



Part of the five-volume  
Active Directory™ Developer's Reference Library

活动目录编程和开发影印丛书

Microsoft® Press

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揭示微软活动目录服务技术内幕  
深入编程与开发  
IT企业 and 专业人员必备

The essential reference set for anyone who develops Active Directory applications in C, C++, Visual C++®, or Visual Basic®

David Iseminger  
Series Editor -  
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# Active Directory

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## Active Directory™ Service Interfaces Reference

## 活动目录服务接口参考手册

(影印版)

北京大学出版社

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活动目录编程和开发影印丛书

Active Directory Service Interfaces Reference

# 活动目录服务接口 参考手册

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## 内 容 简 介

本书是 ACTIVE DIRECTORY DEVELOPER'S REFERENCE LIBRARY (活动目录编程和开发影印丛书) 中的一本, 是一本完整而独特的 ADSI 参考书, 内容涉及所有的 ADSI 数据类型、常量、结构、枚举、函数、接口、系统提供者、错误代码以及扩展的错误消息等。ADSI 是一套 COM 接口, 它所提供的单套目录服务接口, 可以用来管理分布式计算环境中的网络资源。管理员和开发人员可以用 ADSI 服务来完成常规的管理任务, 如添加新用户、管理打印机、在分布式计算环境中查找资源等。

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## 前 言

活动目录 (Active Directory) 是 Windows 2000 网络的基石, 有了它, 很多在企业目录服务出现以前无法实现的解决方案都变成了现实。《活动目录编程和开发影印丛书》就是针对这种全新的开放技术而推出的。

本丛书提供了大量的 Visual Basic、Visual C++ 扩展代码的范例, 可以供网络编程人员参考。丛书中的程序员参考部分主要讲述完全的 Active Directory API 和 Active Directory Service Interface (ADSI) 文档支持, 而这两者提供了一套 COM 接口, 可以用来访问分布式计算环境中由不同的网络提供商提供的目录服务。系统管理员和开发人员可以使用 ADSI 来管理活动目录的资源, 而不必考虑提供资源的网络环境。ADSI 简化了日常的管理工作, 比如添加新用户、管理打印机、查找企业内部的资源等。本丛书构思精巧, 将活动目录和 ADSI 的参考材料有效地组织在一起。此外, 它还包括来自 Microsoft Platform SDK 的重要资料。每一本书都有详尽的索引, 让读者能够轻松地查找所需的内容, 还可以查找其他内容, 例如 Microsoft 的其他书籍及其电子文档。

本丛书的主编 David Iseminger 是 Microsoft 的独立顾问, 作为网络和路由器性能分析师、通信专家和性能工具开发者, 自 Windows NT 3.5 以来, 他就一直从事 Windows NT 和 Windows 2000 的研究与开发工作。最近, 他作为程序员, 正在与开发人员文档组 (Developer Documentation Group) 一道, 创建和维护 MSDN 建立的和新兴的网络技术, 包括服务质量 (Quality of Service)。作为计算机图书作家, David 的著作颇丰, 包括他最新创作、Microsoft 出版的《Active Directory Services for Microsoft Windows 2000 Technical Reference》。David 毕业于华盛顿大学, 现居住在华盛顿州的 Puget Sound 城。欲详细了解 David 的工作以及本丛书的其他作品, 请访问站点: [www.iseminger.com](http://www.iseminger.com)。

本丛书由以下 5 本书组成:

《Active Directory Programmer's Guide》(《活动目录程序员指南》)

《Active Directory Reference》(《活动目录参考手册》)

《Active Directory Service Interfaces Programmer's Guide》(《活动目录服务接口程序员指南》)

《Active Directory Service Interfaces Reference》(《活动目录服务接口参考手册》)

《Active Directory Schema》(《活动目录架构》)

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## CHAPTER 1

# Using the Active Directory Library

A fundamental change in the way Microsoft Windows operates has occurred. With Microsoft Active Directory and Windows 2000, a comprehensive directory service has been developed that enables users, administrators, and application programmers to get more out of the operating system than ever before. My prediction? (I'm an author—I'm supposed to make such predictions.) The advent of Active Directory services in Windows 2000 is going to blur the lines between networks, and will result in a basic but extraordinary change in the way users and applications operate. Just as global e-mail was a basic but extraordinary change only a few years ago (try working without e-mail today), we will reflect on Active Directory in a few years and wonder how we (or our applications) functioned effectively without it.

As a Windows programmer—whether you're writing complex applications in C/C++ or using Microsoft Visual Basic to automate administrative tasks—you need to be familiar with Active Directory and its various programming features. That familiarity (and that multiple programming language coverage) is exactly what the *Active Directory Developer's Reference Library* is geared to provide.

