

GUIDELINES FOR MICROSOFT SERVER-BASED INSTRUCTIONAL ACCOUNTS

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ABSTRACT

In responses to business requests, the CIS program is moving to server-based instruction for appropriate courses, including Database Management Systems, E-Commerce Application Programming, Application Software Development Project (senior capstone), and Advanced Visual Basic .NET programming. The server environment uses Microsoft Server 2003 and Microsoft SQL Server 2000. This paper addresses this task by providing guidelines for four necessary procedures, including establishing Server accounts, establishing SQL Server accounts, establishing Internet Information Server (IIS) accounts with FrontPage Web extensions, and establishing IIS and Visual Basic .NET to SQL server database connection using ODBC and ADO.NET.

Keywords: Microsoft Server 2003, Microsoft SQL Server 2000, Server Accounts, IIS server Accounts, ODBC Database Connection

INTRODUCTION

In response to a number of requests by employers of our Computer Information Systems graduates that the graduates have experience in a server-based environment, the university purchased a dedicated server for CIS instruction in the summer of 2003. The server is a Dell PowerEdge 2600 computer with a speed of 2.6 GHz, an Intel Xeon processor, 1 gigabit of RAM, five 70 gigabit hard drives using a RAID 5 configuration, and a tape backup system. The software load consists of Microsoft Server 2003 and Microsoft SQL Server 2000. Because of the licensing costs of the Microsoft SQL Server 2000 program, a single processor system was chosen.

During the Fall 2003 semester, the Database Management Systems course was taught using the server. During the Spring 2003 semester, we taught the Database Management Systems course, the E-Commerce Application Programming course, the Advanced Visual Basic (VB) .Net course, and the Application Software Development Project course (the capstone senior project), using the server. The program plans to expand the types of courses that will be taught using the server environment as the faculty gain knowledge about the environment and develop a comfort level with this form of instruction.

To say the least, we had a steep learning curve, and of course, the documentation and manuals did not provide the full knowledge base necessary to make a trouble-free transition (1,

2, 3, 4, 5, 6, 7, 8). To complicate the matter, unlike earlier Microsoft Server platforms which had very open security settings, the Server 2003 platform is delivered in a complete lock-down mode. There are two other important considerations about the server installation. One, the server has been set up in its own domain. For many of the procedures that will be discussed, this is necessary and eases the management process. Two, Microsoft Server 2003 and Microsoft SQL Server 2000 are not directly compatible. It is necessary to download and install a compatibility patch from the Microsoft download Web site. To provide guidance for others who are contemplating the undertaking of a server-based instructional environment, we would like to share our knowledge of this environment. The paper provides guidelines for four major issues of server-based instruction, including 1) establishing Server accounts, 2) establishing SQL Server accounts, 3) establishing Internet Information Server (IIS) accounts with FrontPage Web extensions, and 4) establishing IIS and VB .NET to SQL server database connection using ODBC and ADO.NET.

SERVER 2003 ACCOUNTS

We will discuss a few hurdles that had to be overcome as well as a few tips that we would like to pass on to anyone finding themselves with a new Microsoft server and some uncertainty about how to proceed. As a matter of convenience for our students, we have decided to provide a server space for them to store files and to provide backup. We establish folders for them on a network drive. If you decide not to do this, you may skip over those related sections. Screen-shot graphics of important steps are available at:
<http://www.uamont.edu/cis/roigeretal2004/>.

Student accounts must be created in the Active Directory of the Server, which may be accomplished by following the steps below:

1. Log on as the "System Administrator"
2. Access the "Administrative Console"
3. Under the "Console Root", expand the folder labeled "Active Directory Users & Computers"
4. Right click on the name of your server
5. From the drop down menu select "New" and then "Organizational Unit." This allows organization of all students and different courses. For example, we have an organizational unit named "Students" and inside that unit we have organizational units named, "Database," "Web," "Projects," "CIS Club," etc.
6. Once the "Students" organizational unit is created, double click on the folder name; now you are inside the folder. Right click in the white space and select "New" and then "Organizational Unit." A dialog box will pop up that simply requests a name for the sub organizational unit.
7. After adding the sub organizational units, double click on one of them, say for example, "Database."
8. It is now time to add new individual users to the organizational unit.
9. **Note:** If you wish for each student to have their own network folder, follow the steps below, else skip to step 10.
 - a. Minimize the "Administrative Console" and go to "My Computer"

