



Analyzing the Benefits of Migrating to Microsoft Commerce Server 2000

Terrace™
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Introduction

Microsoft Commerce Server 2000 is a complete e-commerce development and management tool that greatly reduces the time and cost of building and maintaining a robust e-business system. Built on the Microsoft Windows 2000 Server platform, Commerce Server 2000 takes advantage of Active Directory, Clustering, Centralized Administration, and integrates with other .NET Servers including SQL Server 2000 and BizTalk Server 2000.

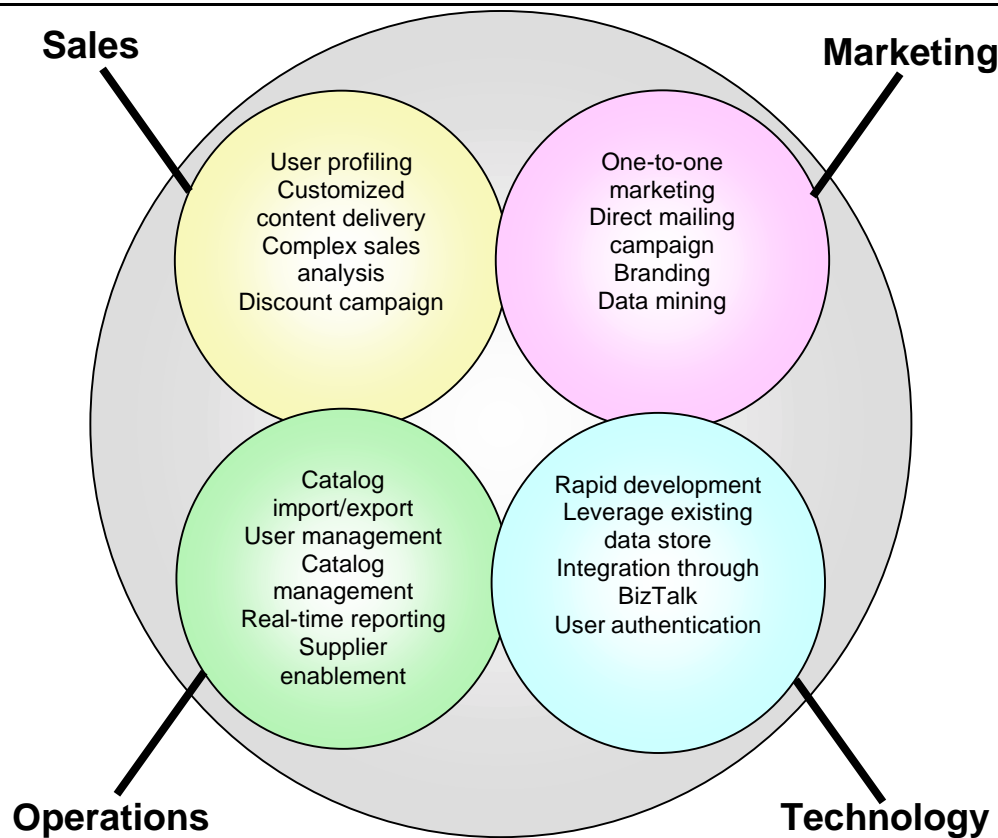
Out-of-the-box functionality enables business managers to maintain customer profiles, product catalogs, campaigns and other essential business functions. Commerce Server 2000 also “closes the loop” by providing real-time data analysis, reporting, and prediction, giving business managers the power to implement business management directly to the commerce site.

Migration from an existing Microsoft Site Server 3.0 implementation to Commerce Server 2000 will be a logical pathway for your e-commerce site. This paper discusses the benefits of such a migration and the important factors to consider, helping you to evaluate and quantify your specific benefits.

The Opportunity

Microsoft Commerce Server 2000 brings all the pieces of e-business together. It provides the solution platform for several challenges facing business managers, technologists, sales, marketing, and operations. Potential business-to-consumer and business-to-business solutions include:

- Client/customer profiling and management
- Product and service management
- Transaction processing
- Targeted marketing and merchandising
- Personalized and relevant content provided to site users
- Online branding
- Analysis of sales patterns
- Online portal for product/service information
- Business-to-business portal with real-time access to internal systems



Commerce Server 2000 provides benefits for the whole organization

Determining Payoffs and Benefits

Commerce Server 2000 can provide many benefits from both a business and technical perspective. Whereas Site Server 3.0 was primarily a sales platform, Commerce Server 2000 is a complete solution that provides benefits to sales, marketing, operations, and IT/IS.

