

# **Linux Invention**

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## **Title of the Invention**

System for Upgrading Software and Related Data Files On a Need Basis Without Querying a Database

## **Description of the Invention**

This publication describes an automated process for upgrading software and data files from cloud computing without querying a database and on an as-needed basis. This keeps all software and data files (such as printer drivers) at the most recent versions without the user having to perform a manual update.

### ***Problem or Opportunity***

Applications and data files that are frequently run or accessed need to be as up-to-date as possible to ensure the most efficient system processing. The process for such an upgrade must be fast, accurate, and most of all, secure.

Currently, the process for updating an application is based on two factors: periodicity and an online database search. For instance, the user computer is set to query an online database whenever a certain period of time elapses: daily, weekly, or monthly. The database is available at a specific website that the application's vendor maintains. The process searches and queries the database for an entry indicating that a newer version of the application is available. If an upgrade is found, the user computer is notified. When the notification is accepted (with the simple click of a 'Yes' button, and unsecured process), the upgrade is downloaded and installed on the user computer.

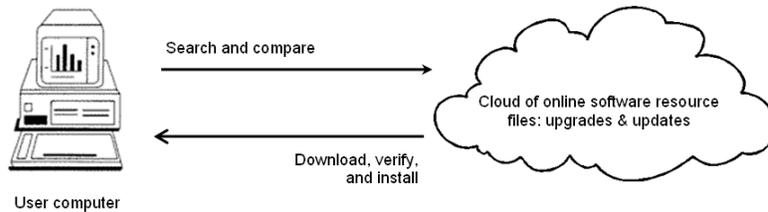
Sometimes, this upgrade process can be set to occur when the user computer starts up or shuts down. More often, however, this upgrade process happens in real time during the work day while the user computer is processing and, as a result, can interrupt work flow.

The process for updating a data file is manual. The user computer must directly access a vendor's website and manually search the online database for new versions of specific data files. This process is labor intensive. It is also happenstance: the user must remember to regularly search for available updates. Oftentimes, the user finds that no such update is available and, as a result, wastes time and effort.

Both these processes—upgrading applications and updating data files—also depend on the integrity of the queried database. The database must accurately represent that upgrades and updates are available.

### ***Detailed Description of the Invention***

Applications must be upgraded and data files updated seamlessly, regularly, quickly, accurately, and securely. This invention accomplishes all these objectives.

