

# WINDOWS ACTIVATION

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**TuCSon** COMPUTER  
SOCIETY



An International  
Association of Technology  
& Computer User Groups

**WINNERS**  
WINDOWS usERS

**GREATER SOUTH BAY PC USERS GROUP**

**Web location for this  
presentation:**

<http://aztcs.org>

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Notes**”

# SUMMARY

The activation process for "Windows.." has changed dramatically from "Windows XP" to "Windows 10".

Here is a comparison of the activation processes for the various versions of "Windows.."

# TOPICS

- "Digital Rights Management" Processes
- "Genuine Windows" For Prior Versions of "Windows.."
- "Windows 10" has "Device Based Activation"

# **"DIGITAL RIGHTS MANAGEMENT" PROCESSES**

- "DRM" protects the intellectual property rights of the creators of something which in this case is an operating system

# "DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)

- Linux:  
for most "distros" of Linux there is  
no DRM:  
please copy and distribute them!
- Mac OS X:  
no activation required but Apple  
severely limits the availability and  
compatibility of installation media

# "DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)

- "Windows XP" and "Windows Vista" have "Windows Genuine Advantage" for an activation process
- "Windows 7" has "Windows Activation Technologies"

# **"DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)**

- "Windows 10" has  
"Device Based Activation"  
which results in a  
"Genuine Windows Device"



# **"DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)**

- The activation process for most of Microsoft's software products including "Windows.." depends on their server farms:

# "DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)

- 1+ million servers for Microsoft services such as "OneDrive", "Bing", "Outlook.com", "Skype", "Xbox", according to Steve Ballmer.

See

<http://www.extremetech.com/extreme/161772-microsoft-now-has-one-million-servers-less-than-google-but-more-than-amazon-says-ballmer>

# "DIGITAL RIGHTS MANAGEMENT" PROCESSES (continued)

- \$23 billion spent to build server farms worldwide according to <https://storageservers.wordpress.com/2013/07/17/facts-and-stats-of-worlds-largest-data-centers/>

# **"DIGITAL RIGHTS MANAGEMENT"**

## **PROCESSES (continued)**

- Server farms located in  
Santa Clara, California  
Chicago (Northlake), Illinois  
West Des Moines, Iowa (x3)  
San Antonio, Texas  
Boydton, Virginia  
Ashburn, Virginia  
Quincy, Washington  
Dublin, Ireland

# FY10 MS Online Data Centers and Markets

- Data Center location will be based on ship-to address during the purchase process
- Data will reside in 2 Data Centers to provide redundancy

- Current market
- Coming in April 2010



## Virginia with backup in Washington+

1. United States
2. Canada
3. Mexico
4. Puerto Rico
5. Brazil+
6. Chile+
7. Colombia

+ In FY11 we will launch a co-lo in Brazil that will serve Brazil, Chile, and some other LATAM countries. Until then Brazil and Chile will use Virginia which has acceptable latency rates

## Dublin with backup in Amsterdam

- |                   |                 |
|-------------------|-----------------|
| 1. Austria        | 13. Israel      |
| 2. Belgium        | 14. Netherlands |
| 3. Czech Republic | 15. Norway      |
| 4. Denmark        | 16. Poland      |
| 5. Finland        | 17. Portugal    |
| 6. France         | 18. Romania     |
| 7. Germany        | 19. Spain       |
| 8. Greece         | 20. Sweden      |
| 9. Hungary        | 21. Switzerland |
| 10. Ireland       | 22. UK          |
| 11. Italy         |                 |

## Singapore with backup in Hong Kong++

1. Australia
2. Hong Kong
3. India (sales in Nov '09)
4. Japan
5. Malaysia
6. New Zealand
7. Singapore (sales in Nov '09)
8. South Korea (sales July '10)
9. Taiwan (sales July '10)



*An aerial view of the Microsoft data center in Quincy, Washington*

After years of operating in third-party facilities, **Microsoft** began building its own data centers in 2007 as it ramped up its battle with Google in the online services arena. Its first in-house project was a huge data center in the small Washington town of Quincy, where Microsoft invested \$550 million in building a 470,000 square foot data center supported by hydro-electric power from nearby dams on the Columbia River. A year later it unveiled a



*An aerial view of the 470,000 square foot Microsoft data center in San Antonio.*

**6. MICROSOFT DATA CENTER, DUBLIN, 550,000 SF**





## 5. MICROSOFT CHICAGO DATA CENTER, Chicago 700,000 SF



**Server Farms  
Operated by  
Microsoft:**

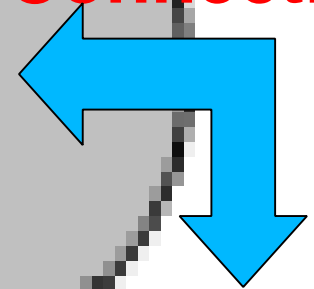
**Activation Servers**

**"OneDrive" Servers**

**Web Servers**

**Email Servers**

**Internet  
Connection**



**"Windows..  
"computer**

# "GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.."

- Activation is based on "Genuine Windows" for versions of "Windows.." prior to "Windows 10.."

