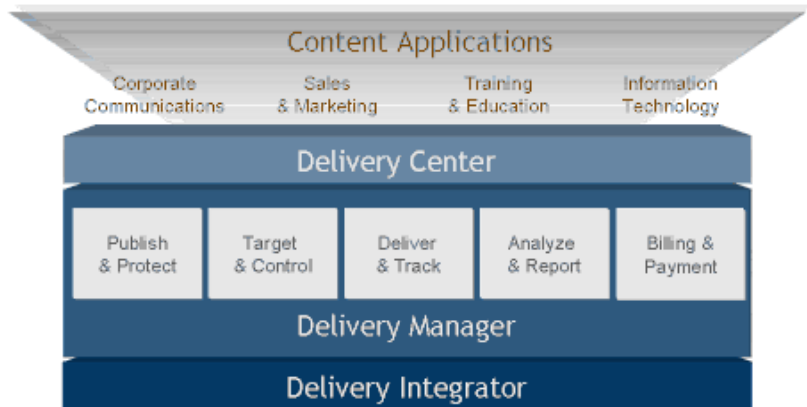


Ignite provides the industry's most secure and scalable Content Delivery Solution, enabling customers to efficiently publish, deliver, and manage digital assets – from rich media content for training and communications to software patches and virus updates – to anyone, anywhere, at any time. Ignite's patented Content Delivery Solution overcomes network and connectivity constraints that have limited the ability to reach online audiences with the highest quality, secure rich media. Ignite's Solution has been deployed around the globe at companies like Accenture, BearingPoint, Sabre, and Procter & Gamble.



## Ignite Architecture

The mission of Ignite's delivery technology is to identify and leverage the most secure and efficient routes for delivery based on individual user needs and content delivery demands. Ignite is built on a client/server platform, with the client (Delivery Center) and server (Delivery Manager) connected via private (e.g., corporate) and/or public (Internet) networks.

The Delivery Center measures bandwidth utilization, and through the Delivery Manager, you can adjust the bandwidth to match the end user's available connection. This allows Ignite to deliver content to targeted end users as quickly as possible, while avoiding impact to their computers' network performance or connectivity. Ignite uses connectionless UDP-based transports in addition to HTTP transmission to optimize its content delivery capabilities and efficiencies.

Figure 1 below shows a simplified topology illustrating the implementation of Ignite's solution. An actual Ignite deployment consists of multiple Delivery Centers installed on each user's computer and one or more Delivery Managers. Each Delivery Manager installation consists of a configuration of firewalls and servers, including web, content, database, application, and e-commerce servers.

