

Dow Jones Interactive Technical Guide

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Introduction

Introduction



This manual was created to be the central source of technical information about Dow Jones Interactivesm. It was written with customers and prospective customers in mind. While explaining some technical aspects of Dow Jones Interactive and its delivery methods and options in basic terms for all business professionals, there are also some advanced sections written for technical personnel. This manual will facilitate successful implementation and ongoing support of Dow Jones services by:

- Orienting customers to key technical aspects of Dow Jones Interactive
- Outlining options available to customers in how they implement access to Dow Jones Interactive and detailing benefits and drawbacks associated with each option
- Providing a common base of technical concepts and vocabulary to insure effective communication between the customer's technical staff and Dow Jones personnel

Dow Jones Interactive Overview

Dow Jones Interactive is a Web-based news and research service. In its simplest form, users access Dow Jones Interactive by entering the URL <http://djinteractive.com>. They must enter a user name and password at the login page and are granted access to the site. Once inside, users can research almost any topic, explore market trends or find important information about a company or industry.

Dow Jones Interactive is made up of seven areas.

- In **Business Newsstandsm**, you can browse the day's important news.
- In the **Publications Librarysm**, you can find information on virtually any topic from more than 6,000 sources.
- The **Dow Jones Web Center** is the intelligent search engine that searches only the most valuable business Web sites.
- In **CustomClips[®]**, you can check your own customized folder for the news that matters to you.
- The **Company and Industry Centersm** allows you to uncover information on thousands of companies and industry sectors.
- The **Historical Market Data Centersm** provides current and historical pricing, dividend and company information for over 145,000 U.S. and Canadian securities, over 30,000 international securities, and over 1,600 markets.
- The **The Wall Street Journal[®] Interactive Edition** is the continually updated, electronic edition of *The Wall Street Journal[®]*.

As users navigate our site and collect information, they have the option to print or save it. Dow Jones Interactive sessions end when users click *Exit* on our navigation bar or when they close their browsers.

Technical Basics

Application Specifics

Browser

A browser is a software program that allows you to see pages on the World Wide Web. The Dow Jones Interactive users in your company will need one of our recommended Web browsers to view our service. While we try to support as many types and versions of Web browsers as possible, we also want to bring you the most technologically advanced, best performing product. Consequently, not all browser makes and versions are fully compatible with Dow Jones Interactive. Refer to <http://djinteractive.com> for the most current list of recommended browsers.

Java

Java is a programming language environment that can run in a browser or on almost any computer even without a browser. It is a compiled language which programs anything that can also be done with traditional programming languages, such as C or C++. When a Java application—referred to as an applet—runs in a browser, it provides a rich, powerful application on par with almost any Windows application. Dow Jones Interactive does not use Java at this time.

JavaScript

JavaScript, is a much lighter scripting language than Java, which is sent to the browser as text for execution on a user's PC. While it is much less powerful than Java, it allows for niceties such as interactive design elements and local field validations without sacrificing speed.

Dow Jones Interactive currently uses JavaScript to achieve some of its more powerful and popular capabilities. For example, the Publications Library

makes use of JavaScript for multiple article selection. JavaScript programming allows users to select multiple articles from your search and view them at once. Since Dow Jones Interactive needs JavaScript to function, our customers must eliminate any barriers to this program. Although some security-conscious companies initially blocked JavaScript, most companies now recognize the benefits of this language and let it pass through their firewalls.

Frames

Frames are a method of dividing a single Web page into two or more independent pages. Interaction with one frame either affects the current frame or references another frame. Dow Jones Interactive uses frames extensively, often without the users ever knowing, since transparent border frames with the same background color have no visible boundaries. This allows Dow Jones Interactive to utilize better navigational tools and user interfaces. The inability of some browsers (specifically older versions) to effectively cope with frames is one of the reasons why Dow Jones Interactive is not compatible with all browsers. Refer to <http://djinteractive.com> for an updated list of recommended browsers.

Cookies

Browsers are typically “stateless,” meaning that they don't remember previous requests. Cookies are information that a host (Dow Jones Interactive, in this case) can store on a browser so it can be returned to the host on subsequent requests. Cookies allow us to keep track of where a user is during a session, or to save a user name and password so they don't need to be entered at every visit.