Sales

Commerce Server 2000 provides a one-site architecture that can deliver information based on who a user is, not where the user goes. Business-to-consumer and business-to-business customers get personalized content that is most relevant to them. Data needed by managers to increase sales is readily available through the Commerce Server Business Desk and Business Analytics.

Targeted Information

Commerce Server provides the means to present the customer with relevant products, content, promotions and discounts no matter who the user is. True commerce site value is often measured in terms of responsive and relevant additional information that other sites

do not offer. Technology improvements discussed in subsequent sections allow easier tracking of users and an improved profile data store. Commerce Server uses not only the personalization that can be derived from the profile data store, but also a comprehensive targeting system and a completely revamped prediction service.

The integrated Targeting System allows for one-to-one sales and marketing through easy administration of campaigns. Typical applications of the targeting system include:

- Discounts
- Advertisements
- Direct Mail
- Content

Some features, such as Direct Mailer, have been vastly improved. Direct Mailer is faster, more scaleable and now can be completely personalized using pipeline components. It then tracks those emails to see which ones were utilized and by whom. This allows business managers to analyze the success of the direct mail campaign.

This integration feeds into a new Prediction engine that allows business managers to perform product area recommendations and user attribute prediction, and to model clusters of users. The Predictor helps answer questions such as:

- What will a user buy next?
- Which users are similar?
- Who should this advertisement be e-mailed to?



The business manager can visualize the data correlations and then automate recommendations in real-time. Predictions are now model-based to provide higher accuracy and a significant speed increase over Site Server 3.0 Commerce Edition.

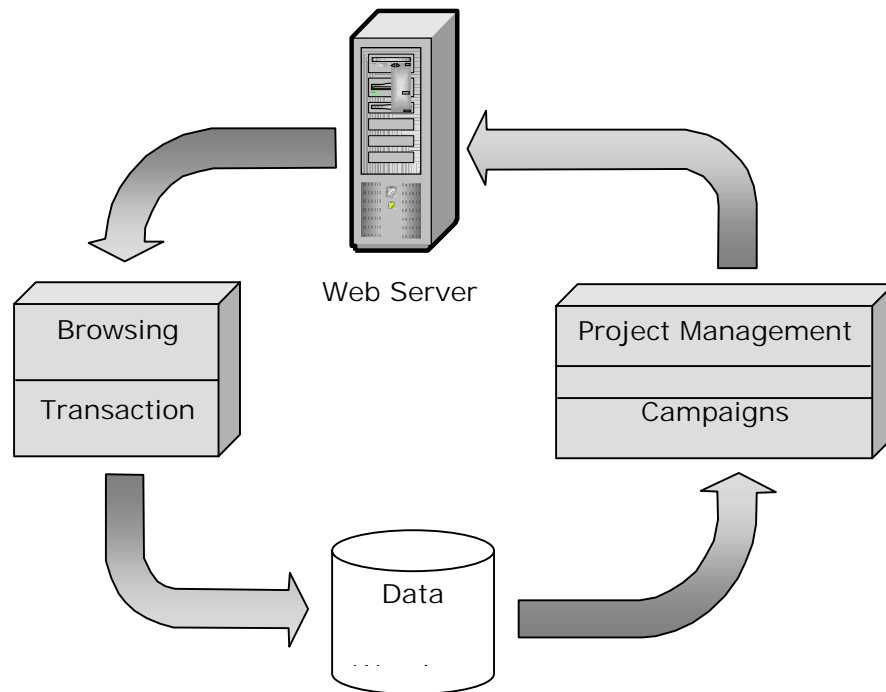
Business Desk

The Business Desk creates a unified framework that empowers sales managers to respond and interact directly with the commerce site resulting in direct cost savings as well as timely and effective targeting of customers. The benefits of the Business Desk span all departments of the organization.