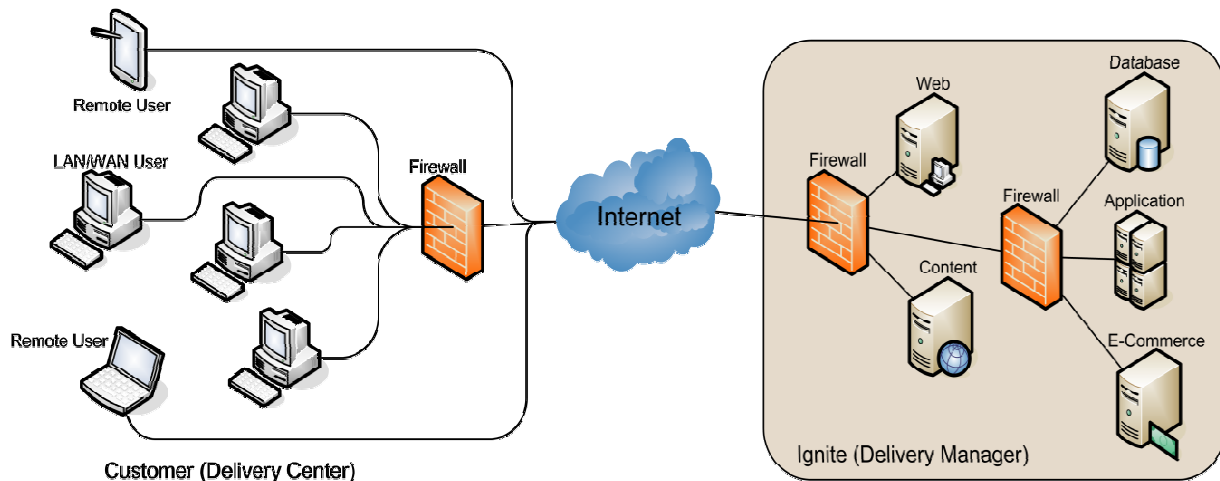


Figure 1: Simple Implementation

This overview describes how Ignite is efficient across all components of the delivery process - from the Delivery Manager, across the network, to the Delivery Center. Let's take a brief look at each of these components and its primary purpose.

## Ignite Delivery Center

One of Ignite's key differentiators is its intelligent client application. This small footprint application, which runs on each end user's computer, is called the Ignite Delivery Center and serves two primary purposes:

- To provide a consistent user experience with respect to delivered content, regardless of bandwidth availability or file type, while maintaining a fully polite delivery mechanism that does not intrude on the end user's overall computing experience.
- To determine the most effective, "least-cost" route to obtain the content the user has requested or been targeted to receive.

### Ignite Delivery Center Key Features

- Small footprint (less than 7MB)
- Operates in the background; doesn't interrupt end user's other activities
- Outbound only; compatible with corporate firewalls and proxy servers
- Provides superior full-screen viewing experience across all types of content, devices, and media players
- Supports online, offline, and on-demand interaction with content

### Customization and Control

With the Ignite Delivery Center, you have complete branding control over the end user experience. You can customize the look and feel of the Ignite Delivery Center and deploy it in a variety of ways, e.g., as a standalone Windows desktop application, embedded within standard HTML pages or other applications, or simply as a silent, background application.

### Seamless Interaction with Delivery Manager

All connections between the Delivery Center running on the end user's computer and the Delivery Manager are outbound. The Delivery Manager only responds to Delivery Center requests, so the Ignite solution is firewall and proxy-friendly. Digital certificates are used to ensure secure and authenticated communication between the Delivery Center and Delivery Manager.

The Delivery Center polls the Delivery Manager at periodic intervals to see if content is waiting to be downloaded. The Delivery Manager provides the Delivery Center with all necessary instructions about the content it needs to obtain. The Delivery Center's role is to determine the most efficient and polite way to obtain that content.

## Working with Networks

Ignite's solution gives you the ability to reach your target audience anywhere, anytime, over any network connection – without creating additional load on your existing network. By transparently leveraging your existing corporate network infrastructure, Ignite eliminates the need for additional hardware or software investments.

The Ignite Delivery Center communicates to the Delivery Manager over any network, so it supports users working directly on your corporate network as well as remote users accessing your network via VPN or those using dial-up, broadband, or wireless access to the Internet. Most importantly, end users can switch from one network to another (e.g., from being connected via the corporate LAN to being connected via a mobile wireless network), and their content access and downloads will resume automatically and seamlessly.

## Ignite Delivery Manager

The Delivery Manager is a web-based application comprised of modules that support your workflow and lifecycle of publishing and delivering content: Publish & Protect, Target & Control, Deliver & Track, Analyze & Report, and Billing & Payment. In addition, the Delivery Manager allows you to administer user and system level roles, security parameters, and delivery options. The centralized application is highly scalable, so a single Delivery Manager can handle a virtually unlimited number of Delivery Center connections. For further details about the Delivery Manager modules, please refer to the *Ignite Content Delivery Solution Overview*.

### Mobile Device Support

Ignite gives enterprises the ability to target, deliver, track, and report on content or notifications to mobile devices. Through the Ignite Delivery Manager, content administrators within an enterprise can manage content delivery to all registered devices such as iPod®, iPhone®, iPod Touch®, and Windows® Mobile-enabled devices. Employees within an enterprise can individually select, for any media type, the device on which they would prefer to view their content.