Overall Considerations

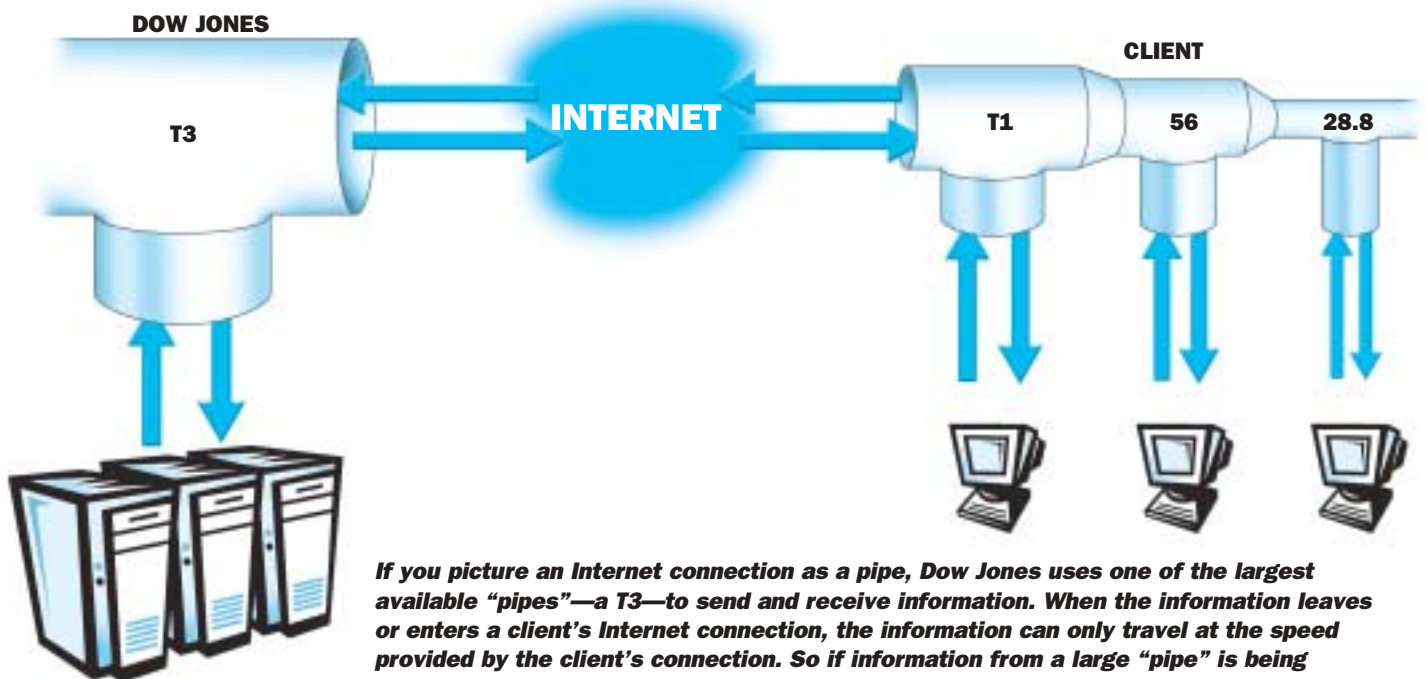
Performance

Performance is the amount of time it takes for a request and a response to go from an end user's browser to Dow Jones and return information to the browser. Performance is a balance of technical capability, cost and product functionality. Tools that improve the navigation and functionality of the Web such as Frames, Java and JavaScript (See Application Specifics, page 7) can make a Web page graphically appealing but have slower performance. Dow Jones constantly reevaluates Dow Jones Interactive to make sure it is as fast and powerful as possible, and we believe we have achieved and maintain a good balance. Our actions, unfortunately, are not the only thing having an impact on performance at the user level. First, some of our customers have slow or clogged networks or slow computers that slow the performance of Dow Jones Interactive. If customers have performance problems, Dow Jones can offer diagnostic programs and benchmark measurements to help assess

whether or not a problem exists, and if one does, whether that problem is located within Dow Jones's network or the customer's. Second, Dow Jones, through our experience as a global information service provider, has also identified some performance discrepancies related to customers' geographic region.

Security-Encryption

Companies want the data that is transmitted by and to them to be secure. Security in this sense refers to the inability of an unauthorized individual to "eaves drop" on what an end-user is doing on the Internet or the company from which they are connecting. For example, if an investment banking firm is looking for information on a publicly-held company, knowledge of that interest could "tip" an investor/hacker to invest in the researched company. Having this knowledge before it is in the public domain could cause an investment to increase when the event covering the investment bank's research



If you picture an Internet connection as a pipe, Dow Jones uses one of the largest available "pipes"—a T3—to send and receive information. When the information leaves or enters a client's Internet connection, the information can only travel at the speed provided by the client's Internet connection. So if information from a large "pipe" is being received by a smaller "pipe." The speed of the overall connection will be limited by the smallest "pipe."

is announced. As the world's most respected publisher, Dow Jones maintains strict standards of propriety regarding individual search records in our database. We analyze searches in the aggregate to understand our customer base and only look into individual sessions when we are troubleshooting a question on search results raised by a customer.

Encryption

Encryption is the process of coding information into an unreadable format, transmitting it, then decoding it back into its original form at the receiving end. Anyone intercepting the communication will be unable to understand it easily without the decoder. Although we continue to evaluate the need for encrypting data transmissions with our customers as they pass through our public Internet or telephone lines, we do not encrypt most information today.

SHTTP

SHTTP (Secure HyperText Transport Protocol) is an extremely thorough way of encrypting data. Dow Jones provides this capability for our most security conscious customers during the login process only. Our logic in restricting this capability to the login stage is twofold. First, if hackers cannot determine which user is logging on to our service, then it really does not matter if they find out what searches that anonymous user is performing. Second, supporting SHTTP requires up to ten times as many computing resources and would seriously infringe upon performance if we used it to encrypt all transactions.

Getting Connected

Getting Connected

Connecting Through Your Corporate Internet Connection

One of the ways that your company can connect to Dow Jones is via your corporate Internet connection. Over the past few years, many companies have begun using the Internet as their main network because it is easy to use and allows for employees in remote locations to use it smoothly with little equipment or instruction.

Connecting Through a Private, Frame-Relay Extranet Connection

An extranet is a connection of two intranets, using either public or private networks for the purpose of transmitting information in a secure manner. Normally, two intranets would not communicate because of internal security policy and firewalls. But two companies can arrange to connect their intranets, making it possible to do business in a confidential manner. They can conduct transactions, send messages and participate in group discussions as if they were behind the other company's firewall. Another form of extranet implementation is a private, leased line. Dow Jones Interactive offers a private, frame-relay connection to customers who wish to access

Dow Jones Interactive without routing traffic to and from Dow Jones through the public Internet.

The Advantages of an Extranet Connection

Security is one reason many extranet customers opt for a private connection to Dow Jones Interactive. Dow Jones Interactive tries to make communications with customers over the public Internet as secure as possible, but some of customers prefer to bypass the Internet.

Extranet communications can also offer a more consistent level of **performance** and **reliability**. This reliability stems, in part, from the managed level of service that Dow Jones Interactive can provide to extranet customers. The public Internet is a network of computers without a main control point or single point of responsibility. If a component or segment of the Internet fails, interrupting one of our Internet customer's communications with Dow Jones Interactive, there is little Dow Jones can do to correct the problem. If one of our extranet connections experiences a failure of any kind, we can alert the telecommunications firm that supports the extranet to immediately begin making repairs. If the Dow Jones extranet can connect to your network at a point behind any existing blockage, performance may be significantly better than the public Internet.



A private, frame-relay extranet connection works like a secret passage which bypasses the Internet. It connects Dow Jones and a client and can be used only by Dow Jones and that client. This makes for faster, more secure and reliable transfer of information.

Bandwidth Options

Bandwidth is the ability of a network to transmit data at a certain rate of speed. It is measured in **bits per second**. The smallest bandwidth available for extranet connections to Dow Jones is 56K bits per second, which is roughly equivalent to that of today’s fastest single user dial-up connections. Extranet connections also offer bandwidths of 256K, 768K and 1,544K bits per second. This last option, 1,544KB is also called **T1** speed. Whenever possible, we recommend customers use T1 connections, as they provide the highest rate of speed possible.

