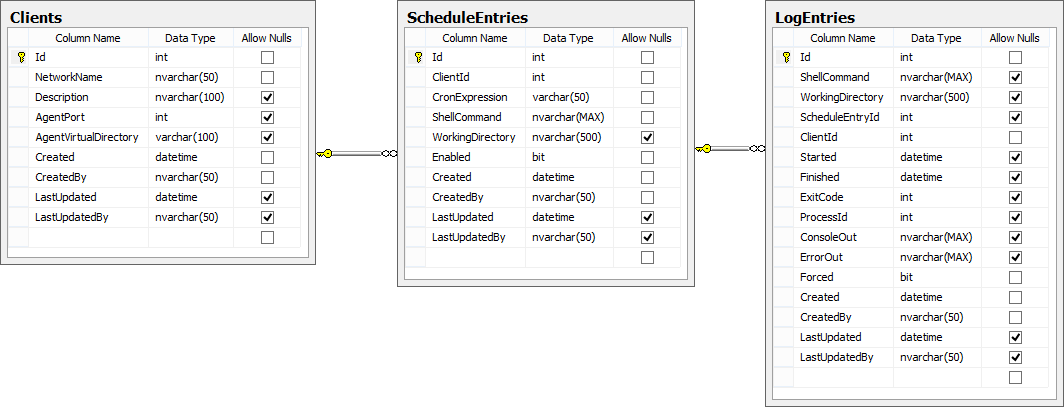
Scheduler

Design Document

Data Model View



Clients Table

The Clients table holds records of client machines in the network that the scheduler can contact and send shell commands for execution.

|  |  |
| --- | --- |
| Id | Table identity. Primary Key. Auto-incremental. |
| NetworkName | Name of the client machine in the network. Also known as host name. Typically a DNS or an IP address. |
| Description | Short informative text that helps the user identify the client machine. |
| AgentPort | Port number in this client machine used by the AgentService. Default value is 8733. |
| AgentVirtualDirectory | Part of the AgentService URI path. The virtual directory comes after the protocol and port, and before the service name. Must not include trailing slash. For example: http://localhost:8733/<AgentVirtualDirectory>/Scheduler/Agent.svc. |
| Created | Audit field. Date and time (UTC) when this record was created (inserted in the table). |
| CreatedBy | Audit field. Name of user that created this record. |
| LastUpdated | Audit field. Last date and time (UTC) when this record was changed. |
| LastUpdatedBy | Audit field. Name of user that made the last update to this record. |

ScheduleEntries Table

The ScheduleEntries table holds records of shell commands that are scheduled for execution at client machines.

|  |  |
| --- | --- |
| Id | Table identity. Primary key. Auto-incremental. |
| ClientId | Foreign key to Clients table. Id of the target machine of this schedule entry. |
| CronExpression | A cron expression that the scheduler that defines when this shell command will be executed. Cron expressions are strings consisting of five components separated by whitespace. Each string component defines scheduling criteria for a particular date/time part. Such parts are:   * Minute (of each hour) * Hour (of each the day) * Day (of each month) * Month (of each year) * Day of the week   Each component’s value can be a positive integer, or an asterisk. Asterisks represent any and all possible values in the date part domain, for example 0 to 59 for the minute component, 0 to 23 for the hour.  Weekdays range from 0 to 6, Sunday being 0, Monday 1 and so on.  At a given moment, the cron expression will be evaluated by the scheduler and will result in a positive match if all expression components match those of the current date and time.  For example: given system’s current date as Sunday, Jan 10, 2016 7:38 AM, the following cron expressions will be evaluated as follows:   |  |  |  | | --- | --- | --- | | \* \* \* \* \* | MATCH | Expression will match every time as all components are wildcards. This results in one execution every minute. | | 0 \* \* \* \* | IGNORE | Minute part does not match current time’s minute part. Expression will run once per hour, at minute zero (2:00 AM/PM, 3:00 AM/PM, etc.) | | \* 7 \* \* \* | MATCH | Expression is set up to run every minute, every day, from 7:00 AM to 7:59 AM. |   For more information about cron expressions, visit [the Wikipedia](https://en.wikipedia.org/wiki/Cron). |
| ShellCommand | The shell command to be executed by the client machine. The syntax will depend on the client machine’s operating system and the expression is executed exactly as typed. |
| WorkingDirectory | The directory in the client machine’s disk where this command will run at. |
| Enabled | A flag indicating whether this entry is to be evaluated by the scheduler for execution. |
| Created | Audit field. Date and time (UTC) when this record was created (inserted in the table). |
| CreatedBy | Audit field. Name of user that created this record. |
| LastUpdated | Audit field. Last date and time (UTC) when this record was changed. |
| LastUpdatedBy | Audit field. Name of user that made the last update to this record. |

LogEntries Table

The LogEntries table holds detailed records of all command executions.

|  |  |
| --- | --- |
| Id | Table identity. Primary Key. Auto-incremental. |
| ShellCommand | Same as ShellCommand column in ScheduleEntries table. |
| WorkingDirectory | Same as WorkingDirectory column in ScheduleEntries table. |
| ScheduleEntryId | A foreign key to the ScheduleEntries table that helps identify the schedule entry that generated this execution and log record. |
| ClientId | A foreign key to the Clients table. The Id of the client machine where this command execution took place. |
| Started | Date and time (UTC) when this command execution started. A NULL value indicates either that the command has been launched but has not yet started, or that execution failed to start at the client machine. |
| Finished | Date and time (UTC) when this command execution finished. A NULL value indicates either that the command has been launched but has not yet finished, or that execution failed to start at the client machine. |
| ExitCode | An integer value that the process returned to the operating system at the client machine as a result of the command execution. Typically, an exit code of 0 (zero) indicates success. |
| ProcessId | An integer value generated by the client operating system that identifies the process in the client machine that executed this command. |
| ConsoleOut | The information sent by the process to the standard output stream. This will normally show the output of the command execution. |
| ErrorOut | The information sent by the process to the standard error stream. |
| Forced | A flag indicating whether this was a manual execution (true / checked) or a scheduled execution (false / unchecked). |
| Created | Audit field. Date and time (UTC) when this record was created (inserted in the table). |
| CreatedBy | Audit field. Name of user that created this record. |
| LastUpdated | Audit field. Last date and time (UTC) when this record was changed. |
| LastUpdatedBy | Audit field. Name of user that made the last update to this record. |