Faye Business Systems Group

# Sage MAS 90 versus MAS 200 Comparison

*Revised 09/01/10*

| Topic | Feature | Version | |
|---|---|---|---|
| | | **Sage MAS 90** | **Sage MAS 200** |
| Back-End Database & Functionality | SQL Available | No | Yes - in Version 4.45 |
| | New Business Framework | Yes | Yes |
| | All Modules Available | Yes | Yes |
| | All Functions in all modules available | Yes | Yes |
| | | | |
| Security | Role Based Security | Yes | Yes |
| | Mapped Drive Required | Yes | No - connects via TCP/IP |
| | Folder Level Security | No - requires full access to MAS90 folder | Yes - no folder access required |
| | | | |
| Technology | Client Server Technology | No | Yes |
| | # of Users Recommended | 1 - 10 | 11 + |
| | Uses TCP/IP protocol to connect to server | No | Yes |
| | Runs across WAN without Terminal Server or Citrix | No | Yes (T/S or Citrix still compatible) |
| | | | |
| Performance | Throughput and Speed - Reports | Standard | Fast |
| | Throughput and Speed - Updates | Standard | Fast |
| | Throughput and Speed - Lookups | Standard | Fast |
| | Throughput and Speed - Data Entry | Standard | Standard |
| | Minimizes network packet collisions | No | Yes |
| | Minimized data transmission across network | No | Yes |
| | Increased data integrity and reliability across network | No | Yes |
| | Minimized error messages | No | Yes |
| | Supports 1000's of transactions per day | No | Yes |
| | | | |

NOTE: See attached for White Paper reviewing MAS90 and MAS200 Technology specs in deetail

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SAGE MAS 90 SAGE MAS 200

## Technology

# Sage MAS 90 and Sage MAS 200 Technology White Paper

**February 2006**

sage software

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# Sage MAS 90 and Sage MAS 200 Technology Overview

Which technology is appropriate for Windows-based business management software as we enter the twenty-first century?

To answer this question, we must first understand how business management and accounting software differs from other business applications, such as word processing or spreadsheet products, and what the unique requirements are for a business management software application. These requirements must incorporate the specific business and accounting needs of a particular business, and the associated workflow. Second, with the tremendous strides made in browser based development and Internet connectivity, there is the ongoing debate of when to use the browser and when not to.

In general, business management systems, especially accounting software, place much higher demands on computer hardware, operating platforms, and communications protocols. In addition, because companies rely on their software to generate the invoices that bring in the cash flow, reliable systems are critical to business success.

This white paper discusses the capabilities of Sage MAS 90 and Sage MAS 200 ERP technology, addressing the vast majority of business management system requirements, from small to mid-market businesses in virtually any industry. In discussing the technology, this white paper focuses on the advanced personalization and customization capabilities of Sage MAS 90 and Sage MAS 200 and the client server version of Sage MAS 90. This paper will also discuss the technology future of Sage MAS 90 and how the Internet can be leveraged for solving business issues today and into the future. For the purposes of this paper, Sage MAS 90 and Sage MAS 200 will be referred to as Sage MAS 90. Unless noted, any capability within Sage MAS 90 is also available within Sage MAS 200.

# Technology Requirements of Business Management Software

A high-level view of the specialized requirements of business management software platforms follows.

## Accounting is Transaction-Intensive

While it may take several hours to create a single document in Microsoft Word or Excel software, accounting systems can create several documents a minute. In addition, thousands of lines of detail may need to be posted to historical files several times a day.

## Many Users Need Access

A fully integrated business management system removes the necessity of entering information twice, and can therefore contribute greatly to streamlining business

processes. In order for all modules to be fully integrated (so that subsidiary modules can post to the General Ledger, for example), all users must have access to the database. A method of limiting the tasks each user has access to is required as well; therefore security must be definable at the task level (invoice data entry, for example).

## Data Integrity and Auditability are Critical

*Accounting data contains crucial information businesses need to analyze profitability and the cost of business processes.*

Accounting data contains crucial information businesses need to analyze profitability and the cost of business processes. It has to be right for the company to succeed. Accurate business logic and a secure database ensure data integrity. Well-designed business management and accounting applications also provide a full audit trail of the data and prevent improper transactions from being added to the database.

## Access to Data for Reporting is Essential

Pre-configured reports often do not present information in a way that is most meaningful and useful to corporate executives and business owners. Moreover, most companies prefer to standardize on a particular report writer for all of their applications to minimize the learning curve of staff members. Access to the data using the tool of choice to obtain precise, timely reporting from the accounting data is required to run businesses successfully. The information must be easily represented within these tools allowing customers to rapidly deploy reports that will help them make more informed decisions.

## Personalization is Unique by Individual

Each user of a business management application has their own unique way of using the system to meet their own personal preference. These applications must offer facilities for users to make appropriate changes in the system that will ultimately help them streamline their day-to-day operations. They can range from task organization and reusable report settings to modified inquiries and report presentation. They must be easy to configure while still offering a robust set of usability options by user without compromising security and system integrity.

## Customization is Often Required

Entering transactions into the system is often one of the most time-consuming tasks of running a business. Optimizing the system so that data flows quickly and accurately can ultimately lower the total cost of ownership. The ability to create modified screens that move or remove unused fields, change the tab sequence for data entry, and add lists of allowed entries to specific fields—without costly programming changes—can be an important strategic advantage. On the other hand, if a major modification or add-on module to automate business processes is needed, the availability of qualified developers and consultants and the ability to use the programming tools of choice are essential.