See

<http://windows.microsoft.com/en-us/windows/activate-windows#1TC=windows-7>

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.."**

**(continued)**

- The "Genuine Windows" process means that the various information is stored both on the internal hard drive of your computer AND at Microsoft's activation servers:

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.." (continued)**

- "Windows XP"  
and "Windows Vista" have "Windows  
Genuine Advantage"
- "Windows 7" has  
"Windows Activation Technologies"
- "Windows 10" has "Genuine  
Windows Device"

# "GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.."

**(continued)**

- Computer make and model
- Version information for the operating system and software
- Region and language settings
- A unique number assigned to your computer by the tools (Globally Unique Identifier or GUID)<sub>22</sub>

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.."**

**(continued)**

- Product Key (hashed) and Product ID
- BIOS name, revision number, and revision date
- Hard drive volume serial number (hashed)

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.." (continued)**

- Product Key (hashed) and Product ID
- BIOS name, revision number, and revision date
- Hard drive volume serial number (hashed)



# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.."**

**(continued)**

- Whether the installation was successful if one was performed
- The result of the validation check, including error codes and information about any activation exploits and any related malicious or unauthorized software found or disabled

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.." (continued)**

- In other words, for "Windows.." prior to "Window 10..", Microsoft does not store the UUID of the motherboard of your computer in it's activation servers

# **"GENUINE WINDOWS" FOR PRIOR VERSIONS OF "WINDOWS.." (continued)**

- For details about this, see <http://www.zdnet.com/article/windows-activation-technologies-an-unauthorized-inside-look/>

# "GENUINE WINDOWS DEVICE"

- "Genuine Windows Device" is the term that Microsoft uses for "Windows 10" according to <https://blogs.windows.com/bloggngwindows/2015/06/19/upcoming-changes-to-windows-10-insider-preview-builds/>

# **"GENUINE WINDOWS DEVICE" (continued)**

- "Genuine Windows Device" means that Microsoft's activation servers in their server farms store the UUID of the motherboard of a computer, the edition of "Windows 10" ("Home" or "Pro", and the bitness of "Windows 10" as part of the activation process.

# **"GENUINE WINDOWS DEVICE" (continued)**

- "UUID" stands for "Universally Unique Identifier"
- A UUID is a 128-bit value that has a high probability of being unique that is used to label devices such as motherboards, hard drives, graphics adapters, etc.

# "GENUINE WINDOWS DEVICE"

(continued)

- According to [https://en.wikipedia.org/wiki/Universally\\_unique\\_identifier](https://en.wikipedia.org/wiki/Universally_unique_identifier):  
.. a UUID is represented by 32 lowercase hexadecimal digits, displayed in five groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters

# "GENUINE WINDOWS DEVICE" (continued)

- The new activation process for "Windows 10" is also known as "Device Based Activation" in <https://blogs.windows.com/bloggngwindows/2015/08/18/announcing-windows-10-insider-preview-build-10525/>



```
UUID
```

```
----
```

```
595B4D56-3B34-B491-4F7C-F030072DAE75
```

**"GENUINE WINDOWS DEVICE"  
(continued)**

- **595B4D56-  
3B34-BA91-  
4F7C-  
F030072DAE75**

**Server Farms  
Operated by  
Microsoft:**

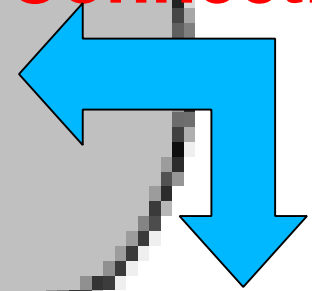
**Activation Servers**

595B4D56-3B34-BA91-4F7C-

F030072DAE75

**Other servers**

**Internet  
Connection**



**Activated  
"Windows 10"**

# "GENUINE WINDOWS DEVICE" (continued)

- To get the UUID of your computer's motherboard, paste **Get-WmiObject -Class Win32\_ComputerSystemProduct | Select-Object -Property UUID** into a Powershell prompt in an "Command Prompt (Admin)" window. Then press the Enter key.