Business intelligence is encapsulated by the Business Desk providing for an expression-based approach at managing user profiles, marketing campaigns, catalogs and all of the business management functions. This allows the people responsible for business management implementation to directly interact with the commerce site instead of relying on the IS department to implement the decisions made in response to market trends and conditions.

Closing the Loop

The tightly integrated Business Analytics System gives sales managers instant feedback on their campaign efforts through built-in reports. In addition, the Business Analytics System provides an extensible framework for writing custom reports, even on custom data. Sales reports can be quickly and easily created and run.



The Business Analytics System includes data mining capabilities that allow business managers to track purchasing, habits, and trends for both registered and anonymous users. The Data Warehouse component serves as the backend; collecting data from day-to-day operations such as, user profile data, transaction data and click history data. In addition, web server logs, product data, advertisement data and all other data associated with the commerce site are collected.

Drawing from real-time reports and the Data Warehouse, sales managers can enable the commerce site to take advantage of several intelligent built-in promotion models as summarized below:

Cross Sell	Based on products that the customer has already purchased
Intelligent Cross Sell	Based on products that the customer has purchased previously, products already in the customer's shopping basket and products that the customer has already browsed
Discount	Invites customers to save money on products or product groups that can be based on certain business expressions such as: <ul style="list-style-type: none">• 2 for 1• Membership in a particular group profile
Up Sell	Invites customers to upgrade selected products to better versions

Promotions can be done not only with web site content, but also through email using the Direct Mailer feature.

Marketing

The ability to target users and perform complex data analysis on site usage and campaign effectiveness provides significant benefits to the marketing department. Other technical features allow quick creation of a web site that reflects your corporate personality.

Business Intelligence

The Business Desk can be used to create direct mailing campaigns to effectively market to targeted individuals. The marketing team can make intelligent decisions regarding advertisements and promotions based on the out-of-the-box reporting and analysis functions. The Business Analytics System includes data mining capabilities that allow business managers to track purchasing, habits, and trends for both registered and anonymous users.

Online Branding

The separation of the business layer from the presentation layer makes creating or revising your online brand a quick task. The work can be split among the resources best suited for the task, and no one steps on each other's toes. The web graphics designer can modify the look and feel of the pages of the website without overwriting the back-end code written by the developer.

Operations

Managing all aspects of an e-business site is easier with the new functionality of Commerce Server 2000. The Business Desk provides tools for managing users, suppliers, and products and service catalogs. Secure authentication methods allow creation of a portal for all members of a supply chain.

Catalog Content

Every supplier has a unique way of publishing their catalog with products and services. This divergent content is managed through the Product Catalog System. Combined with built-in support for Microsoft BizTalk Server 2000, Commerce Server can import, categorize and manage all of the multiple catalogs that a commerce site has to deal with. By aggregating and normalizing the content into master catalogs or content-specific catalogs, business managers have the power to decide the right format for the buyers of their commerce site.

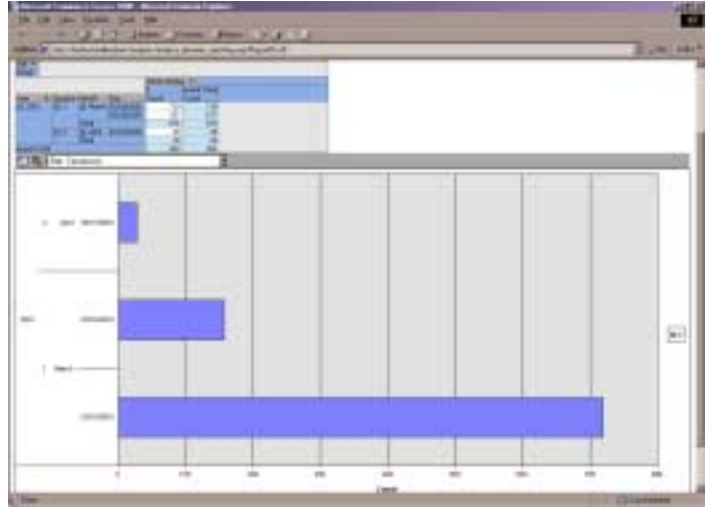
- The Business Desk can make the following activities easy to use for the Business Manager:
 - Creating catalog items and groups
 - Applying prices
 - Managing discounts, ads and direct mail campaigns
 - Supplying multiple search definitions to allow customers different methods of finding the items that they are most interested in

User Management

The Business Desk provides an easy interface for managing site users.