## The System Must Run Reliably

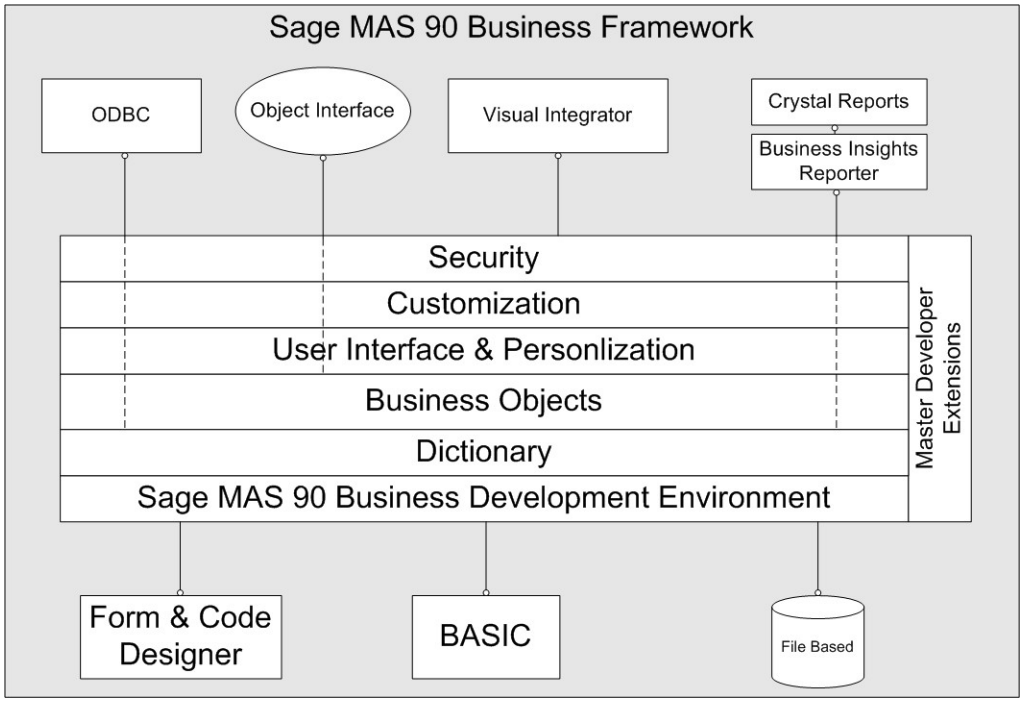
Although a system crash while editing a spreadsheet is an inconvenience, chances are it won't result in the business losses that can occur when the system goes down. In order to avoid database administration headaches and possible loss of data, the database that the system uses should expand dynamically as more transactions are added.

### Consider Future Requirements

A business management system is a major investment in both time and money for most companies. A system that can continue to meet corporate needs in the long term is required. With the increasing pace of technological change, a business management system should be easily transportable to take advantage of new hardware, operating platforms and database environments in addition to leveraging the internet for remote administration, data access and consumer interaction.

# Sage MAS 90 Business Framework

Based on today's business management and accounting software requirements, Sage MAS 90 offers a proven technology through a comprehensive architecture – the Sage MAS 90 Business Framework. The image below illustrates the multiple layers of the Business Framework from the Sage MAS 90 development environment through the user interface and integration points. The following pages will explain the primary developer and user benefits of each layer within the Business Framework. The Sage MAS 90 Business Framework has been incorporated within the General Ledger, Accounts Receivable, Sales Order, RMA, Bank Reconciliation and e-Business Manager module as of this writing. The remaining Sage MAS 90 modules will leverage the Business Framework over subsequent releases.




*With the increasing pace of technological change, a business management system should be easily transportable to take advantage of new hardware, operating platforms and database environments in addition to leveraging the internet for remote administration, data access and consumer interaction.*

## Sage MAS 90 Business Development Environment

The Sage MAS 90 Business Development Environment (powered by ProvideX) included with the Business Framework is the development language, database and tool set used by both Sage MAS 90 Developers and a network of over 100 Master Developers. The Sage MAS 90 Business Development Environment is a 32-bit graphical, object-oriented development platform written in C++. The C++ language yields programs that are extremely fast and efficient. C++ programs can be amassed with industry-standard compilers from Microsoft and other providers, and can operate on multiple platforms such as Windows and Linux. Sage Software leveraged C++ as the foundation for the Sage MAS 90 Development Environment to take advantage of the speed and stability of 32-bit compiled applications.

Like Visual Basic, the Sage MAS 90 Business Development Environment language has its roots in the original BASIC language. Unlike many "BASIC" languages, The Sage MAS 90 BASIC syntax was specifically developed and optimized for efficient handling of business transactions.

The form and code designer used with the Sage MAS 90 Business Development Environment is used for object oriented code development as well as designing the Windows user interfaces for Sage MAS 90 and Sage MAS 200 applications. The Sage MAS 90 designer is used by Sage MAS 90 engineers and Master Developers to quickly and easily enhance or modify the application interface.

