

## **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: Today’s Leading Application Server**

Windows Server delivers a high-performance, highly capable platform for deploying and running custom business applications built with the .NET Framework. As Microsoft’s application server, Windows Server includes key application server functionality directly in the operating system: distributed transactions; message queuing; object pooling; caching; authentication, authorization and encryption; a Web server and Web services; communications; workflow; scripting; management. Complemented by the .NET Framework and Visual Studio, the most comprehensive framework and developer tool suite in the industry, Windows Server is one of the leading application servers in the market, as recognized by industry analysts Gartner (“[Magic Quadrant for Enterprise Application Servers, 2Q08](#)”) and Forrester (“[Microsoft Is a Leader in Application Server Platforms](#)”). It also provides the best performance in the market today, with a documented 72% to 117% better performance [when compared to Red Hat Linux with IBM WebSphere](#).

### **New Requirements to Meet the Demands of Today’s Agile Businesses**

As companies increasingly adopt SOA principles, and embrace composite applications, they are using the full spectrum of web services as part of their applications - ranging from simple RESTful services through advanced web services utilizing WS-\* standards. However, as they reuse services and compose new applications quickly and easily, new requirements arise for the application server:

1. Composite apps 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 apps 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 managing of highly asynchronous transactions, automation of long-running durable workflows, coordination of processes across very heterogeneous environments and seamless interoperability across platforms using standards. Increasingly, customers are turning to workflow-centric and “declarative” approaches of defining application logic to help manage this complexity. And rather than adopt new tools and runtimes, customers prefer to leverage these new techniques alongside traditional approaches, in a single application server design and runtime environment.

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

To address these new requirements, Microsoft is enhancing Windows Server including key components in the .NET Framework. The company is adding significant functionality to the new version of Windows Communication Foundation (WCF) and Windows Workflow Foundation (WF) as part of the .NET Framework 4.0 release, including new messaging and REST capabilities in WCF, new workflow models,

seamless integration between WF and WCF to support stateful and conversational services, and a new visual designer. The company is also introducing a set of enhanced Windows Server capabilities codenamed “Dublin” that will 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 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 will be available at Microsoft’s Professional Developer’s Conference in October 2008.

**Q: What Application Server technologies are coming in Windows Server?**

<b>Windows Communication Foundation 4.0</b>	<b>Windows Workflow Foundation 4.0</b>	<b>Windows Server "Dublin" technologies</b>
<p><b>RESTful enhancements</b></p> <ul style="list-style-type: none"> <li>• Simplifying the building of REST Singleton &amp; Collection Services, ATOM Feed and Publishing Protocol Services, and HTTP Plain XML Services using WCF</li> <li>• WCF REST Starter Kit to be released on Codeplex to get early feedback</li> </ul> <p><b>Messaging enhancements</b></p> <ul style="list-style-type: none"> <li>• Transports - UDP, MQ, Local in-process</li> <li>• Protocols - SOAP over UDP, WS-Discovery, WS-BusinessActivity, WS-I BP 1.2</li> <li>• Duplex durable messaging</li> </ul> <p><b>Correlation enhancements</b></p> <ul style="list-style-type: none"> <li>• Content and context driven, One-way support</li> </ul> <p><b>Declarative Workflow Services</b></p> <ul style="list-style-type: none"> <li>• Seamless integration between WF and WCF and unified XAML model</li> <li>• Build entire application in XAML, from presentation to data to services to workflow</li> </ul>	<p><b>Significant improvements in performance and scalability</b></p> <ul style="list-style-type: none"> <li>• Ten-fold improvement in performance</li> </ul> <p><b>New workflow flow-control models and pre-built activities</b></p> <ul style="list-style-type: none"> <li>• Flowcharts, rules</li> <li>• Expanded built-in activities – PowerShell, database, messaging, etc.</li> </ul> <p><b>Enhancements in workflow modeling</b></p> <ul style="list-style-type: none"> <li>• Persistence control, transaction flow, compensation support, data binding and scoping</li> <li>• Rules composable and seamlessly integrated with workflow engine</li> </ul> <p><b>Updated visual designer</b></p> <ul style="list-style-type: none"> <li>• Easier to use by end-users</li> <li>• Easier to rehost by ISVs</li> <li>• Ability to debug XAML</li> </ul>	<p><b>Provide standard host for WF and WCF applications</b></p> <p><b>Pre-built developer services</b></p> <ul style="list-style-type: none"> <li>• Message-based correlation</li> <li>• Message forwarding service</li> <li>• Content-based message routing</li> <li>• Compensation service for long-running transactions</li> </ul> <p><b>Greater scalability and easier manageability</b></p> <ul style="list-style-type: none"> <li>• Enable scale-out of stateful workflow applications</li> <li>• Persisting and rehydrating state for high scalability</li> <li>• Enhanced management and monitoring functions</li> <li>• Tracking store for workflow events</li> </ul> <p><b>Supports “Oslo” modeling platform</b></p>

**Q: When will the .NET Framework 4.0 and Windows Server “Dublin” technologies ship?**

A: We will deliver a Community Technology Preview (CTP) of Windows Workflow Foundation, Windows Communication Foundation, and “Dublin” technologies at the Professional Developers Conference in October 2008; this will allow us to begin receiving broader feedback from customers and partners. We are committed to driving and prioritizing our development efforts based upon customer and partner feedback; the feedback from this CTP and other customer programs will help inform us as to the exact timing of our beta and RTM.

**Q: What are example products from Microsoft or 3<sup>rd</sup> party ISVs are planning support for .NET Framework 4.0 and “Dublin” technologies?**

A: Among the first products that have announced plans to support Dublin is Microsoft Dynamics. Microsoft has announced that future versions of both the Microsoft Dynamics AX and Microsoft Dynamics CRM applications will leverage both .NET 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 3<sup>rd</sup> party ISVs, line of business applications like **Dataract**, Eclipsys, Epicor, Red Prairie and Telerik and software infrastructure providers like Amberpoint, SOA Software, Friends Technology and Global360 are some of the first to already announce plans to leverage the .NET Framework 4.0 and “Dublin” technologies.

**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 available through 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 “10”. 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 WF and WCF 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 is the WCF REST Starter Kit?**

A: The WCF REST Starter Kit is an early preview of capabilities that will be shipped with WCF in the .NET Framework 4.0. The Starter Kit provides Visual Studio project and item templates for common RESTful scenarios: REST Singleton Service, REST Collection Service, ATOM Feed Service, Atom Publishing Protocol Service and HTTP Plain XML Service. WCF already includes REST support today; the starter kit will make it even easier to get REST services up and running using WCF.

In addition to the templates, the Starter Kit will include support and guidance around caching, security, and error handling in REST servers, and early ideas around a REST client as well. The first public release of this preview will be made available in October 2008 on CodePlex. Ultimately the feedback gathered from the early release of the starter kit will be included into REST features in WCF for the .NET Framework 4.0.

**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" in order 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 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 LOB or 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 of custom application logic, will deploy BizTalk Server. When customers need both capabilities, "Dublin" and BizTalk Server will work together nicely.

**Q: How do I get more information on the .NET Framework 4.0 and Windows Sever "Dublin" efforts? Is there a TAP program that I can sign up for?**

For now, the best way to get more information is to visit our website at [www.microsoft.com/net](http://www.microsoft.com/net). There, we'll provide updates, previews of the technology as they become available, and information regarding the Technology Adoption Program.

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

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