VisualCron - Automation Tool For Windows

VisualCron is an advanced Job/Task scheduler for Windows.

About VisualCron

VisualCron is a tool/utility that runs other commands/programs/tools/utilities at predefined time(s), interval(s) or events. VisualCron is designed for Windows with the intention to simplify scheduling of Windows Tasks.

VisualCron is provided by the NetCart AB, an SMA Technologies company, a company that develops applications and web services. Don't hesitate to use contact web page for improvement suggestions, problem reports or business proposals.

VisualCron Documentation

This is the VisualCron documentation, build date 6/6/2024.

This document describes VisualCron 8.

See changes from VisualCron 4.x to 5.x here and 5.x to 6.x here and 6.x to 7.x here and 7.x to 8x here.

This documentation is provided as is, please check visualcron.com for latest documentation and support information. For a quick introduction in VisualCron, click on the top right flash Tutorial area in the VisualCron Web Site. The goal is to have a tool tip to every enter field, label and combo box in the VisualCron Client application. Hovering the mouse over a field is an easy way to get quick information and what to enter.

NOTE

If you Download help file from visualcron.com, don't forget to "unblock" the file before opening. Due to the Windows security system, the help chapters might show an "Illegal address" message indicating a wrong address entered in an internet browser, instead of the help text. Right-click on the downloaded file *Properties -> **General** -> Unblock (Windows XP)*.

VisualCron End-User License Agreement

Last updated: November 2, 2023

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Documentation

Documentation is provided online and by installation in PDF-format. Use Adobe Acrobat Reader to open the document. The Documentation can be changed anytime and therefore we highly recommend using the online documentation.

Updates of the online Documentation are generally done with a new software release; and as this is noted to our customers with a valid license and/or registered users, this also indicates that the Documentation may be updated. See the specific release note for areas that are subject to the update.

Trial period

Each VisualCron product has a trial period of thirty (30) days. The trial period gives you a chance to fully test the software free of charge. After the trial period has ended, you will no longer be able to control the VisualCron Server through the VisualCron Client.

If the trial period has ended, there is no way of using future upgrades without ordering the full license. See Upgrade/Updates below.

Support limitations

•The end-user must have an active Maintenance License / Subscription that is in good standing. •The active Maintenance / Subscription License is required on the Server in question that the support is related to. •The support is limited to the employees of the end-user. Any third party, i.e., external or third party support or developers must own at least one active Maintenance License in addition to the active Maintenance / Subscription License(s) for the end user.

Perpetual vs Subscription license

In 14th of February 2022 VisualCron moved from Perpetual license model to Subscription license model. Licenses purchased before this date remain perpetual with Support limitations described above. Using Cloud access features (mobile app, cloud servers functionality, etc.) requires an active Maintenance / Subscription. With the new subscription license, the renewal of the subscription is mandatory for Jobs to execute on the VisualCron Server.

Version - End of life support

Each version is supported for one (1) year after the release date. After that, upgrade is recommended to enable all the technical changes that occur throughout the year. Release dates can be found here.

Activation code

The activation key will lock the Software to the computer it is installed on. Once the activation key is used, the code is consumed. This means that you can only activate one time. Under limited circumstances, like the server has crashed, the activation key can be unlocked and consumed again. You may request to move a license to another server. These operations (reset/transfer/move) require a) that you have an active Maintenance account in good standing; and b) that the operation is manually approved by VisualCron staff.

Notwithstanding anything herein, we represent and warrant that we will not include any Trojan horses, worms, or other codes designed to disable the Software once installed pursuant to a full license.

Activation and deactivation of a license

The process of deactivating / moving a license requires that you have an active Maintenance account in good standing.

License Types and Limitations

Single server licenses - can be installed in and moved but may not be used on more than one server at the same time. This is installation purpose; may it be test, development, or production machine.

Site license - allows unlimited server installations within a single physical location (typically a data center).

Country license - allows unlimited server installations within a single country.

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For "unlimited" cloud installations, it is up to discussion depending on usage, expected quantity, and locations. The suggested solution may result in a specific agreement that results in two (2) or more Site licenses, a Country license, or a World license.

Upgrades/Updates

Updates with new functionality and bug fixes may be released at any time. A Subscription is necessary in order to upgrade to a newer version than was available at the time of initial purchase. The Subscription also gives you access to priority support.

Reporting of Bugs

While it is not our intent that you should find bugs, if you do find issues with our product, please report them to us on the contact web page.

Lifetime of VisualCron

Support Support is limited to the way the Software functions included in the VisualCron download were intended to be used. No products or commands, outside the VisualCron download, are supported. In addition, Support is limited to the product life cycle described in Upgrades/Updates.

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Requirements

Operating systems

- VisualCron is designed for Windows based computers
- VisualCron works on the following operating systems: Windows Server 2008 R2/2012/2016/2019/2022 and Windows 8/10/11
- VisualCron works on both 32-bit and 64-bit processors
- VisualCron requires .NET 4.8

Computer requirements (Server only)

- Operating system - recommended Windows operating system is Windows Server 2008 R2/2012/2016/2019/2019/2022
- Disk space - please reserve 1GB to 4GB depending on how much logging you need to store
- CPU - 2GHz or more, quad core or more
- Memory - 4GB or more

Computer requirements (Client only)

- Operating system - recommended Windows operating system is Windows 8/10/11
- Disk space - please reserve 1GB
- CPU - 2GHz or more, quad core or more
- Memory - 4GB or more
- Minimum screen resolution 1920*1080
- Computer requirements (Client and Server)

Operating system - recommended Windows operating system is Windows Server 2008 R2/2012/2016/2019/2022

- Disk space - please reserve 1GB to 4GB depending on how much logging you need to store
- CPU - 2GHz or more, quad core or more
- Memory - 4GB or more
- Minimum screen resolution 1920*1080

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11.1.4 [2024-05-02]

Features

Client: Server SLA and Server Health moved to Subscription tier (VCPCM-850)

Bug Fixes

Client: Main screen Grid filter improved (VCPCM-1055)

Client/Server: Excel Convert Task adjusted on processing date(time) values (VCPCM-1054)

Client/Server: File Sync Task Extend Debug logging added (VCPCM-1053)

Client: Job and Task Log screens UX improved (VCPCM-1031)

Client/Server: Object Replaces for User Variables processing has been improved (VCPCM-713)

Client/Server: Detailed error messages fully under control of extended debugging flag (VCPCM-1055)

11.1.1 [2024-03-12]

Features

Client/Server: Connections management is now available in WebClient (VCPCM-471)

Client/Server: Add the capability to save the email body to an RPA variable within the Outlook "Get Message" activity (VCPCM-833)

Client/Server: Add the ability to handle errors in Web Macro activities using the TryCatch activity (VCPCM-763)

Bug Fixes

Client/Server: Running job in asyncronous mode behavior improved (VCPCM-858)

Client/Server: HTTP triggers now present full certificate chain for HTTPS connections (VCPCM-812)

Client/Server: NRE fixed when flows are being processed (VCPCM-731)

Client/Server: "JSON Encode" Task was failing generating a valid array out of the text file (VCPCM-715)

Client/Server: Blank file with just the header line results an empty SQL query (VCPCM-689)

Client/Server: Archive task instances are now isolated by using different temporary folders (VCPCM-679)

Client/Server: WebClient refreshes whenever a Job gets updated on server (VCPCM-637)

Client/Server: Slack event trigger fixed when listening to a channel (VCPCM-589)

Client/Server: Fixed automatic addition of a user certificate with a private key to the Trusted Root Certificates store (VCPCM-837)

11.0.0 [2024-01-29]

Features

Client/Server: Cookies data stored in Robot Task (VCPCM-660)

Client/Server: Key press events added for web activities (VCPCM-655)

Client/Server: OCR Improvements and fixes regarding text recognition area, UI element behavior, noise processing and OCR activity designer (VCPCM-680)

Bug Fixes

Client/Server: PGKKeyrings operations improved when manipulating private keys (VCPCM-712)

Client: "Loop Variables" menu improved when working with the Loop activity designer (VCPCM-698)

Client/Server: Iteraction between ContinueLoop and Loop activities improved (VCPCM-691)

Client/Server: WebAPI now disregards certificates without private key (VCPCM-686)

Client/Server: "Job - List" Report does not check Theme when outputting to CSV format (VCPCM-656)

Client/Server: "Continue with next Task" is added back into flow (VCPCM-650)

Client/Server: Job variable evaluation fixed in Robot Task (VCPCM-648)

Client/Server: NullReferenceException fixed in SharePoint Download task (VCPCM-642)

Client/Server: WebMacro Task behavior fix, ensuring stable performance during the concurrent execution of multiple instances (VCPCM-641)

Server: WebAPI UTF8 support fixed for JSON endpoints (VCPCM-636)

Client/Server: Web Macro designer fixed when a task is disabled (VCPCM-618)

Client/Server: WebAPI Authentication improved on token management (VCPCM-588)

Client/Server: SyncFiles Task fixed when operating between two remote file shares (VCPCM-565)

Client/Server: Azure Connection empty file upload fixed behavior (VCPCM-402)

Client/Server: WebMacro Show Debugger crash fixed (VCPCM-335)

Client/Server: Transport security protocols updated for Azure Cloud connections (VCPCM-334)

10.0.3 [2023-12-14]

Features

NOTES

Client/Server: Eliminated licensing restrictions for the MFT feature (VCPCM-599)

Client/Server: Eliminated licensing restrictions for the RemoteExecute Task (VCPCM-583)

Client/Server: Added a new category "User input" for Robot Task (VCPCM-83)

Client/Server: Introduced new features for the "PDF - add header/footer" task, including angle of rotation (in degrees) and opacity settings, along with updated documentation (VCPCM-544)

WebClient: Implemented the Tools->Gantt chart feature (VCPCM-194)

Bug Fixes

Client/Server: Removed Debugger detection when using VisualCron .NET API in custom .NET projects (VCPCM-619)

Client/Server: Resolved the issue causing service crashes in certain cases when completing the last Task (VCPCM-95)

Client/Server: Implemented permission checks for Read and Add (or Edit for ServerSettings) permissions in the Export and Import forms. If certain settings are not available for export or import, a warning message is displayed to the user (VCPCM-79)

Client/Server: Updated the vulnerable "Apache log4net" file (log4net.dll) version 1.2.10.0 to address "CVE-2018-1285" security vulnerability, ensuring enhanced security on Windows Server 2019 (VCPCM-77)

Client/Server: Implemented error handling for the "No file(s) found" scenario in the following tasks: Cloud List items, WebDAV List items, and Sharepoint List files (VCPCM-71)

Client/Server: Resolved the issue of system crashes occurring when attempting to stop a job in the middle of executing a stored procedure in SQL Task (VCPCM-61)

Client/Server: Refined limitations for RobotTask operations during Trial period (VCPCM-586)

[BUGFIX] **Client/Server:** Enhanced ParseVariable() error reporting. Fixed FTP/SFTP/SCP reconnection process. Fixed event skipping in the File Trigger when the "Consolidate changes" timeout is specified (VCPCM-585)

Client/Server: Excessive locks removed when processing Task Started/Completed events (VCPCM-584)

Client/Server: Corrected handling of "List Variable" activities to ensure proper function when encountering empty items (VCPCM-576)

Client/Server: Updated job termination logic to ensure the status is set to "Failure" when a job is forcibly stopped, correcting the previous behavior where it could erroneously report "Success" (VCPCM-573)

Client/Server: Introduced functionality to regenerate a list variable in the "List Variable Load" activity (VCPCM-570)

Client/Server: Refined impersonation handling and enhanced logging details for Sync/Copy file(s) Tasks (VCPCM-565)

Client/Server: Updated SCP transfer tasks with an enhanced component for more reliable SCP connections (VCPCM-561)

Client/Server: End-User License Agreement (EULA) revised (VCPCM-560)

Client/Server: Resolved issue with auto-generation of default Task Flows in Import/Export function (VCPCM-559)

Client/Server: Added a column selection feature to the "Historic - transfers" tab in the Log section (VCPCM-558)

Client/Server: Implemented logging for user impersonation errors prior to task execution (VCPCM-553)

Client/Server: Corrected the output formatting in the function for retrieving values from a "List variable" result (VCPCM-548)

Client/Server: Resolved the issue where executing Robot Tasks outside of test mode used insufficient "VisualCron system group" permissions, hindering the creation of new variables (VCPCM-546)

Client/Server: Enhanced the deactivation process for Triggers with expiration settings to function correctly (VCPCM-545)

Client/Server: Resolved the issue where the VisualCron server was unable to apply a self-signed certificate for securing a WebAPI endpoint (VCPCM-542)

Client/Server: Enhanced server log precision, secured XML file saving with locks, and improved thread-safe authorization for Box Connections (VCPCM-541)

Client/Server: Corrected the functionality for accurately reporting the amount of available RAM in Server Monitor (VCPCM-524)

Client/Server: Introduced features for customizing text recognition area and added notifications with guidance on selecting an OCR area (VCPCM-520)

Client/Server: Resolved an issue where headless browser became unresponsive after completing a sequence of activities, by replacing asynchronous calls with synchronous ones based on investigation findings (VCPCM-517)

WebClient: Corrected the functionality of the `Install` and `Enable` buttons for IIS and IIS Express in the Server Settings form (VCPCM-504)

Client/Server: Improved documentation for RobotTask (VCPCM-501)

Client/Server: Robot Task: Implemented error handling settings, including the addition of a form and a dialog box for configuring these activity parameters (VCPCM-5)

Client/Server: Resolved an error encountered when interacting with a screenshot that was previously utilized by the Scan Document (local) task (VCPCM-498)

Client/Server: Addressed and eliminated memory leaks in WebMacro Tasks during extensive usage scenarios (VCPCM-487)

Client/Server: Enhanced SFTP client configuration by implementing automatic selection of all supported KEX, PK, EA, MAC algorithms instead of just the one last reported by server (VCPCM-477)

Client/Server: Restored synchronization block for SAP to manage connection opening and job creation more effectively, along with other miscellaneous fixes (VCPCM-476)

Client/Server: Corrected log messages related to the user login process for clarity and accuracy (VCPCM-469)

Client/Server: Added support for LDAP over SSL (LDAPS) in AD authentication, accommodating ports 636 and 3269 (VCPCM-451)

Client/Server: Implemented functionality in the login form to reset an invalid Active Directory (AD) token if required, ensuring proper authentication (VCPCM-41)

Client/Server: Enhanced locking mechanisms and exception handling for Job processes to prevent instances of hanging at 99% completion (VCPCM-385)

Client: Introduced the ability to reveal job folders not only via the settings form but also through manual adjustment of the splitter (VCPCM-378)

Client/Server: Reduced the occurrence of application crashes attributed to resource errors when operating through Citrix (VCPCM-372)

Client/Server: Resolved the issue of reading empty stored procedure results in the SQL Task (VCPCM-371)

Client/Server: Enhanced the SQL Task by adding additional debug logging when retrieving a list of stored procedures for improved debugging and error tracking (VCPCM-37)

Client/Server: Implemented processor affinity in the task to optimize the configuration of thread count for the 7-zip compressor, ensuring more accurate performance (VCPCM-368)

Client/Server: Enhanced the EventLog Trigger to make three attempts to initiate the watcher and generate a Client event in the event of a failure (VCPCM-350)

Client/Server: In the Sharepoint Upload file(s) Task, when uploading files with recursive subfolders, the corresponding subfolders are now automatically generated on the site (VCPCM-347)

Client/Server: Enhanced the XML validation process by improving the method for obtaining the targetNamespace from XSD files (VCPCM-341)

Client/Server: Fixed the calculation of the relative destination path in Cloud Upload files when the Source folder in the File filter ends with a path separator, ensuring proper functionality (VCPCM-34)

Client/Server: Resolved the Task form crash issue that occurred when selecting the Cloud Copy/move Task type on the Main settings tab (VCPCM-333)

Client/Server: Implemented auto-replacement of incorrect characters in the message ID when generating the save path in the Email function (VCPCM-284)

Client/Server: Corrected the behavior where "User name not found" was being written to the internal cache when a user was not found (VCPCM-182)

Client/Server: Implemented changes that involve checking the IsMSA flag when connecting to the remote ManagementScope and logging unhandled exceptions in Task`s Debugging mode for improved debugging and error handling (VCPCM-162)

Client/Server: Enhanced the configuration of Popups by adding the capability to save previous input data to the cache (VCPCM-155)

Client/Server: Removed duplicate and outdated topics from the CHM help documentation (VCPCM-145)

Client/Server: Implemented automatic decoding of TNEF (winmail.dat) attachments in the Email functions (VCPCM-123)

Client/Server: Added missing locks when accessing the collection of Jobs (VCPCM-602)

Client/Server: Correct DbConnection disposal after testing connection settings or retrieving SP list and params (VCPCM-526)

10.0.2 [2023-09-27]

NOTES

- This version contains new license changes. Below is a list of changes. Please contact sales@visualcron.com for further questions
- The following features require an active maintenance: Reports, ROI, Server monitor, Server sync, Windows Failover Cluster, Job Report Task
- The following features require a license of Subscription type: MFT, SLA, Health, Robot Task
- The following features require a license of unlimited type (Site or greater): Remote Execute Task

Features

Client/Server: New Report->Server: Overview (VCP-312)

Client/Server: New Report->Server: SLA (VCP-242,VCP-402,VCP-403)

Client/Server: New Report->Server: Computer (VCP-295)

Client/Server: Added SLA-stats (uptime, latency and outages) (VCP-366,VCP-355,VCP-403)

Client/Server: Logs->New Transfer log table (VCPCM-445)

Client/Server: New Report->Logs: Transfer log (VCPCM-158, VCPCM-443)

Client: Various UI updates (VCP-354,VCP-326,VCP-389)

WebClient: Various UI updates (VCP-351,VCP-352)

Server: Server events->Logging internal events in the EventLogs table (VCP-359)

Client/Server: Robot Task->Added Load list activity (VCP-397)

Client/Server: Robot Task->Added ability to save Excel file in CSV format (VCP-392)

Client/Server: Web macro Task->Added ability to use local URLs (VCP-377)

Client/Server: Reports->Job list CSV output, Jobs and Groups filters, Job and Task column selection (VCP-322,VCP-391,VCP-405)

Client/Server: Cloud transfer Tasks->Proxy settings can be configured for Azure Block Blob connection type (VCP-135)

Bug Fixes

Client: SFTP component initialization (VCPCM-449)

Client: Server: Export Settings error when lacking Permissions (VCPCM-352)

Client: Server: WebMacro->Not saving "Allow to ignore the element" (VCPCM-356)

Client: Server: WebMacro->Table Extraction Wizard fixes (VCPCM-444)

Client: Server: WebMacro->TakeScreenshot Page mode (VCPCM-442)

Client: Server: Robot Task->Mapping mode (VCPCM-92)

Client: Client: Scan documents(local) bugfixes (VCPCM-450,VCPCM-452)

Client: Server: Email move Task folder bug fixed (VCP-328)

Client: Server: Email Get messages Task->Removing sensitive information from MailClient event log messages (VCPCM-43)

Client: Server: Execute script->Problem using multiple arguments in combination with quotes (VCP-314)

Client: Server: Robot Task->Fixed related actions issue (VCP-220)

Client: Server: Robot Task->Save record issue (VCP-300)

Client: Server: SFTP CreateFolder command fix (VCP-133)

Client: Server: Enforce HTTPS for amazon SNS (VCP-292)

Client: WebClient: AD authentication fix (VCP-344)

Client: Client/Server: AD authentication-> LDAP over SSL (LDAPS) support added for ports 636, 3269 (VCPCM-451)

Client: Client/Server: GroupOverride not working in connections fix (VCP-387)

Client: Client/Server: Reports->Various UI feedback (VCP-351,VCP-353,VCP-409)

Client: Client/Server: Reports->Report run "forever" issue (VCP-327)

Client: Client/Server: Job->Result report date filter issue (VCP-231)

Client: Client: Email Move Task->Fixed issue with destination folder (VCP-398,VCP-328)

Client: Client/Server: Reports Task->Fixed Credential issue (VCP-357)

Client: WebClient: Fixed issue opening Server settings (VCP-368)

Client: Client/Server: Robot Task->Added missing file (fix for web macro) (VCP-408)

Client: Client/Server: Robot Task->Added missing icons (VCP-407)

Client: Client/Server: Robot Task->Fix for possible AccessViolationException (VCP-282)

Client: Client/Server: DB logging->Retry fixes (VCP-304)

Client: Client/Server: DB logging->Access of multiple VC Servers under different users to the same Oracle database (VCPCM-80)

Client: Client/Server: DB logging->Added re-impersonation attempt after first connection failure in DBLogger (VCPCM-360)

Client: Client/Server: SFTP SSH_MA_NONE may lead to NullReferenceException (VCP-411)

Client: Server: Web macro->Show steps issue (VCP-290)

Client: Client/Server: Web macro Task->Fixed video output issue (VCP-416)

Client: Client/Server: Web macro Task->Optimized playback performance 1000% (VCP-376)

Client: Client/Server: Web macro Task->Fixed destroyed webview issue (VCP-373)

Client: Client/Server: Flow chart->Various fixes (VCP-421, VCP-422, VCP-460, VCPCM-338)

Client: Client/Server: Reports->Better form initialization; optimized Server log report generator (VCP-409)

Client: Client: Main grid->Fixed an issue with Job folder rows filtering outside of GUI thread (VCPCM-354)

10.0.1 [2023-05-08]

Features

Client/Server: New Report Task to automate any of the existing reports (VCP-142) **WebClient:** Added Web service Task to web client (VCP-39)

Client/Server: Create/Set-cell Excel Task->Added new cell type Formula (VCP-179)

Client/Server: AMQP Connection->Certificate authentication mode was added (VCP-149)

Client/Server: Triggers->New PowerShell Trigger was added (VCP-53)

Client/Server: Triggers->New .NET code execute Trigger was added (VCP-55)

Client/Server: Triggers->New Variable Trigger was added (VCP-157)

Client/Server: Health->Default Health conditions updated to include both VC and OS CPU (VCP-125)

Client/Server: Robot Task->Added Outlook application awareness (VCP-116)

Client/Server: Variables->Added folder path Variabels (VCP-259)

Client/Server: SFTP->Implemented better auto detect of encryption algorithms (VCP-260,VCP-270)

Bug Fixes

WebClient: Updated version of jQuery for security (VCP-61)

WebClient: Fixed issue with Popup Task (VCP-175)

Server: WebAPI->Fixed background checking for expired user tokens (VCP-184)

Client: Create/Set-cell Excel Task->Fixed renumbering of columns when items are deleted (VCP-177)

Client: NullReferenceException on Server Health window (VCP-229)

Client/Server: ExecuteScript task defaults to ScriptText (VCP-238)

Client/Server: Desktop Trigger->Fixed various issues (VCP-163)

Client/Server: Robot Task->Fixed various issues (VCP-43,VCP-112,VCP-150,VCP-151)

Client/Server: Robot Task->Added error handling (VCP-113)

Client/Server: Google Drive->Fixed upload issue (VCP-48)

Client/Server: Exchange EWS refresh Token for Email tasks (VCP-249)

Server: Cloud File Trigger error when updating statistics (VCP-222)

Server: Box file download issue (VCP-277)

Server: List folders Task->Fixed issue exception throwed using some wildcards (VCP-148)

Server: Jobs->Fixed issue with file getting larged because of statistics stored (VCP-83)

Client: Scan document Task->Fixed admin permission requirements issue (VCP-275)

Client: Web macro Task->Fixed admin permission requirements issue (VCP-283)

Client: Main grid->Fixed progress update issue (VCP-285)

Server: HTTP Rest Trigger status code evaluation (VCP-289)

Server: Database copy->SqlCeCommand timeout error (VCP-287)

10.0.0 [2023-02-20]

Features

Client/Server: Reports->Introducing Reports - advanced inside reports (VC-2910)

Client: Flow chart->Added new flow chart (VC-2645)

Client/Server: Tasks->New TCP Task was added (VCP-44)

Client/Server: Triggers->New TCP Trigger was added (VCP-44)

Server: Directory created variable for MFT (VCP-82)

Client/Server: Execute Task->Added process queue functionality (VCP-159)

Client/Server: File Trigger->Added consolidate changes option (VCP-162)

Client/Server: Variables->Added number format Variables (VCP-170)

Client/Server: RefreshToken stored encrypted (VCP-22)

Bug Fixes

Server: Triggers->Fixed possible thread issue causing crash at high loads (VCP-73) **Server:** Web client not updating/saving credentials (VCP-58)

Server: WebDAV download files task w/Variable in Path (VCP-27)

Server: HTTP Delete Method Issue (VCP-19)

Server: SqlConnection using service account works in SQL Trigger (VCP-23)

Server: Web client fix for crash when creating a job (VCP-72)

Server: Exchange EWS Certificate issue (VCP-52)

Server: Mail trigger for EWS: improved token expiry handlers (VCP-120,VCP-76)

Server: Mail trigger for EWS: custom folder setup minor bugfix (VCP-77)

Server: Mail trigger for EWS: minor bugfix when forwarding enabled (VCP-77)

Server: Mail trigger for EWS: AD users and groups permission check minor improvement (VCP-99)

Server: SSRS issue with Excel formatting (VCP-98)

Client: AddCredentials NRE fix (VCP-126)

Server: AD group integration/cache issue (VCP-99)

Server: Scan Document Task->Fixed potential crash (VCP-26)

Server: Bug with HTTPs webapi port (VCP-96)

Server: Slack Trigger bugfix (VCP-47)

Server: Server events->Fixed potential memory leak (VCP-155)

Client: SFTP connection editor for PublicKey authentication fix (VCP-161)

Server: JSON Decode Task empty value fix (VCP-49)

Server: WebAPI parameters fix (VCP-66)

Server: Web macro / Robot Edit Task exception fix (VCP-94)

Server: VCCommand missing file fix (VCP-136)

Server: SFTP list folders fix (VCP-32)

Server: List folder Task->Fixed wild card issue (VCP-148)

Server: Jobs definitions file grow issue (VCP-83)

Client: Main grid->Fixed filter re-sort issue after reconnecting (VCP-164)

Client: Execute/Kill Task (and more)->Fixed process selection issue (VCP-169)

Server: File Trigger->Fixed potential impersonation context leak to Job from Trigger (VCP-173)

Server: Triggers->Fixed potential Trigger result loss during execution (VCP-174)

Client: Script Execute Task->Fixed validation error that prevent save of option "Script text" (VCP-178)

Client: Local documentation updated (VCP-36,VCP-42)

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Get VisualCron

You can get your copy of VisualCron from several sites on the Internet. To be sure to get the latest version, we encourage you to download VisualCron from this web page.

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System Requirements »

System Requirements

VisualCron is designed for Windows based computers and runs on the following operating systems:

- Windows 2008
- Windows 2012 R2
- Windows 2016
- Windows 2019
- Windows 7
- Windows 8
- Windows 10

Other requirements:

- .NET Framework, version 4.8 or above

Requirements for other software:

- PDF reader (e.g. Adobe Reader), required for reading of some documents

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Download, Install, Upgrade, and Uninstall

Download

VisualCron 9 utilizes functions and features in the .NET Framework 4.8. The .NET runtime, typically Version 4.8 Redistributable Package, can be downloaded from Microsoft.

Download the latest VisualCron version from VisualCron. Download older versions here.

To create "silent package" (non exe package) follow these steps:

1. download old version here
2. install 7-Zip File Manager
3. right click on exe and choose extract to folder

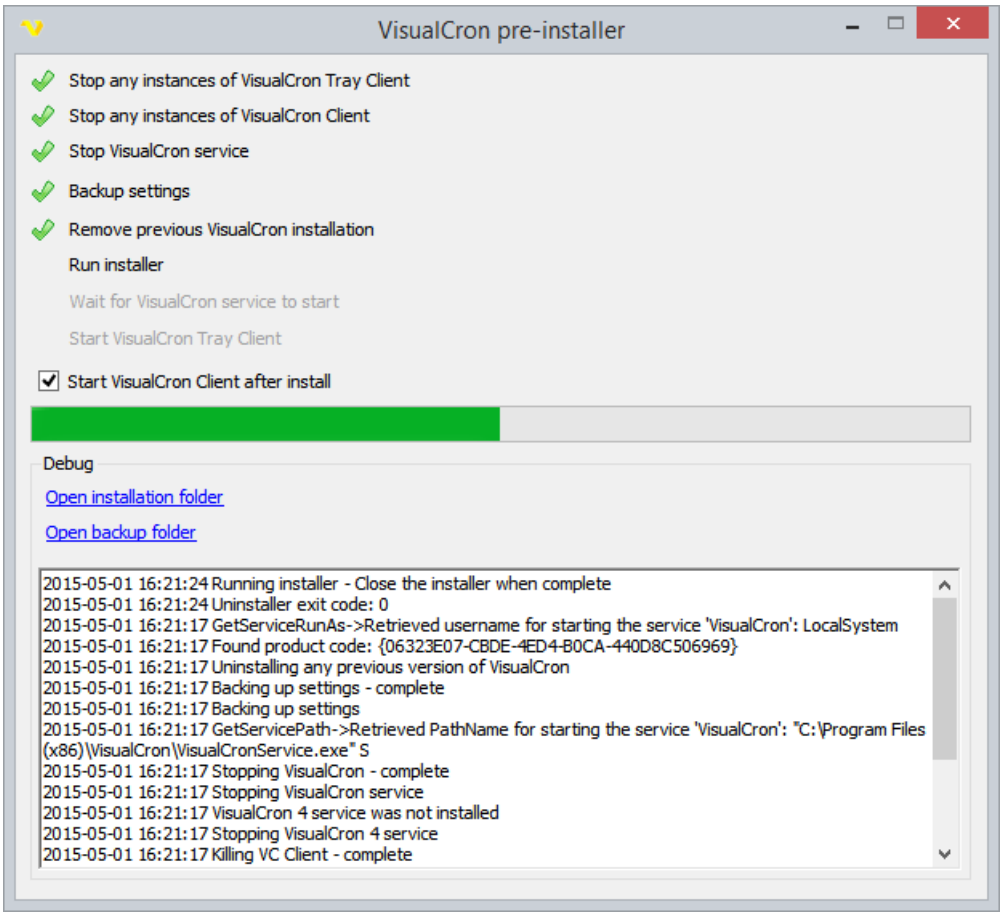
Backup

Always make a backup of existing settings to a safe location before upgrading. This way you can rollback to any previous version if needed. You backup existing settings by connecting with Client to Server. Choose **File > Import/Export > Export settings** tab.

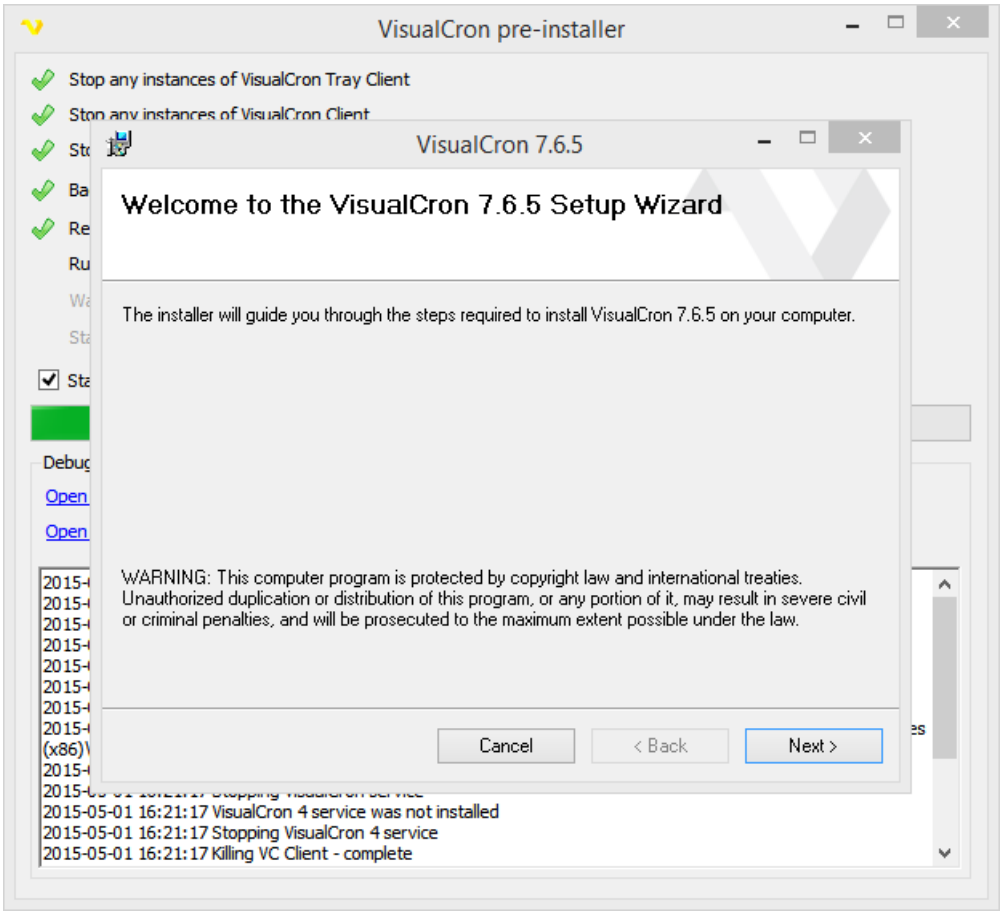
Install/Upgrade

The below steps cover how to install VisualCron. Please note that the installer uninstalls the current installation. No manual uninstall needed first.

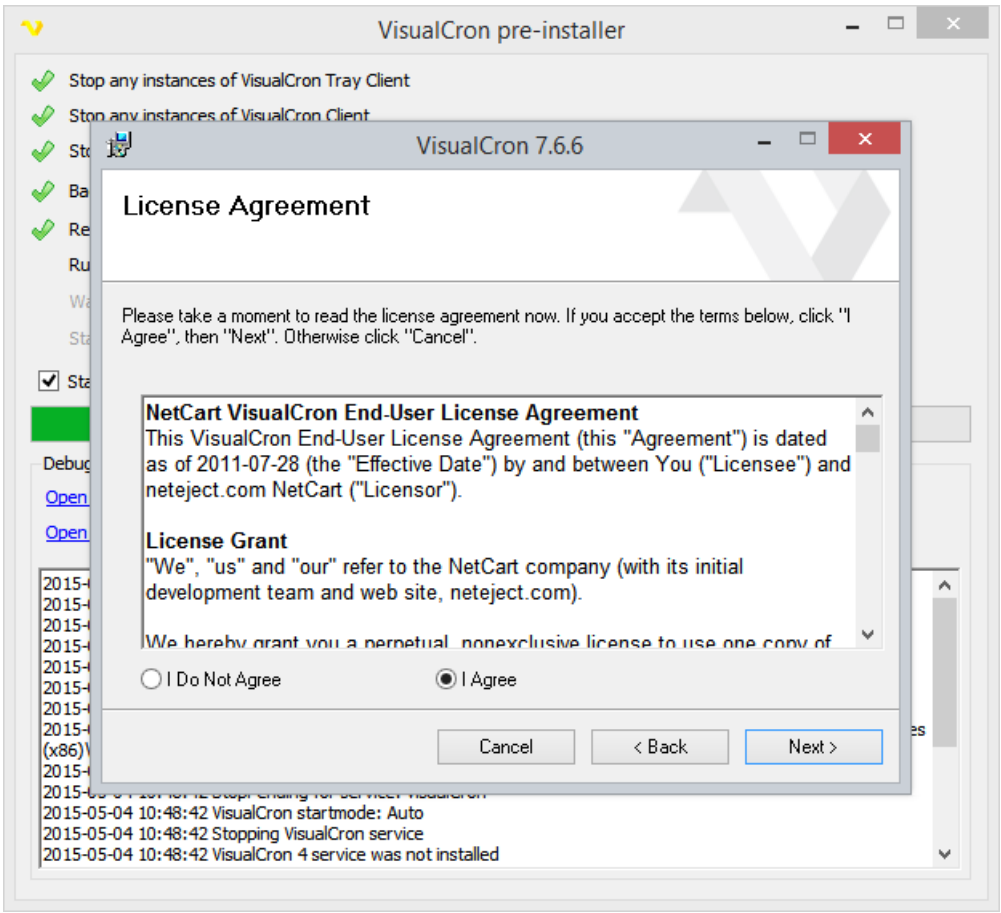
1.Double click on the VisualCron.exe install executable and the below window will appear. This is the pre-installer that is preparing installation files for the msi package - for example, stopping existing applications and uninstalling VisualCron.



2. When the pre-installer is complete it starts the msi-package

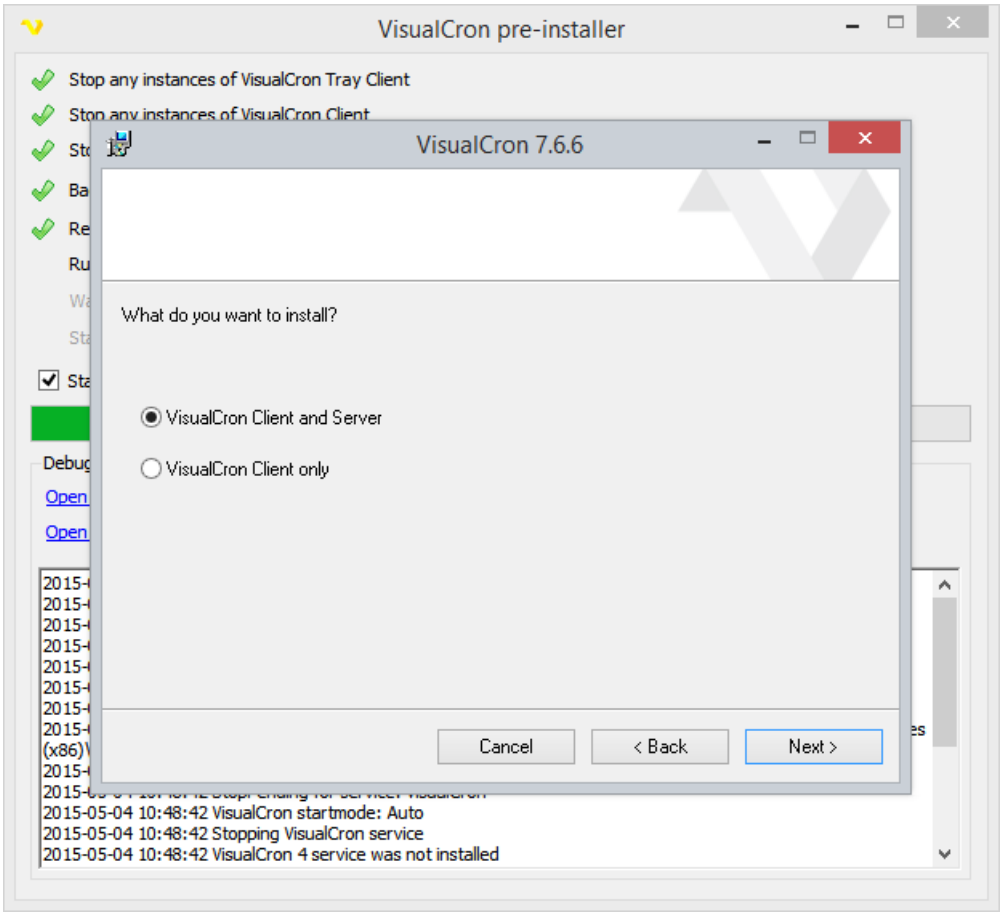


3. Select I Agree in the License Agreement page and click Next

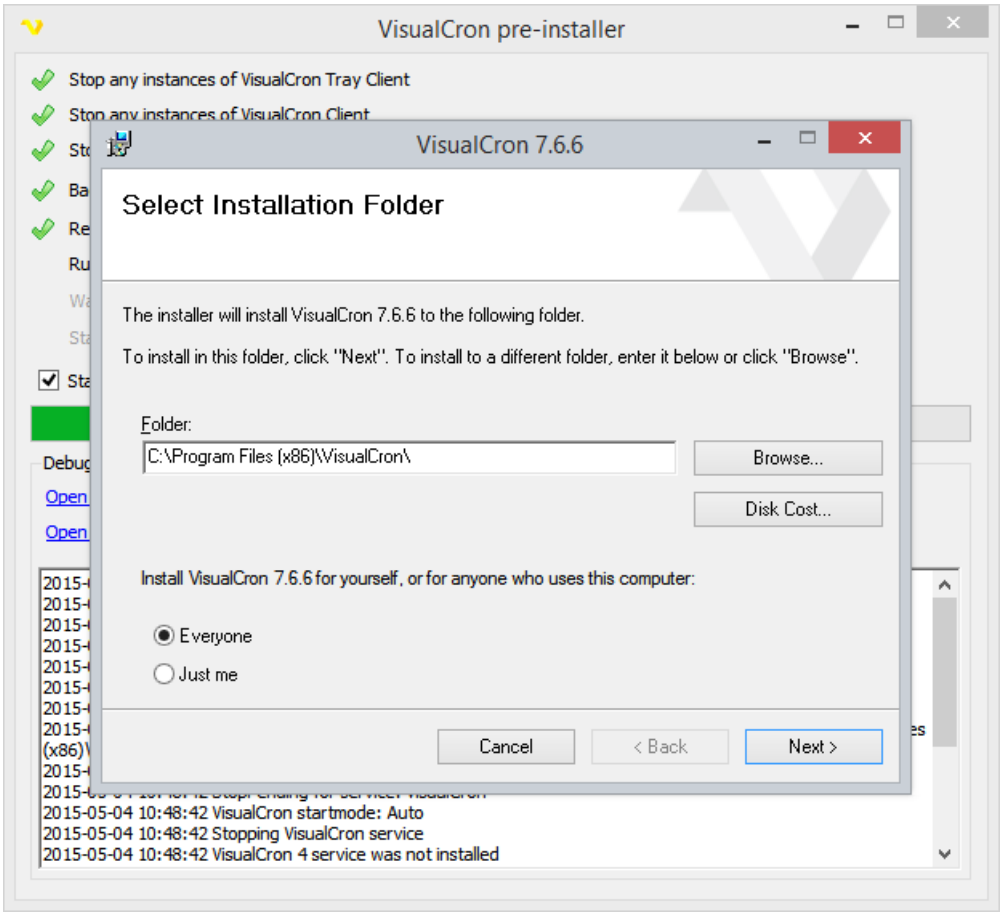


4. The VisualCron installation executable contains installation files both for the VisualCron Client and the Server. You may choose to install both by selecting the first item or just the Client by selecting the second item. When installing just the client the service for the Server will still be installed but "Disabled". If you later need to run the Server on this computer, you can

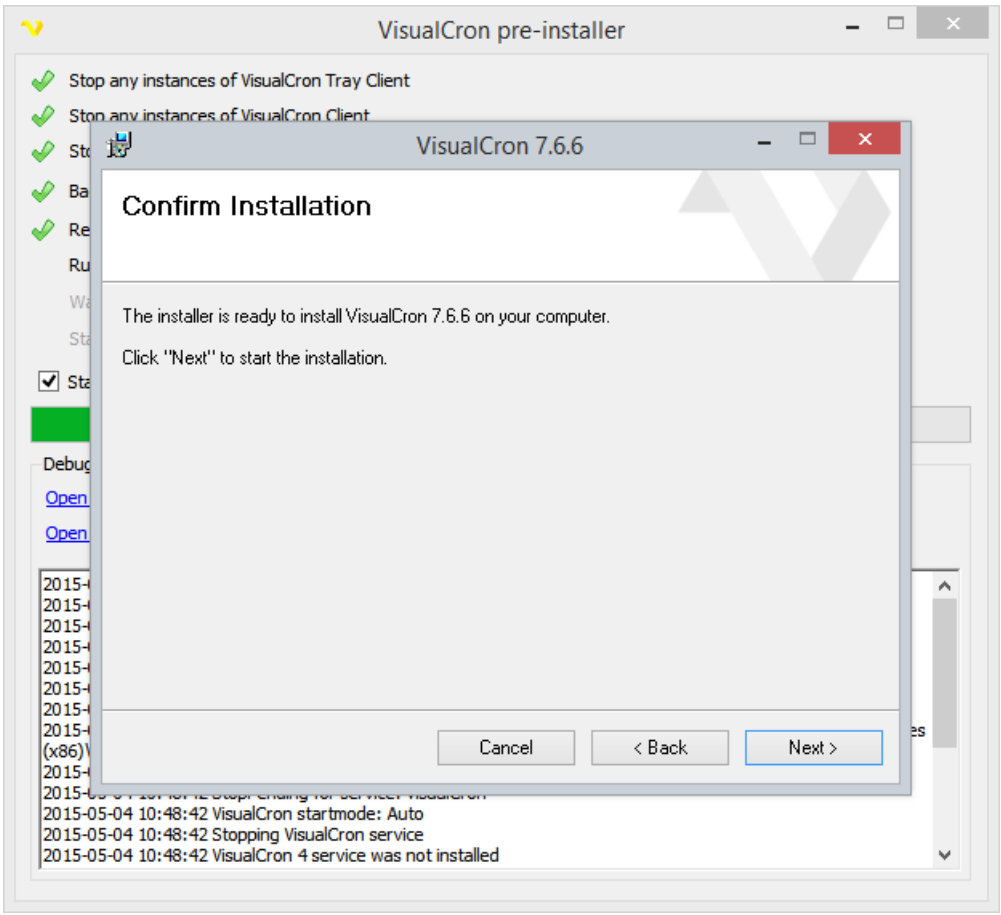
change the service to "Automatic" in Control Panel > Administrative tools > Services > VisualCron and then mark and "Start" the service. Click Next to continue.



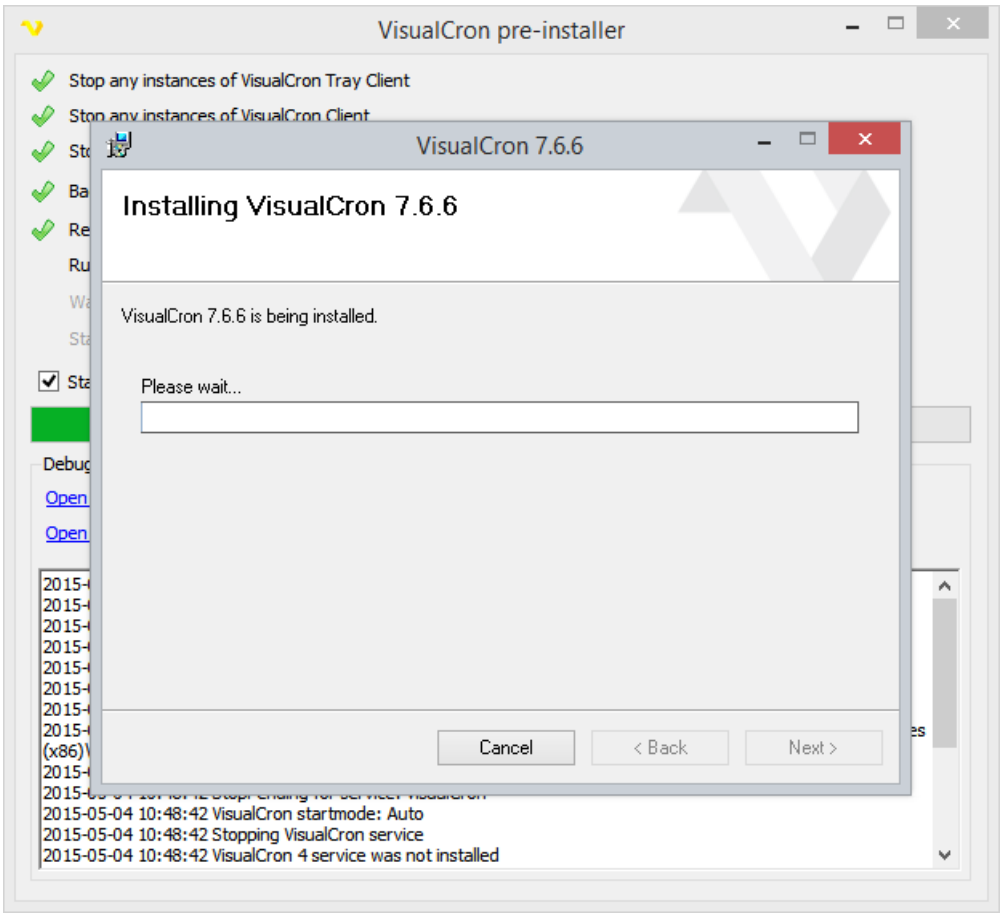
5. Now it is time to choose the installation folder. If you have no objections of the suggested choice just leave it as it is. Click Next to continue.



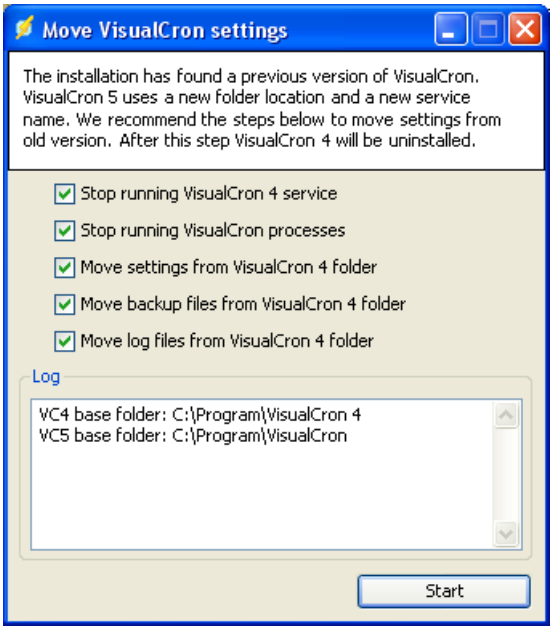
6. This window shows that VisualCron is ready to copy the files and perform the installation. Click *Next* to continue.

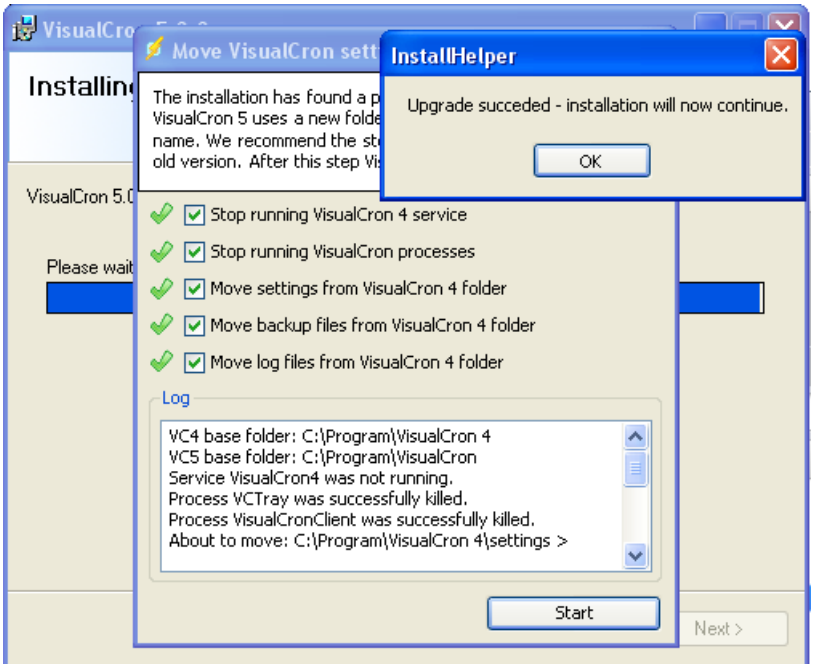


7. The installation has been started and the progress bar shows the current status. Please be patient. The installation may take some minutes depending on the speed of your computer.

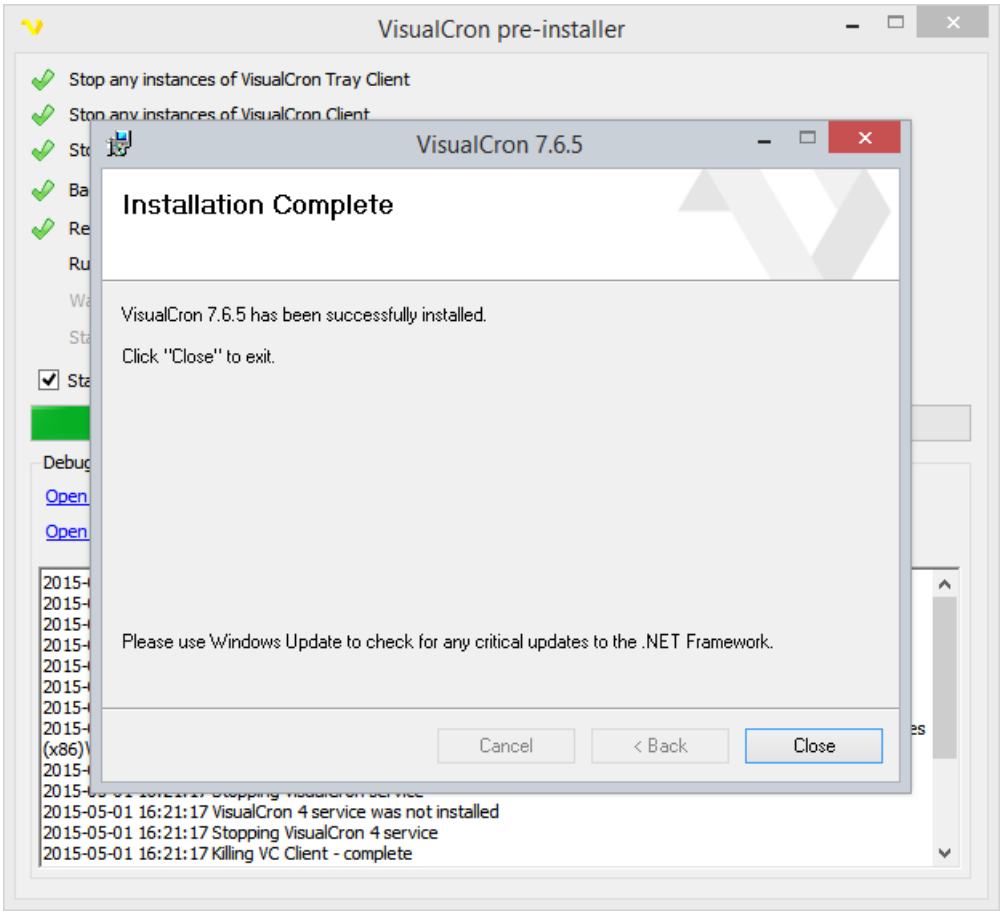


8. The below window will only appear if you have a previous VisualCron installation. VisualCron 5 will be installed in the new %PROGRAMFILES%\VisualCron\ folder and the VisualCron service will be started with the "VisualCron" name. Click Start to proceed with the listed upgrade steps.

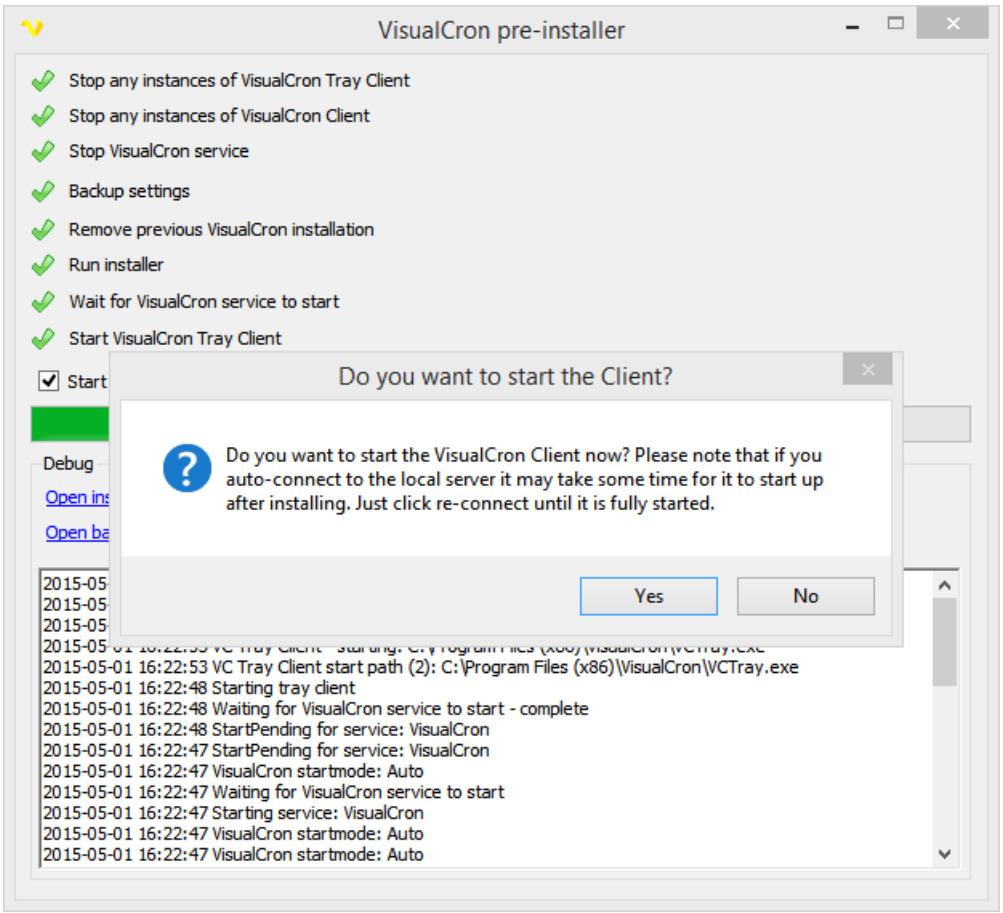




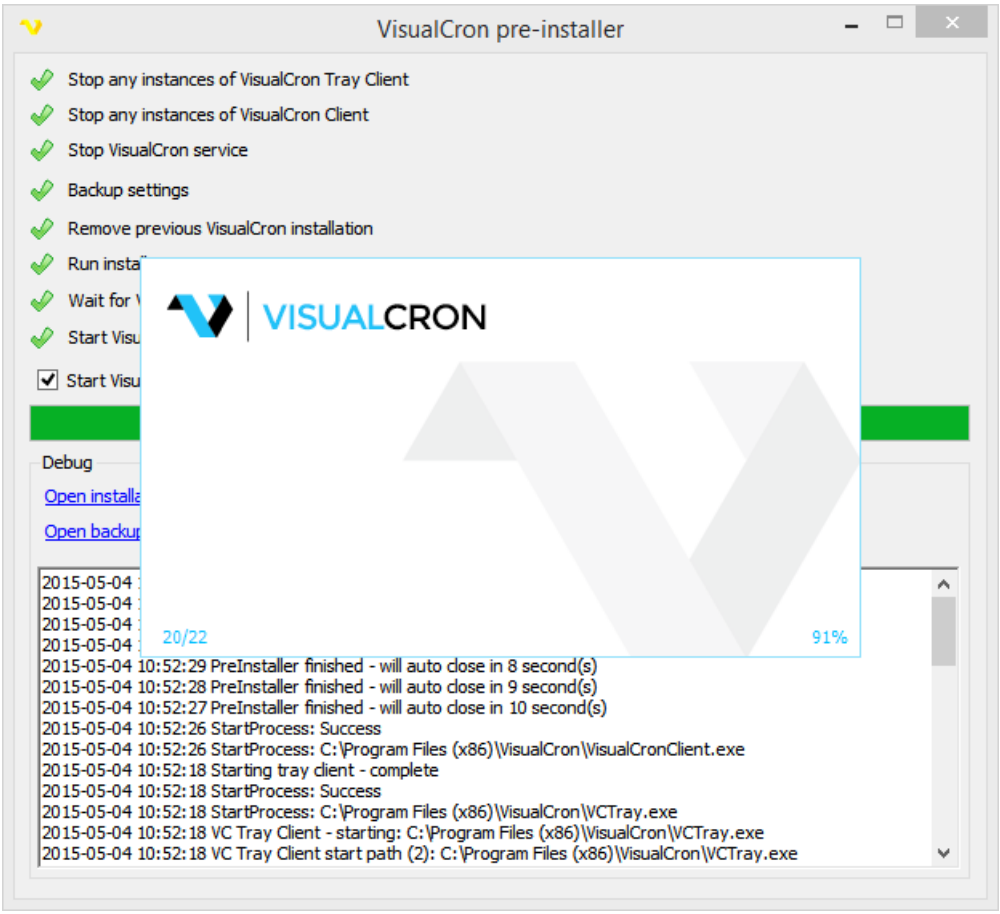
9. The install is now finished. If you have a previous VisualCron installation, it will be uninstalled in the background. Click *Close* to continue.



10. When you have closed the msi-installtion the pre-installer asks you if you want to start the VisualCron Client. Click Yes to start it.



11. The Client is starting. If you get a connection error at startup then wait 60 seconds and click Yes to reconnect. There is a lot of configuration and loading during startup which might affect first time startup time for the Server.



Firewall

If you have some kind of firewall activated, this application might require user interaction during installation and the initial start of VisualCron. A firewall should detect both that VisualCron is trying to act as a server and that VisualCron is trying to access internet. Normally, you shall respond with something like "allow all connections on all ports" for VisualCron initiated requests.

Upgrade

If you already have VisualCron installed, you will get an upgrade message when trying to install. This message informs about the current version and what version you are about to install. Click OK to this message to upgrade.

Uninstall/Remove

VisualCron can be uninstalled by opening the Control Panel -> Add/Remove programs. Browse down to "VisualCron x.x.x", select and click on the Remove button. If you can't find the "VisualCron 5.x.x" entry in Add/Remove programs list, you may have to run the VisualCron installation program again which will open a window with a remove option.

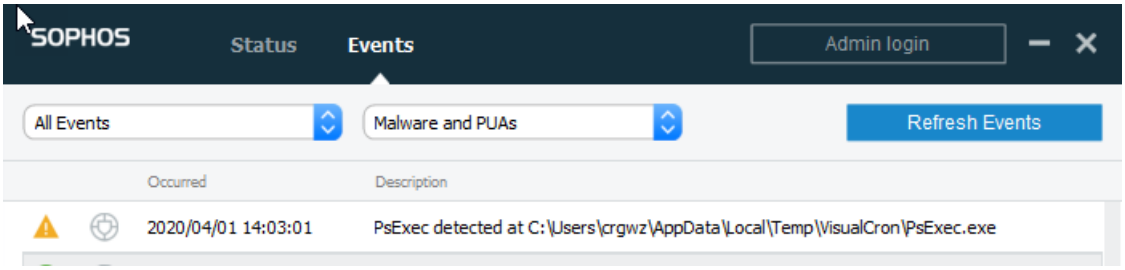
Installation troubleshooting

MSI errors

1. Download the silent package from the VisualCron download page.
2. Extract it
3. Open command prompt
4. Write something like to log the installation file: msiexec /i "C:\MyPackage\Example.msi" /L*V "C:\log\example.log"
5. Send the log file to support@visualcron.com

Antivirus and problems with psexec.exe

Your antivirus may block installation of a file called psexec.exe included in our package:



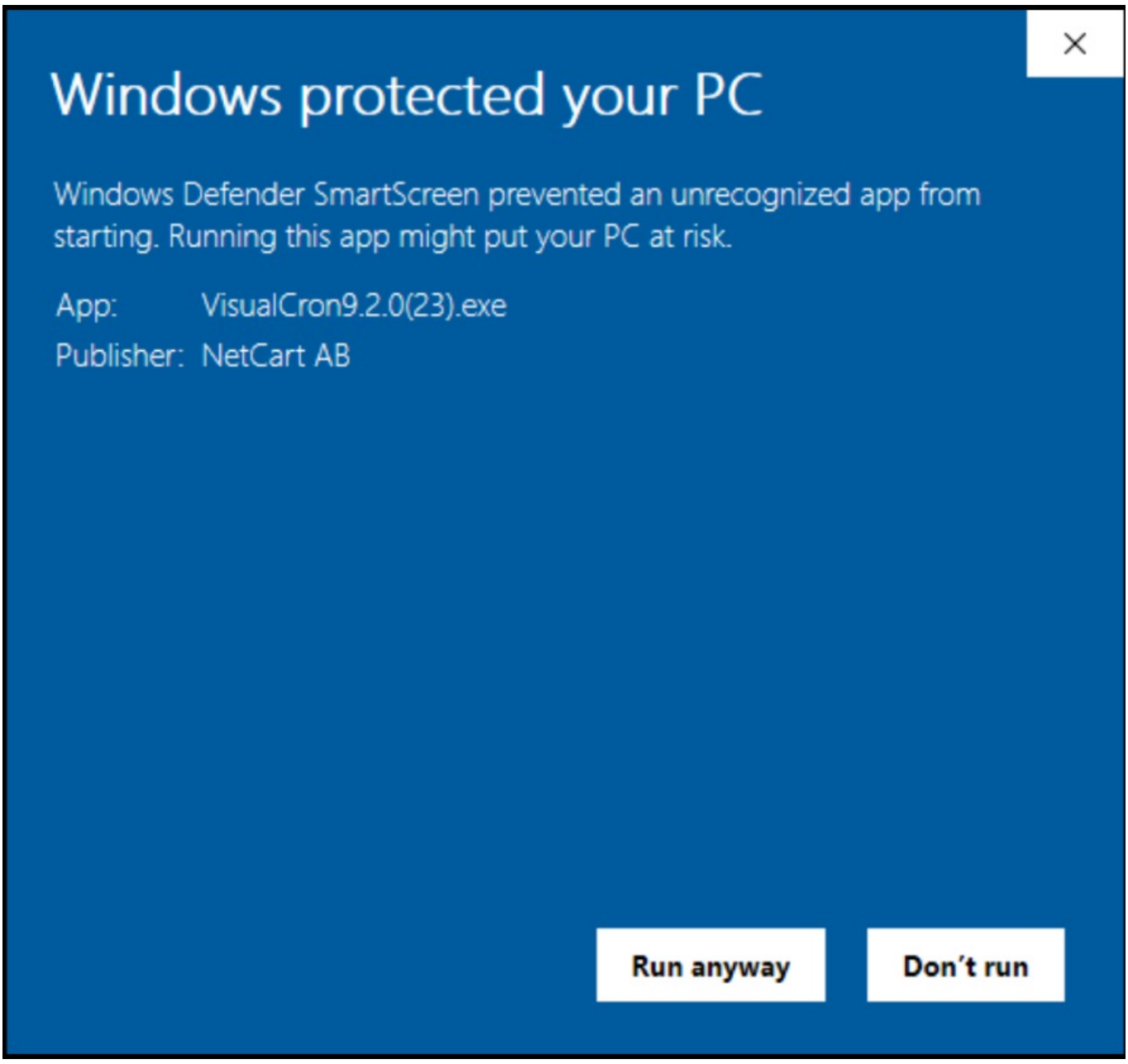
PsExec is a tool from Microsoft used for remote execution

https://docs.microsoft.com/en-us/sysinternals/downloads/psexec.

We use it for optional remote VisualCron installation (from the Client). You can safely allow this file for installation.

Windows Defender SmartScreen

Sometimes our application need to validate and gain reputation (when new version). Then you might get a popup like below when trying to install. As long as you see publisher "NetCart AB" the file is safe.



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Assembly Resolver - Runtime Download of Components

Some assemblies are not included in installation package because the increase the general installation size a lot. If these assemblies are required they are downloaded on demand from our website. Currently, those assemblies are related to language files for the Scan document Task.

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Remote, Silent, and Customized Installation »

Remote, Silent, and Customized Installation

Perhaps you have the need for an automated installation of VisualCron on different servers. Since the VisualCron installation is based on MSI you can use already existing Windows tools to perform the installation silently and remotely. You are also able to control where you want to install (installation folder) and if you want to install both the Client and the Server package or just the Client.

In the download page there is a link for "silent" installation. This means an installation with no user interaction and something you can run across the network if you have the right permissions.

Custom installation

1. Download the "Custom installation package" from the download page.
2. Unzip the content to an empty folder
3. Open the command window (cmd.exe)
4. In the command window, go to the folder where the installation is unzipped

To install the Client & Server package, write:

```
msiexec /i VisualCron.msi /q INSTALLMODE="1"
```

To install the Client only, write:

```
msiexec /i VisualCron.msi /q INSTALLMODE="2"
```

To use other than the default installation folder, write:

```
msiexec /i VisualCron.msi /q INSTALLMODE="1" TARGETDIR="C:\Program Files\your folder\"
```

Remote installation

It is possible to install VisualCron remotely - on a domain or private network.

1. To do this you need to use a tool called "PsExec" which is downloadable from Microsoft PsExec. Once downloaded, unzip the content of the PSTools.zip file into the `"C:\WINDOWS\system 32\"` folder.
2. Download the "Custom installation package" from the download page.
3. Unzip the package on a shared drive on your network.
4. Open the command window (cmd.exe)
5. Combine the row below with the command string above in the Custom installation section like this:

```
psexec \\remoteservername -u adminusername -p adminpassword msiexec /i
\\remoteservername\locationofyourmsi\VisualCron.msi
```

In the zip file of the silent installation you have two bat files: `install_clientSILENT.bat` - **installs the Client only**

```
REM
REM path_to_remote_install_folder\psexec \\remote_server_name -u username -p password path_to_remote_install_
REM

REM Set working folder from parameter "path_to_local_install_folder"
cd %1

REM Stop running processes
taskkill /F /IM VCtray.exe
taskkill /F /IM VisualCronClient.exe

REM Stop the VisualCron service
net stop VisualCron4

REM Uninstall the old version
msiexec /x VisualCron.msi /q

REM Install new version
msiexec /i VisualCron.msi /q INSTALLMODE="2" REINSTALLMODE=dmus
```

`install_serverANDclientSILENT.bat` - **installs both Client and Server**

```
REM
REM path_to_remote_install_folder\psexec \\remote_server_name -u username -p password path_to_remote_install_
REM

REM Set working folder from parameter "path_to_local_install_folder"
cd %1

REM Stop running processes
taskkill /F /IM VCtray.exe
taskkill /F /IM VisualCronClient.exe

REM Stop the VisualCron service
net stop VisualCron4

REM Uninstall the old version
msiexec /x VisualCron.msi /q

REM Install new version
msiexec /i VisualCron.msi /q INSTALLMODE="1" REINSTALLMODE=dmus
```

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Multiple Clients on the Same Machine »

Multiple Clients on the Same Machine

Normally, Clients work best if the corresponding Server version is the same as the Client version. This is because new features might be introduced in either Client or Server. If version is not the same there might be misunderstandings in the communication between Client and Server. This can result in unwanted settings or behavior.

VisualCron is built to support one version of Client installed on a server. If you install both the Client and the Server it is guaranteed that that version is the same.

If you want to install multiple versions of Client on one machine (to be able to Connect to multiple versions of Server) there is one workaround for that;

1. find the corresponding Client version for download here and download it to the Client computer
2. extract the exe file with tool like 7zip into a folder
3. copy that folder to a location where you would like it to be installed
4. right click on the VisualCronClient.exe file and create a shortcut
5. copy that shortcut to desktop and then we recommend that you rename it with the version number like "VisualCron - Client (8.5.2)" or similar

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Upgrading From VisualCron 2.x to 4.x

The VisualCron 4 (VC4) release is the most reworked version since the introduction of VisualCron. Fundamental changes have been made in most parts of the application in order to increase functionality, quality and performance. It is the result of the large amount of requests that have been received from our customers.

VC4 is by default stored in `C:\Program Files\VisualCron 4\`. The reason for a different folder than VC2, is the difference in file structure and formats.

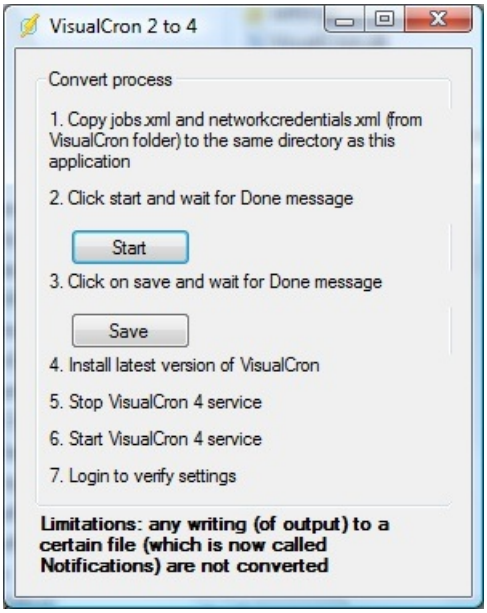
Also, the installation utility is changed in VC4 which means that if you install VC4, it will not uninstall the present VC2 version. An existing VC2 installation will remain until you uninstall it via the Windows Control panel.

The VC4 Job file (jobs.xml) is not compatible with VC2 even though the file name not is changed. The VC4 version of jobs.xml is now stored in the settings folder (not in the installation root folder as for VC2).

Furthermore, Import and Export between VC4 and VC2 does not work. One reason is that the VC4 Job type is more complex than VC2.