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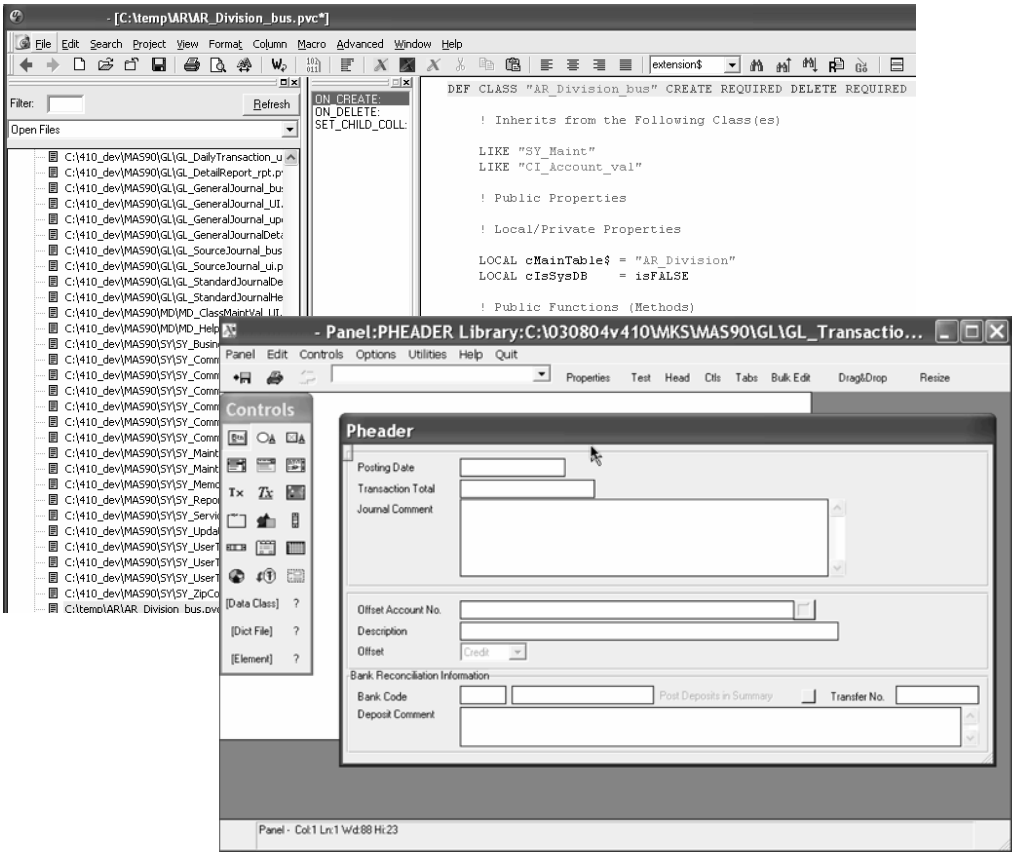


Sage Software has found that if significant additions to functionality or entire vertical modules are required, most companies choose to contract with an outside consultant. More than 100 Master Developers nationwide, authorized for the Sage MAS 90 Development Environment, make this service readily accessible. In fact, since thousands of enhancements have already been created, the specific solution a company needs may already be available

For developers who prefer to augment the Sage MAS 90 Development Environment with other tools to create additional modules and functions for their specific Sage MAS 90 extension, a direct interface to popular programming languages such as Visual Basic, C++ and Delphi is provided. Programmers are able to create seamless links between Sage MAS 90 programs and vertical applications using this interface. Programmers can also take advantage of popular add-ins such as DLLs, OCXs, and ActiveX controls. Using these ready-made objects saves programmers time and expands the functionality available for custom applications.

**Open Database Architecture**

Sage MAS 90 Business Framework leverages an open database architecture that is specifically developed and optimized for handling business transactions in a network environment. Rather than allocating large portions of expense budgets on complex computer systems and IT departments, most companies prefer to focus spending on their employees to successfully sell products and services. The computer system and business management software should run with a minimum of attention and staff. The Sage MAS 90 database offers a secure container that is not readily accessible from the outside without the ODBC data access kit. The database installs automatically with Sage MAS 90, and requires no specialized knowledge to maintain or run. Therefore, no database administrator is needed to run the software. The data files inside the database expand dynamically, so there is no need to worry about running out of space—this is limited only by the capacity of the hard drive.

*Sage MAS 90 Business Framework leverages an open database architecture that is specifically developed and optimized for handling business transactions in a network environment.*

The Sage MAS 90 database is able to process large numbers of transactions, and effectively handles the dynamic nature of those transactions (for example, item number and comment line types in an invoice). Sage MAS 200 offers customers the option of Microsoft SQL Server in addition to the embedded database, allowing Sage MAS 200 users to take advantage of other industry standard relational database management systems. Please refer to the Sage MAS 200 for SQL Server White Paper for more information regarding SQL Server.

The Sage MAS 90 open database platform provides accessibility to the myriad of reporting and business intelligence tools on the market such as Cognos, Crystal and Microsoft Office. The architecture also allows data to be shared with outside applications through ODBC and for reporting, validation and integration purposes. Users and developers accessing Sage MAS 90 data through ODBC are required to pass login credentials' ensuring sensitive accounting information is kept from unauthorized access. By leveraging ODBC, users can create ad-hoc reports and inquiries using the SQL syntax they are accustomed to. Access to Sage MAS 200 data residing within SQL Server is also easily reached using ODBC with specific ODBC drivers available from Microsoft.

