Introduction

Mining Station is mining algorithm autoswitching solution for Windows based on popular online service whattomine.com. All you need to do is to tell it what coins are to be mined by a rig, what are their hashrates, energy consumption etc. Then you will be able to calculate profit individually for each rig, check which machines are online, what are the coins they mine and switch coins manually as well as automatically on multiple machines at once.

The application is free and open source. You don't have to edit config files meticulously, instead you can tune almost everything via neat and practical GUI.

Mining Station is not for greedy people but for lazy ones. Autoswitch doesn’t necessarily have profitability advantage, it simply makes life easier. Mining Station has a built-in back testing capability, you can accumulate daily price data and later see a chart that shows how the autoswitch performed compared to mining any single coin. The autoswitch averages on long enough periods and because of its random nature - one day it guesses the most profitable coin correctly, the other day it gives false detection and the rig mines below the maximum potential profit for some time - the autoswitch's profit might be even lower than mining a single coin at times.

Mining Station is portable application. To install it simply copy the Mining Station.exe file to the folder of your choice. When migrating to a different machine simple copy this folder. Workers.cfg contains the rig configuration templates and WtmSettings.cfg contains app's settings.

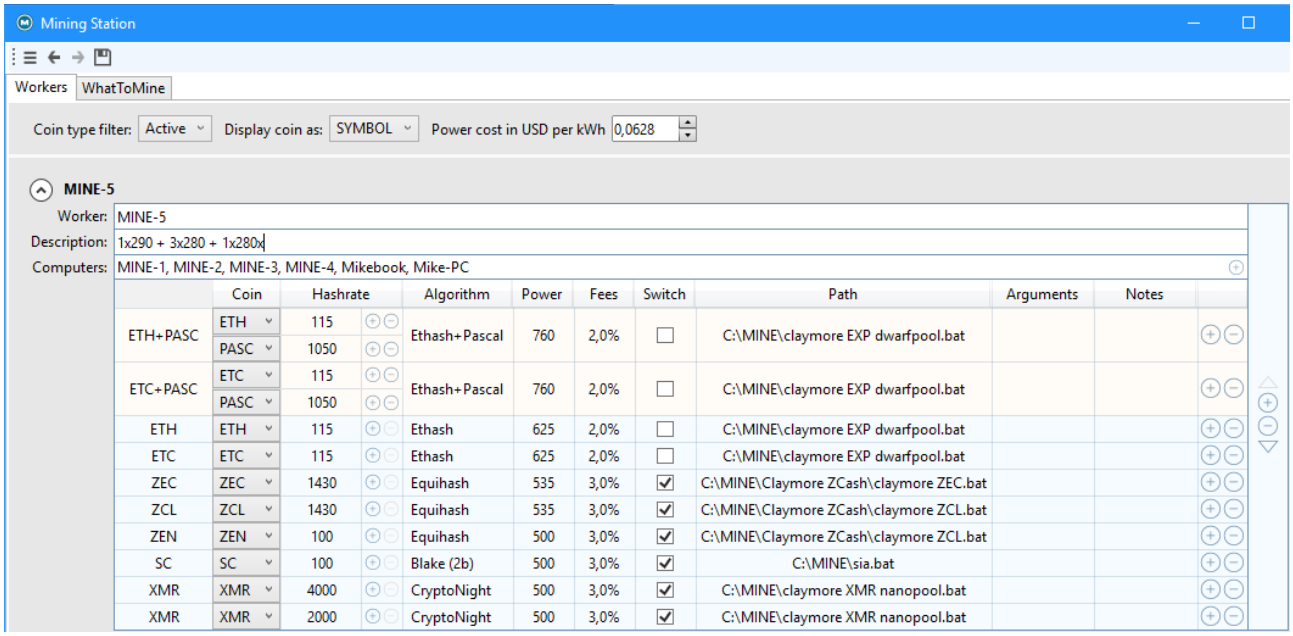
Microsoft .NET Framework 4.5.2 is required for Mining Station to work.

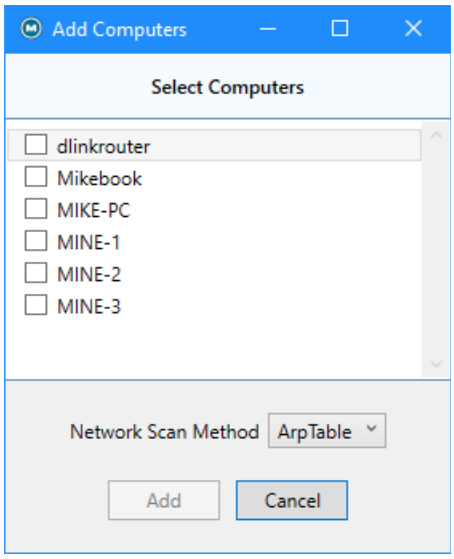
Source Code
https://github.com/MolecularDust/MiningStation

Release
https://github.com/MolecularDust/MiningStation/releases

Workers Tab

A worker – is a mining rig configuration template, that describes which coins a machine can mine, their hashrates, energy consumption and .bat files that launches mining software for each coin. One worker can be applied to multiple machines, so if you have 20 rigs of identical configurations you describe the template only once.





