

## Windows ADK: Checking Run-Time License Key Activations with the Volume Activation Management Tool

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Windows 10 ALL

Ah! Windows Activation. We have said it before, and we will say it again: Windows activation for Embedded/IoT systems is as useful as putting screen doors on a submarine. From MS-DOS to Windows Embedded Standard 7 (WES7), Embedded/IoT OEMs didn't have to worry about activating each system before shipping. Starting with Windows Embedded 8 Standard, activation became a requirement. There were some OEMs, like slot machine vendors, who have to do an image CRC check on OS startup. These OEMs couldn't move off of WES7 because activation would break the CRC check. Microsoft compromised with Windows 10. A run-time license key (aka Product Key) is still required to ship a product; but any Windows 10 device that doesn't connect to the Internet, will remain in a "Deferred Activation State". As soon as a system connects to the Internet for the first time, the activation mechanisms kick in, but sometimes it doesn't. This can be trouble for Embedded/IoT OEMs if they are not careful. Here are a couple of scenarios:

Scenario 1: A system gets connected to the Internet at some point and is later disconnected without being activated. If the system doesn't get activated after 30 days, an overlay appears on the screen saying that activation is required. Not good if this happens at a customer site; especially if you are trying to hide that Windows is running on the system.

Scenario 2: If the Unified Write Filter (UWF) is used to protect the system's C drive. The system must be activated before UWF is enabled. Each run-time license key is limited to 50,000 activations, which is enough for most OEMs. If the system fails to be activated, UWF is enabled, and the system is connected to the Internet, each time the system boots, activation is attempted in the background. The activation information gets put into the system, but it will be lost on a reboot because UWF is enabled. All writes to the disk are lost on reboot. So, you can burn through the 50,000 activations for a key pretty quickly in this scenario.

Activation is not fun, but it has to be addressed. If you are doing a CRC check on startup, where the system is on a closed non-Internet-connected network or your system has no networking connectivity at all, you don't have to activate the system. From the earlier example, slot machines fall into this category. Everybody else will have to activate each system in manufacturing before it ships to the customer. For those in this category, the recommendation is to have each system in production connected to the Internet. When each system boots the first time, the system will be activated. Fielded systems that get a full OS replacement will have to be activated, which throws a wrinkle into the number of activations, as well as, how the system gets activated.

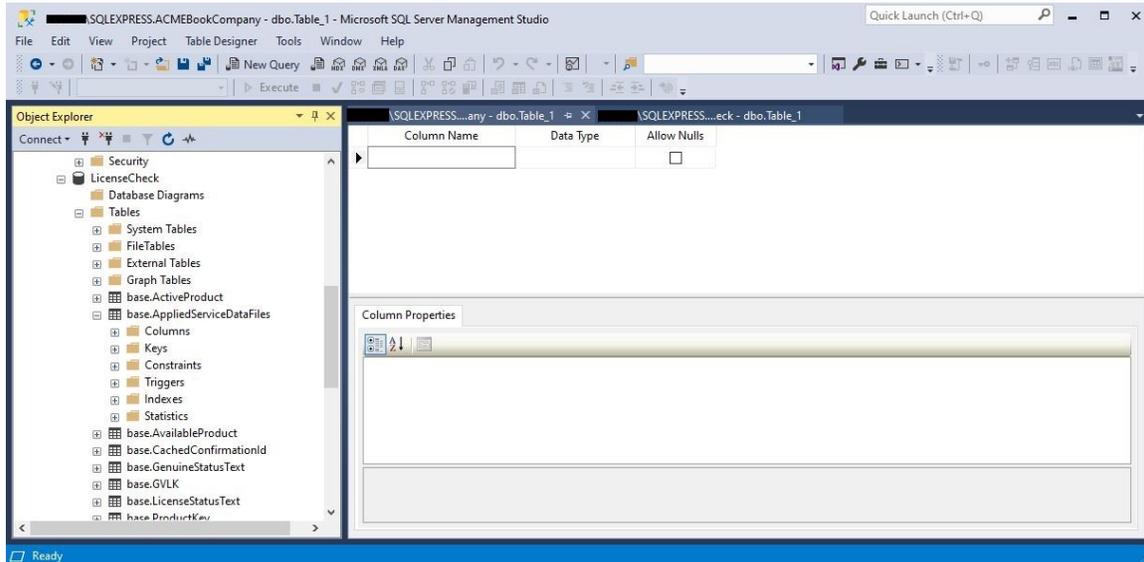
Windows 10 includes a VB script tool called [SLMGR.VBS](#) that assists with activation. The tool has different options to check activation: "slmgr /dlv" will activate the system if it failed to activate, "slmgr /ato" will install a new product key, "slmgr /ipk <5x5 run-time key>" will attempt to install a 5x5 product key, and many more options.