UPDATE 2008-05-20

We have created a simple upgrade tool that may help you but not all the way. Please download it here and follow the instructions on the screen. http://www.visualcron.com/files/VisualCron2-4.zip



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Upgrading From VisualCron 3.x to 4.x »

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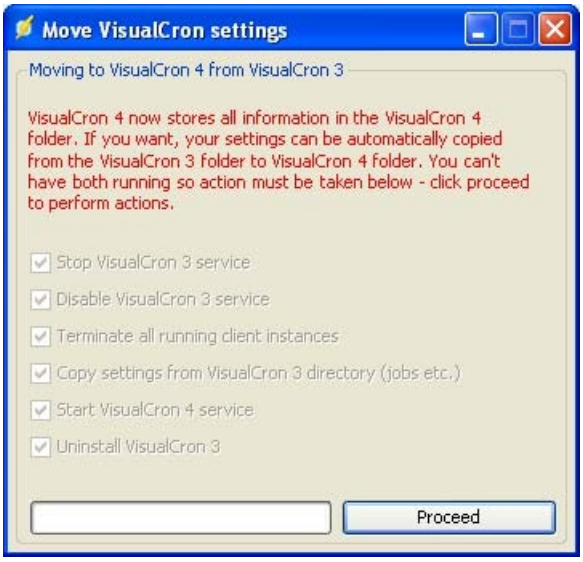
Upgrading From VisualCron 3.x to 4.x

The below window will only appear as a part of the installation if you have VisualCron 3 and upgrade to VisualCron 4.

This window informs you that VisualCron 4 now will exist in the VisualCron 4 folder and all settings will be copied from the VisualCron 3 folder. Click *Proceed* to continue.



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Upgrading From VisualCron 4.x to 5.x »

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Upgrading From VisualCron 4.x to 5.x

In version VisualCron version 5 we have optimized a lot of the code structure in earlier version of VisualCron. However, this it was not possible to be completely compatible with version 4, which means that you will lose some information when upgrading from version 4 to 5. Also, other changes exist that may or not affect you. Below is a list of changes for version 5 and how they might affect you and your Jobs.

Install and location

VisualCron 5 will now install by default in `%PROGRAMFILES%\VisualCron\`. Previously, VisualCron was installed in `%PROGRAMFILES%\VisualCron 4\`. The installation of VisualCron 5 will not uninstall version 4. Both versions can co-exist.

Service name

The service name for VisualCron 5 is *VisualCron*. For version 4, the service name is *VisualCron 4*. If you previously used a specific user for version 4 you need to set that user to run the VisualCron service for version 5. That information is not transferred automatically.

API

If you are using the API you have to upgrade to the latest version of the API for version 5 in order to connect to version 5. Old version can still connect to VisualCron 4.

Desktop short cut

The desktop shortcut is named VisualCron 5.

Task changes

SQL Task

The connection string is no longer stored in the Task. We wanted to make the actual Connection global and we are now storing the connection in Connections. This means that your old connection string will be missing and that you have to create a Connection and select it in the Task.

FTP/S Task

We have removed the direct link to the certificate file and are now storing Client certificates in Certificates. You need to import any existing certificate in Certificates and the select the actual Certificate in the Task.

SFTP Task

We have removed the direct link to the certificate file and are now storing Client certificates in Certificates. You need to import any existing certificate in Certificates and the select the actual Certificate in the Task.

Notification changes

SQL Notification

The connection string is no longer stored in the Notification. We wanted to make the actual Connection global and we are now storing the connection in Connections. This means that your old connection string will be missing and that you have to create a Connection and select it in the Notification.

Installation notes

If VisualCron 4 is already installed and VisualCron 5 is installed, the following notes are applicable:

- The complete VisualCron 4 installation is kept
- A start guide performs VisualCron 5 installation which copies the log, settings and backup sub folders from the `%PROGRAMFILES%\VisualCron 4\` folder to the `%PROGRAMFILES%\VisualCron\` folder. Normally this is done in interactive mode meaning that dialogs are showing the result, but it is also possible to use quiet install (Custom) which performs the same action without dialogs
- A start guide shows a few windows with some basic client/server settings. This guide may be issued later using the client

main menu **File-> Start Guide** option
- The VisualCron 4 Tray client is removed
- The *VisualCron 4* service is shut down and disabled. If VisualCron 4 shall be run, the *VisualCron (5)* service has to be stopped manually and the *VisualCron 4* service has to be started manually
- Some settings cannot be copied to VisualCron 5 automatically, see the above notes. These have to be updated manually using the VisualCron 5 client
- When VisualCron 5 is running with all settings verified, you manually uninstall VisualCron 4 by using the *Control Panel -> Add/Remove programs* option
- When uninstalling VisualCron 4, the Tray Client may be stopped/killed. If that happens you just start it again from the *Start menu -> Program -> VisualCron 5 -> VisualCron Tray Client*

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Upgrading From VisualCron 5.x to 6.x »

Upgrading From VisualCron 5.x to 6.x

A full list of changes between version 5 and 6 can be found here: Change Log

API

If you are using the API you have to upgrade to the latest version of the API for version 6 in order to connect to version 6.

Desktop short cut

The desktop shortcut is named VisualCron 6.

Installation notes

Always make a backup before upgrading to another version. You can do a backup in Client **File > Import/Export > Export settings** - export to another location than default.

Version 6 version requires .NET 3.5 (previous version required 2.0). .NET redistributable can be downloaded here: http://www.microsoft.com/download/en/details.aspx?id=21

VisualCron installer will uninstall the current version and install the new version. Old settings will remain and if needed properties will be upgraded.

You may need to verify these Task types because of changes from version 5.x:

- PGP Encrypt/Decrypt
- Rename Task
- Archive compress/decompress

Especially check source and destination folder properties.

Credentials The way we handle Credentials have changed to provide more control of the actual Credential. Please read more about Credentials

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Upgrading From VisualCron 6.x to 7.x »

Upgrading From VisualCron 6.x to 7.x

General changes

A lot of things concerning Notifications, On error and exit code handling has been changed from version 6 to 7.

Notifications

Notifications has been upgraded to use existing Tasks. This affects the Email Notification for example which previously couldn't send secure emails – you were bound to use the Email Task. Also, the Popup Notification was obsolete in many ways.

The way to use Notifications has been changed. The Notifications tab is gone and you are now adding Notifications through the Flow Tab. This new approach adds possibilities to notify you in other situations than the previous. Previously you could just send "On start", "On complete", "On error". There was never a "On success" or send a Notification based on output or based on a specific exit code. This has been added now.

If you use Variables like `{TASK(Active,StdOut)}` in Notifications you need to change them to `{TASK(PrevTask,StdOut)}`. The reason is that the new Notifications now inherit from Tasks which means that Active refers to the current Task (in this case Notification). By using PrevTask you step back on step to the last Task that was ran in the Job.

Exit codes and collection

Exit code handling works differently. Previously, an error could be ignored and was then reset to 0. Now, we keep the original exit code and focus on another property – the result of the actual Exit code collection that is used for the Task.

Backwards compatibility and import

Notifications

Notifications should be automatically moved to the "Flow" tab with some exceptions:

Email Notification – we are able to move most settings but as we are using Connections instead of settings from Server settings to configure email settings we have tried to create a new Connection based on previous settings.

Popup Notification – the new Popup Notification is simply too advanced and different. You need to look over settings in that Notification in order for it to work fully.

Conditions

If you are using Conditions that look at exit code in combination with ignoring certain errors you might want to adjust the Condition as the actual exit code is no longer reset to 0 when a Task error is ignored.

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Upgrading From VisualCron 7.x to 8.x

Version 7 messages and protocol is similar to version 8. We have found the following that might cause undesired effects:

FTP Download Task

The feature Create FTP folder structure has never worked in version 7 but was fixed in version. As this was enabled by default in version 7 it might cause undesired effects.

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Upgrading From VisualCron 8.x to 9.x

There some breaking changes in VisualCron related to how we store encrypted values. We have increased encryption from 3DES to AES256. This means old version cannot read AES256 values but new version can convert from old.

This means that you cannot do this:

- Export from version 9.x to 8.x
- Connect from version 9.x Client to 8.x Server
- Connection from version 8.x Client to 9.x Server.

You can:

- Import from version 8.x to 9.x (this will happen automatically on upgrade.

From version 9.0.0 you need .NET 4.8. .NET 4.8 is not supported in XP, Windows Vista, 2003, 2008 (only 2008 R2).

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Language Management

When the VisualCron client is started after an initial installation, it is possible to select a preferred language. However, this language selection only affects the language in the client user interface.

In VisualCron system related functions, it is not possible to change language from English. Examples of such areas are states (e.g. Server On/Off) and logging.

The information in the VisualCron web site and all documentation/demos etc. are only available in English. The user definable texts in demo Jobs/Tasks available after an initial installation are also in English.

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Custom Branding

It is possible to change some parts of the VisualCron including name and images. The customization is done by placing a specific xml file in the installation folder. This feature was presented in version 6.1.7.

Customization file

The latest customization file can be downloaded here: https://www.visualcron.com/files/custom.xml

Place this file in the root of the installation folder of VisualCron. Normally c:/program files/VisualCron

Customization

Customization is done by changing the xml file that can be downloaded and then place it in installation folder.

Customization options

ClientAppName

This is the long name displayed in some places (default "VisualCron - Client")

ServerAppName

This is the long name displayed in some places (default "VisualCron - Server")

ProductName

This is the short name of the product (default "VisualCron")

SupportEmail

This is the support email displayed in some places (default "support@visualcron.com")

SalesEmail

This is the sales email displayed in some places (default "sales@visualcron.com")

SplashRelativePath

This is the relative path (from VisualCron installation folder) to the splash image displayed at startup (default "`img\400x250.bmp`")

ShowLinks

This property controls if links to the VisualCron web site should be shown (default "true")

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Overview

Using VisualCron is simple, just start the VisualCron client. With the ordinary Windows graphical interface, all Jobs, Tasks and settings are managed. Unless otherwise stated, all user actions refer to VisualCron client application.

Please note that VisualCron is initially started with server status On. Read here for more information.

For some actions like log, debug and email notification, you need to have knowledge in computer file handling and email account settings.

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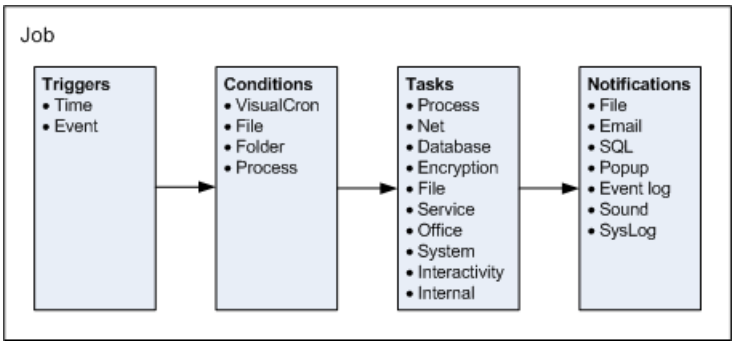
How Does VisualCron Work? »

How Does VisualCron Work?

In one aspect, VisualCron works similarly to the Unix/Linux Cron utility. Down to details of seconds, VisualCron can run any executable file periodically, within a time interval or once. However, in VisualCron also an event can be set to trig a Job.

It is important to understand the structure of all VisualCron objects in order to utilize the new features. The flow is: Trigger > Condition > Task > Notification. One trigger (type time or event) fires a Job to run. A condition is a "check" which is evaluated before a Job or a Task is launched. A Job can include one or more Tasks of different types. When the Job and/or its Tasks are completed, one or more notifications (of different types) may be performed.



NOTE

In the above figure, the lists of Conditions, Tasks and Notifications are just illustrations and not complete. The actual features in VisualCron is constantly expanding.

One way for VisualCron to trig a Job is to keep track of time and match the current time with the time settings in the list of Jobs in order to perform the defined actions. Also, the more simple time interval can be used to trig a Job. The second way of initiating a Job is via an event trigger.

When you add or edit a Job, the list of Jobs and and Tasks are updated. This list defines how the Job will be managed by the VisualCron server.

Each Task will run as a separate process. When a Task is run, VisualCron will save some statistical values like how long time it took to run the current process.

It's possible to set a Job to be run only once. After this run, the Job stays in the Job list but will be ignored when the Job list is checked at later occasions.

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VisualCron Server

The VisualCron server runs as a Windows **service** in the background. The server service status is Started when the server computer is started.

The VisualCron **server** application status can be *On* or *Off*. If the server is On, it will be looking for Jobs to run. If Off, no Jobs will be run unless a user forces it manually in a client. The server application is running, even if no one is logged on to the computer where the server is running or if no client application is connected to the server.

In the VisualCron client, the currently selected server name is displayed in the main menu **Server** `[<server name>]` tab and in the Username/Server entry in the the Server/Groups/Jobs/Tasks grid and in status bar. Server connections are global, thus if you change a connection definition, this will affect all commands associated with this connection.

The default port number between the VisualCron Server and the Client is 16444. This means, that if you are connecting remotely from the outside you may have to open port 16444 in your firewall, software and/or hardware.

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Login

When the VisualCron client is started, an initial login (to server) window is opened. You need to login because the server may be accessed also from other computers. If you haven't defined any connection, VisualCron will use the default server login parameters.

For security reasons, you should change user name and password after the initial login in the main menu **Server > Main settings > User permissions** dialog.

If you want to add new connections, for example to other computers, you select the main menu **File > Servers > Manage servers** option. See manage servers for more information.

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Limitations »

Limitations

There are some limitations in VisualCron which are listed below:

- VisualCron is designed for a set of System Requirements
- The function "run missed Jobs" doesn't take time exceptions into account. A missed Job will run even if there was a time exception during that time
- Calculation of next run doesn't take time exceptions into account
- In Windows 2000 the Credentials are not fully supported. They work in the execute Task but not in other places like Archive, FTP and Notifications. To come around this you can run the VisualCron service as a certain user and map network drives for that account.

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VisualCron uses a per Server licensing model. You only need a license for the Server, the Client does not require a license.

Requires license:

- Server installation

Do not require license:

- Using the VisualCron Client
- Using the VisualCron .NET API
- Using the VisualCron Web API
- Using the VisualCron Web Client

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Trial Time

Trial

You are able to use all VisualCron functions for free for a limited period (30 days). Check the remaining trial days in the main menu *About -> About VisualCron* dialog. After the trial period is over, you can't control the server with the client. However, the server will still run all Jobs in the background even though your trial period is over. To be able to manage your Jobs again you must obtain a license.

If you want to extend you trial period you can contact support@visualcron.com and you will get a trial extension code. Enter the trial extension code in *Client->Server tab->License->Activate* and *Trial extension tab.*

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Choosing the Right License

Test the license guide

Our license guide estimates number and type of licenses needed.

We have created a quiz to help you estimate the license type that fits best according to your needs. It is an approximation based on basic requirements. The final result might differ from your full needs. You can test our new license guide here.

Which license type / quantity is right for me?

When do I need more than one VisualCron Server license?

Often, we get the question "When do I need more than one VisualCron Server license?". The answer depends on your infrastructure and what you want to accomplish. Below is a list of common reasons for our customers purchasing more than one server license:

1. **Server bottlenecks**

The CPU footprint of the VisualCron engine is very small but the processes you launch might consume a lot of CPU power.

To balance the load, some users purchase multiple or unlimited licenses to spread the load over several servers.

2. **Local execution**

We have two types of Execute Tasks; Local and Remote. The Remote Execute Task is limited by Windows in many ways. For example, you cannot retrieve output from a Remote Execute Task or run it with the same privileges as the Local Task. The normal, Local Execute Task has many more features and because of this, users choose to install a VisualCron Server on each Windows machine they want to perform local execution on.

You will face similar issues with the **PowerShell Task** - while this Task can perform remote execute you cannot control the user it runs as and get 100% control of that remote execution (with output etc.). These are limitations in Windows.

For these reasons users choose to purchase multiple or unlimited licenses.

3. **Machine roles development/test**

The acronym DTAP is short for Development, Testing, Acceptance and Production and the DR is short for Disaster Recovery. For various reasons you have or may want to have an environment like the production environment to test and configure Jobs before they go into production.

For these reasons users choose to purchase multiple or unlimited licenses.

Choosing between Basic and Pro license

Two different editions of VisualCron with different features

- VisualCron is released in two editions with different features
- A full comparison of features can be found here
- It is possible to later upgrade from Basic to Pro - however that may cost more than purchasing the Pro version from the beginning
- You can see if you have a Basic or Pro license on the My licenses page and also upgrade from Basic to Pro there.

Choosing between Site license, Country license and World license

Different licensing for unlimited Server installations

- Choose a Site license if you have all Servers within one physical location i.e. a data center.
- Choose a Country license if you have more than one data center, one cloud service with more than 2 regions or more than one cloud service.
- Chose a World license if you operate with installations in more than one country.

The need for limitless storage space, high availability, low latency and scalable infrastructures has increased the number of available cloud services for file storage. Data backup, synchronization of files, redundancy and cross platform support are some reasons for using cloud services.

FAQ

Frequently asked questions

Is a license required for Development/Test/Backup/Production machines?

A Server license is required for each machine independent of the role of the machine and independent of if the machine state is on or off.

Is a license required for Disaster Recovery machine even though it is not active?

A Server license is required for each machine independent of the role of the machine and independent of if the machine state is on or off.

Can we upgrade our license to x type of license later?

We do not offer upgrade from single server license to 5-server license pack but we offer upgrade from 5-server license pack to greater. Please contact Sales for a personal offer based on your situation.

May I resell VisualCron licenses of type Site, Cloud, Country and World?

No, but if you want to act as reseller we can give you discount on all purchases.

How does renewal work?

For more information of the Subscription / Maintenance & Support Pack please check here.

How much are the different licenses and renewals?

You can find the current pricing here.

Is the Client application free / not requiring a license?

The Web Client and the Windows Client, which you use for configuring the Server, is free. You can install as many Clients as you want for free. The licensing/fees are related to number of VisualCron Server installations you have. However, if you own the Basic version you are limited to 3 simultaneous connections.

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Basic vs Pro Edition

We recommend looking at this online topic for choosing the edition for you.

Basic/Pro was introduced 21st of April 2019. Any license purchased before that is considered a Pro license.

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License and Activation »

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License and Activation

License

You need an activation code to activate VisualCron. An activation code is included in the license. A license can be obtained at the VisualCron web site. The license is per server. When you activate VisualCron, you activate the current server you are connected to. You can use several clients to connect to one server with one license.

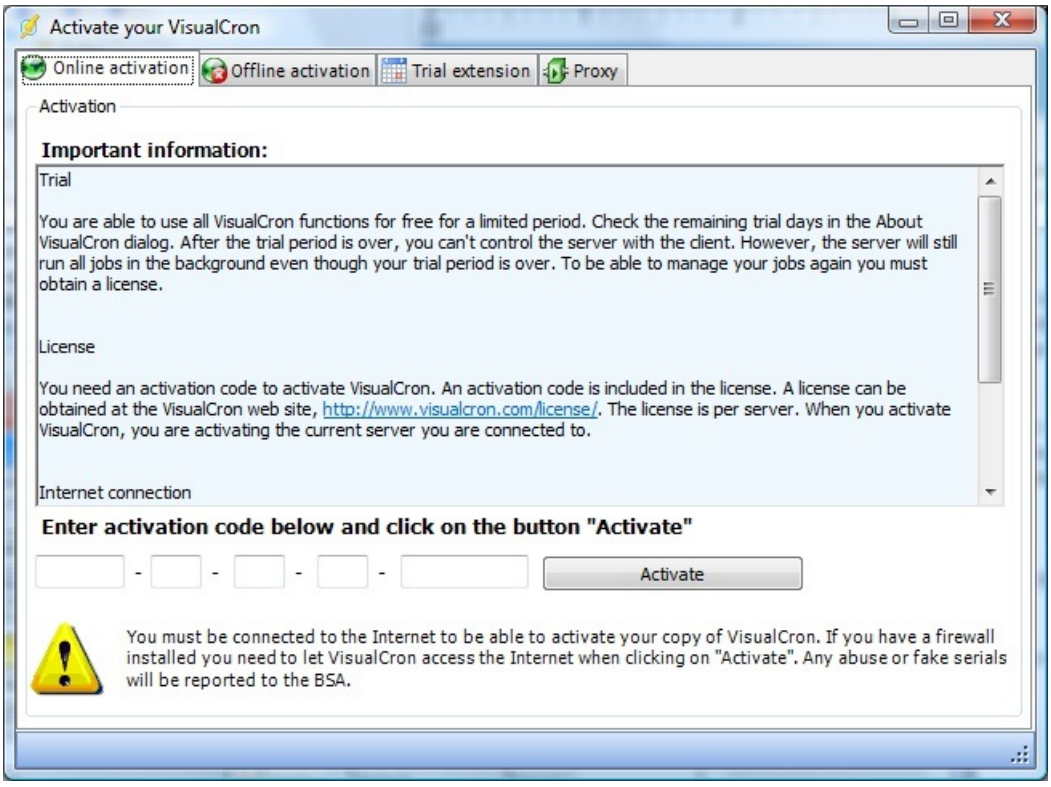
Activation

Once you have an activation code you can activate VisualCron. To activate VisualCron you must login to the server that you want to activate. If you have trial time left you can go to main menu *Client->Server tab->License->Activate*, which opens the activation form. If you don't have any trial time left, the activation form will open automatically when logging in. Enter the activation code in the fields.

Online activation

To be able to validate your activation code you have to connect to the VisualCron web site, this is done automatically when you click on the *Activate* button. However, you need to:

1. Be connected to the Internet
2. Let VisualCron access Internet. If your firewall asks you what to do, you must permit VisualCron to access Internet



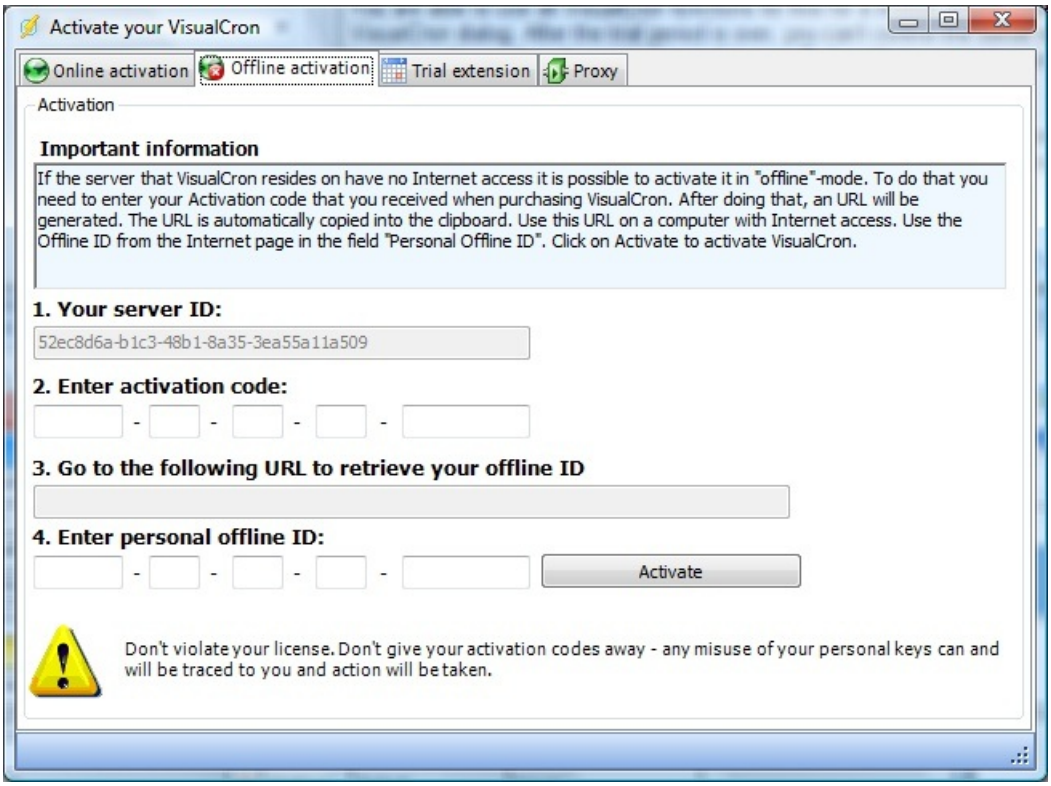
Offline activation

This feature is available if you have a server without Internet access. Note that you still can use online activation if your desktop computer has access to Internet and if your desktop computer can be internally connected (within your network) to the server. If that is not possible you can use offlien activation. Offline activation can be done with the following steps:

1. Start the Client locally on your server
2. Choose Activate in the About menu
3. Choose Offline activation tab
4. Enter your activation code
5. After entering you will get an URL. Copy that url in some way to USB stick or paper. Enter the URL in a browser on a

computer that has Internet access. You will then get an offline ID.

6. Enter the Offline ID in the Client



Deactivation / Move a licenses

Go to Server tab->License->Deactivate to Move a license. Please note that Deactivation / Move a license requires that you have an active Maintenance.

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See general information about Maintenance and priority support at: https://www.visualcron.com/maintenance.aspx.

VisualCron licenses are perpetual, but in order to get the latest version and receive support you need an active Maintenance. Each license has a Maintenance expiration date. Usually, this is one year after purchase and can be renewed here. The Maintenance expiration date is covering any version released within that time period, minor or major version.

This is what you get with an active Maintenance:

- Support
- Upgrades (minor or major)
- Ability to deactivate / move a license

Online/Offline validation

From time to time we validate the license. Both that the actual activation code is valid and the Maintenance is covering the current version. If our servers cannot be reached you need to do a manual validation from time to time.We strongly recommend that you open firewall to host visualcron.com on port 443 so this can be validated and updated without you having to do a manual validation.

If you fail to validate VisualCron will either stop working or you will not be able to connect to the Server with the Client.

Troubleshooting

Maintenance expiration date is not refreshing

Normally, VisualCron refreshes the Maintenance expiration date that you see on the Server row in the main grid of the Client. You can also force this refresh by right clicking on Server row and select Refresh license data. Make sure that VisualCron can connect to Internet against hostname visualcron.com on port 443. If you still have problems with refreshing the maintenance expiration date please follow these steps:

1. Close the VisualCron Client
2. Right click on the VisualCron Tray Client and choose Client->Open log folder
3. Move up one folder to the VisualCron folder. Enter the settings folder.
4. Exit the VisualCron Tray Client application
5. Delete the file servers.xml
6. Start the VisualCron Tray Client
7. Start the VisualCron Client.

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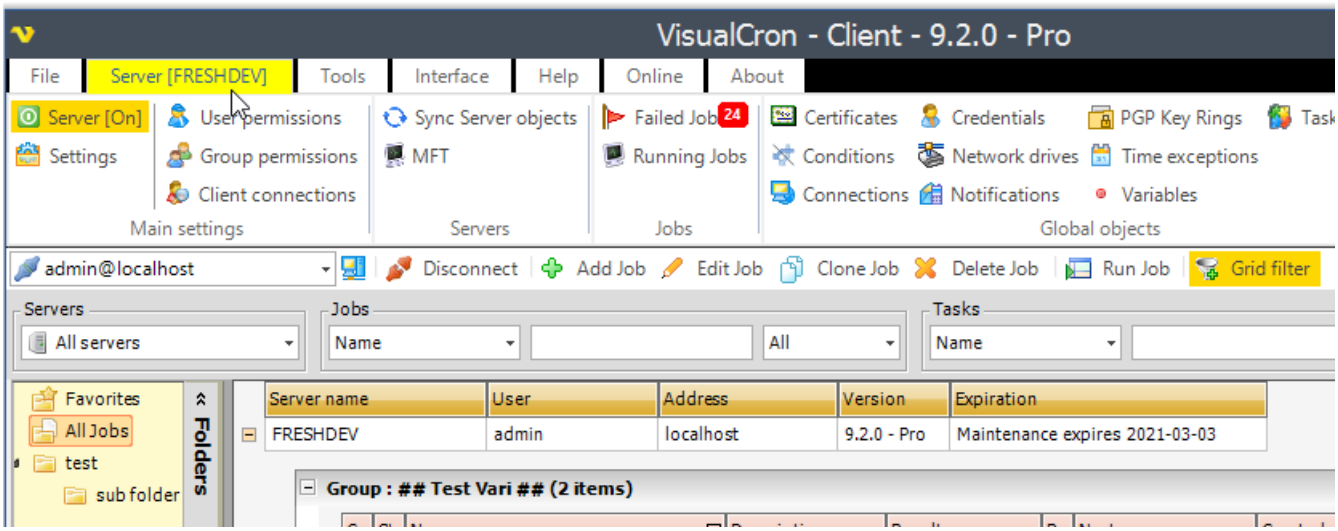
Maintenance Expiration

In the Client you can see the expiration date for the Maintenance in the Server row. This date is refreshed from time to time and may not be directly synced in Client when you purchase a renewal of the Maintenance. To force a sync you can right click on the Server row and choose Refresh license data. If the date is not refreshed please make sure you have associated the Maintenance code online that you purchased with the license you wanted to renew. After doing that you can choose to Refresh license data again.



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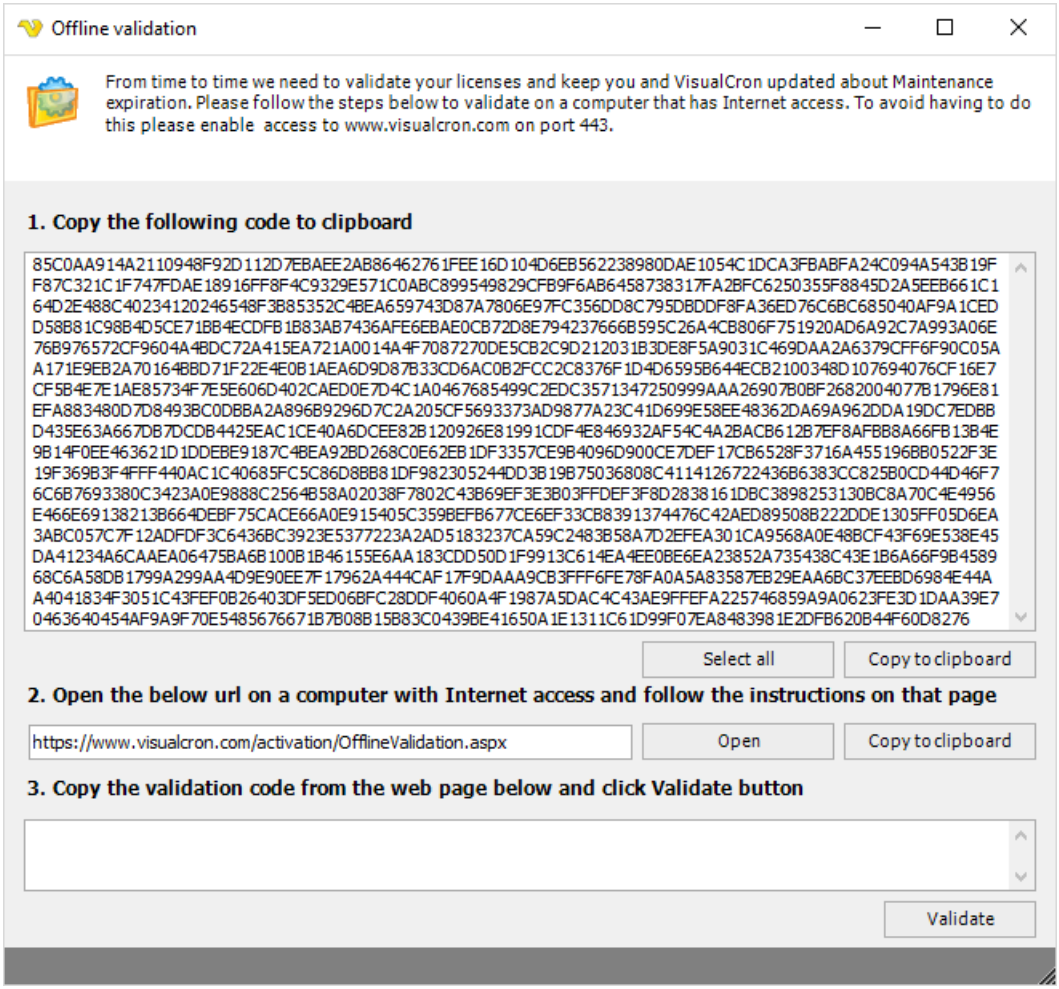
License Validation

From time to time we need to validate your licenses and keep you and VisualCron updated about Maintenance expiration. Please follow the steps below to validate on a computer that has Internet access. To avoid having to do this, please enable access to www.visualcron.com on port 443.

The below screen is shown when the computer where the VisualCron Client runs has been offline for a while. The screen is also shown when the **Server > Information > License > Refresh license data** is issued when the VisualCron Client is offline.



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Move a License

1. Download and install VisualCron on your new server (if this is the first time you install VisualCron you will have 30 days of trial with full functionality)
2. Validate on the My licenses page that you have a Maintenance contract that supports the installed new version for the latest version so you do not run into license problems when trying to activate it later
3. Go to the old server and backup your settings using Export from the menu **File > Export settings**
4. Transfer the file to the new server and import it clearing existing settings (unless you already created new Jobs on Server)
5. If the import was successful you can choose **Server > Information > License > Deactivate** in the old Server
6. Go to the new Server and Activate it with the old activation code

If you have any Deactivation/Activation problems contact us here.

If the Server is decommissioned and no longer available please go to My licenses page and click on the Move button next to the activation code.

Deactivation / Move a license requires that you have an active Maintenance.

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Failover Clustering

It is possible to use VisualCron in a failover clustered environment. We recommend using the built in Windows Server Feature Failover Clustering for this.

A failover cluster is a group of independent computers that work together to increase the availability and scalability of clustered roles (formerly called clustered applications and services). The clustered servers (called nodes) are connected by physical cables and by software. If one or more of the cluster nodes fail, other nodes begin to provide service (a process known as failover). In addition, the clustered roles are proactively monitored to verify that they are working properly. If they are not working, they are restarted or moved to another node.

Failover clusters also provide Cluster Shared Volume (CSV) functionality that provides a consistent, distributed namespace that clustered roles can use to access shared storage from all nodes. With the Failover Clustering feature, users experience a minimum of disruptions in service.

Failover Clustering has many practical applications, including:

Highly available or continuously available file share storage for applications such as Microsoft SQL Server and Hyper-V virtual machines Highly available clustered roles that run on physical servers or on virtual machines that are installed on servers running Hyper-V

You can read more about Windows Failover Cluster here.

Licensing

A unique license (or unlimited license) needs to be activated on each node in the cluster.

However, VisualCron must be manually activated for each cluster.

Installation and preparation

There are two major steps:

1. Installing the Windows Failover Cluster
2. Install and Setup VisualCron on Failover Cluster

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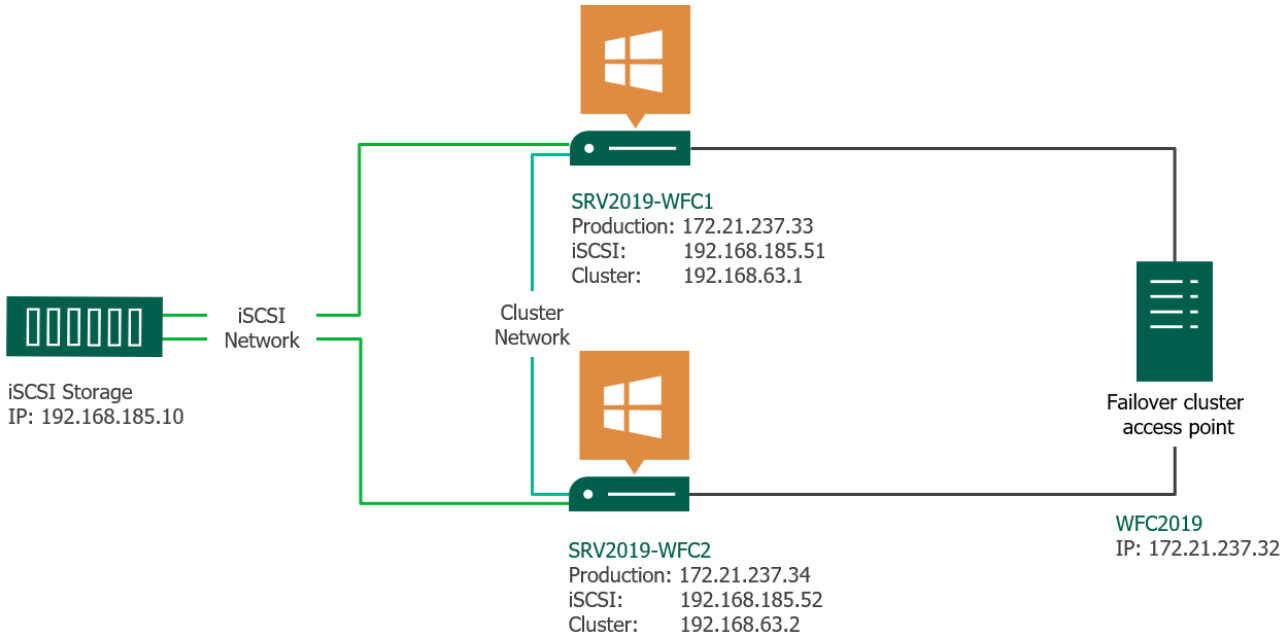
Below is a guide for installing the feature Failover Cluster on Windows 2016.

Installing the Failover Cluster Feature in Windows Server 2016



Requirements

To use Failover Cluster Feature we need:

1. Server that will be a “Failover cluster access point” (FCAP) with Active Directory
2. At least 2 servers that will be an “Cluster nodes”

Steps

1. Configure roles / features on Failover Cluster access point - FCAP
2. Configure roles / features on Nodes
3. Create a iSCI network drive
4. Connecting to iSCSI network drives
5. Create the failover cluster

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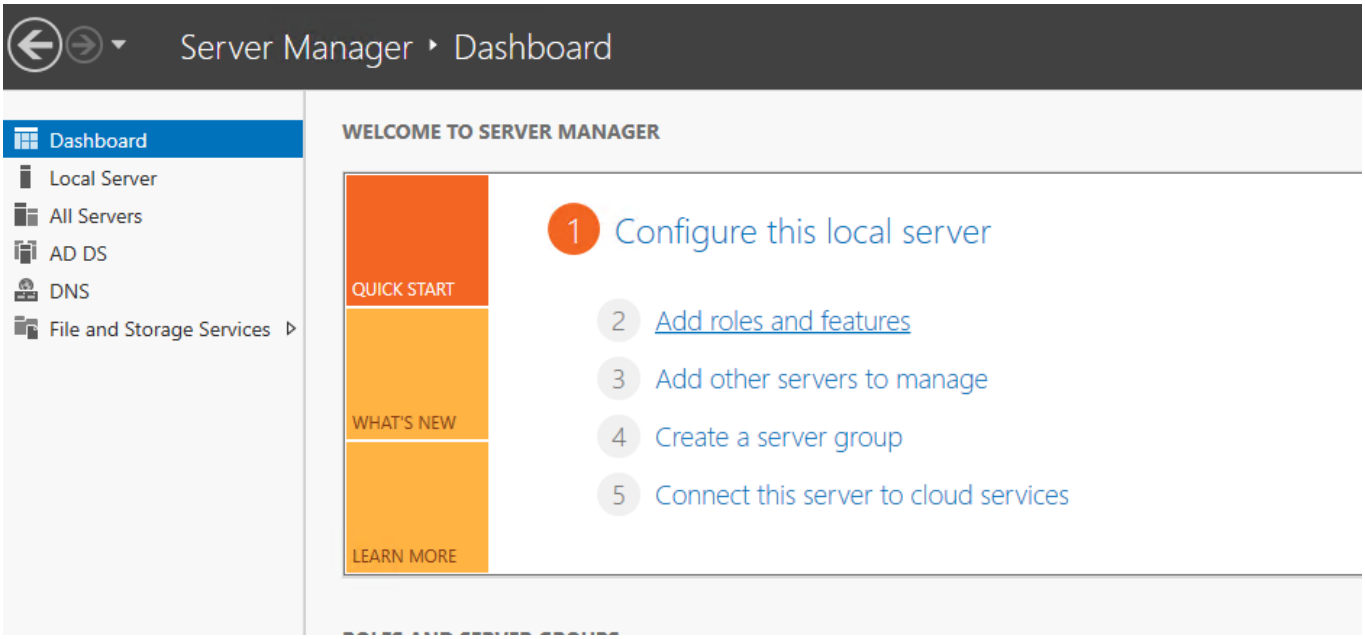
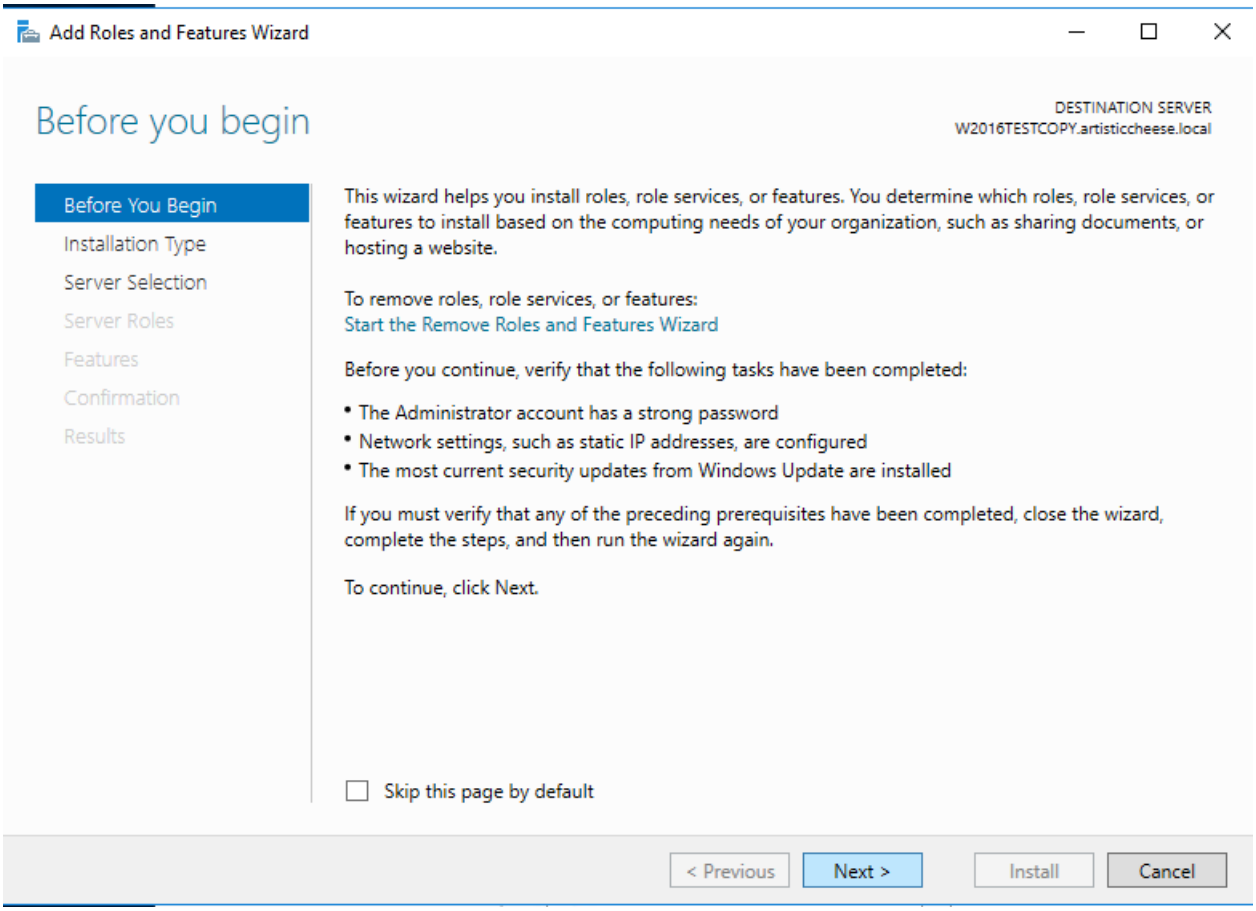
Configure Roles / Features on Failover Cluster Access Point (FCAP)

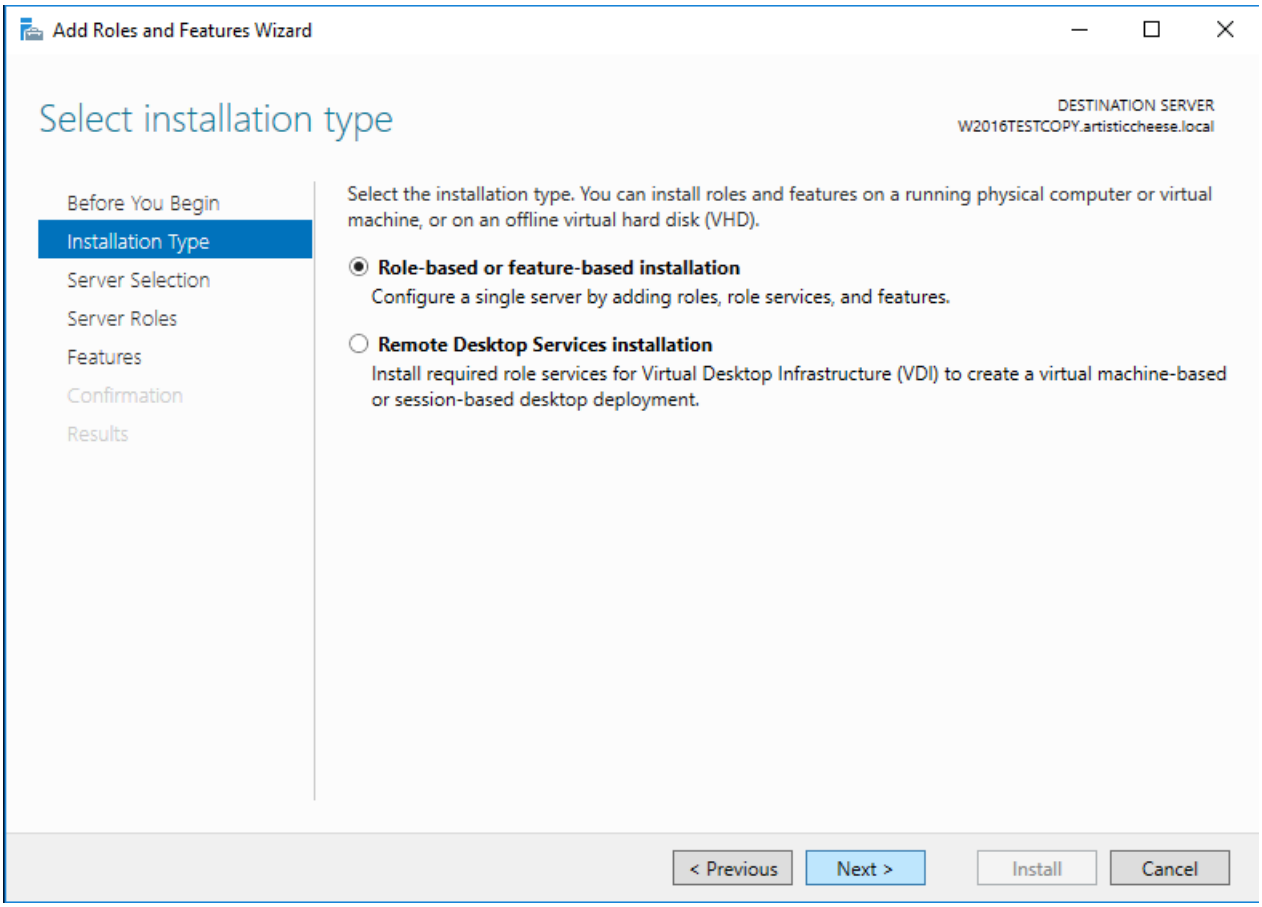
In the **Server Manager > Dashboard**, click Add roles and features.



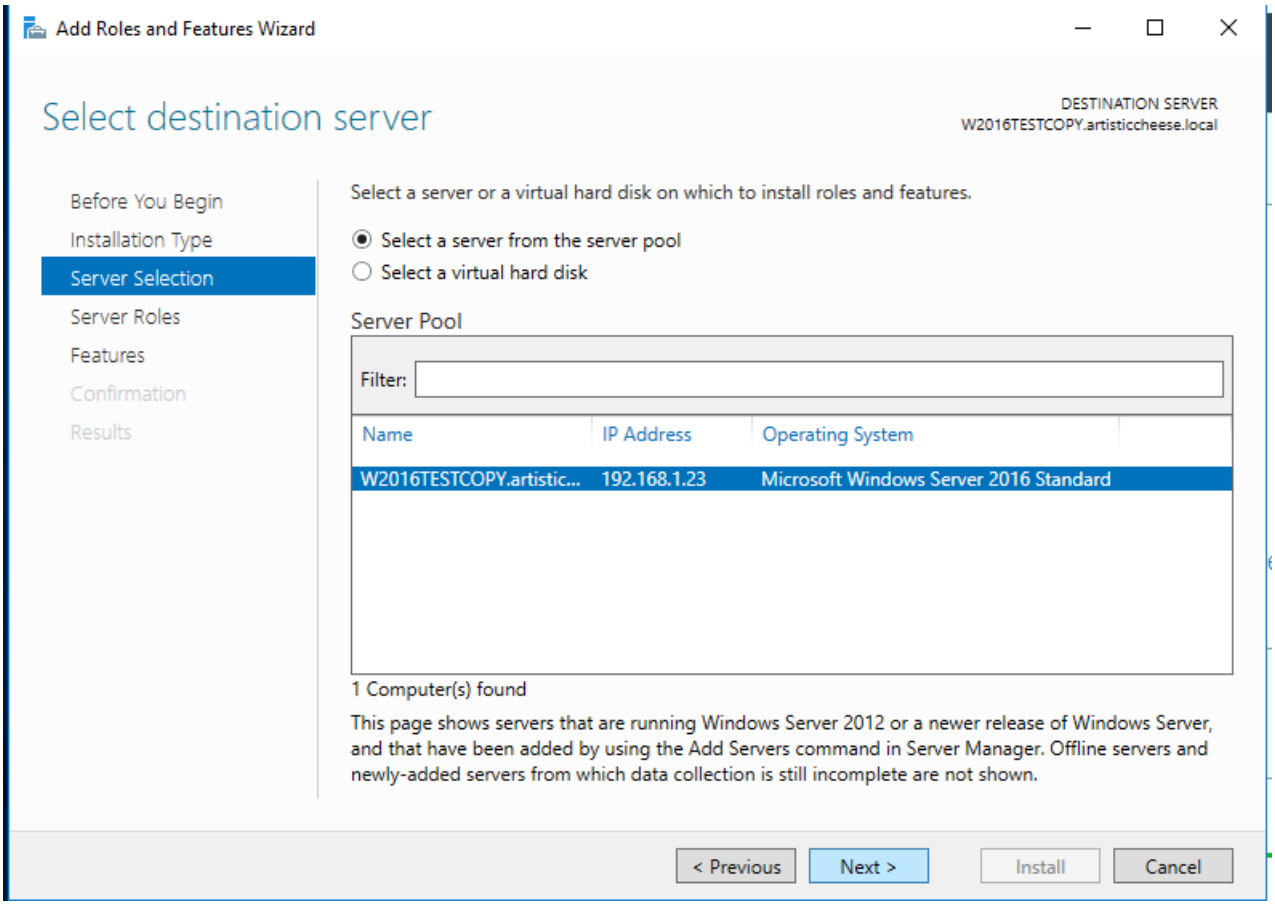
The Before you begin window is displayed. Click *Next*.



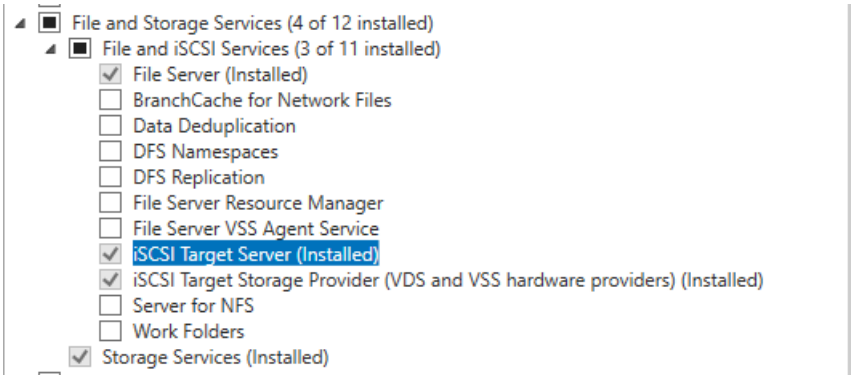
The select *Installation Type* window is displayed. Select *Role-based or feature-based installation*. Click *Next*.



The Select destination server window is displayed. Select the server that you are logged in on. Click *Next*.

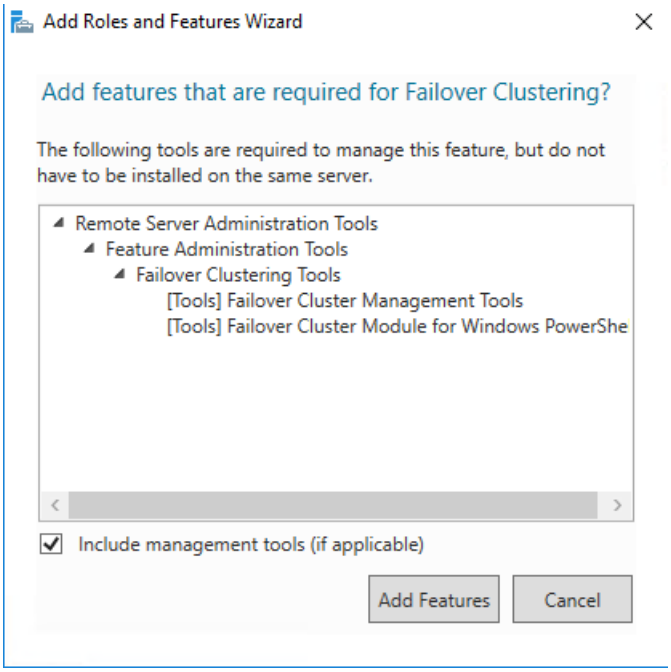


The *Select server roles* window is displayed. In the *Roles list*, select *File Server*, *iSCI Target Server*, *iSCI Target Storage Provider*.



Click *Next*.

The Select features window is displayed. In the Features list, select *Failover Clustering*, *Failover Clustering Tools*. If it wasn't installed before, the Add features that are required for Failover Clustering window will pop up. This window shows the dependencies that will be installed with this feature.



Click *Add Features*. Click Next. The Confirm installation selections window is displayed. Check the setting to ensure all selected items to be installed.

Click *Install*. The chosen Role and Feature will be installed on your machine.

When the installation is complete, restart the machine to finalize the installation.

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Configure Roles / Features on Nodes

Add All Nodes to AD. Change DNS server addresses to your Active Directory Server ip address.

Add Node to Domain by changing “Member of” in Computer name tab of System Properties window.

In the **Server Manager > Dashboard**, click Add roles and features.

The Before you begin window is displayed. Click *Next*.

The Select installation type window is displayed. Select *Role-based or feature-based installation*. Click *Next*.

The *Select destination server* window is displayed. Select the server that you are logged in on. Click *Next*.

The *Select server roles* window is displayed. Click *Next*.

The *Select features* window is displayed. In the Features list, select *Failover Clustering*, *Failover Clustering Tools*. If it wasn’t installed before, the Add features that are required for Failover Clustering window will pop up. This window shows the dependencies that will be installed with this feature.

Click *Add Features*. Click *Next*. The Confirm installation selections window is displayed. Check the setting to ensure all selected items to be installed.

Click *Install*.

The chosen Role and Feature will be installed on your machine.

When the installation is complete, restart the machine to finalize the installation.

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Create a iSCSI Network Drive

In the **Server Manager > File and Storage Services > iSCSI**, click “to create an iSCSI virtual disk”.

The New iSCSI Virtual Disk Wizard window is displayed. Select Disk that you want yo use as location for iSCSI Virtual Disk.

Click *Next*. The Specify iSCI virtual disk name will be displayed.

Choose disk name, add description if it’s needed and click *Next*. The Specify iSCSI virtual disk size window will be displayed.

Type size of a disk. Click *Next*. The Assign iSCSI target window is displayed.

Choose New iSCSI target , click *Next*. The Specify target name window is displayed.

Choose new target name, description if needed and click *Next*. The specify *Access servers* window is displayed.

Click *Add* to specify the iSCSI initiators of added to AD nodes. The *Add initiator ID* pop up will be displayed.

At this popup you can select new *Computer IDs* by selection Query initiator computer for ID and clicking **Browse** button. The Select Computer popup will be shown.

In this popup you can type Computer names, or click to advanced button, and find them at AD network.

Add One-by-One all nodes to accessed servers.

Another way is to select already known initiators from the initiator cache on the target server.

Add One-by-One all nodes to accessed servers.

After All nodes added, click *Next*.

The *Enable Authentication* window is displayed. Setup CHAP protocol settings if it’s needed and click *Next*.

The Confirm selections windows is displayed. You can check all iSCSI settings that you selected before. After that click Create.

The Results windows will be displayed. After Creation will be succeed click Close.

Now you can see new iSCSI virtual drive and targets.

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Connecting to iSCSI Network Drives

Start the iSCSI initiator then connect to your SAN drives:

- Click Start > Windows Administrative Tools > iSCSI Initiator.
- Ensure the drives are set to allow simultaneous connections. This is configured on your SAN. Make sure you have granted access to your cluster servers.
- Open iSCSI initiator.
- Click the Targets tab.
- In Target, enter the IP address for the SAN.
- Click Quick Connect. Or you can click to Refresh to auto discover targets.
- Your advertised drives are displayed.
- Highlight a drive; then click connect to connect to drive.

When a drive is connected, click Done. Click the Volumes and Devices tab.

- Click *Auto Configure*.
- Click *OK*.
- When you are connected on the first machine, click **Start > WIndows Administrative tools > Computer Management > Disk Management**.

Your disks appear as Unknown and Offline. They also display the size you configured on the SAN (eg: 16GB). You need to bring the disks online by Right-clicking the disk number and selecting *Online*.

Initialize the disks:

- Right-click the disk number next to one of the new drives. Select Initialize disk.
- In the box that appears, ensure that your new disk have a tick mark next to them.

Set as *MBR*.

- Click *OK*.
- Configure the new drive. Right-click on the drive.

Select *Create New Simple Volume*. Leave the defaults in place. Choose a drive letter to assign. Label your drive f.ex. as ClusterStorage

Once this is done for your first node (Server), repeat these steps on your additional nodes (Servers). For example, from the two listed servers above (Server1 and Server2), you must connect the iSCSI drives on both systems before they will be available for your cluster.

As the simple volume is now configured, you only need to initialize the disks on the other Nodes, not recreate the Volume.

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« Create a iSCSI Network Drive

Next
Create the Failover Cluster »

Create the Failover Cluster

Create the failover cluster

Click **Start > Windows Administrative tools > Failover Cluster Manager** to launch the Failover Cluster Manager.

Click *Create Cluster*. The *Before you Begin window* is displayed.

Click *Next*. The *Select Servers* window is displayed.

Enter the server names that you want to add to the cluster. Alternatively, you can locate them via Browse.

Click *OK*. The Servers will be verified.

- Click *Next*.
- The Validation Warning window is displayed.
- Select *Yes* to allow verification of the cluster services.
- Click *Next*.
- The Validate a Configuration Wizard is displayed. This wizard validates the server configuration.

Click *Next*. The Testing Options window is displayed.

- Select Run all tests (recommended).
- Click Next.
- The Confirmation window is displayed. This window lists all of the tests that will be run.
- Click *Next*.
- The Validating window is displayed while all of the clustering tests are being run. This process may take several minutes depending on your network infrastructure and the number of nodes you have chosen to add to your cluster.

When the tests have completed, check the report then fix any configuration errors. The cluster setup will fail if any errors exist.

The *Access Point for Administering the Cluster* window in the Create Cluster wizard is displayed.

- In *Cluster Name*, enter a name for your cluster.
- If one or more DHCP IPv4 addresses wasn't configured automatically you can provide an IP address for the cluster. This name and IP address will be registered in your DNS
- Click *Next*.
- The Confirmation window is displayed. This window lists the settings to be applied to your new cluster.
- Select the *Add all eligible storage* to the cluster check box.
- The system will now try to assign any storage it can find.
- Click *Next*.
- The system attempts to create the new cluster in your domain. This may take a while as there are several checks that must take place and tests that are conducted while the system is configured.

When the process is complete, the Summary window is displayed stating that the cluster wizard completed successfully.

Click *Finish*.

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« Connecting to iSCSI Network Drives

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Overview »

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Overview

Requirements

1.2 Pre-install nodes

2.2 Unique VisualCron licenses (or 1 unlimited license)

Steps

1. Create iSCSI drive with the already existing target
2. Add new drive as shared drive to cluster nodes
3. Install VisualCron on both nodes in the same share directory
4. Add Shared Drive to Cluster
5. Add Generic Service
6. Manually changing current node for Generic Service
7. Setup Failover Generic Service properties
8. Individual node activation

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« Create the Failover Cluster

Next
Create iSCSI Drive with the Already Existing Target »

Create iSCSI Drive with the Already Existing Target

In the **Server Manager > File and Storage Services > iSCSI**, make a right click and inside context menu press to the “New iSCSI Virtual Disk”.

The *New iSCSI Virtual Disk Wizard* window is displayed.

Selec Disk that you want yo use as *location* for iSCSI Virtual Disk Click *Next*.

The *Specify iSCI virtual disk name* will be displayed.

Choose disk name, add description if it’s needed and click *Next*.

The *Specify iSCSI virtual disk size* window will be displayed.

Type *size* of a disk. Click *Next*.

The *Assign iSCSI target* window is displayed.

You need to select already existed target that use access rights for your nodes.

Choose *Already existed iSCSI target*, click *Next*.

The *Confirm selections* windows is displayed.

You can check all *iSCSI* settings that you selected before. After that click *Create*.

The *Results* windows will be displayed. After *Creation* will be succeed click *Close*.

Now you can see *new iSCSI virtual drive*.

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Add New Drive as Shared Drive to Cluster Nodes »

Add New Drive as Shared Drive to Cluster Nodes

At now on both nodes new iSCSI shared drive is unallocated and offline

On both nodes you need to go to *iSCSI Initiator Properties*, to the *Volumes and Drives* tab.

And click to *Auto Configure* button. Current node will update information about shared drive.

After that you need to close this window by pressing *OK* button.

When you are connected on the first machine, click **Start > WIndows Administrative tools > Computer Management > Disk Management**.

Your disks appear as Unknown and Offline. They also display the size you configured on the SAN (eg: 10GB). You need to bring the disks online by *Right-clicking* the disk number and selecting Online.

Initialize the disks:

Right-click the disk number next to one of the new drives. Select Initialize disk.

In the box that appears, ensure that your new disk have a tick mark next to them.

Set as *MBR*.

Click *OK*. Configure the new drive. Right-click on the drive.

Select *Create New Simple Volume*. Leave the defaults in place. Choose a drive letter to assign.

Label your drive f.ex. as *VisualCronStorage*

Click *Next*.

Once this is done for your first node, repeat these steps on your additional nodes. you must connect the iSCSI drives on both systems before they will be available for your cluster.

As the simple volume is now configured, you only need to *initialise* the disks on the other Nodes, *not recreate the Volume*. *Shared drive* should have the same *disk letters* on *both nodes.*

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« Create iSCSI Drive with the Already Existing Target

Next
Install VisualCron on Both Nodes in the Same Shared Directory »

Install VisualCron on Both Nodes in the Same Shared Directory

Run the *VisualCron* installation file.

And install it on *Shared Drive*.

After it successfully installed you need *allow firewall*.

Click to *Firewall denies* and apply settings. Close VisualCron client. Stop VisualCron service from task manager.

And Install it to the same folder at next node.

Before shared drive connected to cluster it will be visible at all nodes.

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« Add New Drive as Shared Drive to Cluster Nodes

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Add Shared Drive to Cluster »

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Add Shared Drive to Cluster

Click S**tart > Windows Administrative tools > Failover Cluster Manager** to launch the *Failover Cluster Manager*.

Click to **Storage -> Disks**.

Click to *Add Disk*.

The *Add Disks to a Cluster* window will be displayed.

Select cluster disk and click *Ok* button. Shared disk will be added to our cluster.

One of the drives (Cluster Drive 1) is configured for your Quorum and the other is configured for the virtual machines (Cluster Drive 2). *Cluster Drive 2* will shown to us like *Available Storage* and this disk can be used with *Cluster Roles*.

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« Install VisualCron on Both Nodes in the Same Shared Directory

Next
Add Generic Service »

Add Generic Service

Generic Service resource type allows us to handle failover based on a Windows Service status - in this case we track the VisualCron service.

At *Failover Cluster Manager* go to *Roles*. You will see current roles list.

Click to *Configure Role* to create a new role.

The *Before you begin* window is displayed. Click *Next.*

The *Select Role* window is displayed. Select *Generic Service* item at the role list and click Next.

The *Select Service* window is displayed/ Select *VisualCron* service in current list and click Next.

The *Client Access Point* window is displayed. Choose *NetBIOS* name for cluster role. This name can be used to connect to VisualCron server. Click *Next.*

The *Select Storage* window will be displayed. Select shared drive with installed VisualCron on it. This storage will be used on active node to run VisualCron service. Click *Next*.

The *Replicate Registry Settings* window is displayed. Here you can add additional registry settings if it's needed. When it's done, click *Next*.

The *Confirmation* window will be displayed. Check all settings and click *Next.*

After creation of *Generic Role* was successfully completed close window by clicking *Finish*.

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« Add Shared Drive to Cluster

Next
Manually Changing Current Node for Generic Service »

Manually Changing Current Node for Generic Service

At *Failover Cluster Manager* go to *Roles*. You will see current roles list.

To move *Generic Service* to another node you can *right click* at selected role to open context menu, and go to **Move -> Select Node**.

Or select role and click to **Move ->Select Node**.

The *Move Cluster Role* popup will be shown.

Choose *node* for generic service and click *Ok*.

Service will be switched to selected node.

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« Add Generic Service

Next
Setup Failover Generic Service Properties »

Setup Failover Generic Service Properties

At *Failover Cluster Manager* go to *Roles*. You will see current roles list.

Select role and click on *Properties* (or use context menu by right click on selected role).

The *Generic Service Properties* popup will be displayed.Click on *Failover* tab, to change Failover settings.

At this tab you can change Cluster service Failover settings.

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« Manually Changing Current Node for Generic Service

Next
Individual Node Activation »

Individual Node Activation

After nodes are created you can activate your nodes. You need either a unique activation or an unlimited one (like Site license) for each node.

1. Go to active node and use activation code and use activation code there (unique or unlimited)
2. Switch to second node and check activation status. If it is already activated the deactivate this node and activate with the second activation code (if you are not using an unlimited one).

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« Setup Failover Generic Service Properties

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VisualCron Client »

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VisualCron Client

The VisualCron Client is a separate application that constitutes the main type of user interface for VisualCron. With the client you configure VisualCron and manage the Jobs and Tasks that are run by the server.

Several VisualCron clients can be connected to the same VisualCron server, typically a user have both the VisualCron client application and the VisualCron tray client connected to the same server. See main menu **Server > Main settings > Client connections** for a list of clients that are connected to the currently selected server.

The VisualCron client application can also switch its server connection in the server selection drop-down list in the leftmost part of the toolbar.

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Starting VisualCron Client »

Starting VisualCron Client

The client application is started from the Windows desktop icon (VisualCron X) or the Start menu *Program* > *VisualCron X* > *VisualCron Client*. You can also double click on or open the VisualCron Tray Client to start the VisualCron Client.

As the VisualCron server handles the defined Jobs, the VisualCron client can only connect to the VisualCron server when the server is running.

As the VisualCron server runs as a service, the client application can be closed without affecting the core server activities.

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VisualCron Tray Client »

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VisualCron Tray Client

The VisualCron Tray Client is an application that is part of the VisualCron system. It is shown with a VisualCron icon in the notification area normally located in the bottom right of the Windows screen.

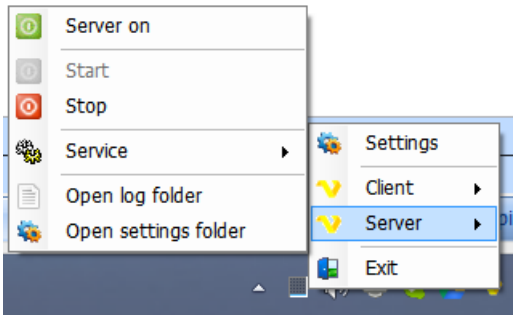
The Tray Client is located to the right in the below image. Right click to interact.

Tray Client Startup

The VisualCron Tray Client starts when a user logs in to the Windows server. When the Tray Client starts, it attempts to connect to the VisualCron Server in order to provide control, allow foreground execution and be able to notify the currently logged in user. When the Tray Client is connected it shows the normal VisualCron icon in the System Tray.

If the Tray Client icon includes a red cross, it is not connected to a server service. One of the reasons may be a stopped service. The change of the icon between having and not having a cross, is based on repeated "ping" from the client and thus it is somewhat delayed related to the actual state of the connection.

Tray Client Features



When the VisualCron Tray Client is connected to the VisualCron Server your are able to control the Client and the Server.

By double clicking on the Tray Client icon you start the VisualCron Client. The Client can also be started by right-click on the Tray Client icon and select *Client* > *Start*.

By right-click on the Tray Client icon you can choose *Server* > *Stop/Start*. You can also Stop and Start the Server service.

Foreground execution

One of the main purposes of the VisualCron Tray Client is to provide foreground execution.

VisualCron Tray Client > Right-click > Settings > Main tab

Start Tray Client on startup

Controls if the tray client should be loaded when each user logs on to the server machine.