**User Interface and Business Object Layer**

At the core of the Sage MAS 90 Business Framework is the business object and user interface layer. The user interface layer provides the visual aspects and

personalization features of the application such as the maintenance and transaction entry screens as well as the dual grid controls and calendar lookups. The business object contains the required business rules for inserting, updating and deleting entity and transaction information. The Sage MAS 90 Business Development Environment provides the infrastructure for merging the two together at runtime. Separation of the user interface from the business object also allows the business object to be used in other scenarios such as middle tier integration, various import routines and third-party integrations that may or may not require user interaction.

*By providing different options, developers can choose the optimal integration method that will best suit their custom solution or third party integration.*

By providing a business object layer, Sage MAS 90 objects can act as a central repository for all Sage MAS 90 business rules, which ultimately eliminates duplicate code and increases maintainability. A consistent methodology was used when developing each of the business objects within Sage MAS 90. Standard object classes for maintenance, transaction, validation and posting were used which defined the default properties and methods to ensure a consistent programmatic interface across all business objects. All validations are enforced within the business object such as; maximum field sizes, upper case field, range validation and numeric vs. alpha. All customizations that affect validation are automatically reflected and enforced within the business object.

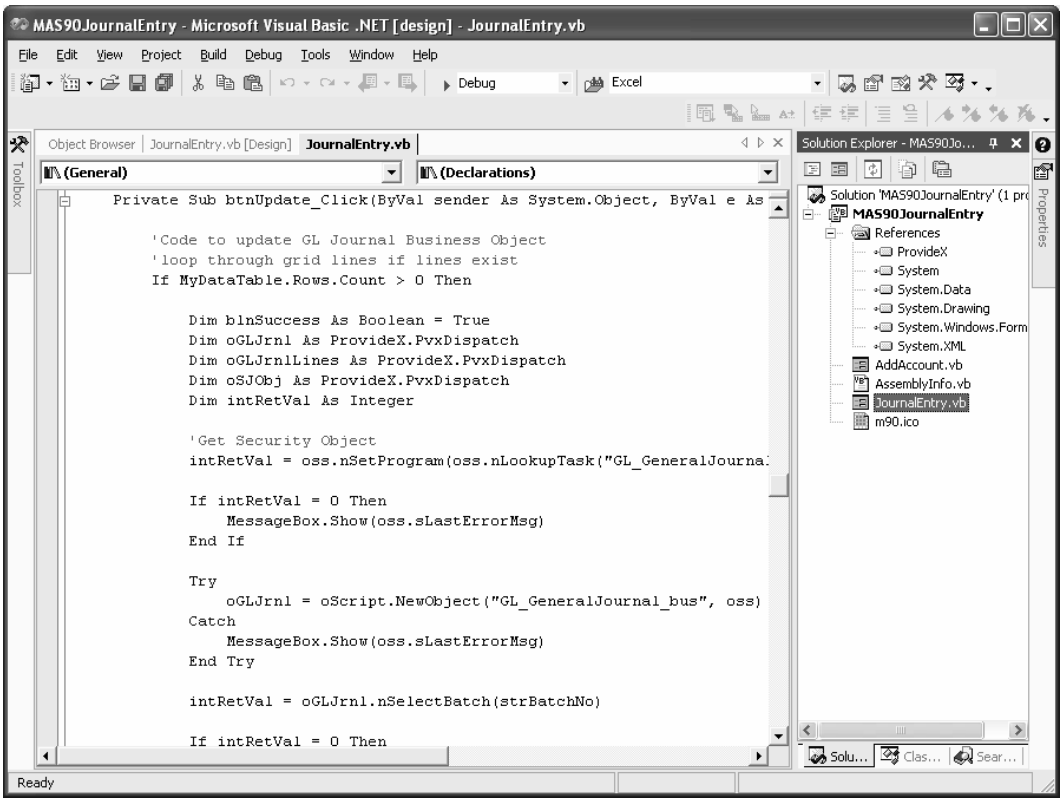
Another benefit of separating the user interface and the business object is to allow for interchangeable user interfaces, from windows and browser-based forms to wireless devices. It also provides a consistent interface for external integration and import routines. Whether exposed through a COM interface or XML integration, the business rules within the Business Object are enforced the same as they are through the standard user interface.

## Integration Platform

The robust integration platform of Sage MAS 90 provides an extensive set of tools and Application Programming Interface's (API) for developers and software vendors to integrate with Sage MAS 90. By providing different options, developers can choose the optimal integration method that will best suit their custom solution or third-party integration.

### Object Interface

The Sage MAS 90 Business Framework Object Interface provides developers and business partners with access to business objects within Sage MAS 90 through a common and secure interface while offering them a development language of choice such as Visual Basic, C++, or Delphi. The Object Interface can be used for data retrieval and updates as well as complex transaction inserts. This ultimately provides developers with the ability to perform tight integrations with Sage MAS 90 by leveraging the data validation routines within the Sage MAS 90 business objects without modifying or reengineering the underlying source code of the application.




Another aspect of the Object Interface is the ability to control the user interface associated with the business object. This can be extremely useful when user intervention is required by the user as part of the communication between the custom program and the Sage MAS 90 business object. Portions of the user interface can be rendered to the user such as a dialog box or inquiry form.

