Droplets™ is a massively scalable User Interface (UI) delivery platform that serves fully remote, browser-independent applications to client-side desktops or wireless devices with all application code remaining on the server. Unlike Web applications, Droplets feature the speed and high interactivity of desktop software.

Our tests have shown that Droplets-based applications consume roughly one-tenth the bandwidth of comparable HTML and Servlet-based applications. This allows you to provide end-users with fully remote services that are every bit as fast and interactive as distributed, fat client/server applications, while at the same time leveraging significant bandwidth cost savings.

How does it Work?

The Droplets Platform's fully asynchronous, laser-thin Optimized Communication Layer provides Droplets with many of its functional benefits. All application code – including presentation logic – resides on the server, while a thin, generic client sits invisibly on the end-user's machine and renders the Droplets GUI. Server and client communicate using this highly optimized layer, which allows Droplets to be fast, highly interactive, and consume much less bandwidth than HTML.

The Droplets Client is responsible for displaying the application. The Droplets User Interface (UI) Server transmits the screen description on the initial client request. On sequential requests the Server transmits only the changes in the UI. This allows Droplets to send much less information over the wire than HTTP, which must send a full page description on every description on every user request.

Optimized communication provides a number of important benefits over past methods of Web and client/server interaction:

Significant Bandwidth Savings

Unlike HTTP – which requires that you update either the entire User Interface or nothing at all – Droplets updates only the individual fields which have changed, resulting in tremendous bandwidth savings. In addition, Droplets significantly minimizes the amount of data sent across the wire. Together, these two factors provide Droplets with roughly ten times the responsiveness of comparable Web applications. The table below compares bandwidth consumption for a Droplets demo email application to Microsoft Outlook Web Access (OWA) over a 26.6k dialup connection:

Bandwidth Consumption in Bytes: Droplets email vs. Outlook Web Access

Action	OWA	Droplets
Read Message	101,672	13,580
Move Message	371,081	24,991
Send Message	200,631	24,991
Send with attachment *	365,669	56,083
Delete Message	128,758	13,497
View Folder	78,985	14,899
Sort Mail	87,389	10,813

* tested using identical attachment for both applications

Faster Application Performance

With radical bandwidth reduction comes a radical increase in application responsiveness, giving Droplets applications a speed that's close to local fat-client software – even on thin-bandwidth devices. The table below compares application response times for the same demo Droplets email application to OWA over a 26.6k dialup connection:

*Application Performance: Droplets email vs. Outlook Web Access*

Action	OWA	Droplets
First-time Startup	62 seconds	13 seconds
Cached startup	17 seconds	11 seconds
Move mail	53 seconds	5 seconds
New message popup (1st time)	24 seconds	3 seconds
New message popup (cached)	7 seconds	3 seconds
Read mail	13 seconds	3 seconds
Read mail (cached)	7 seconds	2 seconds
Preview pane update	5 seconds	2 seconds

Fully Asynchronous Communication

Unlike Web applications, which cannot be updated without explicit user intervention, Droplets allow server-side updates to be placed on the client without any "Refresh" or other user intervention required. This is a critical consideration when serving applications that present real-time data to the end-user, including stock tickers, auction watchers and a wide variety of other services. Since individual GUI fields can be updated individually, users experience Droplets as local applications even though there is zero application code on their machine.

Back-end Communication

The Droplets UI Server uses industry standard protocols to communicate with back-end resources such as EJB/J2EE application servers, XML-based Web services, databases and non-standard legacy applications and data. Interaction with EJB servers takes place via RMI or any other standard VM-to-VM communication channel. Web services and other XML-enabled back-end resources are accessed via standard XML and HTTP libraries, SOAP toolkits or middleware platforms like GLUE. In addition, Droplets is compatible with all standard database classes, and includes Adapters that enable it to integrate with non-standard proprietary products like ATG's Dynamo application server.
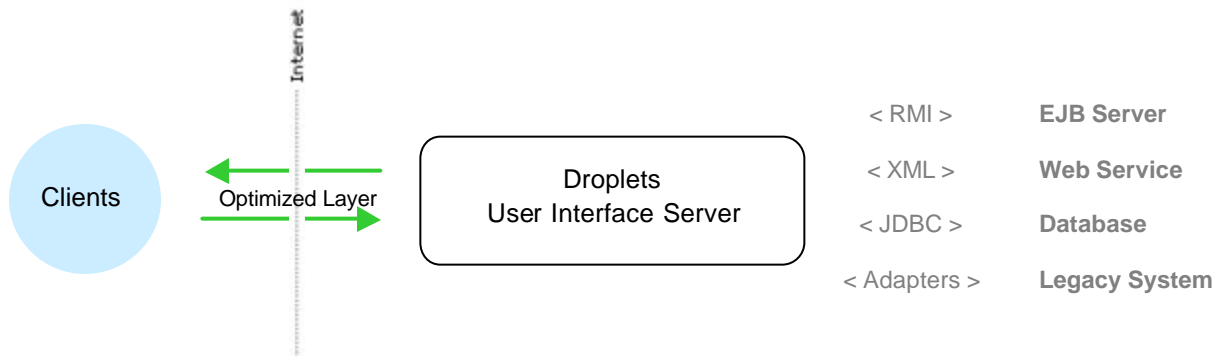
Figure 1: Droplets uses industry standard protocols to communicate with important network resources.

Addressing Firewalls

When the end user is behind a firewall, the Droplets Platform wraps its protocol in HTTP. This allows end users to be able to access Droplets even behind strict corporate firewalls with no programming effort required of the Droplets developer. For more information on this topic read *Droplets and Firewalls.*

Conclusion

Despite the forecasted increase in the Internet's bandwidth capacity, bandwidth consumption has become (and will remain) a tremendous concern for enterprises due to the emerging proliferation of thin-bandwidth wireless devices, and the persistence of slow modem-based home connections. The new generation of online applications must provide all of these platforms and devices with a higher level of interactivity and speed than was possible with previous paradigms, while at the same time cutting the current level of bandwidth usage.

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To find out more about how the Droplets Platform can radically improve the quality of your remote applications, contact Droplets, Inc. today.

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