Extranet-Only Limitations

To take advantage of all of the features of Dow Jones Interactive, users within your company need access to the Internet in addition to an extranet connection to Dow Jones. This is because components of our product like Dow Jones Web Center provide links to sites on the public Internet. We categorize our customers based on their types of connections to us and to the Internet. Your company’s category dictates how much of Dow Jones Interactive will be available to your internal users. The table below describes the four categories and the limitations associated with them.

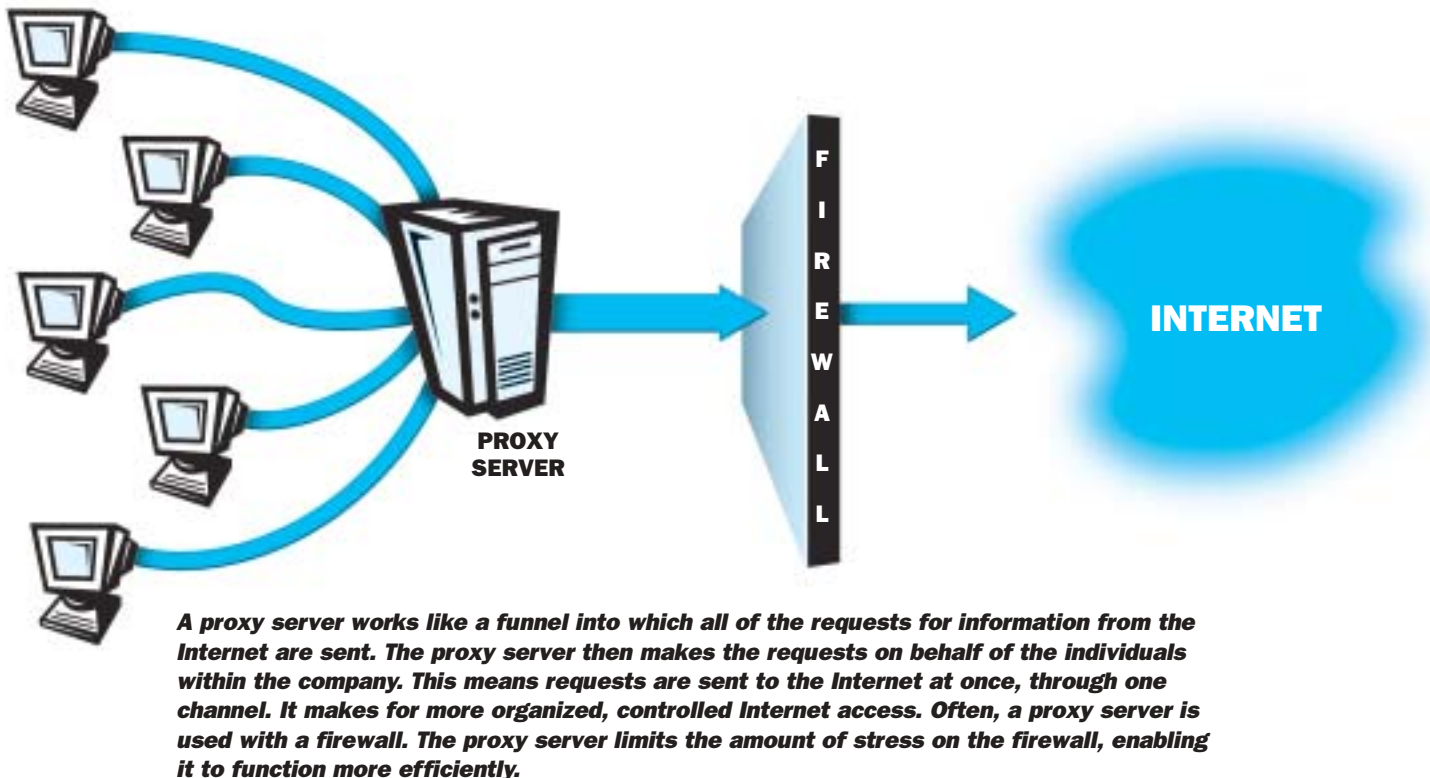
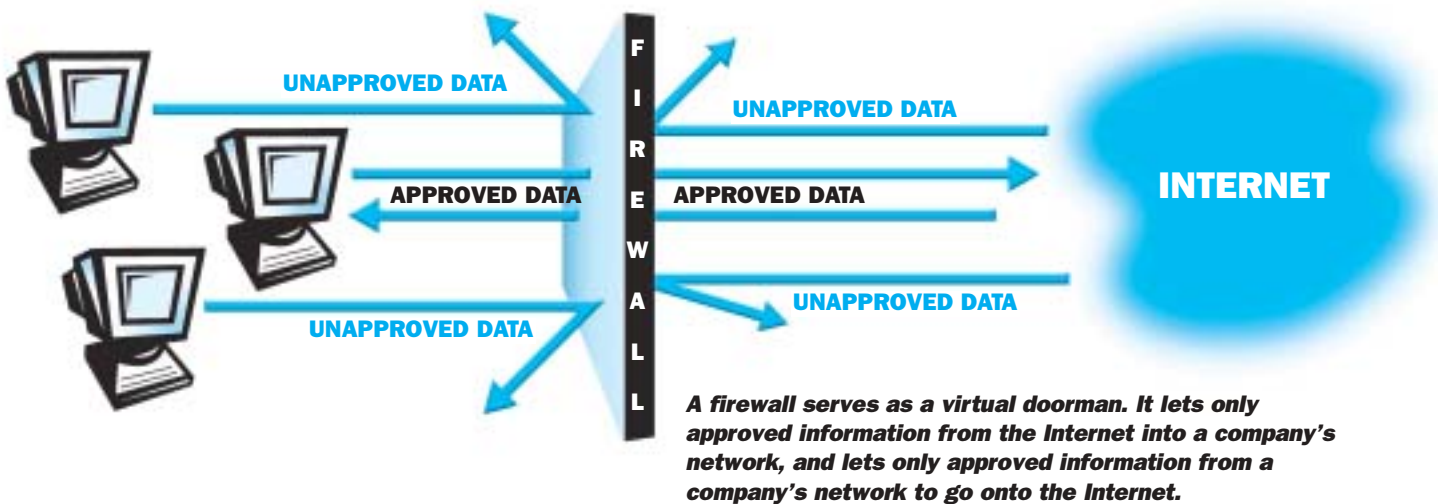
Type of Connection	Definition	Access
1. Internet only	Connect to Dow Jones Interactive via the Internet and have no problem accessing those parts of Dow Jones Interactive that are not Dow Jones-defined.	All areas of Dow Jones Interactive
2. Extranet only	Customers access Dow Jones Interactive via a private frame-relay connection and their employees have no access to the public Internet.	Users will only be able to access those areas of Dow Jones Interactive that are Dow Jones-defined. An updated list of areas available to extranet only users is available at http://ip.dowjones.com .
3. Extranet with partial Internet	Customers access Dow Jones Interactive via a private frame-relay connection. They are connected to the Internet, but they block their employees from accessing certain parts of it.	Users will only be able to access those parts of Dow Jones Interactive that are Dow Jones-defined. In addition, access to all non-Dow Jones defined areas is possible provided that the customer eliminates the barriers to a list of Internet sites that Dow Jones will provide.
4. Extranet with full Internet	Customers access Dow Jones via a private frame-relay connection and also have full access to the Internet.	All areas of Dow Jones Interactive