### Visual Integrator

Providing write-back access to accounting data files directly, invariably will bypass audit trails and business rules within the Sage MAS 90 application. The Sage MAS 90 Visual Integrator (VI) module, coupled with the object interface provided in the Business Framework, facilitates integration with other applications through a combination of import/export, scheduling, and scripting capabilities. This simplified end user-driven interface excels at bringing two disparate data-driven applications together by synchronizing their data on a predetermined schedule without bypassing the business rules of the Sage MAS 90 application. For example, you can create a tight integration with a Microsoft Access application in which VI automatically imports the Access data into Sage MAS 90, performs Sage MAS 90 tasks and exports the processed data back into Access every evening. As an alternative to write-back ODBC access, Visual Integrator provides the robust import and export capabilities with the ease-of-use required by Sage MAS 90 customers. VI is also used as the import hub for data migrations from other Sage Software business management applications such as Peachtree by Sage and Sage BusinessWorks in addition to QuickBooks and other legacy applications.

## End User Services

The End User Service layer of the Business Framework provides the power and flexibility in security, customization and personalization with the ease-of-use that Sage MAS 90 customers are accustomed to. The guided wizards and drag-and-drop interfaces in Sage MAS 90 help alleviate the training burden a new system can place on an organization with the capabilities that can have an immediate impact on business operations.

### Security

Security is an important aspect of any software system where sensitive financial information resides. Sage MAS 90 includes role-based security as part of the Business Framework—a very flexible security system that allows customers to choose exactly who has access to system data and tasks, without requiring a large effort to implement. Users can be assigned to one or more roles, such as Payroll Supervisor or Accounts Payable Clerk. Each role in turn would then have specific task rights assigned to them.

*Security is an important aspect of any software system where sensitive financial information resides.*

Advanced security options within the Business Framework provide an even greater granularity, including; full control, create, modify, delete, and view only. These can be set for each task within a particular role, allowing the administrator exceptional control over who can create, modify, or delete entries.

Sage MAS 90 leverages Windows Unified Logon as the default authentication option, which allows IT departments to configure user accounts and passwords once within their network infrastructure and apply them to various applications like Sage MAS 90. These user accounts can be assigned to one or more roles within Sage MAS 90.

### Customizer

The powerful Customizer tool within the Custom Office module allows users to change the application interface without programming knowledge. Unused fields on screens may be hidden, fields may be reorganized to reflect the way a company prefers to enter data, tab sequences may be modified to skip fields that rarely require input and lists of allowed entries for certain fields may even be added. In combination, these features can significantly improve the accuracy and speed with which data is entered into the system.

Command buttons can also be added using Customizer to run scripts that link application data to productivity tools such as Microsoft Word. For example, a sample script that ships with the Custom Office module launches Word, opens a dunning letter template, and populates the letter with the customer information on the screen including; name, address, telephone number, and balance due.

In addition to standard interface modifications, the most powerful feature of Customizer is the ability to add user defined Fields (UDFs) as extensions to the underlying Sage MAS 90 database. UDFs can be added to data entry forms, inquiries and embedded Crystal Reports. The easy-to-use administration tool for defining UDFs within the system, keeps the user shielded from the complex alter tables commands being performed behind the scenes. This gives users the added capability they need to extend the system without being a software engineer. User defined fields created within the Business Framework can also be configured to automatically flow from current to history tables as well as across modules. This is made possible through the

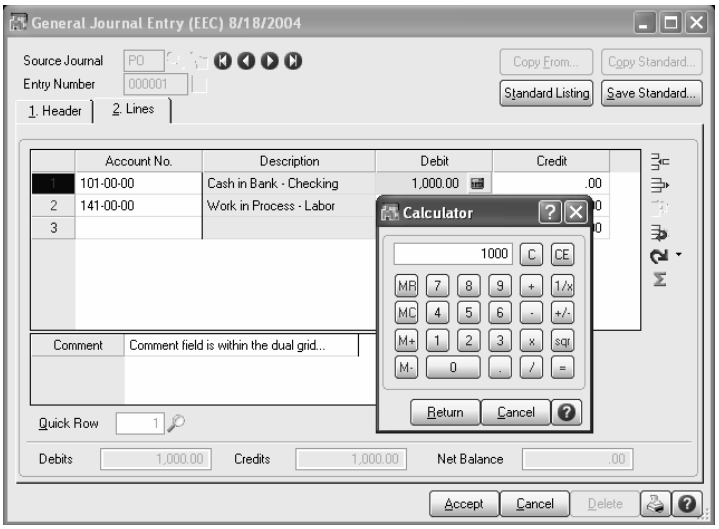
business object architecture, which automatically incorporates all UDF customization as a core layer within each Sage MAS 90 business object.

As an extension to UDF's, users can also create User Defined Tables (UDTs). UDTs can be used as a means for creating validations and referential integrity against the UDFs within the system. For example, a list of valid custom project codes that a user could create and assign to a UDF within a given transaction entry form could be established as a UDT. The combination of Customizer and the business object layer provides a means for creating the UDTs and assigning the UDFs to them. The business object ensures that data entry is validated against the UDT and carried through the system from current to history tables in the exact same manner as the supplied database.

**Personalization**

The Sage MAS 90 Business Framework includes a wide range of features that increase efficiency and give users more of the tools they need to make informed decisions including:

- Dual Grid Design – Data entry interface can be personalized to individuals' workflow needs, for faster data entry. Columns can be resized and moved, between grids, according to how often they are used, or sorted and hidden within the grid. Lines are easily added, deleted, and reordered.
- Calendars and Calculators – Wherever a date or an amount is entered, a calendar or calculator dialog is available. The dialog will automatically populate the field selected, saving time and potential data entry errors.