To add computers simply type their names separated by comma in **Computers** field or use GUI via + button. The latter has two different LAN scanning algorithms. Net32Api detects what the CMD command "net view" can find, while ArpTable detects computers by their IP addresses, similar to "arp - a" command.

- **Coin**

  Choose coin from a drop-down list. Gray are the coins marked as inactive by whattomine. com, which means that they have no fresh price data. You cannot calculate profitability for such coins.

  To create a dual coin you need to press + in **Hashrate** column. Technically you can create even triple coins and more.

- **Hashrate**

  Set hashrate for the coin here. For profitability to be calculated correctly the hashrate has to be updated regularly when the mining software is updated, the hashrate drops with new coin's epoch etc.

- **Algorithm** - this field is read-only.

- **Power**

  Set how much power in Watts the rig draws from the mains when mining this coin here.

- **Fees**

  Extra expenses such as pool's commission, mining software developer fee, rejected shares count etc. Set percentage value to be deducted from revenue.

- **Switch**

  AutoSwitch algorithm only uses those coins that have this checkmark. You can add many coins to the worker, you'll be able to switch all of them manually and calculate profits, but AutoSwitch will only look for the most profitable coin among those with this checkbox ticked. Use right mouse button to select all coins or none at once.**Path**

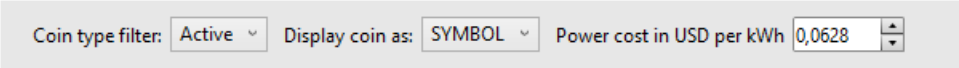
  Enter the path to .bat or .exe that launches the miner application. You can type that manually or browse folders by choosing Select File from right mouse button menu. Also you can open the folder that contains this file by selecting Open In Explorer from the same menu.

- **Arguments** - enter command line arguments here if you use an .exe.

- **Notes** - put comments here.

New coins can be added with the plus button at the right end of the line. You can swap coin lines by dragging them, even between different workers.

Workers Tab Settings



- **Coin type filter**

  Determines which coins are displayed in drop-down lists.

  All - all coins available at whattomine.com.
  Active - only “active” coins, i.e. those that have up to date price data.
  GPU, ASIC - coins that are displayed at WTM in GPU and ASIC sections.

- **Display coin as**

  Determines how coins are named in drop-down lists.

  Name — full name, for instance: Ethereum.
  SYMBOL — ticker symbol: ETH.
  Name (SYMBOL) — name and ticker symbol: Ethereum (ETH).

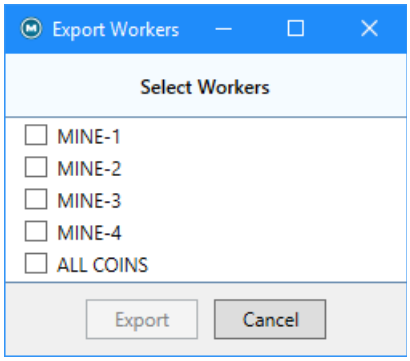
  If whattomine.com is not accessible the coins are displayed without the drop-down lists. In theory, their names are editable, you only have to respect the name and ticker symbol format, e.g. Ethereum (ETH), however it is wiser to wait until WTM is back online, this way you are guaranteed against typos.

	Coin	Hashrate
ETH+PASC	Ethereum (ETH)	115
	Pascalcoin (PASC)	1050
ETC+PASC	EthereumClassic (ETC)	115
	Pascalcoin (PASC)	1050
ETH	Ethereum (ETH)	115

- **Power cost in USD per kWh**

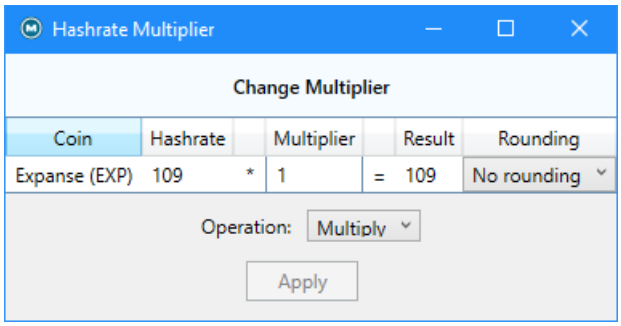
  Enter power cost here.

Export / Import Workers



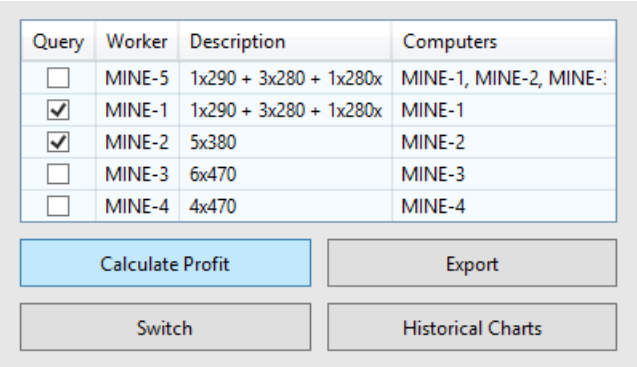
This function can be accessed by right mouse clicking anywhere in the worker table or over its header. It is useful for saving selected workers externally in a file and importing them back when necessary. This comes handy for playing with some experimental settings, for instance, testing different overclocking parameters, tweaking miner arguments etc looking for maximum profitability.

