

# Directory Eventing System Properties

# F

This appendix provides information about the directory eventing system (DES).

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## Overview

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You can configure a DES for an SDX component that connects to one or more directories. The DES provides two functions:

- Automatic notification of changes in the directory

The DES polls the directory periodically to determine changes that affect the configuration or operation of a particular component. If the DES finds relevant changes, it automatically provides the changes to the component. However, if the DES does not find relevant changes, it does not provide any information.

- Redundancy

You must define a primary directory for SDX components that require access to a directory. You can also define a list of secondary (backup) directories.

The DES detects when a connection to the primary directory fails, and:

- a Connects to the first available secondary directory in the specified list.
- b Reverts to the primary directory when it becomes available.

If a connection to a secondary directory fails, the DES:

- a Connects to the primary directory if it is available.
- b If the primary directory is unavailable, connects to the first available directory in the specified list.

The DES is not a central service for all SDX components; rather, you configure a DES for an individual SDX component. The SDX component determines the format of the DES properties; each DES property begins with a variable `<connectionPrefix>`. This variable is a property prefix that depends on the SDX component and the directory to which it connects. Refer to the documentation for a specific SDX component for information on this variable.

Some components have connections to multiple directories; consequently you must configure DES properties for each connection. For example, the SAE may use different directories for service, configuration, and subscriber information.

## Configuring Standard DES Properties

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DES is a Java Naming and Directory Interface (JNDI)–compliant service and accepts standard JNDI properties. For more information on JNDI, see <http://java.sun.com/products/jndi/>.

Standard DES properties have the format:

`<connectionPrefix>.<standardJNDISuffix>`

For an explanation of the variable `<connectionPrefix>`, see *Overview*, earlier in this appendix. The variable `<standardJNDISuffix>` is a standard JNDI property.

For example, the property `net.juniper.smgd.des.retry_interval` is a standard JNDI property that specifies the how often the DES for the NIC agent polls the directory.

If you do not specify values for the standard DES properties, DES accepts the default values. Table F-1 shows the `<standardJNDISuffix>` variables for the most common standard JNDI properties that you may want to customize for an SDX component.

**Table F-1** Standard JNDI properties

<b>JNDI suffix</b>	.java.naming.provider.url
<b>Description</b>	Location of the primary directory
<b>Value</b>	ldap:// <host>:389 <host> – IP address or name of directory host
<b>Example</b>	ldap://127.0.0.1:389/
<b>JNDI suffix</b>	.java.naming.security.principal
<b>Description</b>	DN of directory entry that defines username with which the SDX component accesses the directory
<b>Value</b>	<DN>
<b>Example</b>	<i>cn=nic,ou=Components,o=Operators,&lt;base&gt;</i>
<b>JNDI suffix</b>	.java.naming.security.credentials
<b>Description</b>	Password with which the SDX component accesses the directory
<b>Value</b>	Text string
<b>Example</b>	admin
<b>JNDI suffix</b>	.java.naming.security.protocol
<b>Description</b>	Security protocol for the connection
<b>Value</b>	ssl – SSL protocol
<b>Example</b>	ssl
<b>JNDI suffix</b>	.java.naming.factory.initial
<b>Description</b>	Name of the Java factory class from which the SDX software creates the LDAP initial context
<b>Value</b>	Path to Java factory
<b>Example</b>	<i>net.juniper.smgmt.lib.des.DESInitialContextFactory</i>

## Configuring SDX DES Properties

The SDX software defines a number of DES properties that extend the standard set. These DES properties have the format

```
<connectionPrefix>.des.<propertySuffix>
```

For an explanation of the variable <connectionPrefix>, see *Overview*, earlier in this appendix. The variable <propertySuffix> depends on the DES property.

For example, the property `net.juniper.smgmt.des.enable_eventing` is a property that specifies whether the DES for the NIC agent polls the directory periodically.

Table F-2 provides an explanation of the DES properties that you can configure for SDX components.

