Novell Developer Kit

www.novell.com

EDIRECTORY™ BACKUP SERVICES

March 1, 2006

Novell®

Legal Notices

Novell, Inc. makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc. makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export, or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. Please refer to www.novell.com/info/exports/ for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 1998-2006 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at http://www.novell.com/company/legal/patents/ and one or more additional patents or pending patent applications in the U.S. and in other countries.

Novell, Inc.
404 Wyman Street, Suite 500
Waltham, MA 02451
U.S.A.
www.novell.com

Online Documentation: To access the online documentation for this and other Novell developer products, and to get updates, see developer.novell.com/ndk. To access online documentation for Novell products, see www.novell.com/documentation.

Novell Trademarks

AppNotes is a registered trademark of Novell, Inc.
AppTester is a registered trademark of Novell, Inc., in the United States.
ASM is a trademark of Novell, Inc.
Beagle is a trademark of Novell, Inc.
BorderManager is a registered trademark of Novell, Inc.
BrainShare is a registered service mark of Novell, Inc., in the United States and other countries.
C3PO is a trademark of Novell, Inc.
Certified Novell Engineer is a service mark of Novell, Inc.
Client32 is a trademark of Novell, Inc.
CNE is a registered service mark of Novell, Inc.
ConsoleOne is a registered trademark of Novell, Inc.
Controlled Access Printer is a trademark of Novell, Inc.
Custom 3rd-Party Object is a trademark of Novell, Inc.
DeveloperNet is a registered trademark of Novell, Inc., in the United States and other countries.
DirXML is a registered trademark of Novell, Inc.
eDirectory is a trademark of Novell, Inc.
Excelerator is a trademark of Novell, Inc.
exteNd is a trademark of Novell, Inc.
exteNd Director is a trademark of Novell, Inc.
exteNd Workbench is a trademark of Novell, Inc.
FAN-OUT FAILOVER is a trademark of Novell, Inc.
GroupWise is a registered trademark of Novell, Inc., in the United States and other countries.
Hardware Specific Module is a trademark of Novell, Inc.
Hot Fix is a trademark of Novell, Inc.
Hula is a trademark of Novell, Inc.
iChain is a registered trademark of Novell, Inc.
Internetwork Packet Exchange is a trademark of Novell, Inc.
IPX is a trademark of Novell, Inc.
IPX/SPX is a trademark of Novell, Inc.
jBroker is a trademark of Novell, Inc.
Link Support Layer is a trademark of Novell, Inc.
LSL is a trademark of Novell, Inc.
ManageWise is a registered trademark of Novell, Inc., in the United States and other countries.
Mirrored Server Link is a trademark of Novell, Inc.
Mono is a registered trademark of Novell, Inc.
MSL is a trademark of Novell, Inc.
My World is a registered trademark of Novell, Inc., in the United States.
NCP is a trademark of Novell, Inc.
NDPS is a registered trademark of Novell, Inc.
NDS is a registered trademark of Novell, Inc., in the United States and other countries.
NDS Manager is a trademark of Novell, Inc.
NE2000 is a trademark of Novell, Inc.
NetMail is a registered trademark of Novell, Inc.
NetWare is a registered trademark of Novell, Inc., in the United States and other countries.
NetWare/IP is a trademark of Novell, Inc.

