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Background

The Tool Management System (hereafter called TMS) is a client/server application based on Microsoft SQL Server 7.0 database server technology. Microsoft SQL Server 7.0 (hereafter called SQL7) is a database server that can be applied on every Microsoft 32-bit Windows operating system varying from Windows 95 to Windows XP/Server 2003 used by one or multiple users simultaneously. To increase the usage of client/server applications based on SQL7 even for small environments Microsoft developed a limited edition of the SQL7 full product called the Microsoft Database Engine (hereafter called MSDE). Microsoft Visual Studio developers are allowed to distribute and install MSDE royalty free along with their Microsoft Visual Studio developed applications (such as TMS). MSDE is tuned for use on a single workstation and small networks of up to about 5 workstations but is – compared to SQL7 – limited in database size and is offers none of management tools that the full product SQL7 includes. From an application's point of view both MSDE and SQL7 are identical so to TMS it doesn't matter whether MSDE or SQL7 runs its database. Late 2000 the successor of Microsoft SQL Server 7.0 was introduced called Microsoft SQL Server 2000 (or v8.0 hereafter called SQL8) and its lean MSDE counterpart called MSDE version 2 (MSDE2). TMS however does not rely on specific SQL8 functionality and SQL8 is compatible with version 7 databases and its security model has not changed. The following database implementation methods therefore apply to SQL7, SQL8 and MSDE1 and MSDE2 so where SQL Server 7 (SQL7) is mentioned you can also read SQL Server 2000, MSDE version 1 or MSDE version 2

TMS database implementation possibilities

SQL7 on a Windows 95/98/ME (win9x) workstation, LAN and stand-alone

Win9x is unfamiliar with *Windows NT integrated security* therefore SQL7 access control has to be handled by SQL7 itself called *mixed mode security*. For this kind of setup TMS uses a SQL7 user account to access all tables, views stored procedures etc... This user account and password is encrypted in the TMS application so that a TMS user can automatically access the required information without entering passwords. In case of a LAN connection the TMS database can be accessed from another workstation in a similar way.

Advantage: Usage of the database server architecture possible on Win9x systems.

Disadvantage: Security and access control is very low and absolutely not secure.
In case of LAN access; availability of the database and its performance is dependent of the TMS database workstation usage (powered on, intensive non-TMS use will affect performance).

SQL7 on Windows NT/2000/XP workstation, stand-alone

SQL7 can be set to *mixed mode security* creating and using the same access control situation as described on the 'SQL7 on Win9x' topic (not recommended). But of course on Windows NT/2000/XP *NT integrated security* can be applied. This enables you to link a local NT TMS user group to the TMS User role so that only specific users, validated by the operating system, can access the TMS database.

Advantage: User validation by Windows NT/2000 with the option to allow specific users to access the TMS database.

Disadvantage: A bit more work to install TMS this way compared to the *mixed mode* solution.
Again, availability of the database and its performance is dependent of the TMS database workstation

SQL7 on Windows NT/2000 workstation/XP, Windows NT LAN with local groups

In case of *NT security* database access control a local NT group is being linked to the TMS SQL User role. Then, in a LAN with domain setup, all allowed TMS user IDs from the accounts domain must be added to this local group. In a peer to peer LAN setup the user IDs of the workstation(s) that are allowed access to TMS must be listed in this local TMS group.

Advantage: User validation by Windows NT/2000 with user management by a local administrator.

Disadvantage: Local administrator required; availability of database and its performance is dependent on the TMS database workstation.

SQL7 on Windows NT/2000 workstation/XP, Windows NT LAN with domain groups

A NT group from the accounts domain is being linked to the TMS SQL User role of the SQL7 workstation installation. Users that are allowed to access TMS are added to this domain group.

Advantage: User validation by Windows NT/2000 domain and central user management.

Disadvantage: Extra task for the network administrator; availability database and its performance is still dependent on TMS database workstation with the SQL server database on it.

SQL7 on Windows NT/2000/2003 server in Windows NT LAN

Access of TMS SQL7 database by Win32 workstations can be based on either SQL7 security (mixed mode; see SQL7 on win9x (not recommended)) or NT security. When based on NT security the TMS User role is being linked to a TMS users group on the accounts domain (most likely the PDC).

Advantage: Access control of TMS fully controlled and managed with NT user groups.
SQL7 databases (TMS) always accessible and the up-time and performance is not dependent of the other (non TMS) use of one of the TMS workstations.

Disadvantage: Extra task for the network administrator.

MSDE versus SQL Server 7/2000; a short summary

- MSDE can be supplied royalty free with the Tool Management System – SQL Server required at least one server and one Client Access-license (costs approx. € 850,--)
- MSDE is optimized for 1 to 5 users in a small network – choose SQL Server in case more than 5 users will use the database server simultaneously.
- MSDE is limited to 1GB of data per database – SQL Server can store an unlimited (…) amount of data per database.
- MSDE is supplied without management software; facilities like backup, restore and user management are not part of MSDE. The Tool Management System does however have backup functionality build in and a separate restore program for administrators (developed by Object Software Ontwikkeling BV) is supplied with TMS. TMS uses the TMS user role (SQL security mode) or links the local NT group TMSUser to this role – the SQL Server product comes with a lot of management tools enabling an administrator to exactly create a database environment as is required by the company. For example: SQL Server can be setup so that backups are automatically run or data is replicated to other servers.