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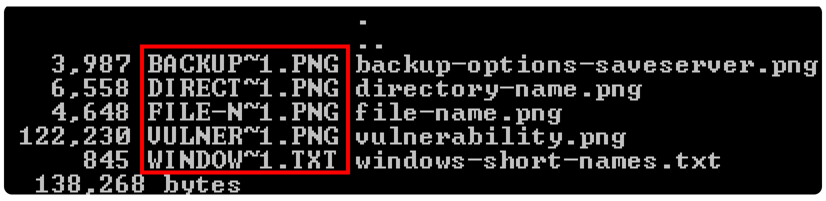
Windows Short (8.3) Filenames – A Security Nightmare?

Bogdan Calin | July 3, 2012

Each time you create a new file on Windows, the operating system also generates an MS-DOS-compatible short file name in 8.3 format, to allow MS-DOS-based or 16-bit Windows-based programs to access files which have a long name. You can see these MS-DOS-compatible short file names by using the **/X** switch with the **dir** command. On my system I get something like this:



```
                              .
                              ..
    3,987 BACKUP~1.PNG backup-options-saveserver.png
    6,558 DIRECT~1.PNG directory-name.png
    4,648 FILE-N~1.PNG file-name.png
  122,230 VULNER~1.PNG vulnerability.png
      845 WINDOW~1.TXT windows-short-names.txt
  138,268 bytes
```

There have been a lot of security problems in the past related to short file names. Just yesterday, I found another paper that talks about this subject. The paper was written by Soroush Dalili and is called Microsoft IIS tilde character "~" Vulnerability/Feature – Short File/Folder Name Disclosure.

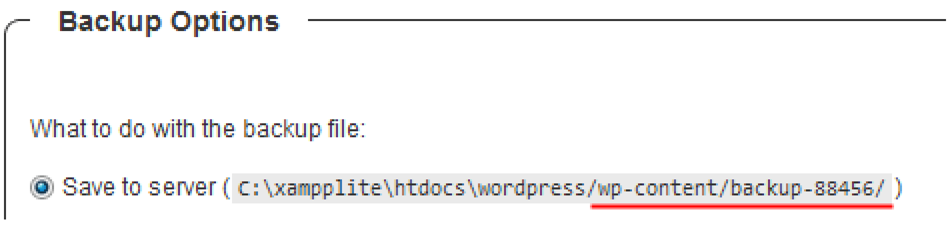
When using IIS, you can get a list of all the shortnames (both files and directories) from a certain directory. This can be a big problem if you can manage to guess, or bruteforce the full file or directory names from these short names. While working on a security script for Acunetix Web Vulnerability Scanner, I thought "Why you have to guess the full names once you have the short names? Why you cannot use the short names? It turns out that IIS doesn't accept short names for a variety of reasons, most of which are security related". But what about Apache? Apache **SUPPORTS** short file names, and this is a security problem.

Think of following scenario; a web application running on Apache on Windows, is creating a file with a long name that should not be guessed by an attacker. For example it creates a session file or an SQL backup file. In this case the security of this application relies on the fact that the name of this file cannot be guessed.

Let's assume that this file name is **backup-082119f75623eb7abd7bf357698ff66c.sql**. Windows will create a short name for this file, **BACKUP~1.SQL**. If I can access this file using the short file name then all the security is broken. I just request BACKUP~1.SQL and get the file, which includes a backup of an SQL database.

Being curious if this problem is a real life problem, I looked at two of the most popular backup plugins for WordPress. Both of them are affected by this problem, which is explained in detail below.