**See Appendix for the extranet network technical engineering specifications.*

Firewalls and Proxy Servers

Whether your corporate connection is via the public internet or a private Extranet connection, traffic to and from Dow Jones Interactive will pass through one or two common types of security devices: **firewalls** and **proxy servers**.

Firewalls are computers that monitor incoming and outgoing data from your company's intranet to the public Internet or to Dow Jones Interactive if you have an extranet connection. These are the "traffic cops" that control what data and types of data can flow in and out of an intranet. Some customers have installed blocking schemes in their firewalls that allow employees to access



some parts of the Web while denying access to others (time wasting sites, inappropriate content, games, etc.). If your company has one of these blocking schemes, you will need to work with Dow Jones to make sure that <http://djinteractive.com> and a list of other URLs associated with our site are removed from the list of blocked sites. Your company's firewall may also be responsible for performance issues that you encounter in your communications with Dow Jones Interactive. Because of the increasing volume and complexity of viruses and other destructive data streams, firewalls are forced to interrogate data more thoroughly, thus adding significant overhead (slowness) to the performance of a user's Internet access. For more on performance, see page 13.

A **proxy server** is a single logical gateway computer used by most companies to access the Internet. Proxy servers protect internal network users from security checks by making information requests on their behalf. All transactions initiated by users on your company's intranet probably pass through your corporate proxy server. If proxy servers are old, overworked or malfunctioning, they can cause significant problems for connecting to the Internet, and to Dow Jones Interactive. They can break up URLs, render pages incorrectly, and slow communications. Proxy servers, like firewalls, are hidden deeply in customers' networks, and end users often overlook the possibility that their own proxy servers are the source of performance problems with their connections to Dow Jones Interactive. For more on performance, see page 13.

The Difference Between Firewalls and Proxy Servers

A firewall works as a two-way filter, monitoring the Internet information that is sent to, and requested by, users within a company. Proxy servers allow information from the Internet to flow unfiltered to and from users within a company, while hiding internal Internet addresses and URLs from the rest of the Internet, thus preventing outsiders from monitoring your employees' use of the Internet. Also, proxy servers use HTTP protocol on input ports and output ports, firewalls may not.

Diagnosing Problems With Your Company's Firewall and/or Proxy Server

We can conduct a simple test to determine whether or not your firewall and/or proxy server are the root of a performance problem with Dow Jones Interactive. With your company's permission, we can bypass its firewall and proxy server for a short period of time and connect your users' browsers directly to Dow Jones Interactive. If performance problems persist during this test, we can assume that the problem is outside of the customer's control and work to correct it. If performance problems are resolved during the test, however, you will need to service your firewall and/or proxy server to improve the performance of your connection to Dow Jones Interactive.

User Setup

Registration

Every employee in your company who will be using Dow Jones Interactive needs a user name. **Registration** is the process of creating a user name for each user in your company.

Assigning User Names

When choosing a registration scheme, for record-keeping purposes, you should assign user names that you can link to specific employees. To understand why user names matter, you need to know something about the steps that follow registration.

Following registration is a process called **authentication**. Authentication is when a user enters the Dow Jones URL: <http://djinteractive.com> and logs on. Each time a user authenticates, he/she submits their user name to Dow Jones Interactive. Users can enter this information manually or they can set their browsers to do it automatically. The submission of user names during the authentication process allows Dow Jones to keep track of which individuals and groups within your company are using Dow Jones Interactive, and how often. At the end of each month, Dow Jones will produce a **usage report** that breaks down your company's use of Dow Jones Interactive by user name. These usage reports help your company determine how your employees are using Dow Jones Interactive, and how they can use it more effectively. What's more, your company can use usage reports for charge backs, usage analysis, and billing clients for research performed on Dow Jones Interactive. In order for this report to have any meaning, however, your company must assign user names that can be easily linked to specific employees. Many of our customers use e-mail addresses or employee numbers as user names for this reason. See section XX for more information on Usage Reports.

Sharing User Names and Passwords

Under special circumstances, your company can choose to have all of its employees log on to Dow Jones Interactive with the same user name and password. Sharing user names saves time. We can roll-out the product much faster because we can skip the registration and authentication processes. There are, however, some significant drawbacks to sharing user names. First, Dow Jones cannot provide user-specific usage reports. Second, the employees within your company will not be able to take advantage of the many customizable features available within Dow Jones Interactive. Consequently, we only recommend sharing passwords when customers' subscriptions do not include customizable components of our product or as a temporary solution when a new customer needs rapid access to Dow Jones Interactive.

Three Types of Registration

Dow Jones offers customers three different registration methods: manual, bulk and dynamic.

