SQL Server Agent Alerts, Operators , Database Mail and Activity Monitor

SQL Server Agent Alerts

- An *alert* is an automatic response to a specific event.

- For example, an event can be a job that starts or system resources that reach a specific threshold.

- You define the conditions under which an alert occurs.

- An alert can respond to one of the following conditions:
    - SQL Server events
    - SQL Server performance conditions
    - Microsoft Windows Management Instrumentation (WMI) events on the computer where SQL Server Agent is running

- An alert can perform the following actions:
    - Notify one or more operators
    - Run a job

SQL Server Agent Alerts (contd…)

- Events are generated by SQL Server and entered into the Microsoft Windows application log.

- SQL Server Agent reads the application log and compares events written there to alerts that you have defined.

- When SQL Server Agent finds a match, it fires an alert, which is an automated response to an event.

- In addition to monitoring SQL Server events, SQL Server Agent can also monitor performance conditions and Windows Management Instrumentation (WMI) events.

- To define an alert, you specify:
    - The name of the alert.
    - The event or performance condition that triggers the alert.
    - The action that SQL Server Agent takes in response to the event or performance condition.

SQL Server Agent Operators

- An *operator* defines contact information for an individual responsible for the maintenance of one or more instances of SQL Server.

- In some enterprises, operator responsibilities are assigned to one individual.

- In enterprises with multiple servers, many individuals can share operator responsibilities.

- An operator doesn't contain security information, and doesn't define a security principal.

  - SQL Server can notify operators of alerts through...

  - E-mail

  - Pager (through e-mail)

  - net send

- To send notifications to operators by using e-mail or pagers, you must configure SQL Server Agent to use Database Mail.

- The primary attributes of an operator are:

  - Operator name

  - Contact information

Database Mail

- Database Mail is an enterprise solution for sending e-mail messages from the SQL Server Database Engine.

- Using Database Mail, your database applications can send e-mail messages to users. The messages can contain query results, and can also include files from any resource on your network.

- Benefits of using Database Mail

    - Reliability

    - Scalability

    - Security

    - Supportability

Database Mail Architecture

- Database Mail is designed on a queued architecture that uses service broker technologies.

- When users execute **sp_send_dbmail**, the stored procedure inserts an item into the mail queue and creates a record that contains the e-mail message.

- Inserting the new entry in the mail queue starts the external Database Mail process (DatabaseMail.exe).

- The external process reads the e-mail information and sends the e-mail message to the appropriate e-mail server or servers.

- The external process inserts an item in the Status queue for the outcome of the send operation.

- Inserting the new entry in the status queue starts an internal stored procedure that updates the status of the e-mail message.

- Besides storing the sent, or unsent, e-mail message, Database Mail also records any e-mail attachments in the system tables.

- Database Mail views provide the status of messages for troubleshooting, and stored procedures allow for administration of the Database Mail queue.
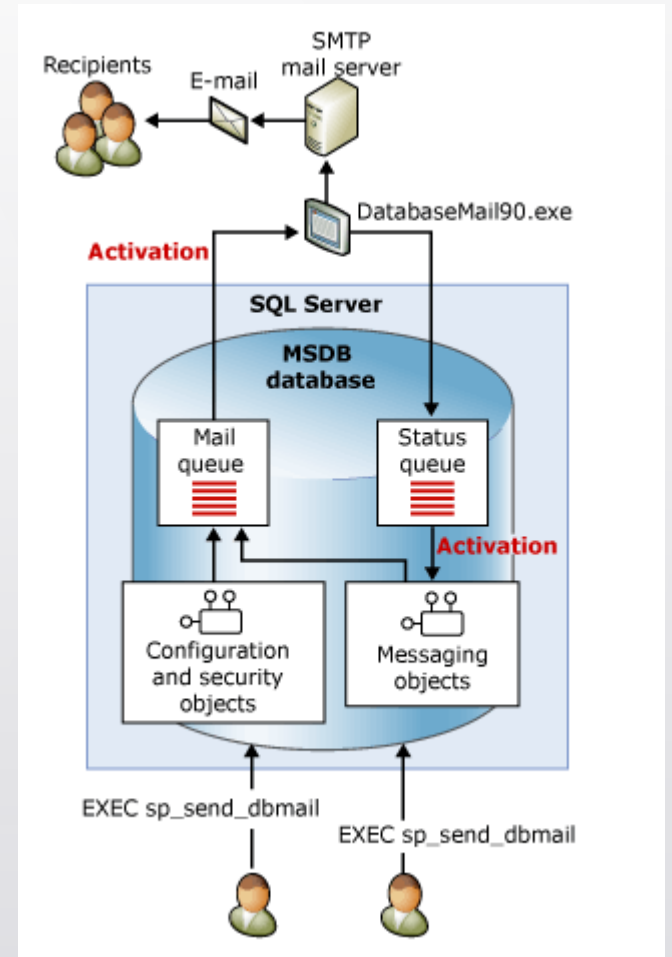
Database Mail Components

- Configuration and security components

  - Database Mail stores configuration and security information in the **msdb** database. Configuration and security objects create profiles and accounts used by Database Mail.

- Messaging components

  - The **msdb** database acts as the mail-host database that holds the messaging objects that Database Mail uses to send e-mail. These objects include the **sp_send_dbmail** stored procedure and the data structures that hold information about messages.

- Database Mail executable

  - The Database Mail executable is an external program that reads from a queue in the **msdb** database and sends messages to e-mail servers.

- Logging and auditing components

  - Database Mail records logging information in the **msdb** database and the Microsoft Windows application event log.

Configuring Agent to use Database Mail

- SQL Server Agent can be configured to use Database Mail.

- This is required for alert notifications and automatic notification when a job completes.

- Individual job steps within a job can also send e-mail without configuring SQL Server Agent to use Database Mail. For example, a Transact-SQL job step can use Database Mail to send the results of a query to a list of recipients.

- You can configure SQL Server Agent to send e-mail messages to predefined operators when:

  - An alert is triggered. Alerts can be configured to send e-mail notification of specific events that occur. For example, alerts can be configured to notify an operator of a particular database event or operating system condition that may need immediate action. For more information about configuring alerts.

  - A scheduled task, such as a database backup or replication event, succeeds or fails. For example, you can use SQL Server Agent Mail to notify operators if an error occurs during processing at the end of a month.

SQL Server Agent Job Activity Monitor

- The Job Activity Monitor allows you to view the **sysjobactivity** table by using SQL Server Management Studio.

- You can view all jobs on the server, or you can define filters to limit the number of jobs displayed. You can also sort the job information by clicking on a column heading in the **Agent Job Activity** grid.

- For example, when you select the **Last Run** column heading, you can view the jobs in the order that they were last run. Clicking the column heading again toggles the jobs in ascending and descending order based on their last run date.

- Using the Job Activity Monitor you can perform the following tasks:
    - Start and stop jobs.
    - View job properties.
    - View the history for a specific job.

- Refresh the information in the **Agent Job Activity** grid manually or set an automatic refresh interval by clicking **View refresh settings**.

- Use the Job Activity Monitor when you want to find out what jobs are scheduled to run, the last outcome of jobs that have run during the current session, and to find out which jobs are currently running or idle.

SQL Server Agent Job Activity Monitor (contd...)

- If the SQL Server Agent service fails unexpectedly, you can determine which jobs were in the middle of being executed by looking at the previous session in the Job Activity Monitor.

- You can also view job activity for the current session by using the stored procedure **sp_help_jobactivity**.