Hashrate Multiplier

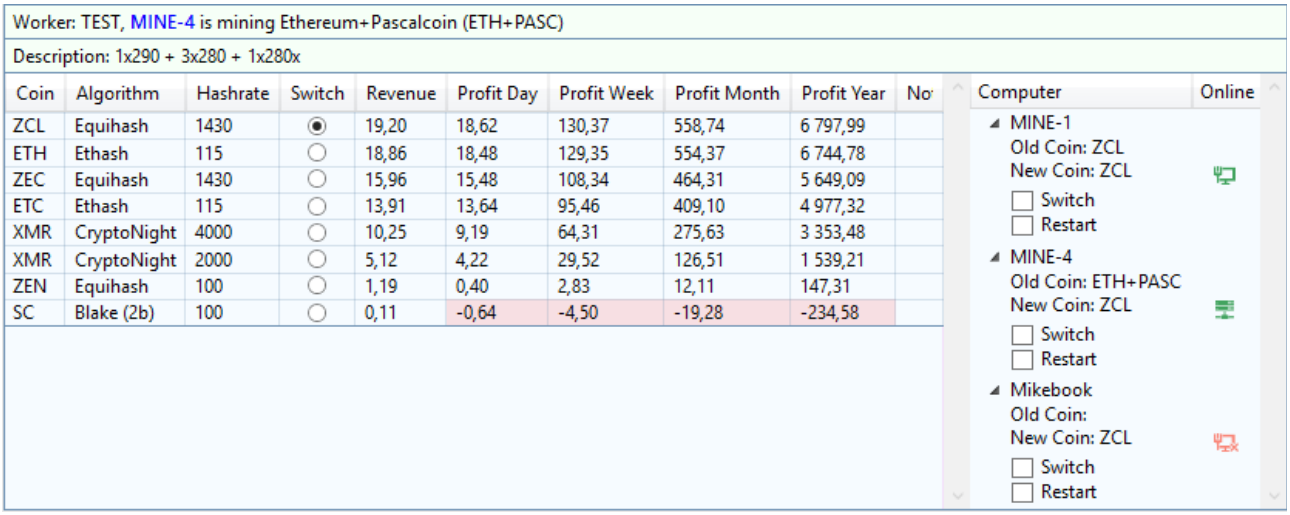


Sometimes WhatToMine updates hashrates for some coins, for example, changing Kh/s to Mh/s etc. This results in incorrect calculations in Mining Station. A coin may become, for instance, 1000 times more profitable one day. This function saves you headache updating hashrate manually in all coin's instances across different workers. In any worker right click over the row with the «rogue» coin and select **Hashrate Multiplier** in a pop-up menu to access this window. Then enter the multiplier or divider, choose rounding precision and click **Apply**. The application will find all instances of this coin in every worker and correct the hashrate.

WhatToMine Tab



After creating some worker templates and saving them by pressing the diskette icon you have to select the workers you wish to calculate profit for in the right top corner of WhatToMine tab. Then press **Calculate Profit** button. Mining Station will query whattomine.com and calculate profit for all the coins in selected workers. Revenue is gross income without deduction of fees and energy cost, while Profit columns represent net profits. The header of the worker that contains the computer that launches the app is highlighted greenish. The online status of a rig that runs Mining Station in proxy server mode is displayed with a special icon (MINE-4 in the picture below).



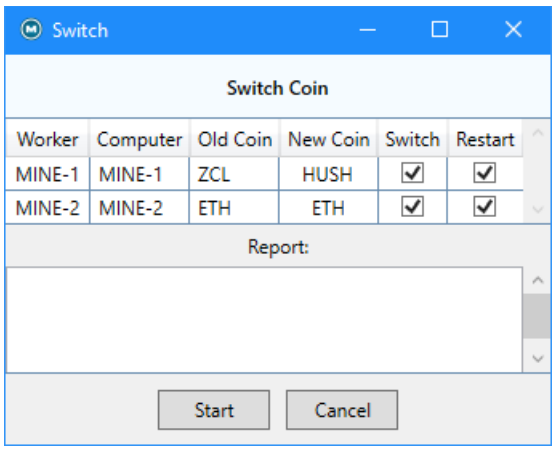
Switch

Use this button to switch the mined coin manually.

In the right pane of a profit table there is the list of computers that this worker can be applied to. When calculating profit Mining Station also scans local network and acquires information on every computer and the coins they mine. You can see it expanding the triangle near the commuter name or via the right mouse button menu.

Next select the coin to switch to in the left part of the profit table and tick Switch ckeckboxes of those machines in the computer list you want to switch the algorithm on. Check Restart boxes for those machines you need to be restarted.