VisualCron Tray Client > Right-click > Settings > Notifications tab

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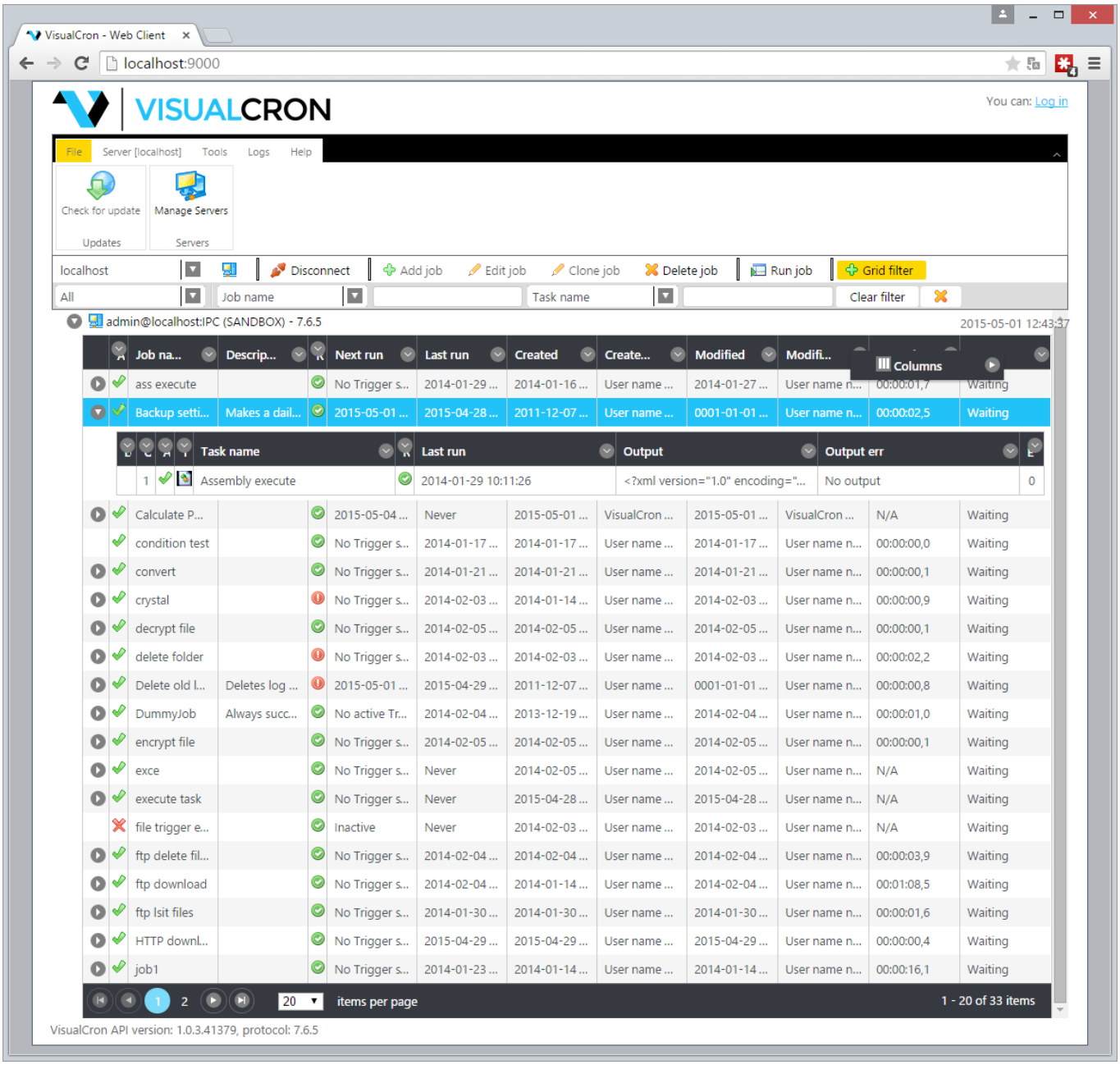
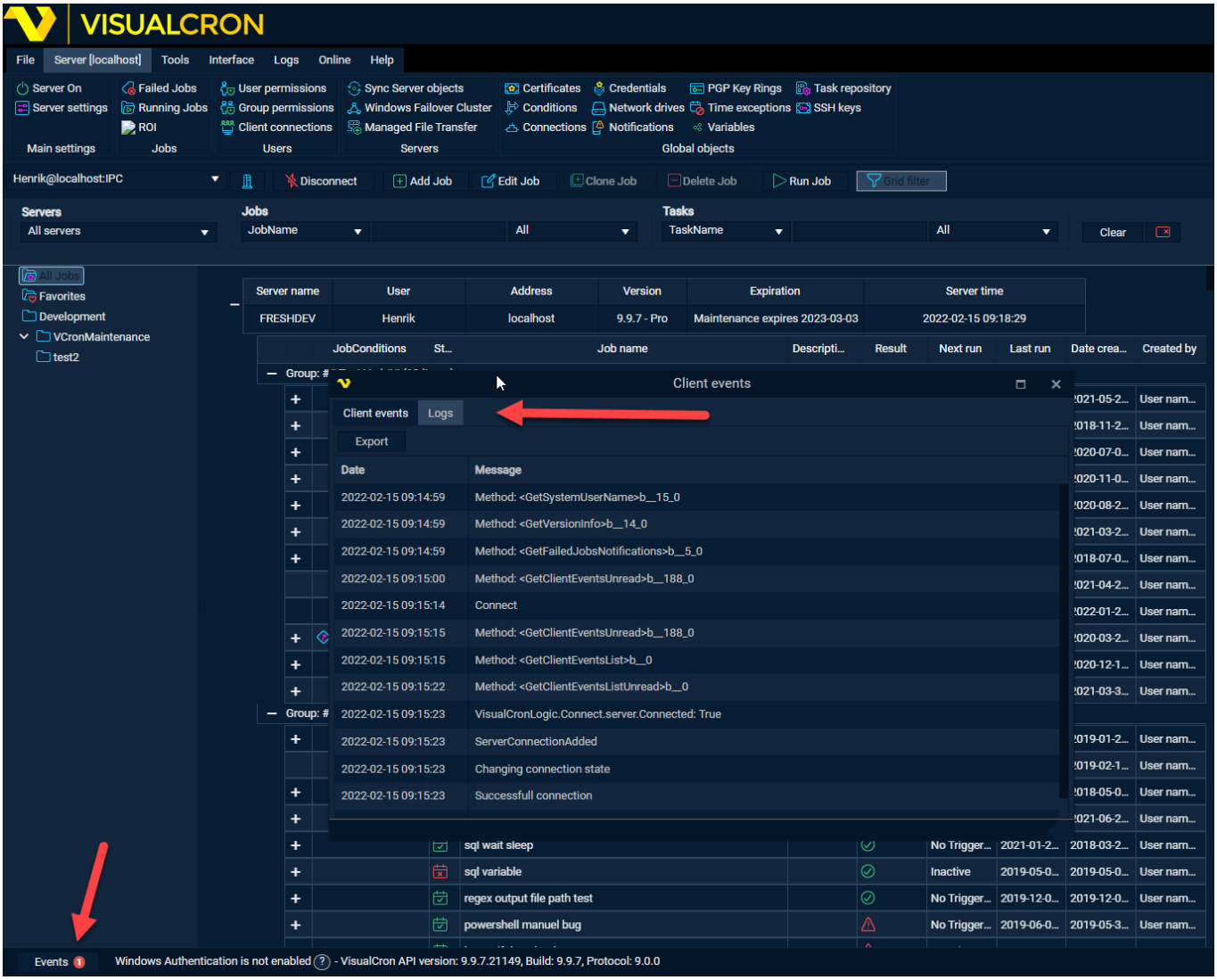
VisualCron Web Client

The VisualCron Web Client was introduced in version 7.6.5. It lets you connect from any device (phone/browser) to the VisualCron Server. The web client has a real time interface for viewing Job and Task information. It is still very limited compared to the normal Client but good for getting an overview and do basic things like running, activating and stopping Jobs and Tasks.



Trouble connecting?

If the Web client gets stuck connecting you can open the Client->Events->Logs and send a screenshot to Support



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Installation of Web Client

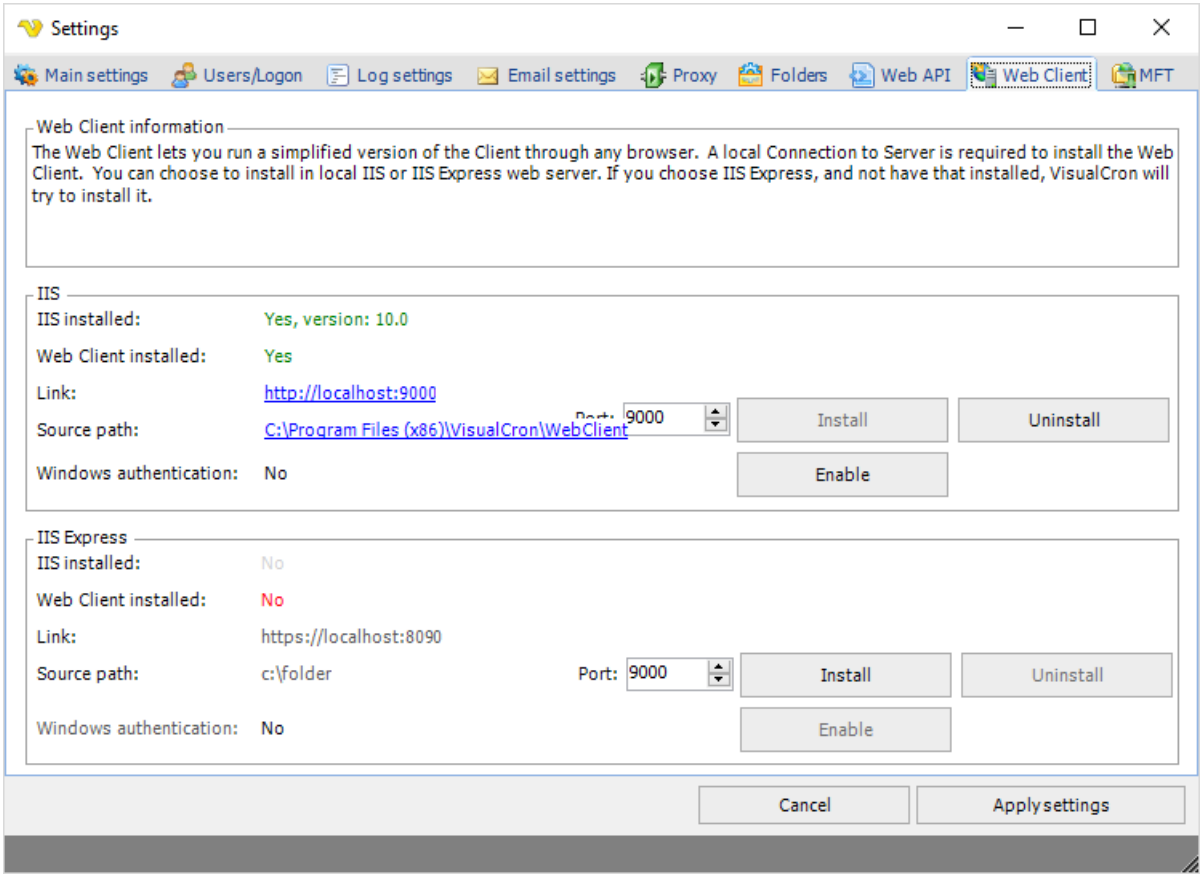
Requirements

IIS 7 or later.

Installation

The web client runs inside Microsoft IIS - a web server. It is possible to install the web client in an existing IIS or install in the free IIS Express version. Installation and configuration of ports are done in Server settings->Web client.

Server > Settings > Web Client tab



The two group boxes display installation status of either IIS or IIS Express. You can see:

- Which version of IIS is installed
- If the Web client is installed
- The local link to the web client
- The local path where the web Client is installed
- Which port is used

Install

Click on Install to install the web Client. We recommend that you use the normal IIS if it is already installed. If you click Install on IIS Express then IIS Express will be installed first (if not installed already).

If you need to change port you can do that in IIS or by uninstalling and installing again with a new port.

Windows authentication

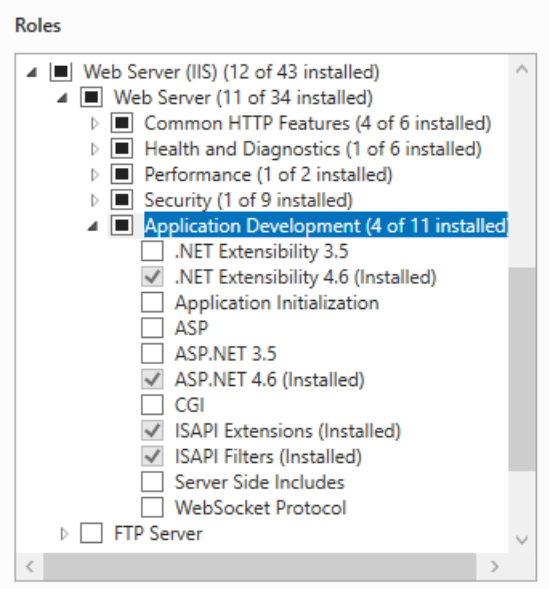
If you are using Active Directory as authentication method in VisualCron > Permissions then you probably want to enable Windows Authentication in the Web Client. Click the *Enable* button to enable.

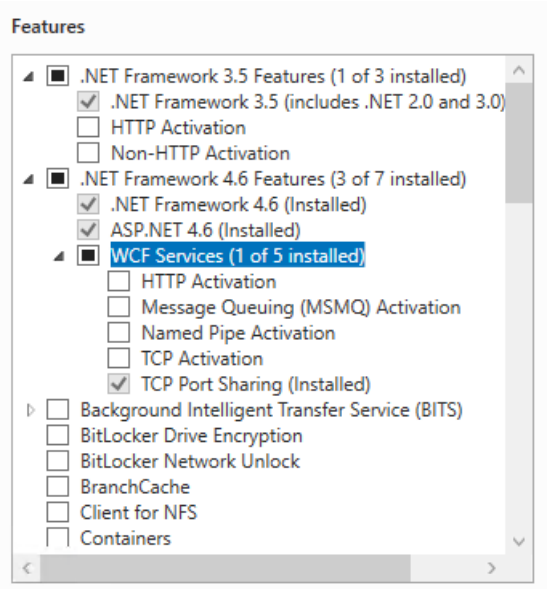
Troubleshooting Web Client and installation

Preparations

Make sure that you have installed the selected roles and features in the Windows server.

Windows 2016 Server > Server Manager > Dashboard > Add roles and features





Installation errors when clicking install from the Client

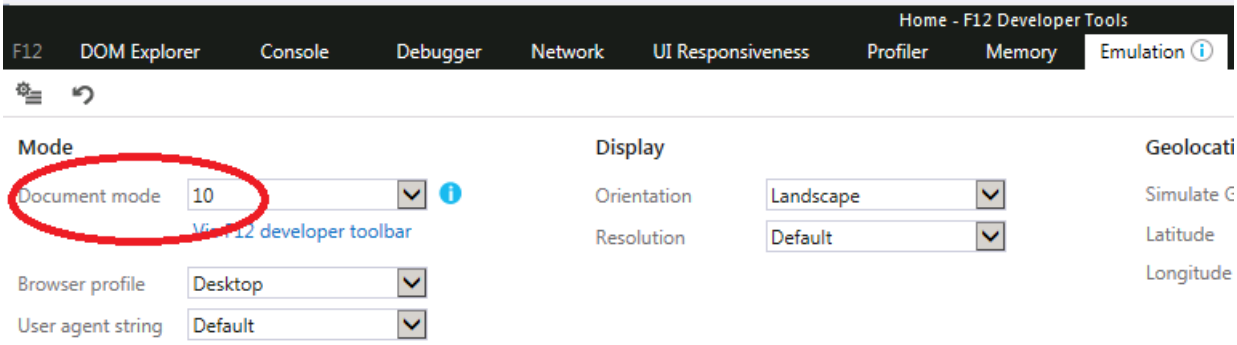
Make sure that you have started the application as Administrator by right clicking on VisualCronClient.exe and select "Run as Administrator". Alternatively, turn off UAC and reboot.

HTTP Error 403.14 error - Forbidden

Please install ASP.NET 3.5 and 4.5 and other features in list mentioned above. Reboot if needed.

Web interface does not display correctly or not working

We recommend using Chrome or Firefox. If using IE make sure that Emulation mode is set to 10. See image below.



AD logon is not working

Open the website in IIS manager and make sure that Windows Authentication is enabled and all other authentication mechanisms are disabled. When creating a new Server connection in server connection manager;

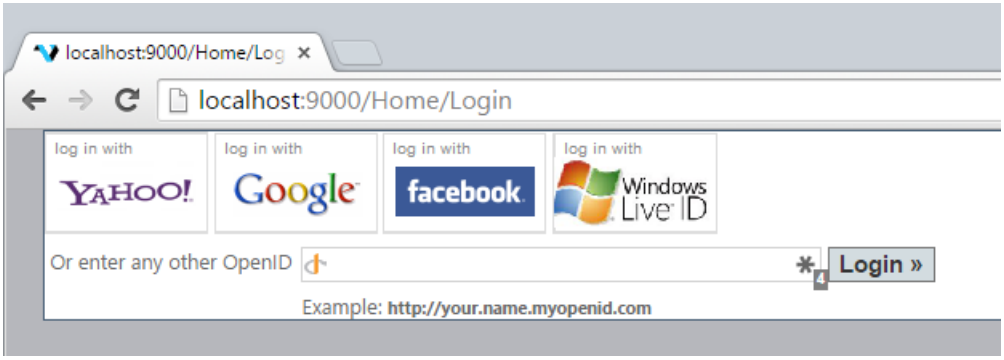
1. check Use AD
2. leave username and password empty

Installing the Web Client on other location than Server

Easiest way is to install the VisualCron Server on the IIS Server. Start the Client and connect locally and go to Server settings->Web client and install the web client as usual. Then stop and disable the VC service. For a custom installation package please contact support.

Web Client settings and logon

You logon into the web Client the same way you logon to the Windows Client. But, if you want to store settings you can click on the Login link to the upper right. It is possible to link settings and logon information to different open authentication systems like:



The advantage is that you can store settings like:

- Server connections
- Column settings

Facebook setup

1. create an App in Facebook
2. set *facebookAppID* and *facebookAppSecret* in web.config

Windows Live Id setup

1. You need to create your own app on https://account.live.com/developers/applications/index
2. - In API parameters add an URL for redirection, which finished with: ~/Home/WindowsLiveIdLogIn (any domain can be used, like "http://example.localhost.com:54257/Home/WindowsLiveIdLogIn") on the "Application settings" tab need to find an application Id and secret key.
3. In order to use redirection to local IP adrress (127.0.0.1) two approaches can be used: a. Create a DNS record like "localhost.yourcompany.com" which points to 127.0.0.1 b. Or add a record to local "host" file (`%windir%/system32/drivers/etc/host`, need to have administrative rights to edit that): 127.0.0.1 example.localhost.com
4. Setup IIS 4.1 * For IIS EXPRESS in `C:\Users%username%\Documents\IISExpress\config\applicationhost.config` Change

```
<binding protocol="http" bindingInformation="*:54257:localhost" />
```

to

```
<binding protocol="http" bindingInformation="*:54257:example.localhost.com" />
```

4.2 * For IIS Open Internet Information Services (IIS) Manager: In the Connections pane, expand the server name, expand Sites, and then click the Web site on which you want to configure the bindings. In the Actions pane, click Bindings. In the Site Bindings dialog box, click Add. In the Add Site Binding dialog box, add the binding information(example.localhost.com), and then click OK.

5. in web.config update these entries with app Id and secret from liveId application :

```
<add key="wll_appid" value="appid" />

<add key="wll_secret" value="secret" />
```

Manual Web Client installation

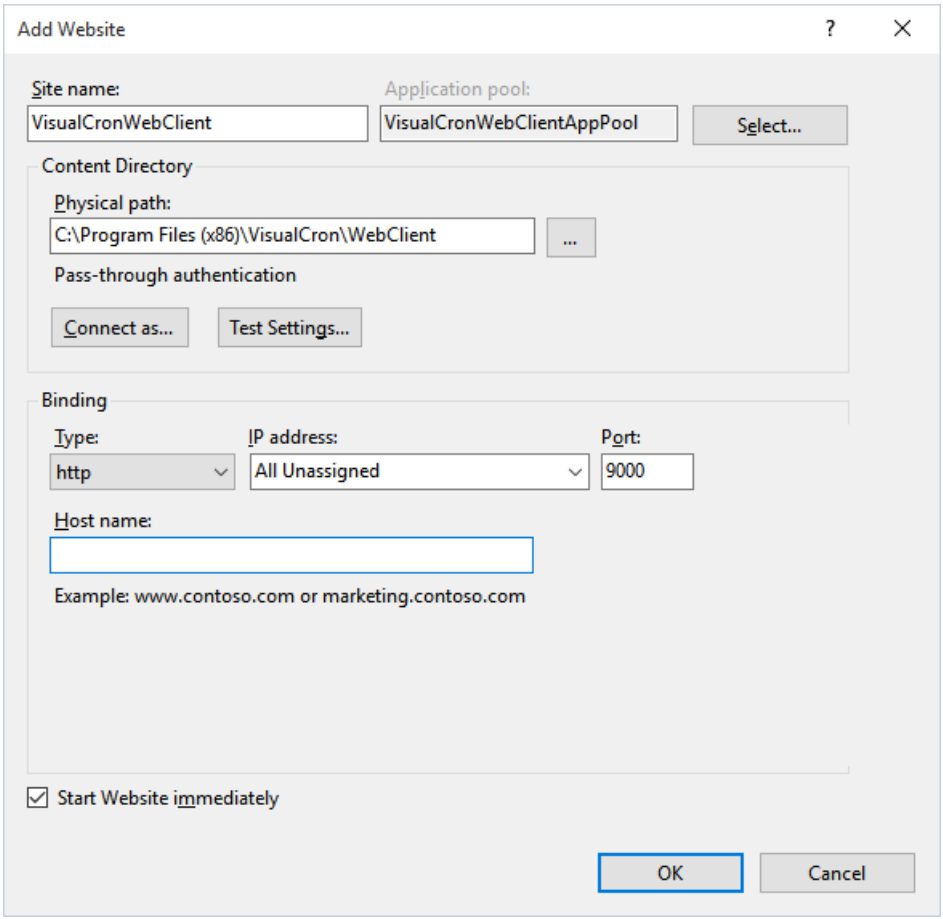
It is possible to manually install the web client. The current requirements are:

- the Web Client needs to be installed on the same machine as VisualCron
- IIS 7 or later is required on that machine
- a specific folder needs to be referenced from IIS

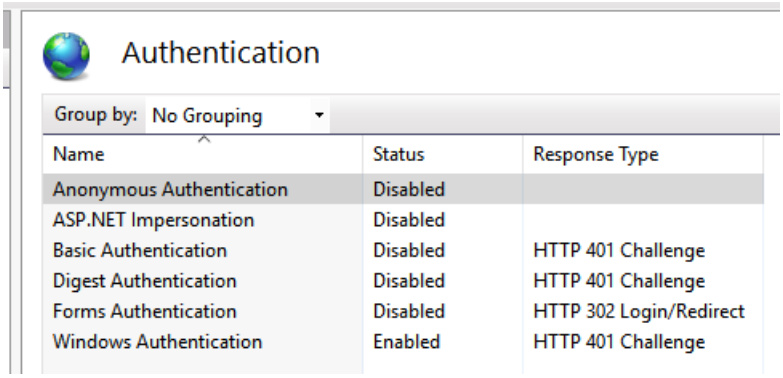
Steps for installing the Web Client are:

1. install the VisualCron Server on the machine
2. open IIS and add an application pool called "VisualCronWebClientAppPool". Setings are .NET 4.0 and Integrated mode

3. Right click on **Sites > Add Website**.



4. Select the VisualCronWebClientAppPool as Application pool.
5. Set the site name to "VisualCronWebClient".
6. Set the physical path to the "WebClient" folder in the VisualCron installation folder (normally in program files (x86)/VisualCron/WebClient).
7. Set any port (default 9000).
8. Click OK to save the web site
9. If you want to us AD for authentication you need to disable Anonymous Authentication and enable Windows Authentication



10. Enter url localhost:9000 in your browser to access the Web Client

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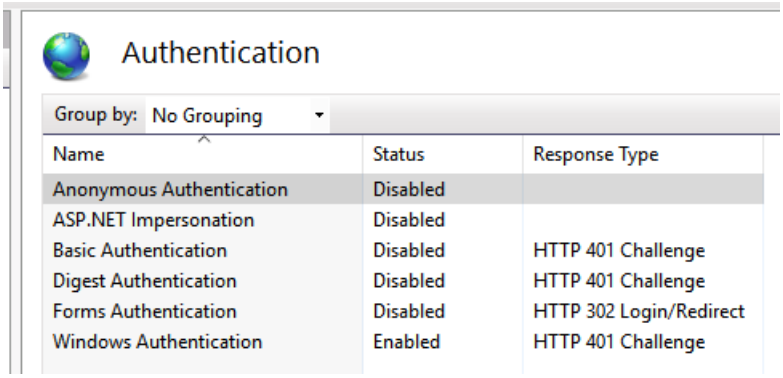
Enable Windows Authentication / Active Directory Logon »

Enable Windows Authentication / Active Directory Logon

To enable AD authentication you need to:

1. enable Windows Auth in IIS and disable other methods



2. click on the Manage Servers button in the Web Client. Add new User and check "Use AD"

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Mobile App »

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Mobile App

Mobile app exists for Android and iOS.

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VisualCron API »

VisualCron API

The VisualCron API is an easy way to control the VisualCron Server. The .NET API is as powerful as the VisualCron Client. The Client itself uses the API to perform all actions.

You can find the API quick start manual and the API reference documentation by the main menu **Help > API** selection.

Basically, you can use these languages:

- .NET - c# or VB.NET
- PowerShell

Visual Basic 6

We do no longer support Visual Basic 6.

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.NET (C#/VB.NET) »

.NET (C#/VB.NET)

.NET

A c# project sample with a lot of functionality exists in the API folder of the installation folder.

We recommend looking at the basic tutorial for the API here - then look at the API sample project.

Below is a quick sample in c#:

```
// create Server object that holds all VisualCron objects like Jobs, Credentials, Connections etc.
Server s;
// create Client object that is used to connect to the Server
Client c = new Client();

// create a Connection object which tells how VisualCron should connect
Connection conn = new Connection();
// use remote connection method to connect to a Server instance on another computer (default local connection
conn.ConnectionType = Connection.ConnectionT.Remote;
// specify the DNS name or IP of remote server
conn.Address = "192.168.0.73";
// optionally specify the port (default value is 16444)
conn.Port = 16444;

// these variables are defined for demonstration purposes: connect with username and password, or connect wit
bool connectWithUsernameAndPassword = false;
bool specifyUpnIdentity = true;
bool specifySpnIdentity = false;

if (connectWithUsernameAndPassword)
{
// specify username you want connect as (default "admin") - user must exist in the Manage user Permissions wi
 conn.UserName = "admin";
// specify password you want to connect with (default empty)
 conn.PassWord = "";
}
else
{
// set below to true to connect with your AD credentials (must be setup on Server to support)
 conn.UseADLogon = true;

if (conn.ConnectionType == Connection.ConnectionT.Remote)
 {
  // for the remote connection with AD credentials we can optionally specify Server identity: either UPN or S
  if (specifyUpnIdentity)
   {
     conn.EndpointIdentityType = EndpointIdentityT.UpnIdentity;
    // specify the UPN of the service account. The UPN is in the form username@domain. For example, when the
     conn.PrincipalName = "username@domain.com";
   }
  else if (specifySpnIdentity)
   {
     conn.EndpointIdentityType = EndpointIdentityT.SpnIdentity;
    // specify the explicit service SPN as the hostname part of the service endpoint address prefixed with th
     conn.PrincipalName = "HOST/hostname.domain.com";
   }
 }
}

// connect to Server, set sync to true to get all Server objects
s = c.Connect(conn, true);

// loop through existing Jobs
foreach (JobClass j in s.Jobs.GetAll())
{
// write Job name to console
 Console.WriteLine(j.Name);
}

// finally disconnect
s.Disconnect();
```

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Powershell »

Powershell

Some of our users have started to use PowerShell to interact with VisualCron. Below are some basic code snippets:

Snippet #1

```
# Load the VisualCron API Dlls
$VC                = [Reflection.Assembly]::LoadFrom("C:\Program Files (x86)\VisualCron\VisualCron.dll");
$VCAPI         = [Reflection.Assembly]::LoadFrom("C:\Program Files (x86)\VisualCron\VisualCronAPI.dll");

# Define Client & Server Objects
# Globals to allow sharing of connections
$Global:Client         = New-Object -TypeName VisualCronAPI.Client
$Global:Server         = New-Object -TypeName VisualCronAPI.Server

# Read Only VisualCron User for API Access
# VisualCron UserName and Password from your Site
$Conn_UserName                          =         'username'
$Conn_PassWord                          =         'password'
$Conn_Address                          =         'localhost'

# Standard Settings
$Conn_Port                                      =         16444
$Conn_ConnectionType         =         'Remote'

# Function to Connect to a VisualCron Server using the API
function VCAPI-ConnectServer ([string]$Conn_Address) {

# Define Connection Object
$Conn = New-Object -TypeName VisualCronAPI.Connection

# Set Connection Values
$Conn.Address                          =         $Conn_Address
$Conn.UserName                =         $Conn_UserName
$Conn.PassWord                          =         $Conn_PassWord
$Conn.Port                                      =         $Conn_Port
$Conn.ConnectionType         =         $Conn_ConnectionType

# Try to Connect to the VisualCron Server
try
 {
         $Global:Server = $Client.Connect($conn, $true);

 }
catch [$ClientLoginFailedException ex]
 {
  MessageBox.Show(ex.Message);

 }

}

# Function to retrieve a User Variable Value using the API
# wrapper for generic get variable API call below
function VCAPI-Get-User-Variable ([string]$Variable_Name) {

$Variable_Value = VCAPI-Get-Variable("USERVAR(" + $Variable_Name + ")")

Return $Variable_Value

}

# wrapper for the get-variable API call
# Returns Varian;e Value
function VCAPI-Get-Variable ([string]$Variable_Name) {

$Variable_Name         = "{" + $Variable_Name + "}"

$Variable_Value = $Global:Server.Variables.GetGenericVariable($Variable_Name)

Return $Variable_Value
}
```

Snippet #2

```
# Determine Script Path
$Path = Split-Path $MyInvocation.MyCommand.Path

# Determine Script Drive
$Drive = (Get-Item $Path).Root.Name

Remove-Variable -Force HOME
Set-Variable HOME $Path

# include the VisualCron API
. "$HOME\VisualCron_API.ps1"

# API Information - Example - Direct API Call
$OSVersion = [VisualCronAPI.ComputerInfoAPI]::GetOSVersion()
Write-Host '$OSVersion : ' $OSVersion

# API Information - Example - Direct API Call
$LocalAdmins = [VisualCronAPI.ComputerInfoAPI]::GetLocalAdministrators()
Write-Host '$LocalAdmins : ' $LocalAdmins

# Set Client Values - Example using $Client Object
$Client.LogToFile = $False

################################################################################
# Server Connection and API Calls
#
################################################################################

# Connect using Server Name (Fully Qualified)
#VCAPI-ConnectServer('washington.somewhere.com.au')
# or
# IP Address
VCAPI-ConnectServer("123.145.167.89")

# Various Variable Calls - Replace First 2 With UserVariable Names from Your Site
$VCUserVariable = VCAPI-Get-User-Variable("SERVER01")
Write-Host '$VCUserVariable : ' $VCUserVariable

$VCServerName = VCAPI-Get-Variable("USERVAR(SERVER02)")
Write-Host '$VCServerName : ' $VCServerName

$VCServerIP = VCAPI-Get-Variable("SERVER(IP)")
Write-Host '$VCServerIP : ' $VCServerIP

$VCServerPort = VCAPI-Get-Variable("SERVER(Port)")
Write-Host '$VCServerPort : ' $VCServerPort
```

Snippet #3

https://gist.github.com/atifaziz/9400489

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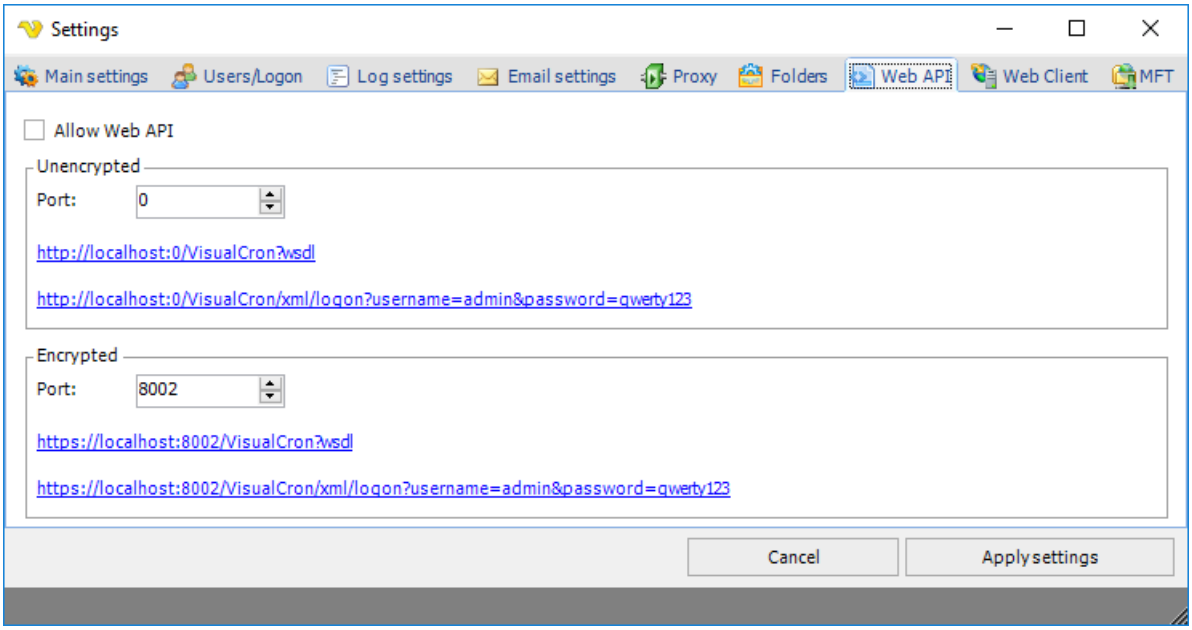
VisualCron Web API

The VisualCron Web API is an alternative way to interact with VisualCron and extract information.

Server > Settings > Web API tab



Allow Web API

When checked VisualCron open ports for Web API.

Unencrypted/Encrypted ports

The Web API uses two ports for communication. The encrypted one uses a certificate created by VisualCron to enable a secure communication channel.

Permissions

The Web API uses the same permission system as in VisualCron which means that you need to add a user in Manage user permissions window first.

Available methods

Once the WebAPI is allowed you can see available methods here: http://localhost:8001/VisualCron/text/Docs

Calling the Web API There are two ways of requesting information:

1. REST The VisualCron REST service communicate through the HTTP protocol. By making simple HTTP calls against the VisualCron service you can easily extract information and interact with VisualCron. The REST service is able to return 3 different result outputs: Text - plain text output XML - XML output JSON - JSON output

The output method is controlled through the url: https://localhost:8002/visualcron/text/job/list?token=[token] [https://localhost:8002/visualcron/xml/job/list?token=token] https://localhost:8002/visualcron/json/job/list?token=[token]

Output result

By default, if you use text as output headers are added (property names). If you want to exclude these you can set &includeheaders=false in the query. By default available properties will be listed but you can also set which properties (columns) to include like this: http://localhost:8001/visualcron/text/job/List?id=1&token=[token]&columns=id,name,runmissed,tasks

It is possible to control the field separator, text qualifier and line break like this: http://localhost:8001/visualcron/text/job/List?

id=1&token=[token]=59&textQualifier=34&lineBreak=10

Tokens and authentication

It is possible to authenticate once and use a token that will work for 24 hours (and will be renewed for each call). The token is then used in each call. You can also authenticate each time you call a method. Using token and a method requires at least 2 calls instead of supplying user name and password in each call. However, using tokens is faster in the long run and generally more secure.

Get token

To get a token you authenticate against the the logon method: http://localhost:8001/visualcron/text/logon?username=admin&password=qwerty123

This call returns a token that you can used in following calls like: http://localhost:8001/visualcron/text/job/List?token=[token]

Authenticate in call By adding user name and password parameters you can work directly with the method without using tokens: http://localhost:8001/visualcron/text/job/List?username=admin&password=qwerty123

2. Web service/SOAP

It is also possible to communicate with VisualCron through the web service API. The wsdl URL can be found in the Web API tab in Server settings.

There is the following example in the API folder (sample TestClient project):

```
var binding = new BasicHttpBinding()
{
        MaxBufferPoolSize = int.MaxValue,
        MaxReceivedMessageSize = int.MaxValue,
        ReaderQuotas =
                new XmlDictionaryReaderQuotas()
                {
                        MaxArrayLength = int.MaxValue,
                        MaxStringContentLength = int.MaxValue,
                        MaxNameTableCharCount = int.MaxValue
                },
        Security = new BasicHttpSecurity()
        {
                Mode = BasicHttpSecurityMode.TransportCredentialOnly,
                Transport = new HttpTransportSecurity()
                {
                        ClientCredentialType = HttpClientCredentialType.Basic
                }
        }
};

var client = new WebServiceClient(binding, new EndpointAddress("http://localhost:8001/Visual
//or just:
//
//var client = new WebServiceClient();
//
//but better setup binding

if (client.ChannelFactory.Credentials != null)
{
        //set Credentials
        client.ChannelFactory.Credentials.UserName.UserName = txtUserName.Text;
        client.ChannelFactory.Credentials.UserName.Password = txtPassWord.Text;
}
try
{
        //just call methods
        var jobs = client.Job_List();

        foreach (var job in jobs)
        {
                Console.WriteLine(job.Name);
        }
}
catch
{

}
```

Troubleshooting

Can't connect securely to this page (outdated TLS security settings)

Install .NET 4.7.1 and reboot.

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VCCommand

VCCommand.exe is a command line tool residing in the install folder\VCommand folder. The VCCommand is an alternate way, just like the API to interact with a local or remote server. This command line tool is based on command line switches that can perform the following actions at the moment:

- Run a Job
- Activate a Job
- Deactivate a Job
- Stop a Job
- Run a Task
- List Jobs
- Activate license
- Deactivate license

You can see existing command switches and examples by running VCCommand.exe without any parameters:

Example: VCCommand --action runjob --connectionmode local --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action activatejob --connectionmode local --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action deactivatejob --connectionmode local --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action stopjob --connectionmode local --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action runtask --ip 127.0.0.1 --connectionmode remote --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action runjob --ip 127.0.0.1 --connectionmode remote --username admin --password xyz --name "Job Id or Name"

Example: VCCommand --action listjobs --connectionmode local --username admin --password xyz

Example: VCCommand --logontype ad --action listtasks --connectionmode local

Example: VCCommand --logontype ad --upn username@domain.com --action listtasks --ip 127.0.0.1 --connectionmode remote --port 16444

Example: VCCommand --logontype ad --spn HOST/hostname.domain.com --action listtasks --ip 127.0.0.1 --connectionmode remote --port 16444

Example: VCCommand --action activate --r xxxxx-xxx-xxxx-xxxx --connectionmode local --username admin --password xyz

Example: VCCommand --action deactivate --connectionmode local --username admin --password xyz

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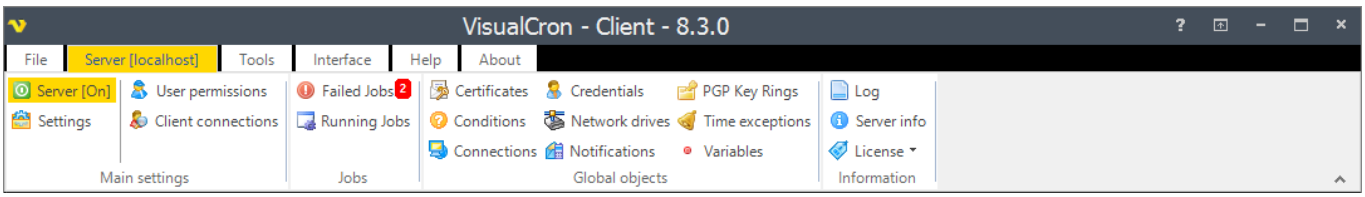
Main Menu



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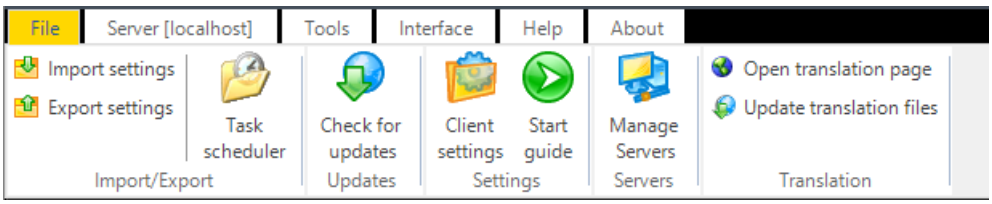
File

The **File** tab is a part of the main menu.



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Import/Export - Import Settings »

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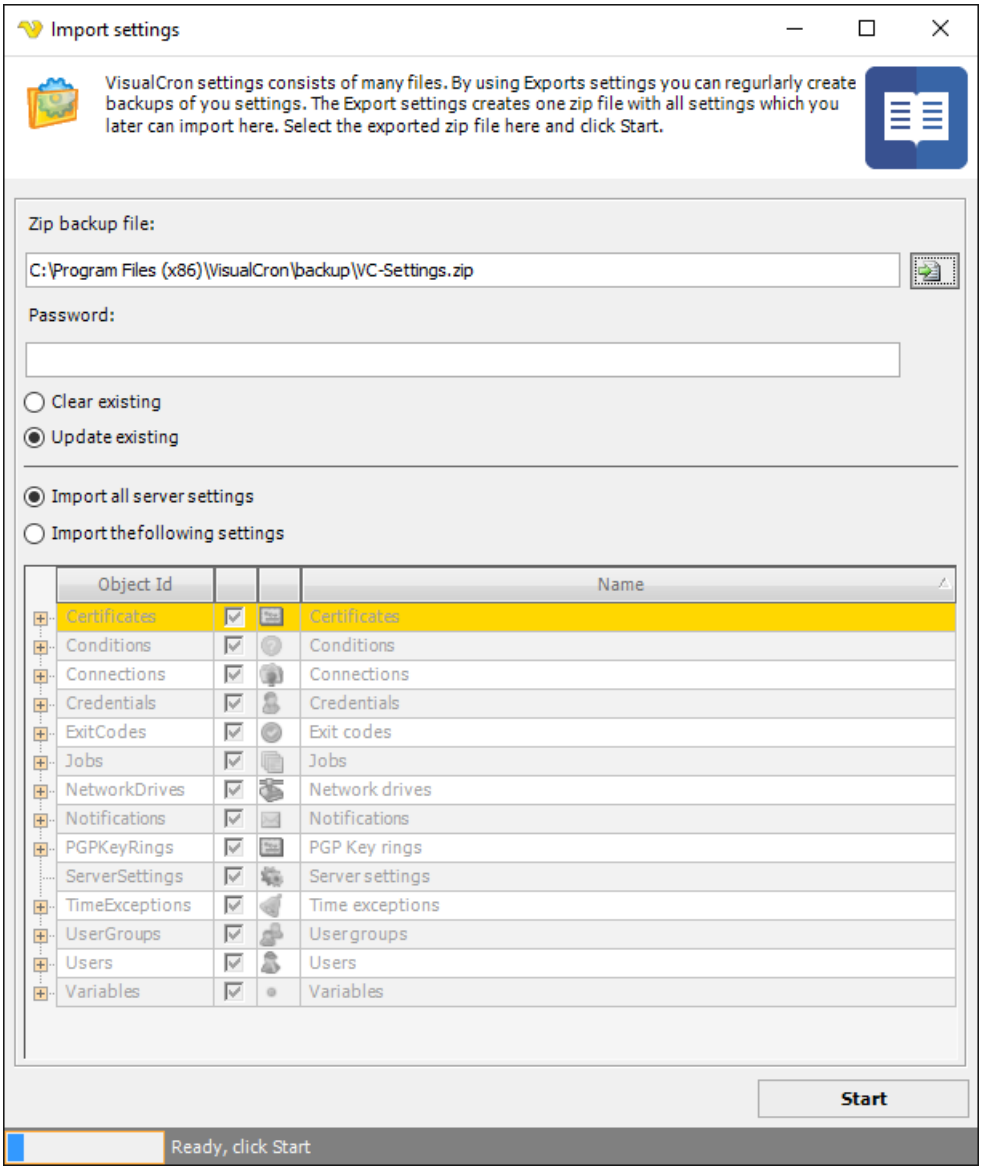
Import/Export - Import Settings

The main menu **File > Import/Export > Import** settings option lets you import settings to the currently connected VisualCron server from a previous backup/export. You may import a settings file across the Internet.

VisualCron settings consists of many files. By using Export settings you can regularly create backups of your settings. The Export settings create one zip file with all settings which you later can import here. Select the exported zip file here and click start.

File > Import/Export > Import settings



File to import

Enter full file path or click the File icon to browse and select a previously exported settings file. The default file for Export settings is C:\Program Files (x86)\VisualCron\backup\VC-Settings.zip

Password

If the exported zip file was protected with password then enter the password here.

Clear existing

Clears all previous settings, then adds the new settings. A setting is only cleared if that setting exists in the exported file. For example, if only Jobs were exported, only the Jobs will be cleared when importing.

Update existing

Updates existing settings. For example, all previous Jobs will remain and updated, if a Job with the same id exists in the file.

Import all server settings

Imports all settings that exist in the file you import.

Import the following settings

Select the settings that you want to import. Note that the setting must exist in the file (must have been previously exported).

Start Click on the Start button to begin the import.

Troubleshooting

Access denied

This error is coming if the Client is not running as administrator. Close the Client and go to the installation folder. Then right click on "VisualCronClient.exe" and choose "Run as administrator".

Workaround

If you have problems importing settings and if you want to overwrite all settings on destination server you can perform the following steps:

1. stop the VisualCron service in the destination server
2. delete all files in the settings folder of installation except license.xml and server_settings.xml
3. copy all settings from source settings folder (except the files above) to destination settings folder
4. start the service

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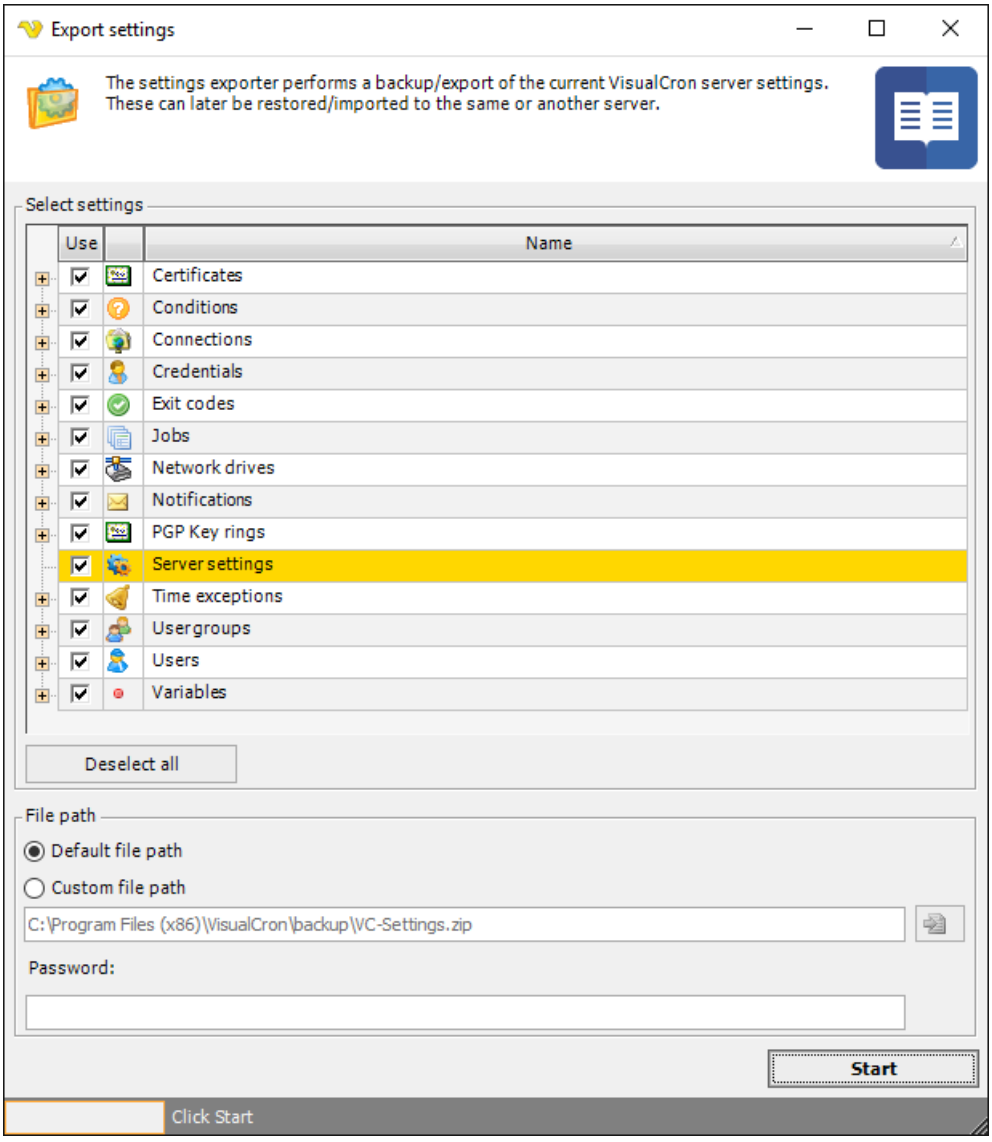
Import/Export - Export Settings

The main menu **File > Import/Export > Export** settings option makes a backup of the the currently connected VisualCron server settings. The backup/export may also be used to import these settings to another VisualCron server or to be used as a part of a problem report or a in fault tracing activity. You may Export/Import across the Internet.

It is recommended to perform regular backups using the Export settings function. If a setting error occurs and a backup file exists in the default backup file path, VisualCron will use the backup file and automatically restore settings. It is a recommendation that you keep a backup file both in the default folder and in another place.

The exported settings consists of many files, but the Export settings function creates one VC-Settings.zip file.

File > Import/Export > Export settings



Select settings

Select the Server settings in the list which you want to export. If there are no specific reason for the export, it is strongly advised that you export all settings, you may later choose to import just some settings. Note that when importing settings again and using "Clear existing settings" only existing object types will be cleared. For example, if you only export your Jobs the Jobs will only be cleared when importing.

Default file path

The default file for Export is C:\Program Files (x86)\VisualCron\backup\VC-Settings.zip.

Custom file path

If you want to use another destination for the exported file than the default file path then specify another file path.

Password

If you want to password protect and encrypt the backup you enter a password here.

Start

Click on the Start button to begin the export.

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Import/Export - Task Scheduler

With the main menu File > Import/Export > Task scheduler option it is possible to import tasks from the built in Task scheduler. There are some limitations as VisualCron uses different Trigger types and different Tasks. Also, you might need to update information after importing. See more information below in sections Limitations and Manual update.

Connecting

To connect to an existing Task scheduler instance you enter information below and the click Connect.

Host name

This is the IP/host name of the local or remote server.

User name

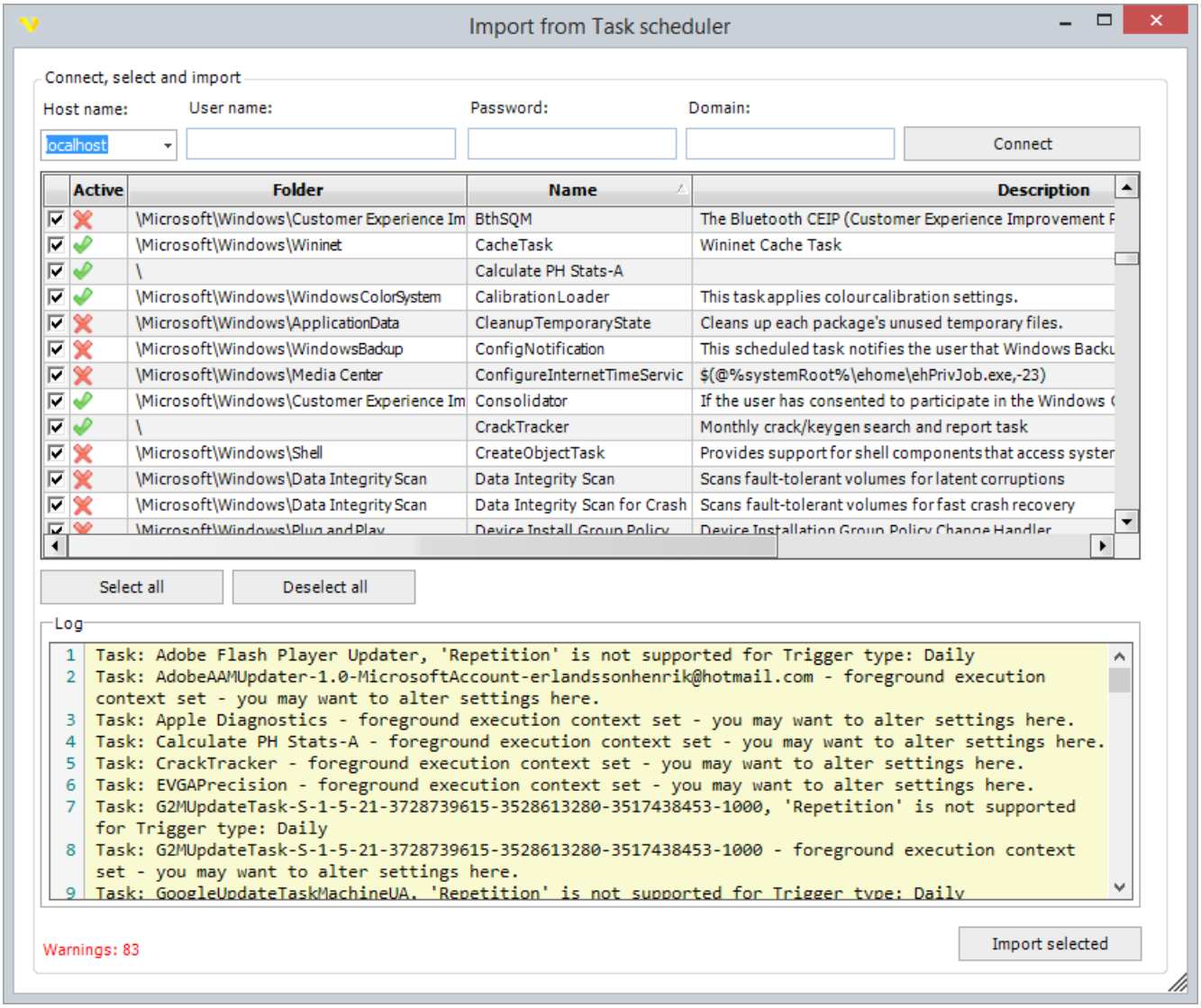
This is the username - used for authenticating against the remote server.

Password

This is the password - used for authenticating against the remote server.

Domain

This is the domain name - used for authenticating against the remote server.



Grid information

The grid displays all Tasks, if they are active or not, the folder they reside in, the name, description and any warnings during the import.

Actual Actions or Triggers within the Task are not visible in the grid but they will be imported.

Task selection

Select the Task you want to import into VisualCron. You can choose to select each one by one, select all or deselect all.

Importing

Click Import selected to start the import. Usually, this goes very fast as tasks are already converted and just needs to be sent to VisualCron Server. Jobs that are created will get the Folder property of the task as group name.

Limitations

Task/Action limitations

- One difference is that currently VisualCron does not fall back to background execution when foreground execution fails.
  Trigger limitations
- There are properties that cannot be directly transferred into VisualCron like the repetition property.
- There are some Trigger types that is not supported like "Registration","Idle"

Warnings

Any warnings, mostly related to limitations, will be displayed in the Warnings column next to each task and also in the log textbox.

Manual update

Manual updates of imported tasks might be required. Some manual changes are stated in the log. These type of changes concern two things:

Credentials - update of password. After import go to Manage Credentials and update the password of any new, imported Credentials. Connections - update of SMTP server information. After import go to Manage Connections and update SMTP server details.

Other types of changes might be to update existing Execute Task. VisualCron does not execute the same way as the Task Scheduler and manual alterations might be needed. For example, if you use cmd.exe you should instead call the full path to the executable/script in the command line instead. This is because VisualCron needs that to be able to capture exit code and output.

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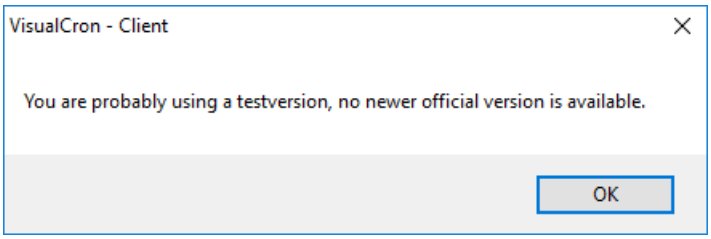
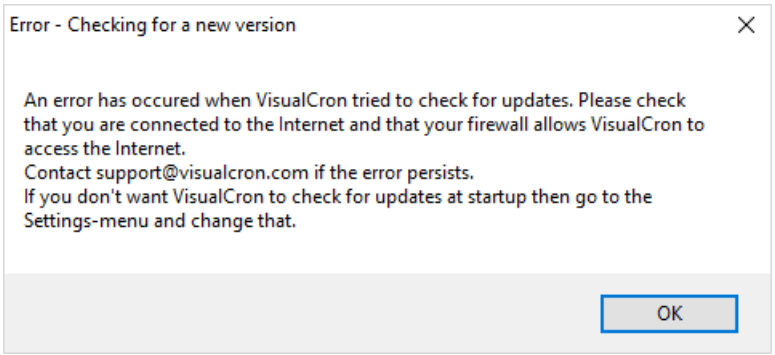
Updates - Check for Updates

The main menu **File > Updates > Check for updates** option connects to the VisualCron web site i order to find if there is a later version available.

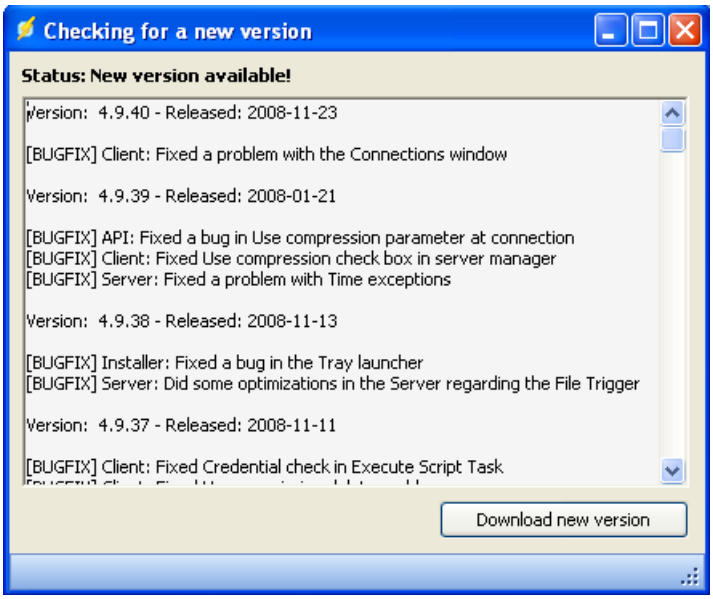


In case of this response, you should repeat the updates function at a later date until the official version is available.

If the VisualCron Client is off, the computer where the VisualCron Client runs is offline and the VisualCron Client is started, the below message is displayed. It is also shown when the computer where the VisualCron Client runs is offline and the **File > Updates > Check for updates** is clicked.



In **File > Settings > Client settings > Main settings** tab, uncheck Check for updates at startup if desired.



In this case you are encouraged to download the latest official version.

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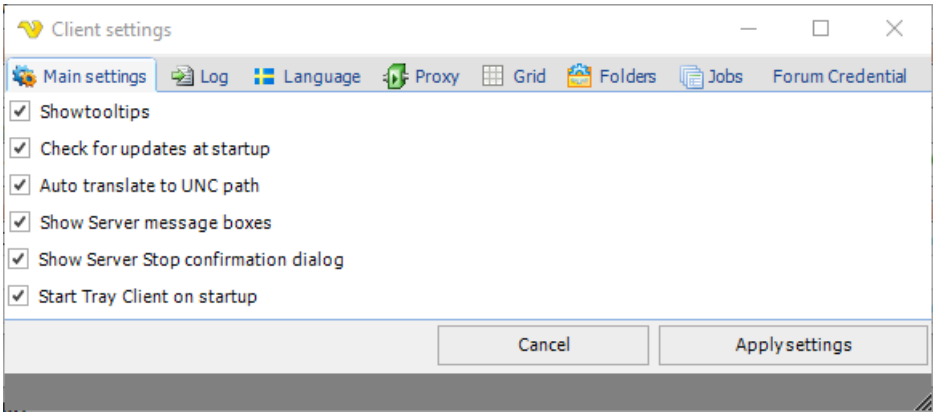
Settings - Client Settings

Some general settings are available for the Client. These are located in the main menu **File > Settings > Client settings.**

File > Settings > Client settings > Main settings tab



Show tooltips

If this option is selected, an "Info" window is opened when the mouse points to some settings. The displayed text provides additional information related to the specific setting.

Check for updates at startup

If this option is selected, a connection to visualcron.com is performed at VisualCron client startup in order to check for and notify the user of possible later VisualCron versions.

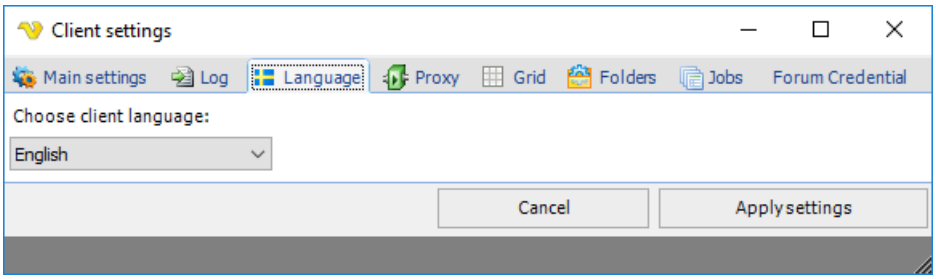
Auto translate to UNC path

When this is checked all logical drives (i.e. Z) is translated to the UNC path (\servername\folder\file)

Show Server message boxes

If alerts should be displayed. Otherwise shown in log window.

File > Settings > Client settings > Language tab



Choose client language

Select language to be used in VisualCron client. In order for the new language to take effect, the client have to be restarted.

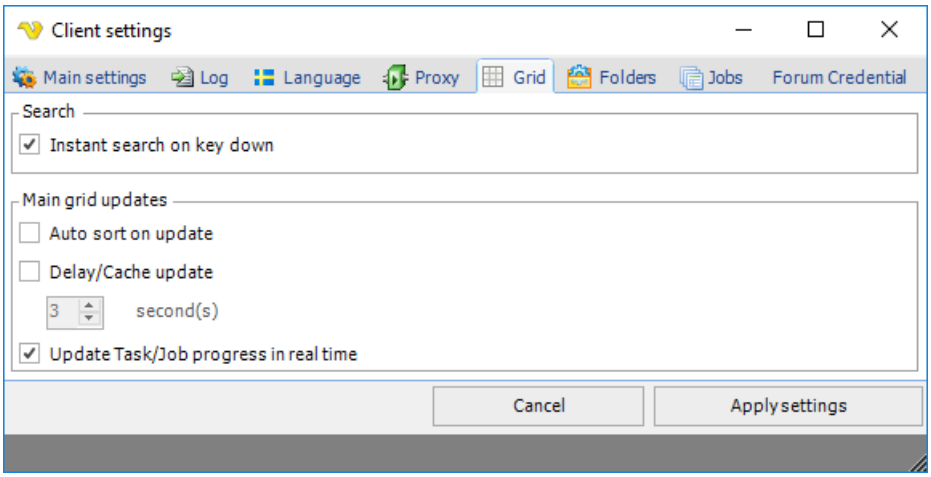
NOTE

The documentation, web, log and debug entries are in English, independently of the language setting. User entered texts, e.g. Job description, remains in the entered language.

File > Settings > Client settings > Proxy tab Enter specific proxy server data to be used for connection to a server. See description

of Server proxy settings for more information.

File > Settings > Client settings > Grid tab



Auto sort on update

If VisualCron should sort all Jobs when updates are received. Checking this degrades Client performance. Default off.

Delay/Cache update

To improve performance you can delay row updates. Default off.

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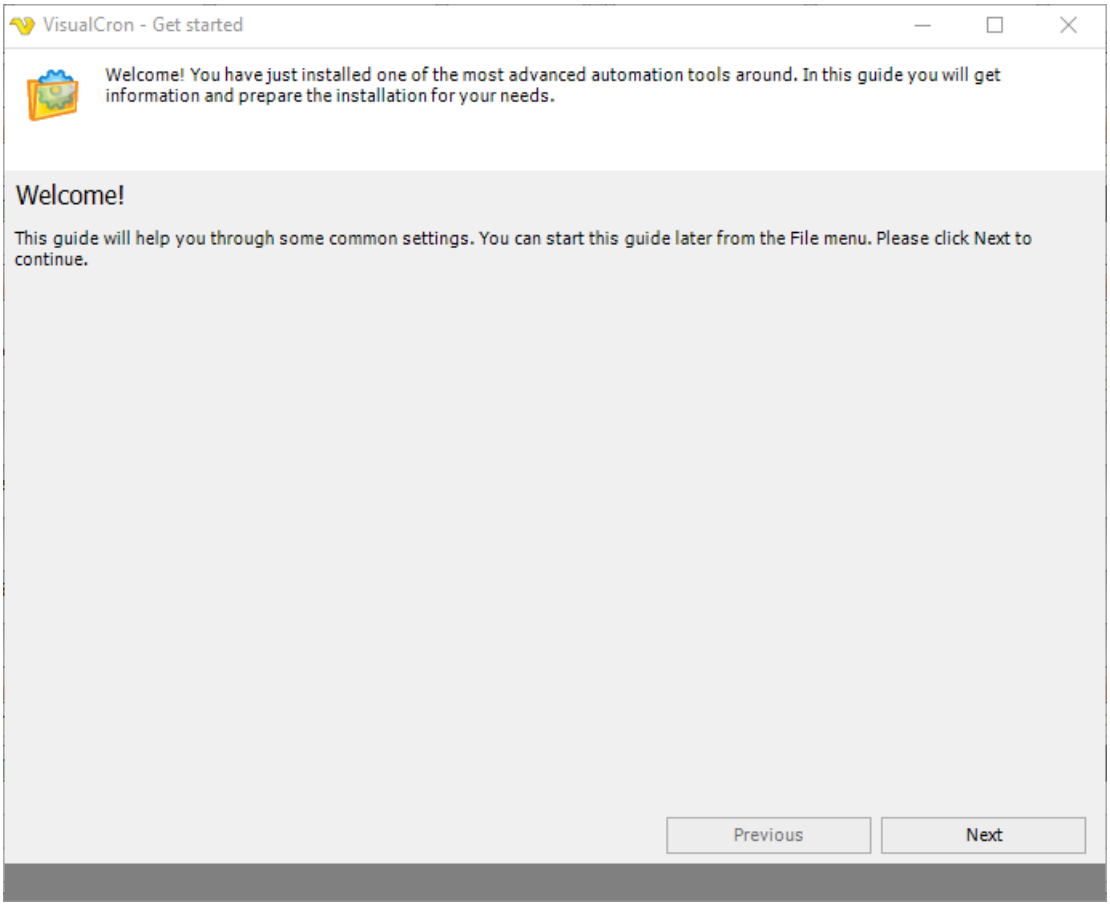
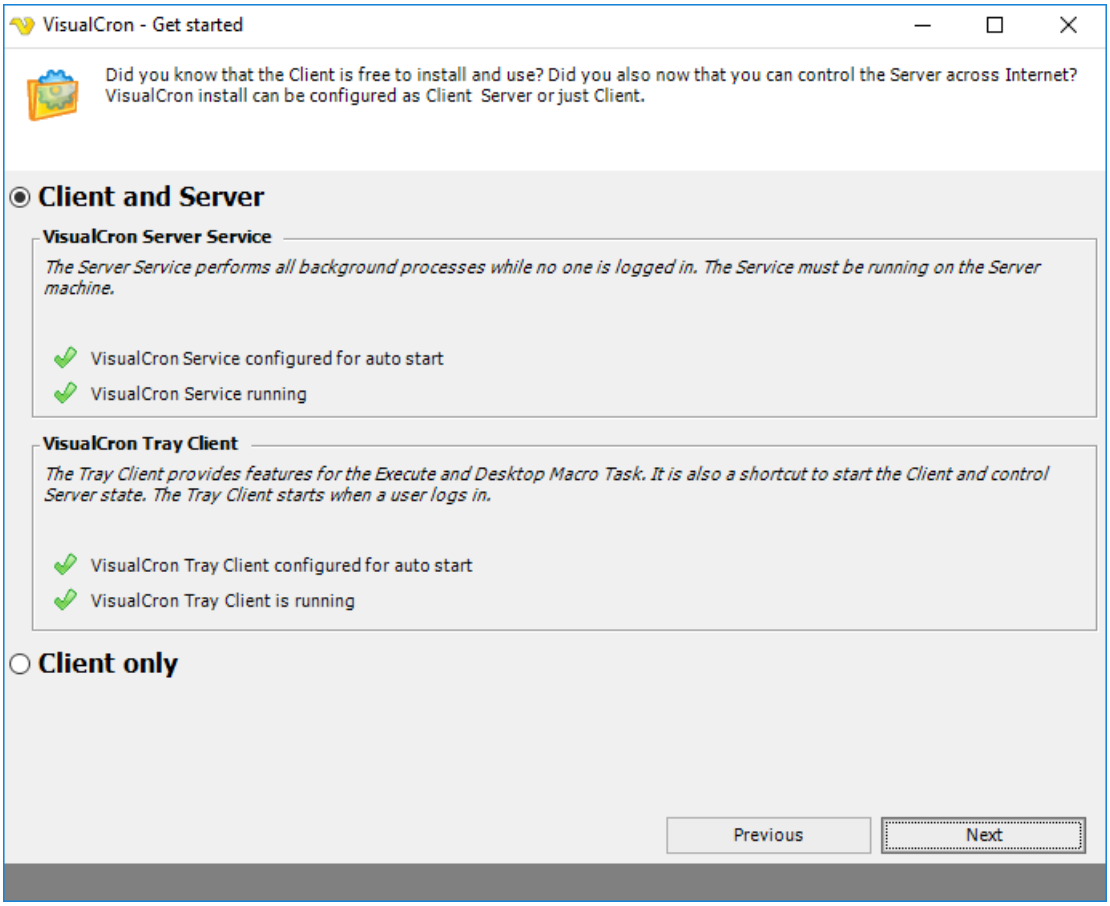
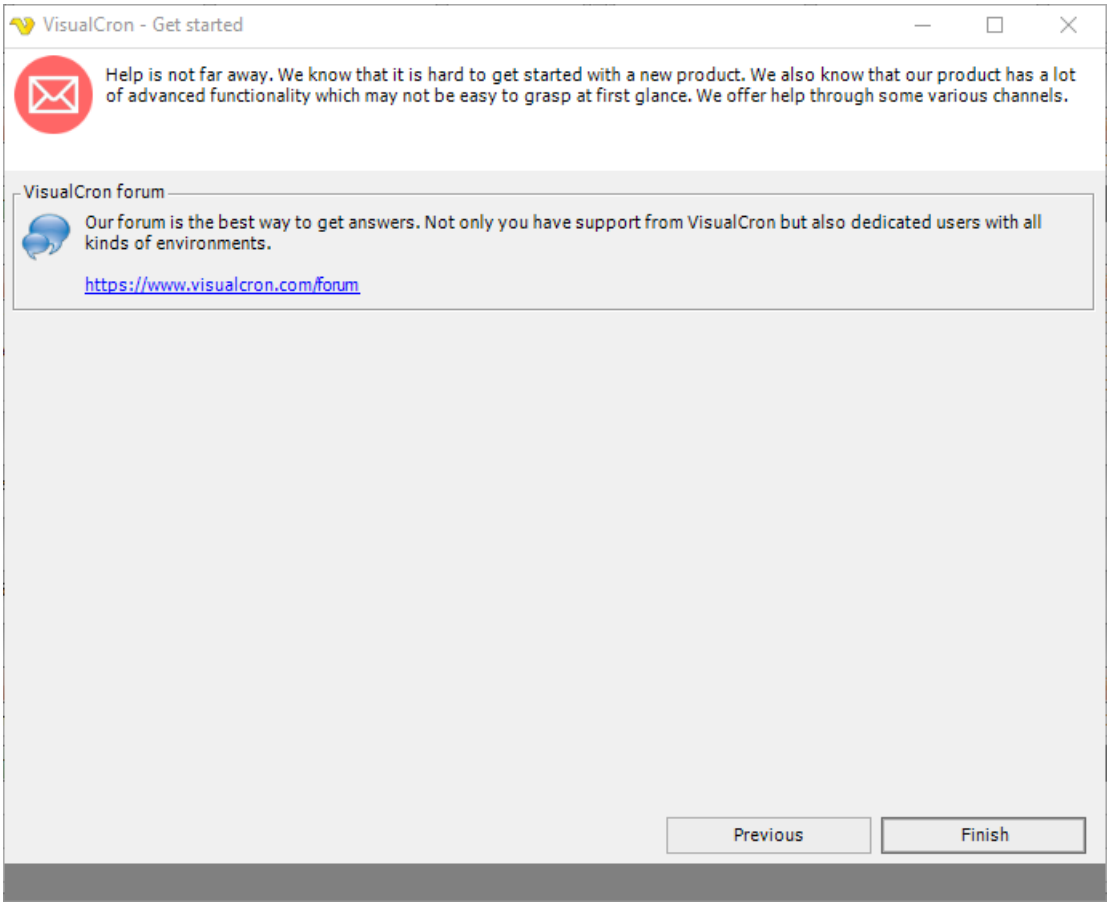
Settings - Start Guide

The main menu **File > Settings > Start guide** option repeats the start screens you were presented to when you installed VisualCron for the first time:







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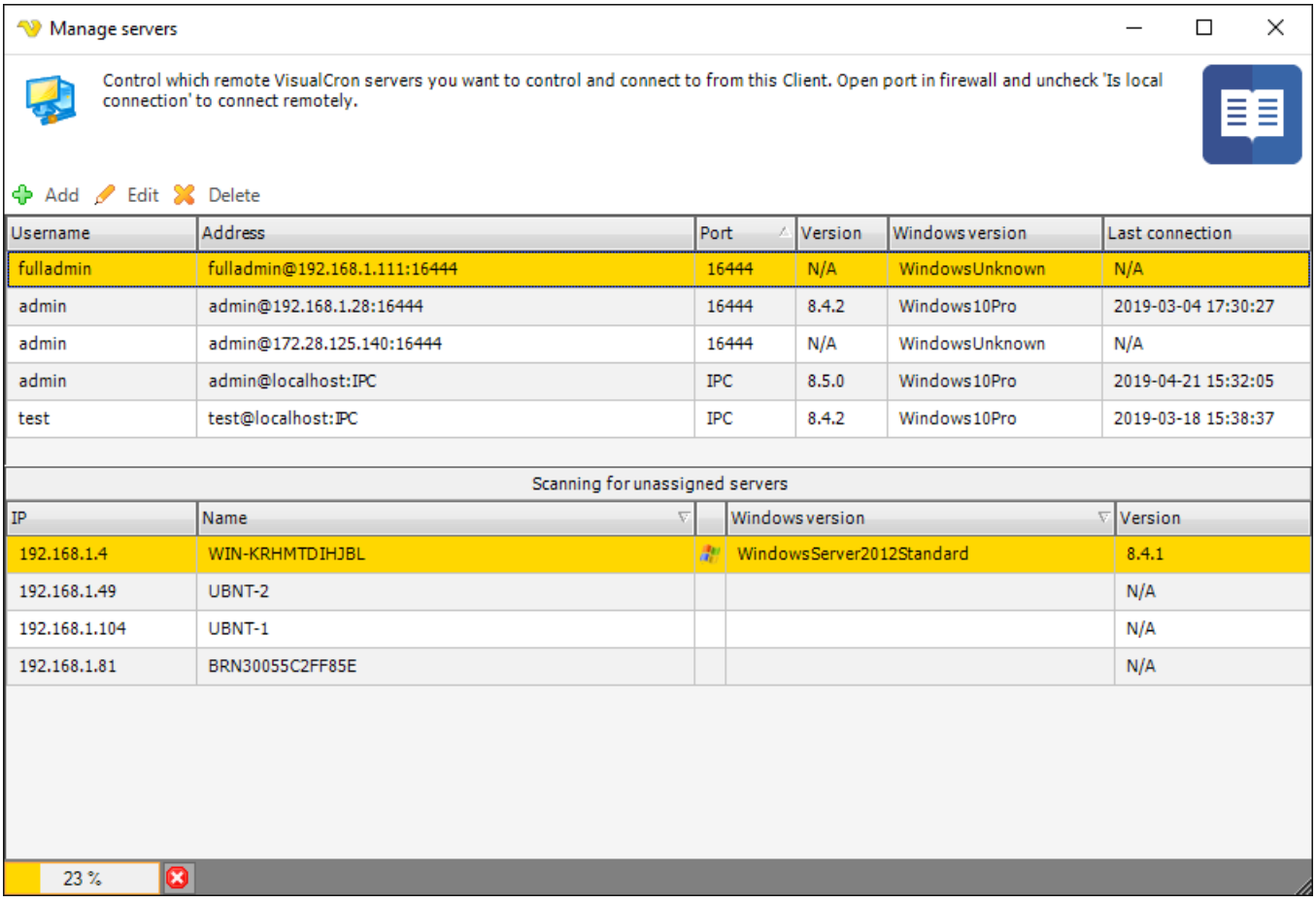
Servers - Manage Servers

With the main menu **File > Servers > Manage servers** option, the currently connected server name is displayed in the main menu **Server** `[<server name>]` tab, as a Server/Username entry in the Server/Jobs/Tasks grid and in the status bar.

