**Riding the Next Platform Wave: Building and Managing Composite Applications**

An introduction to Windows Communication Foundation 4.0, Windows Workflow Foundation 4.0 and Windows Server “Dublin” technologies

## Windows Server: Application Server Demands of Today’s Agile Businesses

Windows Server delivers a high-performance, highly capable platform for deploying and running custom business applications built with the Microsoft .NET Framework and includes key application server functionality directly in the operating system.

As companies increasingly adopt service-oriented architecture (SOA) principles and embrace composite applications, they reuse services and compose new applications quickly and easily. New requirements arise for the application server:

1. Composite applications are typically more complex for IT to deploy, manage and evolve. This creates a need for developers to write more complex infrastructure code and for more sophisticated operations, deployment and management capabilities on the application server than exist today.
2. Composite applications present new challenges around scalability, performance and reliability. The tried-and-true strategies for optimizing traditional applications do not satisfy in the more complex environment of composite applications.

To address these requirements, composite applications must adopt more sophisticated application architectures, including management of highly asynchronous transactions, automation of long-running durable workflows, coordination of processes across heterogeneous environments, and seamless interoperability across platforms using standards. To manage this complexity, customers prefer to leverage new tools and techniques alongside traditional approaches in a single application server design and runtime environment.

## .NET Framework 4.0 and “Dublin” Meet the Needs

To address these new requirements, Microsoft Corp. is enhancing Windows Server including key components in the .NET Framework 4.0 release by adding significant functionality to the next version of Windows Communication Foundation and Windows Workflow Foundation. The company is also introducing a set of enhanced Windows Server application server capabilities code-named “Dublin,” which offer greater scalability and easier manageability, and will extend Internet Information Services (IIS) to provide a standard host for applications that use workflow or communications.

Taken together, these enhancements to the Windows Server application server will simplify the deployment, configuration, management and scalability of composite applications, while allowing developers to use their existing skills with Visual Studio, the .NET Framework and IIS. This new application server capability will be delivered as a separate release of technologies that can be downloaded and used by Windows Server customers. The first preview is available at Microsoft’s Professional Developers Conference, Oct. 27–30, 2008, and the exact timing of beta and release-to-market will be based on customer and partner feedback from this community technology preview (CTP).

**Q & A**

**Q: What application server technologies are coming in Windows Server and .NET Framework 4.0?**

|  |  |  |
| --- | --- | --- |
| **Windows Communication Foundation 4.0** | **Windows Workflow  Foundation 4.0** | **Windows Server  “Dublin” technologies** |
| **Representational state transfer (REST) enhancements**   * Simplified building of RESTful services * Templates to accelerate building Singleton & Collection Services, Atom Feed and Publishing Protocol Services, and HTTP Plain XML Services   **Messaging enhancements**   * Protocols: WS-Discovery, WS-I BP 1.2 * Duplex durable messaging   **Correlation enhancements**   * Content- and context-driven, one-way support   **Declarative workflow services**   * Seamless integration between Windows Workflow Foundation and Windows Communication Foundation and unified Extensible Application Markup Language (XAML) model * Ability to build an entire application in XAML, from presentation to data to services to workflow | **Significant improvements in performance and scalability**   * Performance gains in all aspects of Windows Workflow Foundation at design time and runtime * At least a tenfold improvement in performance * Improvements in serialization performance and size needs   **New workflow flow-control models and prebuilt activities**   * New flowchart control model * Expanded built-in activities: Windows PowerShell, database, messaging, etc.   **Enhancements in workflow modeling**   * Persistence control, transaction flow, compensation support, data binding and variable/argument scoping   **Updated visual designer**   * Easier to use by end users * Easier to rehost by independent software vendors (ISVs) * Ability to debug XAML | **Provides standard host for Windows Workflow Foundation and Windows Communication Foundation applications**  **Prebuilt developer services**   * Message-based correlation * Content-based message forwarding service * Visual Studio templates   **Greater scalability and easier manageability**   * Enables scale-out of stateful workflow applications * Enhanced management and monitoring functions * Tracking store for workflow events   **Supports a set of Microsoft’s forthcoming modeling technologies currently code-named “Oslo”** |

**Q: How will “Dublin” be packaged and made available for customers to use?**

A: “Dublin” will initially be made available for download and use by Windows Server customers; later, “Dublin” will be included in future releases of Windows Server. “Dublin” will be fully supported; customers with current support contracts, such as those available through Microsoft Software Assurance rights, will be able to take advantage of “Dublin” support under their existing contracts. “Dublin” will first become available after the release of the .NET Framework 4.0 and Visual Studio 2010. Thereafter, “Dublin” will have incremental releases roughly in line with the .NET Framework.

**Q: Will “Dublin” support existing applications built on the .NET Framework? What should customers and partners do today to prepare?**

A: Yes. “Dublin” will continue to provide backward compatibility for existing Windows Workflow Foundation and Windows Communication Foundation applications. Customers can confidently begin building applications on top of both Windows Server 2008 and .NET Framework 3.5 today, with assurances that those applications will enjoy the benefits of “Dublin” when it becomes available.