### Enterprise Live Streaming

Ignite gives enterprises the ability to implement a high-quality streaming solution that is scalable, network-friendly and ensures higher audience participation. Ignite's live streaming solution, which is based on a managed peer-to-peer streaming technology, also provides stream publishers with extensive real-time and historical data regarding audience participation. For further details, please refer to the *Ignite Enterprise Live Streaming Overview*.

## Achieving Optimal Efficiency

The remainder of this document focuses on the core networking and software technology components that work together to make Ignite the most scalable and secure content delivery solution available today. First, it describes how Polite Background Delivery and Intelligent Delivery Optimization help you efficiently leverage your existing network resources. Then it details how Ignite's Network Control and Optimization capabilities enable you to manage content delivery and behavior of your content. A high-level discussion of Ignite's Delivery Integrator and Security is also included. All of these elements work together to provide you with the single, highly-integrated solution you need to politely deliver any type of digital content to anyone, anywhere, at any time.

## Polite Background Delivery

Ignite's Polite Background Delivery includes network-level as well as application-level politeness, as described below. Politeness refers to Ignite's ability to deliver large amounts of digital content without negatively impacting network performance or the end user experience. Background Delivery involves downloading content using spare, idle bandwidth. Both of these concepts are explained in more detail below.

### Network Politeness

One of the most critical elements in content delivery is the ability to deliver content to an end user while using only spare, idle, or available bandwidth. Whether users are connected via robust broadband connections at the corporate headquarters, limited network environments at a regional office or dial-up while on the road, their productivity and use of content is often directly impacted by how quickly and efficiently they can receive content deliveries.

Polite Background Delivery provides content delivery efficiency by using patented technology to continuously monitor local computer resources (bandwidth, CPU, and memory) and automatically and dynamically throttle the content download as these local computer resources are needed for other tasks. In addition, Polite Background Delivery internally computes complex algorithms relating to the speed and quality of the connection between the Delivery Center and Delivery Manager. These calculations are used to gauge the overall LAN and/or WAN health, bandwidth availability, and other factors that must be considered when delivering content across the network.

## Tangible Benefits

Polite Background Delivery allows large amounts of content to be delivered to end users without negatively impacting their computer's performance or network traffic – even if they are in a remote, dial-up or otherwise bandwidth-restricted setting. Over the course of a year, a large, global enterprise delivered over 26.5 TB of data in more than 1,000,000 deliveries with no degradation to network performance or content availability.

## Managed Peer-to-Peer Technology

Managed peer-to-peer (P2P) is a form of edge delivery technology in which Delivery Center computers can form a grid and act as relays or "mini-servers" from which other Delivery Centers can receive content. Managed P2P can significantly improve performance by minimizing the amount of data downloaded from the Delivery Manager. More details about managed P2P are included in the Intelligent Delivery Optimization section of this document and in the Managed Peer-to-Peer Technology Overview.

## Polite Upstream

Ignite also uses Polite Background Delivery capabilities when the Delivery Center is uploading log files, reports, and data to the Delivery Manager. This provides the same benefits as the "downstream" methodology in terms of eliminating negative impact to the end user.

## Urgent Delivery Option

Certain content or communications, such as virus description updates and system security patches, may require expedited delivery. In these cases, the Delivery Manager can be instructed to force an urgent, or non-polite, delivery of content to targeted end users.

## Application Politeness

Ignite also includes application-level politeness to enhance the end user experience. For example, content downloads and notifications can be suspended when critical applications are running on the end user's computer. Notifications can also be suspended if a full-screen application is running. In addition, the Delivery Center can monitor mouse and keyboard inactivity to avoid interrupting the end user's normal activities. All of these settings are remotely configurable from the Delivery Manager.

## Intelligent Delivery Optimization

Ignite's unparalleled efficiency is derived from Intelligent Delivery Optimization (IDO), a self-customizing decision process that the Delivery Center uses to determine the most efficient and cost-effective way to obtain content. IDO provides the robust capabilities that enable you to deliver any type of digital content to any user, any time – with minimal impact to your corporate network.