**Table F-2** DES properties

<b>Property suffix</b>	enable_eventing
<b>Description</b>	Setting that specifies whether the SDX component polls the directory for changes
<b>Value</b>	<ul style="list-style-type: none"> <li>• True – enabled</li> <li>• False – disabled</li> </ul>
<b>Example</b>	True
<b>Property suffix</b>	pollinginterval
<b>Description</b>	Time interval (in seconds) at which the SDX component polls the directory
<b>Value</b>	Positive integer in the range 15 to 2147483648 seconds
<b>Example</b>	25
<b>Property suffix</b>	event_baseDN
<b>Description</b>	DN of an entry superior to all relevant SDX data in the directory
<b>Value</b>	<p><i>o</i> = &lt;DN&gt;, &lt;base&gt;</p> <p>&lt;DN&gt; – DN of superior entry</p> <p>Default value – <i>o</i> = UMC, &lt;base&gt;</p> <p><i>Note: If you are storing non-SDX data in the directory, and that data changes frequently whereas the SDX data does not, you may need to adjust this default to improve performance. For optimal performance, set the value to the DN of an entry superior to both the SDX data and the changing non-SDX data.</i></p>
<b>Example</b>	<i>o=umc, &lt;base&gt;</i>
<b>Property suffix</b>	delegate_factory_initial
<b>Description</b>	Value used by an SDX internal process
<b>Value</b>	Value set automatically
	<i>Note: Do not change this value.</i>
<b>Property suffix</b>	connection_pool_size
<b>Description</b>	Number of directory connections that the DES uses
<b>Value</b>	1
	<b>Note:</b> Do not change this value.
<b>Property suffix</b>	dispatcher_pool_size
<b>Description</b>	Number of events that the SDX component can receive from the directory simultaneously
<b>Value</b>	Positive integer in the range 1 to 2147483648 seconds
	<b>Caution:</b> Some SDX components require a specific value for this property. See the documentation for the component to determine if you can change this value.
<b>Example</b>	1
<b>Property suffix</b>	connection_manager_id
<b>Function</b>	DES connection manager within the JNDI framework
<b>Value</b>	Text string
<b>Example</b>	DIRAGENT_POOL_VR

**Table F-2** DES properties (continued)

<b>Property suffix</b>	fake_delete
<b>Description</b>	Setting that allows the DES to track objects deleted from the directory
<b>Value</b>	Value set automatically <i>Note: Do not change this value.</i>
<b>Property suffix</b>	show_fake_delete
<b>Description</b>	Setting that allows you to view the objects deleted from the directory.
<b>Value</b>	<ul style="list-style-type: none"> <li>• True – enabled</li> <li>• False – disabled (default setting)</li> </ul>
<b>Example</b>	<i>Note: Do not change this value.</i>
<b>Property suffix</b>	share_connection
<b>Description</b>	Setting that specifies whether other SDX components running in the same process share a connection to the directory with this SDX component.
<b>Value</b>	<ul style="list-style-type: none"> <li>• True – enabled</li> <li>• False – disabled</li> </ul>
<b>Example</b>	<i>Note: Do not change this value.</i>
<b>Property suffix</b>	backup_provider
<b>Description</b>	List of redundant directories
<b>Value</b>	List of URLs separated by semicolons
<b>Example</b>	See the description for the property .java.naming.provider.url in Table F-1.
<b>Property suffix</b>	enable_sysman
<b>Description</b>	Setting that enables the SDX SNMP agent to export MIBs for this directory connection
<b>Value</b>	<ul style="list-style-type: none"> <li>• True – enabled</li> <li>• False – disabled</li> </ul>
<b>Property suffix</b>	connect.timeout
<b>Description</b>	Maximum time in seconds that the DES waits for the directory to respond
<b>Value</b>	Positive integer in the range 1 to 2147483648 seconds
<b>Example</b>	5
<b>Property suffix</b>	retry_interval
<b>Description</b>	Time interval at which the DES attempts to connect to the directory
<b>Value</b>	Positive integer in the range 10 to 2147483648 seconds
<b>Example</b>	100
<b>Property suffix</b>	connectcheck_interval
<b>Description</b>	Time interval at which the DES verifies its connection to the directory
<b>Value</b>	Positive integer in the range 15 to 2147483648 seconds
<b>Example</b>	50

**Table F-2** DES properties (continued)

<b>Property suffix</b>	signatureDN
<b>Description</b>	DN of the directory entry that specifies the usedDirectory attribute. The usedDirectory attribute identifies the type of directory, such as openLDAP or DirX, to which the SDX software is connected. For information on this attribute, see the LDAP schema files on the SDX software CD in the directory <i>SDK/doc/ldap</i> . For information on setting this property, see <i>Configuring the Type of Directory</i> , later in this chapter.
<b>Default</b>	GlobalUserDatabase.server.signatureDN = o=UMC
<b>Example</b>	GlobalUserDatabase.server.signatureDN = o=SDX,o=Juniper,o=Applications
<b>Error handling</b>	If the value of signatureDN is not the DN of a directory entry or is the DN of an entry that does not have a usedDirectory attribute, the SDX software logs an error and proceeds as it would for directory types other than DirX. If the value of the usedDirectory attribute does not correspond to a type of directory that the SDX software supports, the SDX software logs an error and proceeds as it would for directory types other than DirX.

