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Microsoft .NET

KICK START

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International Standard Book Number: 0-672-32574-8

Library of Congress Catalog Card Number: 2003111833

Printed in the United States of America

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products, which is also used by the consumer-focused MSN Maps and Directions Web site, <http://mappoint.msn.com>.

- **.NET Alerts**—.NET Alerts provides the delivery of time-sensitive information to users through a configured set of rules. For instance, one of the current applications of .NET Alerts is the MSN Hotmail-based email alerts (configured to receive for a set of predefined users and filters) to a mobile phone. Another example is the stock quotes and news delivery to devices based on a variety of rules, including time of day, stock tickers, changes, and so on. Apart from these more consumer-oriented uses of .NET Alerts, a developer kit called .NET Alerts Developer Edition is available for enterprises to develop custom alerts to their own sets of applications. .NET Alerts can be delivered to a Windows/MSN Messenger (the instant messaging client from Microsoft), email, mobile devices, and so on.

Enterprise Servers (also known as Windows Server System)

Enterprise Servers, now known as members of the Windows Server System (earlier called .NET Enterprise Servers) provide a set of prepackaged functionality that, depending on the particular server, can either be standalone or used in conjunction with custom application development efforts. Most of these servers have support for integration with the .NET platform technology. This means that as a developer, you can use a .NET Framework technology (such as ASP.NET, ADO.NET, XML Web services, programming languages) as a development tool to customize and utilize the prebuilt application functionality and integrate it with your own application.

Key components of the Windows Server System are the following:

- **Windows 2003 Server**—Windows 2003 Server represents the next-generation core server operating system technology, evolving from Windows 2000 and Windows NT operating systems. From a .NET application developer's perspective, key highlights of Windows 2003 include intrinsic out-of-box support for the .NET Framework, Internet Information Services (IIS 6.0), which provides the basis for running .NET Web applications and Web services, key security and performance enhancements, and Windows SharePoint Services, which provide essential collaboration functionality such as Document Management.
- **SQL Server**—Even though the .NET database connectivity model ADO.NET provides support for integrating .NET applications with multiple databases, SQL Server is and probably will be the choice of database for most new applications developed or migrated to the .NET platform. As highlighted in the preceding chapter of this book, a new release of SQL Server code, named Yukon, is expected to be available; it further integrates with .NET Framework. For instance, Yukon is expected to support the development of stored procedures using a .NET-supported programming language such as C# or Visual Basic .NET. Apart from this, SQL Server supports Web services integration using the SQL Server Web Services Toolkit.

- **BizTalk Server**—Probably the most important server technology apart from Windows 2003 and SQL Server, BizTalk represents core enterprise application integration (EAI) and a B2B integration middleware technology provider. BizTalk Server 2004 (which at the time of writing of this book was in a beta release) probably has the most advanced support for the .NET Framework. BizTalk integrates with Visual Studio .NET to develop loosely coupled integrations with back-end systems, known as orchestrations, and Web services are intrinsically used within the BizTalk framework for integration with internal and external systems. BizTalk server also features an elaborate adapter model that enables orchestrations developed using BizTalk to provide out-of-box support (or using third-party adapters) for integration with popular back-end enterprise systems such as SAP R/3, PeopleSoft, and the like.
- **Host Integration Server**—A complementary technology to BizTalk Server, Host Integration Server provides support for transactional and data integration with legacy “host” applications. Host Integration Server supports data integration with DB2, Flat File on mainframes, AS/400, and transactional access to CICS/IMS transaction environments. The server, which is an evolution from the Microsoft SNA Server product, provides the legacy functionality wrapped as COM+/MSMQ Services.
- **Commerce Server**—Commerce Server provides out-of-box, configurable functionality developing and deploying electronic commerce (eCommerce) storefronts. Both Business to Consumer (B2C) and Business to Business (B2B) models are supported. Commerce Server leverages SQL Server as its underlying database and uses BizTalk Server to integrate with back-end order fulfillment and inventory systems.
- **Content Management Server**—Content Management Server (CMS) provides out-of-box support for developing Web content management applications. Essentially, Content Management Server can be used to manage a large set of Web sites for a corporation and supports all aspects of content management, including a sophisticated templating mechanism to define the various content types such as a Press Release, content authoring, content approval workflow, and static/dynamic content delivery to Web servers. CMS provides an integration toolkit with Commerce Server to provide authoring support for product information and catalog management.
- **SharePoint Portal Server**—SharePoint Portal Server, also known as Office SharePoint Portal Server because of its integration with Microsoft Office System products, provides a portal framework and serves as the key mechanism for providing a launch pad for integrating several diverse applications from a presentation perspective. Key highlights of SharePoint Portal Server include a Web Parts framework for developing the individual “portlets” of the portal that leverages the .NET Framework, single sign-on facilities to provide seamless access to multiple applications, user profile provisioning, and enterprise search and taxonomy facilities.
- **Exchange Server**—Exchange Server is really the core email based collaboration server of the Windows Server System. It provides support for Internet standards-based (SMTP, POP3, IMAP, Web HTTP/HTTPS) email sending and receiving. In combination with

Microsoft Outlook, a key member of the Office System family, Exchange Server can also be used to create workflow applications.