NetWare Core Protocol is a trademark of Novell, Inc.
NetWare Loadable Module is a trademark of Novell, Inc.
NetWare Management Portal is a trademark of Novell, Inc.
NetWare Name Service is a trademark of Novell, Inc.
NetWare Peripheral Architecture is a trademark of Novell, Inc.
NetWare Requester is a trademark of Novell, Inc.
NetWare SFT and NetWare SFT III are trademarks of Novell, Inc.
NetWare SQL is a trademark of Novell, Inc.
NetWire is a registered service mark of Novell, Inc., in the United States and other countries.
NLM is a trademark of Novell, Inc.
NMAS is a trademark of Novell, Inc.
NMS is a trademark of Novell, Inc.
Novell is a registered trademark of Novell, Inc., in the United States and other countries.
Novell Application Launcher is a trademark of Novell, Inc.
Novell Authorized Service Center is a service mark of Novell, Inc.
Novell Certificate Server is a trademark of Novell, Inc.
Novell Client is a trademark of Novell, Inc.
Novell Cluster Services is a trademark of Novell, Inc.
Novell Directory Services is a registered trademark of Novell, Inc.
Novell Distributed Print Services is a trademark of Novell, Inc.
Novell iFolder is a registered trademark of Novell, Inc.
Novell Labs is a trademark of Novell, Inc.
Novell SecretStore is a registered trademark of Novell, Inc.
Novell Security Attributes is a trademark of Novell, Inc.
Novell Storage Services is a trademark of Novell, Inc.
Novell, Yes, Tested & Approved logo is a trademark of Novell, Inc.
Nsure is a registered trademark of Novell, Inc.
Nterprise is a registered trademark of Novell, Inc., in the United States.
Nterprise Branch Office is a trademark of Novell, Inc.
ODI is a trademark of Novell, Inc.
Open Data-Link Interface is a trademark of Novell, Inc.
Packet Burst is a trademark of Novell, Inc.
PartnerNet is a registered service mark of Novell, Inc., in the United States and other countries.
Printer Agent is a trademark of Novell, Inc.
QuickFinder is a trademark of Novell, Inc.
Red Box is a trademark of Novell, Inc.
Red Carpet is a registered trademark of Novell, Inc., in the United States and other countries.
Sequenced Packet Exchange is a trademark of Novell, Inc.
SFT and SFT III are trademarks of Novell, Inc.
SPX is a trademark of Novell, Inc.
Storage Management Services is a trademark of Novell, Inc.
SUSE is a registered trademark of Novell, Inc., in the United States and other countries.
System V is a trademark of Novell, Inc.
Topology Specific Module is a trademark of Novell, Inc.
Transaction Tracking System is a trademark of Novell, Inc.
TSM is a trademark of Novell, Inc.

TTS is a trademark of Novell, Inc.

Universal Component System is a registered trademark of Novell, Inc.

Virtual Loadable Module is a trademark of Novell, Inc.

VLM is a trademark of Novell, Inc.

Yes Certified is a trademark of Novell, Inc.

ZENworks is a registered trademark of Novell, Inc., in the United States and other countries.

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Java is a trademark or registered trademark of Sun Microsystems, Inc., in the United States and other countries.

Contents

About This Guide 9

1 Functions 11

NDSBackupServerData 12
NDSFreeNameList 14
NDSGetReplicaPartitionNames 16
NDSIsOnlyServerInTree 18
NDSSYSVolumeRecovery 20
NDSVerifyServerInfo 22

2 Structures 25

NAMEID_TYPE 26

3 Values 27

3.1 eDirectory Reason Flags 27
3.2 eDirectory Server Flags 27

A Revision History 29

About This Guide

The Novell® eDirectory™ Backup Services information is divided into the following sections.

- Chapter 1, “Functions,” on page 11
- Chapter 2, “Structures,” on page 25
- Chapter 3, “Values,” on page 27
- Appendix A, “Revision History,” on page 29

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this guide, see eDirectory Libraries for C (http://developer.novell.com/ndk/ndslib.htm).

Additional Information

For information about other eDirectory interfaces, see the following guides:

- eDirectory Iterator Services (http://developer.novell.com/ndk/doc/ndslib/skds_enu/data/front.html)
- eDirectory Event Services (http://developer.novell.com/ndk/doc/ndslib/dsev_enu/data/hmwiqbwd.html)
- eDirectory Technical Overview (http://developer.novell.com/ndk/doc/ndslib/dsov_enu/data/h6tvg4z7.html)
- eDirectory Core Services (http://developer.novell.com/ndk/doc/ndslib/nds__enu/data/h2y7hdit.html)
- eDirectory Schema Reference (http://developer.novell.com/ndk/doc/ndslib/schm_enu/data/h4q1mn1i.html)

For help with eDirectory problems or questions, visit the eDirectory Libraries for C Developer Support Forum (http://developer.novell.com/ndk/devforums.htm).

For product information about eDirectory, see the eDirectory Documentation Site (http://www.novell.com/documentation/edirectory.html).

Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items within a cross-reference path.

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

Functions

1

This chapter lists alphabetically the functions that can be used to back up and restore Novell® eDirectory™ information that is server-specific.