1. Manual Registration

To manually register, someone in your company must complete a registration form for each user. Manual registration requires no technical setup, but completing the form for each user is a process that many of our customers choose to avoid. If you were the administrator responsible for manually registering an individual user on a corporate account, you would go to the front page of Dow Jones Interactive and scroll down until you could see the two links labeled "Register Here." The directions on the screen will guide to you indicate whether you are registering a new user on a corporate account with multiple users or an individually invoiced user. Before you can create an individual user name and

password, you must enter a corporate account number and corporate password. If you enter these two pieces of information correctly and click *Login*, a registration form will appear. This form allows you to select a user name and password for the new user. Once you complete the form and accept the Dow Jones subscription agreement that follows, that user will have access to Dow Jones Interactive under that user name. You can then decide how to distribute the new user names and passwords you create during manual registration.

2. Bulk Registration

Bulk registration requires some preliminary administrative work on the part of your company, but it eliminates the need to manually complete a registration form for each user. To bulk register many users at one time, you must send Dow Jones a spreadsheet or text file with a list of user names, passwords and other information. Dow Jones will use that file to register all users at once. You can choose how you want to distribute the user names and passwords to each user.

3. Dynamic Registration

This method has the most technically-involved setup, but it minimizes the steps required for end users to begin accessing Dow Jones Interactive. Unlike bulk registration, Dow Jones does not process your entire list of users at once. Instead, Dow Jones sends you a single custom Web page with a unique URL to be used on your intranet. You would then write a script for that server containing all of the information needed to register each user with Dow Jones Interactive along with commands instructing the users' browsers to register them with Dow Jones Interactive. Once this background work is complete, individual users need only set the registration process in motion by clicking on your intranet link to Dow Jones Interactive. The server automatically determines which employee is making the request and sends the corporate account number, corporate password and the user's registration information back to the browser, along with the command to contact Dow Jones Interactive and register the user. The

browser then passes the registration information obtained from the server to Dow Jones Interactive in the form of a URL. Finally, Dow Jones sends a message to the browser confirming that registration was successful. All of the above communications between the browser, the server and Dow Jones Interactive take only a few seconds, and are hidden from the user. Along with this confirmation, Dow Jones Interactive will send one of two things, depending on the arrangement we make with you when you design your registration and authentication schemes. Either Dow Jones Interactive can send an e-mail message to the user that provides his/her user name and password, and the user would then need to go to the Dow Jones Interactive login page, if he/she is not already there, and enter his/her user name and password to gain access to our products. Or, Dow Jones Interactive can set an autolog cookie in the user's browser, storing his/her user name and password so that it's not necessary to enter it each time they want to log on to Dow Jones Interactive. For a complete description of autolog cookies and how they work, read the section on Permanent Cookie Authentication on page 21.

Activation

If your company's registration and authentication scheme is not entirely transparent, i.e. if does not pair Dynamic Registration with either Permanent Cookie Authentication or URL Token Authentication (see the following section on authentication), you may need to add a step after bulk registration to help end users access Dow Jones Interactive for the first time. This step might be an e-mail to each user, indicating how to access Dow Jones Interactive, with a link straight to the service. Alternatively, you might post a link on your corporate intranet that will dynamically assign a user name and password to each user when clicked and then link straight into the service. Whenever a user re-visits that link, the assignment step would need to re-occur, so that the user would be logged in under the same user name each time.

Authentication

Authentication is the process of logging on to Dow Jones. There are three different ways to do this, Manual Authentication, Permanent Cookie Authentication and URL Token Authentication. Descriptions of each method are below.

1. Manual Authentication

This process involves a user entering the URL for Dow Jones Interactive <http://djinteractive.com>, entering a user name and password and clicking *Login*. At this point, the user's browser submits this information to Dow Jones. Dow Jones verifies the user name and password and either allows or denies access to the service.

2. Permanent Cookie Authentication

This is an automatic authentication that eliminates the need for users to enter their user names and passwords every time they want to log on to Dow Jones Interactive. With permanent cookie authentication, the user's browser sends a hidden message, or a cookie, to Dow Jones containing his/her user name and password whenever he/she enters <http://djinteractive.com>. Upon receipt of this cookie, Dow Jones permits the user to bypass the manual authentication page and access to the service.

The cookie that Dow Jones can set to automate the login process is called, appropriately, an **autolog cookie**. It contains, among other information, a particular user's user name and password. Like all cookies, this autolog cookie has an expiration date. While many cookies are temporary and usually expire when a user closes his browser, autolog cookies are permanent, and are programmed to expire at a future date. When a user exits his/her browser after a session during which a host has set a permanent cookie, the browser saves the permanent cookie in a file on the hard disk. Every time the browser is launched, it scans the hard disk for permanent cookies and loads them into the browser. If Dow Jones Interactive sets an autolog cookie in one of its user's browsers, every subsequent time that the user types in the URL to access Dow Jones Interactive, his/her browser will send the autolog cookie to Dow Jones Interactive with the request. Upon receipt of this

cookie, Dow Jones Interactive will permit the client to bypass the manual authentication page and grant him/her immediate access to the product.

Two Ways to Set Autolog Cookies for Users in Your Company.

1. If using the Dynamic Registration method described in section 20, remember that after successful Dynamic Registration, Dow Jones Interactive sends confirmation of a successful registration to the user's browser. When this confirmation is sent, Dow Jones Interactive can also set an autolog cookie in users' browsers. When you combine Dynamic Registration with Permanent Cookie Authentication, users in your company can avoid the hassle of dealing with user names and passwords. In fact, they may never even know that they have a user name or a password.
2. Users themselves can also tell Dow Jones Interactive to set an autolog cookie in their browsers. After a user enters his/her name and password in the appropriate fields on the manual login page, he/she has the option of checking a box to save his/her name and password. Checking this box effectively tells Dow Jones Interactive to set an autolog cookie in the user's browser. The next time he/she requests <http://djinteractive.com>, he/she will skip the login page and go directly into Dow Jones Interactive.

Some Important Points About

Permanent Cookie Authentication:

- If a user tells Dow Jones Interactive to set an autolog cookie while working on a computer that you have borrowed, whomever uses that computer after that user will be able to perform searches on Dow Jones Interactive the prior user's account will be charged, unless the autolog cookie is erased. If a customer has employees who frequently borrow computers or share them with others in their departments, URL Token Authentication (described below) might be a more viable authentication scheme, as it avoids this problem.
- If you access Dow Jones Interactive from different browsers or from different PCs, you will have to set autolog cookies on each.