# "GENUINE WINDOWS DEVICE" (continued)

- Reference:

<http://powershell.com/cs/forums/p/12652/22545.aspx>

# **"GENUINE WINDOWS DEVICE" (continued)**

- When "Windows 10" resides inside a computer that is NOT a "Genuine Windows Device":

Windows [Version 10.0.10240]

System

Control Panel > All Control Panel Items > System

Search Control Panel

Control Panel Home


- Device Manager
- Remote settings
- System protection
- Advanced system settings

### View basic information about your computer

Windows edition

Windows 10 Pro


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### System


Processor:	Intel(R) Core(TM) i7-4790 CPU @ 3.60GHz 3.60 GHz
Installed memory (RAM):	4.00 GB
System type:	64-bit Operating System, x64-based processor
Pen and Touch:	No Pen or Touch Input is available for this Display

### Computer name, domain, and workgroup settings

Computer name:	Win76Pr20120308	 <a href="#">Change settings</a>
Full computer name:	Win76Pr20120308	
Computer description:		
Workgroup:	WORKGROUP	

### Windows activation

Connect to the Internet to activate Windows. [Read the Microsoft Software License Terms](#)

Product ID: 00330-80000-00000-AA037  [Activate Windows](#)

See also

Security and Maintenance

## Windows activation

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Connect to the Internet to activate Windows. [Read the Microsoft Software License Terms](#)

Product ID: 00330-80000-00000-AA037

 [Activate Windows](#)



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# License Terms



# **"GENUINE WINDOWS DEVICE" (continued)**

- When "Windows 10" resides inside a computer that IS a "Genuine Windows Device":

[Control Panel Home](#)

-  [Device Manager](#)
-  [Remote settings](#)
-  [System protection](#)
-  [Advanced system settings](#)

## View basic information about your computer

### Windows edition

Windows 10 Pro

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### System

Processor: Intel(R) Core(TM) i7-4790 CPU @ 3.60GHz 3.60 GHz  
Installed memory (RAM): 4.00 GB  
System type: 64-bit Operating System, x64-based processor  
Pen and Touch: No Pen or Touch Input is available for this Display

### Computer name, domain, and workgroup settings

Computer name: Win76Pr20120308  
Full computer name: Win76Pr20120308  
Computer description:  
Workgroup: WORKGROUP

[Change settings](#)

### Windows activation

Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00330-80000-00000-AA037

[Change product key](#)

See also

[Security and Maintenance](#)

## Windows activation

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Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00330-80000-00000-AA037

 [Change product key](#)

## Windows activation

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Windows is activated [Read the Microsoft](#)

Product ID: 00330-80000-00000-AA037

# "GENUINE WINDOWS DEVICE"

(continued)

- If you install "Windows 10 Pro Genuine" into a blank computer or a blank virtual machine, you will get a 30 day grace period, if you skip the activation step in the installation process.

(This was also possible in "Windows 7" but "Windows 8.1" did not have a grace period.) <sup>46</sup>

# **"GENUINE WINDOWS DEVICE" (continued)**

- If you install "Windows 10 Pro Genuine" into a blank computer or a blank virtual machine and enter in a 25-character product key that you purchased, it will activate and the UUID of the motherboard of the computer will then be stored in Microsoft's activation servers.

# "GENUINE WINDOWS DEVICE"

**(continued)**

- If you upgrade a computer that has a genuine copy of "Windows 7.." or "Windows 8.1.." to "Windows 10", it will activate you new copy of "Windows 10" and the UUID of the motherboard of the computer will be stored in Microsoft's activation servers and a default, placeholder 25-character product key will be placed into the Windows registry.



# "GENUINE WINDOWS DEVICE" (continued)

- This means that everyone who upgrades from Windows 7 or Windows 8 to Windows 10 sees the same default, placeholder product keys listed at <http://winaero.com/blog/generic-key-to-install-windows-10-rtm/> when running "Belarc Advisor" or other diagnostic software: 49

# "GENUINE WINDOWS DEVICE" (continued)

- [http://answers.microsoft.com/en-us/insider/wiki/insider\\_wintp-insider\\_install/how-to-activate-and-resolve-common-product-key/33f31475-93b3-4d1c-812f-4b21fbd807a7](http://answers.microsoft.com/en-us/insider/wiki/insider_wintp-insider_install/how-to-activate-and-resolve-common-product-key/33f31475-93b3-4d1c-812f-4b21fbd807a7)

# "GENUINE WINDOWS DEVICE" (continued)

- With the "Genuine Windows Device" process, changing the internal hard drive of your computer is no longer an event to triggers a challenge to "Activate".

You can change hard drives and re-install "Windows 10.." as often as you wish.