The IDO process sequentially applies the following five major decision points to determine the optimal way to obtain content:

### 1. File Replication

To minimize network traffic, the IDO first looks at the end user's computer to see if portions of the new content have already been delivered. File replication minimizes transfers required for delivery by only sending *changes to content*, rather than re-sending all the content. File replication consists of two parts:

#### File-Level Differencing

With file-level differencing, intelligence in the Delivery Center leverages files contained in previous deliveries to satisfy portions of new deliveries. For example, recurring header graphics, logos, and buttons in weekly company newsletters do not need to be re-delivered from week to week. The Delivery Center can leverage these files without consuming any additional bandwidth.

## Byte-Level Differencing

The Delivery Center also has the ability to automatically update or upgrade existing files. If the Administrator tells the system that content is an update or revision to previously-staged or delivered content, the Delivery Manager generates a "difference file" containing only the delta (binary differences between the old and new versions of the file) and sends this "difference file" to all users who have the "old" version on their computers. All pending deliveries of the old version are automatically voided and replaced with the new version. The default for file comparisons is five prior versions, but the Administrator can increase this parameter if needed. Byte-level differencing dramatically reduces bandwidth consumption while enabling reliable content version control.

## 2. Managed P2P

Managed P2P is a communications protocol that uses grid technology to leverage your existing network infrastructure by allowing multiple Delivery Centers to automatically discover each other. This enables content received by one Delivery Center to be distributed to other Delivery Centers via local high-speed, zero-cost connections. Figure 2 below shows an example of a simple managed P2P topology.

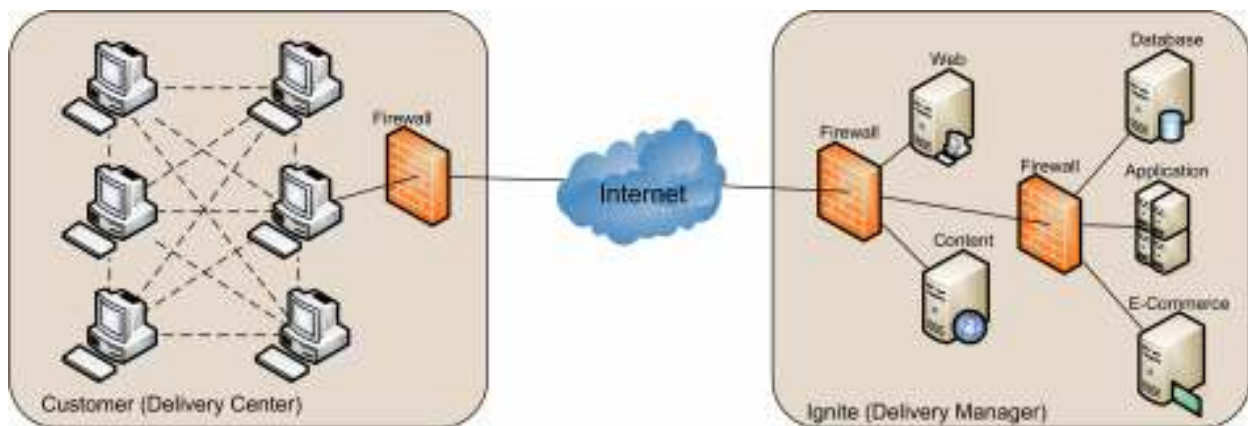


Figure 2: Managed P2P Topology

Managed P2P uses simple, yet effective methods of content delivery where the following information is either broadcast or multicast (depending on the network configuration) by one Delivery Center for the benefit of other Delivery Centers:

### Content Need

When the Delivery Center learns (from the Delivery Manager) that it needs to obtain content, if it does not already know about the availability of the content on the local network, it will advertise its need for the specific content to other listening Delivery Centers on the network.

### Content Availability

When a listening Delivery Center hears another Delivery Center's request for content, it responds with another broadcast to notify the first Delivery Center that it has the requested content. The first Delivery Center can then connect to it and obtain the content. This broadcast of content availability is also heard by all other Delivery Centers on the LAN, which means:

- The other Delivery Centers that have the content are pre-empted from responding, thereby eliminating potential network chatter or broadcast "storms".