Reporting

Several built-in reports provide out-of-the-box statistics on site activity and operations. An extensible framework can be used for custom reporting needs. Built-in and customizable reports can be viewed in Internet Explorer with Microsoft Pivot Charts and Pivot Tables, or can be exported to other applications. Reports can be created and run directly by the business users, avoiding the need for developer intervention.



Supplier Enablement

Microsoft BizTalk Server 2000 support is built-in and adds critical business-to-business functions such as catalog exchange, order management, and fulfillment. Catalogs can be exchanged with vendors, or if selling products wholesale, catalogs can be distributed to retailers. Order management may be done remotely through a distribution and fulfillment center or outsourced to a third party vendor. BizTalk and Commerce Server offer a complete solution for web order capture.

Technology

Several technical improvements have been made to Commerce Server 2000. Enhancements to the architecture reduce development complexity and cost. Increased reliability reduces administration costs.

User Profiles

Commerce Server's Profile Service manages complete user profiles from a variety of data sources. User profile data sources can include Active Directory, SQL Server, LDAP and OLE DB. This allows for a simple connection to existing backend architectures and provides for an extensible architecture for future growth and technology without having to maintain and administer a separate membership directory. The actual location of the data is hidden from the developer and administrator. This saves on both administrative and hardware costs while providing scalability, extensibility and distributed authentication.

The following table summarizes the features and benefits of each of the supported data stores:

Active Directory	<ul style="list-style-type: none">• Supports Active Control Lists for Group Based Permissions• Best for Storing Attributes That Do Not Change Often• Good Performance With Write-Once Read-Many Attributes• Provides for Full Windows 2000 Security
SQL Server 2000	<ul style="list-style-type: none">• Best for Managing Frequently Changing Attributes• Supports User Authentication
Lightweight Directory Access Protocol (LDAP)	<ul style="list-style-type: none">• Typically Used for a Read-Only Property Store During Migration• Does Not Support User Authentication
OLE DB	<ul style="list-style-type: none">• Provides Access to Any Compatible Data Store• Some Features of the Profile Service May Not Be Available On All Data Sources

The Profile Service is contrasted with the LDAP service in Site Server, which usually had to be programmatically combined with an associated SQL Server data store. Management of the users' profiles was specific to each implementation.

Authentication

Establishing identity to the marketplace allows secure transactions to take place. These transactions may take the form of content delivery, product and service purchase, product catalog procurement, and many others.

Commerce Server now provides for several authentication methods including:

- Windows Authentication
- Custom Authentication
- AutoCookie for Anonymous Profiling
- Microsoft Passport Integration

In addition, Commerce Server's integration with Active Directory supports any form of Windows 2000 and IIS 5.0 authentication such as:

- NTLM
- Kerberos
- Certificates
- Clear Text HTTP Authentication
- HTTP Forms Authentication
- Cookie Authentication

The AutoCookie for Anonymous Profiling allows you to track a user's behavior on the site even before they have registered or authenticated. If they then decide to register on the site, their previous behavior can be incorporated in their site profile.

Searching

Commerce Server 2000 uses Index Server to perform content searching. Index Server is an integrated part of Windows 2000 Server. Commerce Server 2000 offers an improved catalog product and services search engine that is more scalable and has improved performance compared to the search engine in Site Server 3.0. Support is included for probabilistic ranking, "Find Similar" and natural language queries. By leveraging SQL 2000 Server, full text search capabilities are also included.

Standards Adoption and Integration

Commerce Server 2000 can be seamlessly integrated with other servers in Microsoft's .NET platform, such as BizTalk Server 2000 and SQL 2000, with technologies such as standards-based XML. Adding service interfaces is made simpler with support for native XML and key technologies such as Simple Object Access Protocol (SOAP).

Third-party support offers quick turn-around for such issues as credit card processing and tax-calculation. Standard implementations of these can be plugged into the commerce pipeline with no development.

