
Appendix A: Adjusting Replication



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Registry Entries

To make adjustments to replication, you can specify desired values for registry entries. To modify the thresholds for excluding nonresponding servers, use the following registry entries in

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NTDS\Parameters, with the data type **REG_DWORD**:

The following table lists the values of registry entries for replication between sites.

Registry entries	Value
IntersiteFailuresAllowed	Number of failed attempts Default: 1
MaxFailureTimeForIntersiteLink (secs)	Time that must elapse before being considered stale, in seconds Default: 7200 (2 hours)

For optimizing connections within a site, use the following registry entries:

Registry entries	Value
NonCriticalLinkFailuresAllowed	Number of failed attempts Default: 1
MaxFailureTimeForNonCriticalLink	Time that must elapse before considered stale, in seconds Default: 43200 (12 hours)
Repl topology update delay (secs)	Time interval that the Knowledge Consistency Checker will wait before running its first replication topology check, in seconds Default: 300 (5 minutes)
Repl topology update period (secs)	Time interval at which the Knowledge Consistency Checker (KCC) performs a review of the topology, in seconds Default: 900 (15 minutes)

For immediate neighbor connections within a site, use the following registry entries:

Registry entries	Value
CriticalLinkFailuresAllowed	Number of failed attempts Default: 0
MaxFailureTimeForCriticalLink	Time that must elapse before considered stale, in seconds Default: 7200 (2 hours)
Replicator notify pause after modify (secs)	Delay between the change to the Active Directory and first replication partner notification, in seconds Default: 300 (5 minutes)
Replicator notify pause between DSAs (secs)	Notification delay between domain controllers, in seconds Default: 30

Configuration Entries in Active Directory

An understanding of some replication events, such as enabling reciprocal replication and change notification is required for those administrators who need to modify the replication behavior beyond the default behavior.

Enabling Reciprocal Replication

Replication between sites exhibits *request-pull behavior* where the destination site, or the receiver, requests changes from the sending site, or source, according to a schedule. Replication within a site, on the other hand, exhibits *notify-pull behavior* where the receiver is notified of changes by the source, and the receiver then requests the changes from the source). *Reciprocal replication* allows one domain controller to initiate replication to and from another domain controller. Reciprocal replication is typically used when a domain controller is connected through a dial-up connection.

To enable reciprocal replication between two sites, perform the following steps:

1. In ADSI Edit, expand the Configuration container.
2. Move to the Inter-SiteTransports container, and then select **CN=IP**.

Note You cannot enable reciprocal replication for SMTP links because a direct connection is not established between the domain controllers.

3. Right-click the site link object for the sites for which you want to enable reciprocal replication, and then click **Properties**.
4. In the **Select a property to view** box, select **options**.
5. In the **Edit Attribute** box, if the **Value(s)** box shows **<not set>**, type **2** in the **Edit Attribute** box, and then click **Set**.

If the **Value(s)** box already contains a value, you must derive the new value by using a Boolean BITWISE-OR calculation on the old value. For example, if the value in the **Value(s)** box is 1, calculate 0001 OR 0010 to equal 0011. Type the integer value of the result in the **Edit Attribute** box; for this example, the value is 3.

Enabling Change Notification

Change notification is a mechanism by which a domain controller notifies a replication partner that it has changes. Replication within a site occurs as a response to changes; as changes occur on one domain controller, it notifies its replication partner, which prompts the partner to request the changes. When a domain controller performs an update to an attribute, it sends notification to its replication partner within a specified time following the change.

Enabling Change Notification Within a Site

For changes that occur within a site, there is a "holdback timer" that determines the interval between the time a change is made and the time that the source server notifies its replication partners. This interval serves to stagger network traffic caused by replication. When a domain controller makes an originating or replicated change to a directory partition, it starts the timer. When the timer expires, the domain controller notifies all of its replication partners (for that directory partition and within the site) that it has changes. If a partner is not engaged in requesting changes from another partner, it sends its change request to the notifying server.

The default value for the holdback timer is 300 seconds, or 5 minutes. To change the default registry setting, you can set a new value in the **Replicator notify pause after modify (secs)** entry in HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NTDS\Parameters.

Note Very small values for this timer generate redundant notifications, which can decrease performance.

A domain controller does not notify all of its replication partners at one time. By delaying between notifications, the domain controller spreads out the load of responding to replication requests from its partners. The default delay between notifications is 30 seconds. To change the default delay, set a new value in the **Replicator notify pause between DSAs (secs)** entry in HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NTDS\Parameters.

Enabling Change Notification Between Sites

By default, changes are replicated between sites according to a schedule and not according to when changes occur. For this reason, the greatest replication latency across the forest is the sum of the greatest replication latencies along the single longest replication path of any directory partition.

For special circumstances, you can configure change notifications on connections between sites. By modifying the site link object, you can enable change notification between sites for all connections that occur over that link. Use ADSI Edit to enable change notification between sites.

To enable change notification between sites, perform the following steps:

1. In ADSI Edit, expand the **Configuration** container. Move to the Inter-Site Transports container, and then select **CN=IP**.

Note You cannot enable change notification for SMTP links.

2. Right-click the site link object for the sites for which you want to enable change notification, and then click **Properties**.
3. In the **Select a property to view** box, select **options**.
4. In the **Edit Attribute** box, if the **Value(s)** box shows **<not set>**, type **1** in the **Edit Attribute** box, and then click **Set**.

If the **Value(s)** box contains a value, you must derive the new value by using a Boolean BITWISE-OR calculation on the old value, as follows: old_value BITWISE-OR 1. For example, if the value in the **Value(s)** box is 2, calculate 0010 OR 0001 to equal 0011. Type the integer value of the result in the **Edit Attribute** box; for this example, the value is 3.

Enabling change notifications across site links propagates all change notifications. With change notification between sites set, changes propagate to the remote site with the same frequency that they are propagated within the source site, including changes that warrant urgent replication.