- The other Delivery Centers that do not already have the content learn of yet another potential local source for that content. Over time, each Delivery Center may learn of many local sources of content, even before it knows it needs that content.

### Content Transmission Startup

When a Delivery Center begins receiving content, it will broadcast or multicast a notification to the network alerting the other Delivery Centers that this has happened. This accomplishes two goals:

- The other Delivery Centers learn that content is available from this new local source. If other clients need this content, they now know of a much closer, faster route by which to obtain it. The Delivery Center rates sources based on a number of factors and will attempt to acquire the future delivery from the best-rated source.
- The other Delivery Centers that know a transfer is in progress are precluded from "asking" the neighboring clients for the content because they already know it is entering the network. This virtually eliminates unnecessary network "conversations".

### Content Transmission Completion

When the Delivery Center completes a transfer, it broadcasts or multicasts a notification to the network to alert the other Delivery Centers that the files are now completely available to any other nodes that may need them. As the other Delivery Centers advertise their completed deliveries, the remaining Delivery Centers continue to learn about new local, efficient sources for that content.

## 3. Optional Customer Network Content Proxies

Your existing caching proxy infrastructure can be leveraged to provide even greater WAN link efficiency without any user or administrative intervention after the application is installed. Ignite features out-of-the box compatibility with caching/proxy servers and Content Delivery Network (CDN) appliances. If your network includes these devices, user-requested content can be cached so that other users can download it from the local network without having to use low-speed Internet connections.

## 4. Ignite's Content Relays

Ignite's content relays are available as appliances or applications that can be installed on existing end-user computers or file servers. Content relays are similar to CDNs, with a few important differences. In smaller locations that cannot justify investing in dedicated caching devices or appliances, or locations that need to support a diverse network topology that may not be permanent, Ignite's content relay application can be used to provide localized caching capabilities *exclusively for Ignite traffic*. Content relays:

- Provide independent path for Ignite traffic
- Allow use of more polite UDP protocols throughout LAN/WAN environment
- Allow subnet traversal even in non-multicast environments, via automatic caching
- Provide extensive bandwidth controls
- Allow remote sites without Internet access to benefit from Ignite's technology without changes to corporate network or firewall configuration, via full request brokering
- Can be configured in repeater mode to provide much greater scale and offload traffic from master content servers

Refer to the Network Control & Optimization section of this document for additional information about how Administrators can customize content relay parameters, such as connection limits and throughput limits.

Figure 3 below shows where caching/proxy servers and content relays fit in a simple implementation topology.