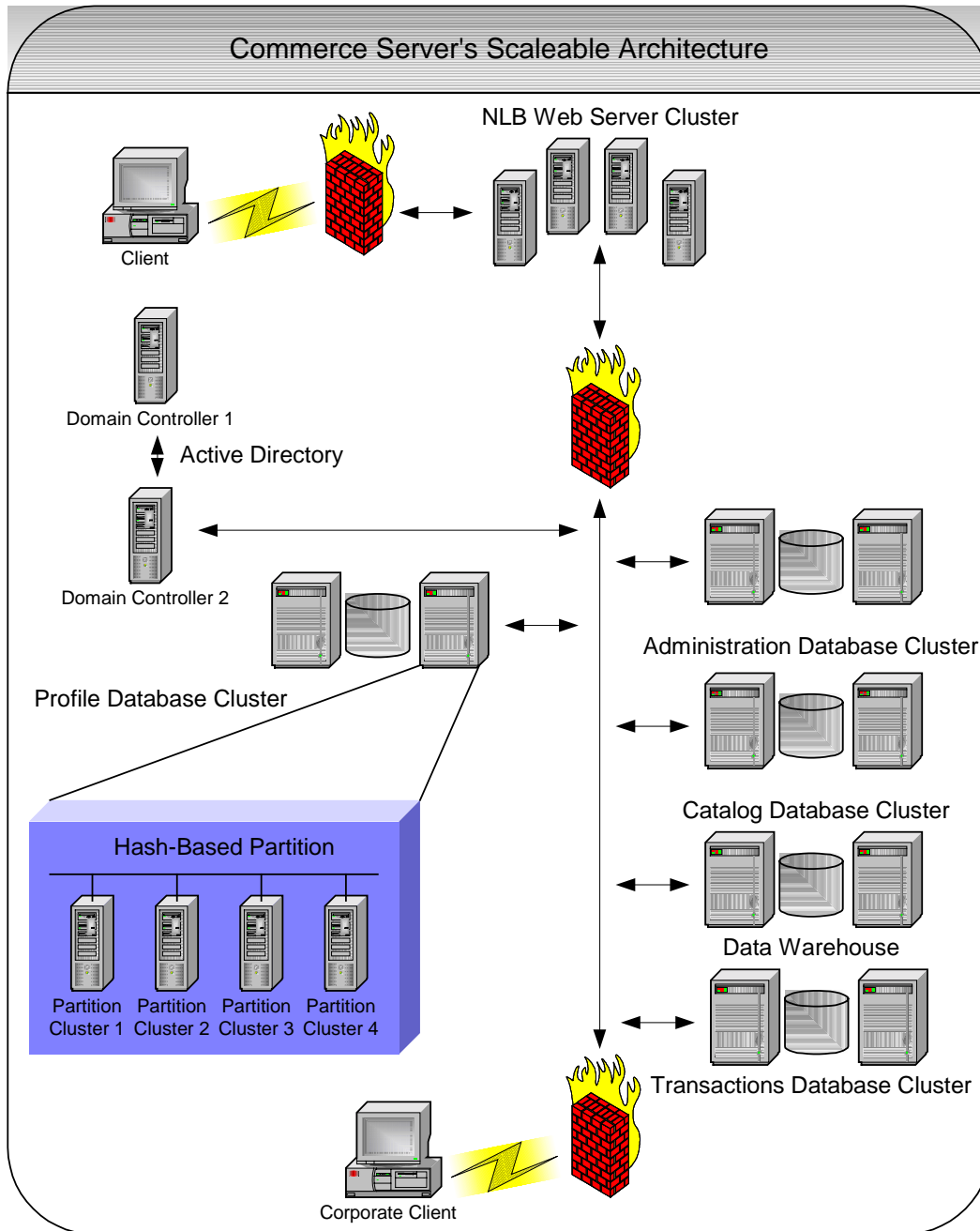
Scalability and Extensibility

The Microsoft platform offers an architecture that can be readily scaled to meet demands. Support for load balanced servers and clustered data services are built-in to the Windows 2000 Advanced Server infrastructure.

Designed for the n-tier architecture, Commerce Server comprises the business object tier. It integrates directly with the Presentation tier and the Data tier and offers a Site Packager to rapidly deploy and scale the commerce application. The improved Site Packager takes content, scripts, configuration information and other relevant data and combines them into one binary file. This allows for rapid installation across the entire server farm.