If you know you're going to ship more than 50,000 units, then you will want to know when to ask for a new key. If you are curious to see how many activations have been made on your assigned license key, the Volume Activation Management Tool (VAMT) that is part of the Windows Assessment and Deployment Kit (ADK) can provide a report on the remaining activations left for a particular run-time license key.

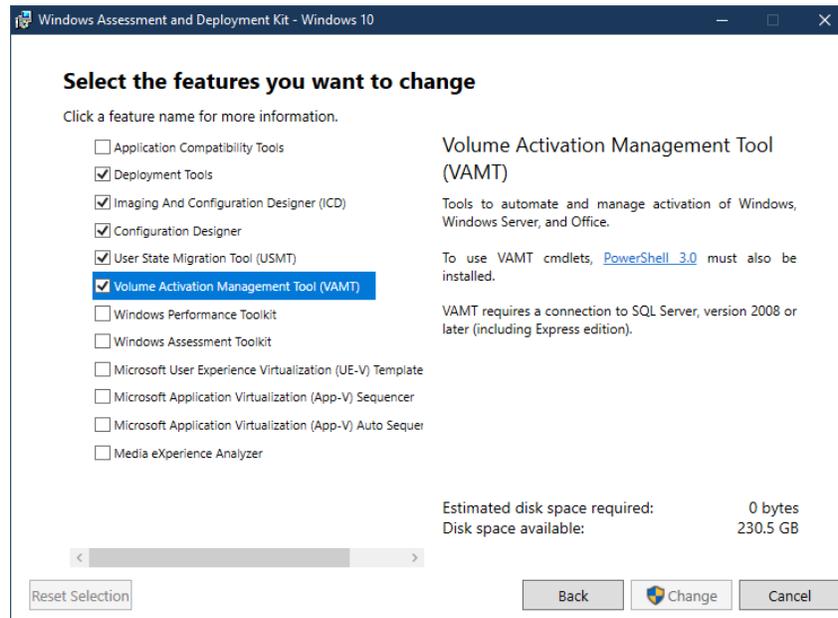
VAMT requires an SQL server as it will set up a database to record and save license information. SQL Express is sufficient to hold the VAMT database.

1. Download and install [SQL Express](#). Choose the defaults when running the installer.
2. Optional: To help manage all the databases that are in SQL Server, download and install the [SQL Server Management Studio \(SSMS\) tool](#).

Opening the SSMS tool, you will see all the databases and the tables associated with each database. Columns can be added, the primary key can be set, and data can be modified in the database. It is a good tool to have, but not needed for VAMT to function.

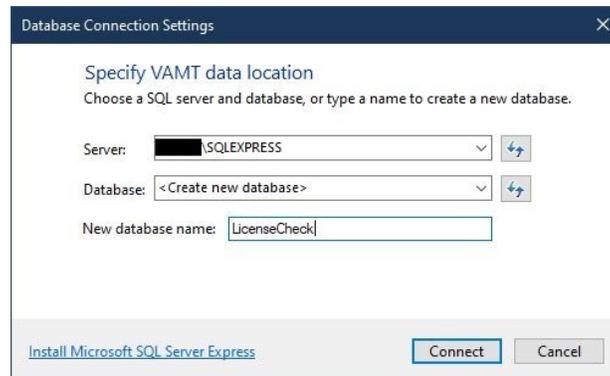


3. Once the SQL Server has been installed, download and install the [Windows ADK](#).
4. When you get to the features screen, be sure to check “Volume Activation Management Tool”.
5. Click the Install button (or Change button if you have previously installed the ADK).