- b. Go to the “C” drive and create a folder named “Students”
- c. Create subfolders inside the “Students” folder in the same manner as you did above with the organizational units.
- d. Return to “My Computer”
- e. From the menu bar Select “Tools” and “Map Network Drive”
- f. Select the drive letter (unused of course) that you would like to use – perhaps “Z”
- g. Click the “Browse” button to navigate to the desired folder – in this case – “Students”
- h. Click “Ok” then “Finish”
- i. You should now see under “Network Drives”
 - i. “Students on (server_name) (Z:)”
10. Return to the “Database” organizational unit
11. Right click in the white space and select “New” and “User”
12. A dialog box will pop up requesting certain user information
13. Add the first name, last name, and whatever the naming convention you use will determine the username.
14. Click “Next”
15. Enter the desired password twice and select from the additional settings regarding passwords.
16. Click “Next” and “Finish” and the new user should promptly appear in the list
17. **Note:** If you wish for each student to have their own network folder, follow the steps below, else skip to step 19
 - a. Double click on the new user just created to display the “Properties”
 - b. Select the “Profile” tab
 - c. In the “Home Folder” frame, select the “Connect” radio button
 - d. In the list box select the drive – in our example “Z”
 - e. In the “To” text box enter the path to the network folder in the form:
 - i. \\server_name\Students\Database\%username%
 - ii. by using the %username%, the server will automatically insert the user name for you, the usefulness of which will become clearer in a moment
 - f. Click “Ok”
 - g. You should have just successfully created an individual network folder for the new user. This can be verified by going to “My Computer” and looking at the “Z” drive and in the “Database” folder.
18. Adding additional students is now a matter of copying the first student user that was added. In other words right click on the new user and select “Copy” and then repeat steps 12 through 16.
19. If not creating individual network folders, then simply perform steps 11 through 16 for each new user you wish to add.

You have now added students to the active directory of your server (and) created network folders for each of them. However, “Sharing” and “Security” permissions must be set in order for the students to successfully access their network folder.

1. Go to the “Users” folder under the server_name
2. Right click in the white space and select “New” and “Group” from the pop up menu
3. Simply name your new group, “Students”
4. Leave the default settings under “Group Scope” and “Group Type” as “Global” and “Security” respectively
5. Click “Ok”
6. Double click on “Students” to get the properties
7. Select the “Members” tab and then “Add”
8. A new dialog box will pop up
9. Click “Advanced” and then “Find Now”
10. A list of all users added to the Active Directory will appear
11. Select multiple names by holding the Ctrl key down and clicking the appropriate user names
12. Click “Ok” three (3) times
13. Close the “Administrative Console” and return to “My Computer”
14. Right click on the “Z” drive
15. Select “Properties” from the pop up menu
16. Click the “Security” tab
17. Click the “Add” button, “Advanced” button, and the “Find Now” button
18. Scroll through the list and find “Students”
19. Click “Ok” twice (2)
20. You will now see “Students” under the security tab
21. Make sure “Students” is selected and then click the “Advanced” button
22. This will display the “Advanced Security Settings for Students” dialog box
23. With “Students” selected, click the “Edit” button
24. In the “Apply onto” list box, select “This folder only”
25. Ensure that the following “Allow” permissions are checked
 - a. List folder / Read data
 - b. Read attributes
 - c. Read extended attributes
 - d. Create folders / Append data
 - e. Read permissions
26. Click “Ok” 3 (three) times
27. The same steps will need to be taken to grant the appropriate permissions to the “Database” folder on the network drive.
28. Once inside the “Database” folder, individual folders will have to be checked for correct security settings.
29. **Do not** allow an individual student to have “Full Control” of his/her network folder. If this happens to be the case, simply uncheck the “Full Control” check box and click “Ok”

Students who have server accounts and an established network folder will now have permission to access their individual network folders and only their folder.

SQL SERVER 2000 ACCOUNTS

Once you have established server accounts, you may proceed to establishing SQL Server accounts. The procedure for setting up these accounts is as follows:

1. Return to the “Administrative Console”
2. Go to the “Microsoft SQL Servers” node and select Databases
3. Right click on the databases folder and select “New Database”
4. Type in the name of the new database – perhaps using the same naming convention as assigning user names above.
5. Expand the “Security” folder and click “Logins”
6. Right click in the white space to create a “New Login”
7. Click the button next to the first text box to display a list of all possible logins
8. Select the appropriate user name
9. Click “Add” and then “Ok”
10. Under Authentication, choose between “Windows authentication” or “SQL Server Authentication”
11. In the “Database” List box, select the appropriate database name which will become the students default database
12. Click the “Database Access” Tab
13. Select the appropriate database(s) that the student should have access to
14. Then, under “Database Roles for (student_name)” check “Public” and “db_owner”
15. Click “Ok”

Even though students will now have Server accounts and SQL Server accounts, they must logon to the SQL Server. There are three modes of authentication that can be used for SQL: SQL only authentication, Windows only authentication, or Mixed mode. We chose windows only because it is the most secure of the three. By using Windows only authentication users must be logged onto the CIS Domain in order to access their database. The procedure for this process may vary, depending on your overall Information Technology system. On our system, all computers must be logged on to the base system. In order to logon to the SQL Server, students in the laboratories must first log off of the base system and then log on to the SQL Server.