- Saved Reports Settings – Pre-defined selection options for each report including sort, filter, and printer selections. This makes running reports faster and prevents incorrect selection criteria during report processing.
- Desktop Task Organization – Users can choose to organize their daily tasks in a personalized task folder within the Sage MAS 90 Desktop and base it on the workflow that best suits their day-to-day functional needs.

Another important capability in data entry is the ability to reset individual lines or return all modified lines back to their original values at the beginning of the session, should manual errors occur during entry.

### Advanced Lookup Engine

One of the most powerful usability features incorporated within the Business Framework is the Advanced Lookup Engine or ALE. The ALE contains options that allow users to filter and customize the search criteria for any built-in lookup window. Users can create custom lookup views into the Sage MAS 90 data by leveraging the data views definitions associated with the ALE lookup. Each data view contains a superset of information that a user may wish to inquire on giving them the ability to include information that other organizations may not require. The image below illustrates an example of adding Sales information to the customer lookup window. Users can also print or export the display list to Excel for further analysis and reporting. The ALE has advanced customization features that allow users to create custom numeric lookup fields as well as modify the attributes of an existing lookup field. Attributes such as the column heading, size and mask can be configured to a user's personal preference.

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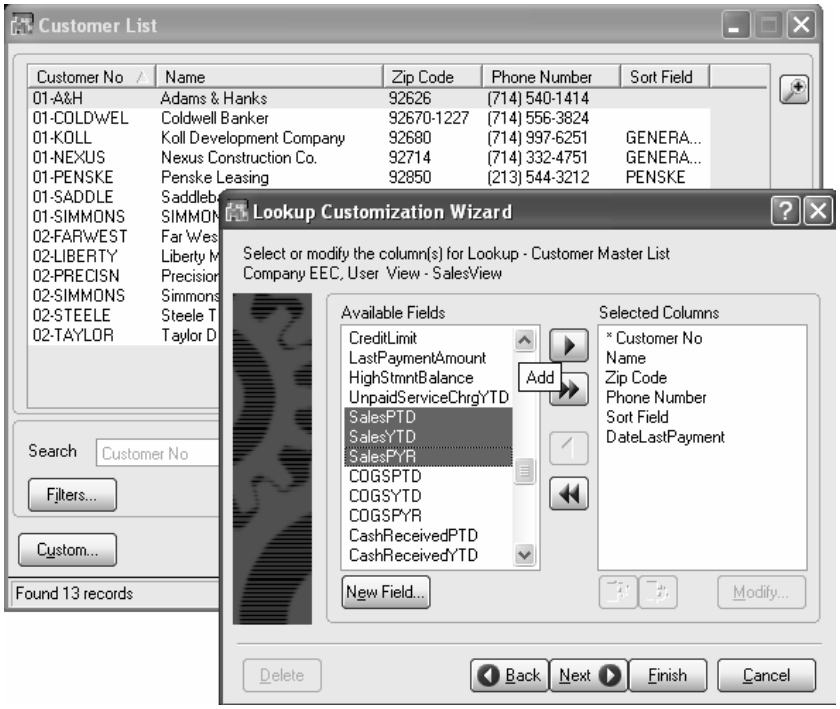


 

### Business Insights Reporter

As an extension to the embedded Crystal Reports included with Sage MAS 90, the ability to create custom reports is an equally important component of any business management system. The inherent issue however is that not everyone has the time to learn the intricacies of data structures or the complexities of creating formulas within Crystal Reports. Business Insights Reporter helps alleviate those issues through a wizard-driven environment with the presentation-quality output and formatting options of Crystal Reports.


Data is presented in logical views provided through the Business Framework. The wizard guides users through all of the required steps to create a report such as the report format and output options, including Excel, Adobe PDF, or XML. Users can easily create calculated fields with simple point-and-click calculations.

The Crystal Reports design interface can then be used to enhance reports generated by Business Insights Reporter. Users may also create new reports completely within the Crystal Reports application by leveraging the data views provided through the Business Framework and ODBC

# Sage MAS 200 Client/Server Technology

## Addressing Expanding Business Management Technology Requirements

For larger companies with expanding business management and accounting needs, the following key system requirements become critical:

- Supporting large numbers of concurrent users.
- Functioning effectively in remote access environments.
- Harnessing Internet technologies.

 

- Processing large transaction volumes efficiently.
- Maintaining security, data integrity, and reliability.
- Leveraging the power and scalability of the server.

## Sage MAS 200 Client/Server Overview

The client/server technology in Sage MAS 200 superbly addresses each of the above system requirements, making it an excellent solution for clients requiring a high-performance business management system. Let's examine in detail how Sage MAS 200 technology addresses each of the key system requirements.

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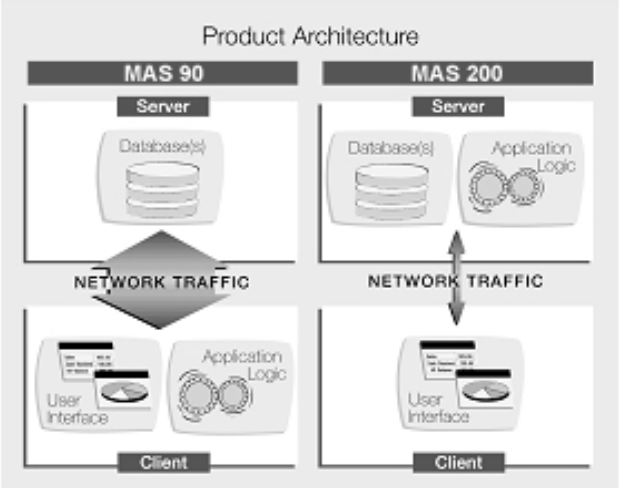


Sage MAS 200 technology separates the program logic, processing, and data management tasks from user-interface processing tasks. All program logic, processing and data management tasks are performed on the application server, and all user interface tasks are performed using a thin client installed on the workstation.