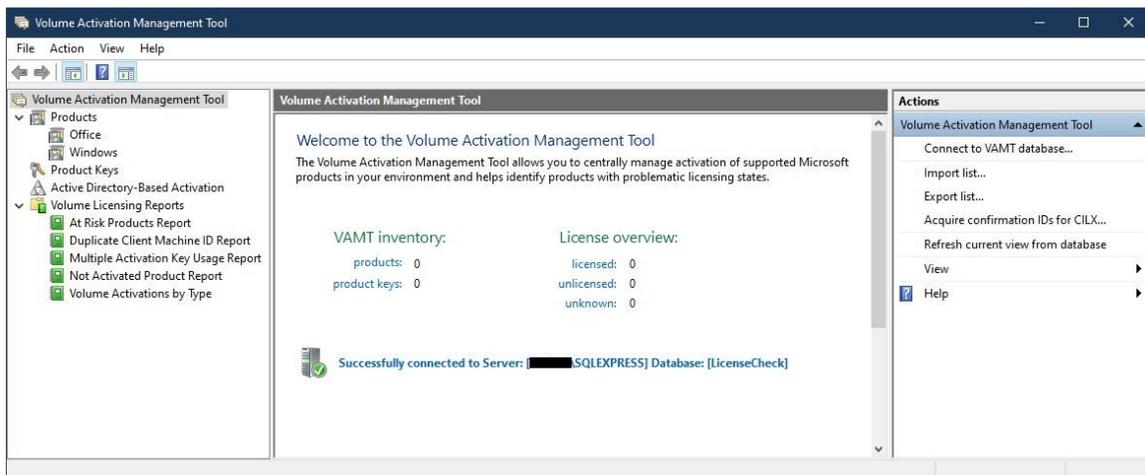


6. Run VAMT
7. When you first run the tool, it will ask for the SQL server location and the database.
  - a. Click on the drop-down next to Server, and you should see the instance of the SQL database.

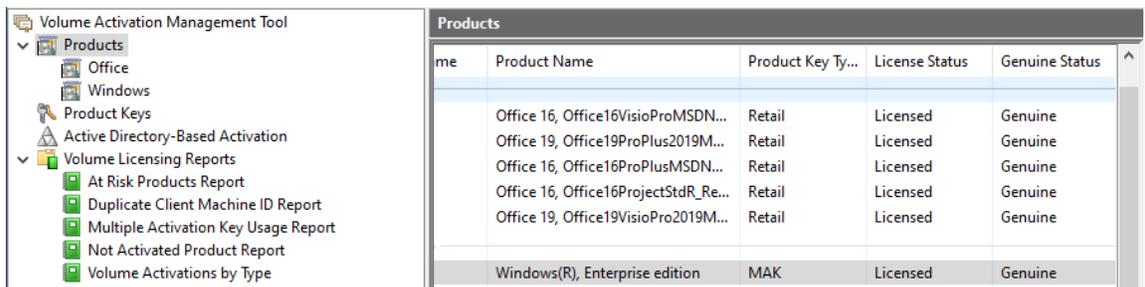
- b. Click on the drop-down next to Database and select “<Create new database>”.
- c. A text box will show up below, enter the name of the database (i.e. LicenseCheck) and click Connect.



VAMT is a MMC plug-in.

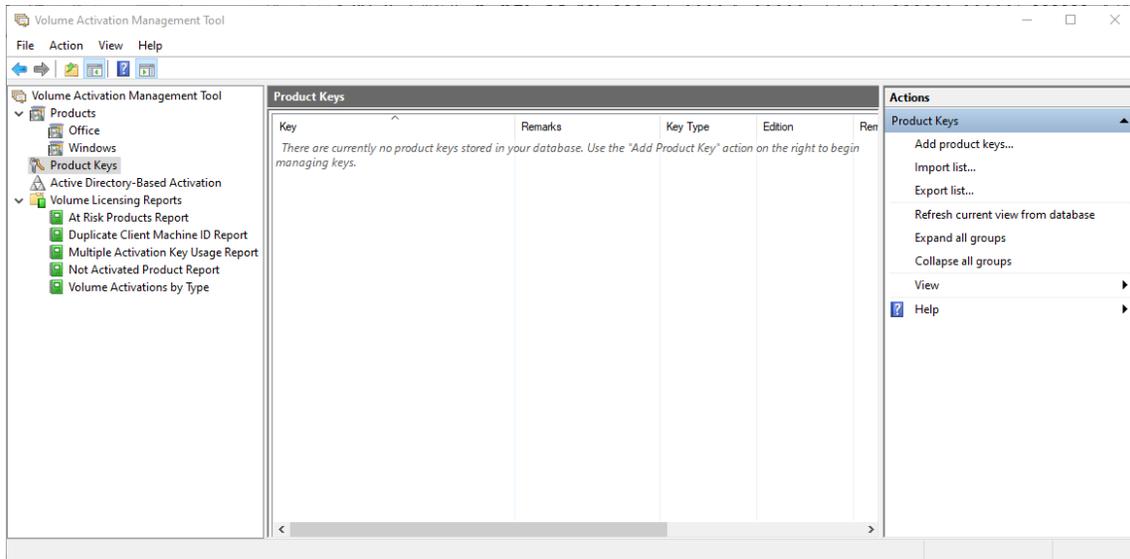


VAMT can be used to get Windows and Office product information for computers on an active directory or local working group, which is perfect for IT departments.