The Active Directory Library is *the* comprehensive reference guide to Active Directory development. This library, like all libraries in the Windows Programming Reference Series (WPRS), is designed to deliver the most complete, authoritative, and accessible reference information available on a given subject of Windows programming—without sacrificing focus. Each book in the library is dedicated to a logical group of technologies or development concerns; I've taken this approach specifically to enable you to find the information you need quickly, efficiently, and intuitively.

In addition to its Active Directory development information, the Active Directory Library contains tips designed to make your programming life easier. For example, a thorough explanation and detailed tour of MSDN Online are included, as is a section that helps you get the most out of your MSDN subscription. Just in case you don't have an MSDN subscription or don't know why you should, I've provided information about that too, including the differences between the three levels of MSDN subscription, what each level offers, and why you'd want a subscription when MSDN Online is available over the Internet.

To ensure you don't get lost in all the information provided in the Active Directory Library, each volume's appendixes provide an all-encompassing programming directory to help you easily find the particular programming element you're looking for. This directory suite, which covers all the functions, structures, enumerations, and other programming elements found in Active Directory and Active Directory Service Interface (ADSI) development, gets you quickly to the volume and page you need, saving you hours of time and bucketsful of frustration.

## How the Active Directory Library Is Structured

The Active Directory Library consists of five volumes, each of which focuses on a particular aspect of Active Directory programming. These guides and programming reference volumes have been divided into the following:

- Volume 1: Active Directory Programmer's Guide
- Volume 2: Active Directory Reference
- Volume 3: ADSI Programmer's Guide
- Volume 4: ADSI Reference
- Volume 5: Active Directory Schema

Dividing the Active Directory Library into these categories enables you, the reader, to quickly identify the Active Directory volume you need based on your task, and facilitates your maintenance of focus for that task. This approach enables you to keep one reference book open and handy, or tucked under your arm while researching that aspect of Windows programming on sandy beaches, without risking back problems (from toting around all 3,200+ pages of the Active Directory Library) and without having to shuffle among multiple, less-focused books.

Within the Active Directory Library—and, in fact, in all WPRS Libraries—each volume has a deliberate structure. This per-volume structure has been created to further focus the reference material in a developer-friendly manner, to maintain consistency within each volume and each Library throughout the series, and to enable you (the developer) to easily gather the information you need. To that end, each volume in the Active Directory Library contains the following parts:

- Part 1: Introduction and Overview
- Part 2: Guides, Examples, and Programmatic Reference
- Part 3: Indexes and Active Directory Glossary

Part 1 provides an introduction to the Active Directory Library and to the Windows Programming Reference Series (what you're reading now), and a handful of chapters designed to help you get the most out of Active Directory, MSDN, and MSDN Online. MSDN and WPRS Libraries are your tools in the development process; knowing how to use them to their fullest will enable you to be more efficient and effective (both of which are generally desirable traits). In certain volumes (where appropriate), I've also provided additional information that you'll need in your Active Directory development efforts and included such information as concluding chapters in Part 1. For example, this volume includes a chapter that introduces crucial concepts about Active Directory—concepts you need to know before you dive into Active Directory programming. Some of the other volumes in the Active Directory Library conclude their Part 1 with chapters that include information crucial to their volume's contents.

Part 2 contains the Active Directory programming guides or reference material particular to its volume. You'll notice that the programmatic reference volumes contain much more than simple collections of function and structure definitions. Because a comprehensive reference resource should include information about how to use a particular technology as well as its definitions of programming elements, the information in Part 2 combines complete programming element definitions as well as instructional and explanatory material for each programming area.

Part 3 is a collection of indexes. One of the biggest challenges of the IT professional is finding information in the sea of available resources, and Active Directory programming is certainly no exception. In order to help you get a handle on Active Directory programming references (and Microsoft technologies in general), Part 3 puts all such information into an understandable, manageable directory (in the form of indexes) that enables you to quickly find the information you need. To enhance your understanding of the content in each volume, I've also included a glossary of Active Directory terms in each volume. This enables you to refresh your knowledge of a given Active Directory term regardless of which volume you're using, without the need to refer to another book (if the glossary were in only one volume).

## How the Active Directory Library Is Designed

The Active Directory Library, like all libraries in the Windows Programming Reference Series, is designed to deliver the most pertinent information in the most accessible way possible. The Active Directory Library is also designed to integrate seamlessly with MSDN and MSDN Online by providing a look and feel consistent with their electronic means of disseminating Microsoft reference information. In other words, the way that a given function reference appears on the pages of this book has been designed specifically to emulate the way that MSDN and MSDN Online present their function reference pages.

The reason for maintaining such integration is simple: to make it easy for you—the developer of Windows applications—to use the tools and get the ongoing information you need to create quality programs. By providing a “common interface” among reference resources, your familiarity with the Active Directory Library reference material can be immediately applied to MSDN or MSDN Online, and vice-versa. In a word, it means *consistency*.

