that the DNS server configuration is correct.  
- Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check the domain controller has a replica partner on a different site |
| 19   | This error might be issued by the DNS Active Directory integrated resource model if the domain controller to which you have distributed the resource model, does not store a copy the DNS zones in its Active Directory. | TMW_DNS_AD \ Integrated | Unable to Start | - Check that you have distributed the resource model to the correct domain controller.  
- Check the configuration of the DNS server and the Active Directory integrated zones. |
| 20   | This error is issued if an Active Directory Service Interfaces (ADSI) query to the domain controller where the resource model is running failed. | TMW_DCs_Avail and TMW_DNS_AD \ Integrated | Unable to Start or Failing | - Check the configuration of Active Directory on the domain controller where the resource model is running.  
- Check that the DNS server configuration is correct. |
| 21   | The call GetGCList, for retrieving the list of global catalogs defined in the forest, failed. | TMW_DNS_AD \ Integrated | Unable to Start | - Check that the DNS server configuration is correct. In particular if the service advertisement record for global catalog are registered on DNS  
- Check that you can connect to the Directory Service of the domain controller on which the resource model is running.  
- Check for network problems |
| 22   | The call GCName, for retrieving the name of a Global Catalog, failed. | TMW_DNS_AD \ Integrated | Unable to Start | - Check the DNS configuration.  
- Check if the Directory Service Log in the event viewer has logged any errors or warning events of the category Global Catalog. |
| 27   | This error is issued by the Domain Controller availability resource model, because FindConnections() function call to retrieve DSA connection failed | TMW_DCs_Avail | Failing | - Check that the DNS server configuration is correct.  
- Check that you can connect to the Directory Service of the domain controller on which the resource model is running. |
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Resource model</th>
<th>Status of resource model</th>
<th>User action</th>
</tr>
</thead>
</table>
| 28   | This error might be issued by the DNS Active Directory integrated resource model if the call GetPDCFSMO, to get the domain controller that owns the PDC emulator FSMO role for a domain, failed. | TMW_DNS_AD \ Integrated | Failing | - Check the DNS configuration  
- Check that you can successfully connect to the Directory Service on this domain controller. |
|      | This error is issued by the Domain Controller availability resource model, because the function call FindConnected\ServerName to retrieve each replica partners name, failed | TMW_DCs_Avail | | - Check the DNS configuration  
- Check that you can successfully connect to the Directory Service on this domain controller.  
- Check that the domain controller has replica partners in his site. |
| 29   | This error might be issued by the DNS Active Directory integrated resource model if the call to DsGetDcList, to get the list of domain controller servicing a domain, failed. | TMW_DNS_AD \ Integrated | Unable to Start | - Check the DNS configuration.  
- Check that you can successfully connect to the Directory Service on this domain controller.  
- Check that you can successfully bind the queried domain controller.  
- Check that you can successfully retrieve information from other domain controllers. |
Support information

This section describes the following options for obtaining support for IBM products:

- “Searching knowledge bases”
- “Obtaining fixes”
- “Contacting IBM Software Support” on page 32

Searching knowledge bases

If you have a problem with your IBM software, you want it resolved quickly. Begin by searching the available knowledge bases to determine whether the resolution to your problem is already documented.

Search the information center on your local system or network

IBM provides extensive documentation that can be installed on your local machine or on an intranet server. You can use the search function of this information center to query conceptual information, instructions for completing tasks, reference information, and support documents.

Search the Internet

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem. To search multiple Internet resources for your product, expand the product folder in the navigation frame to the left and select Web search. From this topic, you can search a variety of resources including:

- IBM technotes
- IBM downloads
- IBM Redbooks
- IBM DeveloperWorks
- Forums and newsgroups
- Google

Obtaining fixes

A product fix might be available to resolve your problem. You can determine what fixes are available for your IBM software product by checking the product support Web site:

2. Under Products A - Z, select your product name. This opens a product-specific support site.
3. Under Self help, follow the link to All Updates, where you find a list of fixes, fix packs, and other service updates for your product. For tips on refining your search, click Search tips.
4. Click the name of a fix to read the description and optionally download the fix.
To receive weekly e-mail notifications about fixes and other news about IBM products, follow these steps:

1. From the support page for any IBM product, click **My support** in the upper-right corner of the page.
2. If you have already registered, skip to the next step. If you have not registered, click register in the upper-right corner of the support page to establish your user ID and password.
3. Sign in to **My support**.
4. On the My support page, click **Edit profiles** in the left navigation pane, and scroll to **Select Mail Preferences**. Select a product family and check the appropriate boxes for the type of information you want.
5. Click **Submit**.
6. For e-mail notification for other products, repeat Steps 4 and 5.

For more information about types of fixes, see the **Software Support Handbook** [http://techsupport.services.ibm.com/guides/handbook.html].

---

**Contacting IBM Software Support**

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus, and Rational products, as well as DB2 and WebSphere products that run on Windows or UNIX operating systems), enroll in Passport Advantage in one of the following ways:
  - **Online**: Go to the Passport Advantage Web page [http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home] and click **How to Enroll**
  - **By phone**: For the phone number to call in your country, go to the IBM Software Support Web site [http://techsupport.services.ibm.com/guides/contacts.html] and click the name of your geographic region.

- For IBM eServer software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web page [http://www.ibm.com/servers/eserver/techsupport.html].

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States or, from other countries, go to the contacts page of the IBM Software Support Handbook on the Web [http://techsupport.services.ibm.com/guides/contacts.html] and click the name of your geographic region for phone numbers of people who provide support for your location.

Follow the steps in this topic to contact IBM Software Support:

1. **Determine the business impact of your problem**
2. **Describe your problem and gather background information**,
3. Submit your problem to IBM Software Support.

**Determine the business impact of your problem**

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem you are reporting. Use the following criteria:

<table>
<thead>
<tr>
<th>Severity</th>
<th>Business Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity 1</td>
<td>Critical business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.</td>
</tr>
<tr>
<td>Severity 2</td>
<td>Significant business impact: The program is usable but is severely limited.</td>
</tr>
<tr>
<td>Severity 3</td>
<td>Some business impact: The program is usable with less significant features (not critical to operations) unavailable.</td>
</tr>
<tr>
<td>Severity 4</td>
<td>Minimal business impact: The problem causes little impact on operations, or a reasonable circumvention to the problem has been implemented.</td>
</tr>
</tbody>
</table>

**Describe your problem and gather background information**

When explaining a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be recreated? If so, what steps led to the failure?
- Have any changes been made to the system? (For example, hardware, operating system, networking software, and so on.)
- Are you currently using a workaround for this problem? If so, please be prepared to explain it when you report the problem.

**Submit your problem to IBM Software Support**

You can submit your problem in one of two ways:

- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be recreated? If so, what steps led to the failure?
- Have any changes been made to the system? (For example, hardware, operating system, networking software, and so on.)
- Are you currently using a workaround for this problem? If so, please be prepared to explain it when you report the problem.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM product support Web pages daily, so that other users who experience the same problem can benefit from the same resolutions.

For more information about problem resolution, see [Searching knowledge bases](#) and [Obtaining fixes](#).
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