Next press the big Switch button. Mining Station will throw a warning if the new coin's profitability is negative or below that of the presently mined coin or if the old and the new coin are the same.



Then you will see the summary window as shown on the left. Pressing Start will switch coins on selected machines and restart them if Restart box is checked.

It is important to understand that Mining Station does not launch miner app, nor does it control its process. "Switching" simply means that the application creates a shortcut to .bat or .exe specified in worker template for a particular coin. This shortcut is located in current user's system Startup folder:

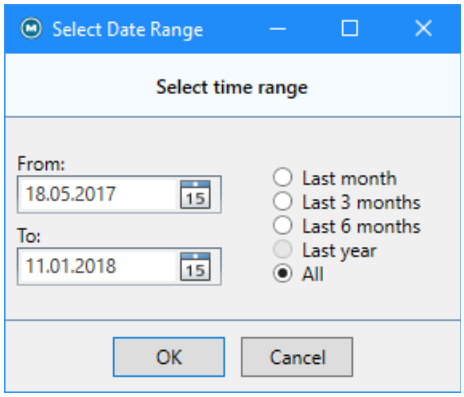
C:\Users\Your_User_Name\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup.

Therefore, for this computer to actually start mining the new coin it has to be restarted. If the very machine that you run Mining Station on is among those to be restarted, you need to wait until other machines report success with green checkmark or show error message and it's only then that you should press the Restart button that will emerge red.

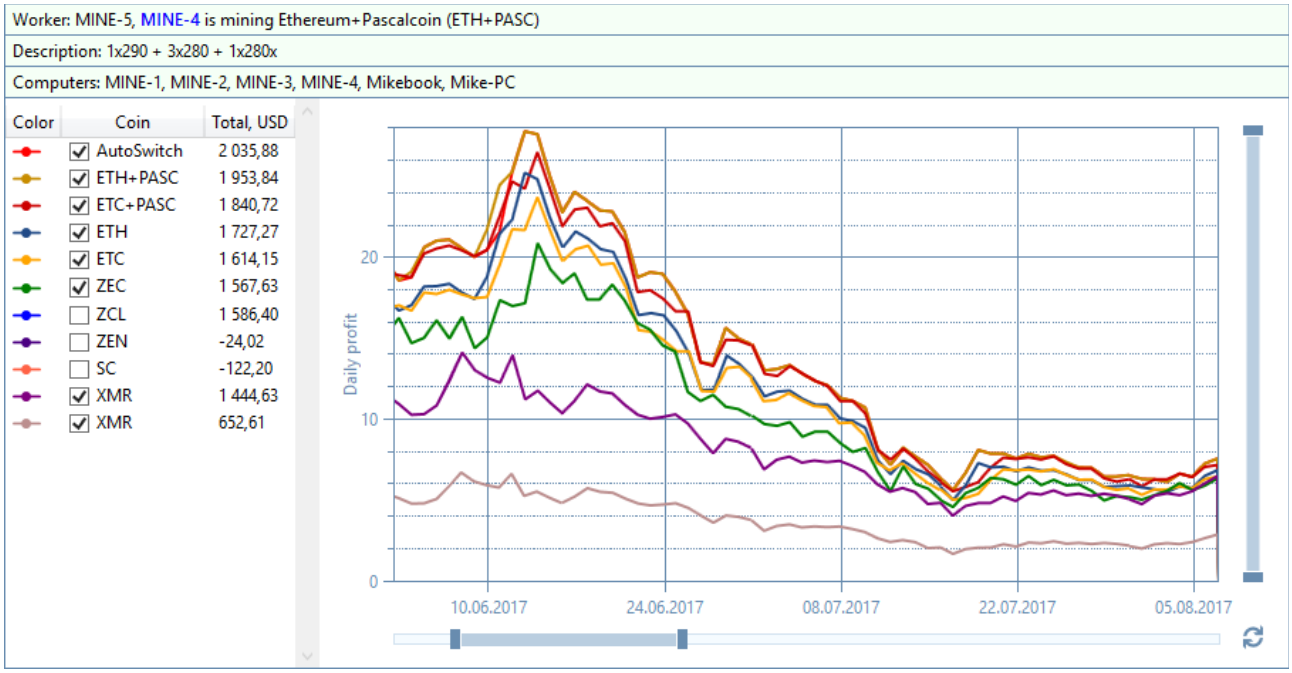
Historical Charts

This button shows the charts of historical profitability for selected workers. For this function to work it is necessary that Accumulate Historical Prices option be turned on and set up properly. And local data base must have records for at least few days

Firstly, you have to specify a time range for the charts in a pop-up window.



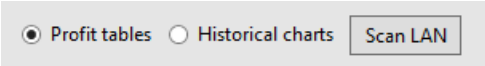
Mining Station will display the graphs of historical profitability for every coin of selected workers and calculate total income for the time range specified previously. AutoSwitch graph emulates the daily switching to the most profitable coin. The graph takes into account the Mine at least XX hours before switch parameter so you can see the difference in profitability if you switch, for example, daily or weekly. In real life this difference will be negligible on long enough time intervals because of averaging.



