

Tuque 1.0

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Table of Contents

How Tuque Works.....	2
Tuque Client.....	5
Registry Settings.....	5
Web Interface	8
Packaging An Application.....	9

How Tuque Works

The Tuque server maintains a database of

- client computers
- the active directory structure for computers in active directory
- software packages
- software subscriptions – the link joining client computers to software packages

A background task regularly updates the active directory structure and list of computers. Computers moved from OU to OU retain their history and current subscriptions.

An administrator can log into the Tuque server and apply or remove subscriptions to software in a number of ways:

- click on software, select a package, then click on PCs to get a list of all PCs the administrator can update.
- Click on software, select a package, then click on OUs to apply software subscriptions to either OUs (and all computers below), or to specific PCs.
- *NOT IMPLEMENTED*: select a computer from computers, then pick Copy Software and use it to pick software subscriptions from any other computer.

The administrator can set a date/time when the software will install, and settings such as whether the machine should reboot, whether the software can be installed while users are logged on, and whether the install should be done overnight.

It is also possible to click on Computers to see the status of software installs, or pick software then reports to see how well installs have gone.

Computers running the Tuque client contact the Tuque server periodically. They communicate through HTTPS and ask if there is any new software to install. If there is, it is presented in the order defined during software package creation – one can specify the steps that must be taken for software that has dependencies, or software that is to be removed first.

The Tuque server sends the Tuque client a URL of a zip file containing the software to be installed. The client downloads the file via HTTP or HTTPS (as desired), then reads the cryptographic signature that identifies the individual who packaged the software. This signature guarantees the preparer is a trusted individual. If the software is not signed or the signer is not recognized, Tuque reports an error to the server and aborts.

Assuming the signature is acceptable, the client unzips the installation files into C:\nexus\install\work, one of these files must be tuqueinstall.cmd which contains the script which will install the software. This script can start msixexec.exe or setup.exe or any other program that's needed. However, the script must not exit until all started applications exit, which can be accomplished with start /wait.

Similarly, `tuqueuninstall.cmd` is called when the client processes a request to uninstall the software.

The most advanced operation is the actual packaging up of software. However, unlike GPOs, it is possible to use vendor supplied EXEs, or any other mechanism. The only limitation is that the installation must be somehow made automated and require no user entry. It doesn't matter if the installer displays a window, the window will not be visible on the client workstation.

Getting a Certificate

To create software packages, you will need a public key, code signing certificate. Contact IST about acquiring one.

You will digitally sign installation files to indicate that it was you who authorized their installation.

When you receive your certificate, do not import it to your 'key ring'. Instead, specify the signature and enter your cert's password every time you need to use it.

Tuque Client

Tuque client refers to the Tuque software on each workstation.

The client software is always stored in **C:\nexus\install**. Chief among the files is `tuqueinstaller1.exe`, which is, for 32 bit systems, a service, and there are a few DLLs needed for SSL and ZIP management..

Tuque can run on 64 bit systems too, but requires the `tuque64.exe` service which is still being finalized. It uses the 32 bit exe to perform much of its work, but is fully capable of installing 32 and 64 bit software.

The 32 bit tuque client consists of the files:

- Libeay32.dll
- ssleay32.dll
- unzip32.dll
- tuqueinstaller1.exe
- batch.cmd

Registry Settings

Tuque reads its configuration settings from the registry when the Tuque service starts.

All values are stored in:

HKEY_LOCAL_MACHINE\Software\Policies\uwaterloo\nexus\tuque
changes can be applied using GPOs.

server=*tuque_server_name*

The server is accessed via HTTPS.

Typical value: `tuque.uwaterloo.ca`

Testing value: `dark.uwaterloo.ca/tuque`

freq=*minutes*

Frequency to check for updates over the network. Defaults to 30 minutes.

It is possible for the user to cause Tuque to check more frequently without setting this value.
More to come.

This value is a compromise between the need to urgently send out software, and the desire to not overburden the server with requests from thousands of clients.

For testing, you may wish to set the value to 1 minute so you don't have to wait long.

freqfast=*minutes*

Frequency to check for urgent changes, like when all users have logged off and it's okay to reboot. Defaults to 5 minutes.

This frequency is usually small because it doesn't put much load on the client, and puts no load on the server. Setting to a small number like five minutes is nice so a user has time to login again before the system senses there is no one logged in and does a long reboot.

Signers/

The **Signers** key contains a list of signers, organized by Email address, then containing the signer's identity.

For example,

```
erick@uwaterloo.ca REG_SZ University of Waterloo, E=erick@engmail.uwaterloo.ca
```

GPOs can be used to update the list of trusted individuals. It is possible for different areas of campus to trust different individuals.

