SQL Server for Blackbaud Products


Why SQL Server?
Microsoft’s SQL Server provides many benefits, including data reliability, high quality performance, and ease of technology maintenance.

It’s fast and reliable.
- SQL Server’s efficient engine can process millions of transactions.
- An independent study shows uptime of 99.95% for early adopters, many at 99.99%.

It’s self-tuning and easy to maintain.
- SQL Server has easy-to-use database administration tools.
- It automatically allocates memory, improving performance.

It’s ideal for any size organization.
- Microsoft Desktop Engine (MSDE) is available for small-to-mid-size organizations.
- The Standard and Enterprise versions accommodate mid-to-large-size organizations.

Version Overview
Microsoft SQL Server Desktop Engine (MSDE)
The Microsoft Desktop Engine (MSDE) is a small-scale version of SQL Server designed specifically for use as the data storage location for third-party applications, such as Blackbaud’s products. MSDE is the default database for The Financial Edge 7.2, The Raiser’s Edge 7.6, and The Education Edge.

MSDE does not include any graphical database tools (such as the Enterprise Manager and Query Analyzer) that an administrator would use to manage the database. Instead the Blackbaud Management Console (BMC) provides all the required administrative tools, and is installed on the database server.

MSDE is very similar to the full-scale SQL Server versions and shares many of the same features. MSDE supports a limited number of concurrent users (up to 10 per Blackbaud MSDE instance) and does not allow for large databases (greater than or equal to 2 GB). These limitations are explained in more detail later in this technical paper.
If you do not own SQL Server 2000 Standard or Enterprise edition or SQL Server 2005 Standard or Enterprise edition and you meet the MSDE requirements, MSDE installs on your server, requiring no special database installation or configuration steps.

**Microsoft SQL Server 2000 Standard Edition**
The Standard Edition is the full version of SQL Server 2000 that is used by organizations who need to support more than 10 concurrent users and/or databases 2 GB or larger. It is a highly scalable, high performance database that supports servers with up to four processors (CPUs) and 2 GB of RAM. If you need or want to use SQL Server Standard Edition you can purchase the database software from a Microsoft reseller and install it on your network server(s). Although you can use the database management tools built into the Blackbaud Management Console, with Standard Edition, you also have access to standard SQL Server administration tools, such as Enterprise Manager and Query Analyzer.

**Microsoft SQL Server 2000 Enterprise Edition**
The Enterprise Edition of SQL Server 2000 is designed for high-end enterprise users who need maximum scalability and availability. It supports large servers with more than 2 GB of RAM and up to 32 processors.

**Microsoft SQL Server 2005 Workgroup Edition**
The Workgroup Edition of SQL Server 2005 is supported with releases beginning with The Financial Edge 7.6*. It supports an unlimited database size, 3GB RAM, and up to 2 processors.

**Microsoft SQL Server 2005 Standard Edition**
The Standard Edition of SQL Server 2005 is supported with releases beginning with The Financial Edge 7.6* and The Raiser’s Edge 7.8. It supports an unlimited database size, the maximum memory allowed by the operating system, and up to 4 processors.

**Microsoft SQL Server 2005 Enterprise Edition**
The Enterprise Edition of SQL Server 2005 is supported with releases beginning with The Financial Edge 7.6* and The Raiser’s Edge 7.8. It supports an unlimited database size, the maximum memory allowed by the operating system, and unlimited processors.

**Choosing a SQL Server Edition**
You can use MSDE if your organization:

- Has 10 or fewer concurrent users for each Blackbaud MSDE instance*
- Does not require a database size of 1.8 GB or larger

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* SQL Server 2005 is compatible with The Education Edge / The Financial Edge 7.6 and higher only if your database does not include any Accounting for Nonprofits version 6 products, such as Student Billing 6 or Payroll 6.
If your organization meets any of the following characteristics, you need to purchase SQL Server 2000 Standard or Enterprise edition or SQL Server 2005 Workgroup, Standard, or Enterprise edition:

- Has more than 10 concurrent users for one Blackbaud product*
- Requires a database size of 2 GB or larger
- Wants to use SQL Server database management tools

*The 10-user limit is per MSDE instance. For example, clients who have eight Raiser’s Edge® users and six Financial Edge™ users can use MSDE for their databases. However, The Education Edge™ and The Financial Edge share an MSDE instance. Clients who have six Education Edge users and six Financial Edge users exceed the concurrent user limit and should consider SQL Server 2000 Standard or Enterprise.

Unlike many database systems, MSDE does not restrict connections on a per-user basis; any number of users can connect to an MSDE server at any one time.