3. URL Token Authentication

URL Token Authentication is an alternative type of automatic authentication that Dow Jones Interactive offers to offers to customers with specialized needs that prevent some of their employees from being able to use Permanent Cookie Authentication. Some users frequently access Dow Jones Interactive from PCs where they have Dow Jones Interactive set an autolog cookie. Here's a scenario in which URL Token Authentication would work well: Bob is a management consultant who travels often. While travelling, Bob frequently needs access to Dow Jones Interactive, but he doesn't always bring a PC with him. Instead, he borrows them from hotels and from his clients. Bob wants to log on to Dow Jones Interactive without entering his user name and password every time. If he tells Dow Jones to set an autolog cookie on one of the borrowed PCs, however, anyone who uses the PC after Bob could perform searches on Dow Jones Interactive and bill them to Bob's account. For people like Bob, Dow Jones Interactive offers the URL Token Authentication option.

How does URL Token Authentication work?

Dow Jones can help you program your intranet server to store the user names and passwords of your company's employees and submit them to Dow Jones Interactive automatically. Then, when an individual user launches his/her browser, connects to your corporate intranet and requests <http://djinteractive.com>, your intranet server will intercept the request. The server will determine which employee made the request and tack on an alphanumeric code that encodes the employee's user name and password to the end of the URL before passing the request to Dow Jones Interactive. Dow Jones Interactive verifies the login information, and, if it is accurate, allows access. No login information will be stored on the hard disk of the PC from which the user accesses Dow Jones Interactive.

Login Page Customization

Some customers develop automatic or transparent authentication schemes designed to simplify the Dow Jones Interactive login process. You can do this through Permanent Cookie Authentication or through URL Token Authentication. Regardless of which method your company chooses, individual users may never even know that they have a user name or a password. If someone from your company tried to log on to Dow Jones Interactive you before you had arranged for him/her to be transparently authenticated, however, he/she would be faced with our manual login screen which requests a user name and password. Dow Jones can customize the login page for your company to solve this problem. With this customization in place, when employees who have not yet been transparently authenticated attempt to access Dow Jones Interactive, they will link to a URL within your corporate intranet where you can inform them that they are not yet able to log on to Dow Jones Interactive and give them information about how to log on.

Usage Reporting

Usage reports will help your company determine how employees are using Dow Jones Interactive, and how they can use it more effectively, if they're not already. What's more, your company can use usage reports for charge backs, usage analysis, billing clients for research performed on Dow Jones Interactive, and justifying your subscription to Dow Jones Interactive.

Ways to Customize

Ways to Customize

Your company can customize Dow Jones Interactive in a number of ways. Most of these options and their descriptions are listed below.

Blocking

Dow Jones Interactive has many different components, but your company may not want all users to have access to all components. On a per-account or on a per-user basis, Dow Jones Interactive can install blocking mechanisms so individual users or groups of users within your company cannot gain access to certain areas. If users try to gain access to a blocked area, Dow Jones Interactive sends a message indicating that their subscription agreement does not allow access to that part of Dow Jones Interactive.

Direct Links

Generally, when users log on to Dow Jones Interactive, whether through manual or transparent authentication, they arrive at the front page. Dow Jones developed the Direct URLs option to allow users to bypass this front page and head directly to a particular component of their choice. Below, we have listed a set of links that you can post that will take users to specific pages of the service. If the user has a cookie, he or she will go directly to the page.

For example, to have a Direct Link to the Business Newsstand, users would use the following code:

```
<a href="http://nrstg1p.djnr.com/cgi-bin/DJInteractive?cgi=WEB_FLAT_PAGE&page=wrapper/access&front_page=newsstand">Newsstand</a><p>
```

Codes for Direct Link to each area of Dow Jones Interactive can be found, and copied for use, at <http://ip.dowjones.com/directurl>.

Intelligent Searches

Generally, when users want to run a search in the Publications Library (see section 3), they need to go to the query screen, enter their request and click *Submit*. Many users do not have the time or expertise to construct and run such searches effectively. Dow Jones Interactive now offers customers the capability to create URLs that have searches embedded in them. Your company's information professionals can author these queries and post them on your corporate intranet. When individuals click on the link associated with one of these queries, they will go directly to the results screen for the search. This Intelligent Search option can save users time and yield better search results, as the queries are professionally authored. Below, we have included a sample interface for such a query. It is not one that you would ever give to a user, but it shows all the possible values.

For example, code for an embedded search on Bill Gates would look like:

```
<a href="http://nrstg1p.djnr.com/cgi-bin/DJInteractive?cgi=WEB_FLAT_PAGE&page=wrapper/search&Search=bill%20gates">Search for Bill Gates in the PubLib</a>
```

Codes for Intelligent Searches in Dow Jones Interactive can be found, and copied for use, at <http://ip.dowjones.com/directurl>.

Group Folders

CustomClips allows individual users to set up their own folders to which Dow Jones Interactive will automatically deliver the news and information that matters most to them. The Group Folders option automatically delivers information to a folder that has been tailored by your company's central administrator or information

professional to fit the information needs of a particular group of users. If your company uses Group Folders, when a user from that group goes into CustomClips, he/she will see a list of folders devoted to their group along with his/her own personal folders.

Exit URL

By default, a user clicks Exit to end a session with Dow Jones Interactive, and is returned to the Dow Jones Interactive login page. If your company chooses, we can customize the Exit URL so that users are returned to a location on your corporate intranet instead.

Browser Check

Dow Jones can activate a feature to automatically verify that a user within your company is accessing Dow Jones Interactive with a browser that will allow him/her to effectively navigate the site. If a user tries to log on with a browser that is not on our list of acceptable browsers, we can deny that user access to the site and send him/her to a URL which provides a list a browsers that function well with Dow Jones Interactive. Dow Jones has not applied this feature often, but in the future, as our site becomes more technologically advanced, we will probably have to actively prevent people from using old browsers with our products, as they simply will not work.