By default, the VisualCron server is installed and started on the same computer as the client. Managing servers is a way to add/edit/delete connections to other VisualCron servers. Thus, it is easy to switch between different connections. It is in the login window you choose what server connection to use when you are connecting. All the server connections are displayed in the combo box at top of the login window.

Manager servers window



INFO

In the Manage Servers window you can Add, Edit and Delete Servers that you want to connect to from the Client. You can add any number of Servers that you want the Client to connect to, either manually or automatically when the Client is starting up.

Scanning for unassigned servers

In the Manage servers window there is a built in function for scanning the network for Windows servers and any VisualCron servers. This way you can let VisualCron detect existing ones and then add the servers for connection based on what is found.

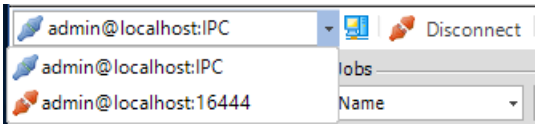
Switching between servers

Also, when using the VisualCron client it is possible to switch to another server.

The easiest way to switch between servers is to click on a server in a Server/Username "track" in the Server/Job/Task grid. Clicking

on another server than the currently connected, immediately updates all parts of the client window with information related the new server.

Switching may also be done by using the toolbar server connection control (Default: "admin@localhost:IPC"):

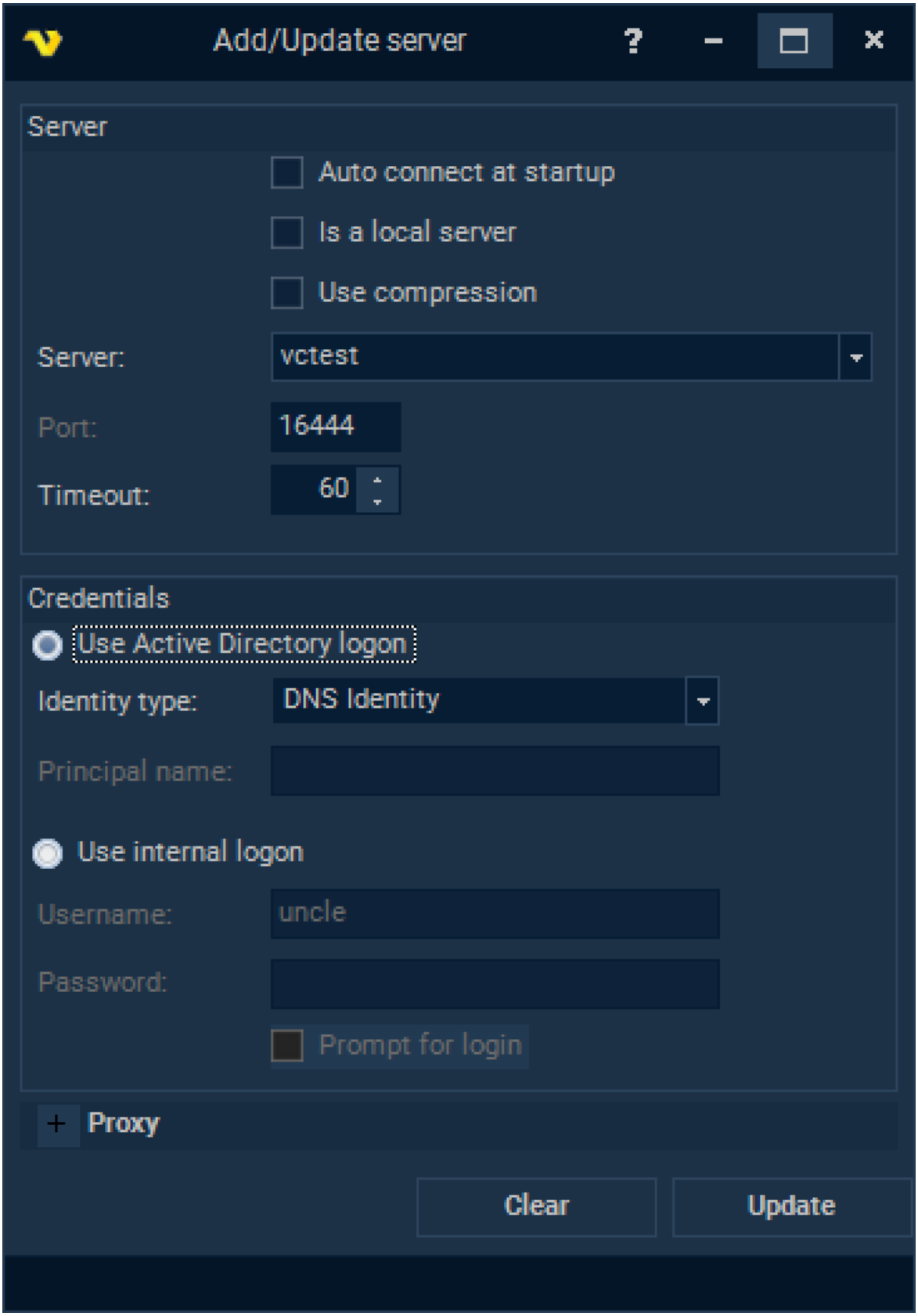


Use the drop down list in the leftmost part of the toolbar to select a new server. If the icon to the left of the server connection is disconnected, all items in the main menu is "greyed out" and not accessible. Click the Connect icon immediately to the right of the drop down server list to connect to the new server. By this, the server name is updated in all parts of the VisualCron client and also all Jobs/Tasks related to the connected server are shown in the Server/Job/Task grid.

Edit and add a server

Choose a server from the list in the **File > Servers > Manage servers** window if you want to edit or delete a server. If you click on Edit the connection information will be shown in the text boxes. Edit any value and click *Update*.

To add a connection, click the *Add* icon (or the *Clear* button if you are in edit mode). Enter the values and click on the *Add* button to add the connection.



Auto connect at startup

If you want the Client to automatically connect to this Server at startup you should check this option.

Is a local server

VisualCron can connect to local and remote Servers. Choose Is a local server if you are connecting to a computer on the same machine, this will increase the login speed to the server significantly.

Server

This can be a server name, or IP number. VisualCron will try to resolve or names. Default: "localhost" (your computer).

Port

Default: "16444". You can only change the port number (which the server is listening to) while you are logged in. If you change the port here, remember to change it in the server. Also, be sure to check that, if you use a firewall, that the port is you enter is opened on that computer for incoming traffic.

Use Active Directory logon/Use internal logon

VisualCron has two different authentication systems; one internal and one that is extended by Active Directory. If you want to allow Active directory logon you need to do that in user logon settings.

We have updated security settings for AD authentication, so now negotiation is handled by native WCF service API. Update involves providing some explicit WCF endpoint settings like Identity type and Principal name. Those applies when VisualCron Server starts on AD environment only.

Identity type:

DNS Identity

Left for backwards compatibility, all messages between client and server are protected by VC certificate encryption. Used when internal authentication is being used. Windows default: Default option for AD authentication when negotionation attempt is made without any explicit settings.

UPN Identity

This identity type is used when VisualCron Service starts as custom AD user account, so client need to know this information explicitly. Please provide Principal Name value as well.

SPN identity

This identity type is used when VisualCron Service starts as SystemService\LocalService\NetworkService, so client need to know this information explicitly. Please provide Principal Name value as well.

Principal Name:

Applies for UPN and SPN identity types only, should contain explicit principal name when negotiating during AD authentication.

UPN identity type:

Principal Name should look like username@FQDN

SPN identity type: Principal Name might look like HOST/serverDNSname.FQDN or serverDNSname.FQDN. In order to check for possible SPN values please run the following command setspn -l serverDNSname in Windows CommandLine utility.

Sample values used to start VisualCron service could be found at user logon settings.

Username

Default: "admin". This is the user name the server uses. Be sure to change this after the initial login.

Password

By default it is blank. This is the password that the server uses. Be sure to change this after the initial login.

Prompt for login

If you want to enter Username and/or password at connection then you should check this box.

Proxy

Proxy settings concerns checking for update, http Job type and activation. The Proxy setup does not apply to the SSL connection between the VisualCron Client and the VisualCron Server.

If you are using a proxy to connect to the Internet and can't connect, uncheck the Autodetect checkbox and enter your settings or contact the network administrator.

Troubleshooting

The client and server cannot communicate, because they do not process a common algorithm You might have disabled TLS 1.2 on the machine. Install .NET 4.7.x or greater and reboot.

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Translation - Open Translation Page

The main menu **File > Translation > Open translation page** option handles VisualCron appearing in specific languages. If your language is missing in VisualCron or if a specific VisualCron caption is missing in your language, and you want to contribute with translation work, please contact VisualCron support.

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Translation - Update Translation Files

The main menu **File > Translation > Update translation files** option handles VisualCron appearing in specific languages. If your language is missing in VisualCron or if a specific VisualCron caption is missing in your language, and you want to contribute with translation work, please contact VisualCron support.

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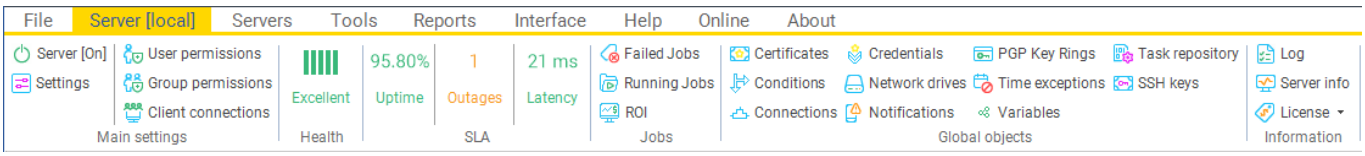
Server

The **Server** tab is a part of the main menu.



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Main - Server On/Off »

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Main - Server On/Off

In the main menu **Server > Main settings > Server** dialog, the VisualCron server status can be set to "On" or "Off". The server status is indicated and/or managed by any connected client by the "Server [On]" or "Server [Off]" text in the main menu Server option.

The status "Server [Off]" means that the service is running but the server doesn't execute the defined Jobs or Tasks, and the *NextRun* field for any active Job will show the "Server off" text. Switching to "Server[Off]" may be used as an emergency stop for the current Job/Task execution.

Once you have changed the server status, the status will be saved and VisualCron will use that status the next time the server computer is started.

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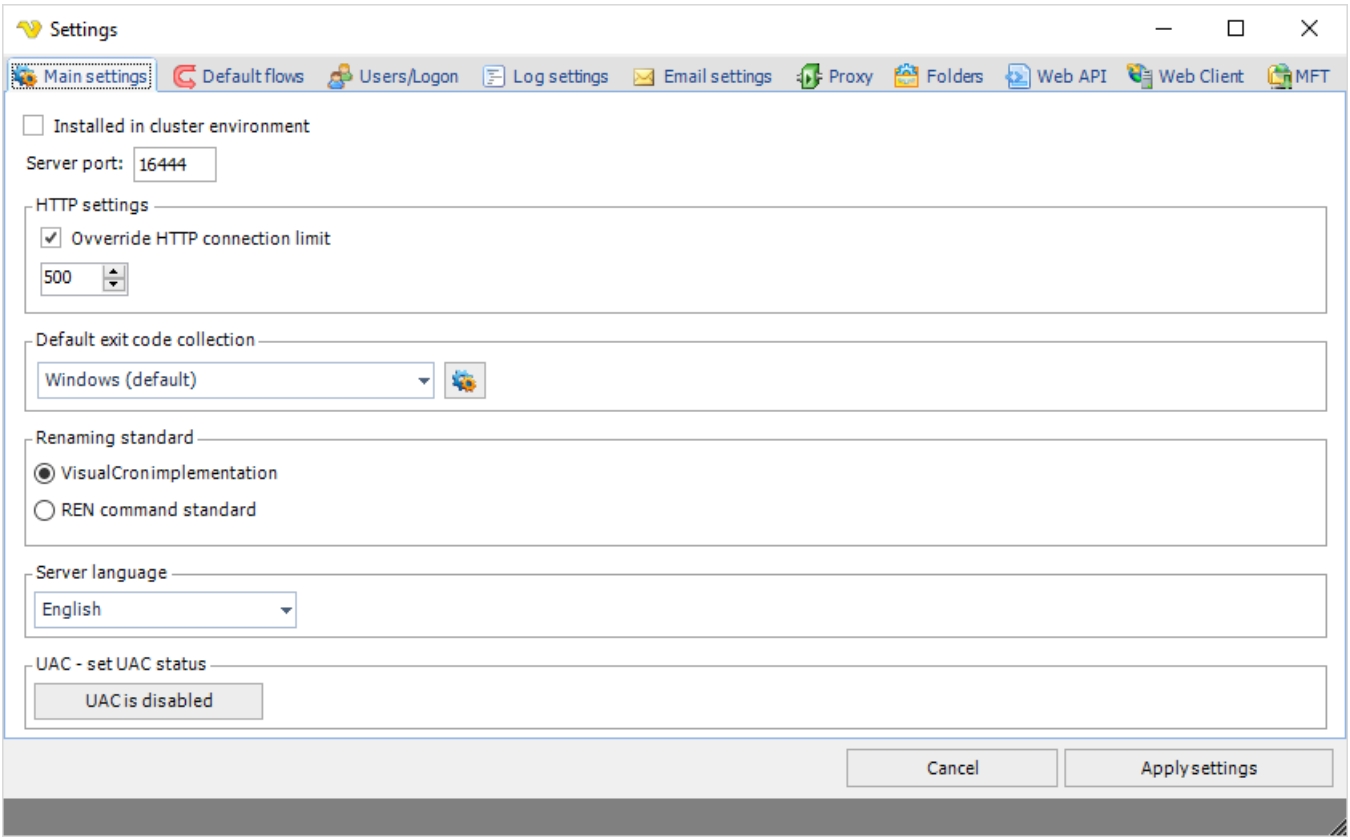
Main - Settings

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. See the following sub chapters for information about other tabs than Main settings:

Main > Settings > Main settings tab



Installed in a cluster environment

Check this if you are installing VisualCron (on two nodes) on a shared drive.

Server port

VisualCron sends encrypted information across the default TCP port 16444. If you want to change this port you enter a new integer value here.

Override HTTP connection limit

This general setting controls number of HTTP connections that can be done from VisualCron. Increasing this might be good if you plan to run many HTTP requests at once (for example through the HTTP Task).

Default exit code collection

This sets the default exit code collection that is pre-selected in On error tab of a Task.

Renaming standard

For various Tasks VisualCron offers "rename" of various strings. Depending on your requirements there are 2 different implementations. The REN command standard follows renaming conventions of REN command. As many of these conventions were not logical to us and our customers we implemented our own renaming standard - adjusting some of the standards of the REN command.

Server language

This controls the language used on the Server (when writing to logs etc).

UAC - set UAC status

This control the Local Security Policy settings "User Account Control: Turn on Admin Approval Mode" and affects Execute Task primarily. If you use the Execute Task along with a Credential and get error -1073741502 you should disabled this property and reboot after the change.

This policy setting controls the behavior of all User Account Control (UAC) policy settings for the computer. If you change this policy setting, you must reboot your computer. The options are:

- UAC is disabled: (Default) Admin Approval Mode and all related UAC policy settings are disabled. Note: If this policy setting is disabled, the Security Center notifies you that the overall security of the operating system has been reduced.
- UAC is enabled: Admin Approval Mode is enabled. This policy must be enabled and related UAC policy settings must also be set appropriately to allow the built-in Administrator account and all other users who are members of the Administrators group to run in Admin Approval Mode.

Alternatively you can edit the registry and set:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Windows\NoInteractiveServices to 0

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Settings - Default Flows »

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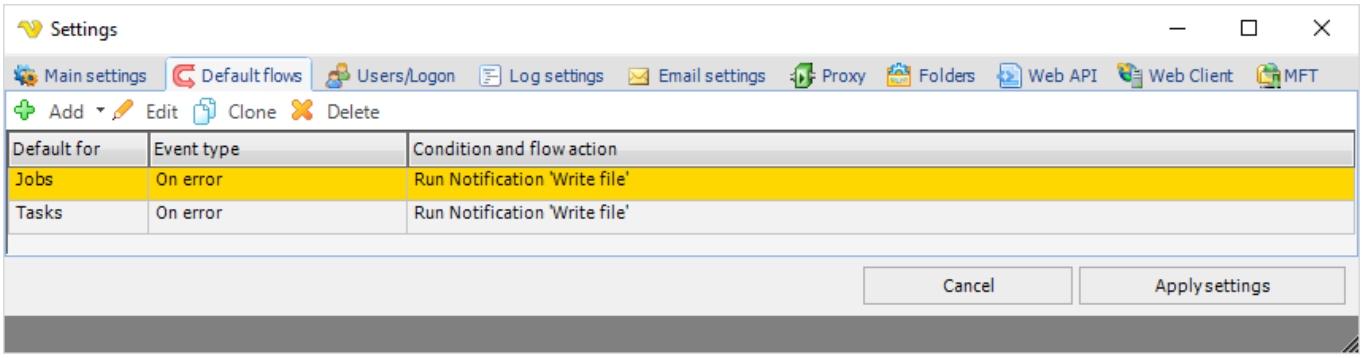
In the main menu **Server > Main settings > Settings** dialog, you can choose to add Flows that will be added as default for new Jobs OR Tasks. Once you have created a default flow here, the flow will be suggested whenever you open a Job or Task for editing/adding. In this way, Default flows has some resemblances to other global objects but it is not quite the same.

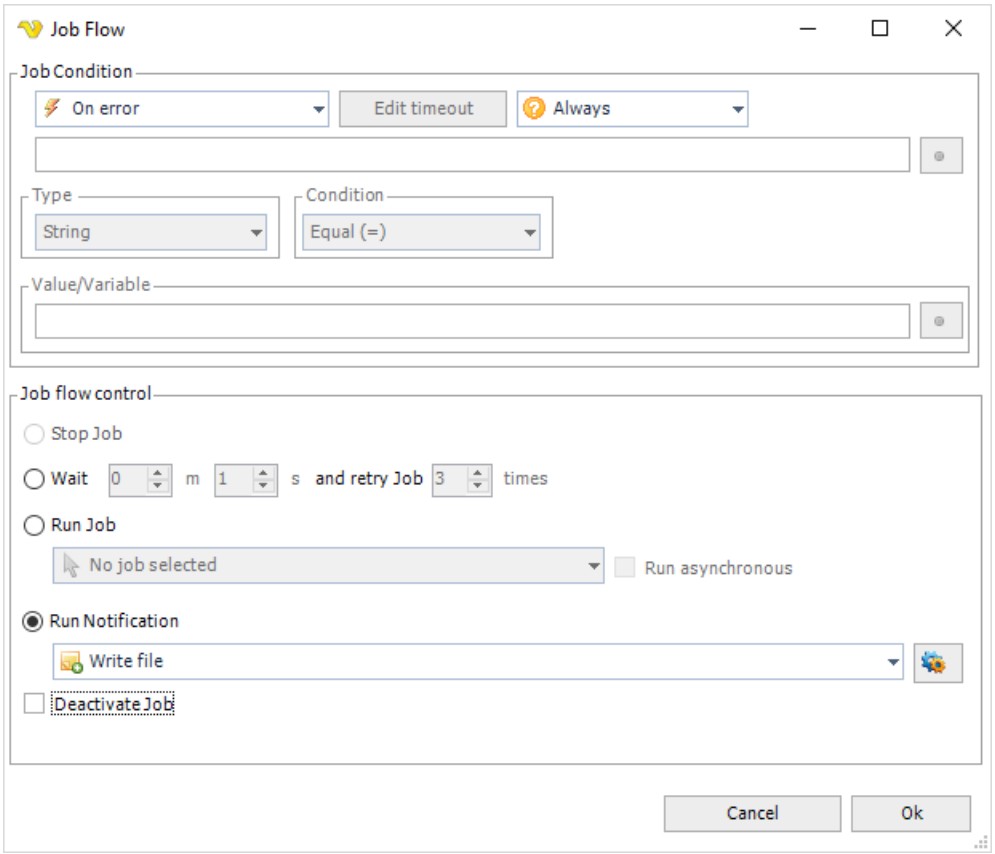
Main > Settings > Default flows tab



Add/Edit/Clone/Delete

Click the **Default flows** icons to update the list of default flows for Jobs and Tasks.

Main > Settings > Default flows > Add > Job flow window

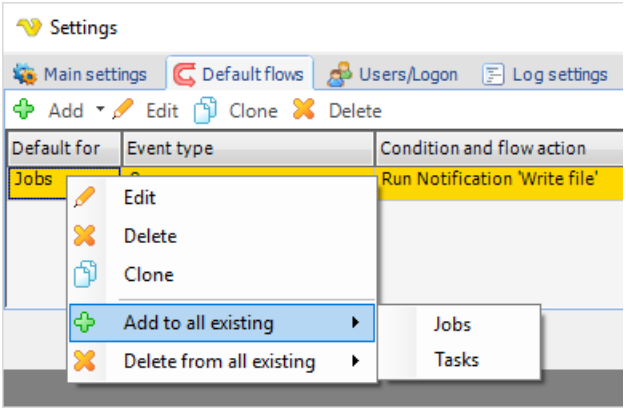


A created default flow will add this flow to all new Jobs or Tasks and will show up in one of the lists in the Edit Job > Flows tab or the Edit Task > Flows tab. Note that Tasks always have two flows included by default; On success - Continue with next Task and On error - Stop Job.

If the new default flow is also desired for previously defined Jobs/Tasks, you need to click the Get default flows icon for each **Job/Task flow** you want the default flow for.

Independently if you right click in the **Default flows** window or in a **Job Flow** or **Task Flow** window, you have the option to add or remove a flow for all Jobs OR Tasks. This will take some seconds and it will run in the background. Thus, the update will not immediately be seen in the **Job Flow** or **Task Flow** window and the Cancel button (not OK) shall be clicked when leaving the window in order not to save the screen contents. The Default Flow Add/Edit/Clone/Delete is based on a hidden Id of the unique flow that is created - not the actual actions it takes (i.e Run Notification, Retry etc). This means that even if you create a Flow that behaves exactly like another existing one it is considered a new Flow as it has another Id. Because of this, if you first create a Default flow and then push it out for all Jobs - then modify the Flow to, let say run other Notification, then push it out again to update all.

Each single flow in the **Job/Task flow** lists can be deleted and the list is immediately updated, in case the **Job Flow** or Task Flow windows are closed by the *OK* button.



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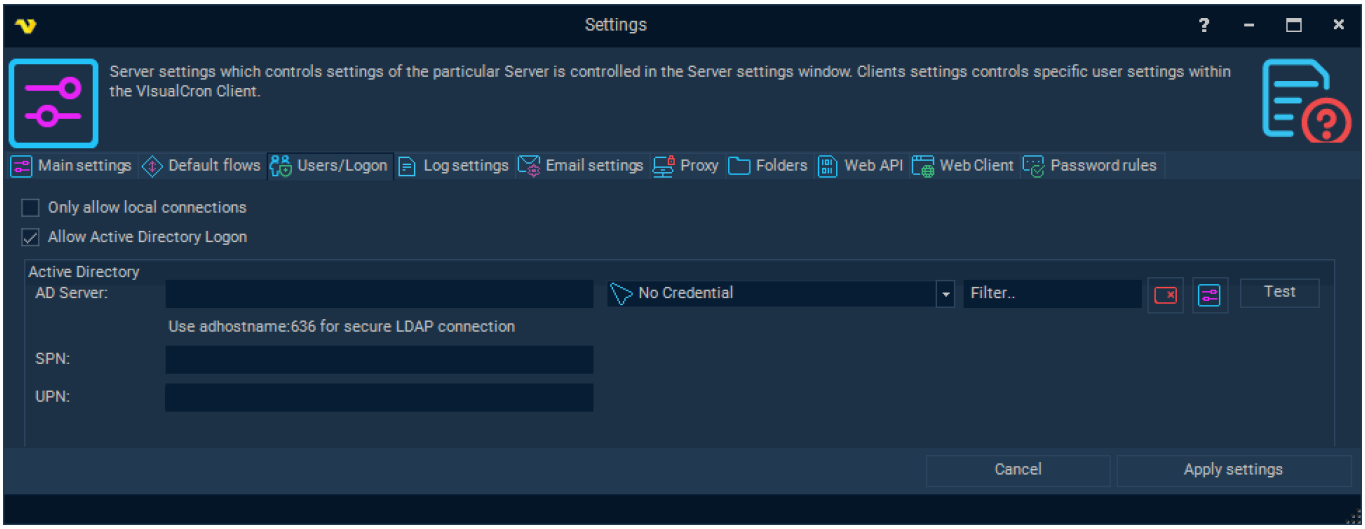
Settings - Users/Logon

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the users and logon settings are managed.

Main > Settings > Users/Logon tab



Only allow local connections

This setting closes the remote port 16444 for incoming connections. Local login is only possible.

Allow Active Directory logon

VisualCron has two different authentication systems; one internal and one that is extended by Active Directory. This box needs to be checked in order to allow AD logon.

AD Server

When using Active Directory logon you need to specify server name or IP address. This will be used as default when working with user permissions. Please add :636 to make secure LDAP connections, i.e. **adhostname:636**. Otherwise non-secure connection will be used. The name of the AD server can also be specified in the extended format: HostName:PortNumber/DistinguishedName. For example: **contoso.com:636/DC=contoso,DC=com**

Credential

The AD Server Credential that will be used as default when working with user permissions.

Test button

When the button is pressed, the availability of access to AD objects from the VisualCron Server is checked. Access is required for further authorization of connecting AD users, in particular to verify the user's presence in AD and to obtain a list of AD groups to which the user belongs. The resulting list of groups is then used to determine the user's permissions according to the [settings(settings)].

Additional testing

If the Test button produces an unsuccessful result, and SSL is used (port 636 is specified), it is possible to activate an additional verification mechanism. To do this, it is first advisable to enable extended debug logging, apply the settings, then open the Users/Logon tab again and specify the AD Server in the extended format: HostName:PortNumber/DistinguishedName (for example: contoso.com:636/DC=contoso,DC=com). After testing, server log messages (starting with "GotADTest") will help determine the source of the problem.

Users/Logon

screen also displays possible UPN / SPN values used to start the VisualCron Server and create secure endpoints for data exchange. You can use those as hints setting up new Client connections.

UPN

The User Principal Name of the service account. The UPN is in the form username@domain. For example, when the service is running in a user account, it may be `username@contoso.com`

SPN

The Service Principal Name as the hostname part of the service endpoint address prefixed with the "host/" literal. SPN Principal Name might look like **HOST/serverDNSname.FQDN** or **serverDNSname.FQDN**. In order to check for possible SPN values please run the following command setspn **-l serverDNSname** in Windows CommandLine utility.

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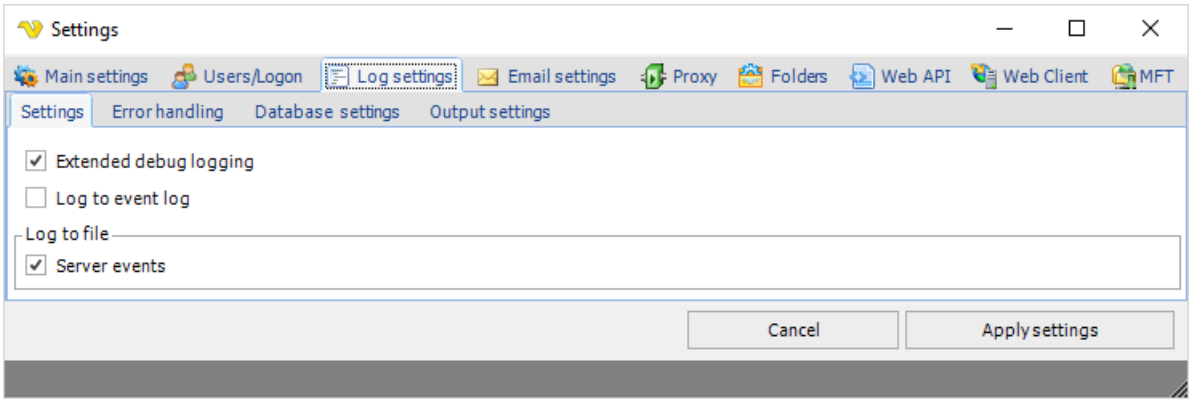
Settings - Log Settings

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the log settings are managed.

Main > Settings > Log settings > Settings sub tab



Extended debug logging

If you experience problems the VisualCron support may ask you to turn on extended debugging. When the support process is done you uncheck this option as it leverages the system.

Log to event log

Use Windows event log for logging.

Log to file - Client events

Controls if Client should write events to a file (placed in VisualCron X/log folder).

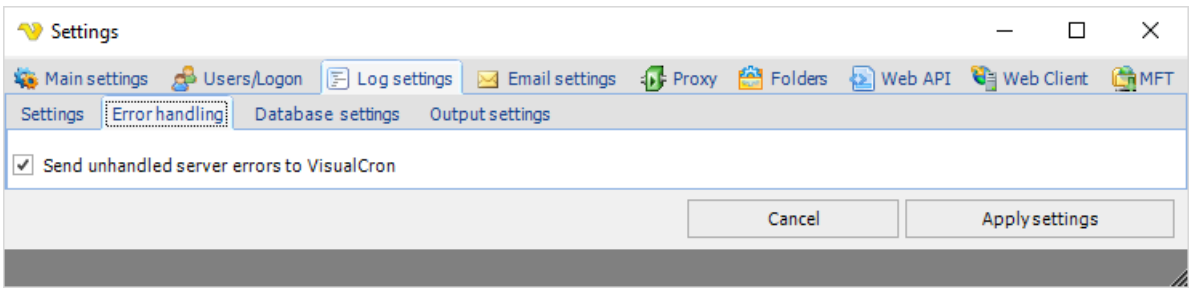
Log to file - Server events

Controls if Server should write events to a file (placed in VisualCron X/log folder).

Log to file

If any option is activated, a log file will be created and entries will be written into the log file. A new log file is created for each day. If no Job has been run during a day (with logging on) - no file will be created. The server/client log file names are "log_serverYYYYMMDD.txt"/"log_remoteYYYYMMDD.txt". By default the log files are located in the "C:\Program Files\VisualCron\log\" folder.

Main > Settings > Log settings > Error handling sub tab

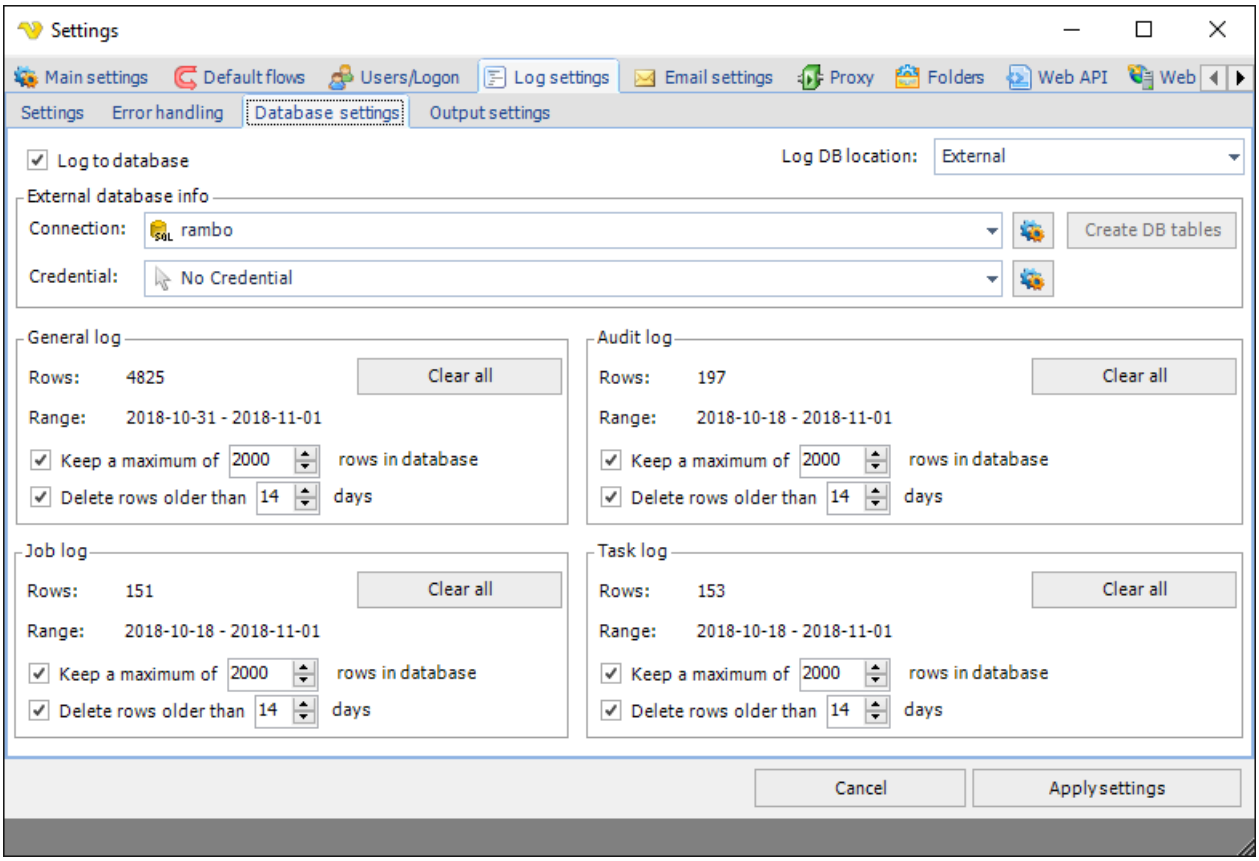


Send unhandled server errors to VisualCron

If you check this all errors are reported back to VisualCron. This way we can get enough information to detect and fix bugs as soon

as possible.

Main > Settings > Log settings > Database settings sub tab



VisualCron uses an internal database to log server events and Job/Task result/output and audit logging. These are stored in separate tables in an internal database. You can control how many and/or how long time this data should be stored in each table. It is possible to store these logs externally.

Log to database

This controls if the internal database should be used or not.

Log DB location

This controls if VisualCron should log to the internal SQL Compact database or any external database.

Location

Only visible when using Internal logging. This shows the location of the internal database (for debugging purposes).

Connection

Only visible when using External logging. Select an existing Connection. If Integrated Authentication is used you need to select a Credential.

Credential

Only visible when using External logging. Select a Credential if Integrated Authentication is used (Windows Auth).

Create DB tables

Creates the External DB tables in the selected Connection. The following tables are created:

- AuditLogs - stores the Audit logs
- DBVersions - controls the version of the database (for upgrades)
- GeneralLogs - stores the General logs
- JobLogs - stores the Job logs
- TaskLogs - stores the Task logs

Size

This shows the current size of the database.

General/Audit/Job/Task Rows

The current number of rows in the current log type

General/Audit/Job/Task Range

The date range of the current stored objects.

General/Audit/Job/Task Keep a maximum of x rows in database

This option controls how many rows to store. If unchecked then unlimited rows will be stored (or limited by number of days in setting below).

General/Audit/Job/Task Delete rows older than x days

This option controls how many days to store. If unchecked then unlimited days will be stored (or limited by number of rows in setting above).

General/Audit/Job/Task Clear all

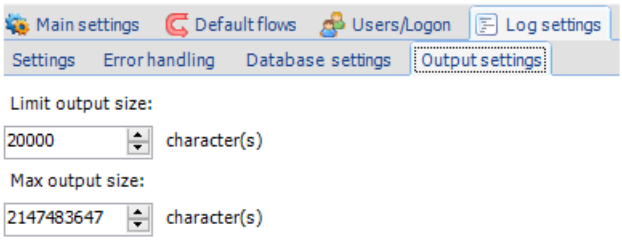
This option deletes all entries for the current log type.

Reset database completely

If the database has exceeded maximum size you may have to manually delete it to restore. Here are the steps:

1. Open the **Main > Settings > Folders** tab and click on the Output cache folder > Open button.
2. Stop the VisualCron service
3. In the Explorer window enter the folder "log" and delete the file "VisualCron4.sdf"
4. Start the service again

Main > Settings > Log settings > Output settings sub tab



Limit output size

If checked, Task output will be limited in the Task log table to the value you set below. It is recommended to have some kind of limitation so that the database file do not grow to fast which makes it hard to control and connection slow between Client and Server.

Max output size

This is the max output size we store in real time. If a Task has larger output than specified we cap at at this level.

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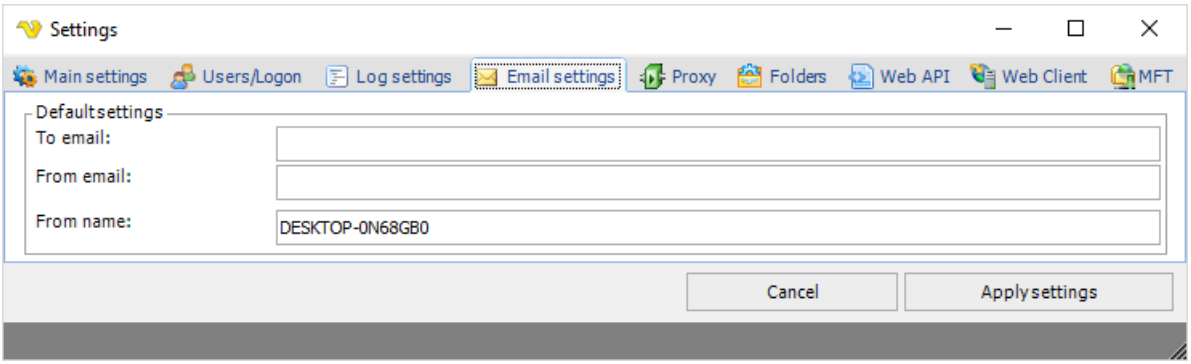
Settings - Email Settings

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the email settings are managed.

These are the default settings that will be used for the Email Tasks. The SMTP connection details are managed in the Connections - SMTP Connection.

Main > Settings > Email settings tab



To email

By entering information in this field, the fields at Add Job, will be automatically entered. You can send to several email addresses at the same time by separating these with a semicolon (";"). The To email address(es) shall be a valid email address(es) to where the email(s) will be sent.

From email

By entering information in this field, the fields at Add Job, will be automatically entered. This is the default email address that VisualCron uses to send email from.

From name

The origin of the the email message. By default it is the server name.

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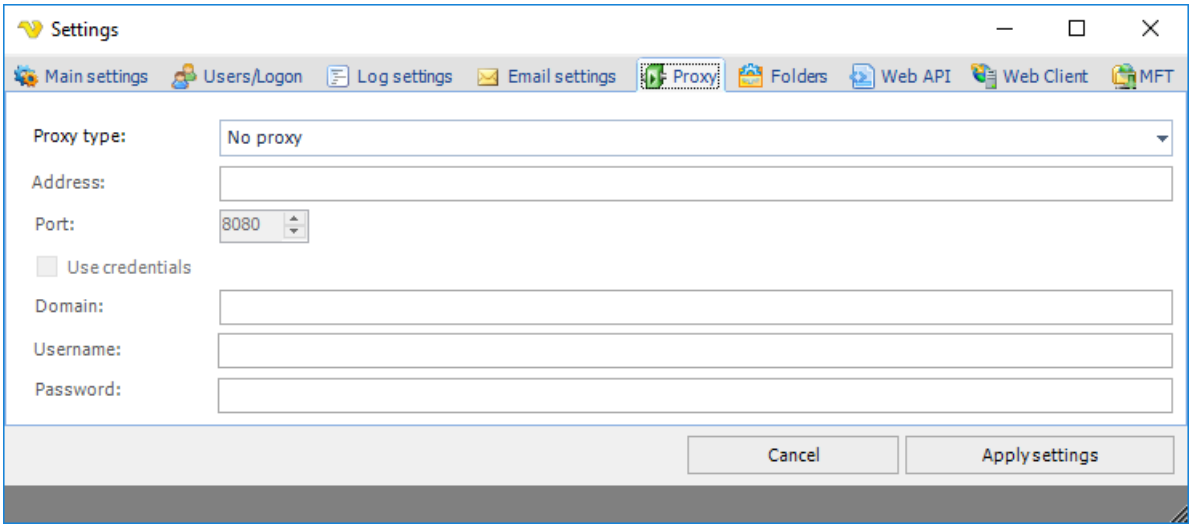
Settings - Proxy »

Settings - Proxy

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the proxy settings are managed.

Main > Settings > Proxy tab



Proxy type

Select the proxy type to be used.

Address

The host name or IP address of the proxy server.

Port

The port of the proxy server.

Use credentials

Text ...

Domain

The name of the domain to be used.

Username

The user name to access the proxy server.

Password

The password to access the proxy server.

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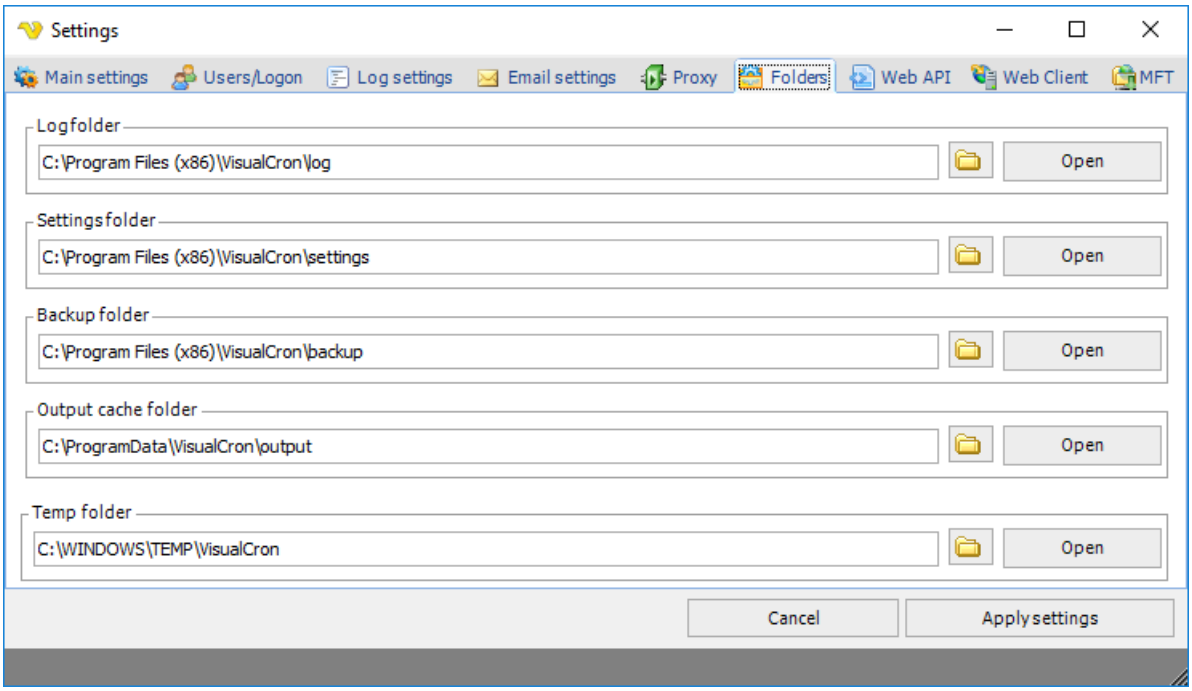
Settings - Folders »

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the folder settings are managed.

Main > Settings > Folders tab



In the folders tab you view and change the folders that are used within VisualCron.

Log folder

This is where server logs are stored, for example log_serverDATE.txt.

Settings folder

This is where settings are stored.

Backup folder

This is the default backup folder for the default Job "Backup settings".

Output cache folder

This is were temporary output and the internal database files are stored (sub folder log).

Temp folder

This is the temporary folder that VisualCron uses for storing temporary files when working with various Tasks. This folder is cleaned up from time to time - do not keep any important files here.

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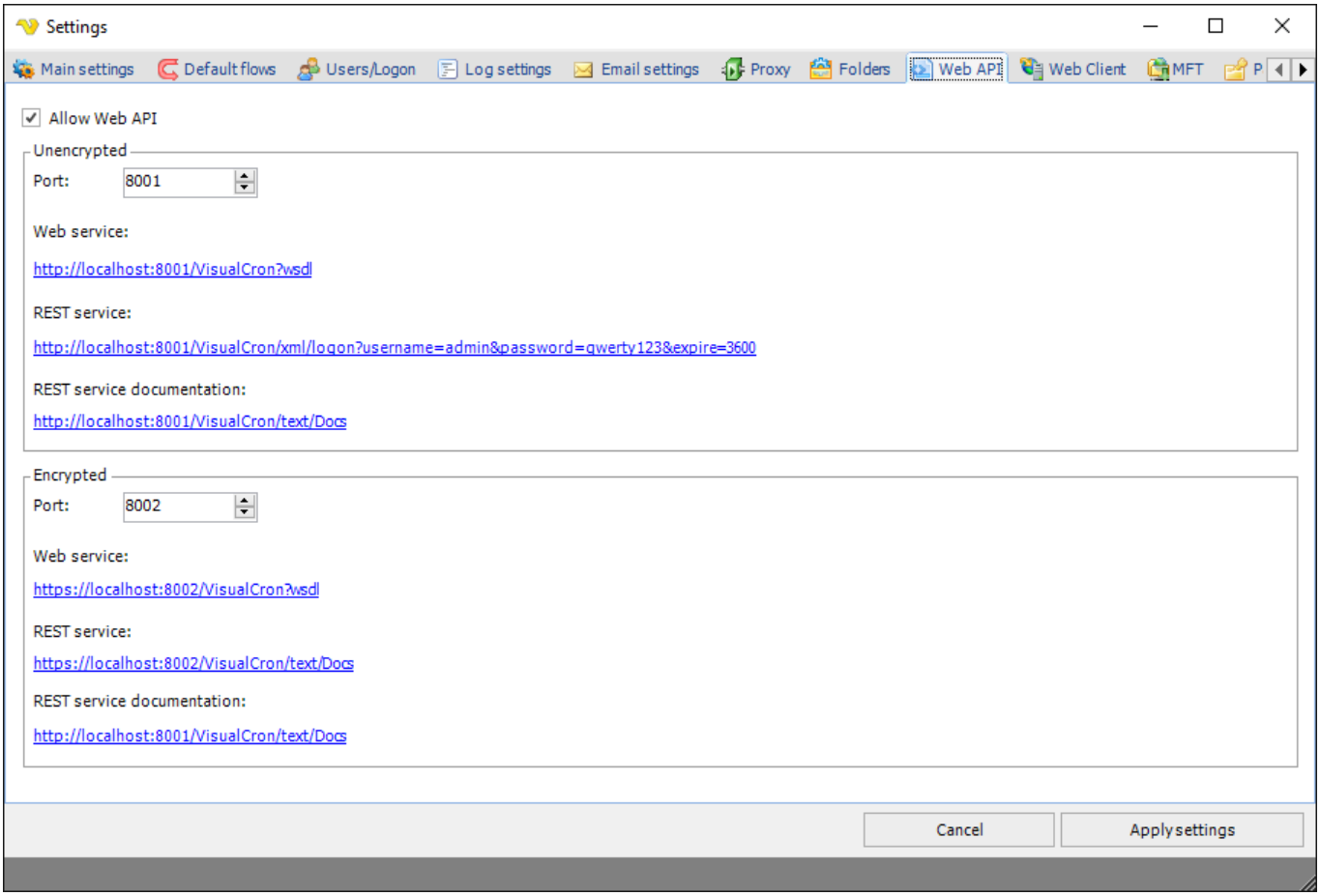
Settings - Web API »

Settings - Web API

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the web API settings are managed.

The Web API consists of a REST and web services API. It is possible to use encrypted or unencrypted communication (on different ports).

Main > Settings > Web API tab



Allow Web API

Enables the Web API.

Unencrypted port

Set the port you want to use for the web API for unencrypted communication.

Encrypted port

Set the port you want to use for the web API for encrypted communication.

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Settings - Web Client

In the main menu **Server > Main settings > Settings** dialog, there are a set of important setting groups/tabs. In this tab, the web client settings are managed.

Main > Settings > Web Client tab See the Web Client section.

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Main - User Permissions »

Main - User Permissions

In the main menu **Server > Main settings > User permissions** dialog, user credentials for different items (Jobs, Tasks, Triggers, Notifications, Time exceptions, Client and Server settings, User administration, Log, and other objects) are handled.

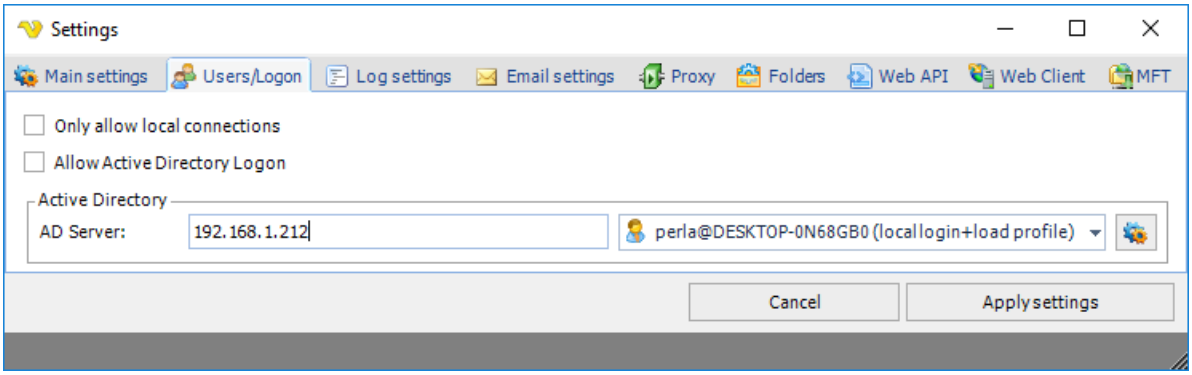
VisualCron uses an internal system for authentication and granting permissions to different objects within VisualCron. The internal system can be extended with users or groups from Active directory to provide a more seamless login.

A user is a set of user name and password. A user can belong to one or more groups. The actual permissions is located in the group. By default, there is a "Administrators" group which can do everything. You can create your own group in order to manage detailed user permissions for this group.

Active directory

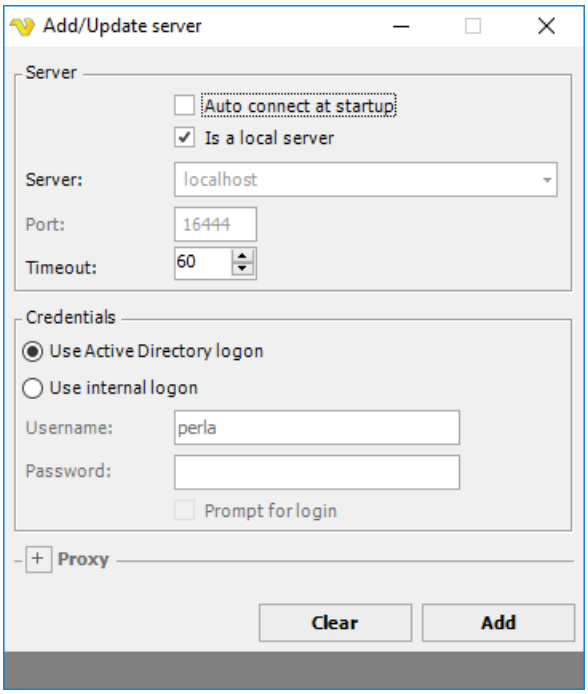
By default the internal system is used. To enable Active Directory support you need to enter Users/Logon settings.

Server > Main settings > Settings > Users/Logon tab



When creating the Server Connection you also need to check "Use Active Directory logon". This way you tell the Client to use AD user login method.

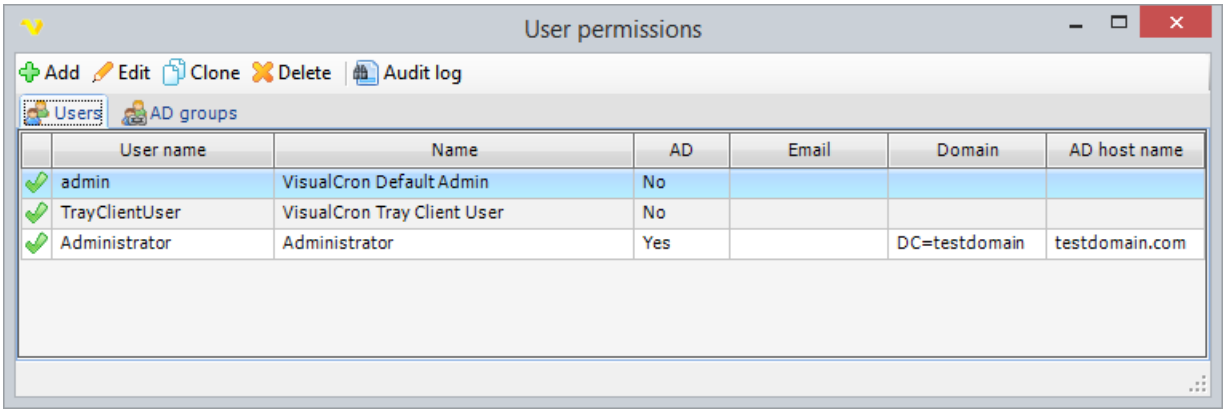
File > Servers > Manage Servers > Add > AD



The main dialog of the *User permissions* window lists all users and AD groups that are allowed to connect to this server. A user can be active (green check icon) or inactive (red cross icon). When active, the user is granted login with the predefined permissions.

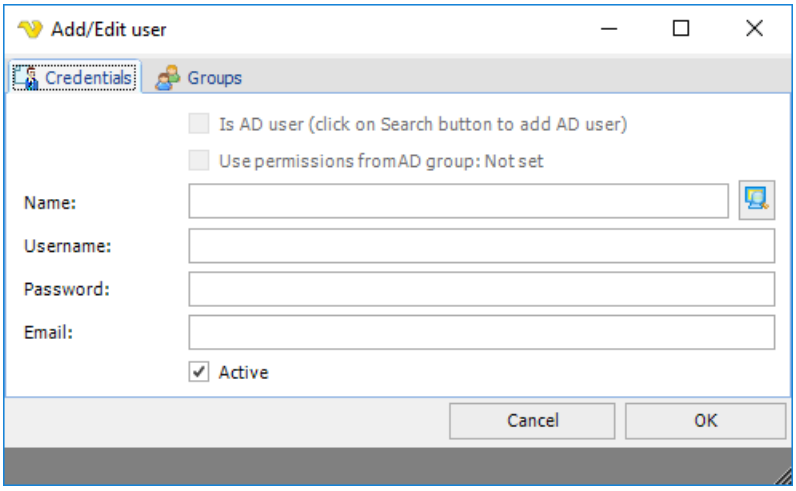
The *Add, Edit, Clone* or *Delete* buttons are context sensitive to the tab you are in. Clone makes a shallow copy, a new user with the same permissions as the original user/group. If you want to add an AD group you need to select that tab and then click Add.

Server > Main settings > User permissions



When you add, edit or clone a user you are presented with the Add/Edit user window.

Server > Main settings > User permissions > Users > Add > Credentials tab



Is AD user

You can select users from the active directory by clicking on the Search button next to the Name.

User permissions from AD Group

It is possible to inherit the permissions from the Groups tab of the AD group. This is enabled by default if user is created from a group. If unchecked, the Groups tab, from the Add user window will be used instead of the settings from the AD group.

Name

This is the name that will be seen in the Manage users list, logs and "created by"/"modified by" in the Job list.

Username

This is the user name which is used at login.

Password

This is the password which is used at login.

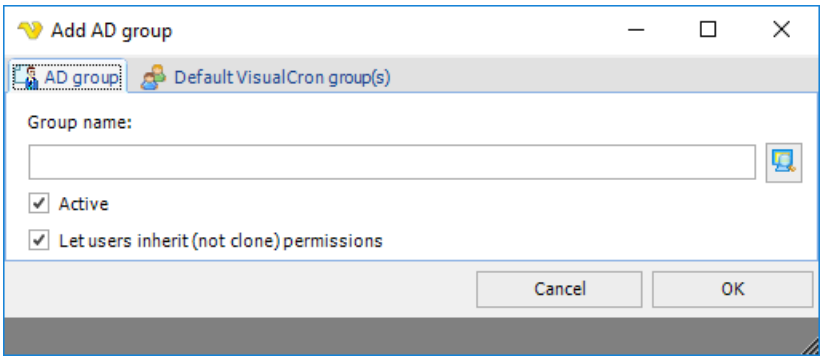
Email

In a future version of VisualCron, the email field will be used for an administrator to send a reminder of the login credentials.

Active

If the current user is active or not (login enabled).

Server > Main settings > User permissions > AD groups > Add tab



Group name

The AD group name. This can not be altered manually - you need to search and select the group.

Active

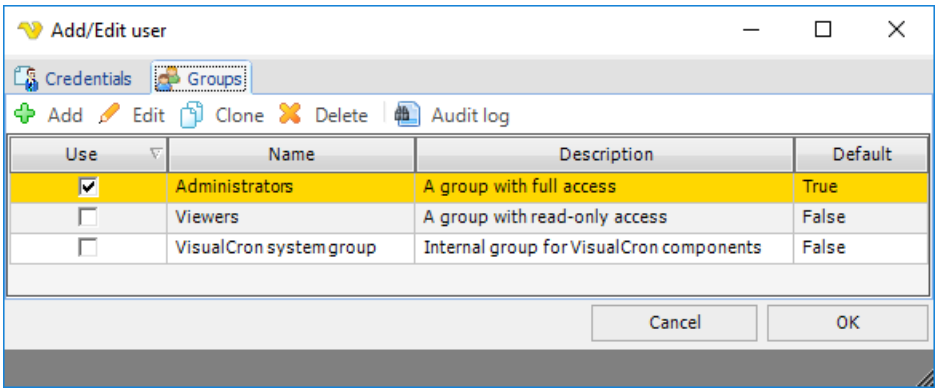
If the current group is active or not (login enabled).

Let users inherit (not clone) permissions

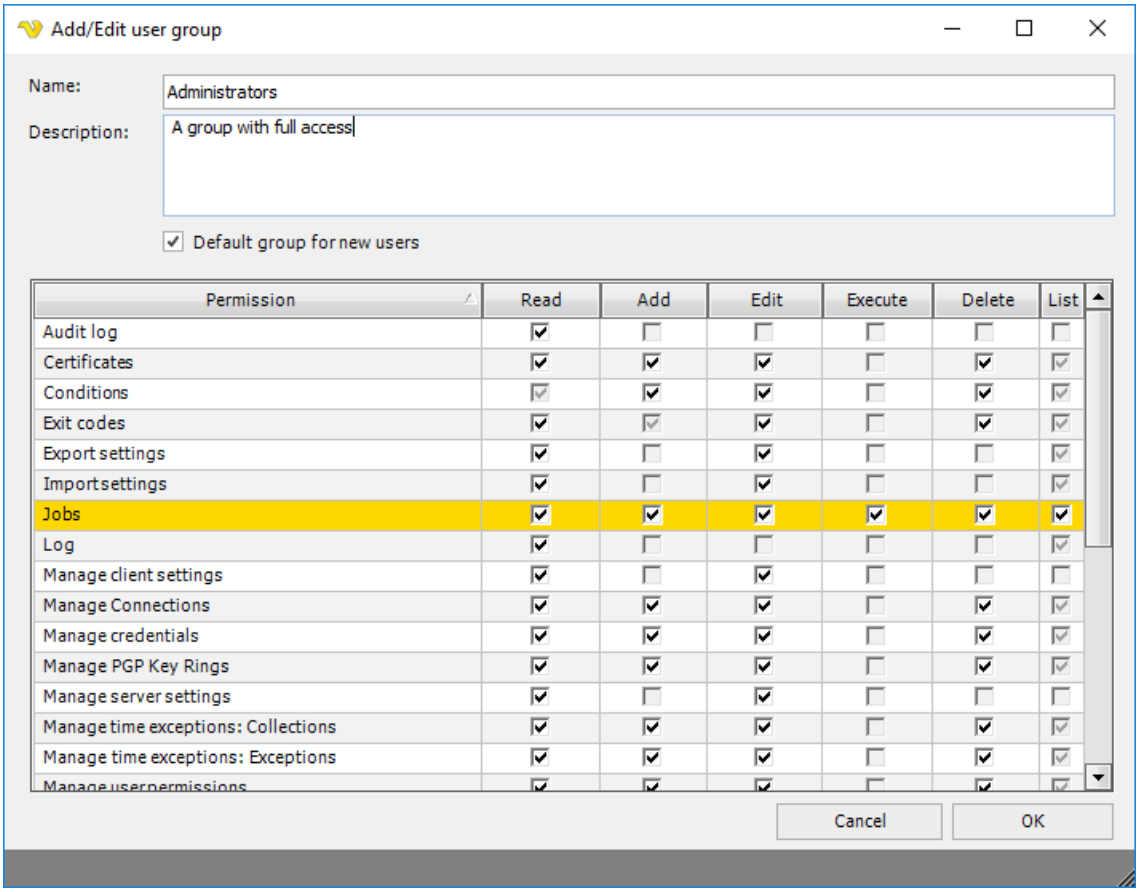
Whenever an AD user logs on that belongs to an existing group the AD user is created in the AD user section. By default, there is a reference to the VisualCron group permissions from the AD group in the new AD user. But you can also uncheck this to be able to set specific group permissions after (so that it not references).

A user can belong to one or more groups. The groups contains the actual permissions. If a specific permission is requested and granted in any of users groups the user is granted to the specific permission.

Server > Main settings > User permissions > Add > Groups tab



Server > Main settings > User permissions > Add > Groups > Edit tab



Name

Name of the group.

Default group for new users

If this group should be the default group when a new user is created.

Permission

A permission can have the following attributes:

- "Read" - Allows the object to be viewed/showed in some way. This can be a window or a list
- "Add" - Allows the user to add and object to a list
- "Edit" - Allows the user to edit an object in a list or window
- "Delete" - Allows the user to delete an object from a list
- "Execute" - Allows the user to run/execute something

Not all permissions has, for obvious reasons, all attributes available. For example, permission "Log" can only be viewable or not and has, therefore, only the "Read" setting is available for change. When a setting cannot be changed for a permission it is grayed out/disabled.

For each permission, use the select boxes to update the valid attribute types. Your changes to a user will be saved when clicking OK.

See the list of all permissions with a description in the Supported permissions topic.

Permissions

Manage Credentials

- Read - Controls if the user can open the Manage Credentials window
- Add - Controls if the user can Add new Credentials
- Edit - Controls if the user can Edit existing Credentials
- Execute - Controls if a user can Execute a Task or similar with the selected Credential
- Delete - Controls if the user can Delete Credentials

Overriding group permissions

From VisualCron version 6.1.2. permissions can be overridden on Job level so you can set specific permission for a group on a

specific Job. From version 8.4.2 you can override Credential permissions.

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Supported Permissions »

Supported Permissions

Below is a list of objects to which access can be configured and supported permissions.

Supported permissions:

Resource	Description	Read	Add	Edit	Delete	Execute	List
Jobs	View, Edit, and Execute Jobs	editable	editable	editable	editable	editable	editable
Tasks	View, Edit, and Execute Tasks	editable	editable	editable	editable	editable	fixed
Task Repository	View, Edit, and Execute Tasks in the Task Repository	editable	editable	editable	editable	editable	editable
Triggers	View and Edit Triggers	editable	editable	editable	editable		fixed
Conditions	View and Edit Conditions	fixed	editable	editable	editable		fixed
Certificates	View and Edit Certificates	editable	editable	editable	editable		fixed
Notifications	View and Edit Notifications	fixed	editable	editable	editable		fixed
Connections	View, Edit, and Open Connections	editable	editable	editable	editable	editable	editable
SSH Keys	View and Edit SSH Keys	editable	editable	editable	editable		fixed
PGP Key Rings	View and Edit PGP Key Rings	editable	editable	editable	editable		fixed
Exit Codes	View and Edit Exit Codes	editable	fixed	editable	editable		fixed
Time Exceptions: Collections	View and Edit Time Exception Collections	editable	editable	editable	editable		fixed
Time Exceptions: Exceptions	View and Edit Time Exceptions	editable	editable	editable	editable		fixed
Variables	View and Edit Variables	editable	editable	editable	editable		fixed
Client Connections	View Connections to the Server	editable					fixed
Client Settings	*Reserved for Future Use*	editable		editable			
Server Settings	Read and Edit SErver Settings	editable		editable			
Export Settings	Open Export Settings Dialog; Perform an Export	editable		editable			fixed
Import Settings	Open Import Settings Dialog; Perform an Import	editable		editable			fixed
User Permissions	View and Edit Users and User Groups	editable	editable	editable	editable		fixed
Log	View Server Logs	editable					fixed
Audit Log	Open Audit Log Form	editable					
License	View Activation Code; Activate or Deactivate the License	editable				editable	
Versions	*Reserved For Future Use*						
Manage Servers	*Reserved For Future Use*	editable		editable			
Network Drives	Manage Network Drives	editable	editable	editable	editable		fixed
Processes	Manage Running Jobs	editable			editable		fixed
Task Manager	Open Task Manager Form; Manage System Processes and Services	editable		editable	editable	editable	
Object Finder	Open Object Finder Form	editable					
Remote File Explorer	Open the Open File, Save File, Browse Folder Dialogs	editable					
SQL Explorer	Open SQL Explorer Form; Execture Scripts	editable				editable	
Server Sync	View and Edit Server Synchronization Settings	editable	editable	editable	editable	editable	editable
Cloud Settings	Open VisualCron Cloud Form; Manage Cloud Registration	editable	editable	editable	editable	editable	fixed
Health Levels	Edit Predefined Server Health Levels	fixed		editable			fixed
Execution Distribution	Open Execution Distribution Menu Items; Edit LB Flows, Broker and Distrubted Execution Settings	editable		editable			fixed

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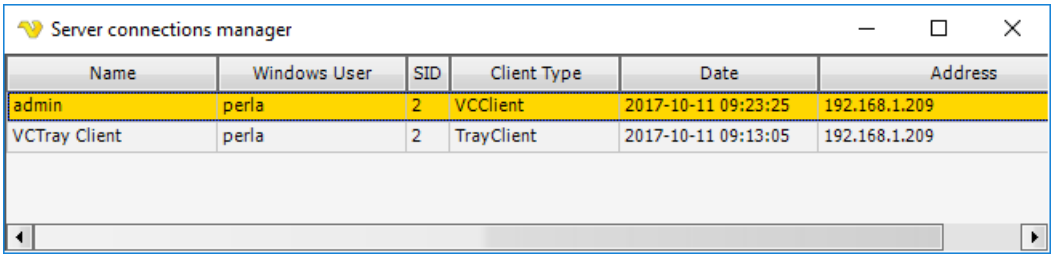
Main - Client Connections

In the main menu **Server > Main settings > Client connections** dialog, VisualCron clients are managed. Several VisualCron clients can be connected to the same VisualCron server, typically one client both has the VisualCron client application and the VisualCron tray client connected to the same server. See below for a list of clients that are connected to the currently selected server.

Main > Client connections



The VisualCron client can also switch its server connection in the Server/Username "track" in the top of the Server/Job/Task grid.

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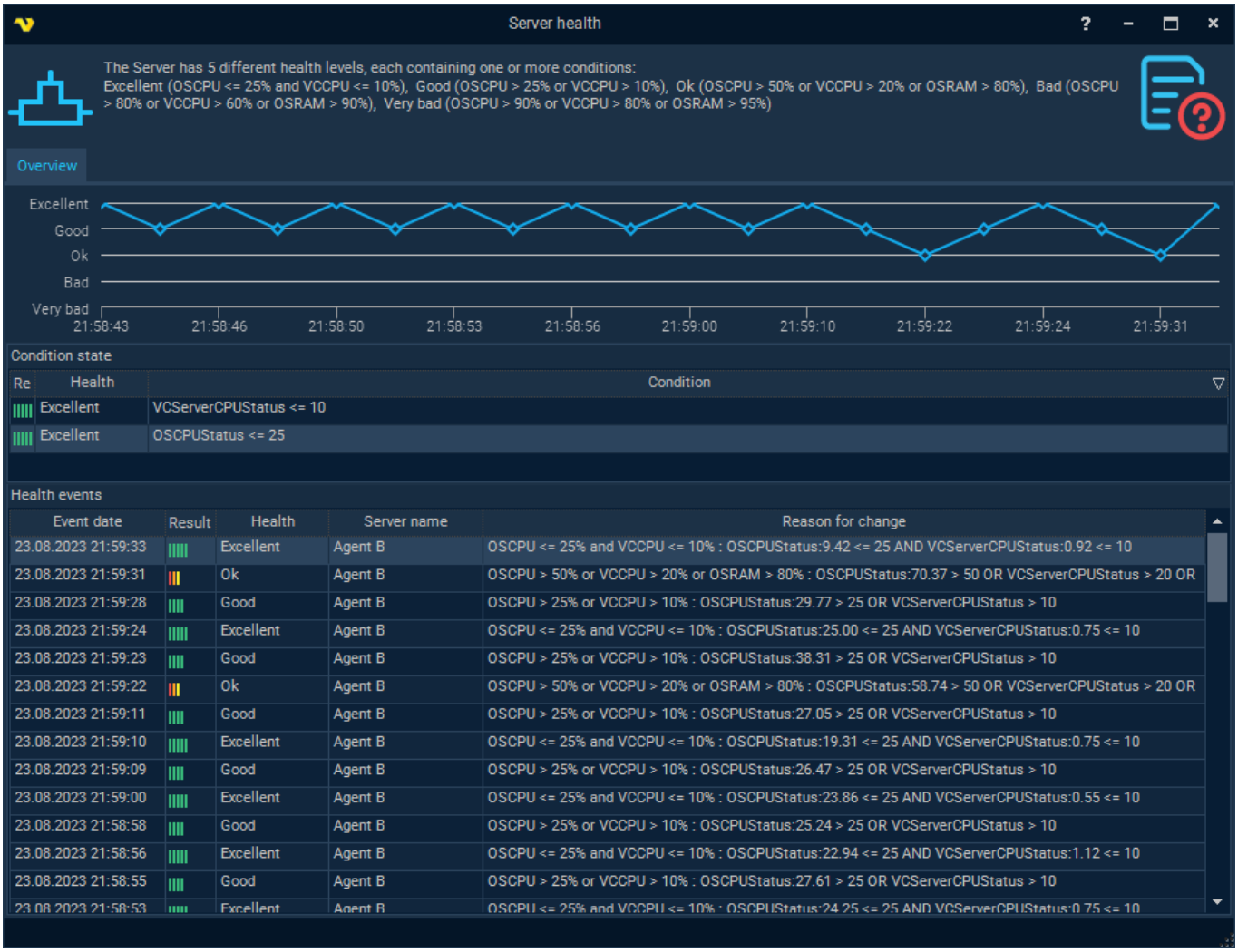
Health - Server Health »

Health - Server Health

In the main menu **Server > Health > Server health** dialog, a diagram of the last changes in the Server health level is displayed, as well as the conditions of the current health level and a list of previous levels from the event log.