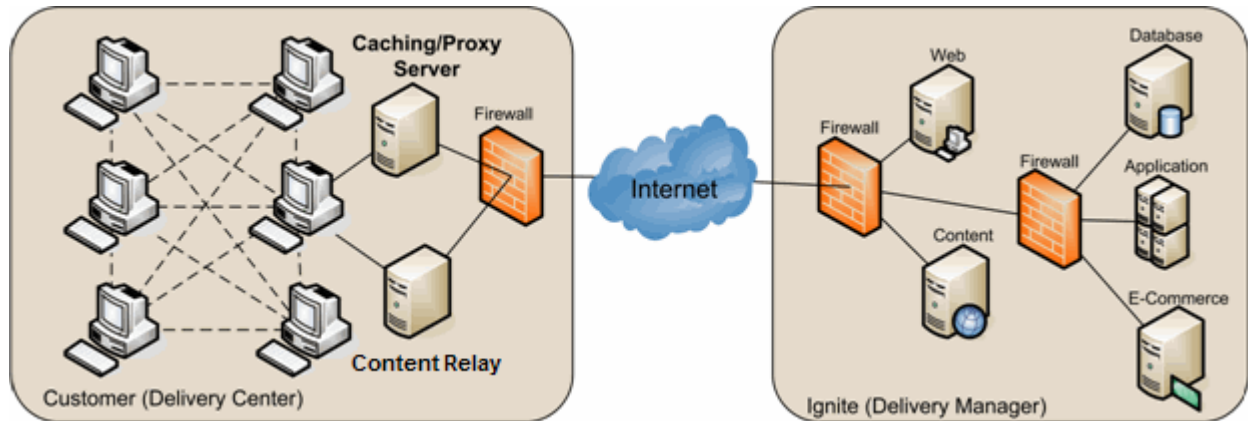


Figure 3: Caching/Proxy Servers & Content Relays

## 5. Ignite Content Delivery Server: Source of Last Resort

The Ignite Content Delivery Server within the Delivery Platform serves as a centralized content repository and handles all connections to the Delivery Center. The Content Delivery Server is the "source of last resort" for content if the user is in a corporate or high-density environment (and typically the primary source of content if the user is "alone on the Internet").

### Implementing IDO in Varied Network Topologies

The IDO framework can be implemented in any network topology to meet your business' unique needs. Regardless of the environment or the sources used to obtain the content, the Delivery Center has the intelligence to automatically resume a download from the point it last left off if connectivity is lost at any point during the download. The following examples show how the IDO decision process works in different network topologies.

#### Example 1: Corporate LAN

The corporate LAN leverages your existing network infrastructure. Content that is requested from a Delivery Center within the corporate network seeds the existing proxy/cache server (if one exists) for future content deliveries and also serves as a distribution point on the network. Ignite's ability to Neighborcast content between computers creates a dynamic grid within your corporate network. Any Delivery Center within this dynamic grid becomes a source of content for all other Delivery Centers within the grid. In this type of environment, less than 5% of all content distributions may require any traffic outside of the corporate network.

#### Example 2: Mobile Workforce

Ignite uses several network-centric protocols and other application logic to dynamically reconfigure and adjust its data distribution path as the Delivery Center's physical location or network topology changes. Ignite's intelligent Delivery Center automatically adapts to your workforce's existing network connections. Whether your employees are using WiFi at a local coffee shop or connected directly to your corporate network, the Delivery Center will auto discover their network connectivity and leverage that connection to consistently and politely deliver content.

### Example 3: Franchise

A franchise environment leverages existing network connectivity to the Internet. Computers installed with the Delivery Center are connected to the Internet and communicate with the Delivery Manager to learn about content deliveries. In a franchise environment, deliveries are usually performed directly from the Delivery Manager, rather than via Neighborcasting, since these environments often contain only one computer per location. Ignite Delivery Managers can scale to handle numerous simultaneous connections for delivery to several independent franchise operations. If multiple computers are installed in each franchise location, Neighborcasting can be used to eliminate the need to purchase additional bandwidth because each piece of content only needs to be downloaded once.

### Example 4: Consumer

If your end users are consumers, their computers are installed with the Delivery Center and communicate with the Delivery Manager via the Internet to learn about content deliveries.

## Network Control & Optimization

One of Ignite's key differentiators is the patented technology it uses to control and manage network utilization at both the network and client levels. The system's robust delivery mechanisms can be further tuned to optimize content delivery across any existing network topology, enabling the delivery of enormous amounts of content with no detrimental effects on the network's availability or performance.

Ignite uses several network-centric protocols and other application logic to dynamically reconfigure and adjust its data distribution path as the Delivery Center's physical location or network topology changes. The Delivery Center contains very sophisticated logic that uses various algorithms to determine when and how it polls for and receives new content. These algorithms are efficient and polite (end-user transparent) at both the desktop and network levels.

## Customizing the Delivery Center

To provide further control and customization, Ignite enables Administrators to dictate specific content traffic patterns to match the special distribution requirements of their network in order to "shape" the content distribution path. These requirements may involve forcing data flow over lower-cost or higher-bandwidth channels, better use of locally-available content sources, or dynamic reconfiguration of the Delivery Center based on temporary issues that may arise during the normal course of network operations.

The Delivery Center's parameters can be changed dynamically using centrally-managed operations controls and systems. Each Delivery Center installation can be reconfigured as needed and does not need to match other Delivery Centers' configurations.