- “NDSBackupServerData” on page 12
- “NDSFreeNameList” on page 14
- “NDSGetReplicaPartitionNames” on page 16
- “NDSIsOnlyServerInTree” on page 18
- “NDSSYSVolumeRecovery” on page 20
- “NDSVerifyServerInfo” on page 22

NDSBackupServerData

Creates a servdata.nds file and backs up the server information to that file.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

int NDSBackupServerData  (
   void  *(*memAlloc)(unsigned size),
   void   (*memFree)(void *p));
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

Return Values

0x0000	SUCCESSFUL
Nonzero	Nonzero values indicate errors. See “NDS Return Values” (001 to 799).

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

This function works only if there are two or more servers in the eDirectory tree. The second server must be available to supply partition information and contain a replica that holds the server object of the server being backed up.

The data backed up by this function allows eDirectory to be restored to a server when the Sys volume has failed. For more information on backing up and restoring eDirectory, see the "Backing Up and Restoring Novell Directory Services in NetWare 4.11" article in the October 1996 issue of *Novell Application Notes* (available at the following Web site: http://developer.novell.com/research/appnotes.htm).

This function backs up the following server information:

- NDS/eDirectory version

- Namebase format
- Single server status
- Time zone information
- Server object information such as
- System partition information
- Entry records
- Replica information
- Supervisor information

The information backed up with this function is restored with the NDSSYSVolumeRecovery function.

NCP Calls

None

See Also

NDSSYSVolumeRecovery (page 20)

NDSFreeNameList

Frees the list generated by the NDSGetReplicaNames function.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

void NDSFreeNameList  (
  void             *(*memAlloc)(unsigned size),
  void              (*memFree)(void *p),
  unsigned long       count,
  NAMEID_TYPE     **nameList);
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

count

(IN) Specifies the number of elements in the list.

nameList

(IN) Points to the list of replica structures (see NAMEID_TYPE (page 26)).

Return Values

None.

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

This is a clean up function for the NDSGetReplicaPartitionNames function because it frees the memory allocated by the NDSGetReplicaPartitionNames function.

NCP Calls

None

See Also

NDSGetReplicaPartitionNames (page 16)

NDSGetReplicaPartitionNames

Returns a list of the replicas stored on the server.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

int NDSGetReplicaPartitionNames  (
  void               *(*memAlloc)(unsigned size),
  void                (*memFree)(void *p),
  unsigned long         nameForm,
  int                *count,
  NAMEID_TYPE     ***replicaNames);
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

nameForm

(IN) Specifies whether the replica names are typeless or typed (0 = typed and 1 = typeless).

count

(OUT) Points to an integer that specifies the number of replica structures stored in the replicaNames array.

replicaNames

(OUT) Points to an array of pointers to NAMEID_TYPE (page 26) structures.

Return Values

0x0000	SUCCESSFUL
Nonzero	Nonzero values indicate errors. See “NDS Return Values” (001 to 799799).

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

Before information can be restore with the NDSSYSVolumeRecovery function, the server needs to be removed from all replica lists. Use this function to obtain the replica information.

Use the NDSFreeNameList function to clean up the list when you are done with it.

NCP Calls

None

See Also

NDSFreeNameList (page 14)

NDSIsOnlyServerInTree

Determines whether the eDirectory tree contains more than one server.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

int NDSIsOnlyServerInTree  (
  void   *(*memAlloc)(unsigned size),
  void    (*memFree)(void *p),
  int    *onlyServer);
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

onlyServer

(OUT) Points to a value that specifies whether the eDirectory tree has more than one server (0 = more than one server; 1 = only one server).

Return Values

0x0000	SUCCESSFUL
Nonzero	Nonzero values indicate errors. See “NDS Return Values” (001 to 799).

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

To prevent user error, call this function before using the NDSBackUpServerData function to verify that the eDirectory tree contains more than one server. The NDSBackUpServerData function requires that an eDirectory tree contain two or more servers.