After installing one of the plugins, I have requested a backup of my WordPress blog:



Backup Options

What to do with the backup file:

● Save to server (C:\xampplite\htdocs\wordpress/wp-content/backup-88456/)

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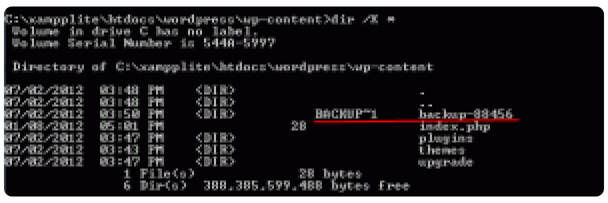
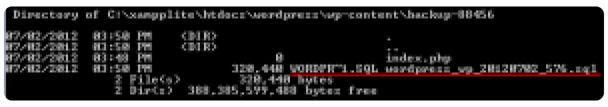
directory name (100 000 combinations) plus the date and plus **3** more numbers. In total it should be at least **100,000,000** combinations if we ignore the date. What do you think are the short names for this directory and file? Using short names this is pretty easy to guess.

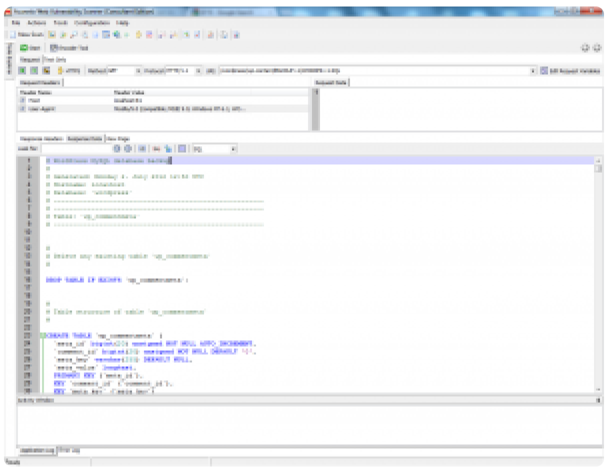


```
C:\xampplite\htdocs\wordpress\wp-content>dir /X *
 Volume in drive C has no label.
 Volume Serial Number is 544A-5997

 Directory of C:\xampplite\htdocs\wordpress\wp-content

07/02/2012  03:48 PM    <DIR>                          .
07/02/2012  03:48 PM    <DIR>                          ..
07/02/2012  03:50 PM    <DIR>          BACKUP~1        backup-88456
01/08/2012  05:01 PM                28                 index.php
07/02/2012  03:47 PM    <DIR>                          plugins
07/02/2012  03:43 PM    <DIR>                          themes
07/02/2012  03:47 PM    <DIR>                          upgrade
               1 File(s)             28 bytes
               6 Dir(s)  388,385,599,488 bytes free
```



```
 Directory of C:\xampplite\htdocs\wordpress\wp-content\backup-88456

07/02/2012  03:50 PM    <DIR>                          .
07/02/2012  03:50 PM    <DIR>                          ..
07/02/2012  03:48 PM                 0                 index.php
07/02/2012  03:50 PM           320,440 WORDPR~1.SQL wordpress_wp_20120702_576.sql
               2 File(s)        320,440 bytes
               2 Dir(s)  388,385,599,488 bytes free
```

Directory name is **BACKUP~1** and file name is **WORDPR~1.SQL**. That's ONE combination. 100,000,000 combinations were reduced to ONE combination because of Windows short names. As expected I can read the SQL backup file from the first try:



What can you do to protect yourself against this problem, and who's fault is it?

Is Microsoft's fault that they still support the short names in 2012? Maybe. I'm not sure but legacy and security do not go well together. Or is it Apache's fault that they support the short names? Maybe. I don't think it is the fault of the person who wrote the WordPress plugin.

The solution

There is a way to disable Windows 8.3 short name creation.You can create a registry key named **NtfsDisable8dot3NameCreation** in HKLMSYSTEMCurrentControlSetControlFileSystem and set it to 1. That should disable short names creation. Refer to this Microsoft TechNet article to read more about the solution.

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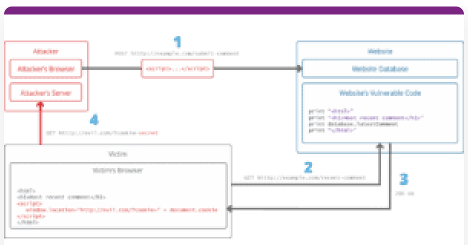

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