- **Mobile Information Server**—Mobile Information Server, as the name suggests, provides Exchange Server capability over a variety of mobile devices, including mobile phones.
- **Speech Server**—Speech Server is a recent addition to the Windows Server System family and provides the capability to develop or extend existing ASP.NET speech and telephony applications that can be accessed by any regular telephone. Speech Server is essentially the standards- and Web-based IVR (Interactive Voice Recognition) enabler for the .NET platform.
- **Small Business Server**—Small Business Server 2003 provides a complete business server solution, bundling and integrating key technologies available in the broad Windows Server System specifically for small and medium businesses. Included in Small Business Server 2003 are Windows Server 2003, Windows SharePoint Services, Exchange Server 2003, Fax Service, ISA Server, SQL Server, and Microsoft Office FrontPage 2003.
- **Application Center**—Application Center provides the much-needed application deployment and management capabilities for high availability of Web-based applications. Essentially, Application Center simplifies deployment of applications into a server farm for high availability (performance, load balancing, and fail over). After it is deployed, Application Center actively monitors performance and health, sending alerts to system administrators if an action needs to be taken, or it can take proactive action, such as restarting servers and services, based on a set of configured rules. All this is pretty much done in a black-box fashion without requiring any application changes.
- **Operations Manager**—Microsoft Operations Manager, also known as MOM, provides operations management capabilities for Microsoft applications and servers through sophisticated event management, proactive monitoring and alerting, reporting, and trend analysis. Through a rich set of management packs, MOM can automatically discover the various infrastructure and server components in a deployment and can monitor key components of the platform, including Active Directory, COM+ Services, network services (DHCP/DNS), IIS, MSMQ, Microsoft Distributed Transaction Coordinator (DTC), .NET Framework, Network Load Balancing, Server Clusters, Windows Operating Systems, BizTalk Server, Application Center, Commerce Server, Exchange Server, Host Integration Server, ISA Server, and SQL Server. For instance, the SQL Server module present in the Application Management Pack can monitor such events as the overall availability of SQL Server, connections, process crashing, and memory-allocation problems.
- **Systems Management Server**—Systems Management Server, popularly known as SMS, provides a scalable configuration management platform for Windows desktop and servers. For instance, SMS can be used to deliver key security updates and patches to a farm of servers from a centrally administered console. SMS can also be used to remotely deploy applications to thousands of desktops running within a corporate environment.

- ISA Server—Internet Security and Acceleration Server provides a multilayer firewall, proxy, Web cache, VPN, basic intrusion detection, and Internet traffic filtering (email, HTTP, FTP) services to the Microsoft platform.

More about the integration of some of the key server technologies with the .NET Framework technologies is covered in Chapter 13, "Leveraging Windows Server System with .NET."

In Brief

- .NET represents a new generation of software from Microsoft and has influenced almost every software created by Microsoft.
- Standards Web services and the Common Language Runtime are the two major changes in application development software tools and technologies between .NET and the DNA platforms.
- Even though the .NET Framework and Visual Studio .NET, which represent the core technology used by application developers to develop custom applications, are really the most significant components of this platform, they are slowly finding their way to changing the underlying architecture of other components of the Microsoft platform, including Office Suite (now known as Office System), and Enterprise Servers (now known as Windows Server System).
- The .NET Framework includes the Common Language Runtime (CLR), a set of programming languages, a rich class library, ASP.NET for Web applications development, support for XML Web services development, and interoperability with existing COM applications.
- Included with the 1.1 release of the .NET Framework is the .NET Compact Framework, which provides support for deploying mobile applications on mobile phone and PDA devices.
- Visual Studio .NET provides a true integrated set of tools for development of .NET Windows and Web applications, Web services, and mobile applications.
- To provide a set of prepackaged functionality to developers using Web services standards, Microsoft has released a set of hosted Web services that can be easily integrated into existing or new applications. These Web services include MapPoint Web service, .NET Alerts, and .NET Passport.
- Apart from the custom application infrastructure represented by the .NET Framework, a set of enterprise servers provide prepackaged and customizable functionality for enterprises. Many of these enterprise servers now leverage and integrate with the .NET Framework.