iPokr System: Leveraging JAX-RPC

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The popularity of the game of poker has grown dramatically in the past few years, because of the increasing visibility of the game through broadcasts on major television networks like ESPN, FSN, and BRAVO. Its increasing popularity has shocked the industry with annual growth rates of nearly 158% (LaunchPoker 2006). The vast majority of these players are playing poker through sites like PartyPoker, PokerStars, Ultimate Bet .Net, and many more. These sites host their news and events online and available to anyone with an internet browser; however, their gaming applications are traditionally standalone applications that must be downloaded and installed in order to play. There are no readily available solutions that allow players to play interactive poker online through a standard web browser – enter iPokr.

iPokr is a project that intends to offer a completely browser independent solution for playing poker online. From the client side all that is be needed to use iPokr is a web browser based on any electronic device; including PDAs and cell phones. This puts the iPokr system in a field of its own. The server side of iPokr presents several problems, especially because the expected server load during peak playing time for a poker site could be upwards of 50,000 users (LaunchPoker 2006). Load balancing among other distributed systems algorithms will need to be addressed in order to accommodate for the massive number of users.

In order to deliver this solution to the end user the iPokr site will harness the power of XHTML, CSS, and non-obstructive DOMScripting through Javascript – namely AJAX. Using this combination of technologies affords the web interface two main advantages: 1. XHTML will become the standard method of serving web content in the next few years (Dumbill 2006) and 2. the practice of separating style from content and

serving only XHTML Strict Doctype, per the suggestions of the Web Standards Project, greatly increases cross-browser compatibility (WASP 2006). Both of these advantages afford the iPokr web interface greatly increased longevity over existing standards like HTML 4.01.

The server side of the iPokr system is implemented as a configuration of three server types. The main server is a central clearing house for computational work and also serves as a go between for the client AJAX calls. The two types of secondary servers are the Game Server and the Account Server. Both the Game Server and Account Server are implemented and deployed as Web Services that utilize the Java API for XML-Based RPC (JAX-RPC). JAX-RPC is an implementation of the distributed concept of Remote Procedure Calling.

Remote Procedure Calling (RPC) is not a new concept to the field of distributed computing. As a new technology pioneered by Sun and IBM in the early 80's, RPC provided a way to let one computer invoke subroutines on another computer without setting up the machinery in between. By the mid 90's Microsoft unrolled its own version of RPC, cleverly named MSRPC. ActiveX, a Microsoft technology used to install and execute software over the internet is layered on top of MSRPC and is a common example of the power of RPC technology.

As a middleware technology JAX-RPC has been a widely used by software developers for its ability to hide the methods by which it functions – through SOAP calls. SOAP, short for Simple Object Access Protocol, is an XML dialect and World Wide Wed Consortium standard that has allows web services to communicate to each other in an organized way (W3C 2003). This has a number of advantages, among them it allows

different platforms (Windows, UNIX, Linux) and languages (Java and C# .NET) to use web services implemented using SOAP. For iPokr this means that our Central Server *could* be written in php, the Game Server could be done in .NET, and the Account Server could be written in Java. For our purposes of the project requirements we will only be using php and Java.

iPokr's use of RPC is, however, in conflict with the Sun's recommendation to develop web services using the newer Java API for XML Web Services (JAX-WS), which supplants JAX-RPC (Sun 2006). JAX-WS intends to decouple some of the original decisions made when JAX-RPC was developed. It will hand off data binding to JAXB – a Java XML Binding Service, support asynchronous client calls that are very complicated an inelegant with JAX-RPC, and offer developers the ability to transmit through non-HTTP mechanisms such as UDP and TCP (Java 2006).

Although JAX-RPC will eventually be phased out in the wake of JAX-WS, it will continue to be a very elegant transport for using RPC in the Java Environment. For that reason iPokr will leverage JAX-RPC instead of JAX-WS to deploy and communicate with web servers and clients.

RPC is and will continue to be an incredible useful technology, whether the concept is implemented using JAX-RPC, JAX-WS, or non-Java languages. The simple idea of distributing the workload using RPC is very powerful, especially today when the cost of computing power is falling rapidly as more efficient technologies are created. iPokr, like desktop poker applications, will be able to provide a computationally rich service and not sacrifice responsiveness and user interaction. This is made possible by the RPC technology.

Resources

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