

# Password Generators & Extended Character Set Passwords

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PasswordsCon 2014

Presented by William Gray

# Set your new password

Frank
Manowar
frankmanowar@mailinator.com
Password

Sign up

Already have an account? [Log in](#)

By joining, or logging in via Facebook, you accept Change.org's [terms of service](#) and [privacy policy](#).

Better make it a strong one?

# What kind of P@\$\$w0rd do you choose?

## DECISION POINTS

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*Divining the future*

# Maybe this is important?

## 'Secret' Nuclear Missile Launch Code During Cold War Was '00000000'

The Huffington Post | By Ryan Grenoble [Twitter](#) [Facebook](#)

Posted: 12/05/2013 2:13 pm EST | Updated: 01/23/2014 6:58 pm EST



# Do this, don't do that, can't you read the sign?

PASSWORD *hidden*

Password can only contain letters [a-z], numbers [0-9], periods [.), underscores [\_], and hyphens [-].

••••••••

••••••••••••

•••••••

SAVE CANCEL

*NYTimes dot com (uses regexes to validate?)*

# The best it's gonna get

0123456789

ABCDEFGHIJKLM

NOPQRSTUVWXYZ

abcdefghijkl # \$ % ^ < > , . : ; ' "

mnopqrstuvwxyz

~ ` / ' ! ? } { & [ ] - \* + =

*Assuming you're even allowed to use them all!*

# What's it all for?

password123

p@\$\$w0rd

superDad1980

2sexy4u

*Some People think these are good!*

# Common Restrictions

## ▼ What are the format requirements for a Passcode?

Your Passcode must:

Be between 8-20 characters

Include at least 1 number and 1 letter

Not contain any spaces

Not contain the characters \$ < > & ^ ! [ ]

Not be the same as your Online ID

Be case-sensitive

*A pervasive password policy permeating our ether*



# Is it all for naught?

Bocephus' House of Mayhem  
(dot com)

email

password

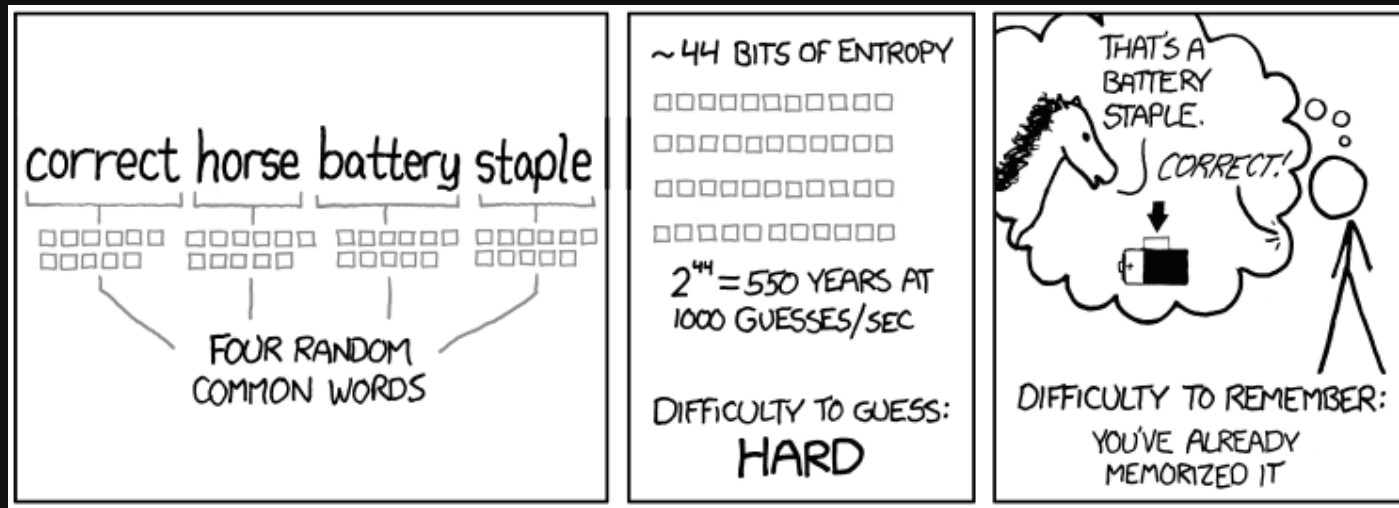
card #

submit

Your local bait, tackle and arms  
resource

<http://research.microsoft.com/pubs/217510/passwordPortfolios.pdf>

# correct horse battery staple



<http://xkcd.com/936/>

# Shoe-horning the horse

yJKa1.Z FY>VA! t\u@\$\\r #GZuLfM4

C0rr3ct h0rse, batt3ry stap13!