For maximum availability, the Profile Service is able to automatically provide for hash-based partitioning. All data stores can be located on not only single servers, but also spread out across data clusters depending on scalability and availability requirements.

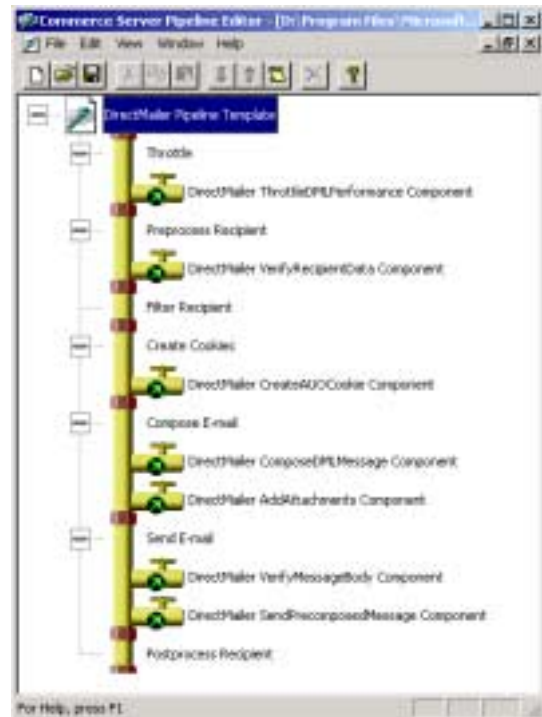
See figure on next page (page 12).



Pipelines

Pipeline components offer extensibility by allowing the extension or redirection of any process with the pipeline editor. The Commerce Server Order Processing Pipeline API is the same as it was in Site Server Commerce Edition even though the underlying pipeline structures have changed. Backward-compatible mode is provided so that existing components will continue to function without change.

However, by taking advantage of native mode, features such as 64-bit high precision currency handling, COM+ Services and pipeline/object pooling are all available. Built-in objects to manage multiple shipment handling, discount handling and other important tasks are all included.



Calculating Your Benefits

While several of the benefits described above are tangible and quantifiable, some are less so. This section will help you identify what benefits you will realize by migrating to Commerce Server 2000, and identify the factors that will determine your return on investment.

Tangible benefits may still be difficult for you to estimate. We have grouped the following under this section because they involve measurable metrics. When estimating costs, use an appropriate rate for resources (billing rate for outside consultants or contractors, total employee cost for internal resources).

For intangible benefits, you may be able to estimate or accurately measure the ROI with small pilot tests or industry studies.

Sales

Targeted Selling

Properly designed targeted selling should result in increased sales revenue. Commerce Server 2000 provides several methods that can help you develop a more effective selling campaign. To help evaluate your potential ROI, make best estimates of the increase in sales for each benefit.

Benefit	Factors
Targeted content delivery	<ul style="list-style-type: none">• Do you employ direct mail campaigns?• Could a targeted mail campaign increase awareness of your product or service?• Do site users respond to promotional announcements?
Upsell and cross sell	Does your product line contain upsell and cross sell opportunities?

Marketing

Business Intelligence

Data mining available through the Business Desk will create a more effective marketing campaign. To help evaluate your potential ROI, make best estimates of the increase in sales for each benefit.

Benefit	Factors
Promotional campaigns	<ul style="list-style-type: none">• Have you conducted a promotion?• Was it successful?
Data mining of user behavior	<ul style="list-style-type: none">• Do you get repeat visitors?• Do you have a large enough user base to model their behavior and apply it to others?

Enhanced User Experience

Commerce Server 2000 separates the business logic from the user interface, allowing easier modification and enhancement of the user interface. Although difficult to quantify, a more pleasant user experience will increase time per visit, number of repeat visits, and hopefully therefore number of purchases. This is primarily a judgment call: is your site pleasant to look at? Is it easy to navigate? Is it easy to make a purchase?