Data transmission across the network is minimized; only the commands used to display the current screen and data are sent across it. Reduced network data transmission per user means that more concurrent network users can be supported using the same network bandwidth and, equally importantly, that Sage MAS 200 can be run in low bandwidth environments like modem and WAN connections.

All data processing and data management tasks are performed on the server, rather than across the network, providing a 300% to 1000% increase in data processing throughput when using a dedicated application server. Data files are stored centrally on the server and are not transmitted across the network, enhancing the data integrity and reliability.

## Leveraging the Power and Scalability of the Server

The client/server architecture of Sage MAS 200 takes advantage of the power and scalability of the server to permit cost-effective performance upgrades. In the case of most LAN-based business management and accounting systems, in order to provide a performance upgrade to all users on the network, it would be necessary to upgrade

 

not only the file server, but also every workstation on the network. This can be a very expensive project if there are a large number of workstations on the network.

In contrast, with Sage MAS 200, upgrading the server to more powerful hardware such as multiple processors, more memory, and faster hard disks can result in dramatic improvements in Sage MAS 200 performance. Furthermore, these performance benefits are enjoyed by every Sage MAS 200 workstation on the network, resulting in a lower total cost to achieve a significant performance boost.

Sage MAS 90 and Sage MAS 200 program code runs through the use of an interpreter optimized for each platform—allowing Sage MAS 90 or Sage MAS 200 to take full advantage of the server environment. Both Sage MAS 90 and Sage MAS 200 run using an interpreter that has been optimized for the 32-bit environment (both the server and the client component are 32-bit applications), providing enhanced performance and stability.

**Supporting Large Numbers of Concurrent Users**

The first step many businesses take to address growing needs is to move from a single PC to multiple PCs connected through a local area network (LAN), with the business management application running across the LAN. Typically, a central server is used to store the data files and the application files. PC workstations are connected to the server, thus allowing multiple users to access the same data files. Network users launch Sage MAS 90 from their workstations, causing the Sage MAS 90 application to be transferred across the network from the server to the workstations, and loaded into the workstations' memory space. Once loaded, Sage MAS 90 applications access Sage MAS 90 data files from the central server. This architecture is referred to as network computing.

This type of Sage MAS 90 LAN configuration is inexpensive, simple to install and maintain, and works very effectively in modest LAN environments of two to 10 users. Since there are relatively few concurrent users, network performance is good, resulting in a responsive system that's easy to install and maintain. Users can work effectively because they gain the benefits of Windows, the ease of use and workflow of Sage MAS 90, and the convenience of a central server for administration and backup of data.

As the number of concurrent network users increases beyond 10, performance begins to degrade due to network saturation—the amount of data that must be transferred across the network begins to exceed the capacity of the network. Network saturation manifests itself in a number of symptoms, one of which is slower application performance. With most LAN-based systems, the upper limit on the number of network users is determined by network capacity.

The optimal solution, therefore, is to use Sage MAS 200, which minimizes network traffic between the workstation and the server and requires less network bandwidth. Sage MAS 200 can operate with a minimum bandwidth of 28.8 Kbps per workstation (56 Kbps per workstation is recommended). This is a fraction of the network bandwidth required to run LAN-based packages.

**Processing Large Transaction Volumes**

Businesses just starting out typically have modest daily transaction volumes. Sage MAS 90 in a LAN environment can easily handle the posting of hundreds of transactions per day. In order to post transactions, Sage MAS 90 retrieves data from

 

the server, updates the date in the memory of the workstation, and then writes the data back to the server. Complex update transactions, such as daily sales order posting operations, require updating sales order data files, inventory data files, accounts receivable data files, and finally, General Ledger data files, all of which must be done across the network. The speed at which Sage MAS 90 can perform complex update transactions is limited by the speed at which data files can be transferred across the network. Update transactions can be performed more quickly if the business data and the business logic can be kept together in the same memory space.

Sage MAS 200 keeps the business logic and the business data in the memory space of the server. As a result, Sage MAS 200 can perform complex update operations in a fraction of the time required by Sage MAS 90 on a LAN—from 300% to 1000% faster. As a result, Sage MAS 200 can handle thousands of transactions in minutes. Thus, for transaction volumes of hundreds of transactions per day, Sage MAS 90 on a LAN is a good solution. As transaction volumes increase to the thousands and tens of thousands per day, Sage MAS 200 provides a solution that can handle high transaction volumes quickly and effectively, minimizing the duration of daily processing activities.

## Functioning Effectively in Remote Environments

Growing businesses often have a need to expand to multiple locations, or employ traveling salespeople in order to service customers more effectively. Remote locations have a requirement to access the system for functions such as entering orders or updating inventory. Typically, remote locations such as warehouses or retail outlets are linked to the main office using an ISDN line, or dedicated lines such as frame-relay or DSL, creating a Wide Area Network (WAN). The emergence of Virtual Private Networks (VPN) has given companies the option of doing away with the WAN architecture and utilizing the Internet as their network backbone. A modern business management solution must work effectively in both of these environments.