Health > [current Server health level]



Server health levels*

*default health settings for version 10.0.2

Abbreviations:

- OSCPU - Total CPU consumption (%)
- VCCPU - CPU consumption by VisualCron Server (%)
- OSRAM - System memory in use (%)

Level	Name	Conditions
	Excellent	OSCPU <= 25% and VCCPU <= 10%
	Good	OSCPU > 25% or VCCPU > 10%
	OK	OSCPU > 50% or VCCPU > 20% or OSRAM > 80%
	Bad	OSCPU > 80% or VCCPU > 60% or OSRAM > 90%
	Very Bad	OSCPU > 90% or VCCPU > 80% or OSRAM > 95%

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« Main - Client Connections

Next
SLA - Uptime, Outages, Latency »

SLA - Uptime, Outages, Latency

There are three interactive buttons in the main menu group **Server > SLA**:

Uptime *(%)*

Server uptime in the last 24 hours as a percentage.

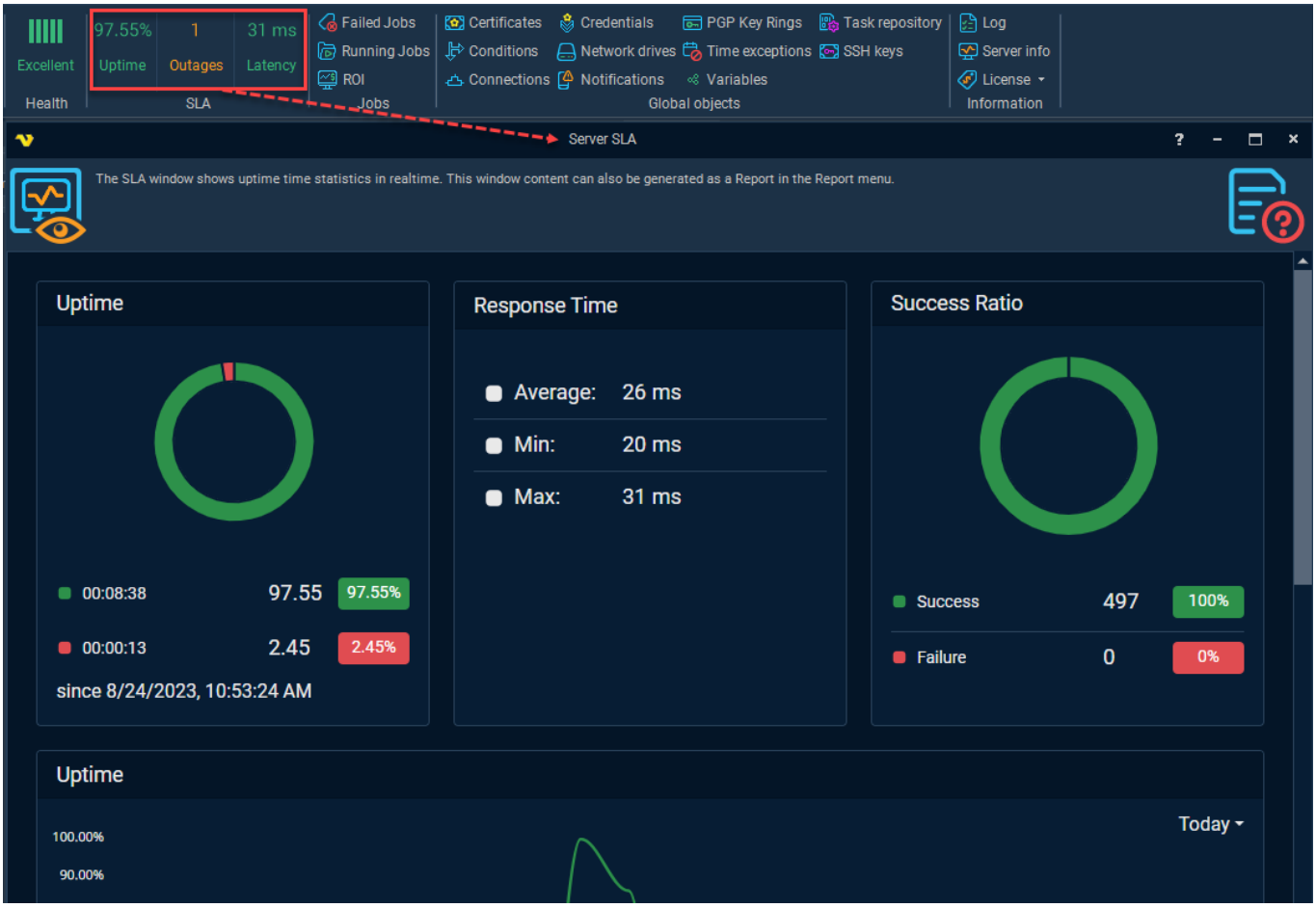
Outages *(amount)*

Server outages number (how many times the server was stopped) in the last 24 hours.

Latency *(ms)*

Maximum Server ping response time (in ms) in the last minute (if there is no recent statistics, the last obtained value is kept).

Clicking on any of these buttons opens an interactive report: **Server > SLA > Server SLA** (report with realtime updates)



Usage in Load Balancer

Server metrics like Uptime and Latency are also available as Load balancing Conditions: "Daily Server uptime (%)" and "Maximum response time (ms)". See the Load balancing Flows topic for information on how to use Load balancing Flows and how to set up various Conditions for them.

On this page

Jobs - Jobs

A defined Job is managed either from the main toolbar or by mouse right-click on a specific Job in the Server/Job/Task grid. To manage a Job you open the *Add Job, Edit Job or Clone Job* dialogs.

For each Job type, some *Main settings* must be defined. In order to run something automatically, one or more Triggers and one or more *Tasks* must be defined for each Job. Finally *Time exceptions, Conditions, Timeout and Notifications* may be defined for each Job.

The only mandatory setting in the *Add Job/Edit Job/Clone Job* windows is the *Name* information. When also the Task settings has been defined, the Job can be tested by the Test Job button (in the bottom of the *Add Job/Edit Job/Clone Job* windows).

NOTE

When you *Clone Job*, please make sure that all underlying variables in Tasks or triggers are updated correctly. The Job settings are stored by VisualCron in the jobs.xml file, by default stored in the "C:\Program Files (x86)\VisualCron\settings\" folder.

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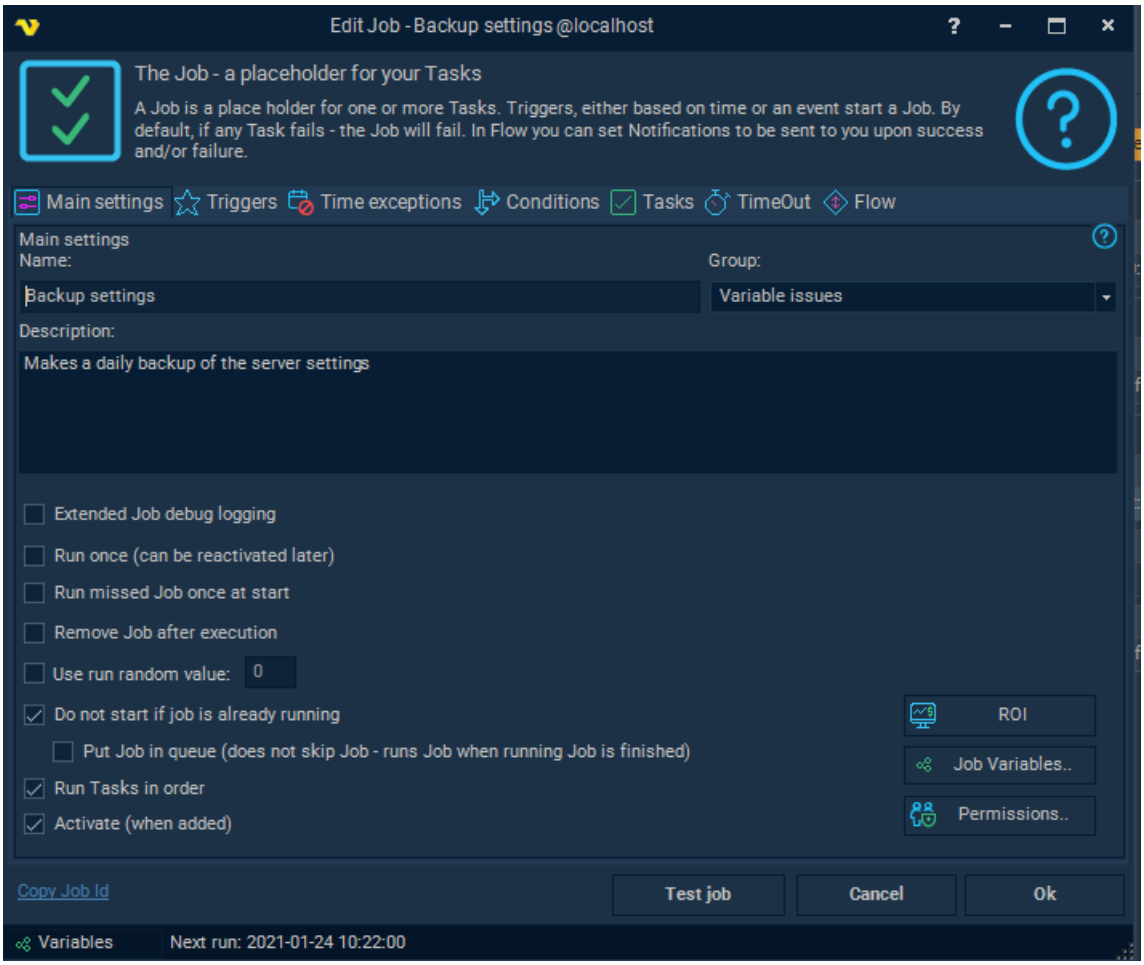
Job - Main Settings »

Job - Main Settings

In the the *Add Job, Edit Job or Clone Job* dialogs, the Main settings for a Job is available.

Add Job



Name

Mandatory parameter, unique name for the Job.

Group

This is the visual grouping in the main window grid. To create a new group you just manually enter a value in this field.

Description

Add information to see the difference between Jobs.

Extended Job debug logging

When checked, VisualCron logs additional information during the execution - for example information about Triggers and all internal operations. This is mainly used for debugging if you experience a problem.

Run once (can be activated later)

Run missed Jobs once at start

This function can be used for a specific Job to let a Job automatically run if it should have been run during a time when the VisualCron service was down/stopped for any reason (typically due to server computer off). For example, a Job is supposed to run once a day at 08:00. Let's say that the server goes down at 07:00 because a power failure. The problem is corrected and the server goes up at 09:00. If the Run missed Jobs once at start box is checked, VisualCron will at startup check if the Job was supposed to run between the last time VisualCron was up and the current time. If so, that Job will be run **once**.

NOTE 1

Currently, run missed Jobs doesn't take time exceptions into account. A missed Job will run even if there was a time exception during that time.

NOTE 2

The "run missed events" behavior is not active when the server has been stopped by the user (i.e. server status "Off").

Remove Job after running

If you check this box the Job will be removed right after running.

Use run random value

To be selected if you want to run Jobs at irregular time intervals. Check the box and enter a probability value. For example value 2 means that the Job will run approximately 1 out of 2 times. So if you want your Job to run approximately three times an hour, you should specify value 20 and in the Time settings select to run it every minute. 1 out of 20 times, the Job will run every minute (60/20 = 3 times in one hour). Note that this is a probability value. In this case, the Job may run 2 times one hour and 4 times another hour.

Do not start if Job if is already running

When a Job is running it is "flagged" as running. If you don't want to execute your Job while it's running the check this box. This can be useful when using the new events which can trigger your Job very often if you set the watch parameters "loosely". If the Job is triggered when this box is checked, a log entry will inform that the Job wasn't run due to this setting.

Put Job in queue

When checked: if a Job is already running the actual execution Job is postponed until the current Job has completed. This option should be enabled for any Jobs that is using Event Triggers which allows unique processing of an object, i.e. a newly created file when using File Trigger.

Run Tasks in order

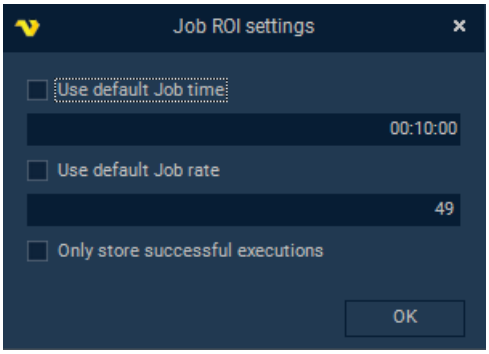
One Job can contain many Tasks. If you for some reason want to run your Tasks in a special order, check this checkbox. The specific Task order is set up under the Tasks tab. If you don't want to run the Tasks in order, VisualCron will try to run them at the same time. This can shorten the actual run time for the Job since some Tasks are dependant on external factors like a remote server.

Activate (when added)

By default a new Job is activated (will be run if the time is right) when it's added.

ROI

These settings override the main ROI settings.



Use default Job time

When unchecked it will not use the main ROI settings but a specific time for this Job that is saved for each execution.

Use default Job rate

When unchecked it will not use main ROI settings rate per hour but a specific one for this Job.

Only store succesful executions

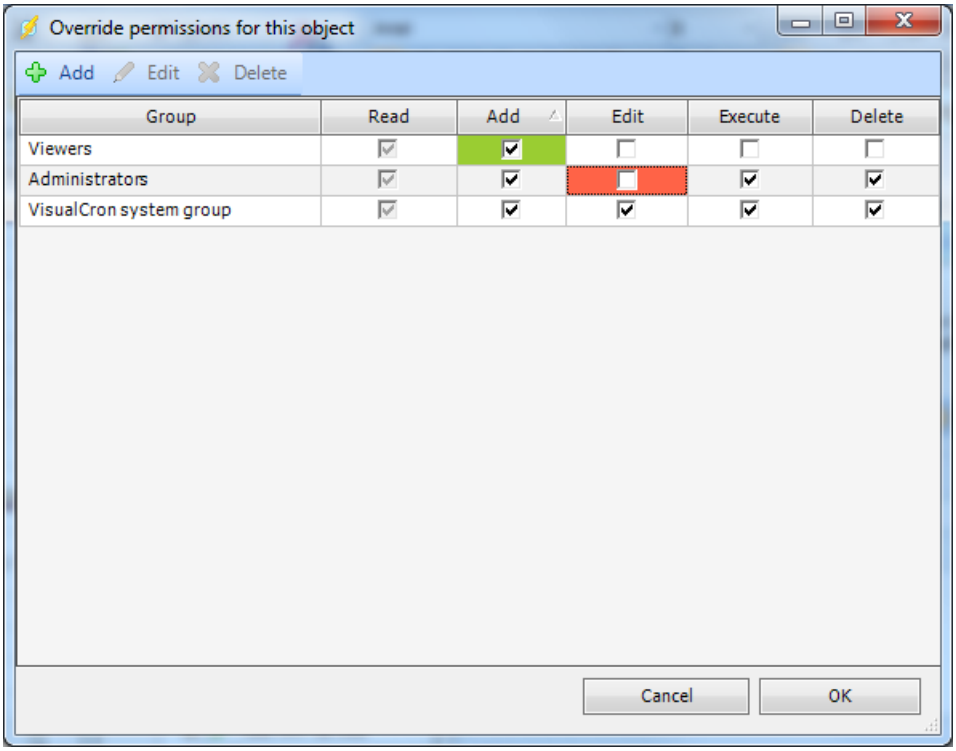
When checked it will only log ROI when the Job has succeeded.

Job variables

See Job variables for more information.

Permissions..

From VisualCron version 6.1.2, permissions for a specific Job can be set. It is controlled by overriding the current existing groups. When a specific permission is overridden in a positive way (granting access) it becomes green in the grid and it becomes red if overridden in a negative way (denying access).



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Job - Job Variables »

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Job Variables

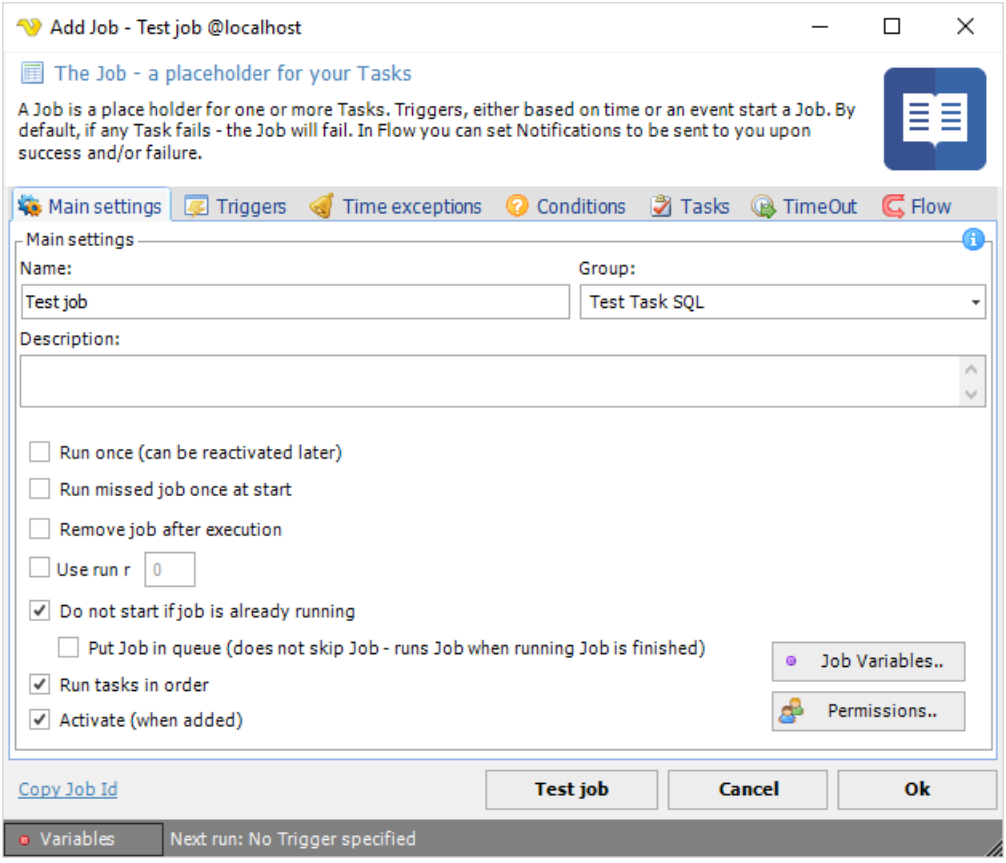
Job Variables are values/parameters that is connected to a specific Job. When comparing Job Variables with User Variables there are a couple of differences:

- Job Variables are stored in the Job and not global like User Variables - still it is possible to refer to a Job Variable from another place in VisualCron
- It is possible to override existing Job Variables with the Job/Task Control Task
- The Job Variables are edited from the main settings of the Job while the User Variables are edited in the Variables browser
- In the Variables browser you can see the Job Variables beneath each Job node while the User Variables are located under the User Variables node

Editing Job Variables

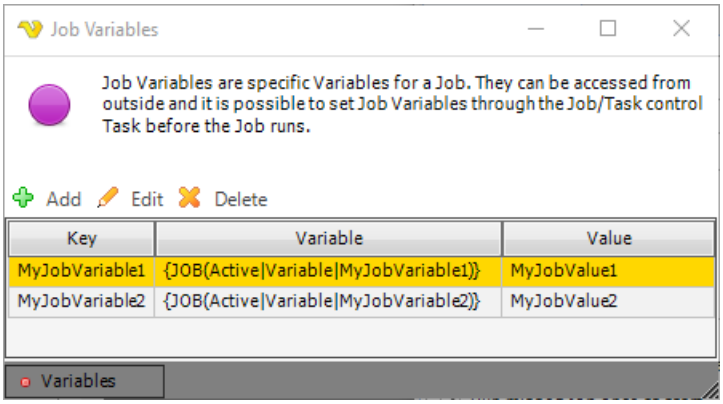
You find the Job Variables for a specific Job in the Job > Main settings tab by clicking on the Job Variables.. button in the lower right corner.

Add Job > Main settings



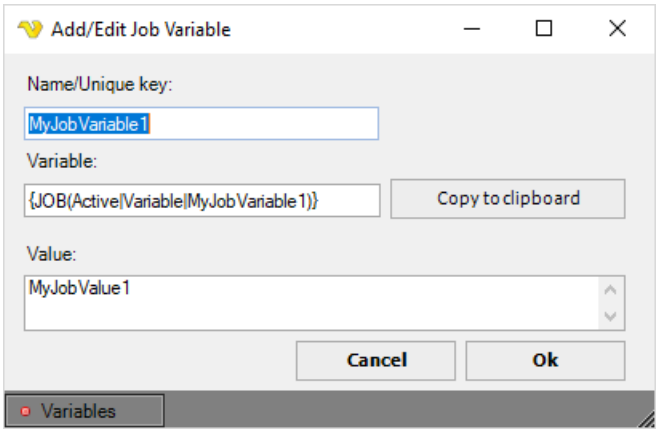
Job Variables

In the Job Variables window all Variables that are connected to the current Job are listed. You can Add new, Edit or Delete by clicking the buttons or by double click on row.



Add/Edit Job Variable

The add/edit Job Variable window lets you Add a new or Edit an existing Job Variable.



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Job Triggers »

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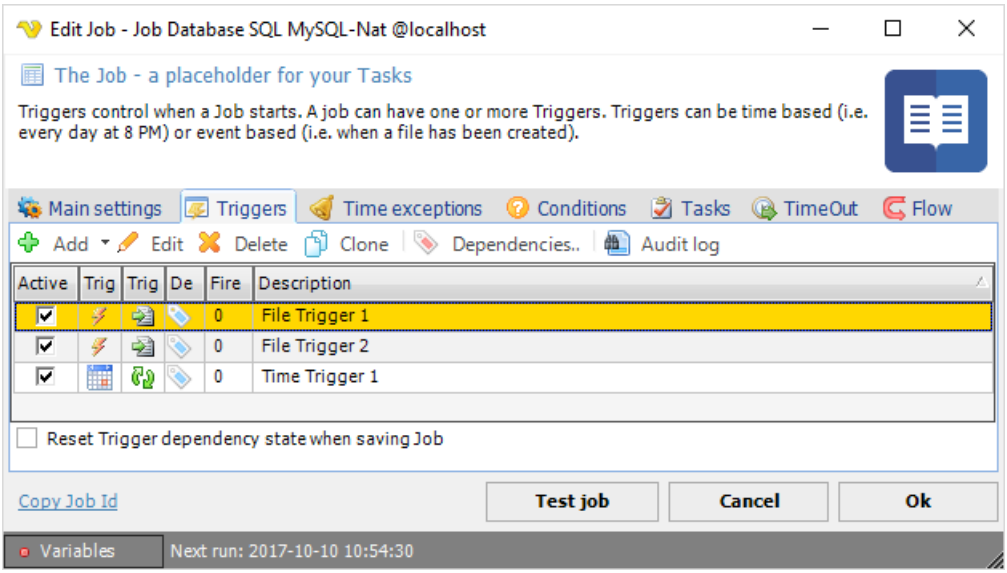
Job Triggers

A Trigger is a part of a Job, the object that starts a Job. One Job can have one or more Triggers. A Trigger can either be based on Time (for example *Every minute*) or a system event (a file has been created). By default, Triggers are executed in an "OR-matter". This means Triggers do not wait for each other to start the Job. You can create dependencies between one or more Triggers.

By invoking the *Add Job, Clone Job or Edit Job* functions, the **Triggers** tab can be opened.

Job > Triggers tab



Add

By pressing the Add button, the different Time Trigger and Event Trigger options are listed.

Edit

Opens a Trigger for edit. Select a row first.

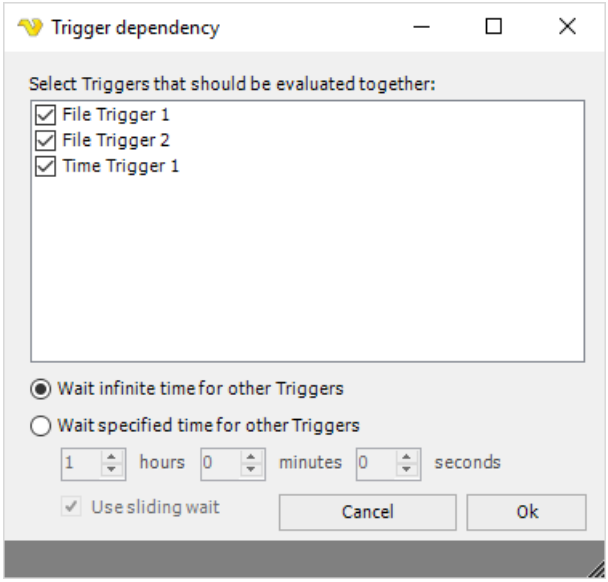
Delete

Deletes a Trigger. Select a row first.

Dependencies

By default, Triggers are executed in an "OR-matter". This means Triggers do not wait for each other to start the Job. You can create dependencies between one or more Triggers by clicking on Dependencies..

Job > Tiggers > Dependency



Trigger selection

In the check list box you can select all Triggers that should be in a dependency.

Wait type

For a Job to start all Triggers must fire (if a dependency exist) at least once. The wait time defines how long time before the state of firing should exist.

Wait infinite time for other Triggers

VisualCron will never reset state. For example, Trigger 1 might fire 1000 times and the Job will still not start because Trigger 2 has not yet fired.

Wait specified time for other Triggers

After a specified time the state will be reset on all Triggers in the dependency. If you want to use this option then select a time until the state should be reset.

Use sliding wait

When using specified time you can use sliding wait. This means that the state wait time will be reset for each Trigger that fires.

The grid in the **Job > Triggers** tab

The Trigger grid listing contains all Triggers that belong to the current Job. Each trigger is listed as a row in the Description table under the Add, Edit and Delete buttons. Mouse double-click on any part of the trigger row opens the same window as the Edit button.

The grid has 6 columns:

Active

By default Active. This checkbox indicates/controls if a Trigger should be active or not (if active it is waiting for the time/events).

Trigger type

This icon shows if it is a Time or Event Trigger.

Trigger inner type This icon shows what kind of Time or Event Trigger. For example if the Event Trigger is of inner type File Trigger.

Dependency image

By default, Triggers are executed in an "OR-matter". This means Triggers do not wait for each other to start the Job. You can create dependencies between one or more Triggers. When a Trigger is not in a dependency this column is blank - otherwise, it will have a unique tag icon for each dependency collection.

Fired times of Trigger in dependency

How many times a Trigger has fired. This is only updated for Triggers within a dependency. A Job with dependencies do only fire

when all Triggers have been fired once. After that - the fired times is reset.

Description

Name/description of the Trigger.

Reset Trigger dependency state when saving Job

This resets the state to zero on all Trigger that has a dependency.

Next run

The Date/time for the next run is shown in the bottom of the Job window.

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« Job - Job Variables

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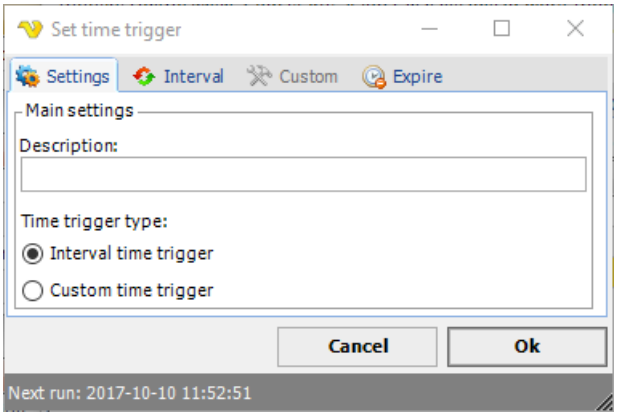
Time Triggers »

Time Triggers

For Time trigger select one of *Interval* or *Custom* types.

Job > Triggers > Add > Time trigger > Interval/Custom



Settings tab

Enter a description which will distinguish several triggers from each other in a trigger list. You can also choose between the Interval Time Trigger and Custom Time Trigger type triggers. One trigger type is always selected and the other option will be grayed out.

Interval tab

This time trigger is a simplified Custom time trigger. Different Interval options are available.

Custom tab

The Custom time trigger also allows setting of time details when a Job should be triggered.

Expire tab

The expiration date/time for the time trigger may be set. Also the handling (Deactivate/Delete trigger) of the expired trigger is selected.

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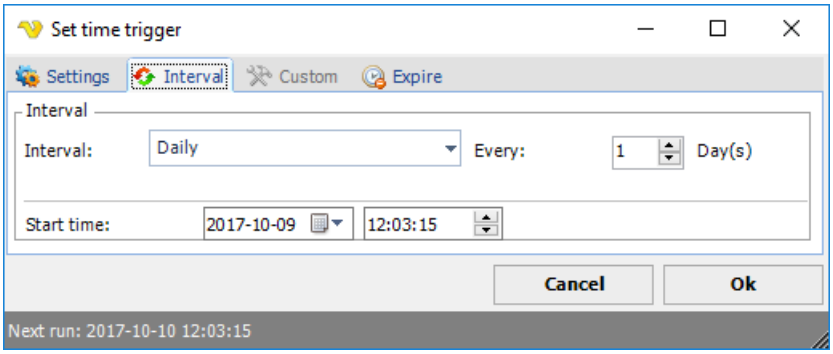
Interval Time Triggers »

Interval Time Triggers

Set Time Trigger > Interval tab



Interval

The Time unit (day, hour, minute, second or specific days of week/month) how often the Job should be triggered

Every

The occurrence (1:st, 2:nd, etc.) is set.

Whatever interval time unit that is selected, also the Start time (date and time for first run occurrence) may be selected.

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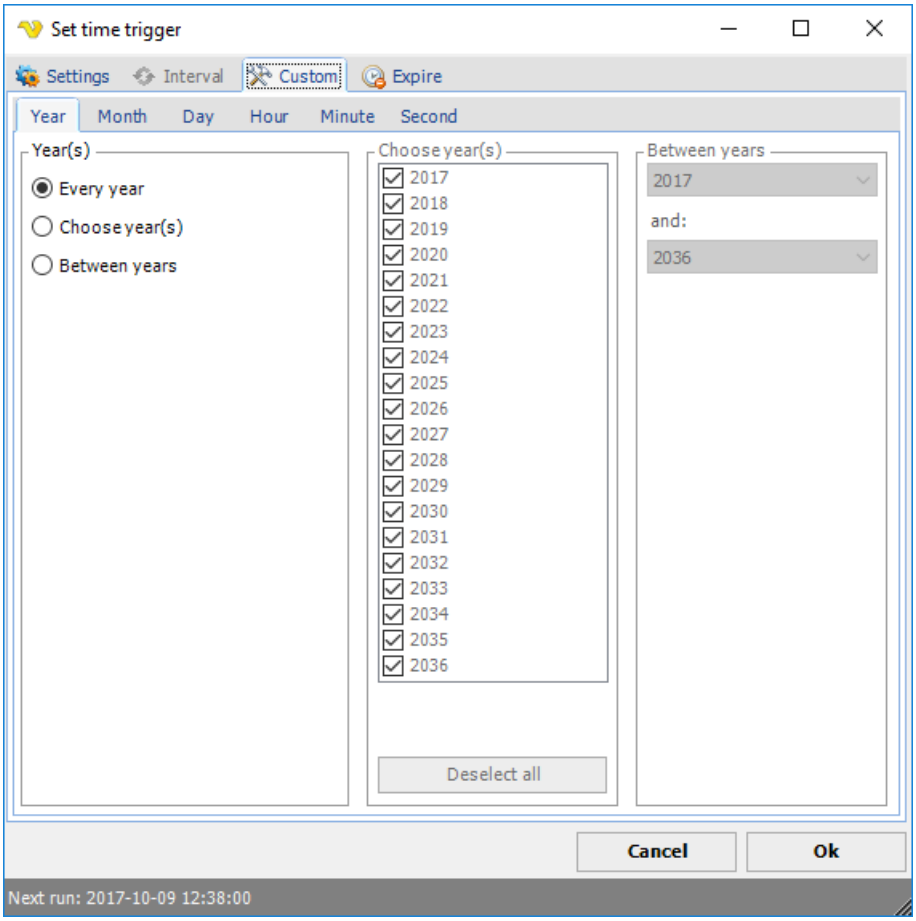
Custom Time Triggers »

Custom Time Triggers

Time Trigger -> Custom tab



The *Year, Month, Day, Hour, Minute* and *Second* time parameters may be defined.

For each time unit, Every, Choose or Between can be selected. The Between ... option specifies a range of values for the specific time unit. For example, Between weekdays "Friday" and "Tuesday" means that the Job will run on "Friday", "Saturday", "Sunday", "Monday" and "Tuesday".

Examples

- Choosing for example day "31" results in that the Job will only execute on months with 31 days
- By default, Second = "0" is checked. In order to be able to set a correct time on a Job, a Job must have a least one second specified. Second "0" is the first second in a minute.

Next run

Next run is calculated every second. Next run is based on the values you enter in time settings using the time on the server. Note that next run is an indicative value, that is if you are about to add or edit a Job and you set that Job to run every minute it won't run every minute until you have finished the add/edit window and the Job has appeared in the Job list.

NOTE

Calculation of next run does not take any time exceptions into account.

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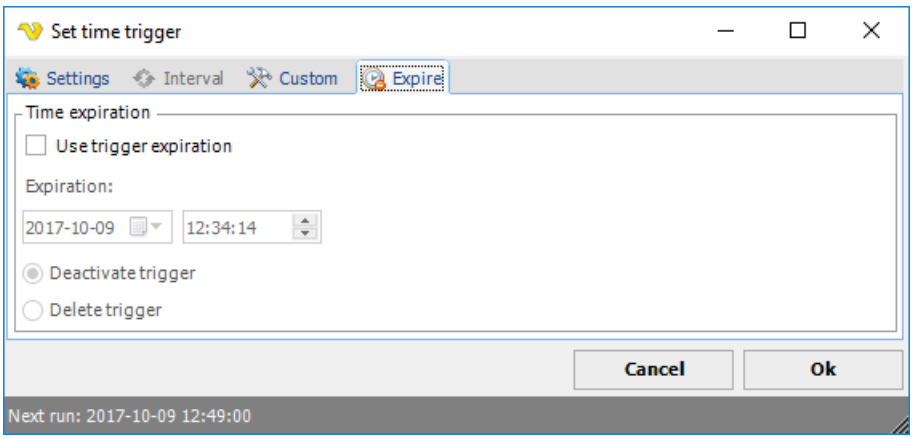
Time Trigger - Expiration »

Time Trigger - Expiration



Set date and time when the time/event trigger should be removed.

There are two kinds of expiration modes:

- **Expire** - the trigger will still remain in the Job but is inactive and cannot be triggered until it is set to active again
- **Delete trigger** - the trigger will be deleted from the Job and will never be seen again

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« Custom Time Triggers

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Event Triggers »

Event Triggers

The event trigger is a complex and sensitive but also powerful way to monitor the system. Events in the system can trig your Job to run if that is the intention. An example is if your web server service dies and you want to know and act upon that.

Most events are based on the **WMI** (Windows Management Instrumentation) interface. **WMI** is a management technology allowing scripts to monitor and control managed resources throughout the network. Resources include hard drives, file systems, operating system settings, processes, services, shares, registry settings, networking components, event logs, users, and groups. **WMI** is built into clients with Windows 2000 or above, and can be installed on any other 32-bit Windows client.

Using a **WMI** based trigger, requires some common settings to control the behavior. These common settings are located in the **Main Settings** tab of the Event Trigger window.

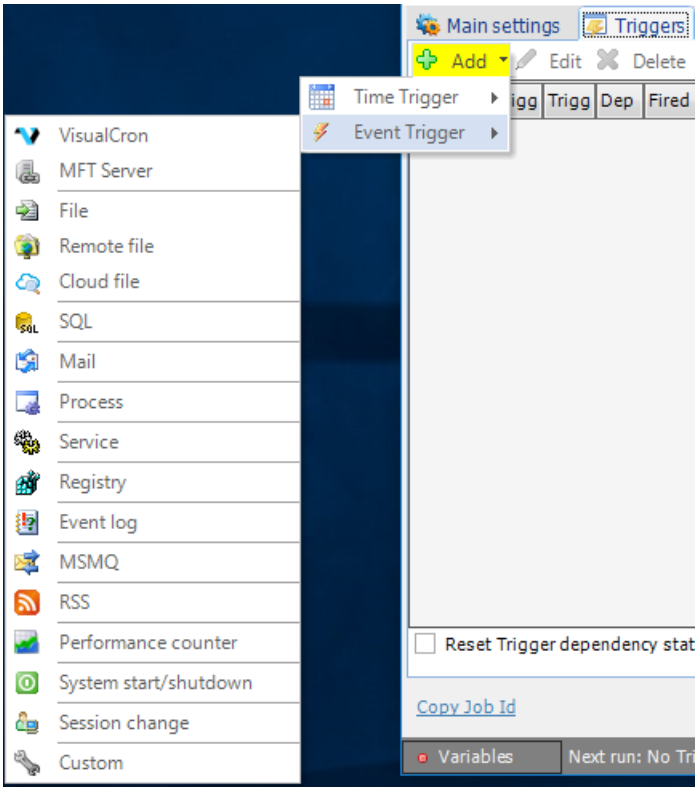
Security:

Some Triggers require higher privileges than the default privileges of the LocalSystem account. You need to either change the user that runs the VisualCron service to an administrator or add LocalSystem user to the administrators group (requires a restart of the server). This is especially true when trying to monitor a remote event, like monitoring an event log on another server.

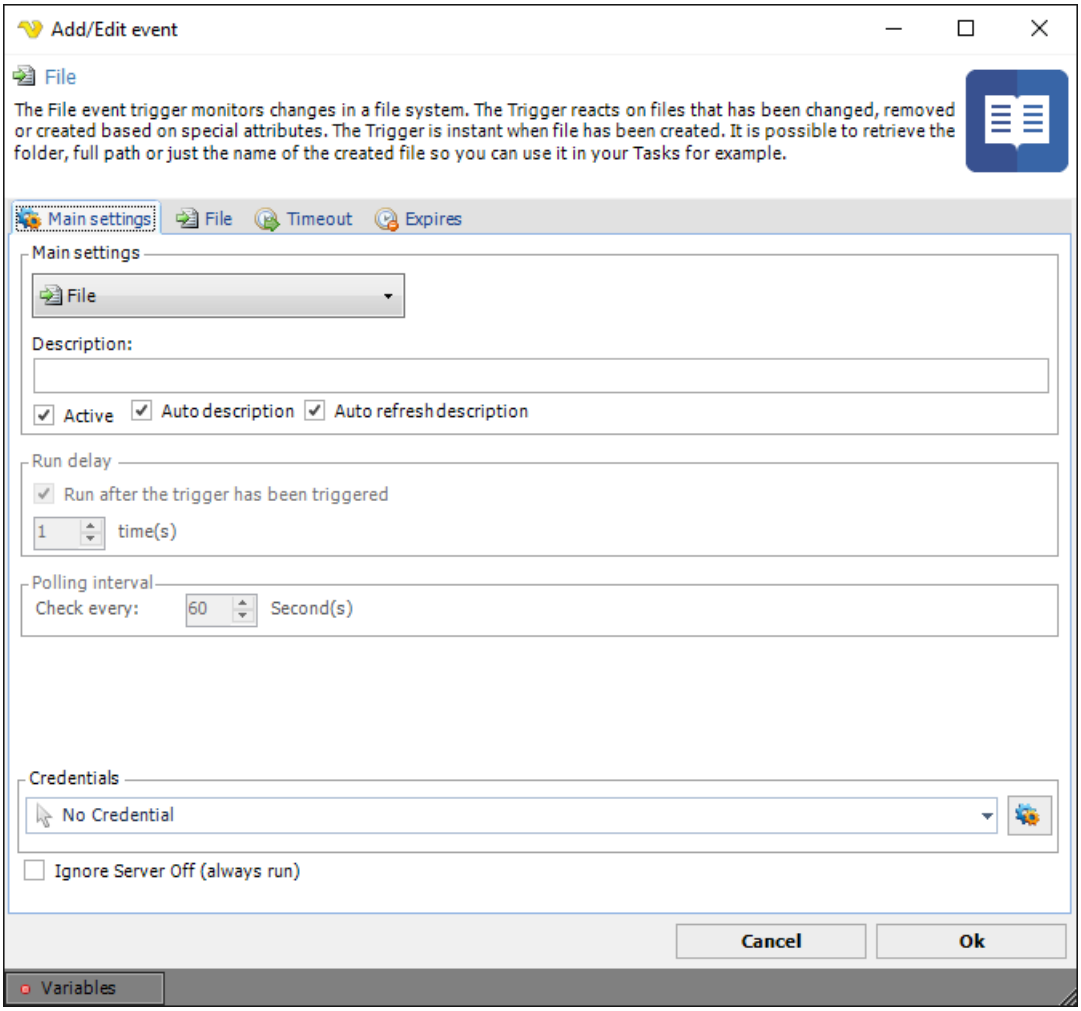
Warning:

Some event based triggers, like the File event type, can in some cases, trigger several times a second. This will run your Job several times a second.

In the **Triggers** tab, clicking on *Add* > *Event trigger*, a selection window for the different event trigger types is opened.



Triggers > Add > Event Trigger > Main settings tab



It is possible to change the event trigger type in the top combo box, which results in that the current trigger type tab is exchanged.

Description

Enter a description which will distinguish several triggers from each other in a trigger list.

Auto description

This will general a description automatically based on Trigger type and settings.

Auto refresh description

This forces update of the description even though it is not empty.

Active

Determines if the current event is active from start. If not, it can be reactivated later. Default is active.

Run delay

You can set a delay which means that the trigger will fire x number of times before executing. Default is 1 which means that the it will fire when the first time it has been triggered.

Polling interval

This value is only used by certain WMI events, otherwise grayed out. The polling interval defines how often VisualCron should check for changes in the system. Default is every 60 second. Setting it to a lower value than 10 will increase the load on the server. What's good is that you won't miss any events even though you are not checking it every second. Changes are stored and if something has happened you will be notified at your polling interval. What is important to know is that if you are watching for state "stopped" at a service and the service has started then stopped, any change has not occurred since the service was stopped in the first place. The service has to be started before monitoring a "stopped" change. Also, if the the service has started before monitoring and it turns from started to stopped within the polling interval no change is observed and you won't be notified.

Remote event

This value is only used by certain WMI events, otherwise grayed out. Can remotely monitor another computer in the network, specify the name or IP address of the remote computer. The computer has to be in the local network. Default is "." which means that VisualCron is monitoring the the local computer. A network credential must be specified when connecting to a remote computer. Also you must check so that the remote computer let's this computer or user access the WMI on the remote computer.

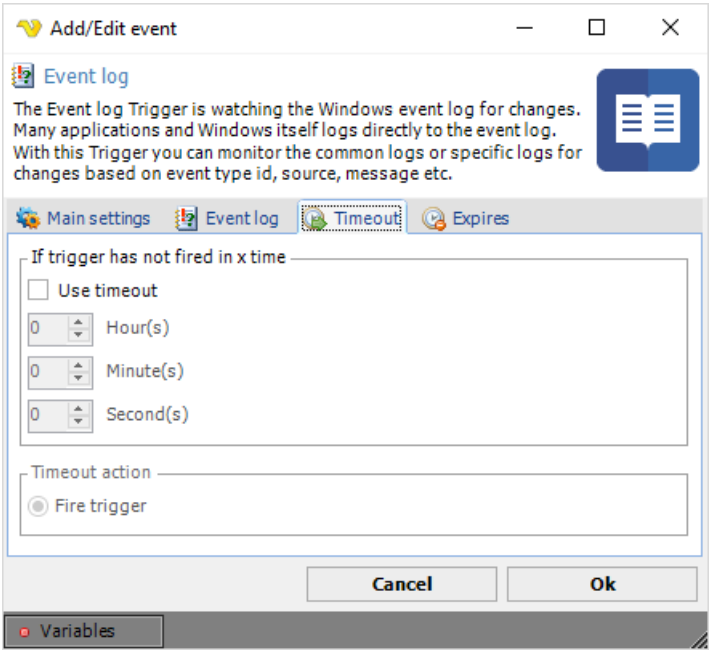
Credentials

To control a remote computer you may need to use a Credential. The Credential must match the user name and password of the user that you want to login for. Select a Credential in the combo box or click the Settings icon to open Manage credentials in order to add or edit Credentials.

Ignore Server Off (always run)

If checked, the Trigger will always run even though the Server status is Off.

Triggers > Add > Event Trigger > Timeout tab



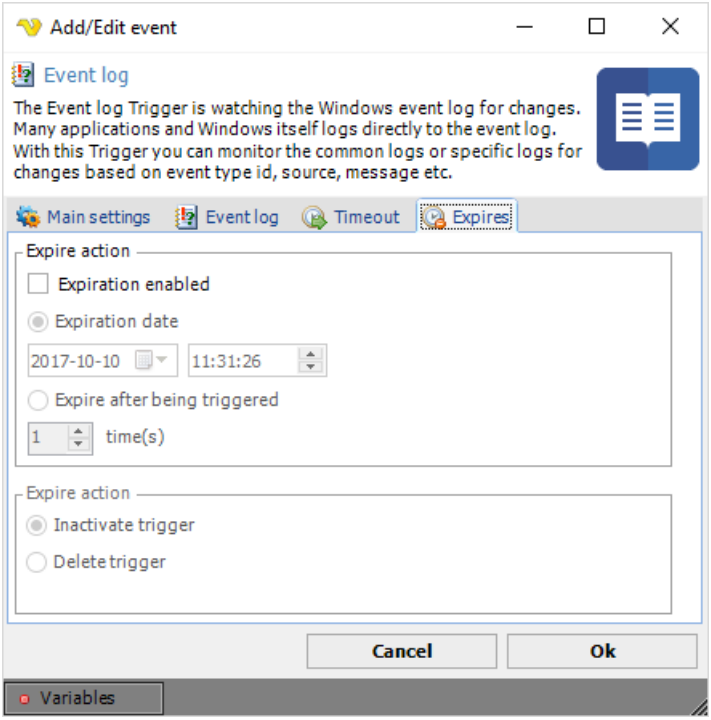
If trigger has not fired in x time

Specify number of hours, minutes and seconds for the timeout.

Timeout action

When VisualCron detects the timeout it will fire the event.

Triggers > Add > Event Trigger > Expires tab



Expiration enabled

Check this option to enable an expiration type. You are able to set if a Trigger should be deleted or deactivated at a certain time or after a certain number of triggered times. Select either date or x time(s) the trigger has to fire before action.

Expire action

Select desired activity when a Trigger has expired. Choose between "Inactivate trigger" and "Delete trigger".

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« Time Trigger - Expiration

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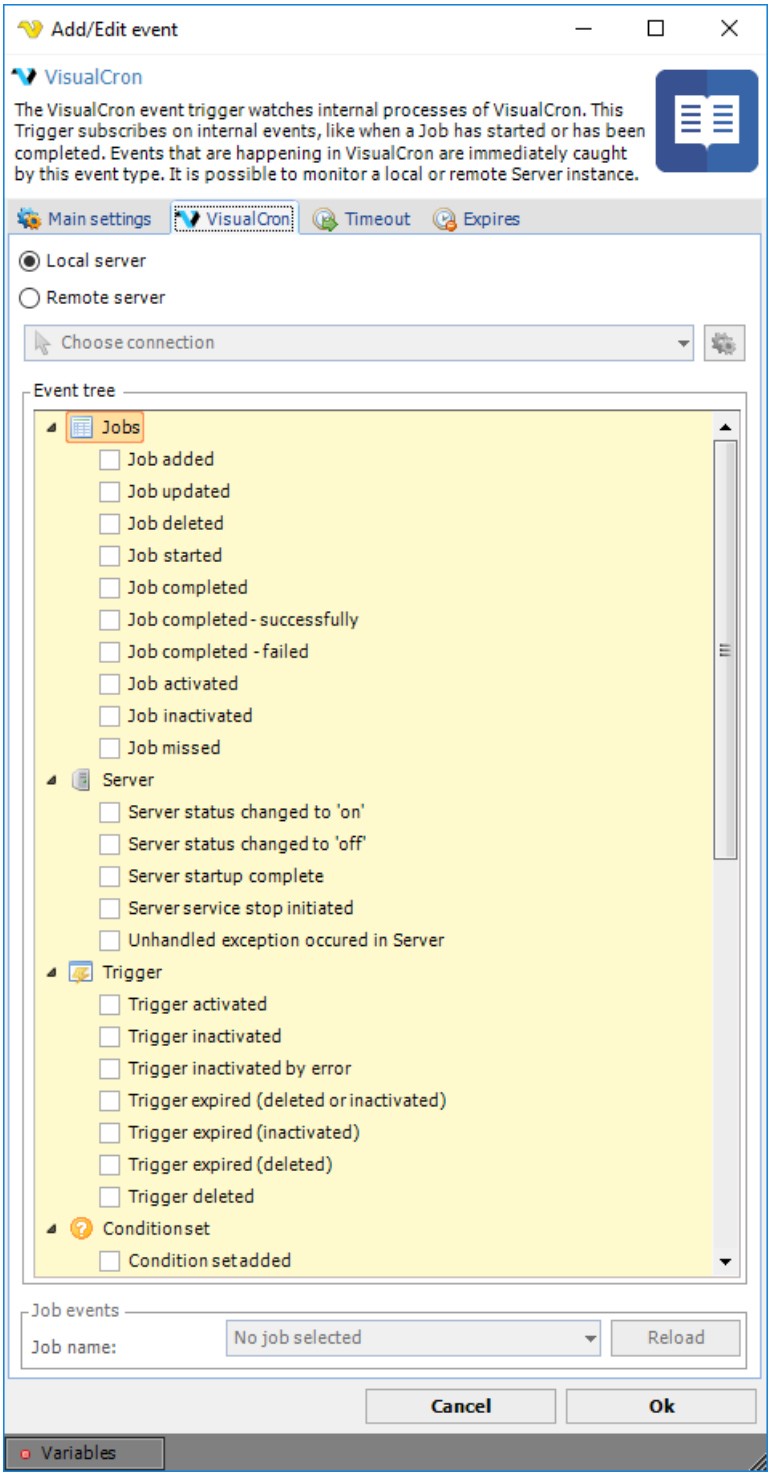
Event Trigger - VisualCron »

Event Trigger - VisualCron

The VisualCron event trigger watches internal processes of VisualCron. This Trigger subscribes on internal events, like when a Job has started or has been completed. Events that are happening in VisualCron are immediately caught by this event type. It is possible to monitor a local or remote Server instance.

Triggers > Add > Event Trigger > VisualCron tab



Local/Remote server

You can choose to monitor the current local Server or a remote VisualCron Server. If you want to monitor a remote Server you need to select Remote server and define a VisualCron Connection.

Job name

If you select an internal Trigger of type Job you need to specify a Job name.

VisualCron Events

Jobs

Job completed

If the Job completes either successfully or fail.

Job completed - successfully

If the Job completes with success.

Job completed - failed

If the Job completes with failure.

Job missed

If the Job missed a Trigger according to schedule because Server was down or similar.

Triggers

Trigger inactivated

Any user or other activity that deactivates the Trigger

Trigger inactivated by error

If a Trigger fails monitoring something, i.e. if Connection fails for too many times.

Trigger expired (deleted or inactivated)

If the Expiration enabled is set and the Expire action is any reason.

Trigger expired (inactivated)

If the Expiration enabled is set and the Expire action is Inactivate Trigger.

Trigger expired (deleted)

If the Expiration enabled is set and the Expire action is Delete Trigger.

Trigger deleted

If the Trigger is deleted.

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Event Trigger - MFT Server »

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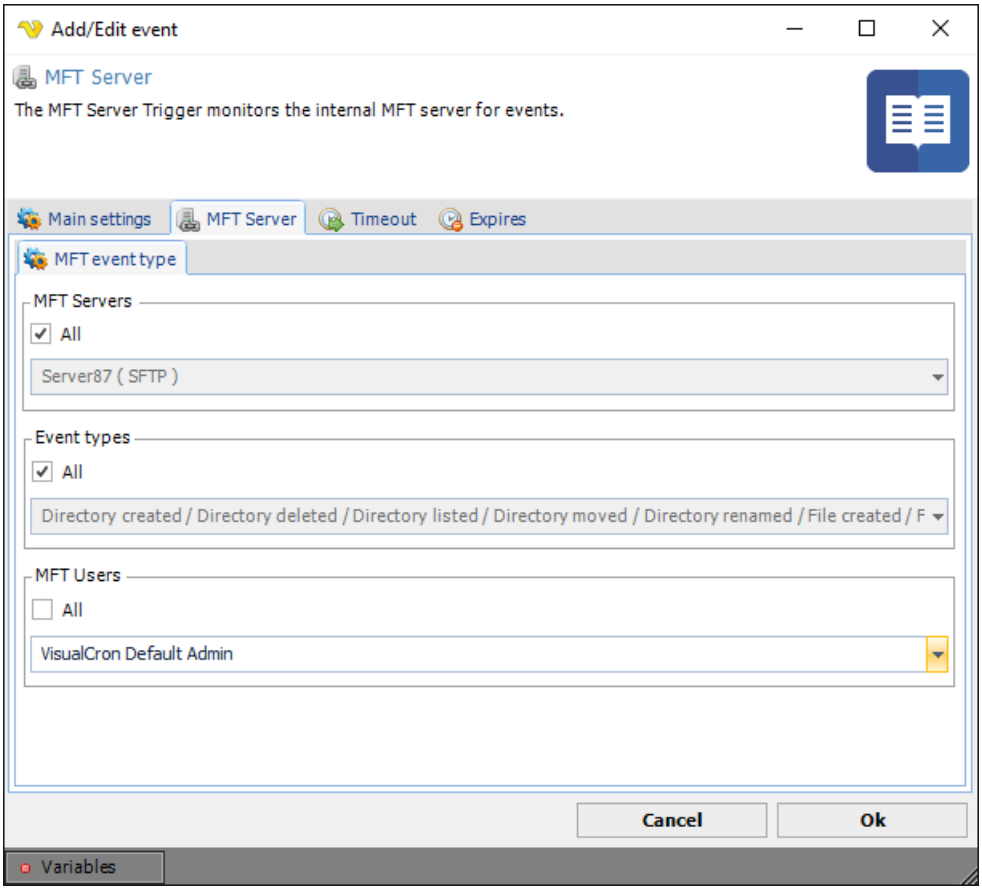
MFT Server

The MFT Server event trigger monitors the internal MFT server for events. General creation and configuration of MFT server is made in MFT Server Settings.

Triggers > Add > Event Trigger > MFT Server > MFT event type sub tab



MFT Server name

Select all or a specific MFT endpoint.

Event type

Select all or specific MFT event type.

User

Select all or a specific User.

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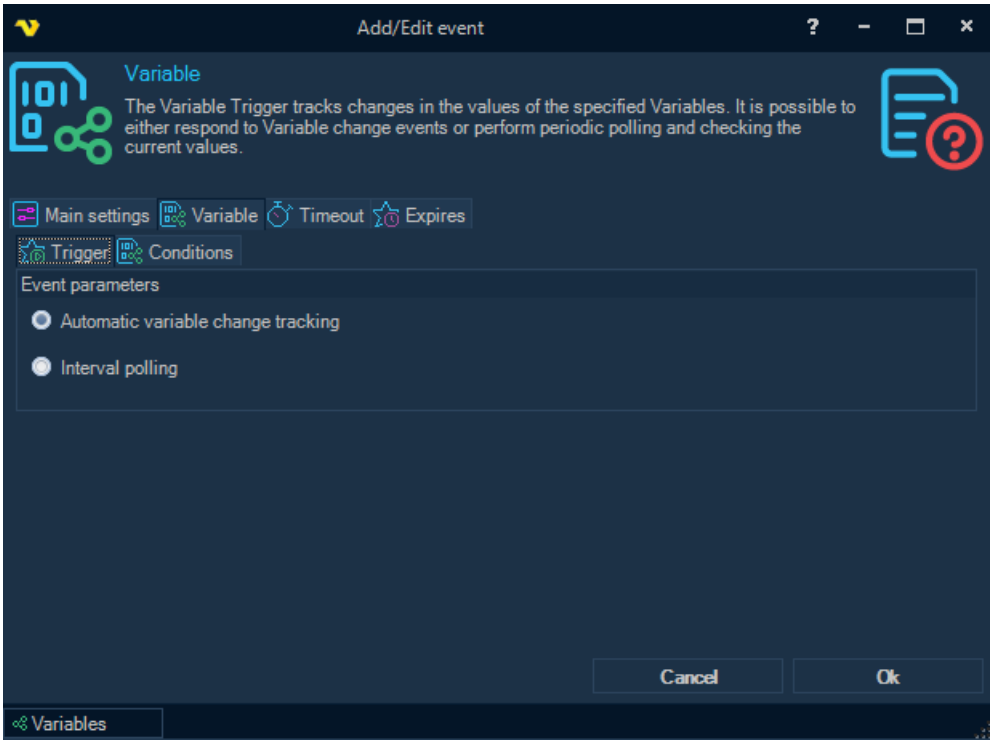
Next
Event Trigger - Variable »

Event Trigger - Variable

The **Variable Trigger** tracks changes in the values of the specified Variables. It is possible to either respond to Variable change events or perform periodic polling and checking the current values.

Triggers > Add > Event Trigger > Variable > Variable tab > **Trigger** sub tab



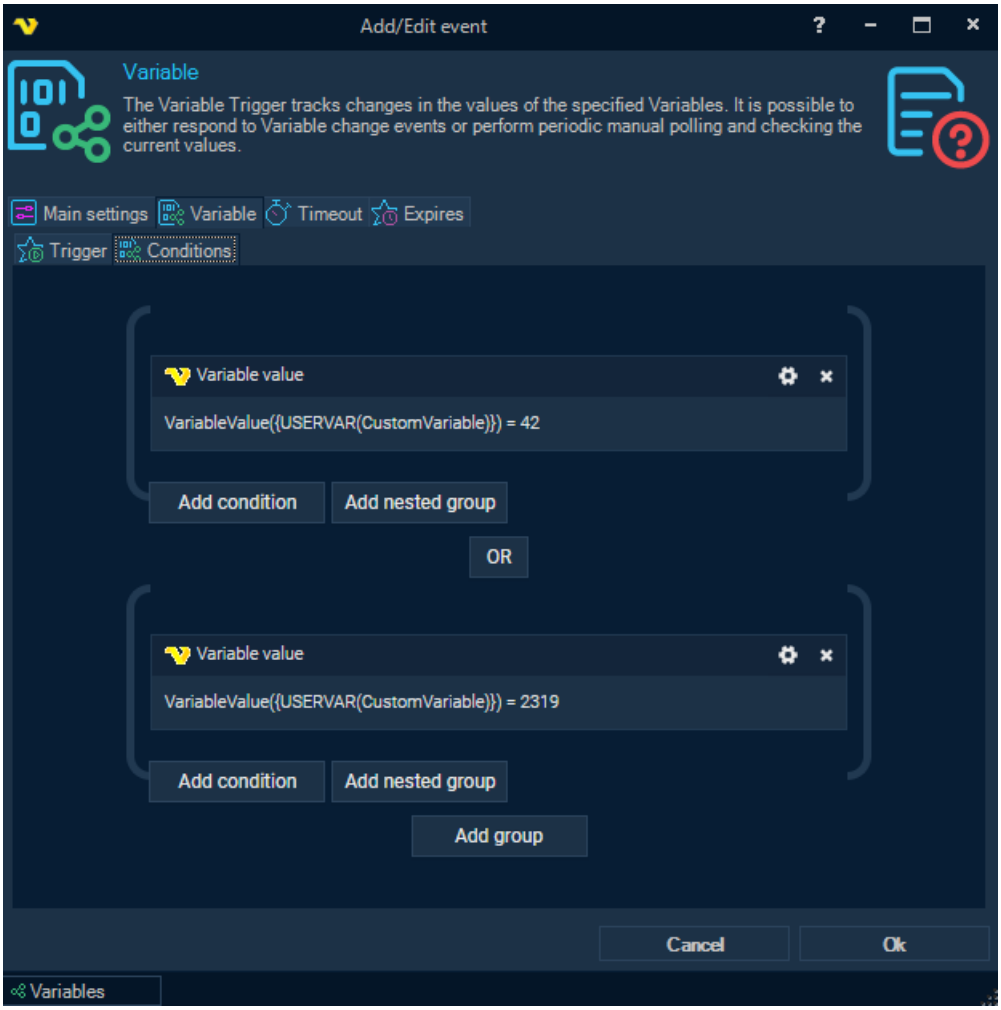
Automatic variable change tracking

Fire the trigger if the configured condition (or a group of conditions) has been met and either the condition acts as an event or a mismatched condition state was previously detected. Polling interval is ignored.

Interval polling

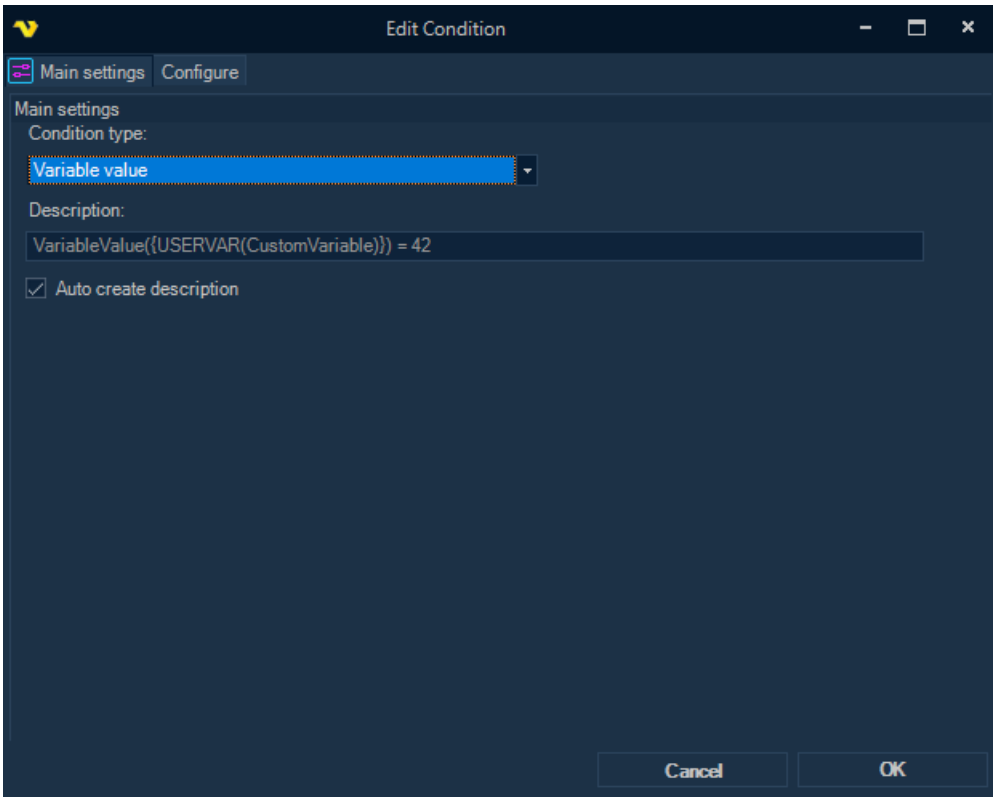
Perform a check of configured conditions at intervals specified in Main settings. Fire the trigger if conditions are met.

Variable tab > **Conditions** sub tab



One or more conditions can be configured here. By default, conditions are linked with the AND operator, but if necessary, the conditions can be combined into groups, and the groups can be linked with the OR operator.

Conditions sub tab > **Add condition** > **Main Settings** tab



There are currently two types of conditions supported:

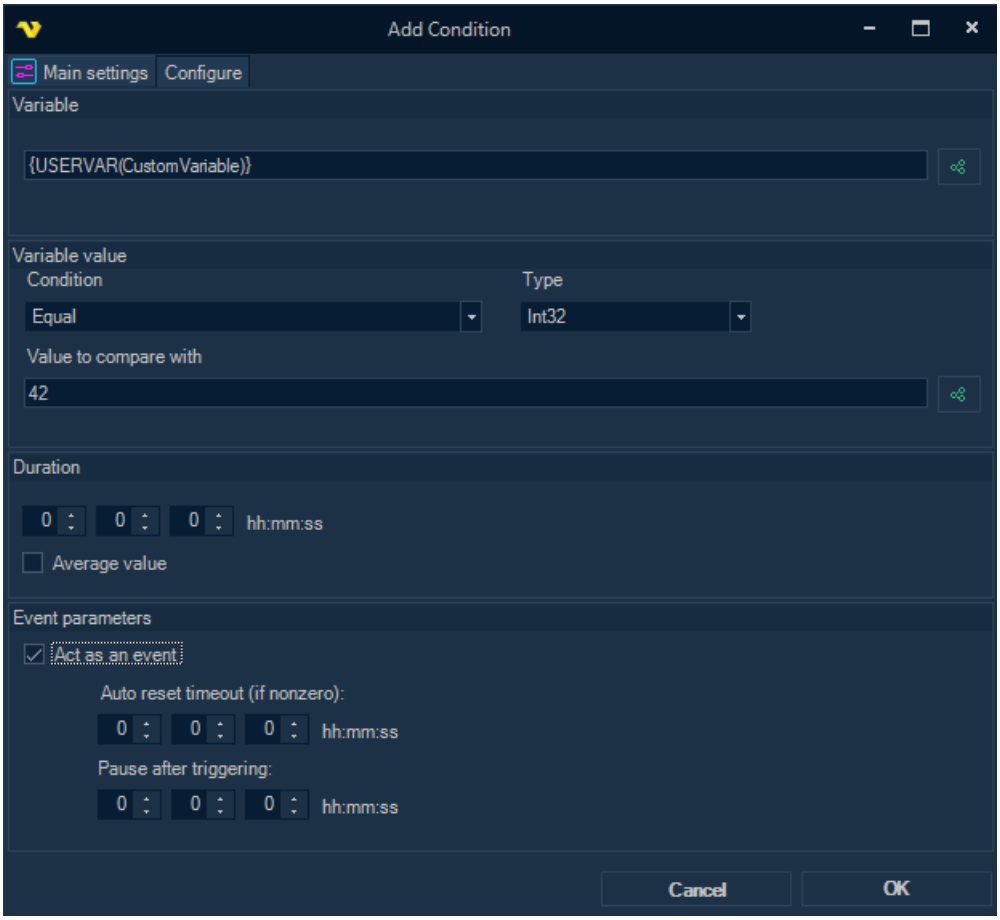
Variable value

A state-check condition that checks the current value of a Variable against a given criterion. Allows the duration, including the calculation of the average value if a numeric value type is selected. Can act as an event, so that the next match of the condition is possible only after an unmatched state is detected or the reset timeout expires.

Variable value changed

An event-based condition that triggers every time the value of a Variable changes from its previous value.

Conditions sub tab > **Add condition > Variable value** condition type **> Configure** tab



Variable

Variable, or a combination of several Variables, the value of which is checked in the condition.

Condition

Comparison operator for the current Variable value and the "Value to compare with".

Type

Variable value type.

Value to compare with

Can be a specific value, or another Variable.

Duration

All values of the Variable obtained during the specified period are checked against the criterion.

Average value

The average value of all values of the Variable obtained during the specified period of time is checked against the criterion.

Act as an event

If enabled, the next match of the state-check condition is possible only after an unmatched state is detected or the reset timeout expires.

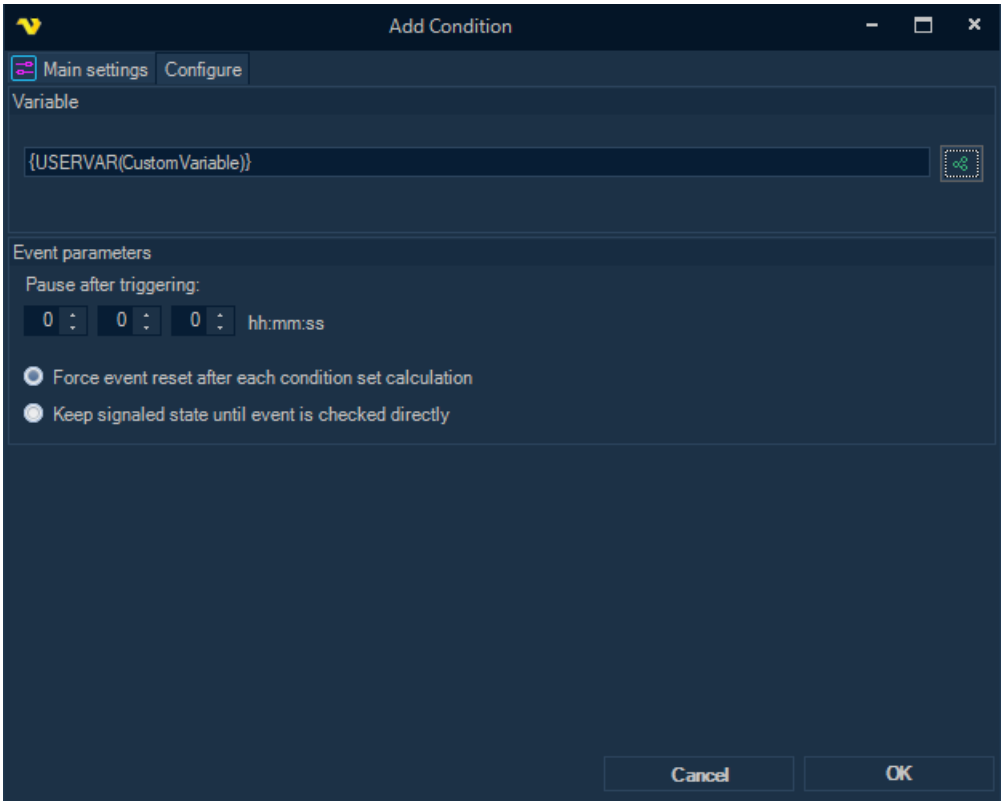
Auto reset timeout

If nonzero, the condition can trigger again after the specified timeout, even if the state matched all the time.

Pause after triggering

The period of time after previous triggering when the event generation is suppressed. However, if while waiting for the end of the suppression period, the state changes to non-matching, and then changes back to matching, then immediately after the end of the suppression period, the condition will be triggered again.

Conditions sub tab **> Add condition > Variable value changed** condition type > **Configure** tab



Variable

Variable, or a combination of several Variables, the value of which is checked in the condition.

Pause after triggering

The period of time after previous triggering when the event generation is suppressed. If an event occurs in the system before the suppression period has ended, the event will be ignored.

Force event reset after each condition set calculation

The state will be set to nonsignaled when calculating the entire condition tree, regardless of whether the event is checked directly or not.

Keep signaled state until event is checked directly

The event will remain in the signaled state until it is checked directly during condition calculations.

Variable Trigger Result Variables

EvaluatedExpression

The general evaluated expression of all configured conditions, for example: "VariableValue({USERVAR(CustomVariable)}):42 = 42 OR VariableValue({USERVAR(CustomVariable)}) = 2319".

ConditionId|Success

Check status of a certain condition.

ConditionId|ActualParameterValue

The actual Variable value of a certain condition.

ConditionId|EvaluatedExpression

The evaluated expression of a certain condition.

Configuration examples

Type 1 - Interval Polling

Example 1.1

Every 10 minutes, check the value of the Variable "VarX". If the value is "X", run the Job.

