

Password Recovery Speeds

How long will your password stand up

This document shows the approximate amount of time required for a computer or a cluster of computers to guess various passwords. The figures shown are approximate and are the *maximum time required* to guess each password using a simple brute force "key-search" attack, it may (and probably will) be possible to guess correctly without trying all the combinations shown using other methods of attack or by having a "lucky guess".

See the [bottom of the page](#) for details about the classes of attack.

10 Characters

Just numbers. As you can see choosing a password from such a small range of characters is a bad idea.

Numerals		0123456789					
Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	100	Instant	Instant	Instant	Instant	Instant	Instant
3	1000	Instant	Instant	Instant	Instant	Instant	Instant
4	10,000	Instant	Instant	Instant	Instant	Instant	Instant
5	100,000	10 Secs	Instant	Instant	Instant	Instant	Instant
6	1 Million	1½ Mins	10 Seconds	Instant	Instant	Instant	Instant
7	10 Million	17 Mins	1½ Mins	1½ Mins	Instant	Instant	Instant
8	100 Million	2¾ Hours	17 Mins	1½ Mins	10 Seconds	Instant	Instant
9	1000 Million	28 Hours	2¾ Hours	17 Mins	1½ Mins	10 Seconds	Instant

26 Characters

The full alphabet, either upper or lower case (not both in this case).

Upper Case Alpha		ABCDEFGHIJKLMNOPQRSTUVWXYZ					
Lower Case Alpha		abcdefghijklmnopqrstuvwxyz					
Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	676	Instant	Instant	Instant	Instant	Instant	Instant
3	17,576	< 2 Secs	Instant	Instant	Instant	Instant	Instant
4	456,976	46 Secs	5 Secs	Instant	Instant	Instant	Instant
5	11.8 Million	20 Mins	2 Mins	12 Secs	Instant	Instant	Instant
6	308.9 Million	8½ Hours	51½ Mins	5 Mins	30 Secs	3 Secs	Instant
7	8 Billion	9 Days	22 Hours	2¼ Hours	13 Mins	1¼ Mins	8 Secs
8	200 Billion	242 Days	24 Days	2½ Days	348 Mins	35 Mins	3½ Mins
9	5.4 Trillion	17 Years	21 Months	63 Days	6¼ Days	15 Hours	1½ Hours
10	141 Trillion	447 Years	45 Years	4½ Years	163 Days	16 Days	39¼ Hours
12	95 Quadrillion	302,603 Years	30,260 Years	3,026 Years	302 Years	30 Years	3 Years
15	1.6 Sextillion	53 Trillion years	532 Million years	53 Million years	5 Million years	531,855 Years	53,185 Years
20	19.9 Octillion	63 Quadrillion years	6.3 Quadrillion years	631 Trillion years	63.1 Trillion years	6.3 Trillion years	631 Billion years

36 Characters

The full alphabet, either upper or lower case (not both in this case) plus numbers.

Upper Case Alpha		ABCDEFGHIJKLMNOPQRSTUVWXYZ					
Lower Case Alpha		abcdefghijklmnopqrstuvwxyz					
Numerals		0123456789					
Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	1,296	Instant	Instant	Instant	Instant	Instant	Instant
3	46,656	4 Secs	Instant	Instant	Instant	Instant	Instant
4	1.6 million	2½ Mins	16 Seconds	1½ Seconds	Instant	Instant	Instant
5	60.4 million	1½ Hours	10 Mins	1 Min	Instant	Instant	Instant

52 Characters

This time we're trying the full alphabet but using a mixture of upper and lower case letters, that effectively doubles the number of combinations when compared with just using a single case.