**Q: What are the customer benefits of the using Windows Communication Foundation and Windows Workflow Foundation with “Dublin”?**

A: The 4.0 release of .NET Framework represents the second generation of the Windows Communication Foundation and Windows Workflow Foundation technologies. For the .NET developer, the 4.0 enhancements include these:

* Simplified coordination of work
* Ability to express applications and services in a way that makes sense to individual teams and businesses
* A framework for durable, long-running applications and services

Taken together in 4.0, Windows Communication Foundation and Windows Workflow Foundation integrate much more naturally, allowing developers to better model complex communication patterns in a full-declarative fashion. Together, they ease the development of distributed applications that cross service boundaries.

With “Dublin,” .NET developers can use the technologies they are already familiar with to build applications. They can use the powerful hosting capabilities of “Dublin” as a deployment vehicle on Windows Server. When .NET 4.0 applications are deployed onto “Dublin,” these enhancements to the application server in Windows Server will simplify the deployment, configuration, management and scale-out of composite applications.

**Q: What is the Windows Communication Foundation REST Starter Kit?**

A: The Windows Communication Foundation REST Starter Kit CTP is a set of features, Visual Studio templates, samples and guidance that enables users to create REST-style services using Windows Communication Foundation. The CTP provides new features that enable or simplify various aspects of using the HTTP capabilities in Windows Communication Foundation, such as caching, security, error handling, help page support, conditional PUT, push-style streaming, type-based dispatch and semistructured XML support. Visual Studio templates simplify creating REST-style services such as an Atom Feed Service, a REST-RPC hybrid service, Singleton and Collection Services and an Atom Publishing Protocol Service. We also provide a rich set of samples that illustrate how to use each new feature and template.

**Q: How will developers learn more about the Windows Communication Foundation REST Starter Kit?**

A: There will be a page under the Microsoft Developer Network (MSDN) Windows Communication Foundation Developer Center (<http://www.msdn.com/wcf/rest>) with documentation, videos, white papers and a link to the CodePlex site for downloading the kit. This site will go live on Oct. 27.

**Q: Will “Dublin” work with the “Oslo” modeling platform technologies?**

A: Yes. “Dublin” will be the first Microsoft server product to deliver support for the “Oslo” modeling platform. “Dublin” does not require “Oslo” to operate and provide benefits of hosting .NET applications; however, administrators will be able to deploy applications from the “Oslo” repository directly to the “Dublin” application server. “Dublin” provides model-driven “Oslo” applications with a powerful runtime environment out of the box.

**Q: Will “Dublin” work with Microsoft BizTalk Server’s enterprise connectivity services?**

A: Yes. The integration server and application server workloads are distinct but complementary; customers want to be able to deploy them separately as needed to support their distinct requirements. For example, customers that don’t need the rich line-of-business (LOB) or business-to-business (B2B) connectivity provided by an integration server will deploy the Windows Server application server to host and manage middle-tier applications. Likewise, customers that need to connect heterogeneous systems across an enterprise, but don’t need to develop and run custom application logic, will deploy BizTalk Server. When customers need both capabilities, “Dublin” and BizTalk Server will work together nicely.

**Q: What plans does Microsoft or third-party ISVs have for offering products that support the .NET Framework 4.0 and “Dublin” technologies?**

A: Among the first product groups to announce plans to support “Dublin” is Microsoft Dynamics, with future versions of both the Microsoft Dynamics AX and Microsoft Dynamics CRM applications leveraging the .NET Framework 4.0 and “Dublin.” In particular, the next version of Microsoft Dynamics AX is being specifically designed to take full advantage of the enhanced capability and scale delivered in Windows Server by the enhanced “Dublin” application server technologies. Among third-party ISVs, line of business applications producers, including Dataract Pty. Ltd., Eclipsys Corp., Epicor Software Corp., RedPrairie Corp. and Telerik Inc., and software infrastructure providers, including AmberPoint SOA Management, SOA Software Inc., Frends Technology and Global360 Inc., are some of the first to already announce plans to leverage the .NET Framework 4.0 and “Dublin” technologies.

**Q: How do I get more information on the .NET Framework 4.0 and Windows Sever “Dublin” efforts? Is there a Microsoft Technology Adoption Program (TAP) that I can sign up for?**

For now, the best way to get more information is to visit our Web site at <http://www.microsoft.com/net>. There, we’ll provide updates, previews of the technology as they become available, and information regarding the TAP.

**For more information, please see** [**http://www.microsoft.com/net**](http://www.microsoft.com/net)**.**

Information in this document is subject to change without notice and is provided for informational purposes only. The entire risk of the use or results from the use of this document remains with the user, and Microsoft Corp. makes no warranties, either express or implied. Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or transmitted in any form (electronic, mechanical, photocopying, recording or otherwise), without the express written permission of Microsoft. Microsoft may have intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to this intellectual property.