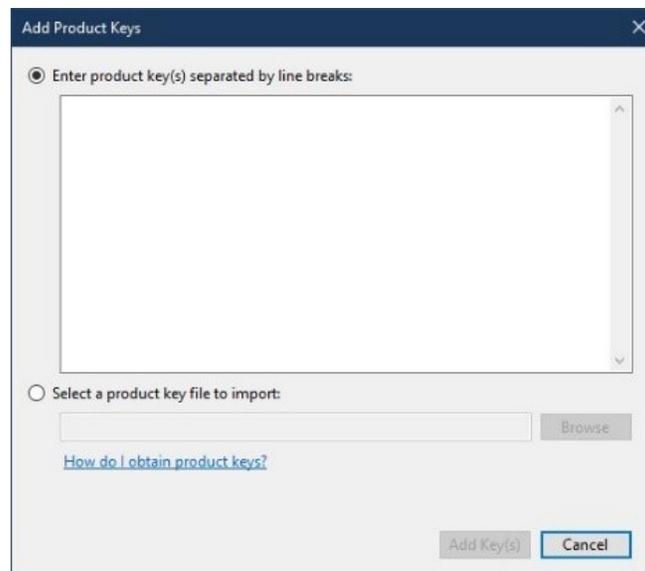


For the Embedded/IoT OEMs, we want to check the license key.

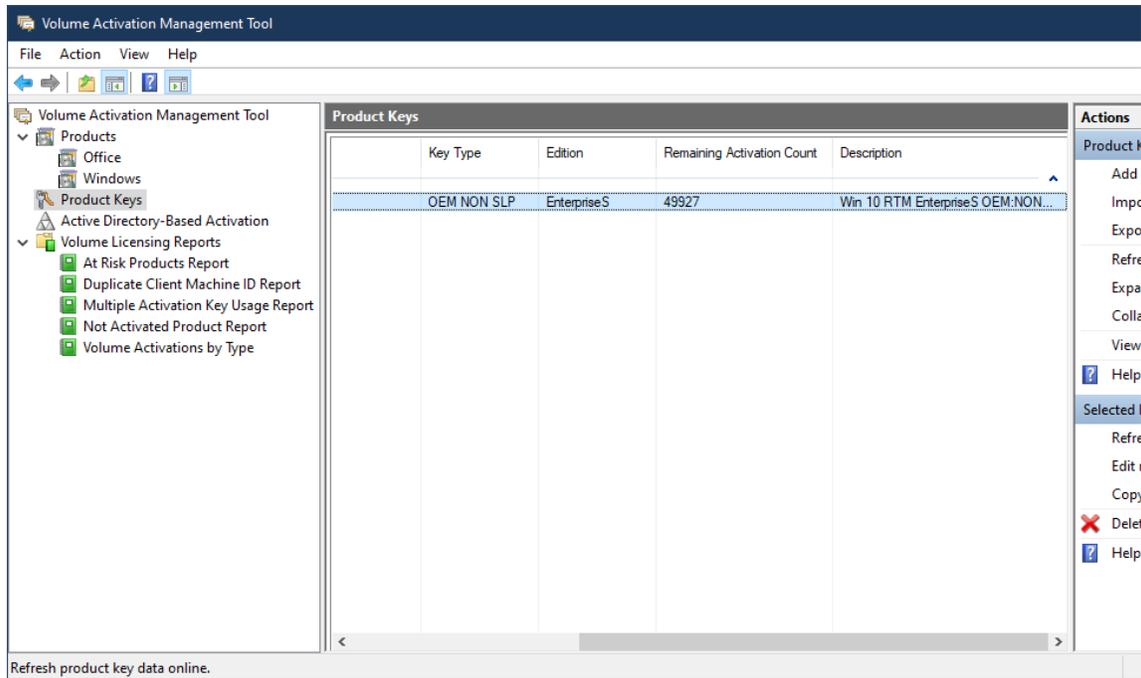
8. Click on the Product Keys on the left pane.



9. In the Actions pane, click on “Add Product keys...”
10. A dialog appears where you can add multiple 5x5 run-time license keys (aka Product keys). Enter your key and click the “Add Key(s)” button.



11. Click the “OK” button on the key-added-success dialog.
12. Click on the key in the center pane, and then in the Actions pane, click on “Refresh product key data online”. This will update the Remaining Activation Count for the key in the center pane.



To get an update of the activations left from the activation server, simply click on the key and click on the “Refresh product key data online” in the lower-right-pane. If you are managing multiple keys for multiple devices, you can add remarks to identify which key goes with each product. The VAMT tool provides an important key management solution for monitoring the number of activations per key. If you notice the activations are higher than the number of units shipped, then you need to make sure something like the UWF scenario is not burning through the activations.

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