Activant Prophet 21
SQL Server Data Storage

SQL Server Administration suite: course 2 of 4
This class is designed for…

• Beginner SQL/Prophet 21 (CC) users who are responsible for SQL Administration as it relates to Prophet 21 (CC)
  • completed the first class in this suite, “Introduction to SQL Server 2000: Installation and Implementation”
Objectives

• Recognize the elements of a SQL Database
• Identify the purpose of and options in Database and Transaction logs
• Classify the two types of backup devices
• Introduce types of indexes
This course will NOT cover...

- Windows Navigation
- Installation of SQL Server
- SQL Backup and Restore Maintenance
- Data Manipulation
Data Storage

• Units
  • Page – 8k of data
  • Extent – 8 pages
## Data Storage

- **Installed databases**

<table>
<thead>
<tr>
<th>Database</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>Controlling database</td>
</tr>
<tr>
<td>Msdb</td>
<td>Stores info about tasks and alerts</td>
</tr>
<tr>
<td>Model</td>
<td>Snapshot image from which all new databases are created</td>
</tr>
<tr>
<td>Tempdb</td>
<td>Used as a workspace</td>
</tr>
<tr>
<td>NorthWind</td>
<td>Practice database</td>
</tr>
<tr>
<td>Pubs</td>
<td>Practice database</td>
</tr>
</tbody>
</table>
## Database Objects

<table>
<thead>
<tr>
<th>Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System tables</td>
<td>Contains info regarding objects in database</td>
</tr>
<tr>
<td>User tables</td>
<td>Structures that contain Prophet 21 (CC) data</td>
</tr>
<tr>
<td>Indexes</td>
<td>Structures used for the timely retrieval of data</td>
</tr>
<tr>
<td>View</td>
<td>View of single table or multiple tables</td>
</tr>
<tr>
<td>Trigger</td>
<td>Procedure fired by SQL Server in response to a data change</td>
</tr>
<tr>
<td>Stored Procedure</td>
<td>Defined and executed in database</td>
</tr>
</tbody>
</table>
Transaction Log

- Running record of all changes to a database
- aka Write-ahead log
- Checkpoint
- Ensures data integrity
### Files

<table>
<thead>
<tr>
<th><strong>Primary data file .mdf</strong></th>
<th>Contains system catalog as well as pointers to all other files in the database. Every database has ONE primary data file</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Log file .ldf</strong></td>
<td>Holds all transaction log info used for database recovery</td>
</tr>
<tr>
<td><strong>Secondary data file .ndf</strong></td>
<td>Any files other than the primary data file</td>
</tr>
</tbody>
</table>
Filegroups

- Primarily used in very large or highly-transacted databases where object separation yields performance advantages
Rules for Files and Filegroups

- Files or filegroups cannot be used by more than one database
- Files can only be a member of one filegroup
- Log files are never part of a filegroup
- Files fill proportionately across all files in a group
Database and Transaction Logs

• Server-end of Prophet 21 (CC) application is SQL Server database

• Every database has a transaction log
  • Transaction log tracks all data modification transactions
  • Makes automatic recovery possible
Creating a New Database

- **Specify**
  - location of data and transaction files
  - Initial size and growth parameters

- **Remember**
  - Database or transaction log runs out of space, no changes can be made – System Lock
  - New database is copy of model
New Database

- Enterprise Manager
- Expand server you want to create database in
- Right click Databases
- Choose New Database...
New Database
New Database

Database Properties -

<table>
<thead>
<tr>
<th>General</th>
<th>Data Files</th>
<th>Transaction Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Database:
- Status: (Unknown)
- Owner: (Unknown)
- Date created: (Unknown)
- Size: (Unknown)
- Space available: (Unknown)
- Number of users: (Unknown)

Backup:
- Last database backup: None
- Last transaction log backup: None

Maintenance:
- Maintenance plan: None
- Collation name: (Server default)
New Database – Data Files
New Database – Transaction Log
Database Properties
## General

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>WBT</td>
</tr>
<tr>
<td>Database</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>Normal</td>
</tr>
<tr>
<td>Owner</td>
<td>sa</td>
</tr>
<tr>
<td>Date created</td>
<td>9/2/2003 4:44:41 PM</td>
</tr>
<tr>
<td>Size</td>
<td>2.00 MB</td>
</tr>
<tr>
<td>Space available</td>
<td>1.13 MB</td>
</tr>
<tr>
<td>Number of users</td>
<td>1</td>
</tr>
<tr>
<td>Backup</td>
<td></td>
</tr>
<tr>
<td>Last database backup</td>
<td>None</td>
</tr>
<tr>
<td>Last transaction log backup</td>
<td>None</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
</tr>
<tr>
<td>Maintenance plan</td>
<td>None</td>
</tr>
<tr>
<td>Collation name</td>
<td></td>
</tr>
</tbody>
</table>
Filegroups

- NAME: "PRIMARY"
- Files: 1
- Read-Only: Off
- Default: On
Options

- Access
- Recovery
- Settings
  - ANSI NULL default
  - Recursive triggers
  - Auto update stats
  - Torn page detection
  - Auto close
  - Auto shrink
  - Auto create stats
  - Use quoted identifiers
- Compatibility
Permissions
Backup Devices

- Disk
  - Physical operating system file that contains a backup

- Tape
  - SQL Server pointed to the tape drive in the database server
Backup Database
Backup Database
Backup Database
Backup Database

SQL Server Backup - WBT

General Options

Options

Verifying the backup will read the entire backup and check for media integrity. Checking the identity and expiration of the media prevents accidental overwrites.

- Verify backup upon completion
- Eject tape after backup
- Remove inactive entries from transaction log
- Check media set name and backup set expiration

Media set name:

- Backup set will expire:
  - After: [InputField] days
  - On: [InputField] 9/9/2003

Media set labels

Initializing tape or disk media set erases the previous contents of the media and labels the media set with a name and description.

- Initialize and label media

Media set name:

Media set description:

[OK] [Cancel] [Help]
Indexes

- Structures used by SQL server for faster data extraction
- Stored in pages or extents
- Built around a column or columns in a table

- Types
  - Clustered
  - Non-clustered
Clustered Indexes
Non-Clustered Indexes
Summary

- Recognize the elements of a SQL Database
- Identify the purpose of and options in Database and Transaction logs
- Classify the two types of backup devices
- Introduce types of indexes
For More Information…

- Visit Activant on the web: distribution.activant.com
  - Browse Documentation
  - Search the Solutions database
  - View Educational Services’ training course offerings
    - SQL Server Administration suite
    - Microsoft SQL Server: 3-day classroom training
  - Submit a web case
- Email Professional Services Sales: pss@activant.com
SQL Server Management

• Performing backups
• Backup and restore statements
• Backup verification
• Managing database logins and permissions

SQL Server Administration suite: course 3 of 4
Basic Data Manipulation

- SQL statements
- Running stored procedures

SQL Server Administration suite: course 4 of 4