Export

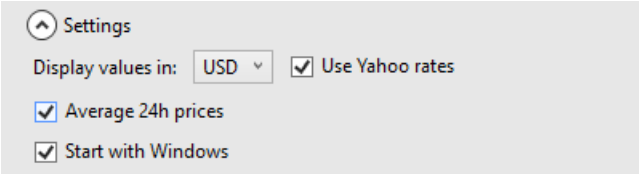
Allows to export the profit tabels as csv, xml or json file.

WhatToMine Tab View Controls



Profit Tables and **Historical Charts** radiobuttons switch between the profit tables rendered from WTM data when you press **Calculate Profit** button and the historical profitability charts rendered from historical prices archived in local data base. **Scan LAN** button refreshes the information about the local network computers and the coins they mine in the right pane of the profit tables.

Settings



- **Display values in** - sets the currency in which the prices are displayed in profit tables. By default USD and BTC are two available options, their values are obtained from whattomine.com. If **Use Yahoo Rates** is checked the world currencies are fetched from yahoo.com as well.

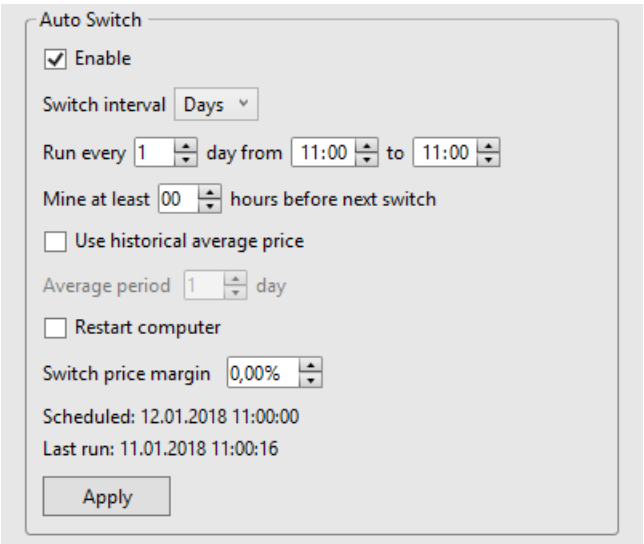
- **Average 24h prices**

  If checked the 24h average prices of BTC and the presently mined coin are used. This is more precise but if you need to reproduce the default behavior of whattomine.com this option should be switched off. Besides, Mining Station spares WTM queries so that if, for example, there are three ETH instances across all workers with hashrate of 80, 100 and 120, MS makes only one query with hashrate of 100 and extrapolates the last two. This may introduce a tiny rounding error, too.

- **Start With Witndows**

  Sets Mining Station to start automatically with Windows via system's registry. It's not mandatory to save settings this time. Just check or uncheck – it will be applied on the fly.

AutoSwitch



- **Enable** - enables AutoSwitch.

- **Run every 1 day from 12:00 to 15:30**

  The autoswitching occurs daily at random time between 12:00 and 15:30. The randomness is useful if you have dozens of machines. If all of them query whattomine.com server at the same time the DDOS protection will ban your IP. To avoid it the query time is randomized.

You can run AutoSwitch on hourly basis as well, for example, from 00 to 30 minutes of every hour.

- **Mine at least XX hours before next switch**

  Mining Station will mine the given coin for the set amount of hours without switching again. If the bot's decision have proven to be wrong and the coin price drops after switching you cannot switch to some other coin immediately. The pool usually has some payout limit, so that if you switch without meeting that threshold your funds end up being frozen at the pool. To ensure smooth autoswitching set this value to as many hours as needed for the rig to mine the slowest paying coin enough time to receive payment from the pool.

- **Use historical average price**

  This is price averaging mechanism based on historical prices. For this function to work the Accumulate Historical Prices option will be turned on automatically. You also have to set up the price backup time for that option manually.

- **Average Period X Days**

  Firstly, you check Use historical average price and then select average period, for instance, 5 days. Mining Station will monitor the prices of all coins in all workers on a daily basis and save them to local data base. If the data base has enough price data for 5 consequent days back from now the average price is used when comparing coin profits. This allows to compare smoothed out prices and to reject short term peak values.

- **Restart Computer**

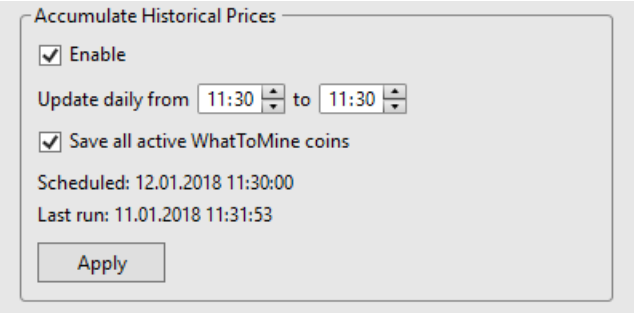
  This checkbox tells the application that this machine needs to be restarted so that it starts mining the new coin. See the description of how Mining Station handles coin switching in Switch section above.