Operations

Site Administration

Easier site administration is provided by the Business Desk and Site Packager. The Business Desk allows easy administration of role-based access to site modules. The Site Packager facilitates installation of the commerce application to multiple servers. Determine your baseline costs for these processes and compare them to estimates for a Commerce Server 2000 implementation:

Benefit	Factors	Metrics
Reduced time to administer site access	Does your site restrict access to modules or pages by role or access control lists?	Business user can make changes directly with no time spent by developer.
Installation of the application to multiple servers	Do you have separate environments (development, test/staging, production)? Does your site have multiple servers for failover or load balancing?	Content, scripts, configuration information and other relevant data are combined into one binary file with Site Packager for easy distribution. Once set up, deploying the commerce application each time should take a matter of minutes for one or more servers.
Web Based Business Desk	Do Business Managers need to make changes anytime, anywhere?	Business Managers can self-install for quick access to the interface. Centralized management of the application lowers manageability costs.

User Administration

User administration is facilitated by the Business Desk.

Benefit	Factors	Metrics
Simple UI for managing users and their attributes	<ul style="list-style-type: none"> How many users does your site have? How often must user attributes be changed? What UI currently exists for managing them? 	An attribute value can be changed in a matter of minutes in CS2K. Easily enable full Children's Online Privacy Protection Act compliance through separate user profiles.
Simple UI for adding attributes	<ul style="list-style-type: none"> Do you ever need to add an attribute for a user? What interface exists for doing this? Is new programming logic needed? 	An attribute can be added to the user template in a matter of minutes in CS2K through the Business Desk.

Catalog Management

Benefit	Factors	Metrics
Simple UI for managing catalogs	<ul style="list-style-type: none"> How large is the catalog? How often do items change? How complex are your categories? What UI currently exists for managing them? 	<p>A new catalog schema can be created in <1 to 2 hours, depending on how many attributes.</p> <p>An item or category can be added, removed or edited in a matter of minutes.</p>
Easy distribution of catalogs	Do you distribute your catalog(s)? How often? How large is the catalog?	A catalog can be exported in a matter of minutes to CSV or XML formats. Tight integration through BizTalk enables easy distribution.

Benefit	Factors	Metrics
Integrate catalogs from multiple vendors	Do you use catalogs from more than one vendor? How often are these catalogs updated?	A catalog can be imported and integrated into a unified catalog.

Technology

BizTalk Integration

Benefit	Factors	Metrics
Integration with fulfillment	<p>Do you use a fulfillment partner?</p> <p>Do you have loop-back functionality (e.g., credit card is charged after fulfillment partner reports product has shipped)?</p>	Pipeline and BizTalk configuration can take a few hours to 2 or more days depending on complexity of process. Operation is automated after configuration.
Catalog aggregation or distribution	Do you aggregate catalogs from multiple vendors? Do you distribute catalogs out to multiple partners?	Integration points with BizTalk can speed data collection, formatting, validation and distribution.

New Development

The ROI of Commerce Server with respect to development of new site functionality is highly dependent on your specific plans.

Benefit	Factors	Metrics
Easier development of authentication and validation	<p>Do you use authentication?</p> <p>Do you anticipate changing the authentication?</p>	Very little custom development is required for any authentication model. .NET initiatives like Passport integrate seamlessly.

Benefit	Factors	Metrics
Easier development of product pages	Do you display products or services from your catalogs?	Several out-of-the-box product pages are provided that will integrate directly with your catalog.
Easier development of pipeline components	Do you use the pipeline? Do you use or need third party tools such as shipping cost, tax calculation or credit card processing?	Standard components require no custom development. Many 3 rd parties provide fully compatible components that integrate into the pipeline seamlessly.
Easier development of custom reports	Do you report on user demographics? Are your user attributes currently stored in LDAP or an associated SQL Server table? Do you report on data over time?	Profiles hide the implementation of the attributes from the developer, so all reports can be developed as if against a single table. The data warehouse can be utilized to focus raw data into meaningful reports.

Stability

Benefit	Factors	Metrics
Improved stability	What are your uptime requirements? How much downtime does your site experience now?	Commerce Server 2000 is more stable than Site Server is. Specific metrics depend on hardware.

Upgrade Considerations

If you decide to migrate to Commerce Server 2000, review this section for best practices and potential migration pathways for the different parts of your site.