One Area Only

If your company has highly specialized needs, Dow Jones can expand the blocking feature discussed on page 25 so that it blocks all but one component of Dow Jones Interactive. We would then give you a Direct Link (see page 25) which takes users within your company directly to the component to which your company subscribes. So far, the One Area Only option has only been applied to the Newsstand component of Dow Jones Interactive. We are able to simplify the roll-out process with One Area Only subscriptions because Business Newsstand has no customizable features. If you are One Area Only subscriber, all of the users in

your company can log on to our service with the same user name and password, and you can skip the Registration and Authentication phases. Instead, Dow Jones gives you a Token-based URL (see page 22) with a single user name and password coded into it for everyone in your company to use.

Internets-Only Areas of Dow Jones Interactive

The Wall Street Journal Interactive Edition and Dow Jones Web Center are special areas of Dow Jones Interactive because to access these area, users must have access to the Internet.

The Wall Street Journal Interactive Edition

Once available only as a stand-alone service, the Interactive Journal is now also included as a part of Dow Jones Interactive.

There are links from Dow Jones Interactive to the Interactive Journal, from several areas, including the front page and from within the Historical Market Data Center. There are, however, no links that will take users back to Dow Jones Interactive from the Interactive Journal. The reason for this is that, while subscribing to Dow Jones Interactive provides access to the Interactive Journal, subscribing to just the Interactive Journal does not allow access to Dow Jones Interactive on the Web. So this is the only way to block Interactive Journal-only subscribers from accessing Dow Jones Interactive. To return to Dow Jones Interactive from the Interactive Journal, users must use their browser's back button or bookmark feature.

Dow Jones Web Center

This component of Dow Jones Interactive provides indexing and access to thousands of valuable business sites on the Web. Web Center's indexing is searchable like Yahoo! or Infoseek, but its updated up to four times each day and its scope provides a focus on business-related sites. What's more, Web Center searches only sites that Dow Jones editors feel provide relevant and/or reliable business news and information.

Appendix A

ExtraNet Network
Engineering Specifications

Connectivity

Basic ExtraNet connectivity uses 56KB frame relay circuits from the customer site to a private frame relay network. Customers may also optionally add a BRI ISDN line or upgrade the wide area speed to 128K, 256K, 512K and full T1 speed. In the testing and modeling for World Wide DowVision, we found that a bandwidth of 56K will permit 200 seats under normal usage conditions with a reasonable response time. Regardless of the line speed selected, each customer is provisioned two Permanent Virtual Circuits (PVCs) through the frame network using divergent paths. This maximizes the reliability of the frame connection.

Redundancy

At our data centers, redundant T1 circuits provide Wide Area connectivity. These circuits connect to redundant Cisco 4700M routers which in turn connect to redundant firewalls. The routers run Hot Standby Router Protocol (HSRP) providing fail over in the event of a wide area circuit outage. This proprietary technology operates by creating a virtual IP address that represents the HSRP grouped routers. In the event of a wide area circuit failure or a router failure, the affected router removes itself from supporting the virtual address. Traffic automatically flows to the other router or routers supporting the HSRP group. Dow Jones & Co. HSRP testing shows the convergence delay to be inconsequential. The Extranet Firewalls connect to Dow Jones Interactive Publishing product network segments and ultimately to those products' servers.

Network Address Translation

Each customer site will be furnished with a Cisco 2503 router running IOS 11.2 IP+. The routers will be configured with network address translation (NAT) to allow Dow Jones to view the entire customer networks as a single IP address. NAT simplifies management, minimizes administrative traffic and supports the InterNic's address conservation initiative. Furthermore, the utilization of NAT provides enhanced security since Dow Jones views each ExtraNet customer as a single IP addresses. The actual addresses used on customer networks never leaves the customer site. NAT modifies the address of packets to substitute a globally unique and InterNic registered address for the original source address. NAT maintains a translation table that is based on the TCP port used by the translated address. This process means that the customers actual address is known only by the Cisco 2503 router.

DNS & Routing

Since ExtraNet enterprise customers may have Internet connectivity, the topic of DNS and potential misrouting were addressed early on by the ExtraNet team. Dow Jones must ensure that the proper path is taken to return requests, since the information products are available over both the public Internet and the Extranet. In order to accommodate this design goal, the ExtraNet routers will use a routing protocol to inject a specific route to Dow Jones Interactive. Since the TCP/IP protocol suite prefers the most specific route, ExtraNet traffic will flow through the proper path. If the customer site does not support a routing protocol, the enterprise's network administrator must add static routes to the end user systems to provide the specific route to the Dow Jones ExtraNet border router. Obviously, supporting a routing protocol is less administratively intensive than static route maintenance. However, this decision is left to the enterprise customer. Regardless of the communications path, the ultimate destination is the same. Whether an enterprise customer has internal DNS, a DNS host on the InterNet or a DNS host

Appendix B

Glossary of Terms

Activation

The process of distributing user names and passwords after registration.

ASP – Active Server Page

Microsoft's Web application development technology. ASP consists of two primary parts—an IDE and an application server—that work together to produce server—parsed HTML. Pages created by the IDE consist of a mixture of HTML and proprietary tags, or script code. When a user requests a page, a special application server evaluates the code and delivers the resulting HTML page to the user. ASP lets you create pages manually, using textual HTML tags, or visually, with a graphical user interface.

Authentication

The process of a user being uniquely identified to a host system, or, more simply, the process of logging on to Dow Jones by manually or automatically submitting a user name and password.

Bandwidth

The ability of a network to transmit data at a certain rate. It is measured in bits per second. The smallest bandwidth available for extranet connections to Dow Jones is 56K bits per second.

Browser

The client software used to provide access to the World Wide Web. Netscape and Microsoft make the two leading browsers.

Bookmark

A method of placing a mark at a certain web page that is kept in the browser software. You can quickly return to the place marked by a bookmark at any time.

C

A common programming language

C++

A common programming language

CGI – Common Gateway Interface

Instead of returning a fixed HTML file in response to a Web request, a CGI program can be run and return a varying result to the browser, depending on the the input parameters.

Cookies

Browsers are typically stateless, in that they don't remember anything between one request and the next. Cookies are information that a host can tell a browser to store, so that information can be returned to the host on subsequent requests. Users can tell Dow Jones to set an autolog cookie in their browsers to avoid having to manually enter their user names and passwords each time they log on to Dow Jones.