NCP Calls

None

See Also

NDSBackupServerData (page 12)

NDSSYSVolumeRecovery

Restores the data backed up in the servedata.nds file to the server.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

int NDSSYSVolumeRecovery  (
  void  *(*memAlloc)(unsigned size),
  void   (*memFree)(void *p));
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

Return Values

0x0000	SUCCESSFUL
Nonzero	Nonzero values indicate errors. See “NDS Return Values” (001 to 799).

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

This function uses the servdata.nds file created by the NDSBackupServerData function. The NDSSYSVolumeRecovery function expects the file to be in the Sys:system directory.

If the server stored a master partition, another partition should be designated as the master partition before using this function. Also, the server needs to be removed from all replica lists so that it appears as if it stores no replicas.

NCP Calls

None

See Also

NDSBackupServerData (page 12)

NDSVerifyServerInfo

Verifies that the server you are trying to restore information to is the same server that is in the servdat.nds file.

NetWare Server: 4.x, 5.x, 6.x

Platform: NLM

Service: NDS

Syntax

```
#include <ndsback.h>

int NDSVerifyServerInfo  (
  void  *(*memAlloc)(unsigned size),
  void   (*memFree)(void *p),
  int   *serverStatus,
  int   *reasonCode);
```

Parameters

memAlloc

(IN) Points to the address of the function to use to allocate memory.

memFree

(IN) Points to the address of the function to use to free memory allocated with the memAlloc parameter.

serverStatus

(OUT) Points to the server flag that indicates whether the server and the data in the servdata.nds file match (see Section 3.2, “eDirectory Server Flags,” on page 27).

reasonCode

(OUT) Points to the reason the server and the data in the servdata.nds file do not match (see Section 3.1, “eDirectory Reason Flags,” on page 27).

Return Values

These are common return values.

0x0000	SUCCESSFUL
Nonzero	Nonzero values indicate errors. See “NDS Return Values” (001 to 799).

Remarks

This function is an exported symbol from the DSBACKER NLM. To use it, you will need to create an import file.

To prevent user error, call this function before calling the NDSSYSVolumeRecovery function.

NCP Calls

None

See Also

NDSSYSVolumeRecovery (page 20)

Structures

2

This chapter lists alphabetically and defines the structures used by the Novell® eDirectory™ backup services functions.

- “NAMEID_TYPE” on page 26

NAMEID_TYPE

Holds the distinguished name of the replica and its type.

Service: NDS

Defined In: ndsback.h

Structure

```
typedef struct
{
   void             *dn;
   unsigned long     id;
   unsigned long     type;
} NAMEID_TYPE;
```

Fields

dn

Points to the distinguished name of the replica.

id

Not used; set to invalid.

type

Specifies the type of replica (see “Replica Types” (*NDS Core Services*)).

Values

3

This chapter lists and defines the flags used by the Novell® eDirectory™ backup services functions.

- Section 3.1, “eDirectory Reason Flags,” on page 27
- Section 3.2, “eDirectory Server Flags,” on page 27

3.1 eDirectory Reason Flags

The eDirectory Reason flags indicate why the data in the servdata.nds file does not match the server object.

Value	Flag Name	Description
0	NDS_SERVER_KEY_DIFFERENT	The server authentication keys in the file do not match what is stored in the server object.
1	NDS_SERVER_CTS_NEWER	The server creation timestamp in the file is newer than the creation timestamp in the server object.
2	NDS_SERVER_CTS_OLDER	The server creation timestamp in the file is older than the creation timestamp in the server object.

3.2 eDirectory Server Flags

The eDirectory Server flags indicate whether the data in the servdata.nds file matches the server object.

Value	Flag Name	Description
0	NDS_SERVER_MATCH	The server object and the data in the servdata.nds file match.
1	NDS_SERVER_DIFFERENT	The server object and the data in the servdata.nds file do not match. The information in the file belongs to a different server.
2	NDS_SERVER_NOT_FOUND	The server object cannot be found.
3	NDS_SERVER_UNVERIFIED	The server object cannot be verified.

Revision History

A

The following table lists all changes made to the NDK: eDirectory Backup Services documentation:

March 1, 2006	Transitioned to updated Novell® documentation stylesheets.
October 5, 2005	Transitioned to revised Novell documentation standards.
February 2004	Renamed the product name from “NDS” to “Novell eDirectory” at relevant instances.
July 1998	Added to the NDK.