A salesperson on the road may need to dial in with a modem to the office, access the system, enter orders or check the status of a pending order. To achieve dial-in remote access capabilities, many systems require the purchase and installation of additional hardware and/or software, such as PC Anywhere, or Citrix MetaFrame. A modern business management solution should not need to rely upon additional hardware or software for remote access configuration; it should work effectively with standard remote access software provided with the current Microsoft Windows operating systems.

Even though Sage MAS 200 does not require the use of additional software for effective remote usage, Sage Software does support Windows Terminal Services and Citrix MetaFrame for Sage MAS 90 and Sage MAS 200. Terminal Services Software is included with Windows Server and Advanced Server, (although additional Client Access Licenses may be required) and provides basic remote access to applications running on the Terminal Server. Citrix MetaFrame is an add-on to standard Terminal Services and provides greatly enhanced functionality; for example, MetaFrame gives users the flexibility to use devices attached to the remote client—even networked printers.

The cost of communications is another important consideration in choosing a multiuser business management solution. In recent years, the Internet explosion has resulted in the availability of a very low cost wide area network—the Internet itself—

 

that can be accessed from millions of locations worldwide at a fraction of the cost of a long distance phone line or other dedicated connection. The global span of the Internet, based on TCP/IP, has dictated the future standard of networking. Businesses and corporations are migrating to TCP/IP networking due to its robustness, connectivity flexibility, and of course, its widespread use as the fundamental networking architecture of the Internet. Today, the TCP/IP protocol is used both for the public Internet and on private corporate networks, referred to as intranets. It is clear that in the future, the requirement will be for all network applications to run on TCP/IP.

A business management system must be able to work effectively in both WAN and remote access environments, and have the capability to operate effectively in TCP/IP networking configurations in order to take advantage of the communications cost savings. In short, it must be able to run efficiently in an intranet (internal corporate TCP/IP network) environment or over the public Internet (public TCP/IP network).

The communications between the Sage MAS 200 server and a Sage MAS 200 client workstation is performed using TCP/IP sessions. The Sage MAS 200 Host is responsible for handling all application and data processing, and the Sage MAS 200 client workstation is responsible for presenting the user interface. Once a connection has been established, the Sage MAS 200 server and workstation communicate with each other by sending commands across the network.

For example, to display a window filled with data, the Sage MAS 200 Host will send commands to the Sage MAS 200 workstation application instructing it to draw a window and fill it with appropriate data. The Sage MAS 200 workstation processes the instructions and draws a window containing the data received—only the data necessary to fill the current screen is transmitted to the workstation. This thin-client architecture results in exceptional performance in low bandwidth TCP/IP networks, such as intranets and the Internet.

An additional consideration for operating across the Internet is security. Encryption of the TCP/IP session is desirable to ensure that anyone on the Internet who may be capturing data transmitted during the Sage MAS 200 session would be unable to decipher the sensitive accounting data. Additional encryption functions, such as point-to-point tunneling protocol (PPTP), are already embedded in the current Windows operating systems. Security of the Sage MAS 90 Client/Server host server is provided exclusively through the Sage MAS 90 Client/Server application.

## Data Integrity and Reliability

Data integrity and reliability are critical requirements of any business management system. For larger businesses, these requirements become even more important, as any compromise of data integrity, security or reliability creates serious disruption to business activities.

As a business grows, and more concurrent users are added to the system, network traffic may increase to the point where network capacity is filled, resulting in network saturation. Networks with multiple network nodes that are functioning at or above network capacity are subject to increasing numbers of network transmission errors. Network transmission errors may result in corrupted files. In business management and accounting applications, this can have serious implications; key accounting information may be permanently lost or damaged. In another example, if power should be lost while the system is in the process of writing an updated accounting

 

data file across the network back to the server, the data file could be damaged. Finally, there is also the risk that a workstation may corrupt the data due to faulty hardware (for example, a bad memory chip, an intermittent hard disk failure, and so on.). In the above configuration, the more workstations that reach across the network to touch (update) the data, the greater the risk of file corruption. Moreover, as the network grows in complexity, and the number of network nodes increases, the risk of data corruption grows.

Sage MAS 200 addresses this issue through the innovative use of a client/server architecture that keeps both data and applications on the server, and minimizes network traffic. Since the data files are never transferred across the network, they are never exposed to the risk of network data corruption or workstation data corruption. Also, by minimizing network traffic, more concurrent users can be supported on the same network bandwidth.

# Conclusion

Sage MAS 90 and Sage MAS 200 technology provides the best possible basis for a business management system that may be quickly implemented, is low-cost, provides for efficient processing of accounting transactions, and runs on the platform of choice. For larger organizations, Sage MAS 200 provides high performance business management and accounting (with an easy upgrade path from Sage MAS 90), and a two-tiered TCP/IP-based client/server technology that is Internet-enabled. Sage MAS 200 takes advantage of a thin-client application server model for exceptional performance on standard modem connections and across wide-area TCP/IP networks. For those businesses that require the functionality of relational database, Sage MAS 200 is also available for Microsoft SQL Server providing a high performance yet cost effective SQL solution. Sage MAS 90 and Sage MAS 200 technology delivers excellent price/performance value – high performance and top-notch business management and accounting functionality in a competitively priced package.

SAGE MAS 90 SAGE MAS 200

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