- set the polling interval to 600 (seconds) on the Main settings tab;
- activate "Interval polling" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Condition = Equal*
  - *Value to compare with = X*

Example 1.2

Every 10 minutes, check the average value of the numeric Variable "VarN" for the last 10 minutes.

If the average is above [N], run the Job.

- set the polling interval to 600 (seconds) on the Main settings tab;
- activate "Interval polling" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
  - *Condition = Larger*
  - *Type = Int32*
  - *Value to compare with = [N]*
  - *Duration = 00:10:00*
  - *Average value = Checked*

Type 2 - Variable Value Changed Event

Example 2.1

Run the Job every time the value of the Variable "VarX" changes.

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value changed" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*

Example 2.2

Run the Job every time the value of the Variable "VarX" changes, but no more than once per minute.

If the value has changed before 1 minute has elapsed since the previous change, ignore the change.

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value changed" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Pause after triggering = 00:01:00*

Example 2.3

Run the Job every time the value of the numeric Variable "VarN" changes, provided that the new value is less than [MinN] or greater than [MaxN] (i.e. is outside the tolerance interval).

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value changed" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
- add another "Variable value" condition by pressing "Add group";
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
  - *Condition = Smaller*
  - *Type = Int32*
  - *Value to compare with = [`MinN`]*
- add another "Variable value" condition by pressing "Add nested group";
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
  - *Condition = Larger*
  - *Type = Int32*
  - *Value to compare with = [`MaxN`]*
- set AND operator between the first two conditions
- set OR operator between the last two conditions

Type 3 - Variable Value Becomes Matched The Condition

Example 3.1

Run the Job every time the value of the Variable "VarX" becomes "X".

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Condition = Equal*
  - *Value to compare with = X*

Example 3.2

Run the Job every time the value of the Variable "VarX" becomes "X", and also run the Job every 10 minutes while the value remains equal to "X"; with the limitation of starting the Job no more than once per minute, so that if the value becomes "X" earlier, the Job will be executed with a delay of 1 minute after the previous run (if the value is still "X").

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Condition = Equal*
  - *Value to compare with = X*
  - *Act as an event = Checked*
  - *Auto reset timeout = 00:10:00*
  - *Pause after triggering = 00:01:00*

Example 3.3

Run the Job every time the value of the Variable "VarX" becomes "X", provided that the value of the Variable "VarN" is equal to "N" at that moment.

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Condition = Equal*
  - *Value to compare with = X*
  - *Act as an event = Checked*
- add another "Variable value" condition by pressing "Add condition";
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
  - *Condition = Equal*
  - *Value to compare with = N*

Example 3.4

Run the Job every time the value of the Variable "VarX" becomes "X", provided that the value of the Variable "VarN" has changed since the previous successful run.

- activate "Automatic variable change tracking" mode on the Variable/Trigger tab;
- add a new "Variable value" condition on the Variable/Conditions tab;
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarX)}*
  - *Condition = Equal*
  - *Value to compare with = X*
  - *Act as an event = Checked*
- add another "Variable value changed" condition by pressing "Add condition";
- set up the condition parameters on the Configure tab:
  - *Variable = {USERVAR(VarN)}*
  - *Keep signaled state until event is checked directly = Checked*

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Event Trigger - File »

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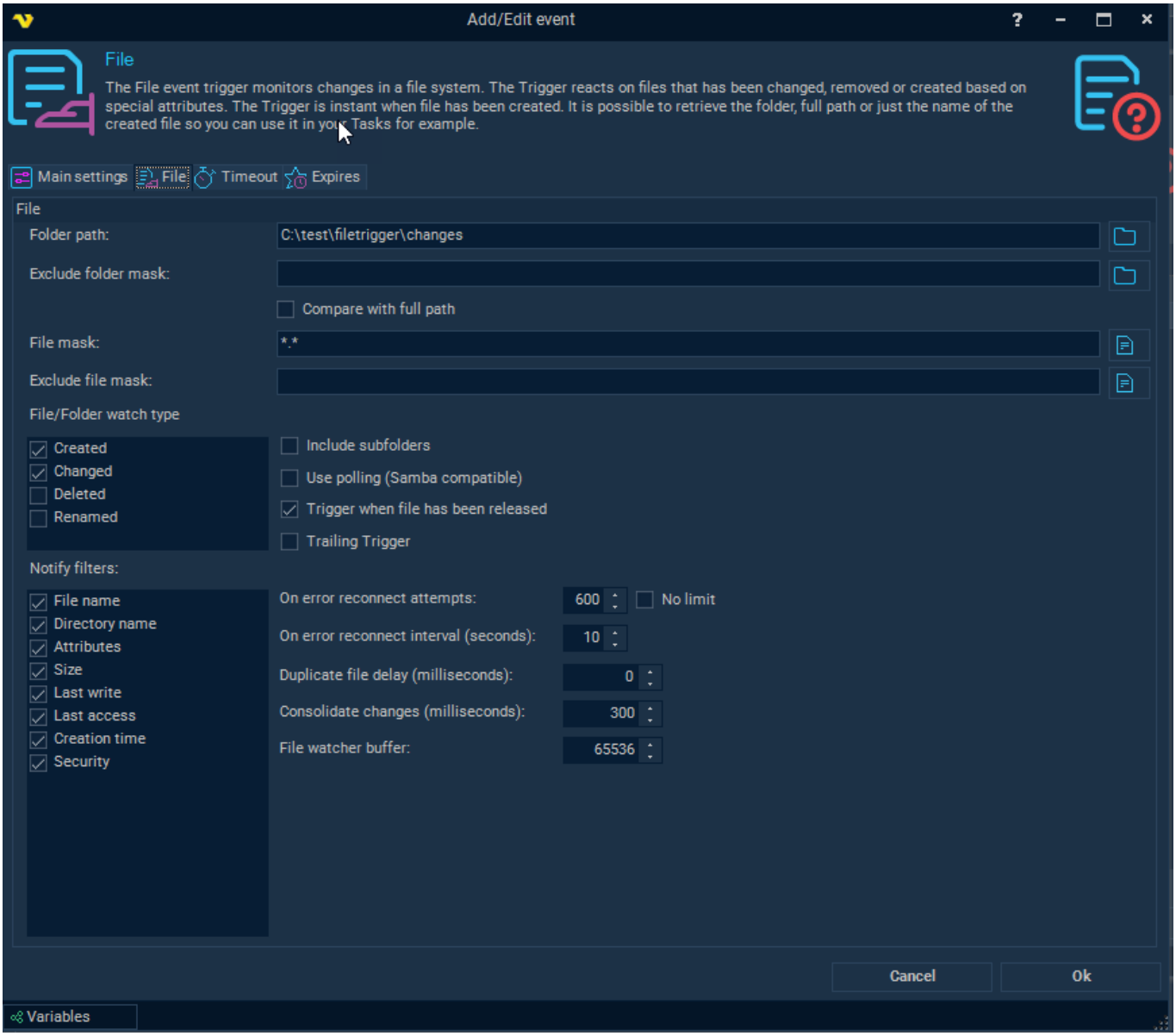
Event Trigger - File

The File event trigger monitors changes in a file system. The Trigger reacts on files that has been changed, removed or created based on special attributes. The Trigger is instant when file has been created. It is possible to retrieve the folder, full path or just the name of the created file so you can use it in your Tasks for example.

To monitor a change you have to specify a path. The file event is not based on **WMI** but can monitor a remote computer if you specify the appropriate credentials (username, password and computer name for the remote computer).

Triggers > Add > Event Trigger > File tab



Folder path

This is the directory you want to monitor.

File mask

The filter can be a complete file name or your can use . to monitor all files (default) or e.g. *.txt to monitors all text files. If you want to check for multiple file masks you can separate them with semicolon (;). For example: *.txt; *.xml

Exclude folder mask

Use this field, with our without wild cards, to exclude triggering files from (sub)folder matching the mask. The comparison will be done against the sub folder name. If you do want to check against the whole part of the path then check *Compare with full path*.

Compare with full path

See above.

Exclude file mask

This field is used the same as File mask but is used to exclude one or more file masks. If you want to check for multiple file masks you can separate them with semicolon (;). For example: *.txt;*.xml. To exclude special characters like # you need to wrap them like this: [#]. For example: [#]*.txt

File/Folder watch type

There are a set of watch types which monitors changes that might occur to a file or directory:

- "Created" - the creation of a file or folder
- "Changed" - change of a file or folder. The types of changes include: changes to size, attributes, security settings, last write, and last access time
- "Deleted" - the deletion of a file or folder
- "Renamed" - the renaming of a file or folder

Include subfolders

This setting enables monitoring of all sub folders of the Path.

Use polling (*Samba compatible*)

Only use this option if you are monitoring a Samba file share. Samba does not support the normal file events so we are using our own polling technique instead.

Trigger when file has been released

If you are planning on using the file that was triggered directly you could use this option to ensure that the file has been fully changed/written before it is being triggered (and used by you or a later stage in VisualCron).

Trailing Trigger

When checked VisualCron will watch for changes within a file and through Variables deliver the change (of text) between write to the file. Use this Variable to track changes: {TRIGGER(Active|LastTrigger|File.Result.NewText)}

Notify filters

Specifies changes to watch for in a file or folder. These are used in conjunction with the watch types. Certain combinations can give different results. The following notify filters can be activated:

- "File name" - the name of the file
- "Directory name" - the name of the directory
- "Attributes" - the attributes of the file or folder
- "Size" - the size of the file or folder
- "Last write" - the date the file or folder last was updated
- "Last access" - the date the file or folder was last opened
- "Creation time" - the creation time for a file or folder
- "Security" - the security settings of the file or folder

You can combine the notify filters to watch for more than one kind of change. For example, you can watch for changes in the size of a file or folder, and for changes in security settings. This raises an event anytime there is a change in size or security settings of a file or folder.

On error reconnect attempts

Let say the remote folder you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect attempts value controls how many times VisualCron tries to reconnect. Default value is 3 times.

On error reconnect interval (*seconds*)

Let say the remote folder you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect interval which you can specify is the number of seconds it will wait between each reconnect attempt, in seconds. Value 1 to 500 is available. Default is 5 seconds which may be a long time when the network is down and a short time if the remote computer is

down. VisualCron attempts to reconnect 3 times by default.

Duplicate file delay (*milliseconds*)

Some systems create duplicate Created/Changed events. The duplicate file delay is a time period where no new events are accepted from the same file name. This setting sends the first event and prevent later events ompared to Consolidate changes which waits and sends the last event.

Consolidate changes (*milliseconds*)

Some systems create duplicate Created/Changed events. The consolidate changes delay is a time period when events are queued into one single last event. For example, if you are watching for Created and Changed events this could potentially generate 1 Created and 2 (or more) Changed events. By increasing this value we wait for file to be updated during this time. If file is updated it will wait another round. Finally, this will generate one single event. Compared to Duplicate file delay which just send the first event - then wait the Consolidate changes will wait and send the last event.

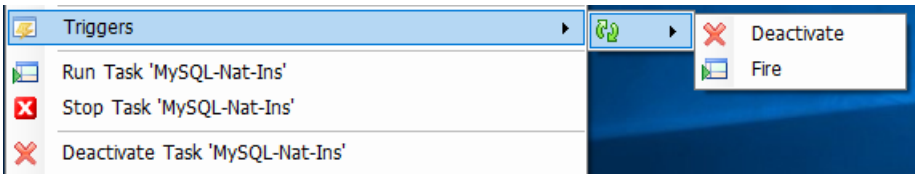
File watcher buffer

You can set the buffer to 4 KB or larger, but it must not exceed 64 KB. Increasing the size of the buffer can prevent missing file system change events. However, increasing buffer size is expensive, so keep the buffer as small as possible.

Trigger on existing files

Once the File Trigger has been setup you can click on the Trigger to manually fire on existing files in folder.

Task right-click > Triggers



Using File Trigger Variables in upcoming Tasks/Notifications

Whenever a file is created unique Variables will be created in VisualCron so you know exactly which file was created. It is common that users use wild cards or hard coded fields when later working with the created files - this will later end up in timing issues and working with the wrong file. Instead, whenever there is a Task or Notification with Source folder and Include file mask you should use these Variables:

- Source folder: `{TRIGGER(Active|LastTrigger|File.Result.TriggerFolder)}` - this is the folder the file was created in
- Include file mask: `{TRIGGER(Active|LastTrigger|File.Result.Name)}` - this is the name of the file that was created

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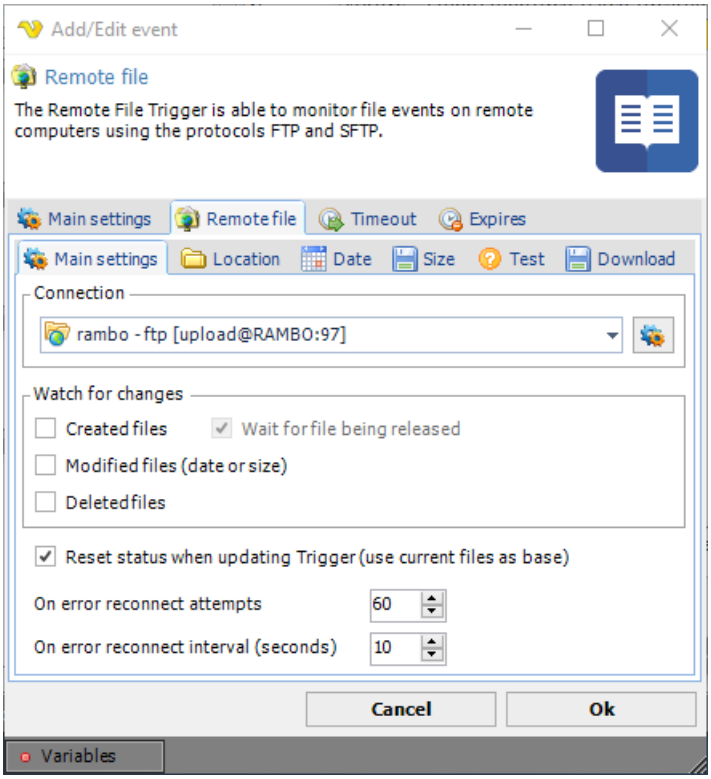
Event Trigger - Remote File »

Event Trigger - Remote File

The Remote File event trigger is able to monitor file events on remote computers using the protocols FTP, SFTP and SCP.

Triggers > Add > Event Trigger > Remote file > Main settings tab



Connection

This Trigger uses the centrally stored Connections. Available protocol types are listed here. Click on Manage Connections to add a new one.

Watch for changes

You are able to watch for new, modified and deleted files. Select what you want the Trigger to fire for.

Wait for file being released

The Trigger will monitor a new file for modify date. If modify date has not changed since last check the Trigger will fire 'Created' event.

Reset status when updating Trigger (use current files as base)

This reloads the internal list of files. You should check this if you for some reason change the Connection.

On error reconnect attempts

Let say the remote server you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect attempts value controls how many times VisualCron tries to reconnect. Default value is 3 times.

On error reconnect interval (*seconds*)

Let say the remote server you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect interval which you can specify is the number of seconds it will wait between each reconnect attempt, in seconds. Value 1 to 500 is available. Default is 5 seconds which may be a long time when the network is down and a short time if the remote computer is

down. VisualCron attempts to reconnect 3 times by default.

Triggers > Add > Event Trigger > Remote file > Location tab

This Task is using the standard VisualCron Folder filter to find one or more folders.

Triggers > Add > Event Trigger > Remote file > Date tab

This Task is using the standard VisualCron Folder filter to filter for created/modified date.

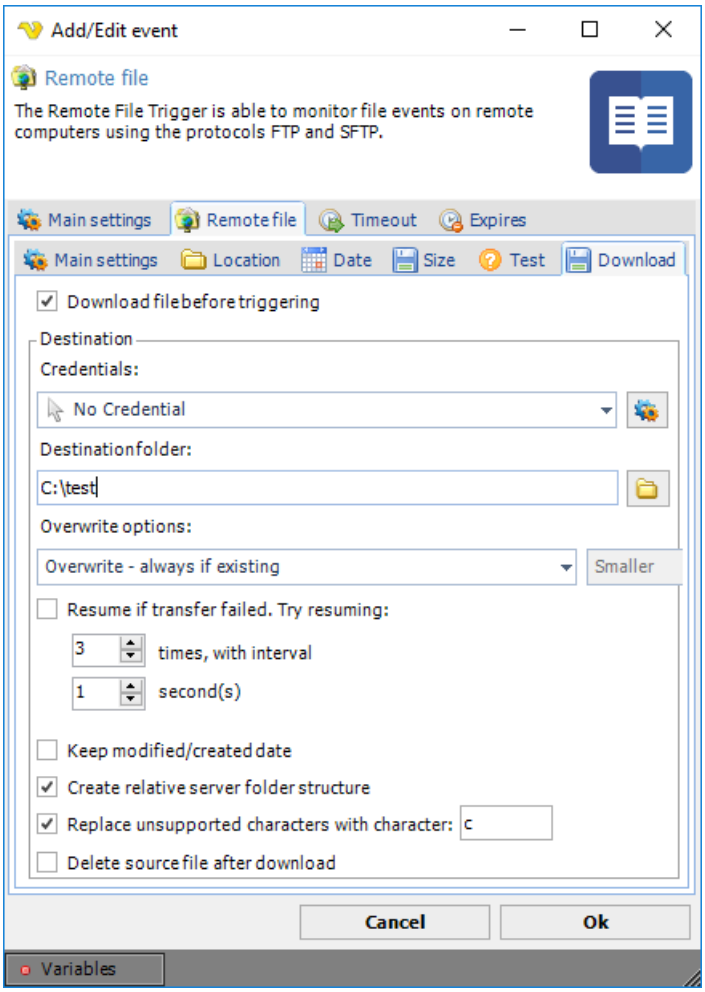
Triggers > Add > Event Trigger > Remote file > Size tab

This Task is using the standard VisualCron Folder filter to filter out files based on size.

Triggers > Add > Event Trigger > Remote file > Test tab

This Task is using the standard VisualCron Folder filter to test your current file filter - if it matches any existing files.

Triggers > Add > Event Trigger > Remote file > Download tab



Download file before triggering

Optionally, you can set the Remote file Trigger to download the file that was just Triggered.

Credential

Select a Credential if you are going to save to a network drive. Click the Settings icon to populate the drop-down list with available credentials.

Destination folder

The local folder where the file should be saved.

Overwrite options

If the file exists you can choose different overwrite options.

Resume transfer if failed

If an error occurs while downloading the file you can choose to retry X times and wait Y seconds between each retry.

Keep modified/created date

This option will set the same modified and creation date as the on the ftp.

Keep modified/created date

Sets the modified/created date on locally downloaded files to the same dates as the remote files.

Create relative folder structure

Creates relative folders if checked. If not checked all files (in sub folders) will be saved to destination folder.

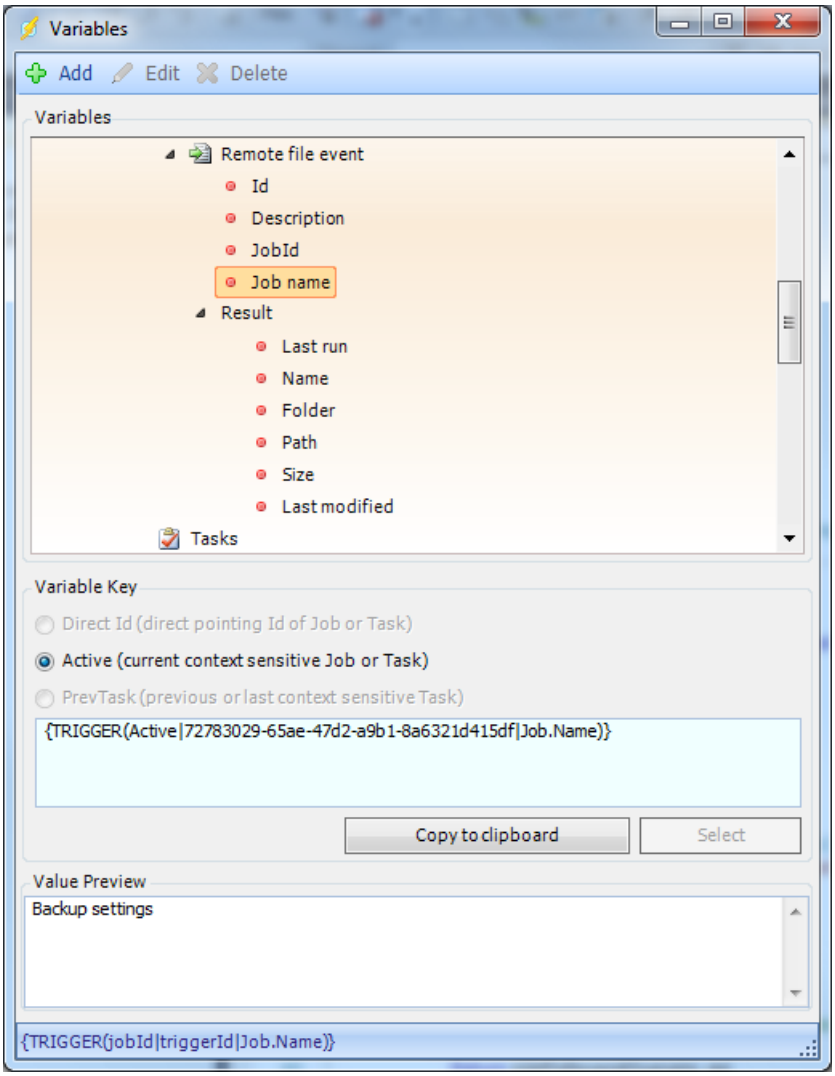
Replace unsupported characters with character

If checked, VisualCron will replace any character that is not supported in Windows file system with the specified character.

Delete source file after download

Optionally delete the remote file after download.

Triggers > Add > Event Trigger > Remote file > Variables



Last run

When the Trigger was last run.

Name

The name of the file that was created/modified/deleted.

Folder

The folder of the file that was created/modified/deleted.

Path

The full path to the file that was created/modified/deleted.

Size

The size of the file that was created/modified/deleted.

Last modified

The last modified date of the file that was created/modified/deleted.

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Event Trigger - Cloud File »

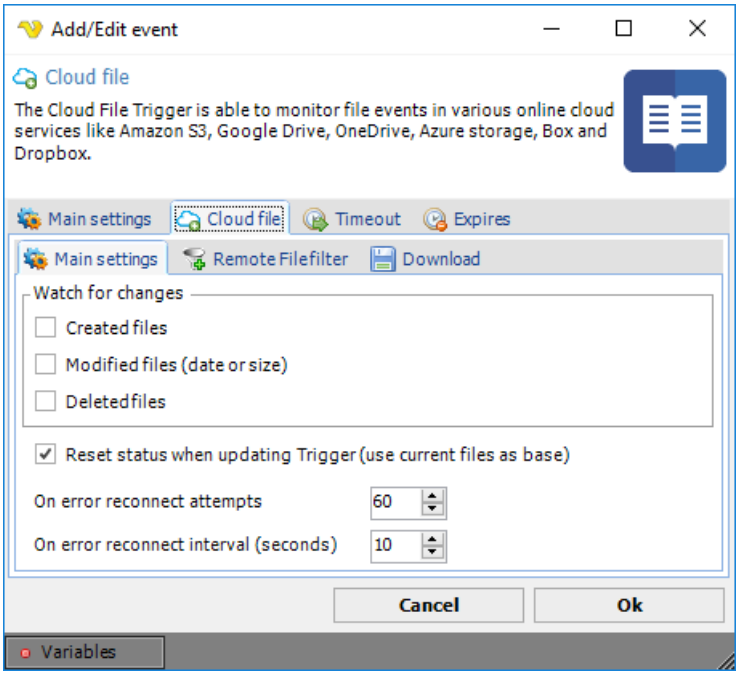
Event Trigger- Cloud File

The Cloud file event trigger is able to monitor file events in various online cloud services:

- Amazon S3
- Box
- DropBox
- Google Drive
- Microsoft Azure
- OneDrive

Different Connections are used depending on the wanted cloud service provider.

Triggers > Add > Event Trigger > Cloud file > Cloud file > Main settings tab



Watch for changes

You are able to watch for new, modified and deleted files. Select what you want the Trigger to fire for.

Reset status when updating Trigger (*use current files as base*)

This reloads the internal list of files. You should check this if you for some reason change the Connection.

On error reconnect attempts

Let say the remote server you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect attempts value controls how many times VisualCron tries to reconnect. Default value is 3 times.

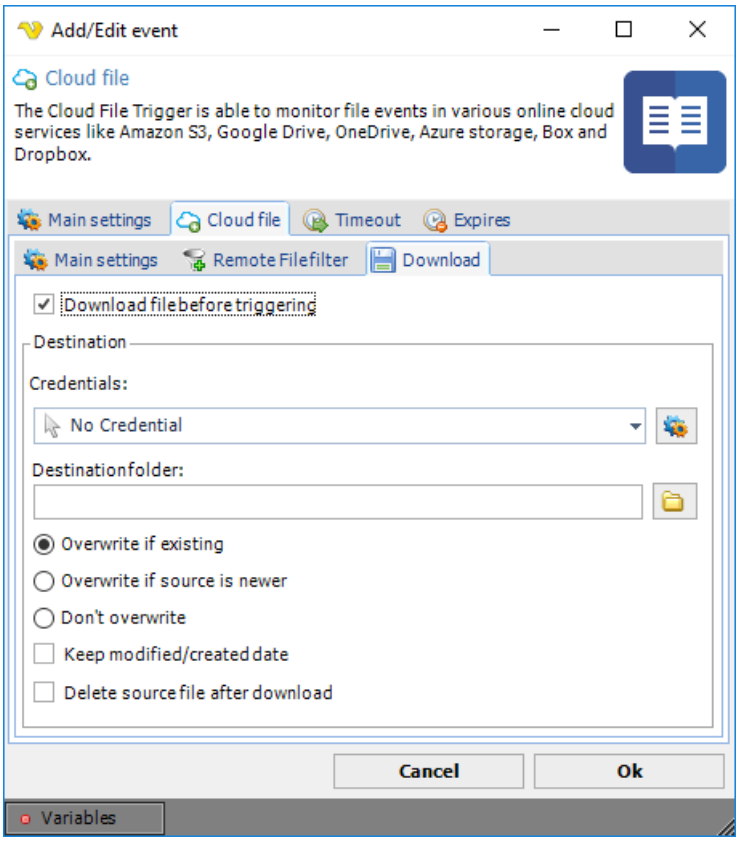
On error reconnect interval (*seconds*)

Let say the remote server you watch gets disconnected for some reason, perhaps the network or computer is down. The reconnect interval which you can specify is the number of seconds it will wait between each reconnect attempt, in seconds. Value 1 to 500 is available. Default is 5 seconds which may be a long time when the network is down and a short time if the remote computer is down. VisualCron attempts to reconnect 3 times by default.

Triggers > Add > Event Trigger > Cloud file > Cloud file > Remote file filter tab

This Trigger uses the Cloud Remote file filter for filtering out files to check for.

Triggers > Add > Event Trigger > Cloud file > Cloud file > Download tab



Download file before triggering

Optionally, you can set the Remote file Trigger to download the file that was just Triggered.

Credential

Select a Credential if you are going to save to a network drive. Click the Settings icon to populate the drop-down list with available credentials.

Destination folder

The local folder where the file should be saved. Click the Folder icon in order to browse the folder tree.

Overwrite options

If the file exists you can choose different overwrite options.

Keep modified/created date

Sets the modified/created date on locally downloaded files to the same dates as the remote files.

Delete source file after download

Optionally delete the remote file after download.

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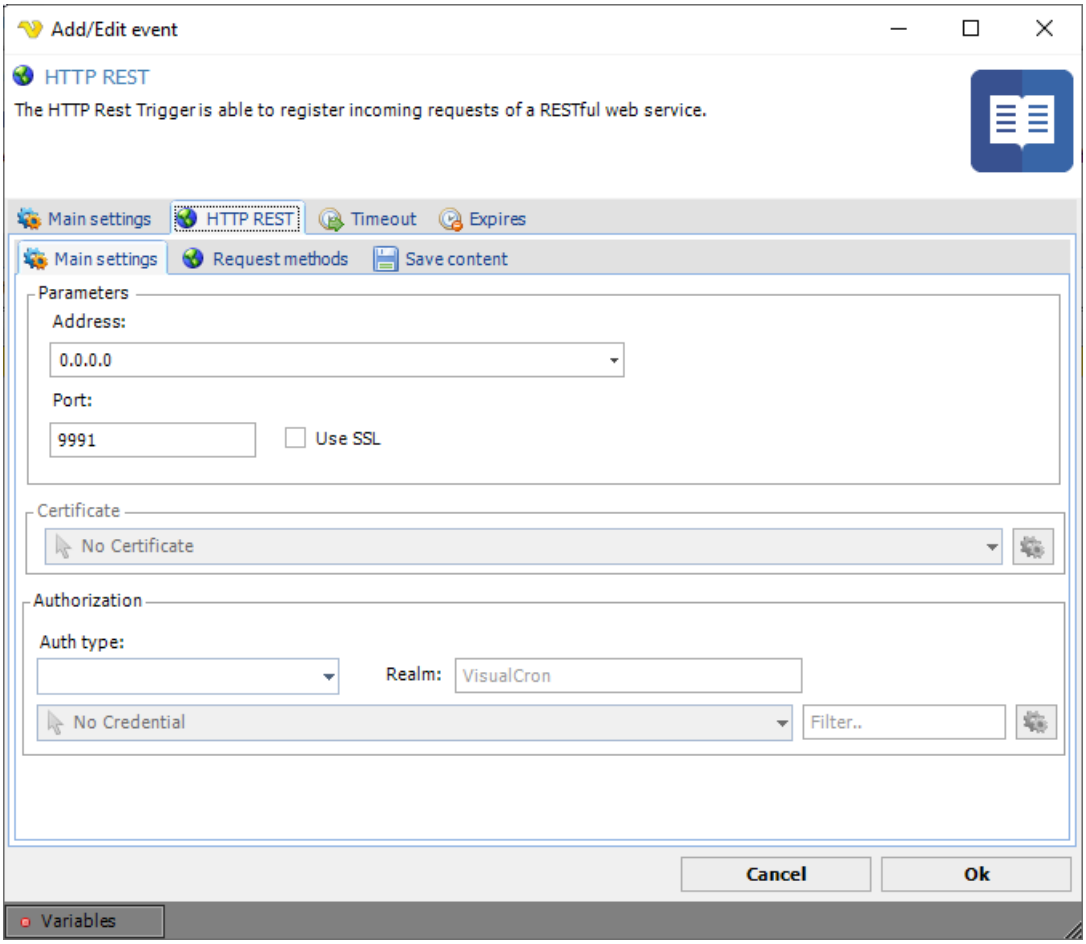
Event Trigger - HTTP REST »

Event Trigger - HTTP REST

The HTTP REST Trigger is able to host a local HTTP server, on a certain path and be able to receive requests through GET and POST through that path. The Trigger will capture all details about the request including parameters received. These parameter values, among other information about the request, can be accessed as Variables for the Trigger.

Main settings



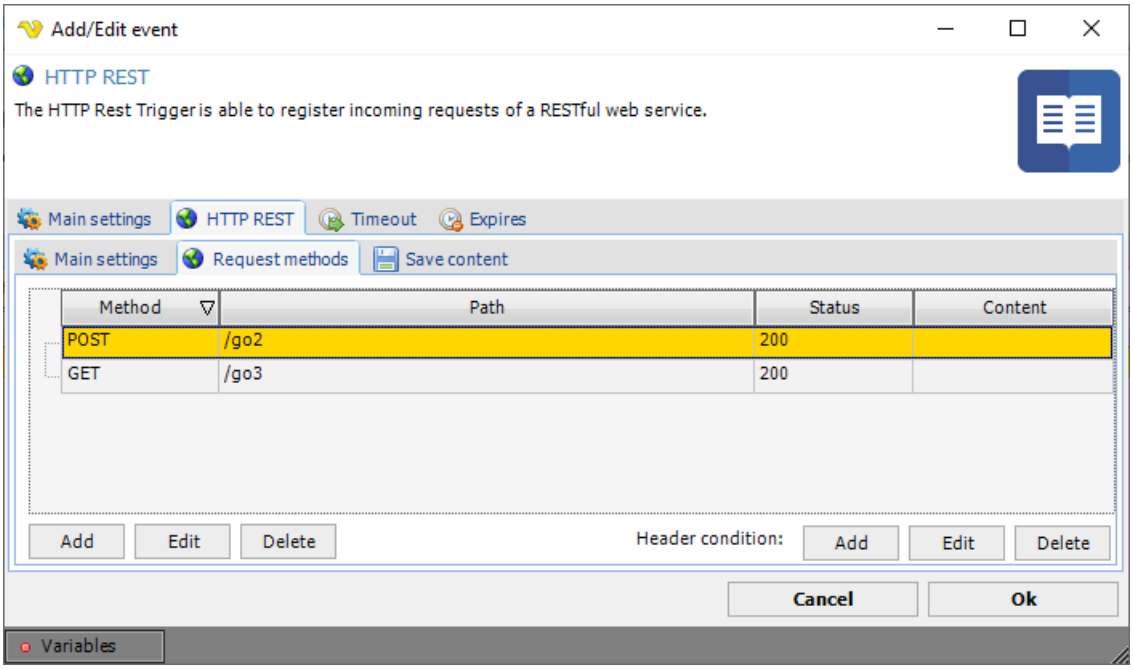
Address

Use this property to set the authentication realm. All pages in the same realm share authentication credentials.Realm parameter refers to Digest authorization and is not a required parameter.

Realm

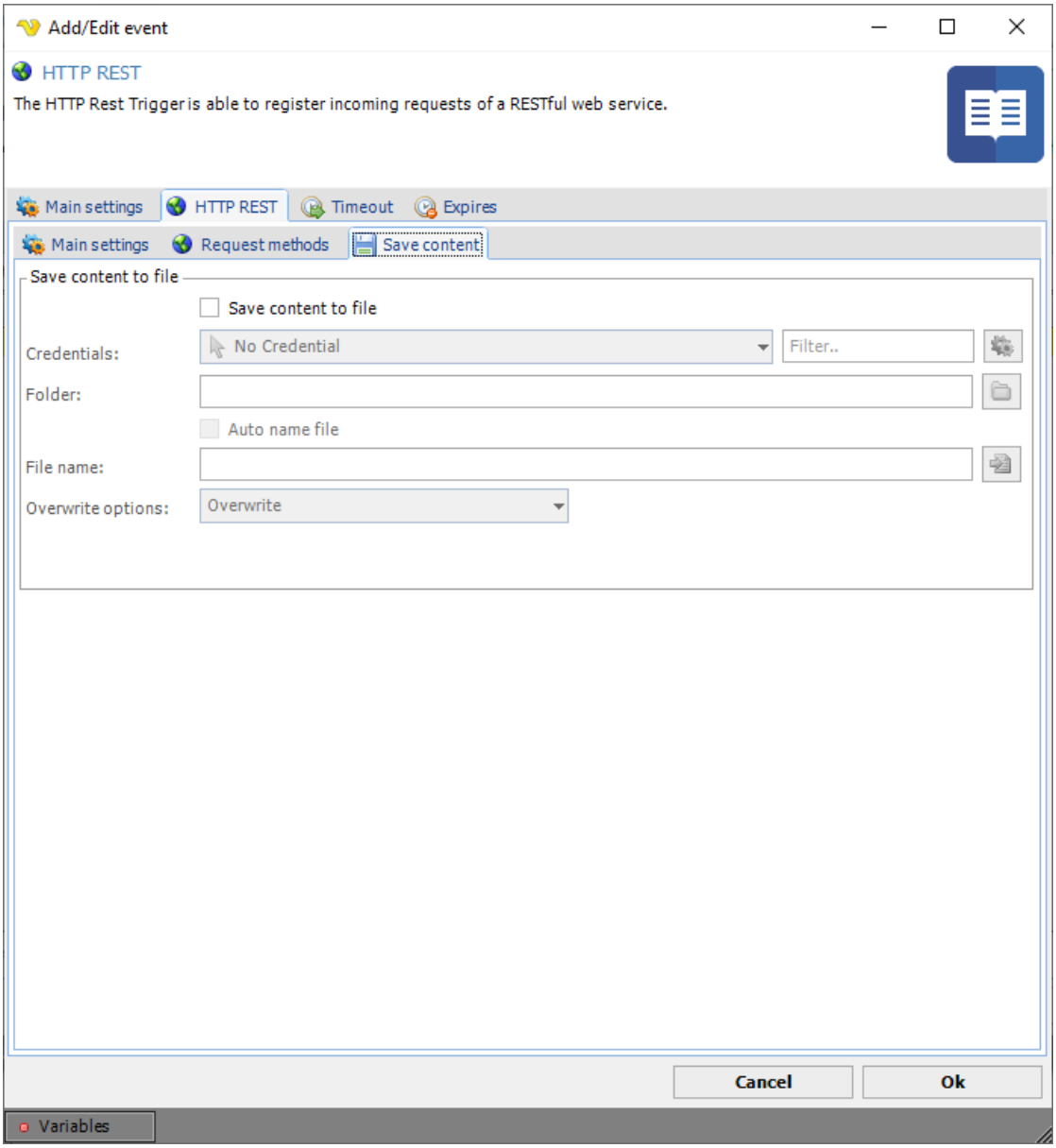
Use this property to set the authentication realm. All pages in the same realm share authentication credentials.Realm parameter refers to Digest authorization and is not a required parameter.

Request methods tab



In this tab you specify the paths and methods supported. Above you can access http://localhost:9991/go2 with POST and [http://localhost:9991/go3?name=John(http://localhost:9991/go3?name=John) with GET. To get the parameter value you can use this Variable in follow up Tasks: {TRIGGER(Active|LastTrigger|HTTPREST.Result.QueryParameters.Value|name)}

Save content tab



In this tab you can control File uploads and choose how to name the files.

Variables

As other Triggers, this Trigger produces Variables that contain various information about the request.

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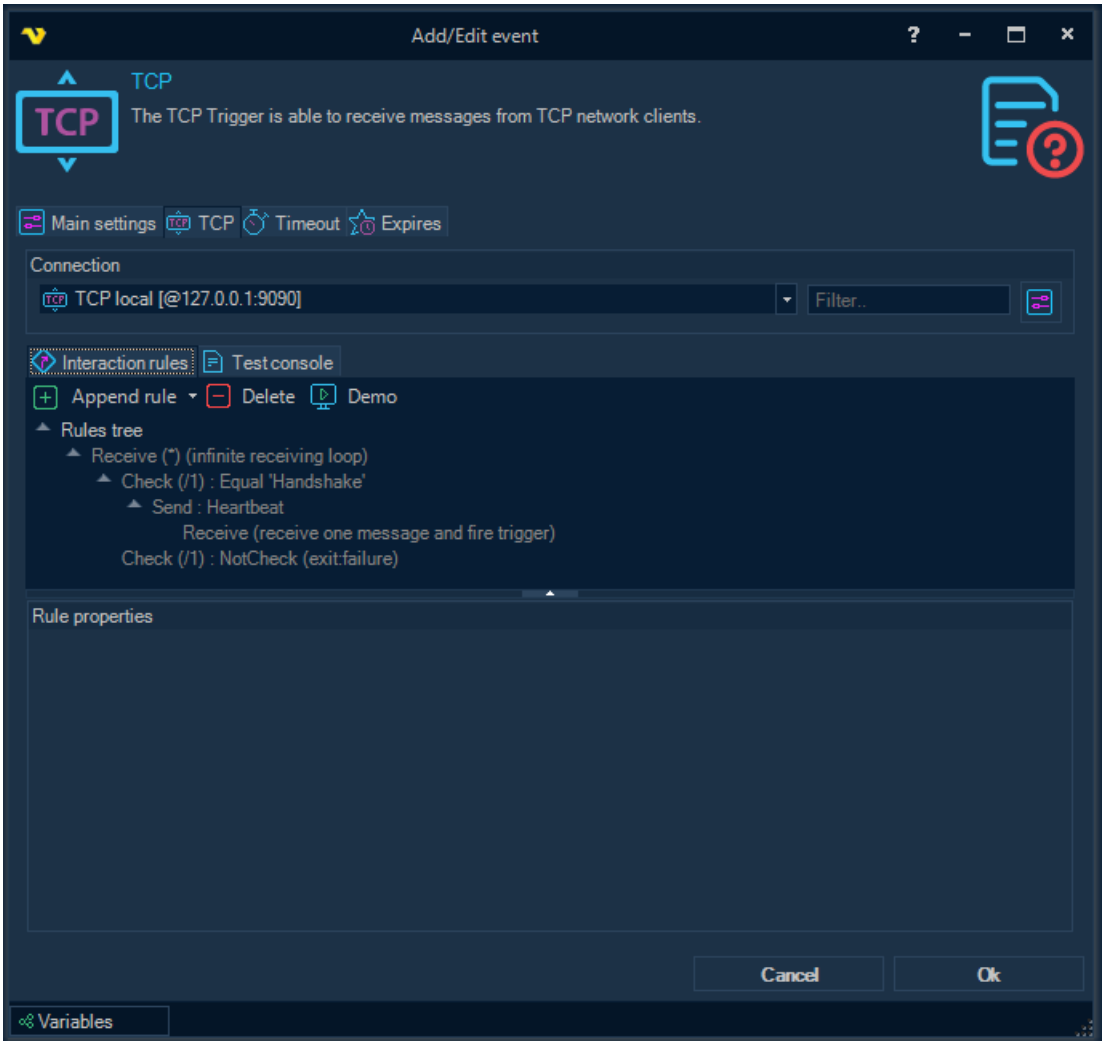
Event Trigger - TCP »

Event Trigger - TCP

The TCP Trigger creates a TCP Listener which then listens persistently for connections from TCP network clients. For each established connection, the server communicates with the client based on the logic configured using some messaging rules.

TCP > Connection group and **Interaction rules** inner tab



Connection

Before configuring any interaction rules you must create a Connection. Click on Manage Connections to add a new Connection. Select TCP connection and alter connection settings.

Interaction rules tab

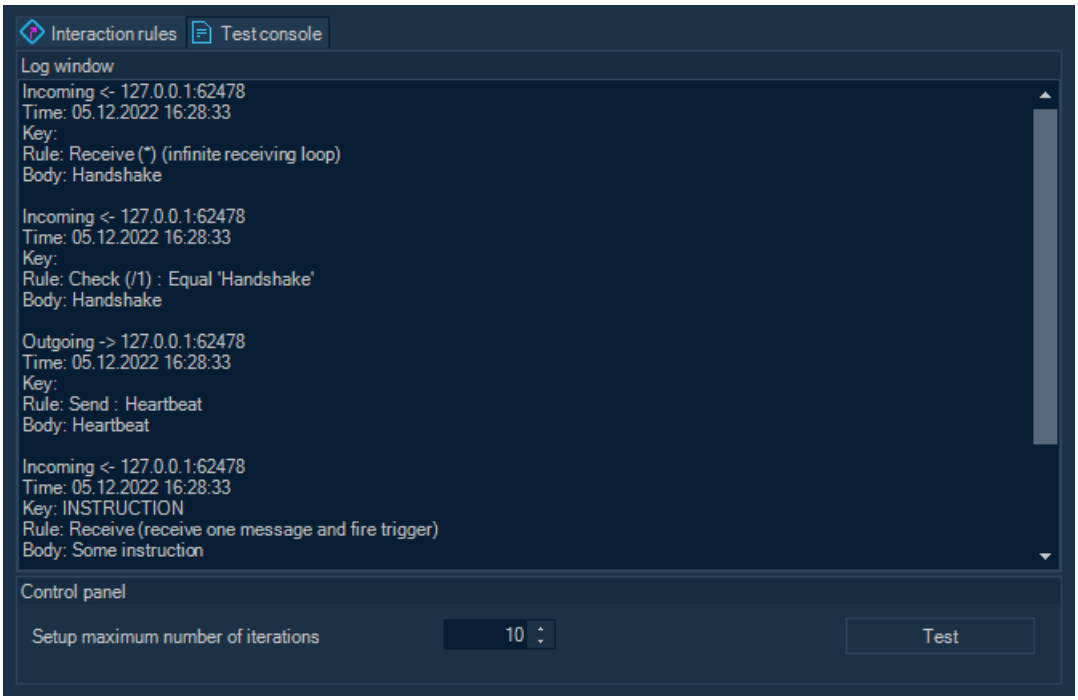
The tab contains a toolbar with commands to configure a tree-like structure, which, in turn, is used for setting up the messaging logic between the TCP server (listener) and the TCP client.

Available commands:

Append rule: append a rule of some type (send a message, receive a message, or check the received message body). **Delete**: delete a rule with all child rules. **Demo**: automatically create a set of rules with an example of a simple communication algorithm between a client and a server.

See "TCP messaging rules" section in the TCP Task topic.

TCP > Test console inner tab



You are able to test the configured messaging rules without saving the settings. As a remote TCP client, a similar test scenario can be launched in the TCP Task UI form, or a test application can be compiled and launched (see sample TCP Client application code below).

Setup maximum number of iterations

All rules with a large or infinite number of repetitions automatically terminate after the specified maximum number of iterations.

TCP Trigger Result Variables

TextBody

The triggered message content decoded with connection's codepage.

ReceivedTime

The triggered message receipt time.

FromAddress

The triggered message sender address in the form "host:port".

Messages

A list of processed messages in the form { Key, TextBody }, so that the text of a particular message is available by specifying Key in a variable template.

***Attention*:** when using variables with the result of TCP trigger in tasks, for example `{TRIGGER(...|TCP.Result.TCP.TextBody)}`, it should be mentioned that in case of simultaneous connection of several TCP clients, the content of a variable may change unexpectedly. In practice, a trigger may fire twice when receiving messages from two different clients, but the value of `{TRIGGER(...|TCP.Result.TCP.TextBody)}` will contain the message that came last.

Sample TCP Client application code (*C#*)

```
using System.Net.Sockets;
using System.Text;

namespace TCP_Client
{
  internal class Program
   {
      static void Main()
       {
          /*
            * Connecting
            */
          using var tcpclnt = new TcpClient();
```

```
            using var tcpclnt = new TcpClient();
            Console.WriteLine("Connecting .....");

            tcpclnt.Connect("127.0.0.1", 9090);
            using var stm = tcpclnt.GetStream();

            if (stm.CanWrite)
            {
                Console.WriteLine("Connected");
                Thread.Sleep(1000);
            }
            else
            {
                Console.WriteLine("The stream is unavailable");
                return;
            }

            /*
              * WARNING:
              *   the encoding should be the same as configured in the TCP Connection / Common settings / Code
              */
            var enc = Encoding.UTF8;
            string message;
            byte[] buffer;

            /*
              * Sending "Handshake"
              */
            message = "Handshake";
            Console.WriteLine();
            Console.WriteLine($"Sending '{message}' .....");
            buffer = enc.GetBytes(message);
            stm.Write(buffer, 0, buffer.Length);

            Console.WriteLine($"'{message}' sent");
            Thread.Sleep(1000);

            /*
              * Receiving a response
              */
            Console.WriteLine();
            Console.WriteLine("Receiving .....");
            buffer = new byte[tcpclnt.ReceiveBufferSize];
            var cnt = stm.Read(buffer, 0, buffer.Length);

            message = enc.GetString(buffer, 0, cnt);
            Console.WriteLine("Message received : " + message);

            /*
              * Checking the response
              */
            const string heartbeat_response = "Heartbeat";
            if (message == heartbeat_response)
            {
                Console.WriteLine("Response checked. Ready to send a command");
                Thread.Sleep(1000);
            }
            else
            {
                Console.WriteLine($"The response is invalid. Must be '{heartbeat_response}'");
                return;
            }

            /*
              * Sending some command
              */
            Console.WriteLine();
            Console.Write("Enter the command to be transmitted : ");
            message = Console.ReadLine() ?? string.Empty;

            Console.WriteLine($"Sending '{message}' .....");
            buffer = enc.GetBytes(message);
            stm.Write(buffer, 0, buffer.Length);

            Console.WriteLine("Command sent.");
            Console.WriteLine("Exit.");
        }
    }
}
```

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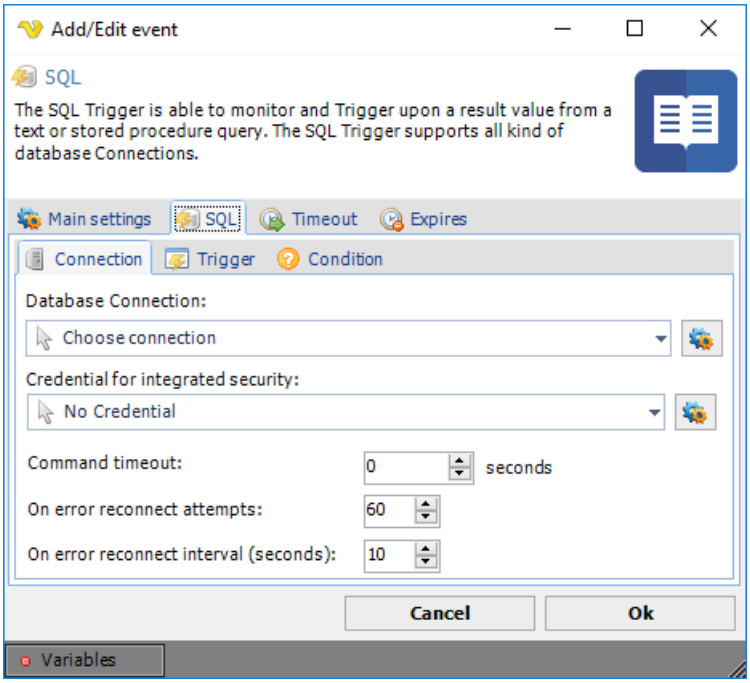
« Event Trigger - HTTP REST

Next
Event Trigger - SQL »

Event Trigger - SQL

The SQL event trigger is able to monitor and Trigger upon a result value from a text or stored procedure query. The SQL Trigger supports all kind of database Connections.

Triggers > Add > Event Trigger > SQL > Connection sub tab



Database Connection

Select an existing database Connection, if not existing you need to create one first. Click the Settings icon to open the Manage Connections dialog. Once a connection is added you can select it in the combo box.

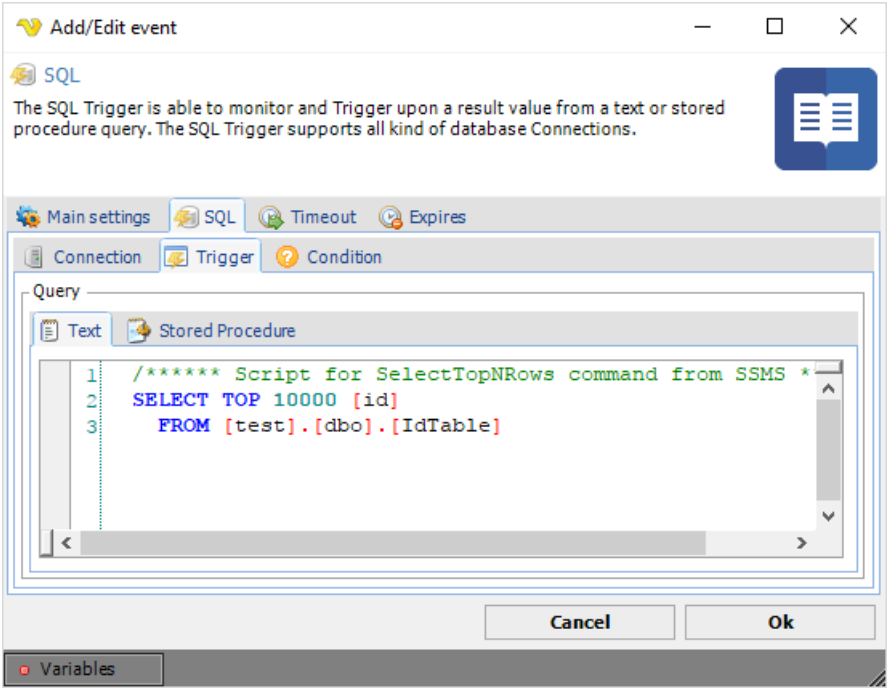
Credential for integrated security

If your Credential requires integrated security you should select a Windows user that has access to database. Click the Settings icon to populate the drop-down list with available Credentials.

Command timeout

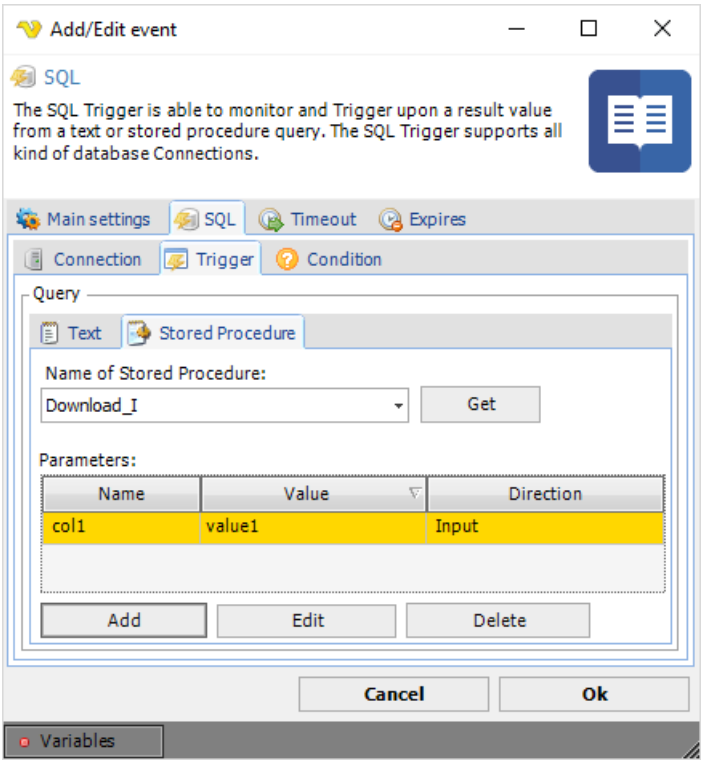
How long time before the query times out.

Triggers > Add > Event Trigger > SQL > Trigger > Text sub tab

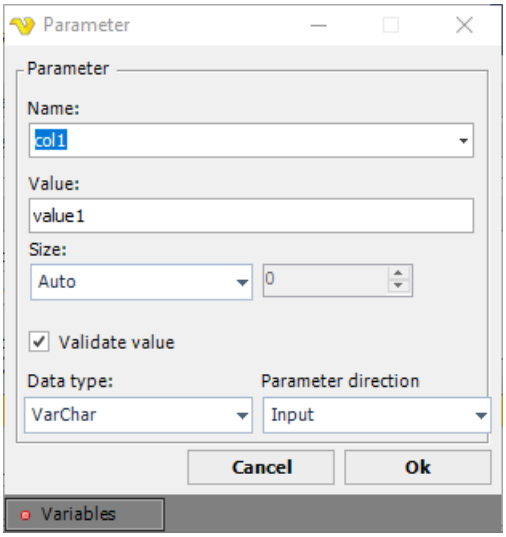


Enter the query in the text field. If you have a stored procedure - select the stored procedure tab.

Triggers > Add > Event Trigger > SQL > Trigger > Stored procedure sub tab



Enter the name of the stored procedure to execute. The grid shows all parameters. When clicking on the Add button, a parameter window will open. Enter parameter values for Name, Value, Data type and Parameter direction.

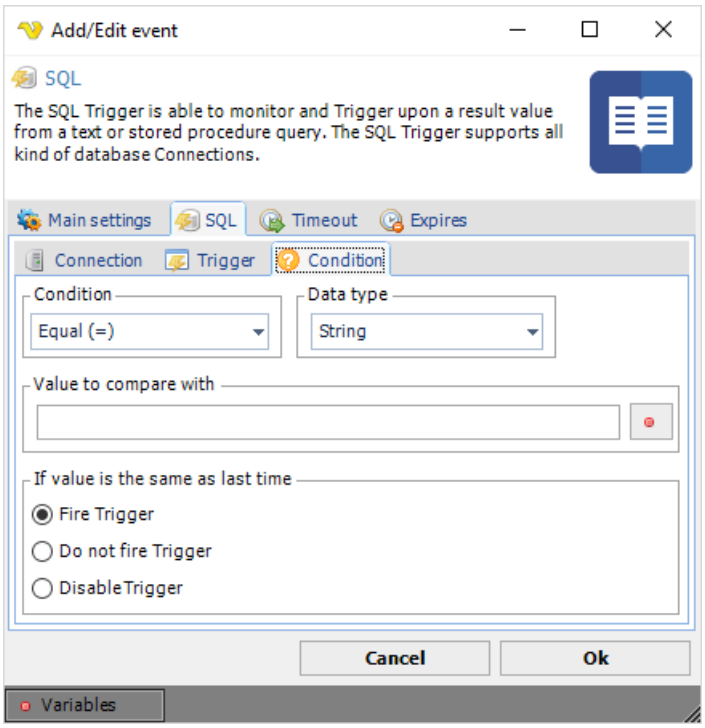


Validate value

If this value is checked VisualCron will validate the value against the value type. Unselect this if you are using a Variable as value and this Variable is not yet set.

Test your SQL Task before closing the VisualCron client. Errors will be reported in the log window.

Triggers > Add > Event Trigger > SQL > Trigger > Condition sub tab



Condition

Select the comparison method.

Data type

Select the result data type and the value to compare with.

Value to compare with

Enter a value/Variable to compare the result with. Click the Variables icon to open the the Variables list.

If value is the same as last time

You can control what happens if the same value comes two times in a row. By default the Trigger fire each time the Condition is met.

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« Event Trigger - TCP

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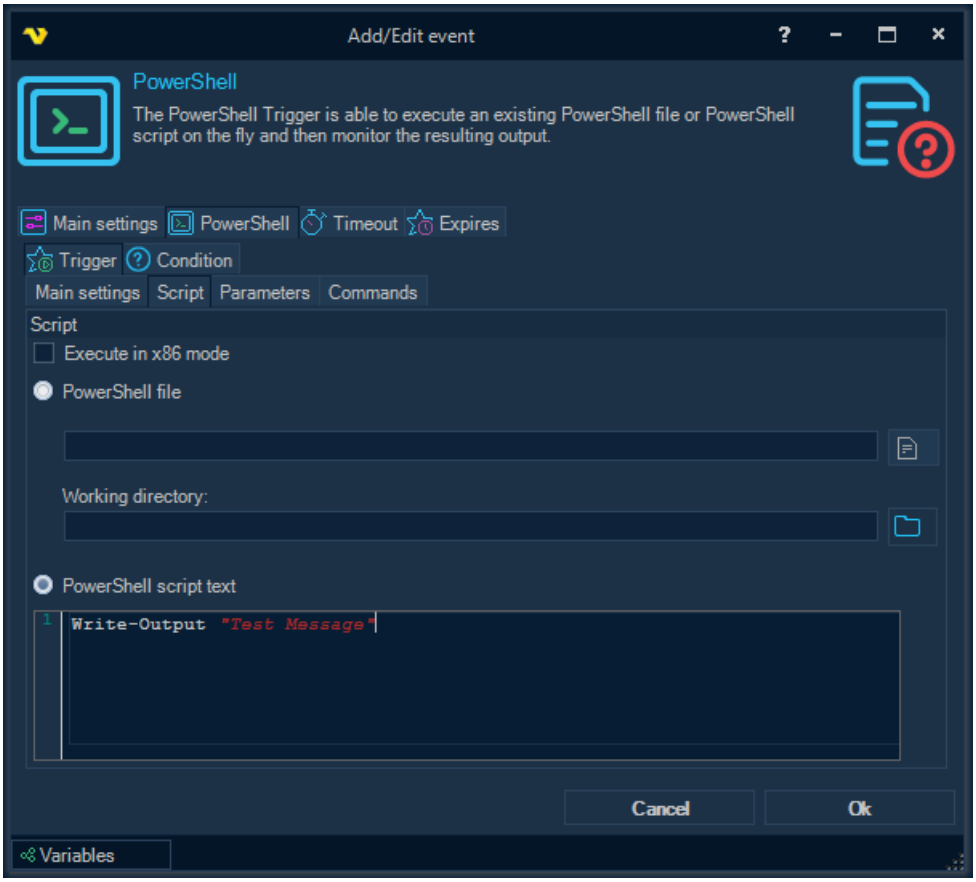
Event Trigger - Powershell »

Event Trigger - Powershell

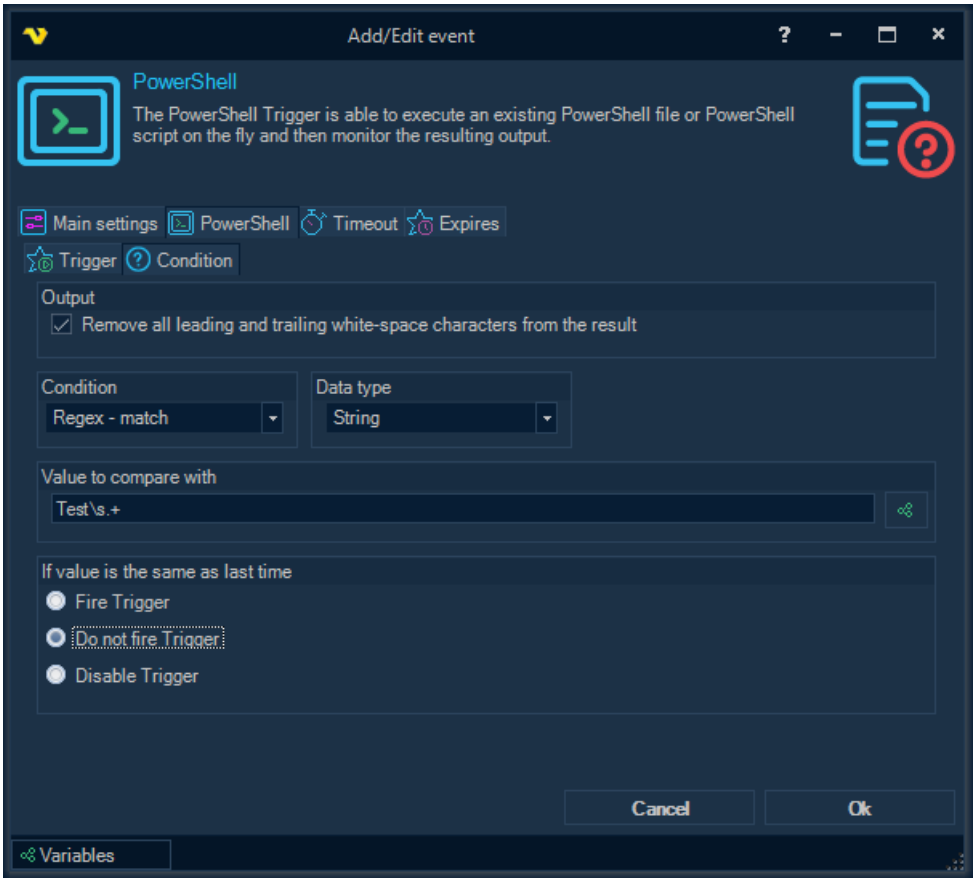
The **PowerShell Trigger** is able to execute an existing PowerShell file or PowerShell script on the fly and then monitor the resulting output.

Triggers > Add > Event Trigger > PowerShell > PowerShell tab > **Trigger** sub tab



Inside the **Trigger** sub tab there are four inner tabs: **Main settings**, **Script**, **Parameters** and **Commands**. The composition and purpose of all the parameters that are available in the inner tabs fully corresponds to the description of the parameters from the topic, which describes the PowerShell Task.

PowerShell tab > **Condition** sub tab



Remove all leading and trailing white-space characters from the result

All leading and trailing white-space characters are removed from the PowerShell script output before the condition is checked.

Condition

Select the comparison method.

Data type

Select the result data type and the value to compare with.

Value to compare with

Enter a value/Variable to compare the result with. Click the Variables icon to open the the Variables list.

If value is the same as last time

You can control what happens if the same value comes two times in a row. By default the Trigger fire each time the Condition is met.

PowerShell Trigger Result Variables

MatchedValue

The string representation of the matched value from the PowerShell script output.

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« Event Trigger - SQL

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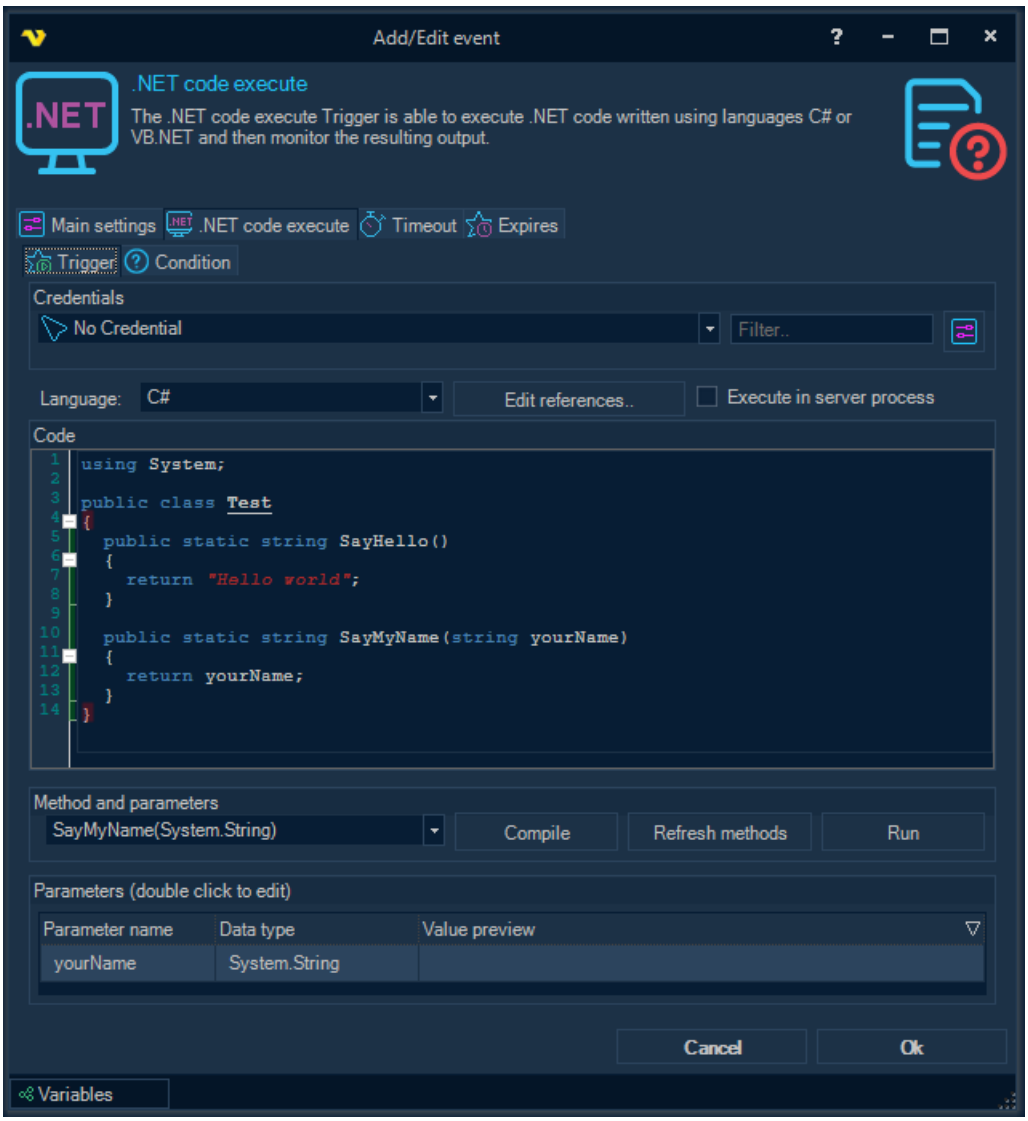
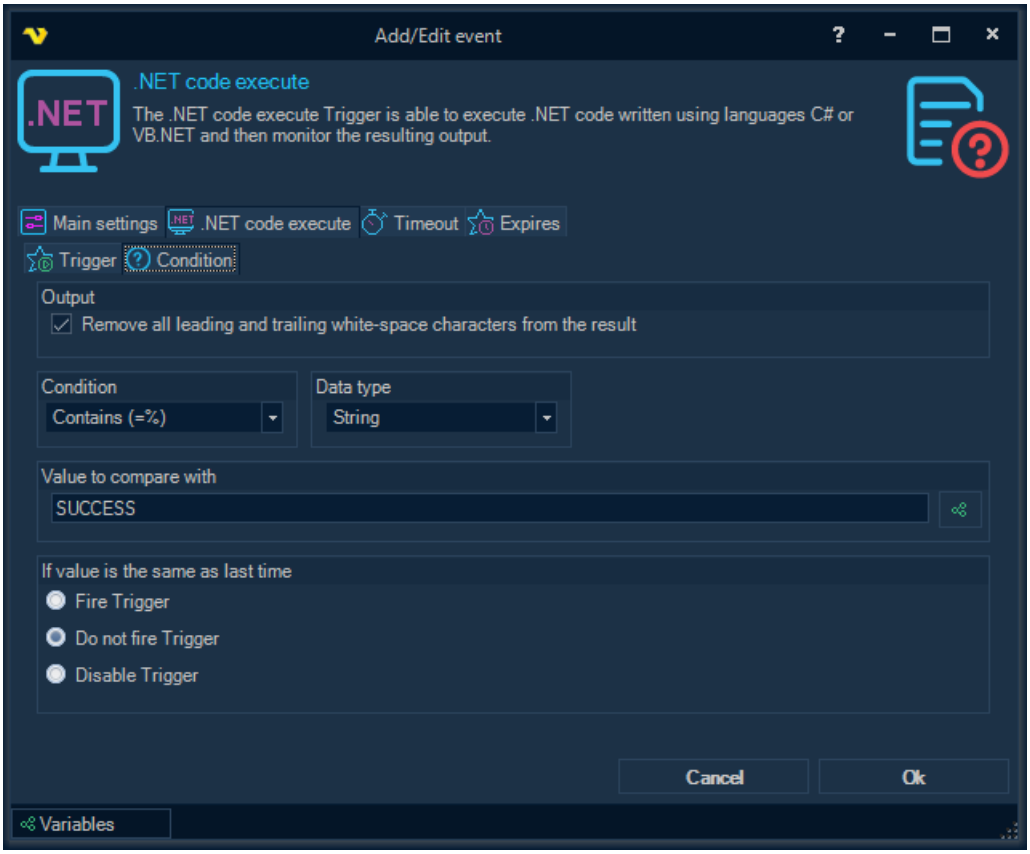
Event Trigger - .NET Code Execute »

Event Trigger - .NET Code Execute



The composition and purpose of all the parameters that are available inside the Trigger sub tab fully corresponds to the description of the parameters from the topic, which describes the .NET code execute Task.

.**NET code execute** tab > **Condition** sub tab



Remove all leading and trailing white-space characters from the result

All leading and trailing white-space characters are removed from the .NET code execution output before the condition is checked.

Condition

Select the comparison method.

Data type

Select the result data type and the value to compare with.

Value to compare with

Enter a value/Variable to compare the result with. Click the Variables icon to open the the Variables list.

If value is the same as last time

You can control what happens if the same value comes two times in a row. By default the Trigger fire each time the Condition is met.

.NET code execute Trigger Result Variables

MatchedValue

The string representation of the matched value from the .NET code execution output.

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« Event Trigger - Powershell

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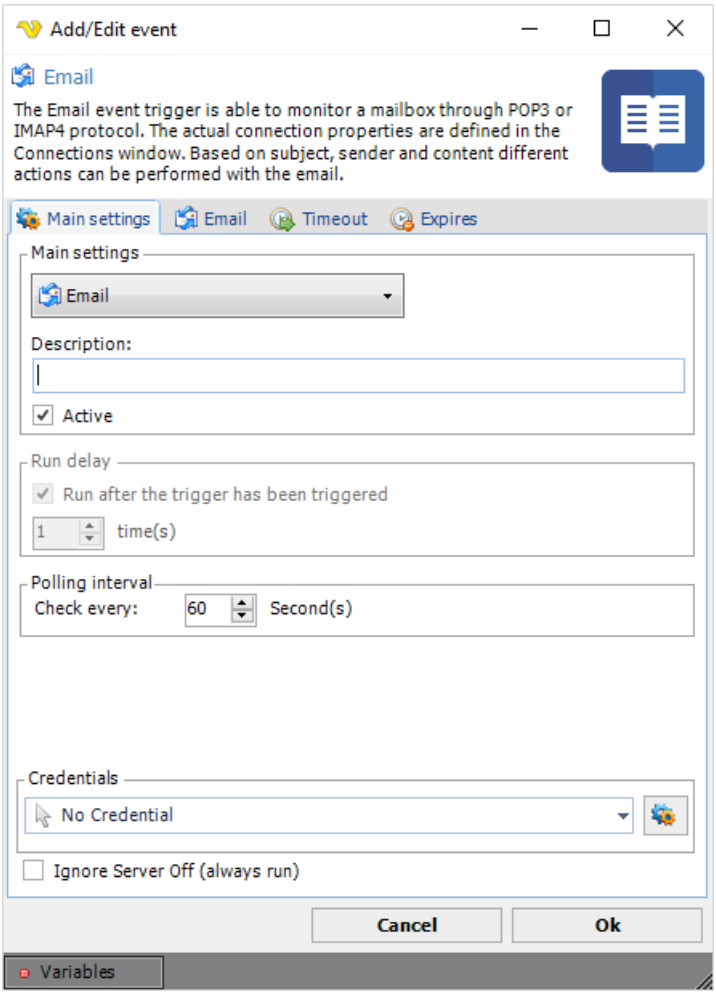
Event Trigger - Mail »

Event Trigger - Mail

The Email event trigger is able to monitor a mailbox through the POP3 or the IMAP4 protocol. The actual connection properties are defined in the Connections window. Based on subject, sender and content different actions can be performed with the email.