Double-blind password assignments

Security measure used by Dow Jones to accommodate customers with extreme security needs. Under this scenario, only the account executive and a senior sales manager know the identity of the customer entered into our formal records under a false name. User passwords are assigned with no reference to their personal information or identity.

Encryption

The process of coding information into an unreadable form, transmitting it, then decoding it back into its original form at the receiving end. Anyone intercepting the communication will be unable to understand it easily without the key.

Extranet

A new term defining the extension of the intranet to selected services via private, secure connections. The private, frame relay connection that Dow Jones offers to customers is an extranet connection.

Firewall

Computer that interrogates incoming and outgoing data from an Intranet to the Internet. These are the “traffic cops” that control what data and types of data can flow back and forth between an Intranet and the Internet. Because of the increasing volume and complexity of viruses & other destructive data streams, these firewalls are forced to interrogate data more thoroughly and thus add significant overhead (slowness) to the performance of an end-user's Internet access experience.

FTP – File Transfer Protocol

The protocol that allows an individual or groups of files to be transferred between two computers.

Gateway

A single logical gateway computer to used by some companies to access the Internet as an alternative to a proxy server. All transactions initiated by users on an Intranet are passed through the gateway computer or a proxy server. Performs the same functions as a proxy server, but not using a defined standard.

Hub

The low cost device that hooks several twisted pair runs together into a single ethernet

HTML – Hypertext Markup Language

The file format used for the World Wide Web. Tags surround areas of text to give attributes such as font size or bold and italics. Also defines page layout, graphics positioning, and hypertext links to other web pages and services.

Hypertext

A method of delivering information that provides links from one document to the next. Normally, these links are in context so that someone can tour around just by clicking the links with his/her mouse. If this underlined work was a link to the word internet, clicking on it would take you to a glossary entry for Internet.

Internet

The largest computer network in the world, really a network of networks. It is completely distributed, so there is no main control point or single point of failure.

Intranet

The internal “mini-internet” that a company sets up that is entirely self-contained and totally under the control of the company. It is “behind the firewall” from the overall Internet. Some intranets do not provide access to the Internet, although most do.

Java

Java is a programming language environment that can run in a browser or on almost any computer even without a browser. It is a compiled language which programs anything that can also be done with traditional programming languages, such as C or C++. When a Java application runs in a browser (referred to as an applet), it provides a rich, powerful application on par with almost any Windows application.

Javascript

JavaScript is a much lighter scripting language than Java. It is sent to the browser as text for local execution. While it is much less powerful than Java, it allows for niceties such as interactive design elements and local field validations without sacrificing speed.

Listserv

A server that allows for the maintenance of long mailing lists. Allows one message to be broadcast to any users that have “subscribed” to the list.

Mail server

The software that allows a server to send and receive e-mail. Stores messages in an inbox for users until they retrieve their messages.

Normal FTP

Two connections between the client and server. The client opens a connection to the server on a well known port (21). This first connection is the control channel, where logins and commands are handled. Once the client authenticates on the control channel, a request for data such as a GET, PUT, or NLST (FTP command for ls or dir) is made. The server then opens a second connection back to the client machine on port 20. Data is then sent via the second channel, while the first channel is maintained for status messages and for the user to terminate the connection or whatever commands they wish to enter.

Passive FTP

Like Normal FTP, it involves two connections between the client and server. The client opens a control channel to the server on port 21. Once the client authenticates on the control channel, a request for data such as a GET, PUT, or NLST is made. Now, in passive mode, the server only responds to the client on the control channel, telling the client what port to connect to for the data channel. The port specified is always > 1023. The client then opens a second connection back to the server machine on the specified port. The rest of the logic is identical to Normal FTP, except for this change on the initiation of the data channel, and the port number being used.

Perl

A common programming language

POP

Post Office Protocol. The protocol used by client workstations to get their mail. Programs such as Eudora, Outlook and Netscape use POP.

Protocol

An agreed set of rules that are used to conduct an interaction or transaction. The protocol defines the rules and the language to be used.

Proxy server

A single logical gateway computer to used by most companies to access the Internet. All transactions initiated by users on an Intranet are passed through the Proxy Server. The Proxy sends out transactions that reduce the addresses or originating point of all messages to a few publicly published addresses. These addresses are part of the transaction and they can be used to identify the company that initiated the request.

Push vs. Pull

the push model send information to the user, sometimes continuously, sometimes on a schedule. The pull model means the user knows what he or she wants and goes looking for it. The Dow Jones Interactive Intranet Toolkit is an example of the push model, and Dow Jones Interactive is an example of the pull model.

Registration

The process of assigning usernames to all of the Dow Jones Interactive users in your company, activating and authenticating their accounts.

Router

A piece of network equipment that takes care of routing packets to and from the right computers. Typically, the device between an intranet and the Internet. Very high speed, and very specialized.

SHTTP

Secure HTTP uses encryption to send and receive web requests.

TCP/IP – Transmission Control Protocol/Internet

Protocol –TCP ensures that all packets arrive at the receiver in the correct sequence. Inter net protocol is the specification for the format of packets used between two computers on an intranet or Internet.

Tokens

Cookies are a facility provided with Netscape and Microsoft browsers. Tokens perform a similar function, but are managed by the developer. Dow Jones offers URL Token Authentication as an alternative method of logging on to Dow Jones Interactive automatically.

T1 Speed

A fairly fast connection, 1.544 Mb per second. Typical Internet speed for a corporation.

URL – Uniform Resource Locator

The name of the exact resource you want from the Web – in the form `http://www.dowjones.com/home.html`. This URL means “use the http protocol, connect to host www in domain dowjones.com, and ask for the file called home, it is an HTML file.”

Webmaster

A job description which is a jack of all trades. The person usually handles design, HTML authoring, site management, and light programming duties.

Web server

The software that runs on a server to enable it to serve up web pages or accept and run CGI requests. Understands the http protocol. Typically runs on a UNIX or NT system.

WWW - World Wide Web – W3

The network of computers on the Internet that obey the http and HTML standards.

Y2K or Project Millennium

The huge effort needed to bring all computer systems up to date to be able to handle the year going from 1999 to 2000.

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