*Example*

```

java.naming.security.principal =
  cn=nic,ou=Components,o=Operators,<base>
java.naming.security.credentials = {BASE64}bmlj
java.naming.provider.url = ldap://127.0.0.1:389/
java.naming.factory.initial=net.juniper.smgd.lib.des.DESInitialContextFactory

net.juniper.smgd.des.enable_eventing = true
net.juniper.smgd.des.delegate_factory_initial =
  com.sun.jndi.ldap.LdapCtxFactory
net.juniper.smgd.des.connection_pool_size = 1
net.juniper.smgd.des.connection_manager_id =
  DIRAGENT_POOL_VR
net.juniper.smgd.des.dispatcher_pool_size = 1
net.juniper.smgd.des.fake_delete = true
net.juniper.smgd.des.show_fake_delete = false
net.juniper.smgd.des.directory_init_delta = 2592000
net.juniper.smgd.des.polling_interval = 30
net.juniper.smgd.des.share_connection=true
net.juniper.smgd.des.event_baseDN = <base>
net.juniper.smgd.des.enable_sysman = false
net.juniper.smgd.des.connect.timeout = 10
net.juniper.smgd.des.retry_interval = 30
net.juniper.smgd.des.connectioncheck_interval = 60
net.juniper.smgd.des.signatureDN = o=UMC

```

## Configuring the Type of Directory

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The SDX software includes a DES property called `signatureDN` (see Table F-2) that identifies the DN of the entry that specifies the LDAP schema attribute `usedDirectory`. This attribute identifies the type of directory, such as `openLDAP` or `DirX`, to which the SDX software connects. For information on this attribute, see the LDAP schema files on the SDX software CD in the directory *SDK/doc/ldap*.

Identifying the type of directory allows the SDX software to accommodate the different ways that different directories process DES queries, and enables more efficient retrieval of information. In particular, this feature offers benefits for the following tasks:

- Checking whether an object in the directory has not been deleted
- Finding new entries in the directory

If you load the LDAP schema from the SDX software CD, the SDX software automatically sets the `usedDirectory` attribute for the type of directory to which it connects. If you use this LDAP schema as the structure for your directory, you can use the default value (*o=UMC*) for the `signatureDN` property, and you do not need to configure the type of directory.

However, you may want to use a customized LDAP schema rather than the provided LDAP schema. If you do so, use the following procedure to allow the SDX software to determine the type of directory:

- 1 Choose the entry that will specify the `usedDirectory` attribute.
- 2 Specify a value for the `usedDirectory` attribute.
- 3 In the property file of the SDX component that connects to this directory, set the `signatureDN` property to the DN of the entry with the `usedDirectory` attribute for the `signatureDN` property.

For example, use the Configuration Editor or SDX Admin to configure the DES properties for the SAE.

- 4 Repeat steps 1 through 3 for each DES connection.

## Configuring DES to Manage Directory Problems

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When an SDX component communicates with the directory, that component may pass a time (known as a server timeout) to the directory to specify a time limit for the directory to respond. If the directory is not working correctly, however, it may not respond during this time, and will cause the SDX component to stop operating.

DES recovers if the directory is not working correctly. In addition, you can configure DES to prohibit communications with a directory if that directory repeatedly fails to respond. If you do so, the DES starts the following procedure for all communications with the directory:

- 1 Assigns a client timeout to the communication.  
The client timeout exceeds the server timeout.
- 2 If the directory does not respond during this time, DES closes the connection to the directory.
- 3 DES tries to reconnect to the directory and proceeds as follows:
  - If DES cannot connect to the directory, it connects to the next available directory specified by the DES redundancy properties.
  - If DES can connect to the directory, it contacts the directory again and repeats steps 1 to 3.
- 4 If a directory fails to respond 10 times, the DES prevents further communication with the directory.

To enable the DES to prevent connection to a directory that repeatedly fails to respond, configure the `enable_blacklist` property.

<b>Property suffix</b>	<code>enable_blacklist</code>
<b>Description</b>	Setting that determines whether the DES prevents connection to a directory if the directory fails to respond during 10 polls
<b>Value</b>	<ul style="list-style-type: none"><li>• True – enabled</li><li>• False – disabled</li></ul>
<b>Default</b>	False

If the DES prevents connection to a directory, you must take the following action to reestablish the connection to the directory.

- 1 Fix the problem with the directory.
- 2 Restart the SDX component that communicates with this directory.

## Using DES for Large Directories

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**Caution:** Do not use directory eventing for an OpenLDAP directory with more than 1000 subtrees.

OpenLDAP does not support some of the features required for DES to operate with large directories. If you enable directory eventing for large OpenLDAP directories, performance will be poor.