Important Note: A funny thing happens on the way to making this connection. You will not be able to remotely log on to the SQL Server unless the NETBIOS protocol has been installed and is activated on each laboratory or server access-required computer when you are using static IPs. Microsoft documentation for the Server 2003 states that the only protocol necessary is TCP/IP, but we have found that the only way to establish connection with the SQL Server is with NETBIOS installed and with “NETBIOS over TCP/IP” selected. This selection is located under the “WINS” tab for “Advanced” settings under the “TCP/IP” properties selection. This may be an artifact of the computer integrity program that we use, Deep Freeze, although the company says no.

INTERNET INFORMATION SERVER (IIS) ACCOUNTS

If you are providing students with World Wide Web space on the server's IIS, you will need to establish an account for them on the IIS and set permissions. The students must have an account set up on the server (see above). If they are also working with a SQL Server database, they will need an account on the SQL Server (see above).

To establish an IIS account and set Permissions:

1. Log on to the server as "Administrator" and open "My Computer."
2. Open the "Local Disk (C:)"
3. Select and open the "Inetpub" folder.
4. Select and open the "wwwroot" folder
 - a. To keep accounts organized, we establish a folder for the group, and then establish individuals' folders within the group folder.
5. Create the individuals folders. Be sure that the names match the server account name.
6. Log off the server.
7. Open Internet Explorer and open the default Web page for the server.
8. Click on the "Edit with FrontPage" button on the browser tool bar.
9. After the login dialog opens, enter the server_name\administrator username and password.
10. Locate the newly created folder and right click.
11. Click on "Convert to Web" and click yes in response to the warning notice.
12. With the new web folder highlighted, click on the "Tools" menu.
13. Select "Server" from the menu, then "Permissions."
14. The login dialog opens, enter the server_name\administrator username and password.
15. Under administration section choose "change subweb permissions"
16. Make the choice for "use unique permissions for this web"
17. After you convert the web to have unique permissions then, select "Manage Users."
18. Check the box for the new user and click on "Add a User."
19. The "Add a User" page opens.
20. Select the "Add User or Group Name" button and enter the server_name/username.
21. Select the appropriate "User Role." We normally set "Advanced User."
22. Click on the "Add User" button.
23. Close all the open windows.

The IIS account has now been set up and permissions set. The individual will be able to access the account by opening the Web page in Internet Explorer, selecting the "Edit with FrontPage" button on the toolbar, and logging into the server using server_name\username and password.

ODBC DATABASE CONNECTIONS FOR IIS AND VB .NET

In Adv. VB we are actually using ADO.NET for connecting. The steps would involve having the prerequisite domain and SQL accounts. Then the user would have to add the server instance to the server explorer of Visual Studio. Not related to database connection, but users must be members of the SQL debuggers group on the local machine in order to run or compile any visual studio project.

The connection procedure for allowing a database-driven WWW account on the IIS and a database-driven VB .NET project to use a SQL Server database is the same. The procedure establishes a DSN connection for the database.

To establish a DNS connection:

1. Log on to the server as administrator.
2. Click on "Start" and open the "control Panel."
3. Open "Administrative Tools" on the control panel.
4. Open "Data Sources (ODBC)" on the administrative tools panel.
5. Under the "User DSN" tab, Check to make sure the "SQL server" driver is loaded. If not follow the procedure to add it.
6. Select the "System DSN" tab.
7. Click the "Add" button.
8. After the dialog opens, select "SQL Server" and click "finish."
9. When the "Create a New Data Source to SQL Server" dialog opens, enter the appropriate username in the "Name" box.
10. Open the "SQL Server" list and select the SQL Server to be used.
11. Click "next." Several additional dialog boxes will open but we normally accept the default settings. When the dialog procedures are completed, the new connection should be added to the list.
12. Close the windows and log off the server.

The DSN connection will allow VB .NET programmers to link to their SQL database and WWW programmers will be able to link ASP pages to their SQL database using the appropriate ASP script.

CONCLUSION

The above guidelines should not be considered the definitive answer for using Microsoft Server 2003 and Microsoft SQL Server 2000 for server-based instruction, but they should provide a good starting point that will help to avoid some of the frustrations we had to deal with in establishing necessary accounts and connections.

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