- **Switch price margin X%**

  Represents another mechanism for smoothing out price peaks. If the profit of the presently mined coin is, for example, 100 USD and this parameter is set to 5%, then if other coin's profit doesn't exceed 105 USD the switch won't be triggered. The AutoSwitch algorithm will consider this price difference insignificant.

AutoSwitch records its messages to “switch.log” file.

Accumulate Historical Prices



- **Enable** - turns on the historical price accumulation and storage. If you cannot turn off this checkbox make sure that **Use historical average price** in AutoSwitch settings is unticked**.**

- **Update daily from XX:XX to YY:YY —** Records prices of all coins in all workers to local data base daily at a random time from the specified interval.

  For AutoSwitch, Use historical average price and Accumulate Historical Prices to work together correctly follow the below guideline. Assume that AutoSwitch is set up to fire daily. First the local price stats must be saved at some time, for example, your rigs are set up to Accumulate Historical Prices from 10:00 to 11:00. Next you need a pause in case some error occurs or WTM server is inaccessible. Altogether the bot makes 10 attempts to connect to WTM for approximately 2.5 hours. Next, when you have the local price stats ready you may want to trigger AutoSwitch, for example, from 15:00 to 16:00. This will make sure that the data for average price calculation is always acquired beforehand.

- **Save all active WhatToMineCoins**

  If checked the prices of all coins marked at whattomine.com as "active" are saved locally, not only those that are mentioned in workers.

The local price data are stored in LiteDB format in “Mining Station.db” file. Use LiteDB Explorer utility to browse them offline. Accumulate Historical Prices records its messages to “historical_data.log” file.

Advanced Settings

- **WhatToMine request interval XXX millisesonds**

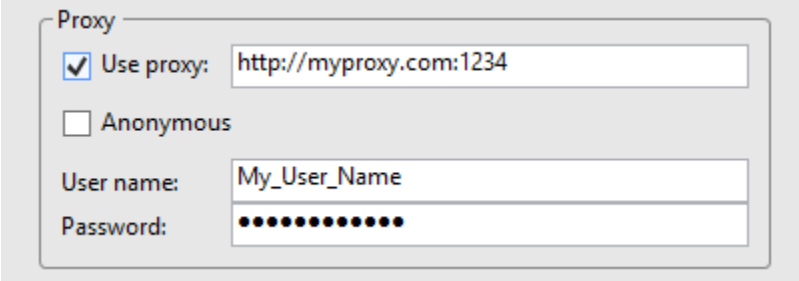
  Makes a pause for the specified time in milliseconds before every new request to whattomine.com. The developer of WTM posts the current RPM (requests per minute) limit of the server in official bitcointalk topic sometimes. If you encounter errors similar to "429 Too Many Requests" this value should be increased. If the developer writes, for instance, that the limit is 80 rpm the interval between requests should be set to 60*1000/80 = 750 ms or even higher in case of DDOS attacks and similar access problems, in these situations the value should be chosen empirically.

  The dynamic interval is bit trickier. You have to open WtmSettings.cfg file located in application's folder and edit the following values:

  "WtmRequestInterval":0,
  "DynamicRequestInterval":750,
  "DynamicRequestTrigger":50,

  If WtmRequestInterval (which is the setting discussed here, other two are not present in GUI) is 0 then if Mining Station makes 50 requests or more it increases the request interval to 750 ms. If WtmRequestInterval is other than 0 it is always forced regardless of the number of requests, the dynamic settings are ignored in this case. Described above is the default behavior of MS.

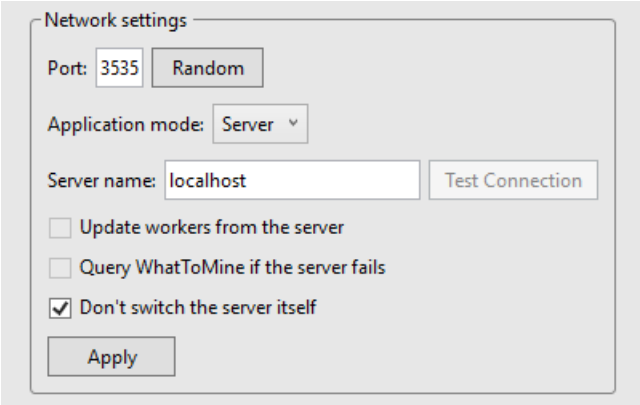
Proxy



If access to whattomine.com is blocked where you are you may want to use a third party proxy server.

Enter full proxy address as http://myproxy.com:1234 in **Use Proxy** field. If your proxy server requires user credentials make sure **Anonymous** is unchecked and enter your user name and password. The password is stored encrypted, the encryption is based upon your hardware, Windows version, user name and password. Should you copy WtmSettings.cfg to a different machine, switch to a different user or change system password you will have to enter the proxy password again. If you need to copy Mining Station settings to multiple machines use the built-in function Mass Update/Update Settings in app's menu. This will re-encrypt the proxy password on every machine on the fly.

Network Settings



- **Port XXXX -** TCP port that Mining Station instances on different computers use to communicate with each other. The port must be identical on every machine. Port 3535 is used by default, if that is occupied in your network you may use any other value between 0 and 65535 or generate port number with **Random** button.