You'll find this philosophy applied throughout Windows Programming Reference Series publications. I've designed the series to go hand-in-hand with MSDN and MSDN Online resources. Such consistency lets you leverage your familiarity with electronic reference material, then apply that familiarity to enable you to get away from your computer if you'd like, take a book with you, and—in the absence of keyboards and e-mail and upright chairs—get your programming reading and research done. Of course, each of the Active Directory Library volumes fits nicely right next to your mouse pad as well, even when opened to a particular reference page.

With any job, the simpler and more consistent your tools are, the more time you can spend doing work rather than figuring out how to use your tools. The structure and design of the Active Directory Library provide you with a comprehensive, presharpended toolset to build compelling Windows applications.



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CHAPTER 2

## What's In This Volume?

Volume 4 of the *Active Directory Developer's Reference Library* picks up where Volume 3 leaves off—with a complete set of reference information for ADSI. If you're new to ADSI programming, your best approach is to start with Volume 3. If your development effort is using ADSI as a way to develop applications that take advantage of Active Directory services, you should start with Volume 1, which provides an overview of what you need to know about Active Directory programming and then describes what can be considered “best practices” for Active Directory programming.

This volume also contains information about how you can use development tools (not tools in the traditional sense, but tools that enable you to find the information you need to get your job done) such as MSDN, MSDN Online, and developer support resources. This helpful information is found in various chapters in Part 1, and those chapters are common to all Windows Programming Reference Series (WPRS) volumes. By including this information in each library and in each volume, several goals of the WPRS are achieved:

- I don't presume you have bought, or expect you to have to buy, another WPRS Library to gain access to this information. Maybe your primary focus is Active Directory programming, and your budget doesn't allow you to purchase the *Microsoft Win32 Developer's Reference Library*. Since I've included this information in this library, you don't have to.
- You can access this important and useful information regardless of which volume you have in your hand. You don't have to (nor *should* you have to) fumble with another physical book to access information about how to get the most out of MSDN or where to get support for questions you have about a particular Windows development problem you're having.
- Each volume becomes more useful, more portable, and more complete in and of itself. This goal of the WPRS makes it easier for you to grab one of its library volumes and take it with you, rather than feeling like you must bring multiple volumes with you to have access to the library's important overview and usability information.

You'll also find a glossary of Active Directory terms in the back of this volume and in each volume in the Active Directory Library. If you've read through the first chapter in any of the WPRS libraries (including this one), you know that my primary objective is to ensure that these volumes provide you with the information you need in as convenient and useful a way as possible (as the previous bulleted points explain). To that end, you might run into unfamiliar Active Directory terms in any of these volumes; by having a glossary in the back of each volume, you know that the definitions for unfamiliar terms are a few page flips away, rather than a book, or (if you're not near the rest of the volumes) a long walk away.

## **ADSI Reference Contents**

Part 2 of this volume provides a complete, one-stop reference source for ADSI. Its contents are as follows:

- ADSI Functions and Structures
- ADSI Enumerations, Data Types and Constants
- About ADSI Interfaces
- Core Interfaces
- Schema Interfaces
- Property Cache Interfaces
- Persistent Object Interfaces
- Dynamic Object Interfaces
- Security Interfaces
- Non-Automation Interfaces
- Extension Interfaces
- Utility Interfaces
- Data Type Interfaces
- ADSI System Providers
- ADSI Error Codes

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CHAPTER 3

## Using Microsoft Reference Resources

Keeping current with all the latest information on the latest networking technology is like trying to count the packets going through routers at the MAE-WEST Internet service exchange by watching their blinking activity lights: It's impossible. Often times, application developers feel like those routers might feel at a given day's peak activity; too much information is passing through them, none of which is being absorbed or passed along fast enough for their boss' liking.

For developers, sifting through all the *available* information to get to the *required* information is often a major undertaking, and can impose a significant amount of overhead upon a given project. What's needed is either a collection of information that has been sifted for you, shaking out the information you need the most and putting that pertinent information into a format that's useful and efficient, or direction on how to sift the information yourself. The *Active Directory Developer's Reference Library* does the former, and this chapter and the next provide you with the latter.

This veritable white noise of information hasn't always been a problem for network programmers. Not long ago, getting the information you needed was a challenge because there wasn't enough of it; you had to find out where such information might be located and then actually get access to that location, because it wasn't at your fingertips or on some globally available backbone, and such searching took time. In short, the availability of information was limited.

Today, the volume of information that surrounds us sometimes numbs us; we're overloaded with too much information, and if we don't take measures to filter out what we don't need to meet our goals, soon we become inundated and unable to discern what's "white noise" and what's information that we need to stay on top of our respective fields. In short, the overload of available information makes it more difficult for us to find what we *really* need, and wading through the deluge slows us down.