Network Groups can be created for a single computer, a group of computers, or an entire company. Customized network control and optimization settings can be targeted to these Network Groups. For example, if an office in South America has special network needs, a dynamic group can be created based on an IP address range. All computers within this IP address range will receive these Network Group settings.

Configurable Delivery Center parameters include:

**Dynamic Edge Relay (Neighborcasting) Connection Limits** - The maximum number of neighbors that a dynamic edge relay is allowed to serve concurrently.

**Dynamic Edge Relay (Neighborcasting) Network Throughput** - Defines the maximum amount of network bandwidth that the Delivery Center is allowed to consume while performing dynamic edge relay deliveries to another neighbor.

**Content Polling Interval** - The time the Delivery Center waits between each poll to determine if content is available for it. The polling interval parameter can be customized in several ways on a per-Delivery Center basis. For example, the Administrator can use centrally-managed network scripts that account for changes and

preferences according to the network environment and user location. This customization can even take place outside the Delivery Manager via an Ignite-supplied utility.

**Transmission Port** - Forces a specific network port to be used for Neighborcast communications with other Ignite clients.

**Transmission Protocol Priority** - Allows selection of protocol priority between HTTP (firewall "friendly") or UDP (even more network and resource efficient) protocols for file transfers between the Delivery Center and content relays or Delivery Managers. Note: Setting UDP priority allows fallback to HTTP, which is especially important for mobile users. By default, the system uses ports 370 and 371 for UDP and port 80 for HTTP communications.

**Segment Fragments** - The number of logical subdivisions into which a single network segment can be divided

**Time to Live (TTL)** - Limits the number of routers the Delivery Center is allowed to traverse in order to reach a distribution point (Neighbor).

**Content Relay List** - Specifies a list of content relays (in priority order) which a Delivery Center will attempt to contact to request and receive content

**Notification Protocol Selection** - Allows selection of either broadcast or multicast protocols for advertising availability and progress of content. The Delivery Center can be manually or dynamically reconfigured to change the preferences from broadcasting to multicasting to allow the advertising and distribution to traverse multiple network segments. This accommodates a network environment that hosts many users on multiple network segments within a single physical facility or between two or more facilities linked via a high-speed connection.

**Communication Settings** - Each network group can be configured with "delivery windows" which define the days and times when content delivery is allowed and "communication windows" which specify the days and times when the Delivery Center is allowed to communicate with the Delivery Manager. In addition, certain Delivery Centers in each group can be designated as edge relays. If one or more edge relays exist in a given group, a normal (non-group) Delivery Center will not be permitted to retrieve content until at least one edge relay in its group has already retrieved the content. If the edge relay already has the content, the remaining Delivery Centers will retrieve the content from the edge relay via Neighborcasting.

**Bandwidth Cap** - Administrators can specify the maximum bandwidth that can be used by the Delivery Center while downloading content from Ignite Content Servers, Content Relays, or HTTP proxy servers. Administrators can change the maximum value at any time and distribute the setting change to the appropriate Delivery Centers, which may be the entire company, a select group of computers or an individual computer.

As you have just seen, Ignite's Polite Background Delivery and Intelligent Delivery Optimization capabilities help you efficiently leverage your existing network resources. In addition, Network Control & Optimization helps you control and manage your network utilization at both the network and client levels. The result is an unparalleled efficiency in content delivery, complemented by Ignite's security and integration features described below.

Additionally, Ignite's Multi-User Module enables Administrators to configure selected Delivery Centers so that multiple users can register, download and access packages on a single computer. This functionality is especially helpful in shared environments such as training rooms, bank teller stations, and call centers. To ensure security, the Delivery Center authenticates each user and gives them access only to packages targeted to them. User interactions, transactions, and events are tracked on a per-user basis, and Administrators can take actions such as targeting and reporting on a per-user basis.

## Security

Security is always a major concern when it comes to distributing digital content. You want to ensure that your content will be protected throughout its entire lifecycle - from publishing and targeting through delivery, receipt, and use. Ignite's Content Delivery Solution incorporates multiple layers of physical, user, and content security to provide the utmost protection of your critical assets. For details about Ignite's security technology, please refer to the *Ignite Security Overview*.