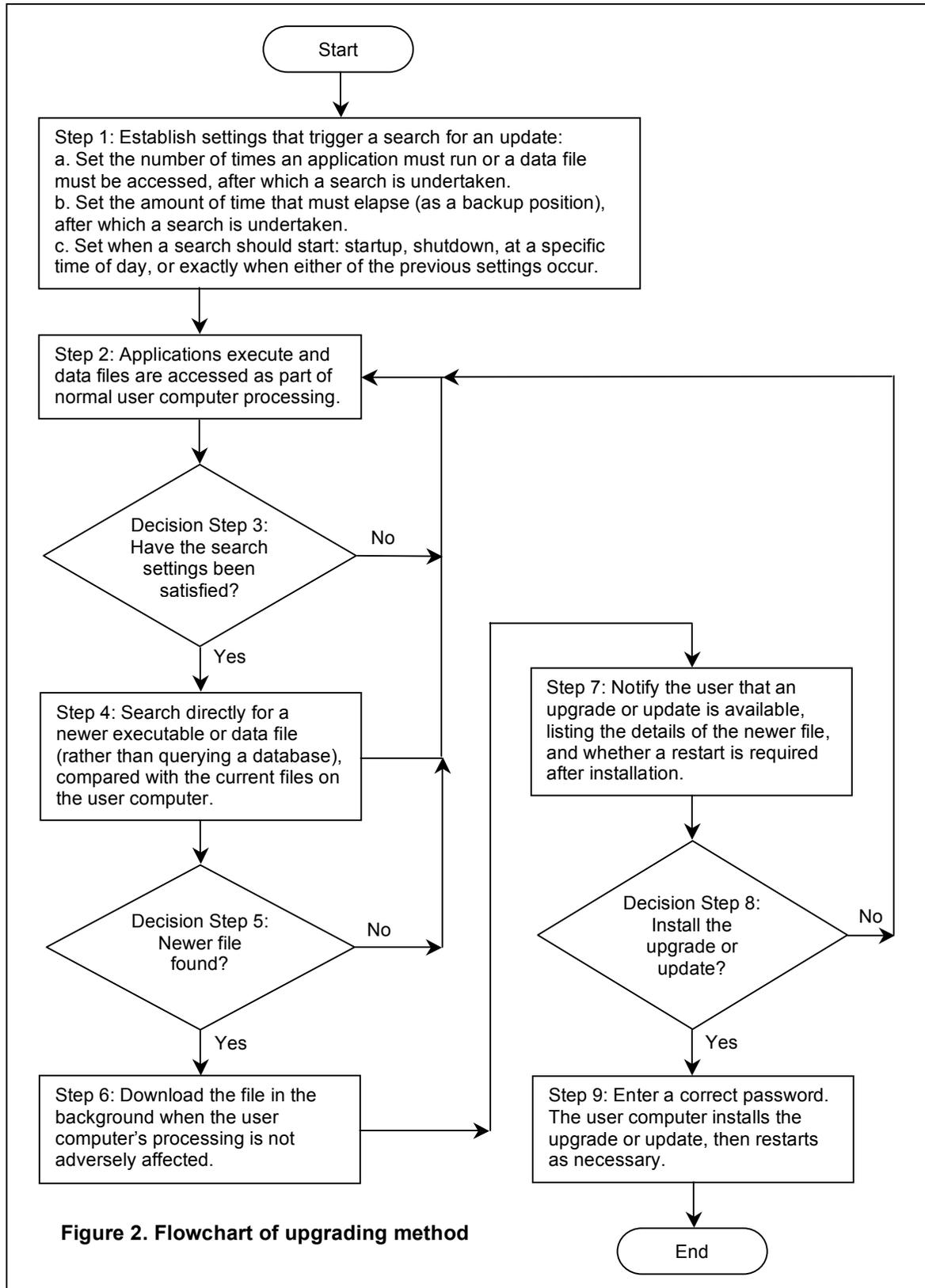


**Figure 1.** Upgrading/Updating process

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As shown at a high level in Figure 1, the user computer checks for application upgrades and data file updates based on a specific number of uses (then a period of time as a backup position), directly searches for a newer executable or data file (rather than querying a database), and downloads and securely installs the new file when it is most efficient for the user computer and user.

Figure 2 depicts a detailed flowchart of the method involved in upgrading applications/updating data files (collectively referred to as upgrading for the sake of simplicity).



The method starts with step 1, where the user computer establishes the following settings:

- ◆ The number of times an application must run or a data file must be accessed, after which a search for a newer version is undertaken. For example, if the usage number is set to 5, then the user computer searches for a newer file after the application has run 5 times or after the data file has been accessed 5 times.
- ◆ An amount of time that must elapse, after which a search for a newer version is undertaken. This is a threshold setting. It is set so that the user computer can ensure that an application or data file is updated after a specific amount of time regardless of the number of times it has run. For example, the user computer searches for newer files after every 5 uses or every day, whichever is sooner. This setting is particularly useful for applications or data files that are rarely run or accessed.
- ◆ When the user computer should search for a newer file: at startup, at shutdown, at a specific time of day, or after the usage number has been attained. This setting enables the user computer to determine when a search for a newer file actually happens. The user has some control over system performance, when new files are installed, and how often.

Using these settings, the user computer determines when to search for a new file.

In step 2, the user computer runs applications and accesses data files as part of its normal operation.

In decision step 3, the user computer periodically checks to see if the criteria established in step 1 are met. If so, the method proceeds to step 4; if not, the method returns to step 2.

In step 4, the user computer searches for a newer file, accessed from a cloud of online resource files<sup>1</sup> where software is available as a service. The user computer attempts to locate the actual file rather than querying a database (since maintaining a database first requires the newer file be available and then, second, requires that the database be accurately updated).

In decision step 5, the user computer determines if any found file is newer by comparing it to the versions currently available on the user computer's resident hard drive. The comparison can be based on the file name, the file's date and time, or any other method that uniquely identifies a newer file. If so, the method proceeds to step 6; if not, the method returns to step 2.

In step 6, when a newer file is found, the user computer automatically downloads it in the background when system processing on the user computer is low so as not to adversely affect processing.

In step 7, after the file has successfully downloaded, the user computer notifies the user that an upgrade or update is available, lists the details of the downloaded file, and specifies if a restart is required following installation. (In general, installing executable files require a restart whereas installing data files does not.) This notification happens in

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<sup>1</sup> Cloud computing allows anybody to upload, modify, and download files from any device connected through a simple Internet connection.

accordance with the specified search-time criteria (described in the third bullet above), so the user is interrupted only when requested.

In decision step 8, the user determines whether or not to install the update. If so, the method proceeds to step 9; if not, the method returns to step 2.

In step 9, to ensure the security of the user computer and that of the downloaded file, the user reviews the details of this file to ensure its accuracy and legitimacy and enters a password to initiate the installation (rather than simply clicking a 'Yes' button). After installing the upgrade or update, the user computer automatically restarts (if required) or immediately returns processing to the user.

The method ends.