An Introduction to Microsoft .NET Services for Developers

This overview paper introduces Microsoft® .NET Services, each of its building block services, and how they fit together.

The .NET framework for the cloud

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Abstract
This whitepaper is the first in a series of whitepapers dedicated to Microsoft® .NET Services, a core part of the Azure™ Services Platform. Microsoft® .NET Services provides a set of developer-oriented building block services commonly required by cloud-based and cloud-aware applications. This overview paper introduces Microsoft® .NET Services, each of its building block services, and how they fit together. For more in-depth coverage of each service, see the other papers in this series (see Additional Resources).

An Overview of the Azure Services Platform
The Azure™ Services Platform is poised to radically change the way Microsoft architects and developers think about building and managing applications. The Azure™ Services Platform (see Figure 1) provides an Internet-based cloud computing environment for running applications and storing data in Microsoft data centers around the world. In many ways, you can think of it as Windows® in the cloud.

Figure 1: Azure Services Platform

The Azure™ Services Platform consists of the Windows® Azure™ cloud-based operating system, as the foundation, and several layered building block service offerings as illustrated in Figure 1. You can take advantage of this new Microsoft cloud computing platform to host entirely new applications or individual services that enhance existing on-premises software investments. The choice is entirely yours.

Windows® Azure™
Windows® Azure™ provides a cloud computing fabric, hosted within Microsoft data centers, for creating, deploying, managing, and distributing (scaling) applications and services on the Internet. Windows® Azure™ provides two main areas of functionality: computation (e.g., executing an application) and storage (e.g., storing data on disk). The value is in how Windows® Azure™ provides these foundational capabilities theoretical without limits. Scale-out is simply a matter of configuration. From a business perspective, Windows® Azure™ shields you from many of the costly IT complexities related to provisioning, configuring, and managing physical servers and the software running on them.

It's important to note that the Windows® Azure™ storage services are designed to be very simple and highly scalable. It

provides fundamental services for BLOB storage, queue storage, and simple table storage, but it doesn't provide the capabilities of a relational database (e.g., query, search, reporting, or analytics). If you need those richer relational capabilities, you'll want to turn to Microsoft® SQL Services.

As shown in Figure 1, there are several service offerings that run on the Windows® Azure™ foundation including Microsoft® .NET Services, Live Services, Microsoft® SQL Services, and others. While the focus of this whitepaper is specifically Microsoft® .NET Services, it is helpful to describe each of these service offerings in a little more detail and how they all fit together within the Azure™ Services Platform.

Microsoft® .NET Services
Microsoft® .NET Services provides a set of .NET developer-oriented services and a software development kit (SDK) for building .NET applications to run in the cloud. Today it provides functionality related primarily to application connectivity, access control, and workflow hosting. Today, the three services it provides include the Microsoft® .NET Service Bus, the Microsoft® .NET Access Control Service, and the Microsoft® .NET Workflow Service. In some ways, you can think of Microsoft® .NET Services as the new .NET framework for building cloud applications, but it's an entirely service-based development fabric.

One of the reasons it's called Microsoft® .NET Services is because it has been designed and optimized to provide a first-class .NET developer experience. The Microsoft® .NET Services SDK makes working with these cloud-based services feel just like writing any other .NET application. The SDK provides integration with Windows Communication Foundation (WCF) and Windows Workflow Foundation (WF), which allows .NET developers to build on their existing skills in those key areas. In the end, Microsoft® .NET Services provides a .NET-centric development experience when building applications for the cloud.

Although Microsoft® .NET Services has been designed to provide a first-class .NET developer experience, it's important to note that it's based on industry standard protocols, making it possible for any service platform to integrate with it through standard REST, SOAP, and WS-* techniques. As an example of that, there are already Java and Ruby SDKs for Microsoft® .NET Services available for download today.

Microsoft® SQL Services
Microsoft® SQL Services provides a set of data-oriented services designed to extend the capabilities SQL Server into the cloud as part of the Azure™ Services Platform. Microsoft SQL Services is actually the brand name for the family of SQL-related services. The first service included within this brand is called Microsoft® SQL Data Services (SDS), which offers full relational database capabilities as a service offering within Azure™ Services Platform. More data-centric services are likely to come in the future.

SDS gives you all the features of a relational database but as a service running in the cloud. This includes tables, stored procedures, triggers, views, indexes, and compatibility with Visual Studio .NET, ADO.NET, and ODBC. Developers will be able to provision logical servers and database instances in the cloud and begin working with them using the same tools and technologies they use today. This is possible because Micrososft® SQL Services supports the Tabular Data Stream (TDS) protocol, the same protocol used by SQL Server running on-premise. Hence, developers can use any TDS-compatible tool or technology when working with their Microsoft® SQL Services instances running in the cloud. In the end, most developers will just need to update their connection strings to point to their Microsoft® SQL Services databases.Live Services

Live Services provides a set of user-centric services focused primarily on social applications and experiences, along with a programming framework that makes them easy to program against. More specifically, the Live Services brand consists of Mesh Services, Identity Services, Directory Services, User-Data Storage Services, Communication and Presence Services, Search Services, and Geospatial Services.

The Live Framework provides a standards-based development framework for interacting with all of the Live Services through a consistent protocol/interface. The Live Framework embraces REST, Atom, and AtomPub, thereby making it possible for anyone to integrate with Live Services via common HTTP/XML programming techniques. It also comes with a friendly client SDK for .NET developers and a rich client runtime that provides built-in mesh synchronization capabilities as well as online/offline support.

Ultimately, Live Services makes it possible for you to build rich mash-up applications that leverage the data found within the Windows Live platform, actively used by more than 400 million people today, in ways that allow rich data synchronization across devices, applications, and business partners.

Additional Service Offerings
In addition to these core service offerings (.NET, SQL, and Live), Microsoft is also actively building some domain-specific service offerings. One such offering is Microsoft® SharePoint Services, which will provide a set of SharePoint building block services that you can incorporate into your own applications. Another example is Microsoft® Dynamics CRM Services, a set of Microsoft® Dynamics CRM building block services hosted in the cloud. In both cases, developers will be able to continue writing code in Visual Studio and have the resulting logic hosted on the Azure™ Services Platform. Both offering are still a work in progress so stay tuned for the initial CTP release of each technology.

It's important to understand that Microsoft® SharePoint Services and Microsoft® Dynamics CRM Services are service offerings; they are not end-user applications. They provide capabilities in each of their respective areas that developers can use to incorporate those features into their applications.

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