Using X.509 certificates to sign packages, Tuque prevents unauthorized distribution of software, even if the server were somehow compromised.

Tuque 64 Bit Extensions

If using Tuque on a 64 bit OS, don't install tuqueinstaller1.exe as a system service. Instead, install tuque64.exe with the .Net command:

```
Installutil tuque64.exe
```

The 64 bit tuque64 service runs the 32 bit tuqueinstaller1 installer, which is then capable of installing either 32 bit or 64 applications.

There is a flaw in that tuque64 never turns off the tuqueinstaller1 service. So if you

```
net start tuque 64  
net stop tuque64  
net start tuque64
```

you will have two tuqueinstaller1 processes running. This shouldn't affect users because they wouldn't be stopping the service under normal circumstances.

Web Interface

The Tuque website is <http://tuque.uwaterloo.ca/tuque>

Tuque's main web interface is relatively simple to navigate.

TO BE FILLED IN LATER

Packaging An Application

1. The first step is to acquire a SETUP.EXE or MSI, CMD script or other file format which will install the application in an unattended fashion. Tuque runs the program in the background; it is not visible on the user's monitor and cannot accept input.
2. Place all the required files into a fresh subdirectory, or fresh subdirectory tree. At install time, this subdirectory will be placed in c:\nexus\install\work, but don't place it there right now or your files may be overwritten.
3. Create a tuqueinstall.cmd and tuqueuninstall.cmd in that subdirectory, these commands should call MSIEXEC or SETUP, or whatever will be used to perform the install/uninstall. However, be certain to run with START /WAIT, so that the script does not exit until the installation or deinstallation is complete.
4. Create a ZIP file containing this subdirectory.
5. Make a signed exe recording the MD5 hash of the zip file:
zipsign test.zip
signcode -cn "erick@uwaterloo.ca" %1 -t
<http://timestamp.verisign.com/scripts/timestamp.dll>
6. Copy the zip file to a web site and make a note of the URL.
7. Log onto the Tuque server, click Show Packages, then click Create New Package.

Warning, this is only a test site.	
Software	MS Office 2010 Pro
Package Number	6
Creator	erick
Last update	2011/03/09 15:04
Comment	<input type="text"/>
Flags	<input type="checkbox"/> reboot after install <input type="checkbox"/> reboot after uninstall <input type="checkbox"/> install when not logged in <input type="checkbox"/> uninstall when not logged in <input type="checkbox"/> install overnight <input type="checkbox"/> uninstall overnight
Requires	<input type="text"/> comma separated list, will be installed first
Replaces	<input type="text"/> comma separated list, will be removed first
URL	<input type="text" value="http://dark.uwaterloo.ca/tuque/data/msoffice.zip"/>
URLexe (optional)	<input type="text" value="http://dark.uwaterloo.ca/tuque/data/msoffice.exe"/>

The package number is -1 if we haven't saved the package yet, it will be assigned a number when submit is pressed. The creator is the userid that was used in the tuque login.

All we had to enter was the name of the package, a comment, set some flags, and the URL of the zipped package and its associated EXE file.

If we entered 1,2 into the **requires** field and then view the package info, Tuque would list those required packages. This is a little bit difficult, one has to look up the package numbers from the packages list screen, but at least Tuque does display the package names.

Requires	(1) webview demo (2) Microsoft Office 2007
	<input type="text" value="1,2"/> comma separated list, will be installed first
Replaces	<input type="text"/> comma separated list, will be removed first

Now the package is ready to be assigned to computers.

Tweaking the Client Installation

Out of the box, tuque installs software exactly as the vendor intended. Often you will want to tweak the installation, such as grouping software links in the start menu under functional names like: German, Scientific, etc. Tuque's **tweak** program can do this.

```
tweak /v /lnkcopy "Programs\Microsoft Office\Word.lnk" "Programs\Microsoft Word.lnk"
```

demonstrates how to copy the MS Word link from its default location, to also appear in the root of the program's menu. The /v option mean show verbose, in this case, listing the source and destination subdirectories.

The commands to tweak are:

```
/v          verbose
```

```
/lnkmove arg1 arg2
```

moves the link from all users arg1 to arg2

```
/lnkcopy arg1 arg2
```

copy the link to the new location

```
/lnkdel arg1
```

delete the link

```
/mkdir subdir
```

makes subdir under all users

All the source and destination are assumed to be all users startmenu. It uses the Shellapi to find all users start menu, so it finds the right subdirectory.

Be sure to use the /mkdir command before you copy or move files into a subdirectory that may not yet exist on the client.