- **Application Mode**

  Mining Station's autoswitching algorithm has three modes: Standalone, Server and Client. In Standalone mode MS instance is autonomous and self-sufficient. In Server mode one computer becomes a proxy server that connects to whattomine.com, receives price data and stores them in a local cache. Other computers are set up in Client mode so that instead of connecting to WTM directly they first try to obtain price data from this local cache server. On server AutoSwitch should be set up to an earlier time than on clients. For example, if switching daily, the proxy-server receives data off WTM from 10:00 to 11:00 and clients query the server from 12:00 to 13:00.

The Server machine's online status is shown with a special icon in the right pane of profit tables.

On Client machines you have to specify the server's host name. Use **Test Connection** button to check whether the server with this name is up and running.

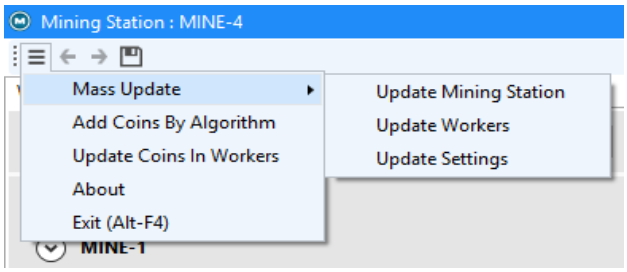
- **Update workers from the server –** is active only in Client mode. If checked the client machine tries to copy workers from the server. This way you edit coins and other settings in workers on the server machine only and the client machines synchronize them automatically. A manual alternative for Standalone mode is located in app's menu: Mass Update/Update Workers.

- **Query WhatToMine if the server fails –** is active only in Client mode. If checked and the client cannot access the local proxy server it attempts to obtain price data from whattomine.com directly. Please note that if you have dozens of machines sharing the same IP address and all of them start bombarding WTM with requests at the same time your IP will be blocked by WTM most likely.

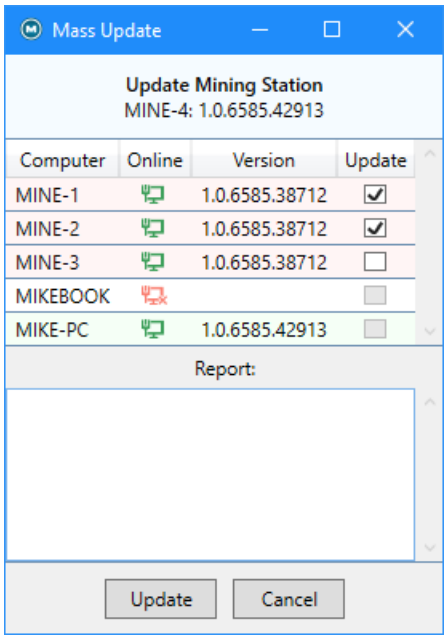
- **Don’t switch the server itself –** is active only in Server mode. Check this box if you want the server not to switch coins on itself. You may want that if you run Mining Station proxy server on a separate machine that does not mine anything. This will prevent .bat shortcuts in system Startup folder that launch miners at boot.

Menu

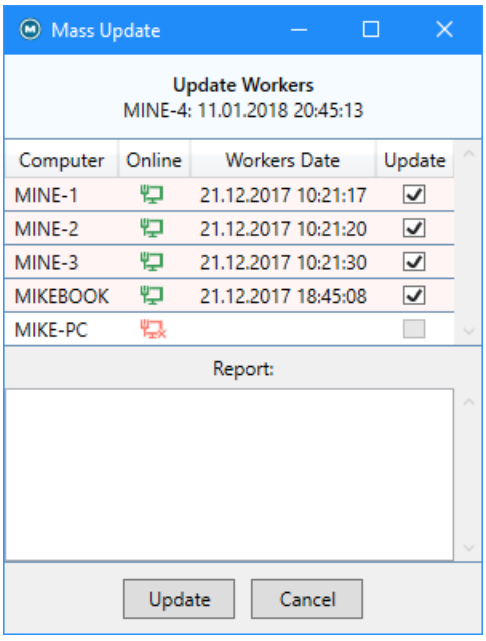
Left and right arrows provide Undo-Redo functionality when editing workers or settings. The diskette icon is for saving workers and settings.



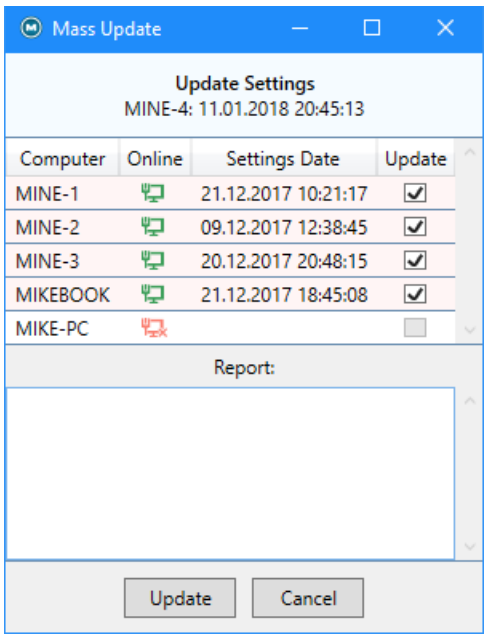
Mass Update – is used for mass updating Mining Station and its settings over local network.