**Refer to Blackbaud’s system recommendations before making purchasing decisions.

***10 is the maximum number of concurrent users that we recommend for running MSDE. This is not an enforced limit, but performance is likely to degrade with more than 10 concurrent users. See the section “How MSDE Limits Concurrent Users” for details.

****The database size limit is an absolute limit. If your database is larger than 2 GB, MSDE will not install. If you are running The Raiser’s Edge® 7, The Financial Edge™, or

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<tbody>
<tr>
<td>Licensing Costs</td>
<td>No charge. Bundled with your Blackbaud software.</td>
<td>Per Processor Licensing and Per Server/Client Access Licensing is available. Please contact a Microsoft reseller to discuss your options and special pricing for nonprofit organizations.</td>
<td></td>
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<tr>
<td>Maximum Users</td>
<td>10***</td>
<td>N/A (provided proper license obtained)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Maximum Database Size</td>
<td>2 GB****</td>
<td>N/A (the “actual” limit is 1,048,516 Terabytes)</td>
<td>Unlimited</td>
<td></td>
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<tr>
<td>Maximum # of Processors Supported</td>
<td>2</td>
<td>4</td>
<td>32</td>
<td>2</td>
<td>4</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Maximum RAM Supported on the Database Server</td>
<td>2 GB</td>
<td>2 GB</td>
<td>Maximum supported by the operating system</td>
<td>3 GB</td>
<td>Maximum supported by the operating system</td>
<td></td>
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<tr>
<td>Graphical Tools</td>
<td>None</td>
<td>Full set — Enterprise Manager, Query Analyzer</td>
<td>Full Set — SQL Server Management Studio</td>
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Before you upgrade to a SQL Server product, monitor how many users connect to each database throughout each day for several days.

The Education Edge™ on MSDE and your database grows to 1.8 GB, you will receive warning messages and eventually be unable to access the database.

How MSDE Limits Concurrent Users

Unlike many database systems, MSDE does not restrict connections on a per-user basis; any number of users can connect to an MSDE server at any one time. However, MSDE performance will begin to degrade as it experiences too much traffic.

Instead of limiting user connections, MSDE actually restricts concurrent active threads, which it limits to five before performance delays are introduced. After five active threads are started, MSDE introduces a delay into each operation performed. This delay gets longer each time an additional thread is added over the limit. As you begin to exceed the supported user load, no users will be locked out of the database but application performance begins to degrade, creating an incentive for you to upgrade to a full SQL Server version.

The effect of this “concurrent workload governor” (Microsoft terminology) on an application depends on how often the application’s users access the database. A thread is active only when it is actually performing a database operation (e.g., running a query or import). When the user is idle (e.g., when looking at data on the screen), the connection is considered to be sleeping and is not included in the active thread count. For most applications, even when users are actively doing something on their workstations, the actual database activity is low.

The “user limit” for MSDE varies from application to application. The 10-user limit is based on average use cases for these applications. Clients with 10 or fewer users logged into their databases should see the same performance with MSDE as with SQL Server Standard Edition, even if those users are performing database-intensive operations such as running reports or executing queries. If 11 or more users try to log into the system, they will be allowed in, but clients should expect to see the application’s performance begin to degrade.

In some circumstances, it may be appropriate for a client to support more than 10 users on an MSDE database. Generally this is acceptable if only a few users actively use the application while the others make only occasional requests. For example, a client may have four employees who regularly use The Raiser’s Edge® to enter gifts, update constituent information, and run reports and 10 additional employees who occasionally view information in the system. These occasional users do not enter any information into The Raiser’s Edge; they just log in from time to time to look at information on dashboards. In such a situation, the application should perform acceptably on MSDE because these occasional users put very little strain on the system.

Determining the Number of Concurrent Users

Before you upgrade to a SQL Server product, monitor how many users connect to each database throughout each day for several days. If more than 10 users are never logged in simultaneously — and your database is less than 1.8 GB — you are a good candidate for MSDE. However, we recommend you explore your options for purchasing SQL Server 2000 Standard or Enterprise or SQL Server 2005 Workgroup, Standard, or Enterprise edition, so you can budget for growth.
Clients who purchase SQL Server 2000 Standard or Enterprise Edition or SQL Server 2005 Standard or Ednterprise Edition gain the added advantage of having the complete set of database management tools, including SQL Server Enterprise Manager, which allows them to perform complete database administration, and Query Analyzer, which allows direct access to the underlying database tables for The Raiser's Edge, The Information Edge, and The Financial Edge.