Triggers > Add > Event Trigger > Email > Main settings tab



Description

Description or name of your Trigger.

Active

If the Trigger is active (watching) or not.

Polling interval

How often the mailbox is to be checked.

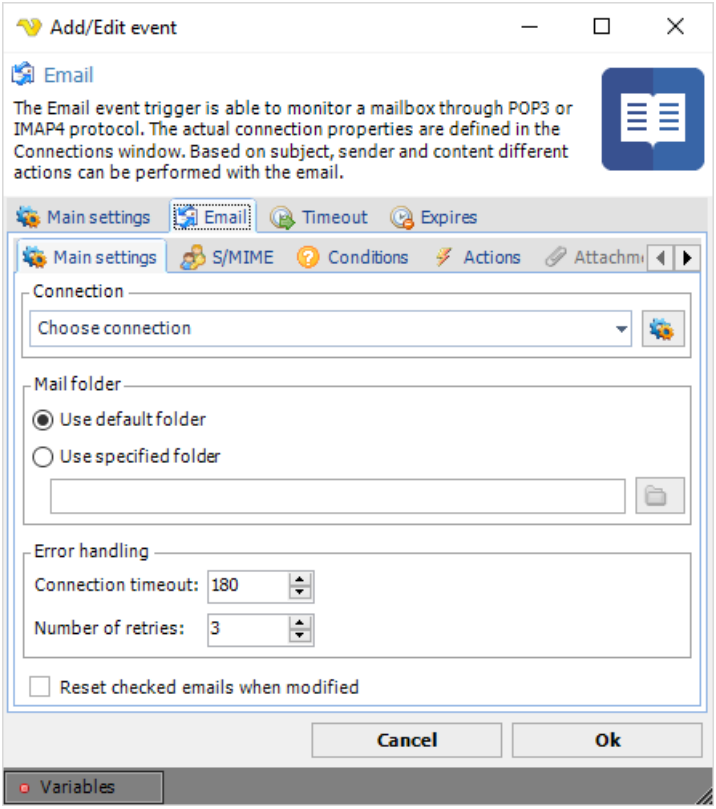
Credential

To control a remote computer you may need to use a Credential. The Credential must match the user name and password of the user that you want to login for. Select a Credential in the combo box or click the Settings icon to open Manage credentials in order to add or edit Credentials.

Ignore Server Off (always run)

The Trigger will run even though Server is set to off.

Triggers > Add > Event Trigger > Email > Email > Main settings tab



Connection

Select an existing POP3/IMAP4 connection, if not existing you need to create one first. Click the Settings icon to open the Manage Connections dialog. Once a connection is added you can select it in the combo box.

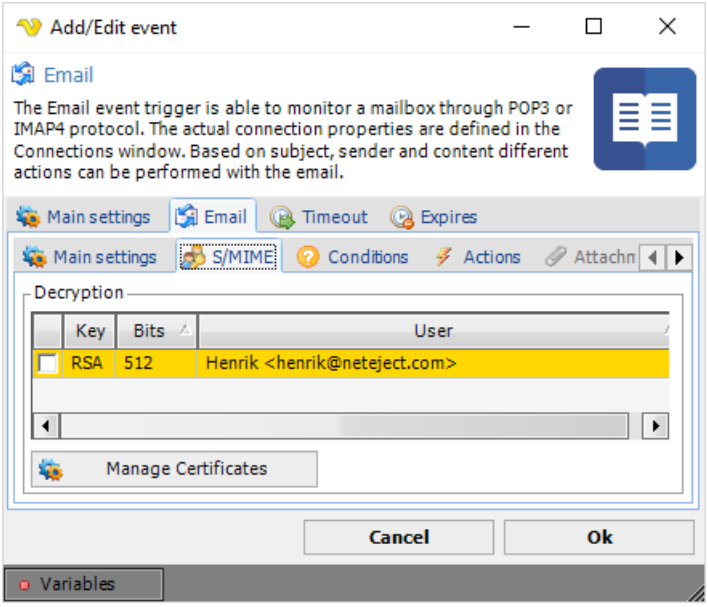
Mail folder

When VisualCron connects it uses the default folder retrieved from the mail server. If you want to change the folder you monitor you select "Use specified folder" and write the folder name in the text box.

Reset checked emails when modified

VisualCron keeps tracks on which emails that have been checked or not. When an email has been checked it is added to an internal list. In the next polling interval VisualCron will check if that email has been parsed or not. To keep this list and efficiency to a minimum it is recommended that you either delete or move the email once the email has been parsed. This is controlled in the Actions tab. If you, for some reason, wants VisualCron to reset that list you check this box and VisualCron will consider all emails found in the mail folder as new.

Triggers > Add > Event Trigger > Email > Email > S/MIME tab



VisualCron is able to decrypt S/MIME emails and verify signatures.

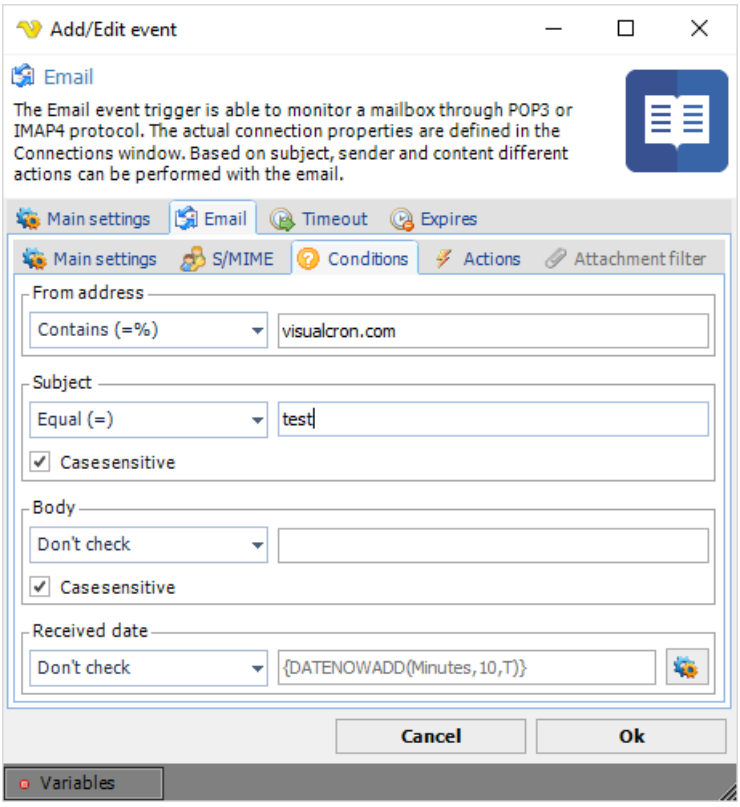
Decryption

If the email is encrypted you need a Certificate to decrypt it. A certificate is often retrieved from the sender of the Certificate and is in the X509 certificate standard. Once you have created or imported a certificate you need to check it in the list. If an email is encrypted VisualCron will try to use that certificate for decryption.

Manage Certificates

You can create/import your certificates defined in the Manage Certificates window.

Triggers > Add > Event Trigger > Email > Email > Conditions tab



The Email Trigger has some Conditions. The Conditions are there to evaluate certain values from the parsed email. Each evaluation returns a result. The following results exist: All match, Any match and No match. If all match the evaluation then it will return All match. If at least one is matching it will return Any match. If none are matching it will return No match. The actual evaluation of the Condition is different depending on what part of the email is evaluated. For example, when evaluating a subject you can choose among the following checks:

- "**Equal**" - the subject must match the string in the text box exactly
- "**Not equal**" - the subject must not match the string in the text box
- "**Contains**" - if any of the letters in the text box matches the subject it is returning a match
- "**Don't contain**" - if not any of the letters in the text box matches the subject it is returning a match
- "**Don't check**" - this Condition is not checked at all which is returning a match

From address

This Condition checks the actual address part of the message (not name of sender).

Subject

This Condition checks the subject of the email

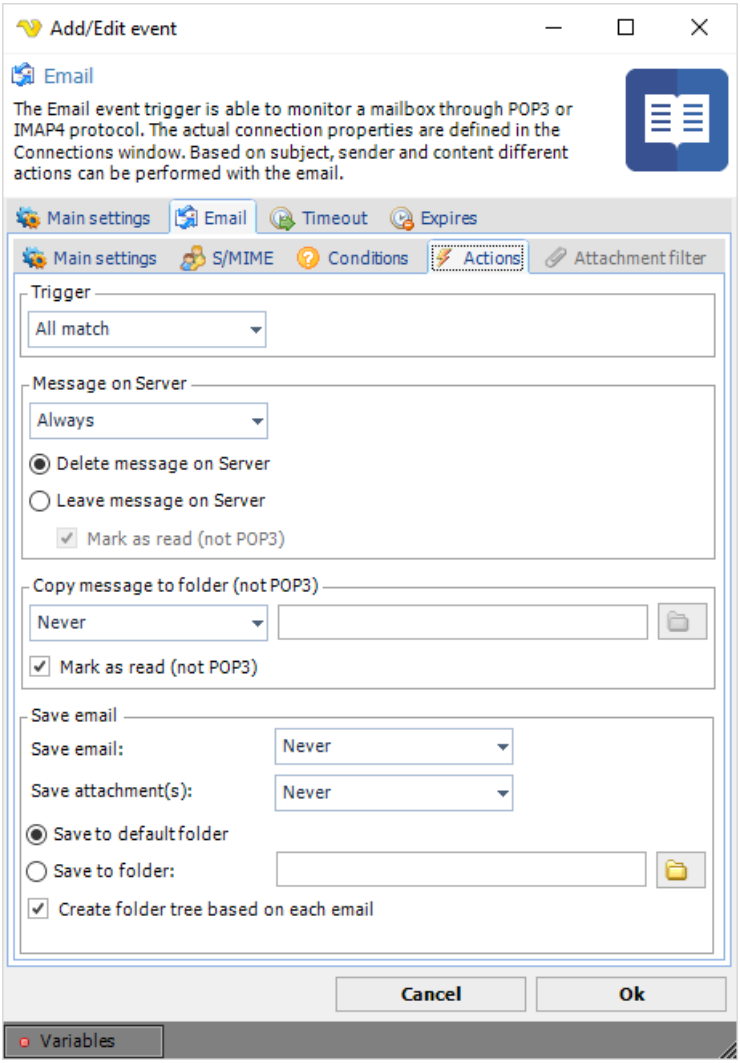
Body

This Condition checks the body of the email

Received date

This Condition compares the date and time the message was received against a Variable. Please not that you can only use date Variables and that it does not matter what kind of formatting of the Variable you use.

Triggers > Add > Event Trigger > Email > Email > Actions tab



Actions are controlling what happens when the Conditions has been evaluated - depending on collective result.

Trigger

This action controls if the Job should be triggered or not depending on result.

Message on Server

This controls what happens with the message on the mail server. It is recommended that you delete or move the mail or VisualCron will check that email again in the next polling interval. If you leave the message on the server you can choose to mark it as read (this option is only available in IMAP4 because it does not exist in POP3 protocol). Note that VisualCron does not care if it is read or not - VisualCron has it's internal list to check if email has been checked or not.

Copy message to folder (*not POP3*)

This option copies a mail to another folder. It does not delete it unless you set Delete message on Server in previous setting. This option is only available when using IMAP4 as protocol mode.

Save email

Both the actual mail and/or attachment can be saved to a file. You can choose to save the email at a custom location or at the default location. By default the content is saved in `"C:\Program Files\VisualCron\data\triggers\mail\{MailId}\{MailId}.eml"`. Attachments of an email are by default stored in the attachments folder; `"C:\Program Files\VisualCron\data\triggers\mail\{MailId}\attachments"`.

NOTE

when forming the folder name and file name, all incorrect characters in *MailId* are replaced with the `&#xFFFD;` symbol. The final folder and file path are stored in the trigger execution result variables: `Mail.Result.Mail.MailFolder` and `Mail.Result.Mail.MailPath`, respectively. Moreover, this folder and/or file name can also be calculated by applying the built-in variable function "*File variables / Encode FileName*" to *MailID* as follows: `{PATH(EncodeFileName|{TRIGGER(Active|LastTrigger|Mail.Result.Mail.MessageId)}|MASK)}`.

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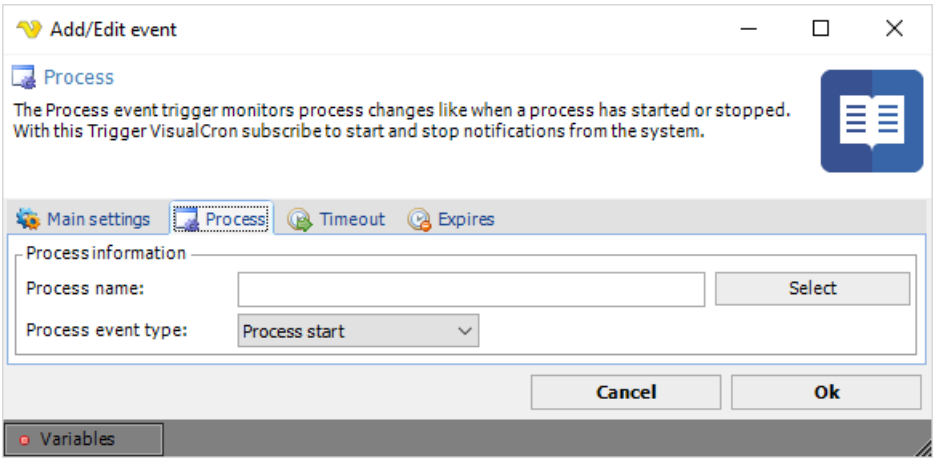
« Event Trigger - .NET Code Execute

Next
Event Trigger - Process »

Event Trigger - Process

The Process event trigger monitors process changes like when a process has started or stopped. With this Trigger VisualCron subscribe to start and stop notifications from the system.

Triggers > Add > Event Trigger > Process tab



Process name

Enter a process name which is listed in the Task Manager, e.g. "WINWORD.EXE". A list of processes from the server can be retrieved by clicking on the Select process button. In the list window, double-click on the desired process for selection. Note that the process name is case sensitive.

Process Event type

"Process start" it means that you are monitoring for new, created, processes. "Process end" means watching for termination of a running process.

Edit this page

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« Event Trigger - Mail

Next
Event Trigger - Service »

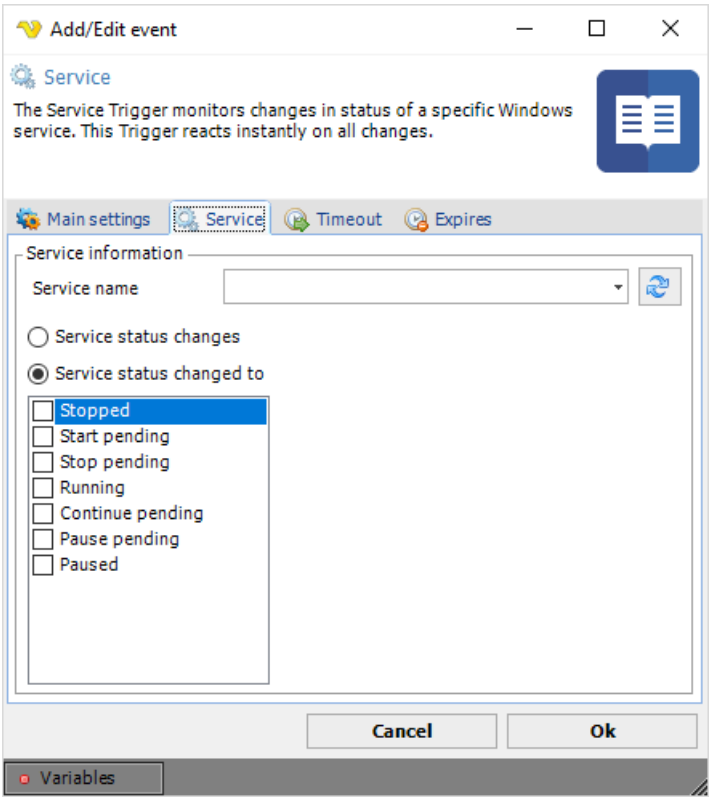
Event Trigger - Service

The Service event trigger monitors changes is the status of a specific Windows service, stopped or started. The trigger reacts instantly on all changes.

A service is a process that runs in the background. List and details about installed services can be retrieved by going to *Windows Control Panel -> Administrative Tools* and open "Services".

Often, services start when the computer starts. Normally, a service stops when an error has occurred in the process. The Service Event Monitor is based on **WMI**. This means that you set the polling interval or use the 60 seconds as default.

Triggers > Add > Event Trigger > Service tab



Service name

To add a service event you must specify a service name and at least one state. Click the Refresh icon to populate the drop-down box with service names.

Service status

Tick the check boxes for the states you want to watch. When a service with a specific name changes or has changed to the selected state, the event is triggered. The following service states exist:

- "Stopped" - The service is not running
- "StartPending" - The service is starting
- "StopPending" - The service is stopping
- "Running" - The service is running
- "ContinuePending" - The service continue is pending
- "PausePending" - The service pause is pending
- "Paused" - The service is paused

NOTE

All services may not have all states implemented. Mostly, a service is either started or stopped. Started ("Running") and "Stopped" are always implemented for all services.

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« Event Trigger - Process

Next
Event Trigger - Registry »

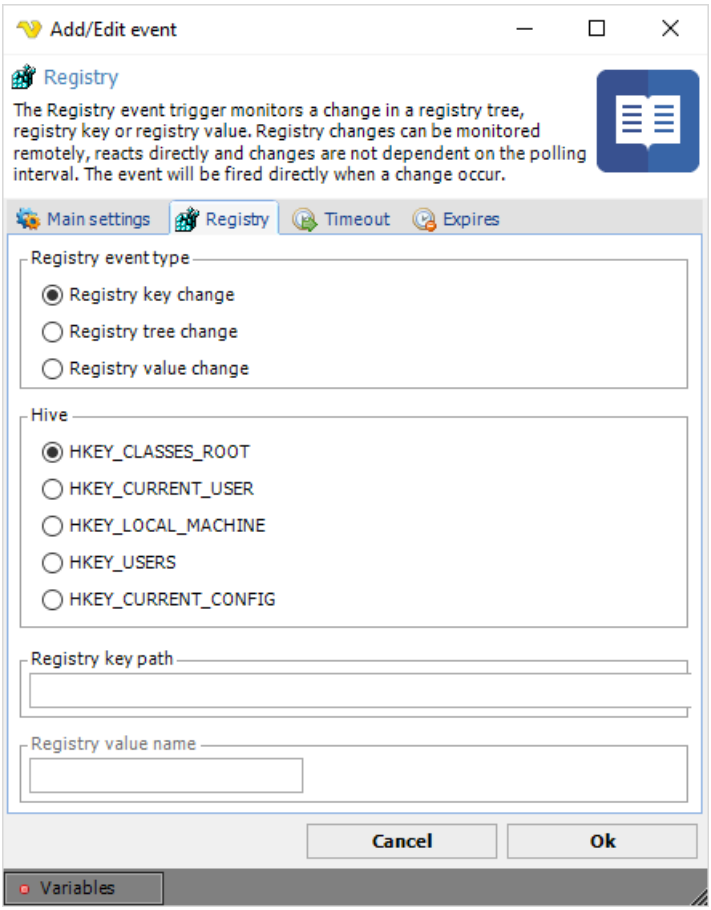
Event Trigger - Registry

The Registry event trigger monitors a change in a registry tree, registry key or registry value. Registry changes can be monitored remotely, reacts directly and changes are not dependent on the polling interval. The event will be fired directly when a change occur.

Many programs and Windows itself stores information and change information during a Windows session. This event trigger is based on **WMI**.

You can examine the registry settings by starting "regedit.exe" from a Windows command window.

Triggers > Add > Event Trigger > Registry tab



Registry event type

The registry can be monitored for changes in the following ways:

- "RegistryKeyChange" - represents changes to a specific key. The changes apply only to the key, not its sub keys
- "RegistryTreeChange" - represents changes to a key and its sub keys
- "RegistryValueChange" - represents changes to a single value of a specific key

Hive

Name of the hive that contains the key (or keys) that is changed.

Registry key path

Path to the registry key. Use backspaces to separate trees. Do not start with a backspace. Registry Key path example: "SOFTWARE\Microsoft\DirectX". Do not include the hive.

Registry value name

Name of the value in the registry key. Example: "InstalledVersion" located in `RegistryKeyPath: SOFTWARE\Microsoft\DirectX`.

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« Event Trigger - Service

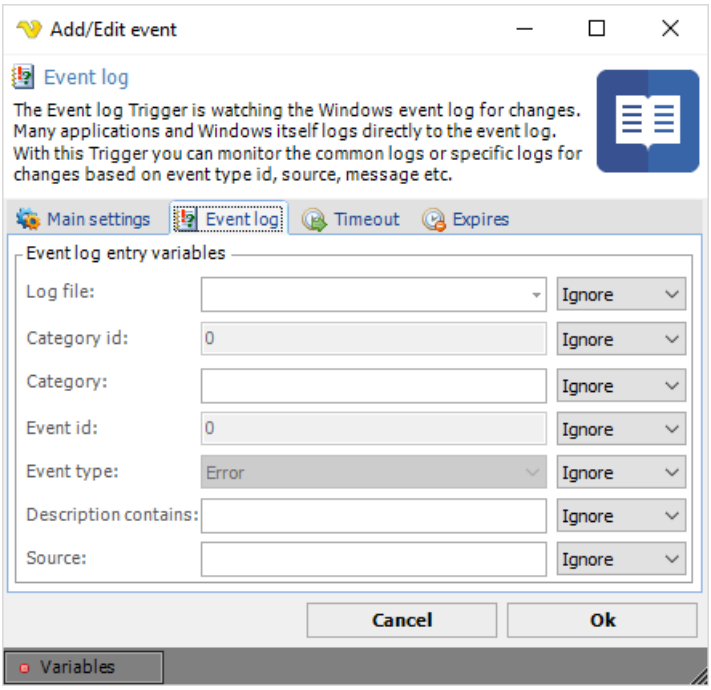
Next
Event Trigger - Event Log »

Event Trigger - Event Log

The Event log trigger is watching the Windows event log for changes. Many applications and Windows itself logs directly to the event log. With this trigger you can monitor the common logs or specific logs for changes based on event ID, source, message etc.

Some applications create their own log files and it is possible for you to create one or view events by the Windows application "Event viewer" which is found in Windows Control Panel -> Administrative tools. This event trigger is based on **WMI**.

Triggers > Add > Event Trigger > Event log tab



You can choose what kind of conditions to use by first enabling the setting and then enter a value in the text window or select a value. When enabling a condition you can choose to use "AND" or "OR". Think of it's as a query.

Log file

Probably you know what log file to look for. Select a specific log file or you may be flooded with Event log events from other log files.

Category id

Each application (event source) can define its own numbered categories and the text strings to which they are mapped. The Event Viewer can use the category to filter events in the log. The categories must be numbered consecutively beginning with number 1.

Category

This is a description of the numeric value, which could be, for example: "Kernel" or "Disk". Each application (event source) can define its own numbered categories and the text strings to which they are mapped. The text strings associated with the category are stored in the computer's registry. The Event Viewer can use the category to filter events in the log.

Event id

Event code is a numeric value to further distinguish an entry.

Event type

There exist some predefined event types which can be selected from the combo box. The predefined event types are:

- "Error" - An error event, indicates a significant problem the user should be aware of; usually a loss of functionality or data
- "Warning" - A warning event, indicates a problem that must not be taken care of immediately, but may indicate conditions that could cause future problems
- "Information" - An information event, indicates a significant and successful operation
- "SuccessAudit" - A success audit event, indicates a security event that occurs when an audited access attempt is successful; for example, logging on successfully
- "FailureAudit" - A failure audit event, indicates a security event that occurs when an audited access attempt fails; for example, a failed attempt to open a file

Description contains

The formatted, localized text for the message. This includes associated replacement strings. Enter a text that exists in a part of the description/message.

Source

The event source indicates what initiated the event. It is often an application name or the name of a subcomponent of the application if the application is large. Applications and services usually write to (and therefore are sources for) the Application log or a custom log. Device drivers usually write to the System log.

Main settings tab

Polling interval

This value is also used for Event log trigger, in the case where (usually) the remote host is temporarily unavailable to start Windows event log tracking. A number of repeated attempts to connect to the remote host will be made at the specified time intervals.

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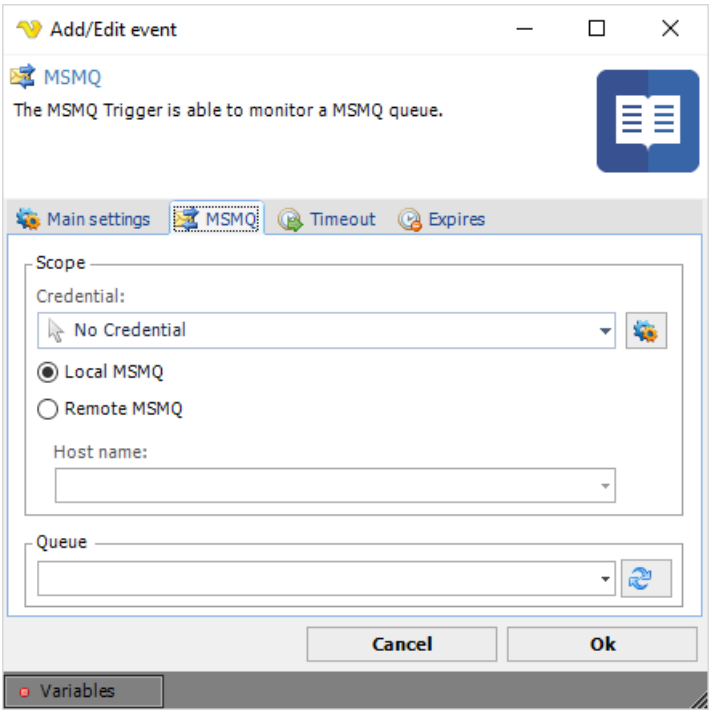
« Event Trigger - Registry

Next
Event Trigger - MSMQ »

Event Trigger - MSMQ

The MSMQ event trigger is able to monitor a private or public queue for new messages. When a new message arrives you can use VisualCron Variables to extract the information in the new message. To use this Trigger you need to setup a MSMQ Connection.

Triggers > Add > Event Trigger > MSMQ tab



Credential

Select a Credential if you are going to monitor a remote MSMQ queue. Click the Settings icon to populate the drop-down list with available credentials.

Local/Remote MSMQ

You can choose to monitor a local or a remote MSMQ Server. If you want to monitor a remote MSMQ Server you need to define a Host name.

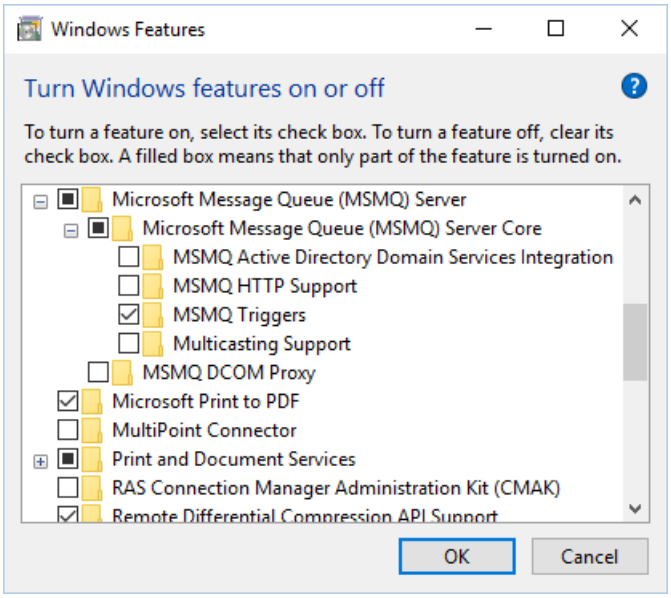
Queue

Select the queue to be received. Click the Refresh icon to populate the drop-down list of queues.

Troubleshooting:

Error: Retrieving the COM class factory for component with CLSID {1D9F85C0-9666-11D2-8927-0008C70C0622} failed due to the following error: 80040154 Class not registered (Exception from HRESULT: 0x80040154 (REGDB_E_CLASSNOTREG)).

Make sure you have installed MSMQ Triggers in Programs and Features dialog:



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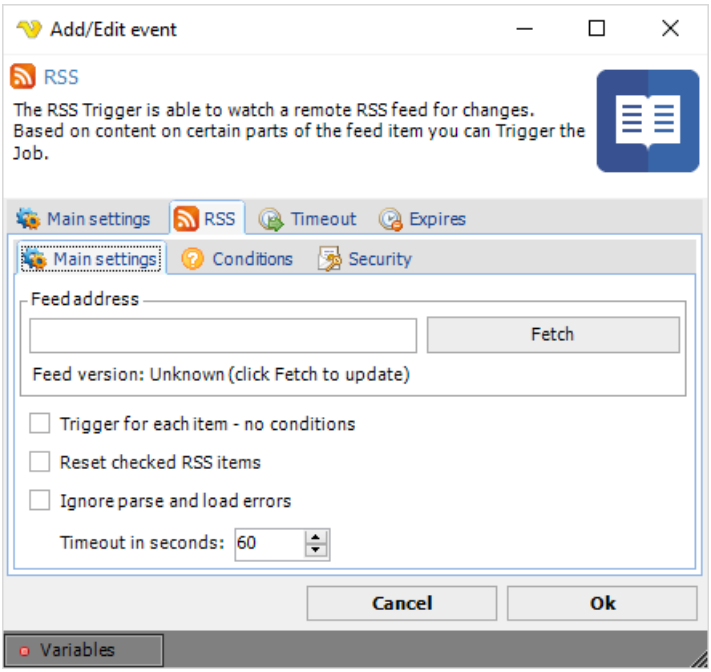
« Event Trigger - Event Log

Next
Event Trigger - RSS »

Event Trigger - RSS

The RSS event trigger is able to watch a remote RSS feed for changes. Based on content on certain parts of the feed item you can Trigger the Job.

Triggers > Add > Event Trigger > RSS > Main settings tab



Feed address

Text ... Click the Fetch button to

Trigger for each item - no conditions

Check this option if you just want to know when a feed has been updated. This setting will fire the Trigger each time a new item has been added.

Reset checked RSS items

Text ...

Ignore parse and load errors

Text ...

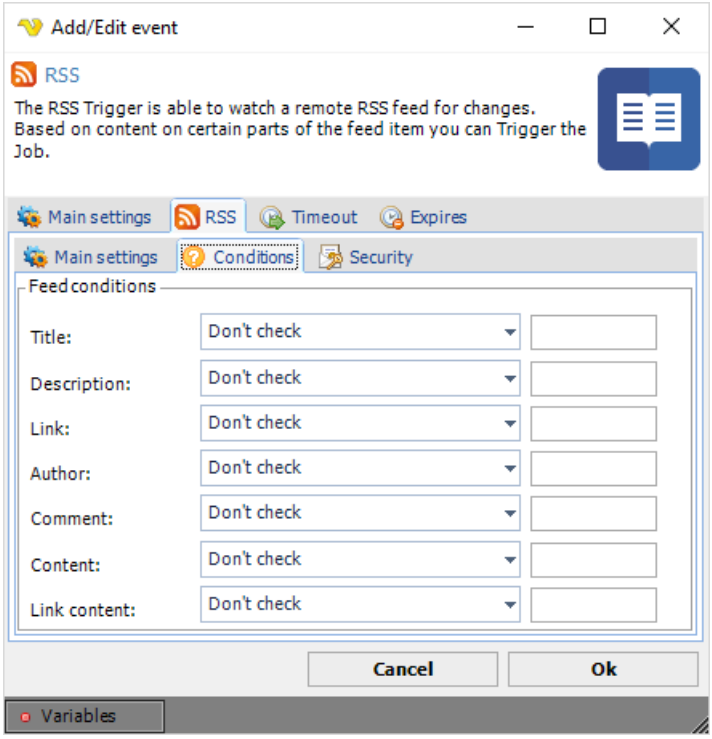
Timeout in seconds

Text ...

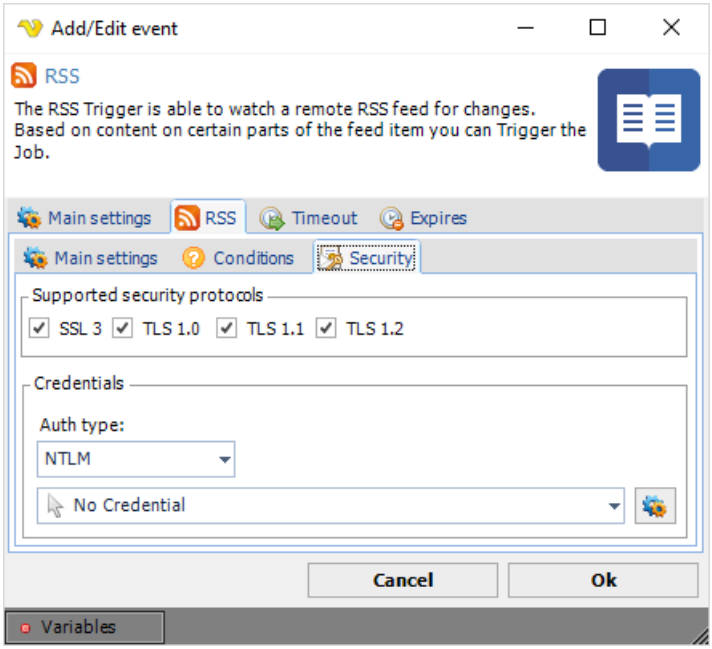
NOTE

As for all event triggers we recommend that you set "Put Job in queue" in the man settings of the Job. This will force VisualCron to process one item at a time. For example, if you let your RSS Trigger check every 60 seconds and two new items has been added since last check - then VisualCron will Trigger twice. In order to be able to use Variables from the Trigger correctly "Put Job in queue" needs to be set otherwise a mixup of Variables is possible.

Triggers > Add > Event Trigger > RSS > Conditions tab



Triggers > Add > Event Trigger > RSS > Security tab



Supported security protocols

Text ...

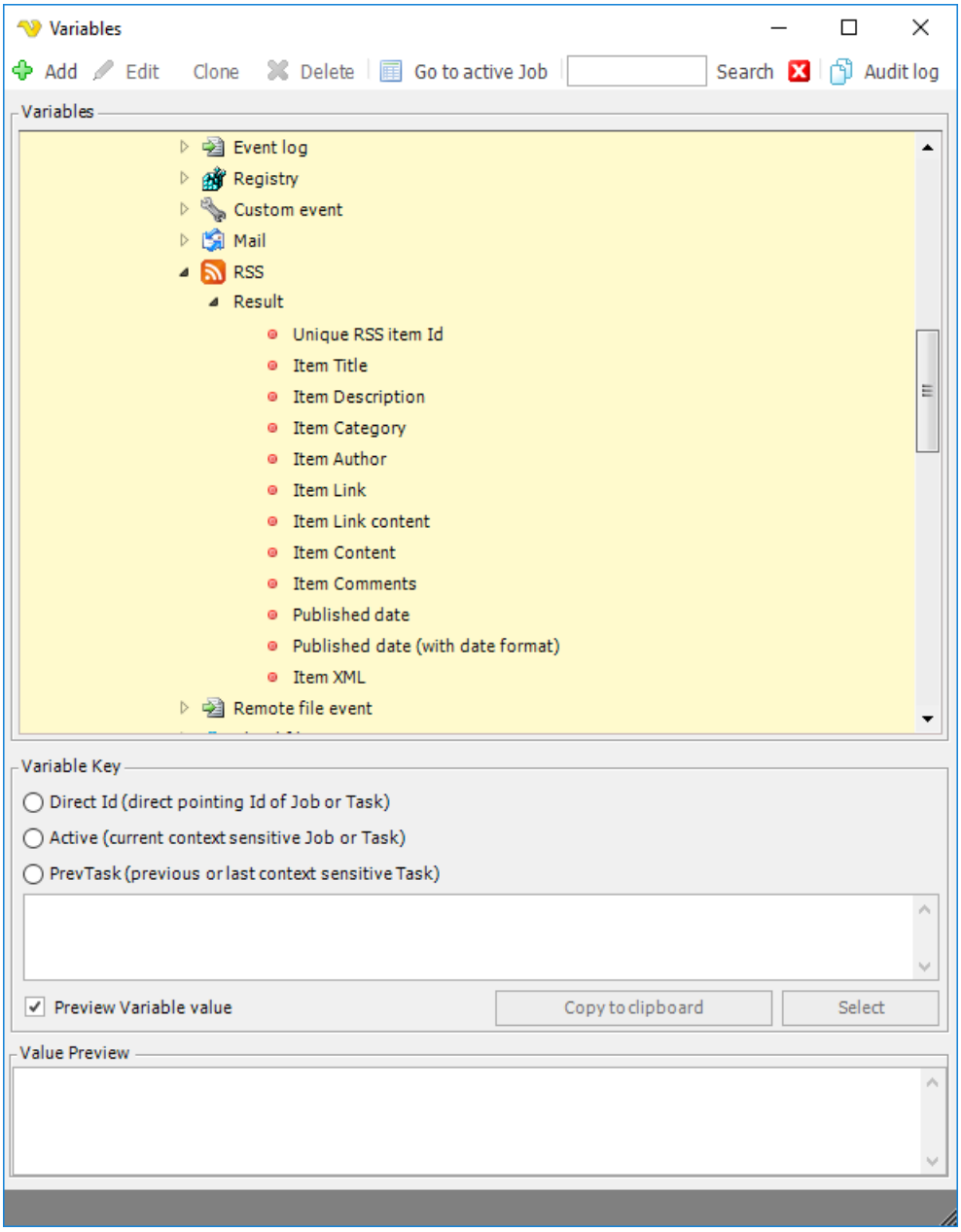
Auth type

Text ...

Credential

Select a Credential suitable for the selected authentication type. Click the Settings icon to populate the drop-down list with available credentials.

RSS Event Trigger Variables



In the Variables window you can find related Variables from the Trigger.

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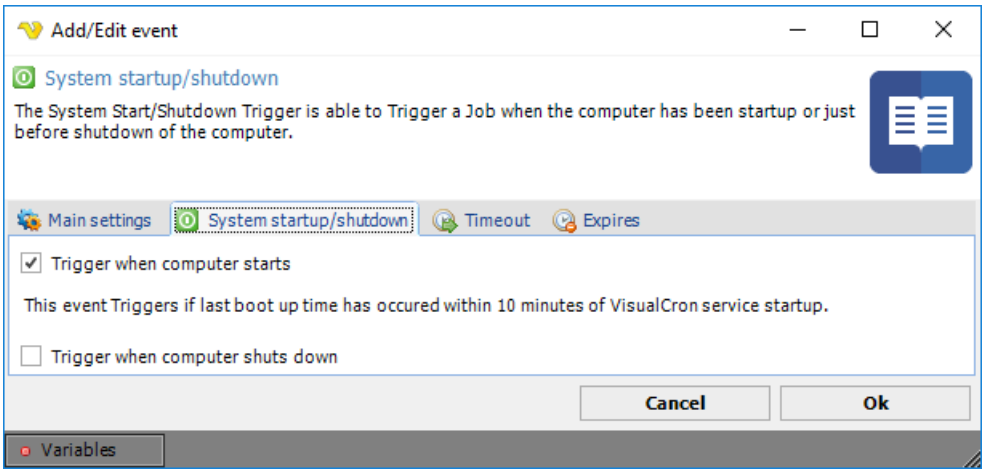
« Event Trigger - MSMQ

Next
Event Trigger - System Start/Shutdown »

Event Trigger - System Start/Shutdown

The System Start/Shutdown Trigger is able to Trigger a Job when the computer has been startup or just before shutdown of the computer.



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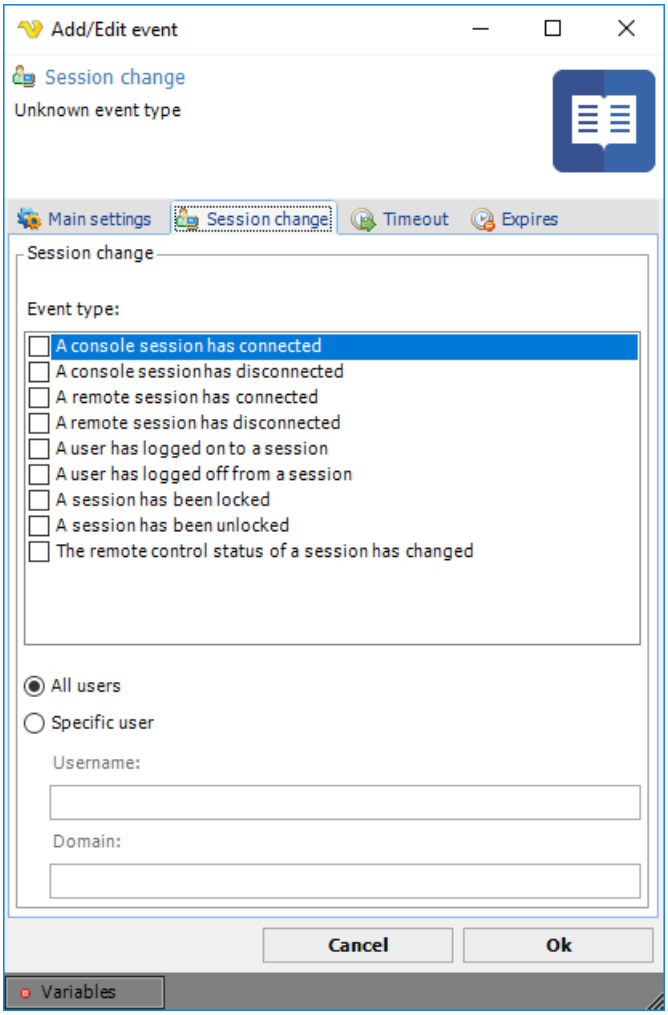
Event Trigger - Session Change »

Event Trigger - Session Change

Unknown event type.



Event type

Select the session event type(s) you want to monitor.

All/Specified user

Select either All users or a specified user which these events should concern.

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« Event Trigger - System Start/Shutdown

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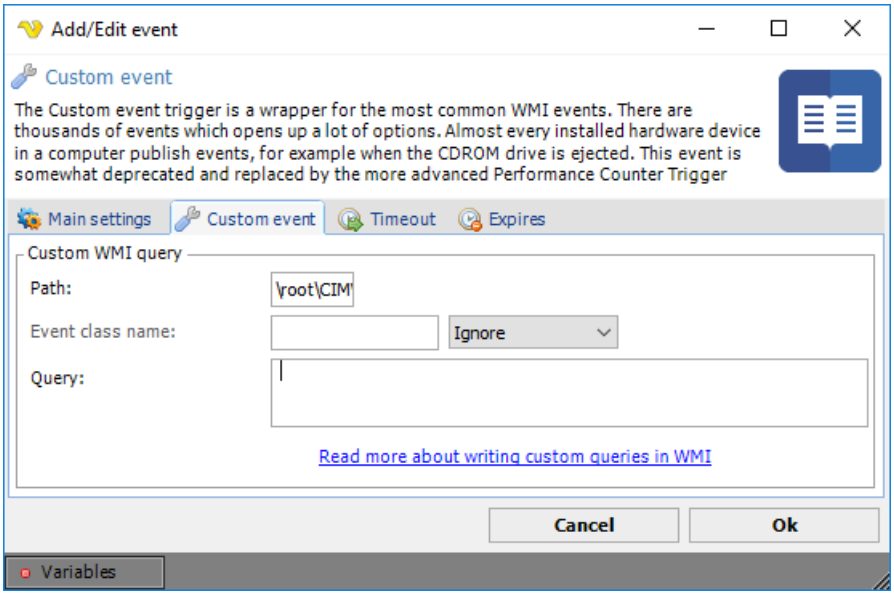
Event Trigger - Custom »

Event Trigger - Custom

The Custom event trigger is a wrapper for the most common **WMI** events. There are thousands of events which opens up a lot of options. Almost every installed hardware device in a computer publish events, for example when the CDROM drive is ejected. This event is somewhat depreciated and replaced by the more advanced Performance Counter trigger.

Events that are not considered, may be taken care of by creation of your own WQL (WMI Query Language) query. VisualCron do not take any responsibility for customer created WQLs, however there is a lot of documentation available on the Internet.

When trying to find the right query for an event it's good to have a tool, e.g. the Microsoft WMI Code Creator. This tool let's you browse, test and construct your queries. The tool can be downloaded from here.



Path

WMI supports namespaces, allowing users to logically group WMI classes together. Each WMI provider normally registers its own WMI namespace and then all its classes within that namespace. For example, all Win32 WMI classes can be found in the namespace "root\cimv2", all IIS WMI classes can be found at "root\microsoftiisv2", and all LDAP WMI classes can be found at "root\directory\ldap". The root namespace is called "Root" and namespaces can have child namespaces and WMI classes. The default path is \root\CIMV2.

Event class name

Some drivers require that you specify their class belonging. If necessary, this information can be retrieved from the WMI Code Create. Normally, the Event class name is the "table name" when constructing a query.

Query

This is the field where the query is entered. If you need to specify a polling interval you do that in the query using the operator WITHIN.

EXAMPLE

SELECT *

FROM __InstanceOperationEvent

WITHIN 10

WHERE

TargetInstance ISA 'Win32_Processor'

AND TargetInstance.LoadPercentage > 15

This query checks if the CPU load is over 15%. WITHIN 10 means that it will check that every 10th second. Our recommendation is that you do not use a lower WITHIN value than 10, because this may keep your CPU too busy.

A new query in WMI Code Creator have to be tested before entering in VisualCron. Entering an invalid query may affect the VisualCron stability.

A few WMI links: Microsoft WMI Scripting Primer WMI error codes

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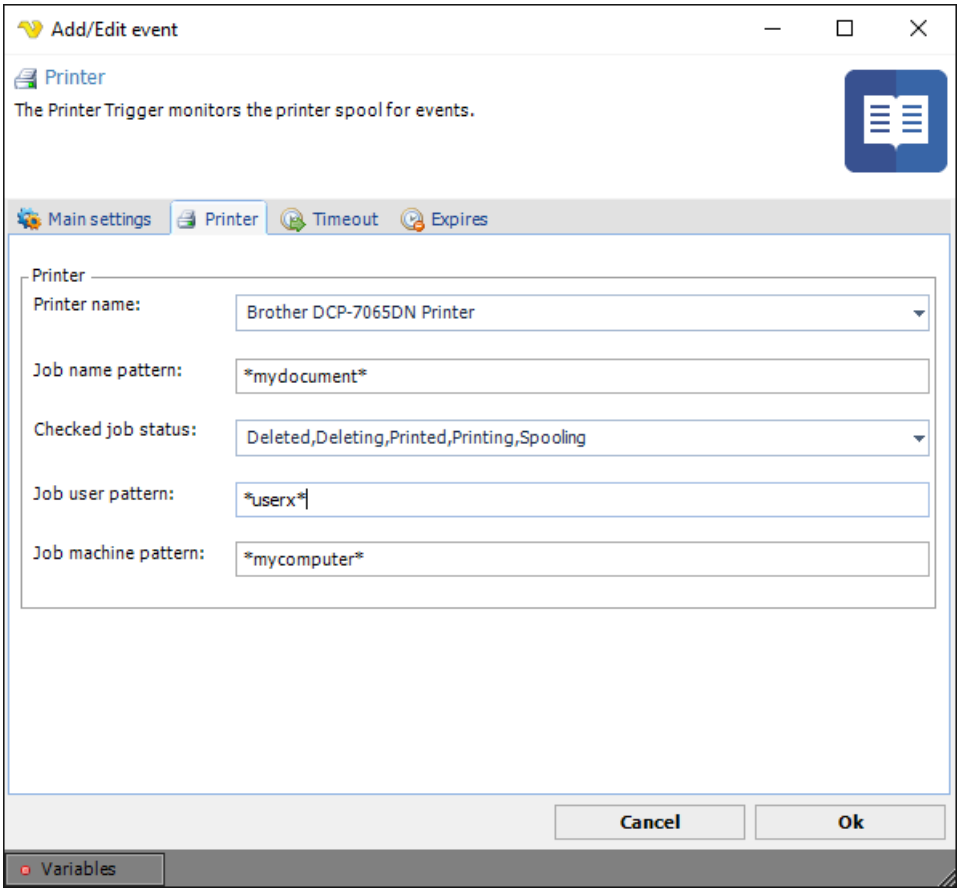
« Event Trigger - Session Change

Next
Event Trigger - Printer »

Event Trigger - Printer

The Event Trigger - Printer Trigger lets you monitor a printer for events within the spooler.



Printer name

Printer name as specified in devices.

Job name pattern

Mask for the job name from the printer queue.

Checked job status

Status of the job to which the Trigger will work.

Job user pattern

Mask for the user who sent the document for printing.

Job machine pattern

Mask for the name of the computer from which the document was sent to print and on which the user is working from the previous element.

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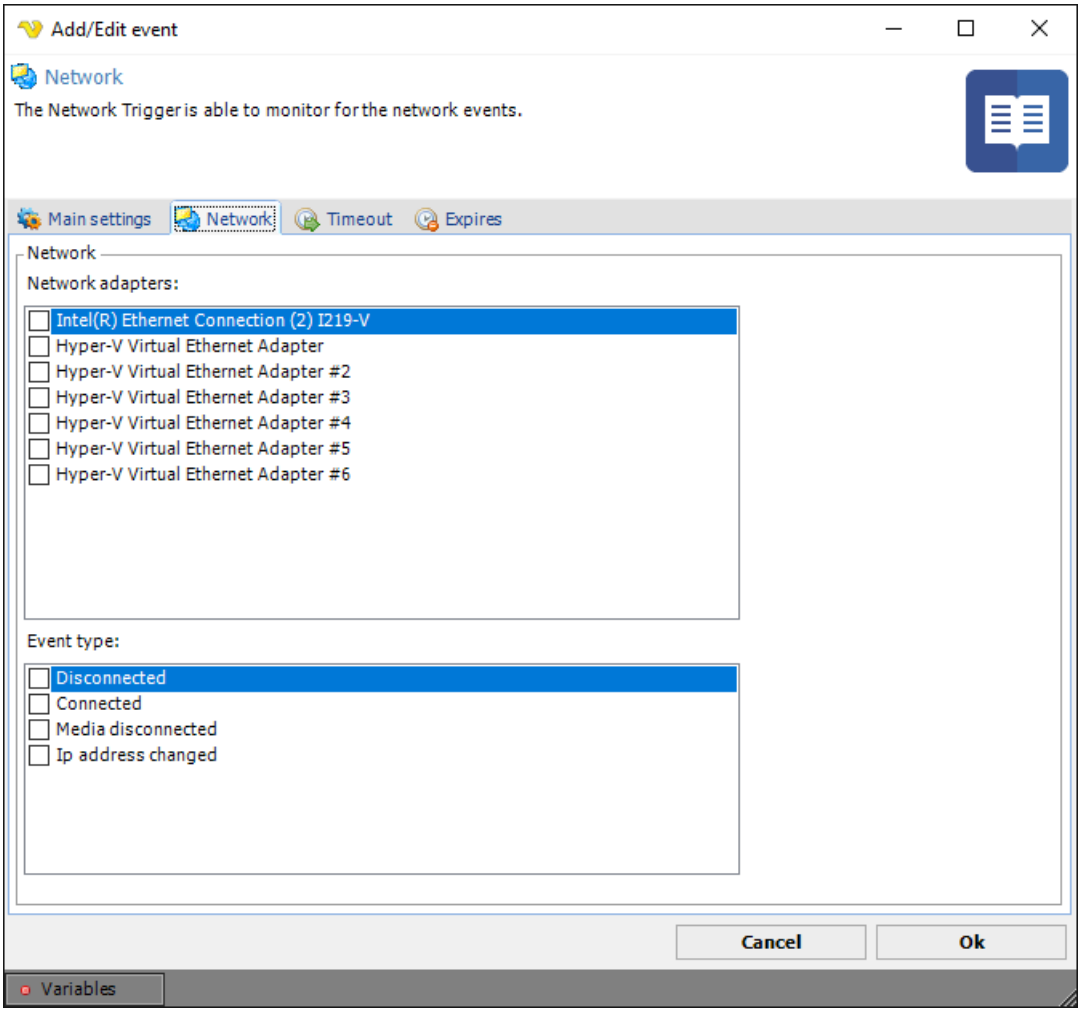
« Event Trigger - Custom

Next
Event Trigger - Network Change »

Event Trigger - Network Change

The Network change Trigger is able to monitor changes on a network connection.



Network adapters

Select the network adapter(s) you want to monitor.

Type of events

Select the type of event you want to monitor.

Disconnected

Whenever the network adapter goes offline.

Connected

Whenever the network adapter goes online.

Media disconnected

Whenever a network media is disconnected.

IP address changed

Whenever the IP address changes.

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« Event Trigger - Printer

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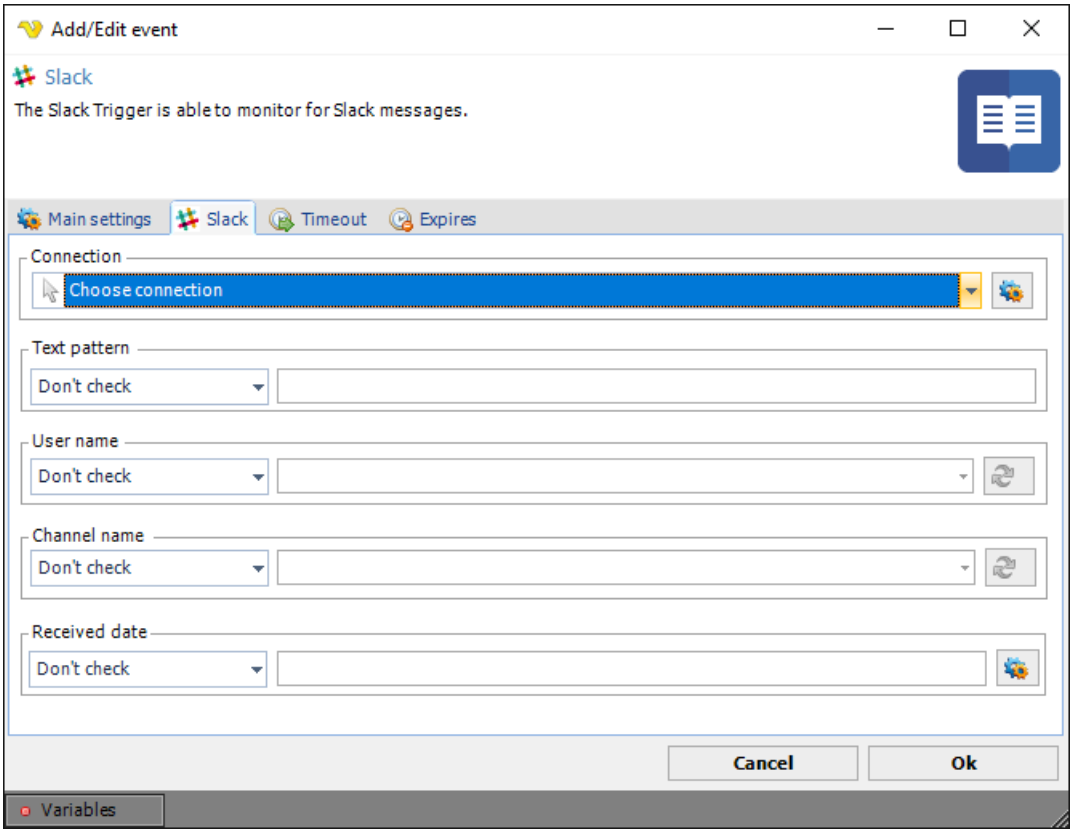
Event Trigger - Slack »

Event Trigger - Slack

The Slack Event Triggers triggers on new messages in the Slack cloud. This Trigger is using the Slack Connection.



Connection

Select a Slack Connection.

Text pattern

Select a condition to match the Slack message text.

User name

Select a condition to match the Slack message sender.

Channel name

Select a condition to match the Slack channel.

Received date

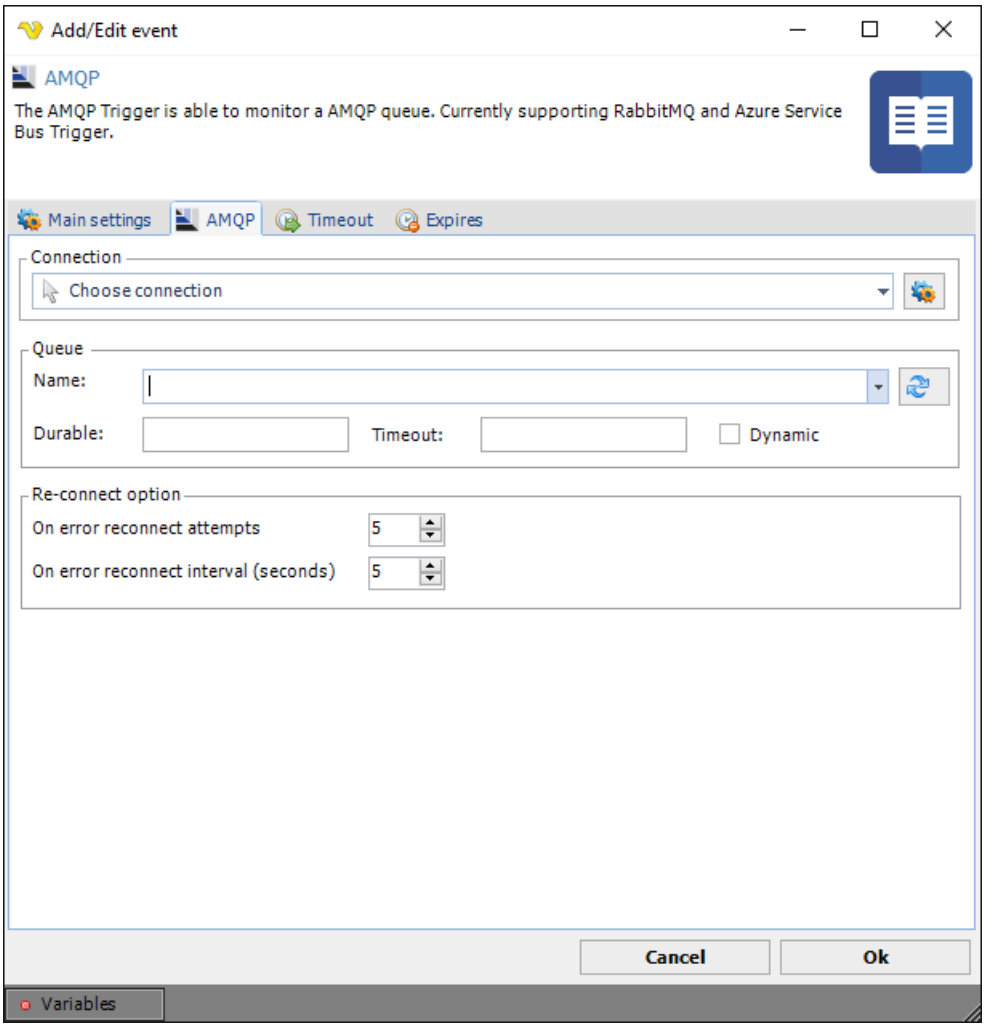
Select a condition to match the Slack message received date.

Next
Event Trigger - AMQP »

Event Trigger - AMQP

The Advanced Message Queuing Protocol (AMQP) is an open standard application layer protocol for message-oriented middleware. The defining features of AMQP are message orientation, queuing, routing (including point-to-point and publish-and-subscribe), reliability and security. AMQP defines a self-describing encoding scheme allowing interoperable representation of a wide range of commonly used types. It also allows typed data to be annotated with additional meaning,[17] for example a particular string value might be annotated so that it could be understood as a URL. Likewise a map value containing key-value pairs for 'name', 'address' etc., might be annotated as being a representation of a 'customer' type.

The AMQP Trigger is using the AMQP Connection.



Name

Name of the queue. Click refresh to get all once you have selected a Connection.

Durable

Indicates what state of the terminus will be retained durably: the state of durable messages, only existence and configuration of the terminus, or no state at all.

Timeout

Timeout duration that an expiring source will be retained. The source starts expiring as indicated by the expiry-policy.

Dynamic

Dynamic request dynamic creation of a remote node. When set to true by the receiving link endpoint, this field constitutes a request for the sending peer to dynamically create a node at the source. In this case the address field MUST NOT be set. When set to true by the sending link endpoint this field indicates creation of a dynamically created node. In this case the address field will contain the address of the created node. The generated address SHOULD include the link name and other available information on the initiator of the request (such as the remote container-id) in some recognizable form for ease of traceability.

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« Event Trigger - Slack

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Event Trigger - SQS »

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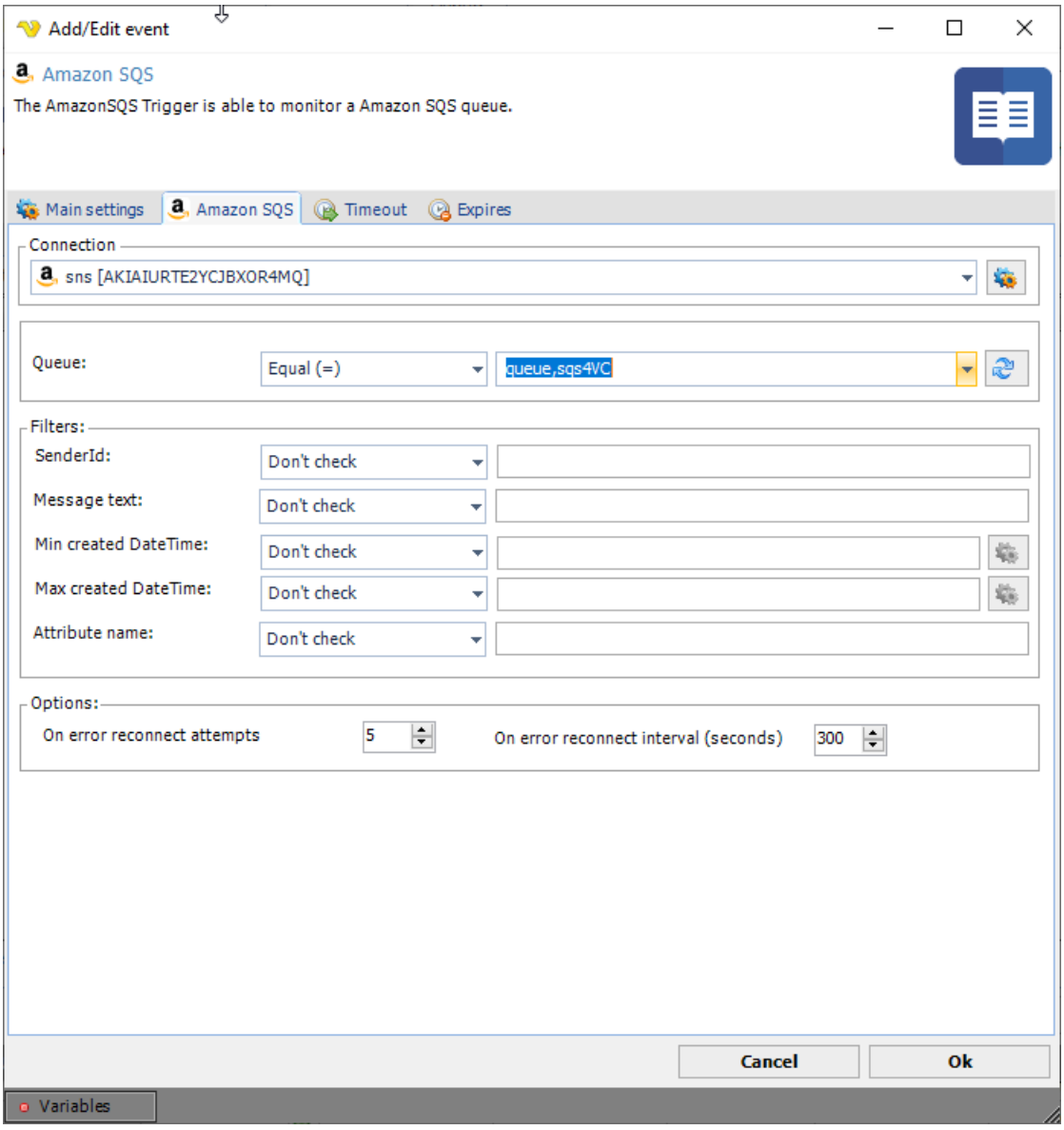
Event Trigger - SQS

Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. SQS eliminates the complexity and overhead associated with managing and operating message oriented middleware, and empowers developers to focus on differentiating work. Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Get started with SQS in minutes using the AWS console, Command Line Interface or SDK of your choice, and three simple commands.

The Amazon SQS Trigger in VisualCron is using the Amazon Connection.

Amazon SQS Trigger settings



Queue

Filter on one or more queue names. If not set it will watch all.

SenderId

Filter on SenderId. If not set it will watch for all.

Message text

Filter on message text. If not set it will watch for all.

Min created DateTime

Filter on min created time. If not set it will watch for all.

Max created DateTime

Filter on max created time. If not set it will watch for all.

Attribute name

Filter on attribute name. If not set it will watch for all.

On error reconnect attempts

How many times it will try to reconnect on error.

On error reconnect interval (*seconds*)

How often it will try to reconnect.

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Event Trigger - Azure Queue Storage

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Event Trigger - Desktop »

Event Trigger - Desktop

The **Desktop trigger** monitors changes in a UI via a locally or remotely runned VC tray. The Trigger reacts on UI events like as opened, closed, focused, appeared, clicked, checked, hovered, changed and many other UI, system, keyboard events. The trigger listens to events for a specific type of controls. It is possible to retrieve the username, hostname, process name, window name, control name, control content, pressed key, event type and other results so you can use it in your Tasks for example.

Events tab

Events are divided into categories: Process, Application, Window, Control, System, Keyboard.

Process category

The Process category contains 2 events:

- Process started
- Process ended

The **Process started** event monitors the running of a specific process that matches the name of the process that the user-specified when adding an event.

The **Process ended** event monitors the ending of a specific process that matches the name of the process that the user-specified when adding an event.

Application category

The Application category contains 4 events:

- Application focused
- Application unfocused
- Application clicked
- Application double clicked

The **Application focused** event monitors the focusing to a specific application that matches the name of the application that the user-specified when adding an event.

The **Application unfocused** event monitors the focus leaving from a specific application that matches the name of the application that the user-specified when adding an event.

The **Application clicked** event monitors the clicking to a specific application that matches the name of the application that the user-specified when adding an event.

The **Application double** clicked event monitors the double clicking to a specific application that matches the name of the application that the user-specified when adding an event.

Window category

The Window category contains 6 events:

- Window opened
- Window closed
- Window focused
- Window unfocused
- Window clicked
- Window double clicked

The **Window opened** event monitors the opening of a specific window that matches the name of the application and window that the user-specified when adding an event.

The **Window closed** event monitors the closing of a specific window that matches the name of the application and window that the user-specified when adding an event.

The **Window focused** event monitors the focusing to a specific window that matches the name of the application and window that the user-specified when adding an event.

The **Window unfocused** event monitors the focus leaving from a specific window that matches the name of the application and window that the user-specified when adding an event.

The **Window clicked** event monitors the clicking to a specific window that matches the name of the application and window that the user-specified when adding an event.

The **Window double clicked** event monitors the double clicking to a specific window that matches the name of the application and window that the user-specified when adding an event.

Control category

The Control category contains 7 child categories:

- Button
- Textbox
- Label
- Checkbox
- Radio button
- Combobox
- Document

The Button, Label categories contains 6 events:

- Button hovered
- Button clicked
- Button enabled
- Button disabled
- Button appeared
- Button disappeared

The **Button hovered** event monitors the hovering of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Button clicked** event monitors the clicking of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Button enabled** event monitors the enabling of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Button disabled** event monitors the disabling of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Button appeared** event monitors the appearing of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Button disappeared** event monitors the disappearing of a specific button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Texbox, Document** category contains the same events, but has one more additional: **Textbox value changed**.

The **Value changed** event monitors the value changing of a specific textbox, document that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Checkbox**, Radio button category contains the same events, but has two more additional: **Checked**, **Unchecked**

The **Checked** event monitors the checking of a specific checkbox or radio button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Unchecked** event monitors the unchecking of a specific checkbox or radio button that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Combobox** category contains the same events, but has three more additional:

- Combobox value changed
- Combobox opened
- Combobox closed

The **Combobox value changed** event monitors the value changing of a specific combobox that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Combobox opened** event monitors the opening of a specific combobox that matches the name of the application, window, button, content that the user-specified when adding an event.

The **Combobox closed** event monitors the closing of a specific combobox that matches the name of the application, window, button, content that the user-specified when adding an event.

System category

The **System** category contains 4 events:

- System locked
- System unlocked
- RDP connected
- RDP disconnected.

The **System locked** event monitors the locking of the system. The event fires when the user locks the system session.

The **System unlocked** event monitors the unlocking of the system. The event fires when the user unlocks the system session.

The **RDP connected** event monitors the RDP connecting.The event fires on remote connecting.

The **RDP disconnected** event monitors the RDP disconnecting.The event fires on remote disconnecting.

Keyboard category

The Keyboard category contains 3 events:

- Key pressed
- Hotkey pressed
- Key sequence pressed

The **Key pressed** event monitors the pressing to a specific key.

The **Hotkey pressed** event monitors the pressing to a specific hotkey.

The **Key sequence pressed** event monitors the pressing to a specific key sequence.

Control selector

All fields support wildcards such as: “?”, “” “” - any symbol and any count, “?” - one any symbol.

For example, if we enter ‘notep*’ to Process name field, trigger will listen for all processes whose name begins with ‘notep’.

If you don't know the details of the control, you can click on the search button.

Then select the control you need. To select hold down the Ctrl button and click on the control.

The fields will be filled in automatically.

Connections tab

In the Connections tab, configure a connection that will listen for an event on a local or remote client.

Before initializing the trigger, make sure that you have a tray client running, depending on which connection you have selected.

The event from the Process category requires running the tray client as administrator.

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Job - Time Exceptions »

Job - Time Exceptions

Time exceptions are "global", which means that once a time exception is defined it can be selected by one or more Jobs. The activated collections include time definitions when the Job will NOT run, i.e. blocking time(s) and interval(s) set in the other *Time settings* sub tabs.

A time exception is a complement to the *Time* trigger settings.

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« Event Trigger - Desktop

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Job - Conditions »

Job - Conditions

Condition sets are global and the included conditions for Jobs and Tasks are managed in the same way, see Global - Conditions for details.