- Update Mining Station – the mass update of the application. This function copies the current Mining Station instance to selected machines over local network. The green highlight means that the app is up to date on this computer.



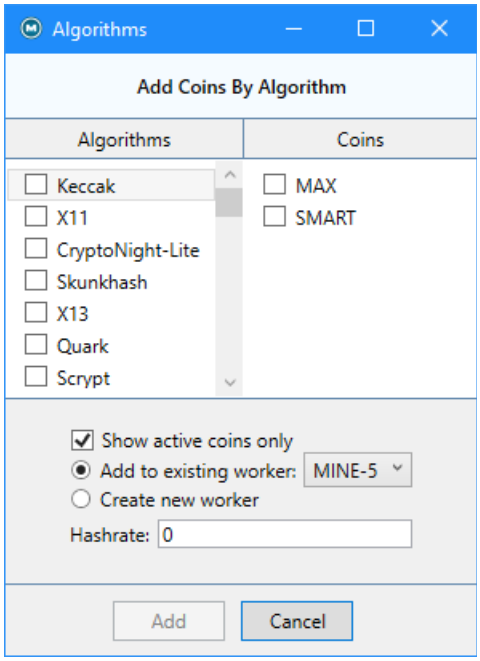
- **Update Workers** – the mass update of the workers. This function copies the worker templates from this machine to other selected local network machines. массовый апдейт воркеров. Копирует шаблоны воркеров, описанные на данной машине, на другие выбранные машины в локальной сети.



- **Update Settings** – the mass update of the app's settings. This function copies Mining Station settings from this machine to other machines over local network. Be cautious if you use Client/Server scheme, the server settings should not be copied to the client and vice versa, because AutoSwitch time on these should be set differently, see Application Mode section.

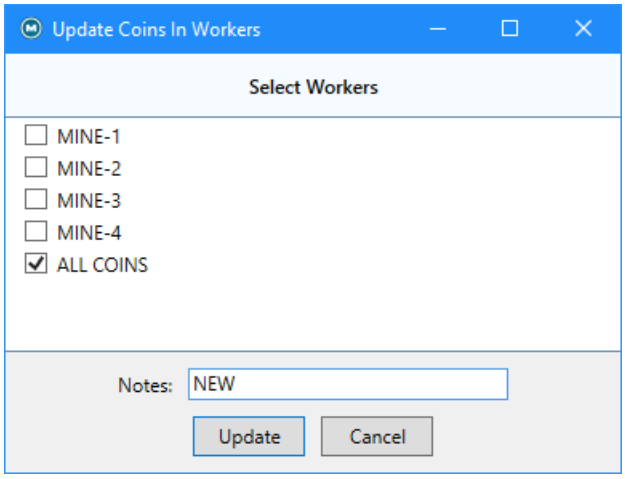
Add Coins By Algorithm

Allows to add WTM coins sorted by algorithm to an existing worker or to create a new one with chosen coins.



- **Show active coins only** – only displays coins that have "active" status on WTM, i.e. coins that have actual price data.
- **Add to existing worker** – adds coins to the worker from the drop-down list.
- **Create new worker** – adds coins to a new worker. It will be named "NEW WORKER" automatically.
- **Hashrate** – sets the default hashrate value for the new coins.

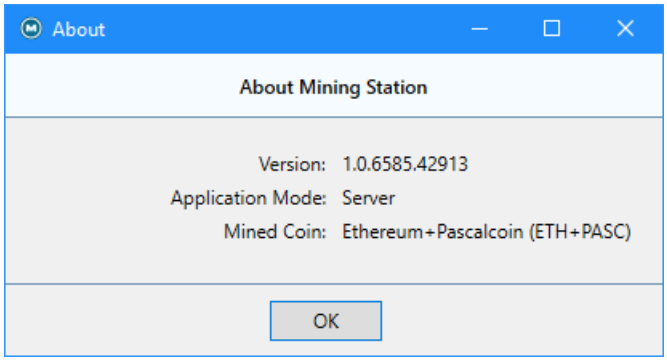
Update Coins In Workers



This function works together with **Add Coins By Algorithm**. The idea here is that you first create a worker that contains all algorithms you are interested in monitoring thereof and then you use this function to update them. It queries WhatToMine and if there are any new coins among the algorithms of the worker it adds them to the list. The **Notes** field is used to add a commentary so that the new coins could be found in the list easily.

About.

Pops up a window with Mining Station version, application's proxy server mode and the name of the coin mined presently.



Exit.

Exits the application.

Uninstalling Mining Station

Download and execute this .bat file as administrator:
https://github.com/MolecularDust/MiningStation/blob/master/unistall-mining-station.bat

This will delete Mining Station registry entries and any left-over shortcuts in system's Startup folder.

Then simply delete the folder that contains “Mining Station.exe”.