The Financial Edge™, The Education Edge™, Faculty Access for the Web™, NetClassroom™, and eRequisitions™ share a database so users logged into any product count toward the 10 allowed concurrent users for the database. To determine how many concurrent Financial Edge/Education Edge users you will have when you upgrade to SQL Server, add together your concurrent accounting software users and concurrent education software users.

Action to Take as the Database Reaches the MSDE Limit
Upgrading to SQL Server 2000 Standard or Enterprise or SQL Server 2005 Workgroup, Standard, or Enterprise from the MSDE version is not difficult. When your database reaches 1.8 GB, the Blackbaud Management Console provides a warning message so you can prepare to upgrade. If you do not upgrade, you will not be able to access the database when it reaches 2.0 GB.

If you approach the user or database size limit, contact a Microsoft reseller about your purchase options for SQL Server 2000 Standard or Enterprise or SQL Server 2005 Workgroup, Standard, or Enterprise. You can then budget to purchase SQL Server 2000 or SQL Server 2005 before you reach the MSDE limit.

Miscellaneous Issues
Multiple Databases
SQL Server 2000 MSDE, Standard, and Enterprise editions or SQL Server 2005 Workgroup, Standard, or Enterprise editions support the configuration of multiple databases on a single server. For example, if you want to configure three different Raiser’s Edge databases, you can do so with MSDE. However, MSDE’s concurrent user performance limits apply to all the databases collectively on a single server instance. If more than 10 users need to use The Raiser’s Edge at the same time, regardless of whether they are logging into the same database or into different ones, you should install the full SQL Server Standard or Enterprise Edition. Note: We are using different instances of MSDE for The Raiser’s Edge 7® and The Financial Edge™; therefore, if you have multiple products and 10 or fewer users in each product, you can use MSDE.

SQL Server Management Tools
SQL Server 2000 Standard or Enterprise Edition have a complete set of database management tools, including SQL Server Enterprise Manager, which allows you to perform complete database administration, and Query Analyzer, which allows direct access to the underlying database tables for The Raiser’s Edge, The Information Edge, and The Financial Edge.

SQL Server 2005 Workgroup, Standard, or Enterprise Edition includes the SQL Server Management Studio, which allows for complete database administration and access to the underlying database tables.

Although our licensing agreement will not allow you to use these tools to alter our database schema (i.e., you cannot change our table structures, modify our stored procedures), you are free to write your own queries, create new databases for extracting and manipulating data, use reporting tools to generate custom reports, and perform other read-only operations against Blackbaud databases. Database administrators or staff may find it advantageous to use SQL Server’s administrative tools to set up scheduled maintenance jobs, define security policies, or integrate the management of Blackbaud databases with management of other SQL Server databases within your organization.
Important:
We will not provide support for any database activities that insert data, modify data, or alter the schema of a Blackbaud database unless the action is performed through our own products. Microsoft’s Query Analyzer, Enterprise Manager, and SQL Server Management Studio tools (SQL Server Workgroup, Standard, or Enterprise Edition) allows you to perform such modifications against Blackbaud databases, but doing so invalidates your support agreement with Blackbaud for that database.

If you use the Microsoft-provided SQL Server client tools to manage and access Blackbaud databases, you run the risk of corrupting the databases if you perform invalid operations. For this reason, we highly recommend that the Blackbaud-provided facilities be used for database operations. The Query, Import, and Export tools provide safe, robust means of performing most data-migration tasks, and the Blackbaud Management Console provides a rich set of database administration functions. Only qualified database administrators should use the SQL Server tools for database management operations.

With the Standard and Enterprise editions, the SQL Server database administrator can grant logins to users using the SQL Server Enterprise Manager or SQL Server Management Studio tool. If a database administrator gives these users permissions to Blackbaud database(s), then users can access the back end of the database. Therefore, if the database administrator decides that it is beneficial to allow certain users access to the database from applications besides Blackbaud products, then you must ensure the users are provided only with read-only rights.

Writing to the Database and Application Programming Interface (API)
Microsoft SQL Server Standard, and Enterprise editions allow database administrators to have full read and write access to databases, but we offer support only for read access to Blackbaud products. Writing to the database directly via a SQL Server connection or with the Microsoft SQL Server client tools is a violation of our maintenance agreement, and we cannot support clients who write directly to their Blackbaud product database. If you bypass the business logic and rules for what is allowed in the database, you will likely corrupt the database, sometimes in ways that will not become evident until much later.