This fact applies equally to Microsoft's reference material, because there is so much information that finding what *you* need can be as challenging as figuring out what to do with it once you have it. Developers need a way to cut through what isn't pertinent to them and to get what they're looking for. One way to ensure you can get to the information you need is to understand the tools you use; carpenters know how to use nail-guns, and it makes them more efficient. Bankers know how to use ten-keys, and it makes them more adept. If you're a developer of Windows applications, two tools you should know are MSDN and MSDN Online. The third tool for developers—reference books from the WPRS—can help you get the most out of the first two.

Books in the WPRS, such as those found in the *Active Directory Developer's Reference Library*, provide reference material that focuses on a given area of Windows programming. MSDN and MSDN Online, in comparison, contain all of the reference material that all Microsoft programming technologies have amassed over the past few years, and create one large repository of information. Regardless of how well such information is organized, there's a lot of it, and if you don't know your way around, finding what you need (even though it's in there, somewhere) can be frustrating, time-consuming, and just an overall bad experience.

This chapter will give you the insight and tips you need to navigate MSDN and MSDN Online and enable you to use each of them to the fullest of their capabilities. Also, other Microsoft reference resources are investigated, and by the end of the chapter, you'll know where to go for the Microsoft reference information you need (and how to quickly and efficiently get there).

## The Microsoft Developer Network

MSDN stands for Microsoft Developer Network, and its intent is to provide developers with a network of information to enable the development of Windows applications. Many people have either worked with MSDN or have heard of it, and quite a few have one of the three available subscription levels to MSDN, but there are many, many more who don't have subscriptions and could use some concise direction on what MSDN can do for a developer or development group. If you fall into any of these categories, this section is for you.

There is some clarification to be done with MSDN and its offerings; if you've heard of MSDN, or have had experience with MSDN Online, you may have asked yourself one of these questions during the process of getting up to speed with either resource:

- Why do I need a subscription to MSDN if resources such as MSDN Online are accessible for free over the Internet?
- What is the difference between the three levels of MSDN subscriptions?
- Is there a difference between MSDN and MSDN Online, other than the fact that one is on the Internet and the other is on a CD? Do their features overlap, separate, coincide, or what?

If you have asked any of these questions, then lurking somewhere in the back of your thoughts has probably been a sneaking suspicion that maybe you aren't getting the most out of MSDN. Maybe you're wondering whether you're paying too much for too little, or not enough to get the resources you need. Regardless, you want to be in the know and not in the dark. By the end of this chapter, you'll know the answers to all these questions and more, along with some effective tips and hints on how to make the most effective use of MSDN and MSDN Online.



## Comparing MSDN with MSDN Online

Part of the challenge of differentiating between MSDN and MSDN Online comes with determining which has the features you need. Confounding this differentiation is the fact that both have some content in common, yet each offers content unavailable with the other. But can their difference be boiled down? Yes, if broad strokes and some generalities are used:

- MSDN provides reference content *and* the latest Microsoft product software, all shipped to its subscribers on CD or DVD.
- MSDN Online provides reference content *and* a development community forum, and is available only over the Internet.

Each delivery mechanism for the content that Microsoft is making available to Windows developers is appropriate for the medium, and each plays on the strength of the medium to provide its “customers” with the best possible presentation of material. These strengths and medium considerations enable MSDN and MSDN Online to provide developers with different feature sets, each of which has its advantages.

MSDN is perhaps less “immediate” than MSDN Online because it gets to its subscribers in the form of CDs or DVDs that come in the mail. However, MSDN can sit in your CD/DVD drive (or on your hard drive), and isn’t subject to Internet speeds or failures. Also, MSDN has a software download feature that enables subscribers to automatically update their local MSDN content over the Internet, as soon as it becomes available, without having to wait for the update CD/DVD to come in the mail. The interface with which MSDN displays its material—which looks a whole lot like a specialized browser window—is also linked to the Internet as a browser-like window. To further coordinate MSDN with the immediacy of the Internet, MSDN Online has a section of the site dedicated to MSDN subscribers that enable subscription material to be updated (on their local machines) as soon as it’s available.

MSDN Online has lots of editorial and technical columns that are published directly to the site, and are tailored (not surprisingly) to the issues and challenges faced by developers of Windows applications or Windows-based Web sites. MSDN Online also has a customizable interface (somewhat similar to *MSN.com*) that enables visitors to tailor the information that’s presented upon visiting the site to the areas of Windows development in which they are most interested. However, MSDN Online, while full of up-to-date reference material and extensive online developer community content, doesn’t come with Microsoft product software, and doesn’t reside on your local machine.

Because it’s easy to confuse the differences and similarities between MSDN and MSDN Online, it makes sense to figure out a way to quickly identify how and where they depart. Figure 3-1 puts the differences—and similarities—between MSDN and MSDN Online into a quickly identifiable format.