Best Practices

If you currently use Site Server3.0 Commerce Edition, there are several practices to make migration to Commerce Server 2000 easier. These practices are summarized below:

- Access Control Lists
- Problematic to migrate
- Use a small number if necessary

Content Types and Content Sources

- Only content classes are used in Commerce Server 2000
- Match content sources to content types as content sources will be ignored
- Content types will migrate

Content Management Store

- Content and schema will migrate
- ASP and scripts that manage upload will not migrate

Design Time Controls

- Existing DTC code will not work
- Can not be used to generate compatible code

Site Vocabulary

- Operates on a new paradigm
- Flat-file representation in Commerce Server 2000

Usage Log Files

- Save historical log information
- Will be imported into business analysis engine

Features Not Included In Commerce Server 2000

Several features that were a part of Site Server 3.0 and Site Server 3.0 Commerce Edition are not included in Commerce Server 2000. Some of these features are now offered in other Microsoft .NET Server products. Below is a summary of these features:

Active Channel Multicaster/Active Channel Server

This feature does not have a corresponding migration path. However, Direct Mailer has been improved and offers many more benefits including:

- Improved speed and scalability
- Personalization support through Pipeline components
- Create dynamic distribution lists as well as importing static distribution lists

Commerce Interchange Pipeline

This feature is now provided through Microsoft BizTalk Server 2000 and offers:

- Built-in support for catalog exchange, aggregation and normalization
- Processes for external order processing and fulfillment

Content Analyzer

This feature does not have a corresponding migration path. Many of the features are present in products such as FrontPage 2000. Web site reporting is now managed through the Data Warehouse and Business Analytics System providing for centralized management.

Content Replication and Deployment

This feature is now provided through Microsoft Application Center. Application Center extends the core set of Web services found in Windows 2000 and provides a suite of monitoring, testing, and diagnostic tools. Application Center is used with Commerce Server to deploy content and make incremental updates to your Web site.

Dynamic Directory

This feature is now provided through Microsoft Windows 2000 Server Internet Locator Service (ILS). The ILS feature does not provide for true fault tolerance.

Knowledge Manager

This feature will be provided by Microsoft SharePoint Server, which allows users to share, search and publish information.

Posting Acceptor

This feature is now provided through Microsoft Windows 2000 Web Distributed Authoring and Versioning (WebDAV).

Publishing Wizard

This feature does not have a corresponding migration path. Commerce Server Site Packager and Application Server offer similar features.

Search

Commerce Server 2000 provides full text search on the product catalog and Windows 2000 Index Server provides search capabilities for web pages. Commerce Server's enhanced product catalog search includes support for probabilistic ranking, "Find Similar" and natural language queries.

Tag Tool

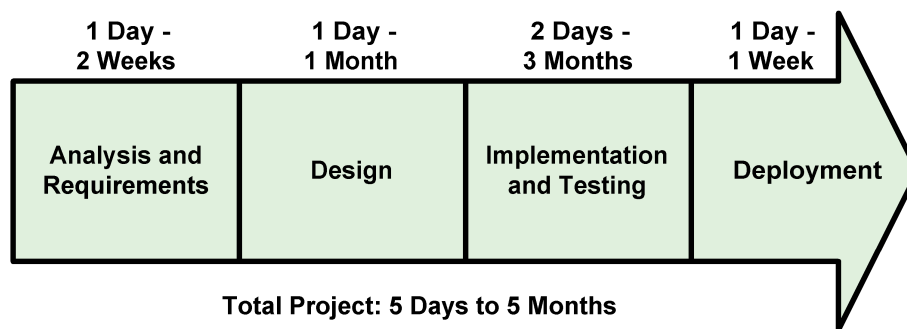
This feature does not have a corresponding migration path. Meta tag editing is available through Microsoft FrontPage 2000.

What's Next

A migration should be approached as a complete project, with requirements gathering, analysis, design, implementation, and deployment. If you decide to migrate, it is an excellent time to consider other enhancements to your site to take advantage of the new functionality available in Commerce Server 2000.

The solution roadmap is highly dependent on the functionality currently in your site, and any new functionality that will be added. Commerce Server truly enables rapid application and deployment, allowing you to get a site up and accepting transactions within a week.

Rapid Application Development with Commerce Server 2000



Terrace Consulting, Inc.

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For More Information:



Terrace Consulting, Inc.

436 14th Street
Oakland, CA 94612

Tel: 510.836.3400

E-mail: info@terrace.com

WEB: www.terrace.com