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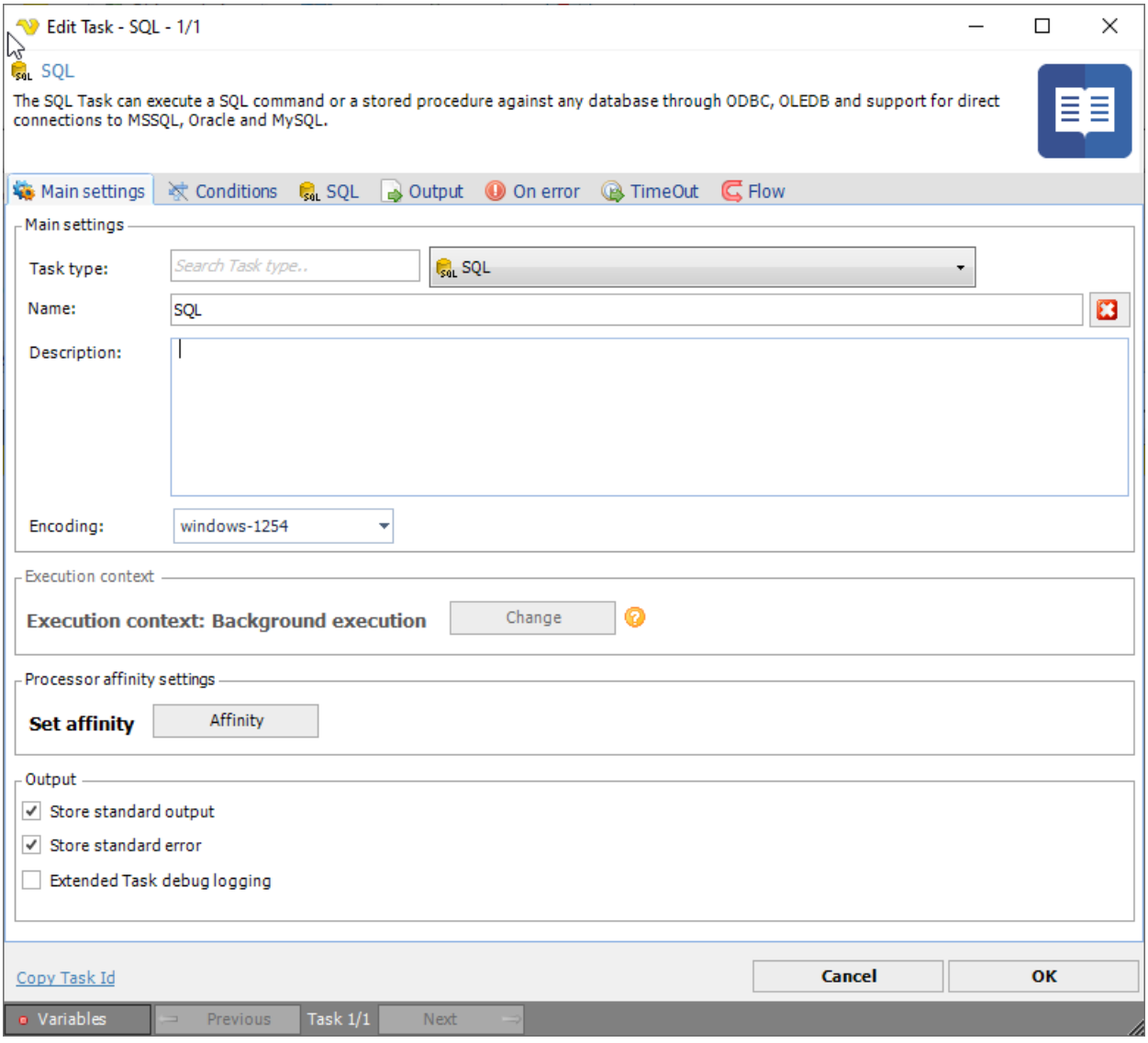
Job - Tasks

A Task for a Job is managed either by mouse right-click on a Job (in the Server/Job/Task grid) and select *Add Task* to Job `'<Job name>'` or by right-click on an existing Task and select *Edit Task* `'<Task name>'`.



The above is an example of the Task > Main settings window.

For each Job, one or more Tasks must be defined.

By default, a defined Job or Task is set to the "Active" state, but it is possible to inactivate each Job or Task individually, see Activate/Inactivate Job for more information.

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Loop Functionality »

Loop Functionality

Summary

“Loops” are introduced in VisualCron version 6.0.0. Loops let you run several Tasks multiple times in three loop types:

1. For
2. For Each
3. While

During a loop you are able to access loop runtime Variables. For example, where you are in the current iteration and all related values.

Architecture

Loops are objects that are stored in a Job. On Job can contain a maximum number of loops equal to the maximum number of Tasks. Loops are defined by a start Task and end Task. Anything in between will be looped in Task order. Loops cannot cross each other - you cannot create a loop in a loop.

Task Conditions are checked each time before a Task is run, independent of if Task is in loop or not.

Loop types

There are three different loop types:

For

A loop type with and x and y value where x and y are numeric values.

While

A loop type that can compare two values according to a specific data type (i.e. string, integer) and comparison method (i.e. larger than, contains, equal).

For each

A loop type that iterates through an existing y value. A list of some sort.

Working with loops

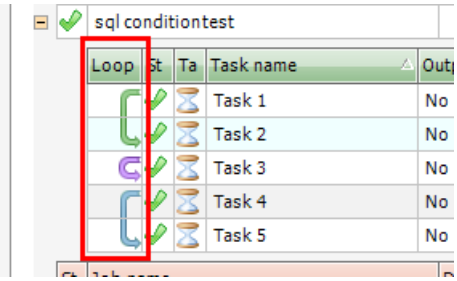
Loop display

If one or more Tasks belong to a loop you can see that in the loop column. You will see how the loop stretches over itself or more Tasks.

Purple loop: For loop

Green loop: While loop

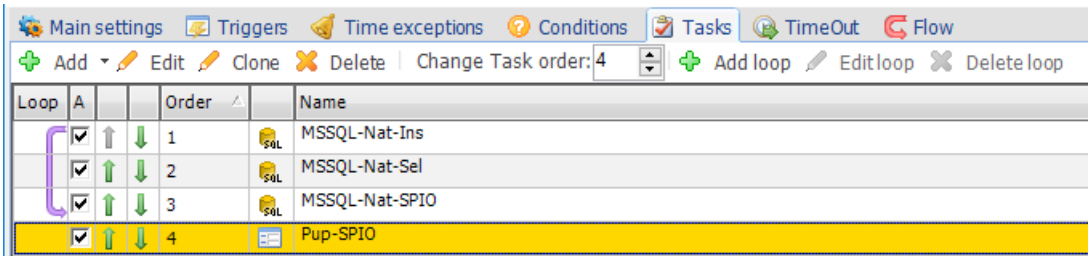
Blue loop: For Each loop



Add/Edit loop

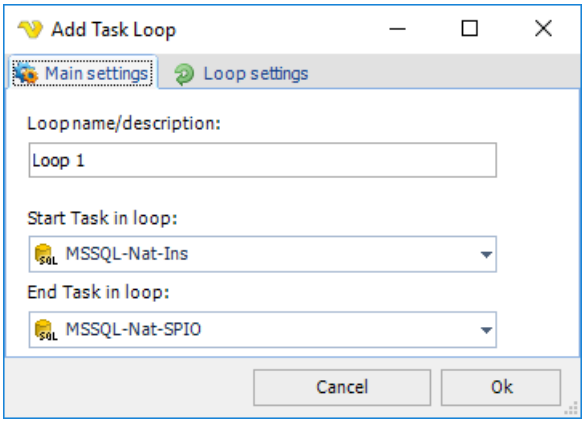
In the Task list, in main window or Task list of add/edit Job you can double click in the “Loop” column in each Task row. This will open up existing or new Loop settings window.

Add loop option



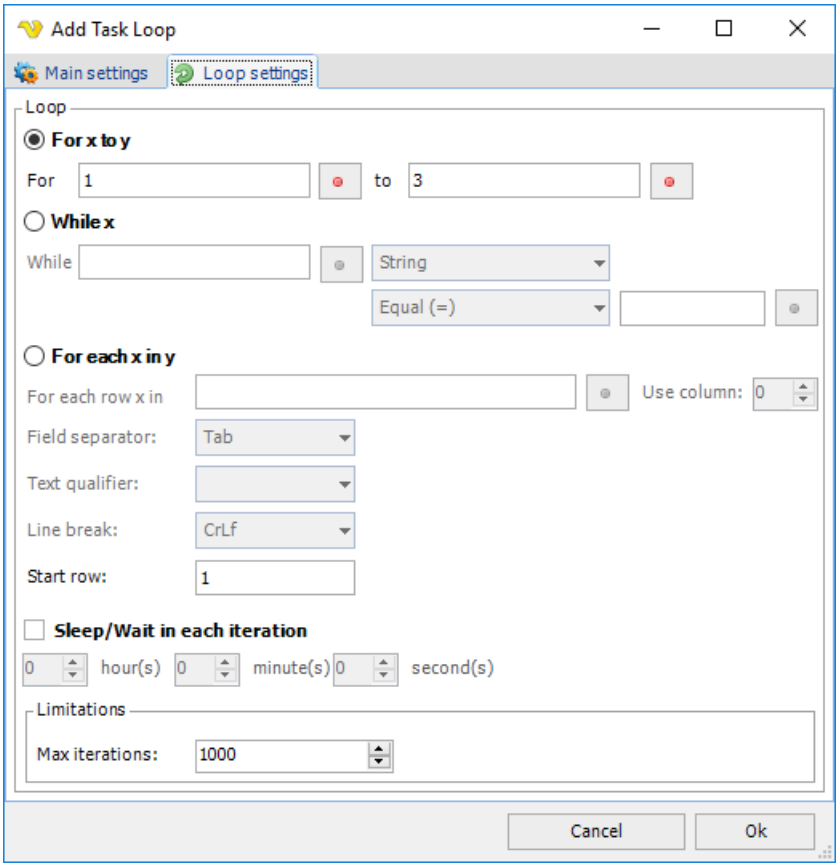
Add loop > Main settings

In the main settings you enter the descriptive name of the Loop. You also set which Task the loop should start and end with.



Add loop > Loop settings

In the loop settings you control the loop type by clicking on one of the three radio buttons. You can click on the Variable button next to each text field to find and insert a Variable that can be used in the field.



For x to y

Enter two numerical values or Variables that contain numerical values.

While x

Depending on type comparison you enter different kind of values/Variables.

For each x in y

Enter a Variable that contains a list. You may need to alter field separator, text qualifier or line break depending on the format of the Variable list.

Sleep/Wait in each iteration

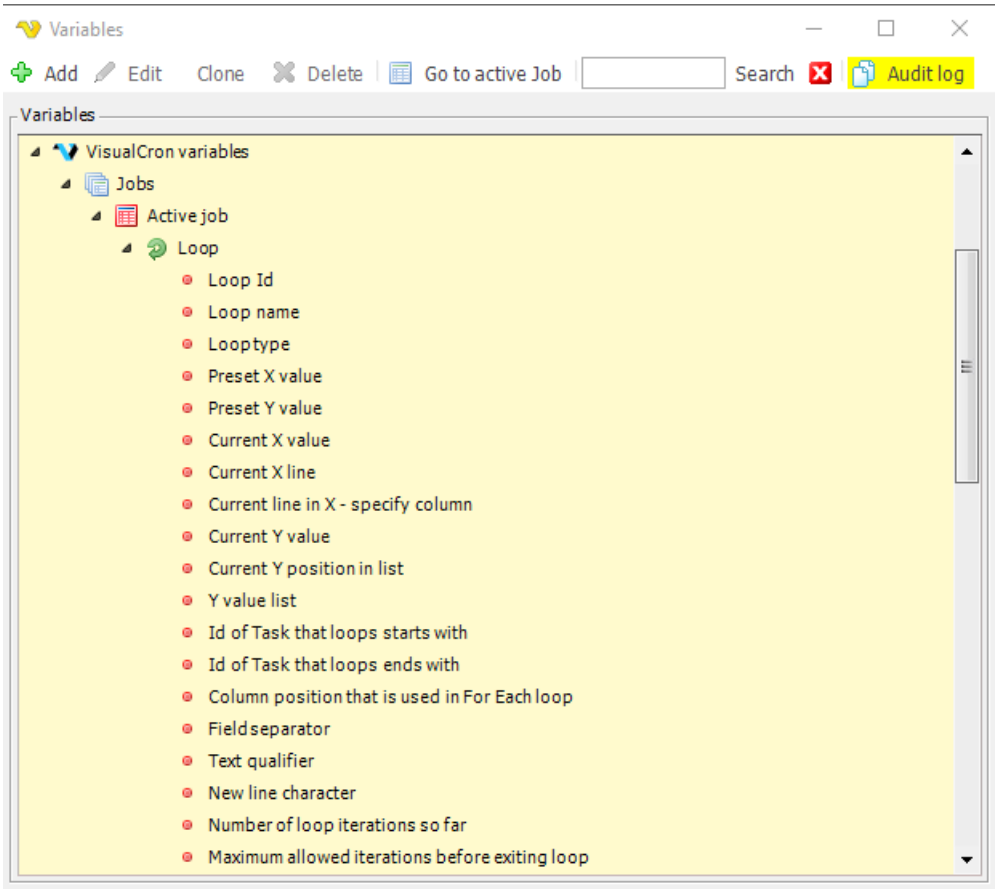
Sets the wait time between each iteration. This is especially interesting if you are using a While loop because you might want to save resources and not check *all* the time.

Limitations

Set the maximum number of iterations. If your y value is less than 1000 then lower or keep value to prevent never ending loops.

Add loop > Loop settings > Loop Variables

Any Variable can be used in the settings of the actual loop to provide dynamic x and y values. Also, a set of dynamic, loop context sensitive Variables exist. You find them in the Variables browser:



Loop Id

Each loop in a Job has an internal Id.

Loop name

You are able to set a name of a loop which can be accessed through this Variable.

Loop type

If it is a For, For Each or While loop.

Preset X value

The original left hand value that you used in a For or While loop.

Preset Y value

The original right hand value in For, While or For Each loop.

Current X value

The value of the position in the loop. This value is interesting when using For or For Each loop.

Current Y value

The current value of the right hand value. Should be the same as Preset Y value in most scenarios.

Current Y position in list

A numeric value of the position in the y list. Used when using a For Each loop type.

Y value list

A list containing all rows in y.

Id of Task that loops starts with

Task Id for the selected start Task in the loop.

Id of Task that loops ends with

Task Id for the selected end Task in the loop.

Column position that it used in For Each loop

The numeric value of column position where x value is picked up.

Field separator

The character that is used to separate feilds in For Each loop.

Text qualifier

The surrounding character of each column.

Line break

The line break character that is used in each column.

Number of loop iterations so far

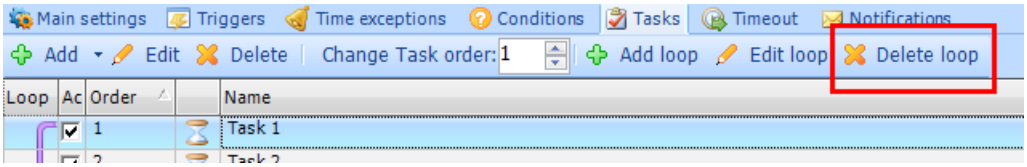
Number of loop “laps”/iterations that has been done so far.

Maximum allowed iterations before exiting a loop

A limit that prevents loop for going on forever. Default 1000. This value is showed here.

Deleting a loop

To delete a loop you open the Add/Edit Job window and go to Tasks tab. Right click/select a Task row that contains a loop and click on Delete loop. This will only delete the related loop - not the Tasks in it.



Changing Task order

A change of Task order (clicking up/down in the numeric box in the Task list) affects any existing loop.

If a loop covers 3 Tasks and the first Task is moved up it will include any Task that becomes number two in the list.

Deleting Tasks

If a start or end Task is deleted VisualCron will attempt to shift start or end Task, if loops covers more than one Task. If all Tasks that a loop covers are deleted the loop itself will be deleted.

Edit this page

Previous
« Job - Tasks

Next
File Filter »

File Filter

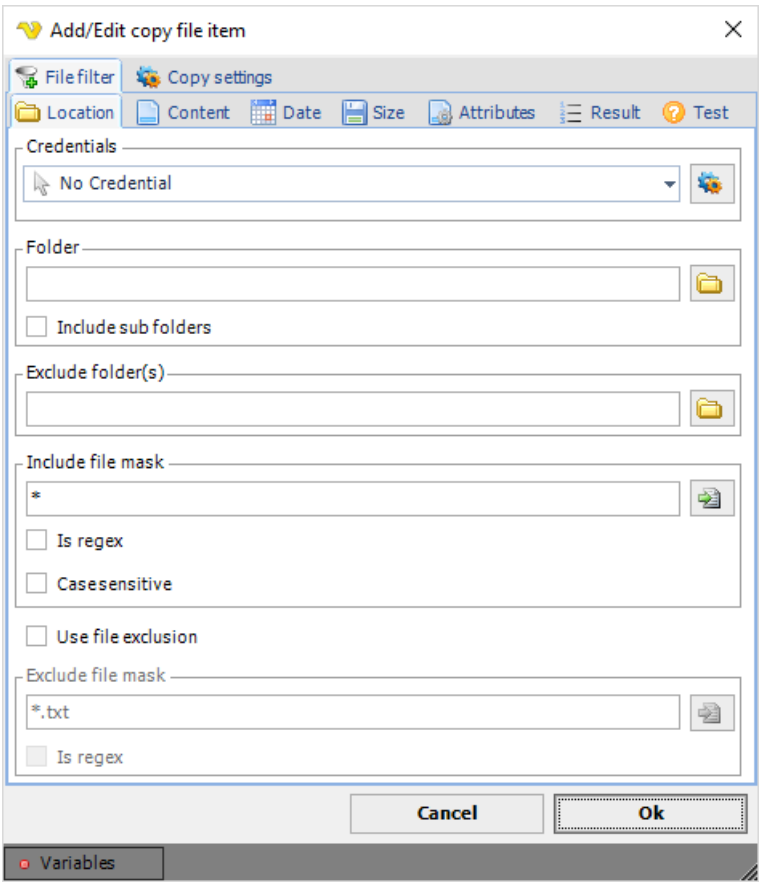
The file filter is a part of many Tasks and other objects within VisualCron. The purpose of the file filter is to provide a standardized way of filtering out files for a given Task.

Evaluation

The file filter is evaluated the following way:

- **Location** AND **Content** AND **Date** AND **Size** AND **Attributes** = filtered files
- **Date** = Date older than AND/OR Date newer than
- **Size** = Size smaller than AND/OR Size larger than

File filter > Location Contains the basic properties of finding one or more files.



Credentials

To access a remote computer you may need to use a Credential. Normally that Credential is a remote or AD user with "Local logon" unchecked. The Credential must match the user name and password of the user that you want to login for. Select a Credential in the combo box or click the Settings icon to open Manage credentials in order to add or edit Credentials.

Folder

The folder path where the source file(s) reside. You can input several folders by separating with semicolon ";" like this: C:\Temp;C:\test. Click the Folder icon to browse the folder tree.

Include sub folders

If the file filter should look for files in sub folders then check this option.

Exclude folder(s)

If the file filter should exclude folder(s) to look for files. Click the Folder icon to browse the folder tree. You can exclude multiple sub folders by separating them with semicolon. Please not that the exclusion is exact to a specific folder. For example:

`C:\subfolder\main2` - this will exclude files in that folder only. `C:\subfolder\main2*` - this will exclude files in this folder and sub folders to this folder.

Include file mask

Define your file mask for the file name here. When not using the Is regex string, you can use the normal wildcard characters like *or ?. You can input more than one file mask by separating them with semicolon ";" like this:* .doc;*.txt. Click the File icon to browse for files.

Is regex

If the include file mask is a regular expression. For more information about regular expressions please look here: http://www.regular-expressions.info/

Case sensitive

If the file name search is case sensitive.

Exclude file mask

It is possible, the same way, to use a exclusion filter. When not using “Is regex” string here you can use the normal wildcard characters like * or ?.

Is regex

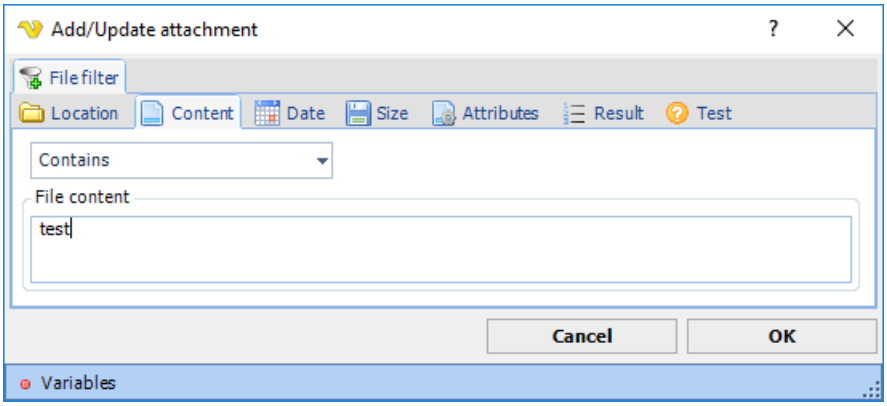
If the exclude file mask is a regular expression. For more information about regular expressions please look here: http://www.regular-expressions.info/

File filter > Content

Makes it possible to check found files for content.

File filter > Content

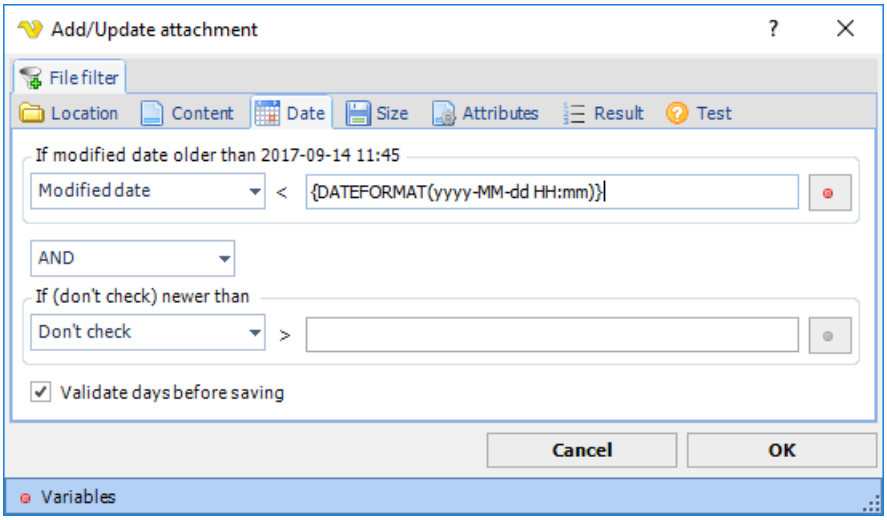
Makes it possible to check found files for content.



The default **Content** property is *Don't check*. Use the drop-down list to select the desired property.

File filter > Date

Makes it possible to check the created/modified date against a Variable value.

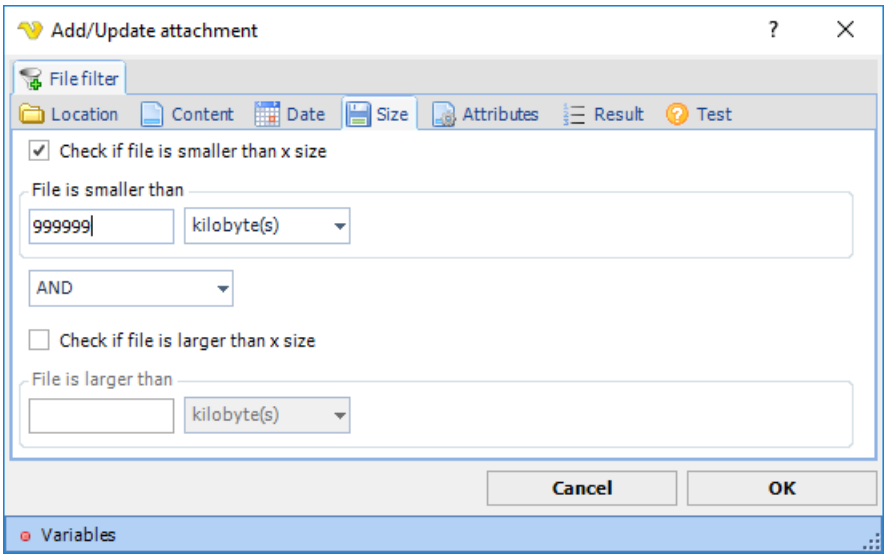


There are two types of checks *Older than* and *Newer than*. These can be combined with AND/OR or used separately. Only date variables can be used here. Once you have selected a Variable it can be previewed when hovering over text box (tool tip) or in the group caption.

Click the *Variables* icons to view and select available Date Variables.

File filter > Size

Makes it possible to filter out files based on size. Like the Date filter it can be combined with AND/OR and check can be done on *Larger than* or *Smaller than*.



Check if file is smaller than x size

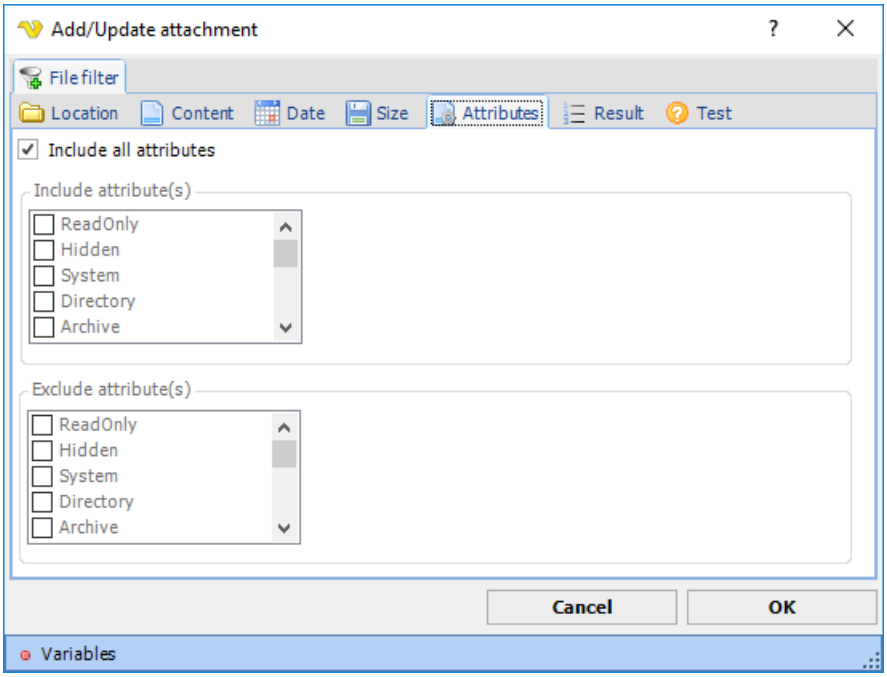
Select this to enable size checking. Enter a value in the numeric text box and select the size unit to compare with. Default is kilobyte(s). If the size on the file is smaller than the value you enter in the numeric box it will return true (= file will be included).

Check if file is larger than x size

Select this to enable size checking. Enter a value in the numeric text box and select the size unit to compare with. Default is kilobyte(s). If the size on the file is larger than the value you enter in the numeric box it will return true (= file will be included).

File filter > Attributes

All files have different attributes. If you want to check for a specific attribute you can use whether to include or exclude a file based on attribute.



Include all attributes

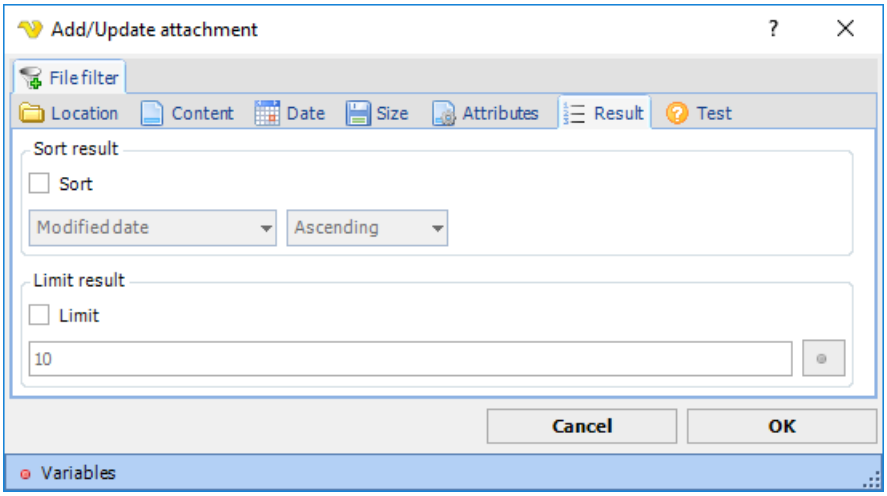
The default is checked, uncheck if you want to filter on attributes.

Include attribute(s), Exclude attribute(s)

Check the attributes you want to include or exclude.

File filter > Result

The filtered files can be presented (in output) in different ways. It is possible to sort the result on various values like name, modified date, created date and size. You can also limit the number of rows returned to, for example, only list the top 3 files according to the current sorting.



Sort

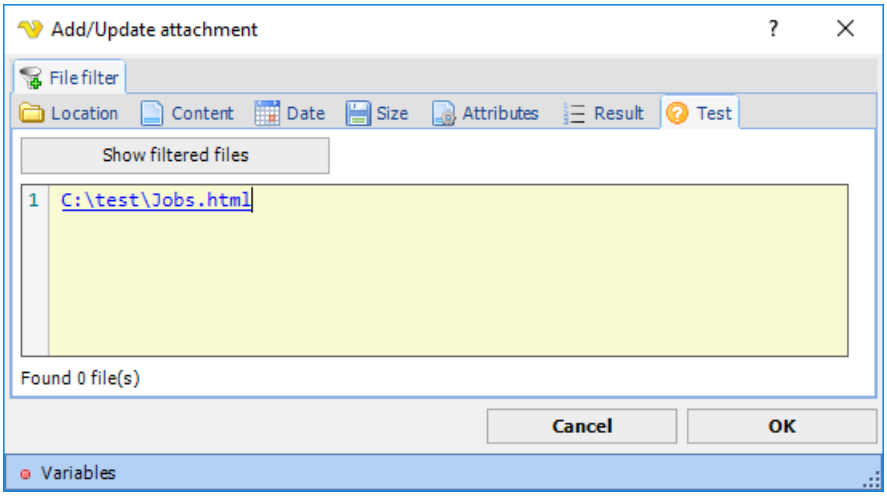
It is possible to sort the result on various values like name, modified date, created date and size. If sort is unchecked the files will just be presented in the order they are discovered.

Limit

Check this if you want to limit the number of rows returned. It will be limited according to the number (which could be a Variable) and the current sorting.

File filter > Test

Makes it possible to test your current file filter - if it matches any existing files



Show filtered files

The test will use the selected Credential. Click to test the filter.

Edit this page

Previous
« Loop Functionality

Next
Remote File Filter »

Remote File Filter

The remote file filter is a limited version of the normal local file filter. The difference is that the remote file filter is limited for remote Tasks (like FTP/SFTP) and Triggers (Remote file).

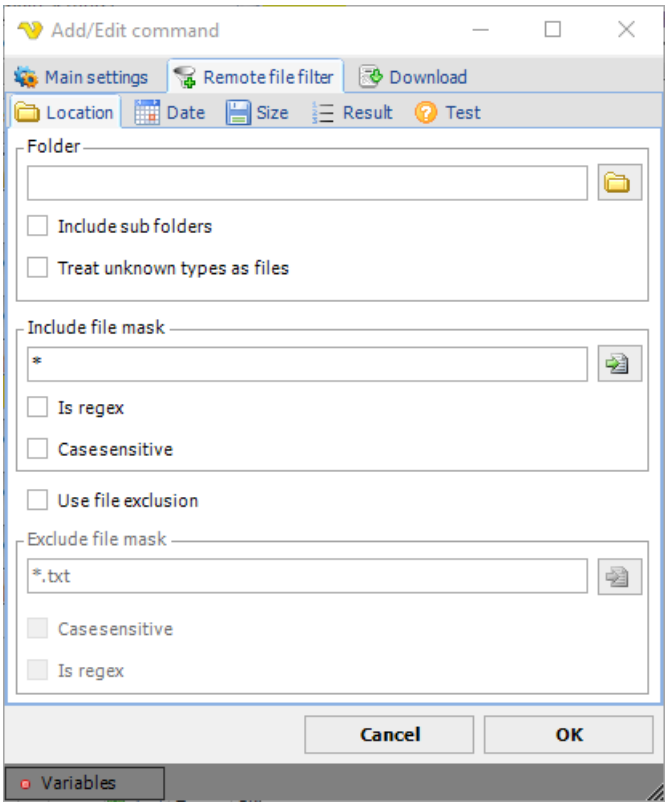
Evaluation

The file filter is evaluated the following way:

- Location AND Content AND Date AND Size AND Attributes = filtered files
- Date = Date older than AND/OR Date newer than
- Size = Size smaller than AND/OR Size larger than

Remote file filter > Location sub tab

This tab contains the basic properties of finding one or more files.



Folder

The folder path where the source file(s) reside. You can input several folders by separating with semicolon ";" like this: `C:\Temp;C:\test`

Include sub folders

If the file filter should look for files in sub folders then check this option.

Treat unknown types as files

Some servers to not report the correct item type (file or folder) when listing items and instead reporting unknown type. When checking this property VisualCron will treat unknown types as files.

Include file mask

Defined your file mask for the file name here. When not using “Is regex” string here you can use the normal wildcard characters like *or ?. You can input more than one file mask by separating them with semicolon ";" like this:* ```.doc;*.txt```

Is regex

If the include file mask is a regular expression. For more information about regular expressions please look here: http://www.regular-expressions.info/

Case sensitive

If the file name search is case sensitive.

Exclude file mask

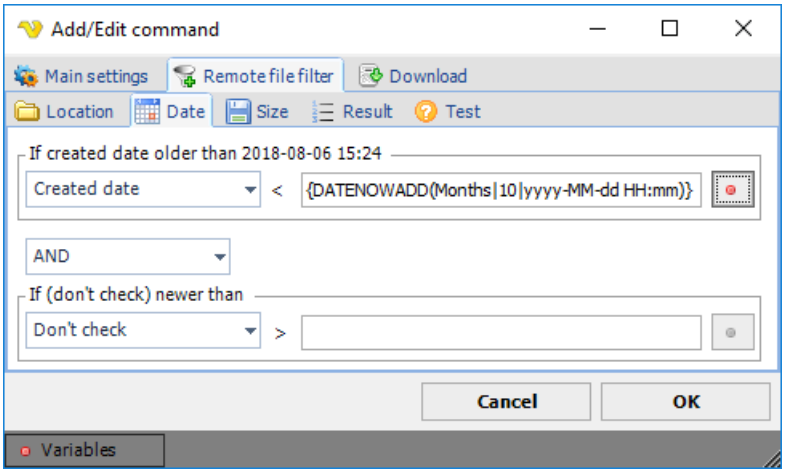
It is possible, the same way, to use a exclusion filter. When not using “Is regex” string here you can use the normal wildcard characters like * or ?.

Is regex

If the exclude file mask is a regular expression. For more information about regular expressions please look here: http://www.regular-expressions.info/

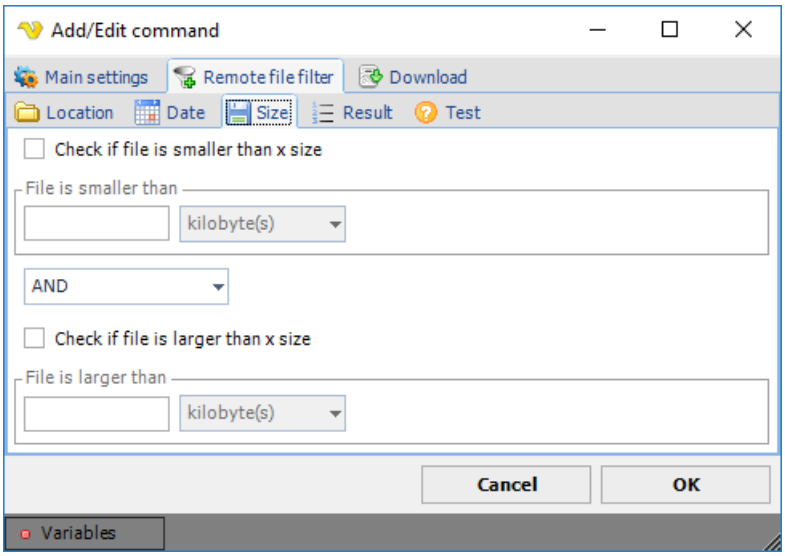
Remote file filter > Date sub tab

It is possible to check the created/modified date against a Variable value.



Remote file filter > Size sub tab

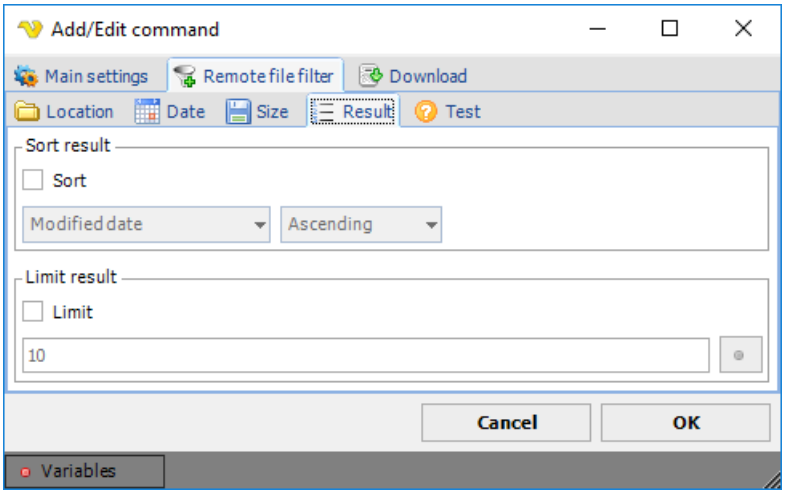
It is possible to filter out files based on size. Like the Date filter it can be combined with AND/OR and check can be done on *Larger than* or *Smaller than*.



Remote file filter > Result sub tab

The filtered files can be presented (in output) in different ways. It is possible to sort the result on various values like name, modified

date, created date and size. You can also limit the number of rows returned to, for example, only list the top 3 files according to the current sorting.



Sort

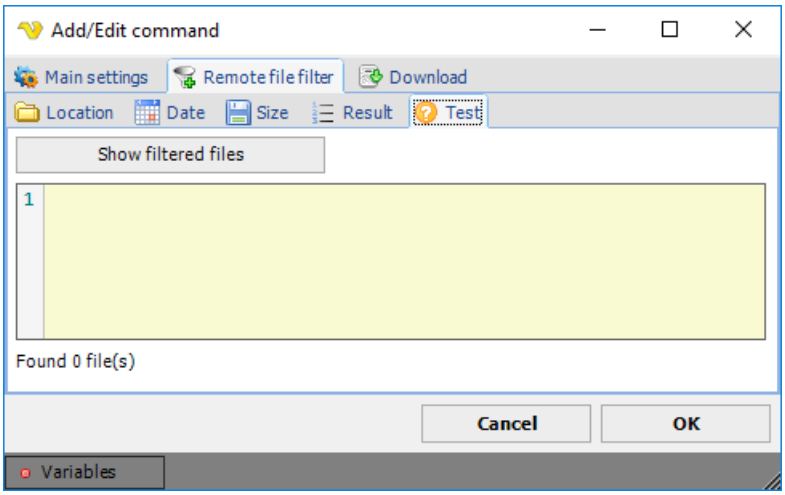
It is possible to sort the result on various values like name, modified date, created date and size. If sort is unchecked the files will just be presented in the order they are discovered.

Limit

Check this if you want to limit the number of rows returned. It will be limited according to the number (which could be a Variable) and the current sorting.

Remote file filter > Test sub tab

In the Test tab you can test your current file filter - if it matches any existing files. The test will use the selected Credential. Click on *Show filtered files* to test filter.



Edit this page

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« File Filter

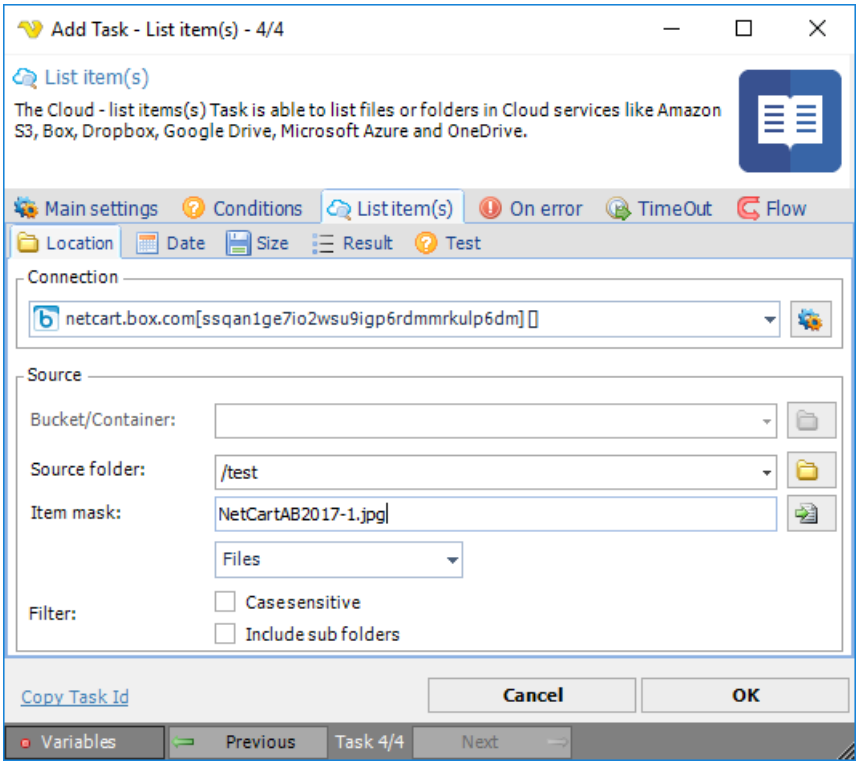
Next
Cloud Remote File Filter »

Cloud Remote File Filter

In order to simplify and unify common parameters, the standard VisualCron Cloud remote filter is used in the below list of Cloud Tasks:

- List item(s)
- Download file(s)
- Delete item(s)

Location sub tab



Connection

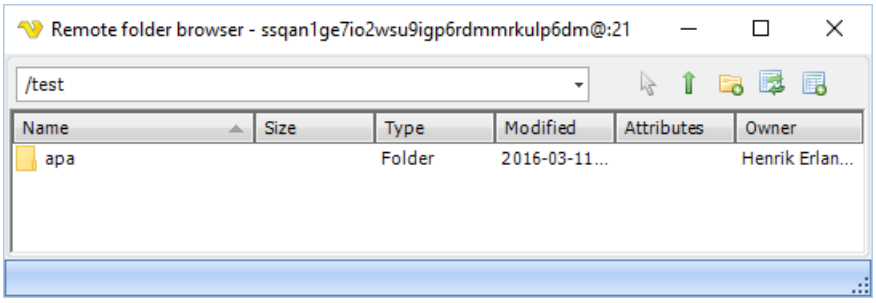
To use a specific cloud service you need to create a Connection first. Click the *Settings* icon to open the *Manage Connections* dialog.

Bucket/Container

This property is used for Amazon Cloud services to specify the Bucket.

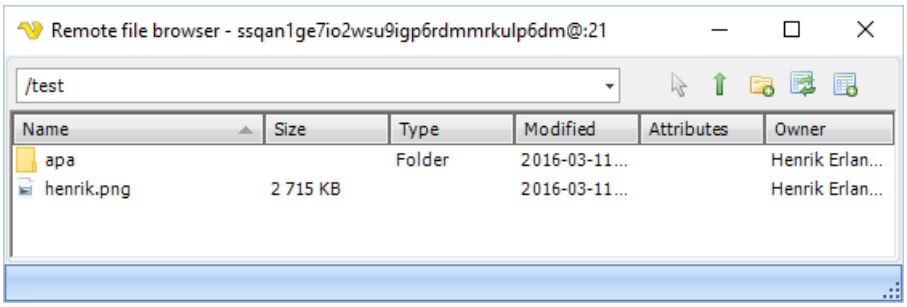
Source folder

This is the remote source folder. Click the *Folder* icon to select the folder.



Item mask

The file/folder mask. Use wild cards like *and ?. Click the* File* icon to select the file.



Filter

Select whether you want to get Files, Folders or All.

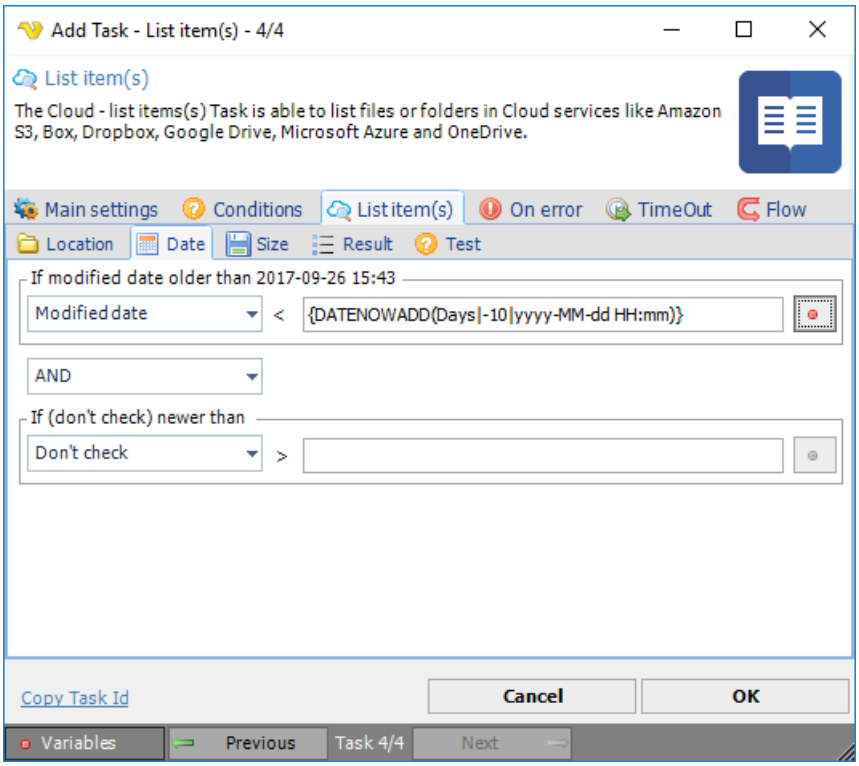
Case sensitive

Check if you want a case sensitive match.

Include sub folders

Check if you want to include sub folders and not just the base *Source folder*.

Date sub tab



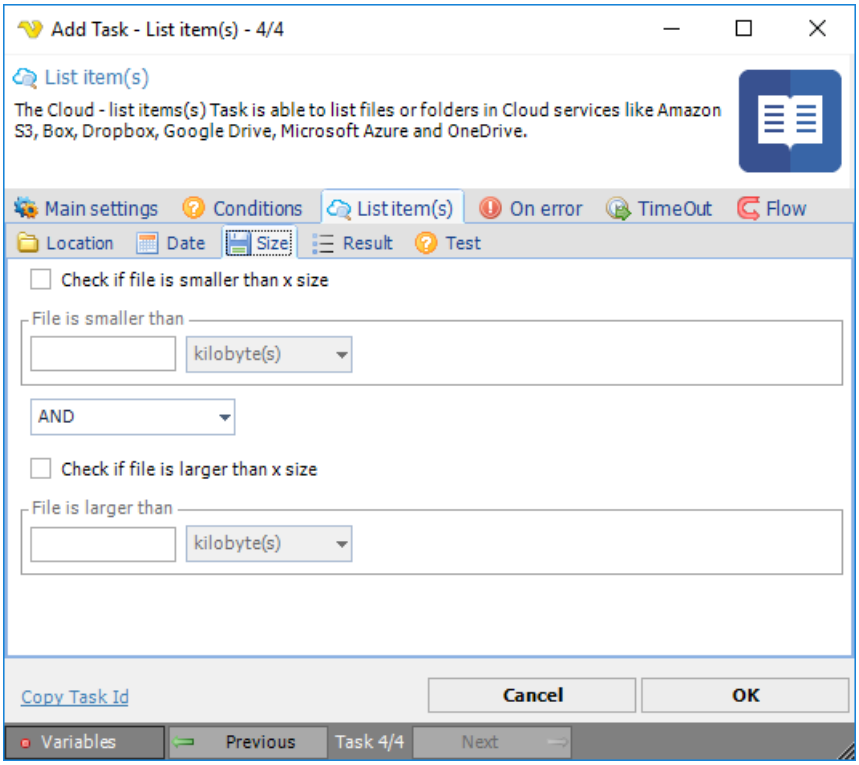
Modified date

Use a Variable to, for example, download files older than a specific modified date.

Created date

Use a Variable to, for example, download files older than a specific modified date.

Size sub tab



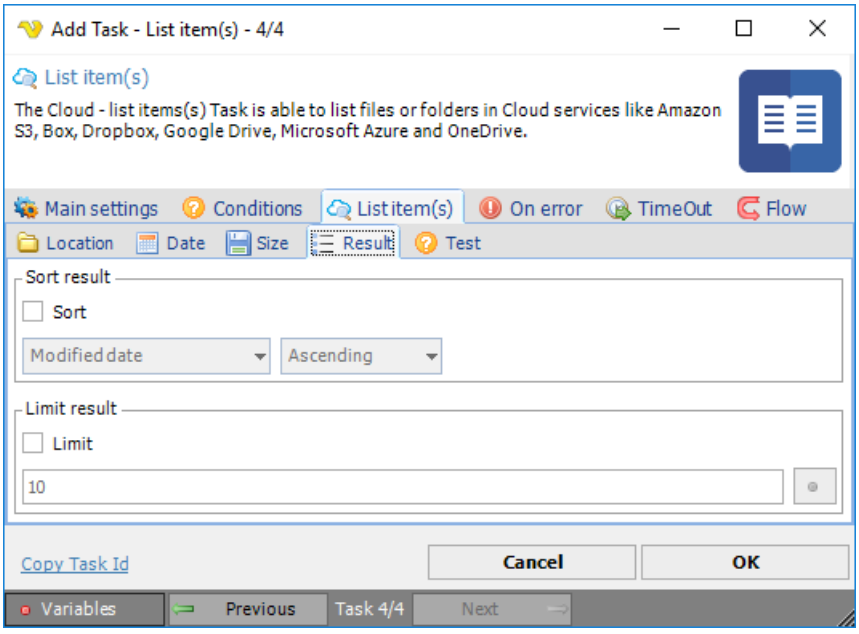
Check if file is smaller than x size

Filter files that are smaller than a value/Variable.

Check if file is larger than x size

Filter files that are larger than a value/Variable.

Result sub tab



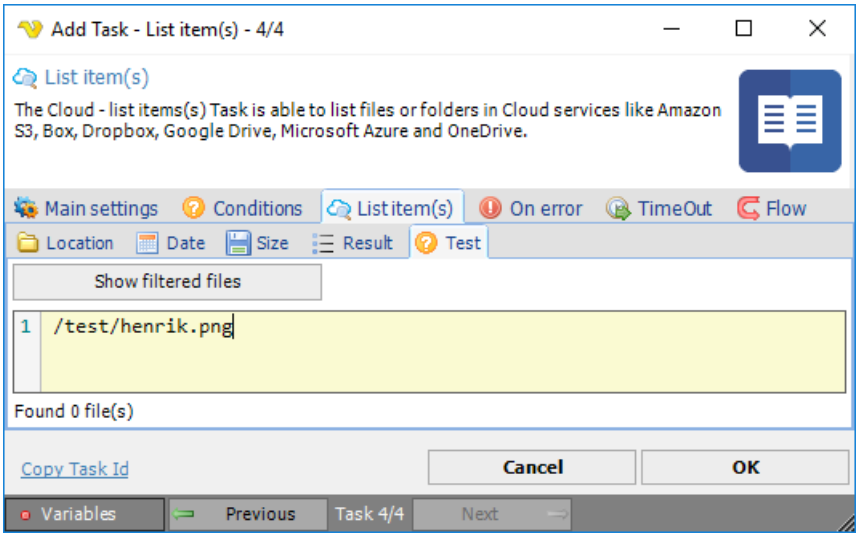
Sort

By checking sort you can sort the found files according to your desired order. This is important if you later want to limit the result to, for example, the 10 newest files.

Limit

How many files you want to return.

Test sub tab



The Test tab lets you test the result of your set filters to see what is really returned.

Edit this page

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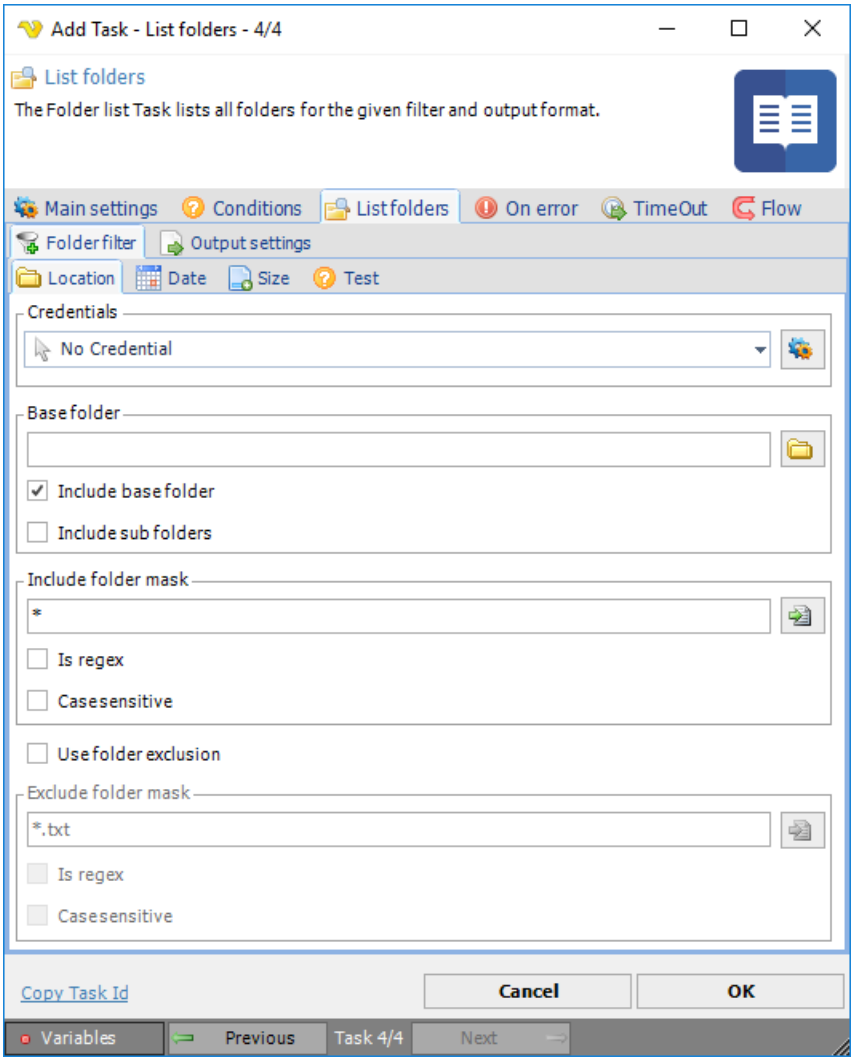
« Remote File Filter

Next
Folder Filter »

Folder Filter

The folder filter is similar to the file filter but filters out folders only. It is used in various Tasks.

Folder filter > Location sub tab



Credentials

To control a remote computer you may need to use a Credential. Normally that Credential is a remote or AD user with "Local logon" unchecked The Credential must match the user name and password of the user that you want to login for. Select a Credential in the combo box or click the Settings icon to open Manage credentials in order to add or edit Credentials.

Base folder

Where the search filter should start finding folders. Click the Folder icon to browse the folder tree.

Include base folder

If the base folder should be included in the result.

Include sub folders

If sub folders of the base folder should be included in the result.

Include folder mask

Wild card for filtering out folder names. Separate multiple folder names with semicolon ";" like this: C:\Temp;C:\test. Click the Folder icon to browse for files.

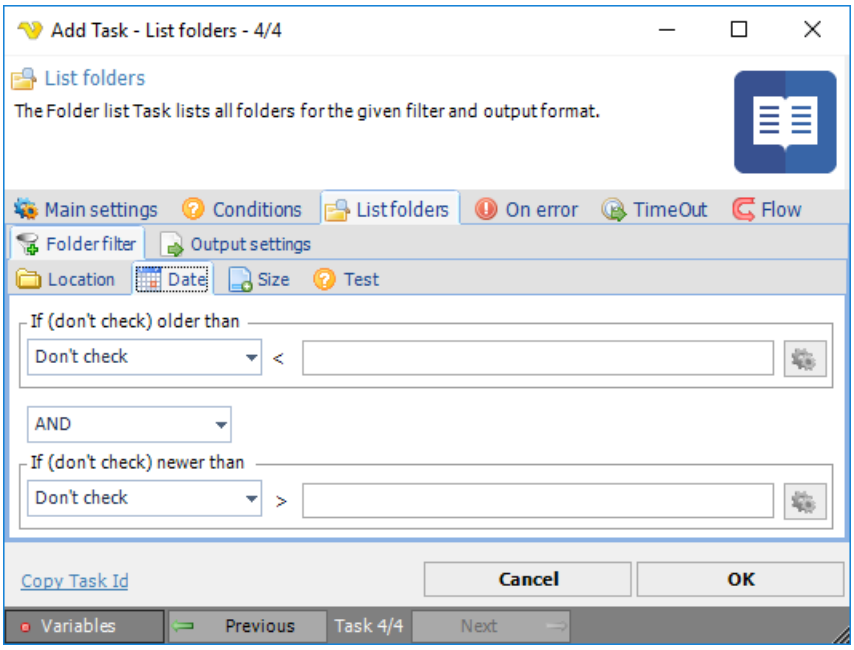
Is regex

If the include folder mask is a regular expression

Case sensitive

If case sensitive search should be done on the include folder mask.

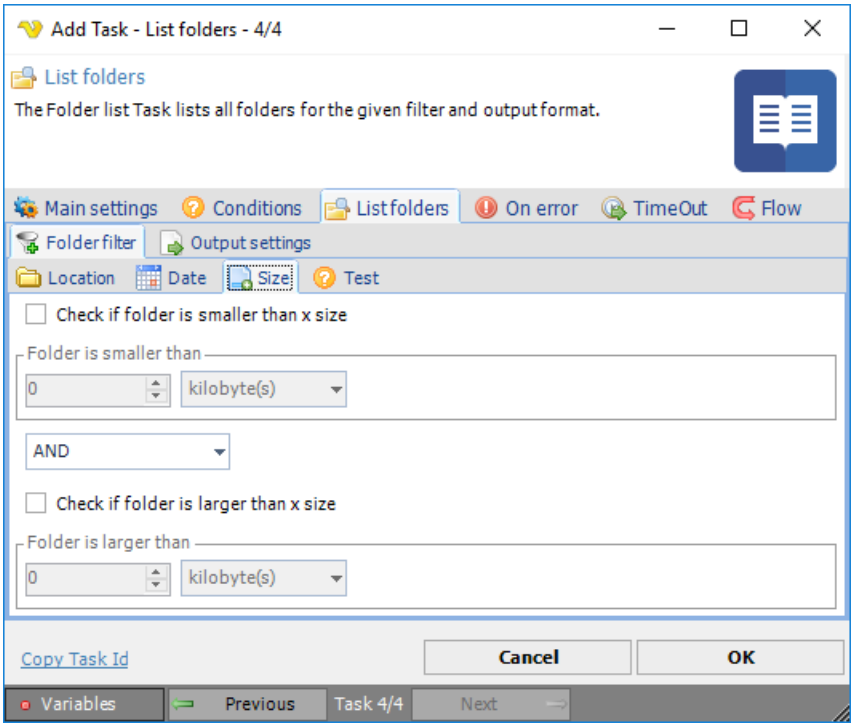
Folder filter > Date sub tab



There are two types of checks *Older than* and *Newer than*. These can be combined with AND/OR or used separately. Only date variables can be used here. Once you have selected a Variable it can be previewed when hovering over text box (tool tip) or in the group caption.

Click on the *Variables* icons to view and select available Date Variables.

Folder filter > Size sub tab



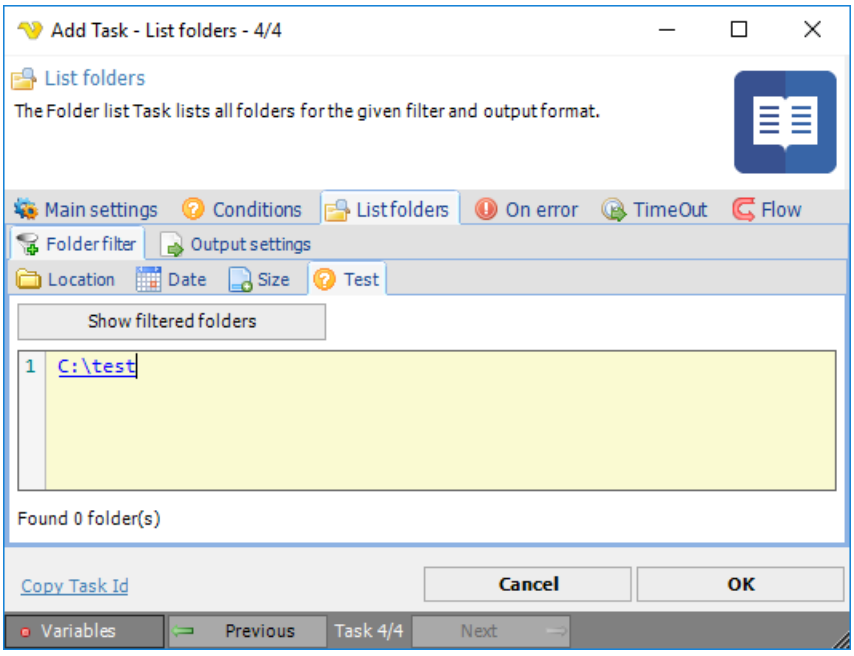
Check if folder is smaller than x size

Select this to enable size checking. Enter a value in the numeric text box and select the size unit to compare with. Default is kilobyte(s). If the size on the folder is smaller than the value you enter in the numeric box it will return true (=folder will be included).

Check if folder is larger than x size

Select this to enable size checking. Enter a value in the numeric text box and select the size unit to compare with. Default is kilobyte(s). If the size on the folder is larger than the value you enter in the numeric box it will return true (=file folder be included).

Folder filter > Test sub tab



Show filtered folders

The test will use the selected Credential and lets you test your folder filter - what folders it returns based on the filter.

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« Cloud Remote File Filter

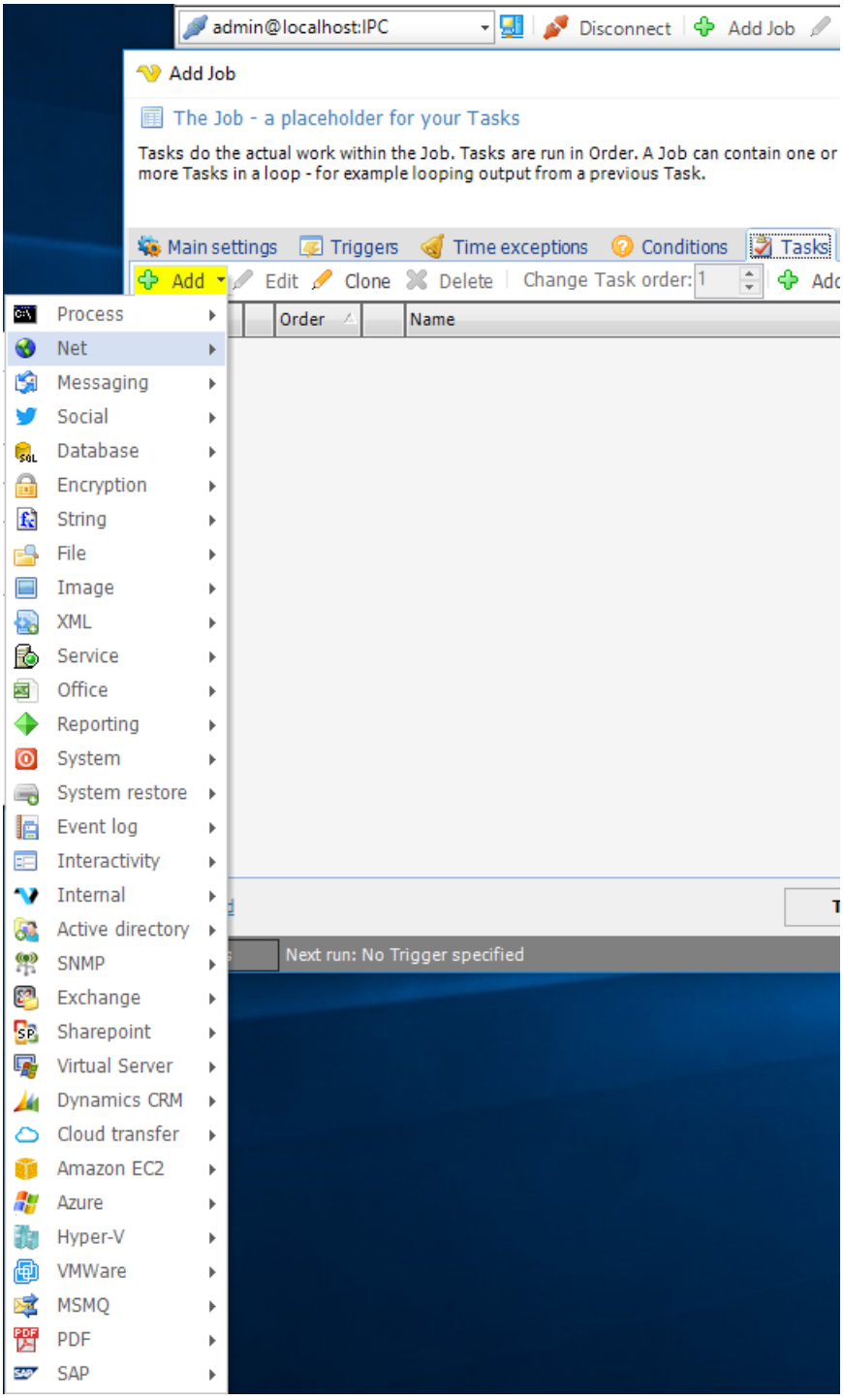
Next
Task - Main Settings »

On this page

Task - Main Settings

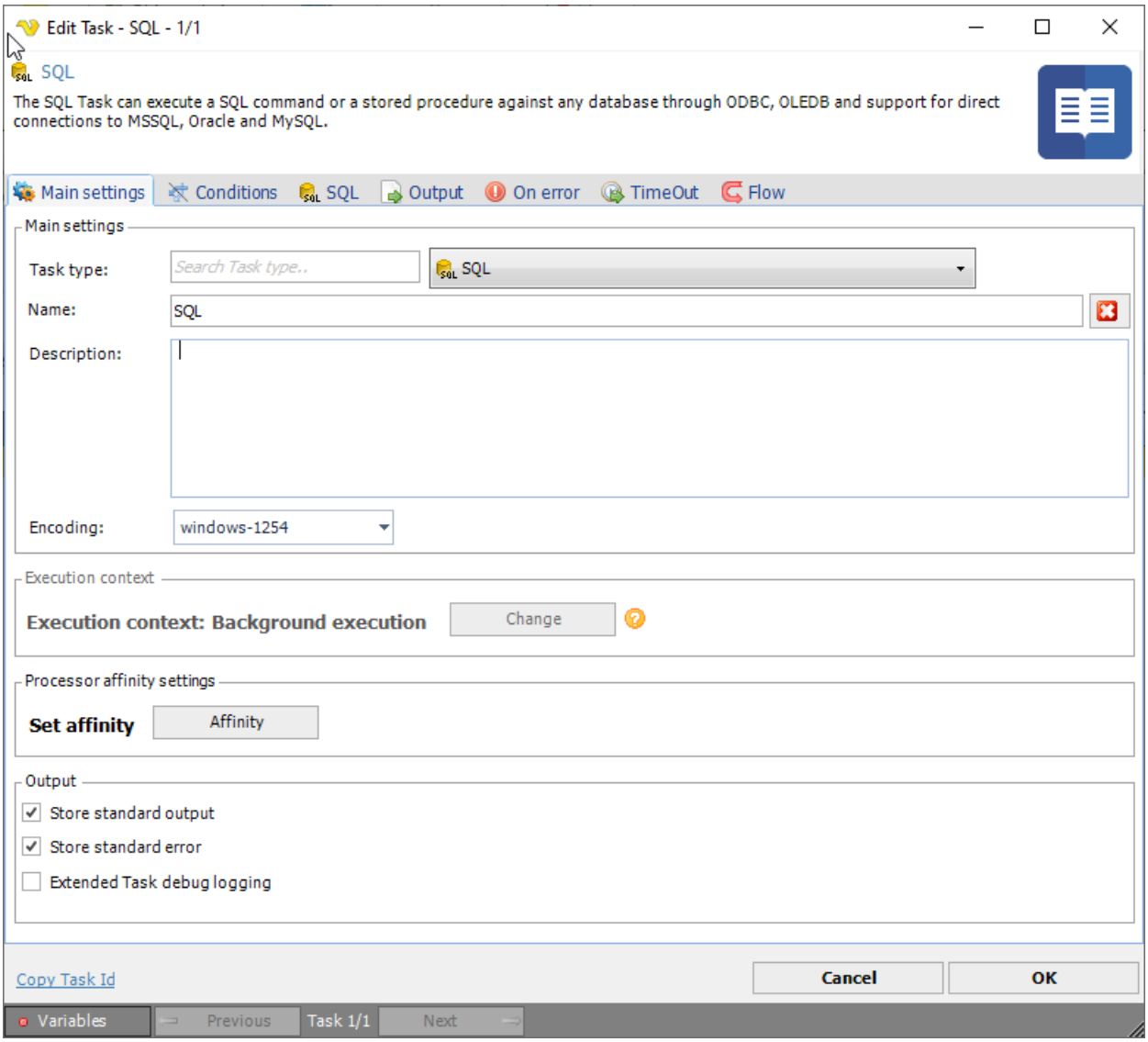
A set of different Task types can be defined using the **Add/Edit Job > Tasks** tab, then press the Add button to display the list of Tasks.

Add Job > Tasks > Add tab



After selecting a Task, in this case the **Internal > Set Job Variable**, the **Set Job Variable > Main Settings** tab is displayed. Also, the selected Task is preset as *Task type* but this may be changed.

Set Job Variable > Main Settings tab



NOTE

If several Tasks are defined for a Job and the Tasks are under execution, the Task information fields will include just executed, present and previous information. In the Add/Edit Job > Tasks window, adjust the Change Task order in which the Tasks are executed.

Encoding

The encoding property sets which encoding to use. This feature is not implemented in all Tasks. If you got any encoding problem please contact support.

Execution context

Click the Change button to set Execution context.

Processor affinity settings

This control if the CPU usage of a Task should be controlled automatically (divided over processors/cores) or if you want to execute on a specific processor/core.

Stor stanard output/error

By default, VisualCron is capturing and storing all output from executed processes. If you don't want this and want Windows to capture all output you uncheck these options.

Extended Task debug logging

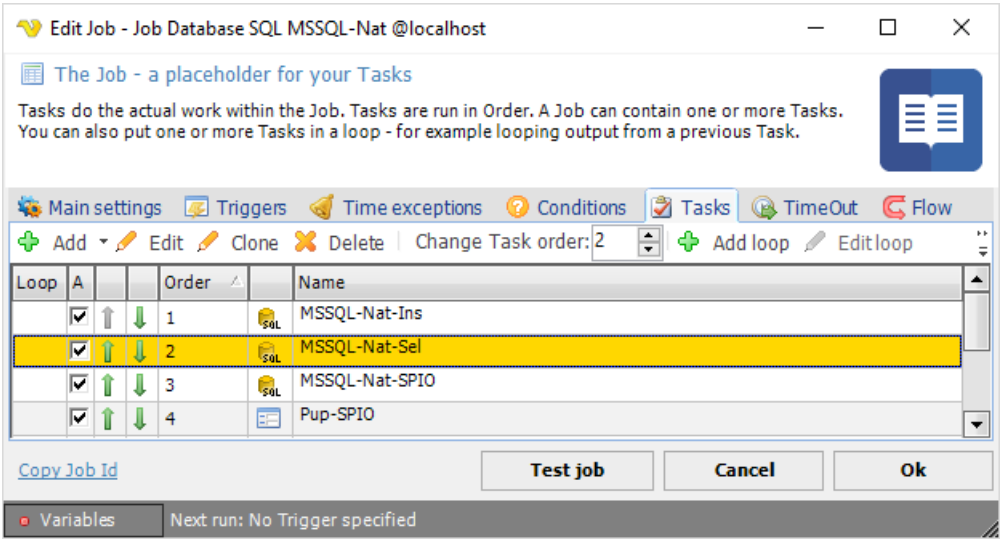
Sometimes support of VisualCron asks you do check this to provide additional debug information for a problem. When checked,

additional debug output will be added to standard output.

Task order

The task order can be changed by either clicking on the up/down arrows next to each Task or select a Task row and edit the Change Task order numeric field.

Edit Job > Tasks tab



Loop

Loops can be added to one or more Tasks, read more about loops here.

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« Folder Filter

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Task - Main Settings »