Instead of writing directly to the database, you should use the Application Programming Interface (API) for Blackbaud products, optional modules that provide the following benefits:

- Enforces business rules and data integrity checks, protecting you from inserting invalid data into the database
- Follows all of the security settings that you have configured into your database
- Provides the ability to show forms, reports, and screens such as the search screen
- Allows you to use built-in tools such as the search functionality
- Provides an easy model that wraps up the complicated SQL statements and is optimized to process only the data that is needed, when it is needed
- Gives protection from future database changes. If the database structure changes, then the API is updated accordingly. The API will remain binary compatible with future releases, so you can be assured that an existing custom application will not require any modification to function with future releases.

Extended Database Assistance is a maintenance option providing resources and support for back-end access to SQL Server databases.
Blackbaud Read-only Database Assistance

Extended Database Assistance, also known as Read-Only Database Assistance (RODBA), replaces RE:OPEN, Accounting OPEN, and EA:OPEN.

Extended Database Assistance is a benefit of the Advantage Professional and Advantage Priority maintenance plans, providing resources and support for back-end access to SQL Server databases. SQL Server Standard and Enterprise automatically include back-end access to your data. MSDE can accommodate back-end access for RODBA clients only. Our OPEN optional modules remain available for Blackbaud products with Adaptive Server Anywhere (ASA) or SQL Anywhere (SQLA) databases.

The benefits of Extended Database Assistance include:

- Access to Extended Database Assistance user guides
- Support for read-only database access
- Tools within your database
- Access to MSDE databases

Ask your account executive about upgrading your maintenance plan when you are ready to implement the SQL Server version of The Raiser's Edge®, The Financial Edge™, or The Education Edge™. You can also contact Maintenance Programs directly at maintenance@blackbaud.com.

If your organization is currently enrolled in either the Advantage Professional or Advantage Priority maintenance plan, all features, maintenance, and support remain the same after you upgrade to the SQL Server version of the product, whether you use SQL Server Workgroup, Standard, Enterprise, or MSDE.

Microsoft’s SQL Server Licensing Options

If your organization decides to purchase SQL Server 2000 Standard or Enterprise or SQL Server 2005 Workgroup, Standard, or Enterprise, Microsoft provides different licensing models to fit your organization’s needs. We recommend you speak with a Microsoft reseller to understand these options and make the best purchase decision for your organization. However, following is a general description of the licensing options as of the date of this publication. Microsoft offers the following licensing options:

- Processor License
- Server plus Device Client Access License (CAL) OR Server plus User Client Access License (CAL)

A Processor license allows you to install SQL Server on a single computer (your database server.) You must purchase processor licenses for all processors on the computer that are accessing SQL Server. The Processor license allows for any number of devices or users, including internal and external connections. If you purchase a Processor license, Server/Client Access Licenses are not required.
A **Server plus Device Client Access License (CAL)** allows any number of users to access SQL Server from a single device. You purchase one server license plus as many Device CALs as you need. A **Server plus User Client Access License (CAL)** allows a single user to access SQL Server from any device. User CALs cover a single user’s access to the server software from any device — desktop, laptop, home computer, handheld, Internet, etc. Device CALs are designated to the device and any user can use a licensed shared device (computer, etc.).

Microsoft provides guidelines for determining the best licensing model to fit your organization’s needs. A Microsoft reseller can assist you in making this decision. In addition, Microsoft provides licensing information on their Web site [http://www.microsoft.com/sql/howtobuy/faq.asp](http://www.microsoft.com/sql/howtobuy/faq.asp).

### Purchasing SQL Server Standard or Enterprise

To make purchasing SQL Server as easy as possible for you, we have made arrangements with a specific Microsoft reseller who will discuss your needs and provide SQL Server at a competitive price:

**Mr. Bill White**  
Software House International (SHI)  
Greenville, South Carolina  
Bill_White@shi.com  
Phone: 864.325.7744  
Fax: 864.845.0060

Microsoft offers the Open Charity License and the Educational Program for organizations qualifying as nonprofits. Microsoft resellers can help you purchase SQL Server 2000 Standard or Enterprise or SQL Server 2005 Workgroup, Standard, or Enterprise. Check with members of your organization to see if you already have an account with a Microsoft reseller, or visit [www.microsoft.com](http://www.microsoft.com).

Learn more about discounts:

- The Open Charity License program: [www.microsoft.com/licensing/programs/open/opencharity.asp](http://www.microsoft.com/licensing/programs/open/opencharity.asp)
- Discount programs for academic institutions: [www.microsoft.com/education/howtobuy.aspx](http://www.microsoft.com/education/howtobuy.aspx)