Mixed Alpha		AaBbCcDdEeFfGgHhIiJjKkLl MmNnOoPpQqRrSsTtUuVvWw XxYyZz					
Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	2,704	Instant	Instant	Instant	Instant	Instant	Instant
3	140,608	14 Secs	< 2 Secs	Instant	Instant	Instant	Instant
4	7.3 Million	12½ Mins	1¼ Mins	8 Secs	Instant	Instant	Instant
5	380 Million	10½ Hours	1 Hour	6 Minutes	38 Secs	4 Secs	Instant
6	19 Billion	23 Days	2¼ Days	5½ Hours	33 Mins	3¼ Mins	19 Secs
7	1 Trillion	3¼ Years	119 Days	12 Days	28½ Hours	3 Hours	17 Mins
8	53 Trillion	169½ Years	17 Years	1½ Years	62 Days	6 Days	15 Hours
9	2.7 Quadrillion	8,815 Years	881 Years	88 Years	9 Years	322 Days	32 Days

62 Characters

Mixed upper and lower case alphabetic characters plus numbers.

Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	3,844	Instant	Instant	Instant	Instant	Instant	Instant
3	238,328	23 Secs	< 3 Secs	Instant	Instant	Instant	Instant
4	15 Million	24½ Mins	2½ Mins	15 Secs	< 2 Secs	Instant	Instant
5	916 Million	1 Day	2½ Hours	15¼ Mins	1½ Mins	9 Secs	Instant
6	57 Billion	66 Days	6½ Days	16 Hours	1½ Hours	9½ Mins	56 Secs
7	3.5 Trillion	11 Years	1 Year	41 Days	4 Days	10 Hours	58 Mins
8	218 Trillion	692 Years	69¼ Years	7 Years	253 Days	25¼ Days	60½ Hours

86 Characters

Mixed upper and lower case alphabet and common symbols.

Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	7,396	Instant	Instant	Instant	Instant	Instant	Instant
8	2.9 Quadrillion	9,488 Years	948 Years	94 Years	57 Years	346 Days	34 Days

96 Characters

Mixed upper and lower case alphabet plus numbers and common symbols.

Password		Class of Attack					
Length	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
2	9,216	Instant	Instant	Instant	Instant	Instant	Instant
3	884,736	88½ Secs	9 Secs	Instant	Instant	Instant	Instant
4	85 Million	2¼ Hours	14 Mins	1½ Mins	8½ Secs	Instant	Instant
5	8 Billion	9½ Days	22½ Hours	2¼ Hours	13½ Mins	1¼ Mins	8 Secs
6	782 Billion	2½ Years	90 Days	9 Days	22 Hours	2 Hours	13 Mins
7	75 Trillion	238 Years	24 Years	2½ Years	87 Days	8½ Days	20 Hours
8	7.2 Quadrillion	22,875 Years	2,287 Years	229 Years	23 Years	2¼ Years	83½ Days

Examples

These are just a couple of examples to show the resilience of certain types of password, using the information in the tables above you will be able to make your own examples.

Sample Passwords		Class of Attack					
Pwd	Combinations	Class A	Class B	Class C	Class D	Class E	Class F
darren	308.9 Million	8½ Hours	51½ Mins	5 Mins	30 Secs	3 Secs	Instant
Land3rz	3.5 Trillion	11 Years	1 Year	41 Days	4 Days	10 Hours	58 Mins
B33r&Mug	7.2 Quadrillion	22,875 Years	2,287 Years	229 Years	23 Years	2¼ Years	83½ Days

Classes of Attack

These are just some example speeds, I'd be interested to hear from people with more information about the speed taken to crack various types of passwords with various hardware.

A. 10,000 Passwords/sec

Typical for recovery of Microsoft Office passwords on a Pentium 100

B. 100,000 Passwords/sec

Typical for recovery of Windows Password Cache (.PWL Files) passwords on a Pentium 100

C. 1,000,000 Passwords/sec

Typical for recovery of ZIP or ARJ passwords on a Pentium 100

D. 10,000,000 Passwords/sec

Fast PC, Dual Processor PC.

E. 100,000,000 Passwords/sec

Workstation, or multiple PC's working together.

F. 1,000,000,000 Passwords/sec

Typical for medium to large scale distributed computing, Supercomputers.

[Distributed.net](#)'s Project Bovine RC5-64 possibly the fastest computer on earth has recently reached a speed of 76.1 Billion passwords per second!

Source: [lockdown.co.uk](#)

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