## Application and Data Integration

Ignite's Delivery Platform is built on open standards and XML-based design features that provide an extensible platform for integration with existing enterprise applications and data sources. By using these secure interfaces, existing applications and data can be leveraged as sources of content, directory lists for targeting and delivery of content, as well as initiating triggering events for delivery of content.

Ignite's open architecture provides the following features and benefits:

- Improve time-to-market by leveraging content and data from your existing enterprise applications.
- Improve security and identity management through direct access to established directory services.
- Increase communications effectiveness by using previously-defined workgroups, lists, information directories, etc.
- Leverage your investment in existing enterprise applications by importing data from standard sources such as CRM or exporting data to existing reporting and analytics systems.
- Seamlessly integrate with existing CDN infrastructure.

Examples of Ignite's interfaces include:

### Directory Synchronization

Ignite provides several methods for integration or active synchronization with your existing list management application, such as Microsoft Active Directory, PeopleSoft, SAP, Microsoft Exchange, Lotus Notes, or other applications.

### Import /Export Services

Ignite provides for the importing and exporting of various types of information. For example, Import Services allows user data to be imported into the Delivery Platform database, which can be used for targeting, reporting, and authenticating users as they complete the client Delivery Center installation process. Export Services allows data to be exported in specific formats, such as XML, HTML, PDF, CSV, etc.

### Third-Party Applications

To enable integration with other third-party systems, such as PeopleSoft, SAP, or your proprietary legacy systems, Ignite provides interfaces to support various client-side and server-side functionalities.

### Portal Integration

With the ability to customize the user interface, Ignite's Delivery Platform and Delivery Center are easily integrated with various portal systems. On-demand targeting and various interfaces and presentation tools allow the end user to access the Ignite-delivered content from a company's intranet portal.

### E-Learning Suite Integration

Using Ignite Delivery Platform, e-learning managers can build their courses, package them for delivery, and allow users to take courses offline as well as online. Ignite can also complement a company's existing Learning Management System (LMS) by delivering training materials and providing employee progress, completion, and test scores back to the LMS.

## Low Total Cost of Ownership

Ignite's Content Delivery Solution provides the lowest total cost of ownership (TCO) in the industry by providing:

### Network Interoperability

Many national or global networks have a wide variety of equipment, capacity, standards, and settings across the organization. Ignite addresses this challenge by dynamically adapting to each environment.

### Scalability

Ignite's platform scales easily and efficiently to match any existing or planned network topology to accommodate current and future needs of your organization. You do not need to buy hardware as your network grows or changes configuration.

### Ease of Deployment

No specialized hardware or hardware deployments are required when implementing the Ignite system. Centralized settings, control, and automatic upgrades are delivered through the software-based system.

### Automatic Upgrades

As enhancements and new releases of Ignite modules become available, the Delivery Center software can automatically update itself without end user intervention.

## Summary

Ignite's powerful client/server architecture, unique delivery optimization, network control, and integration capabilities, coupled with unparalleled security and low total cost of ownership, make it the most comprehensive content delivery solution on the market. Ignite gives you unprecedented reach while leveraging your existing infrastructure, thereby delivering worldwide scalability on demand with no additional hardware, software, or bandwidth purchases required. Intelligent routing and delivery software ensures that your users experience fast delivery and access to content wherever they are, regardless of global or local traffic conditions.

To experience Ignite's Content Delivery Solution firsthand, visit [www.ignitetechnology.com](http://www.ignitetechnology.com) and click on the "Experience Ignite" link

## The Ignite Advantage

**Leverage Your Existing Infrastructure** – No additional hardware, software or bandwidth purchases required

**Accelerate Time-to-Market** – With no complex infrastructure buildout, you can be deployed within days

**Maximize Your Reach** – Instant worldwide content delivery when and where you need it

**Achieve Rapid ROI** – Ignite gets the right stuff to the right place at the right time, for the right price!