- Completely random version is very hard to remember
- Swapping out chars with similar matches won't stop hashcat
- And was it O's or E's or A's you replaced?

# So we're stuck?

0123456789

ABCDEFGHIJKLM

NOPQRSTUVWXYZ

abcdefghijkl # \$ % ^ < > , . : ; ' "

mnopqrstuvwxyz

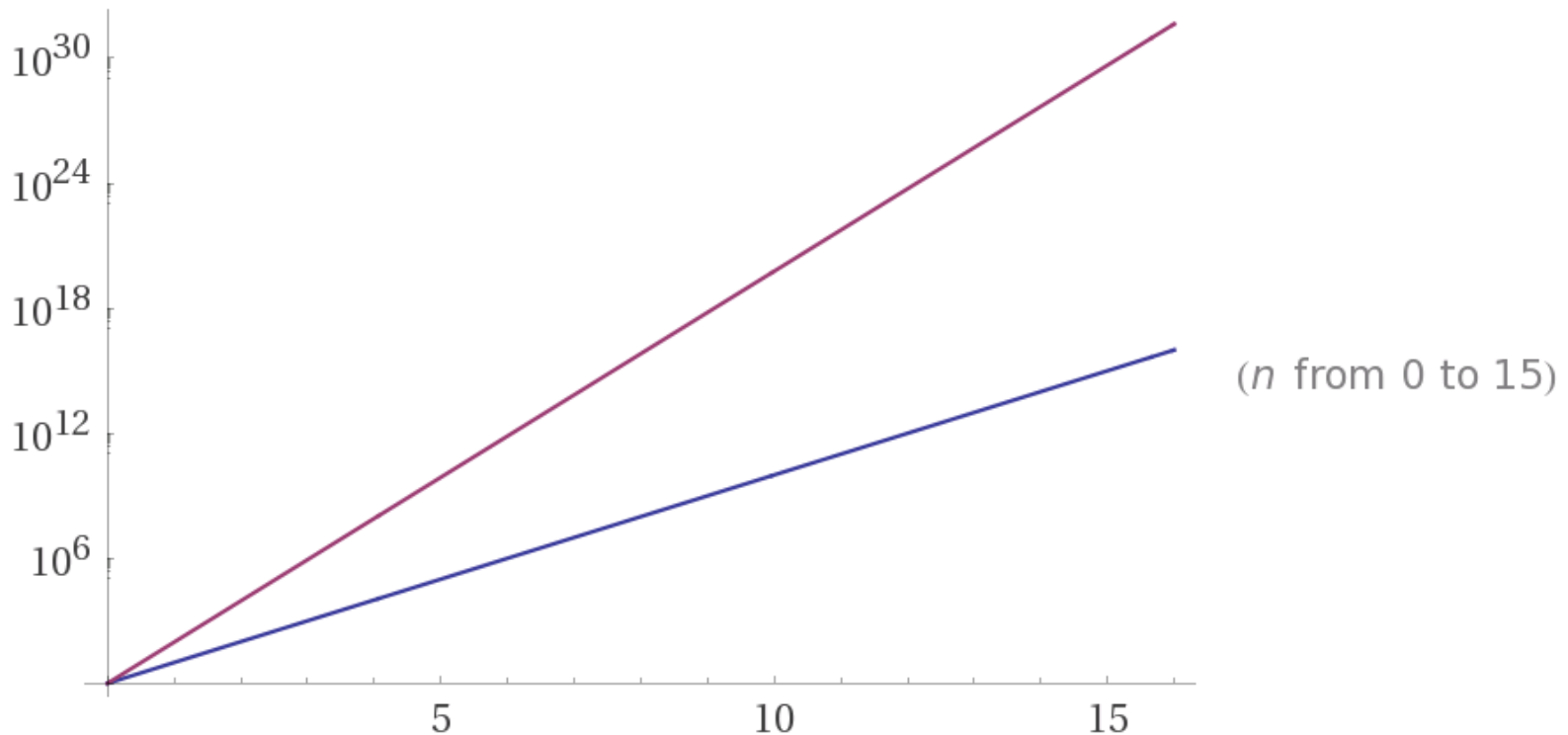
~ ` / ' ! ? } { & [ ] - \* + =

- With fewer than 100 characters for each character in our password
- We use password generators and managers or re-use passwords
- Hashcat touts 29528 million guesses per second for SHA-1 on 8 graphics cards

# What about the rest of Unicode?

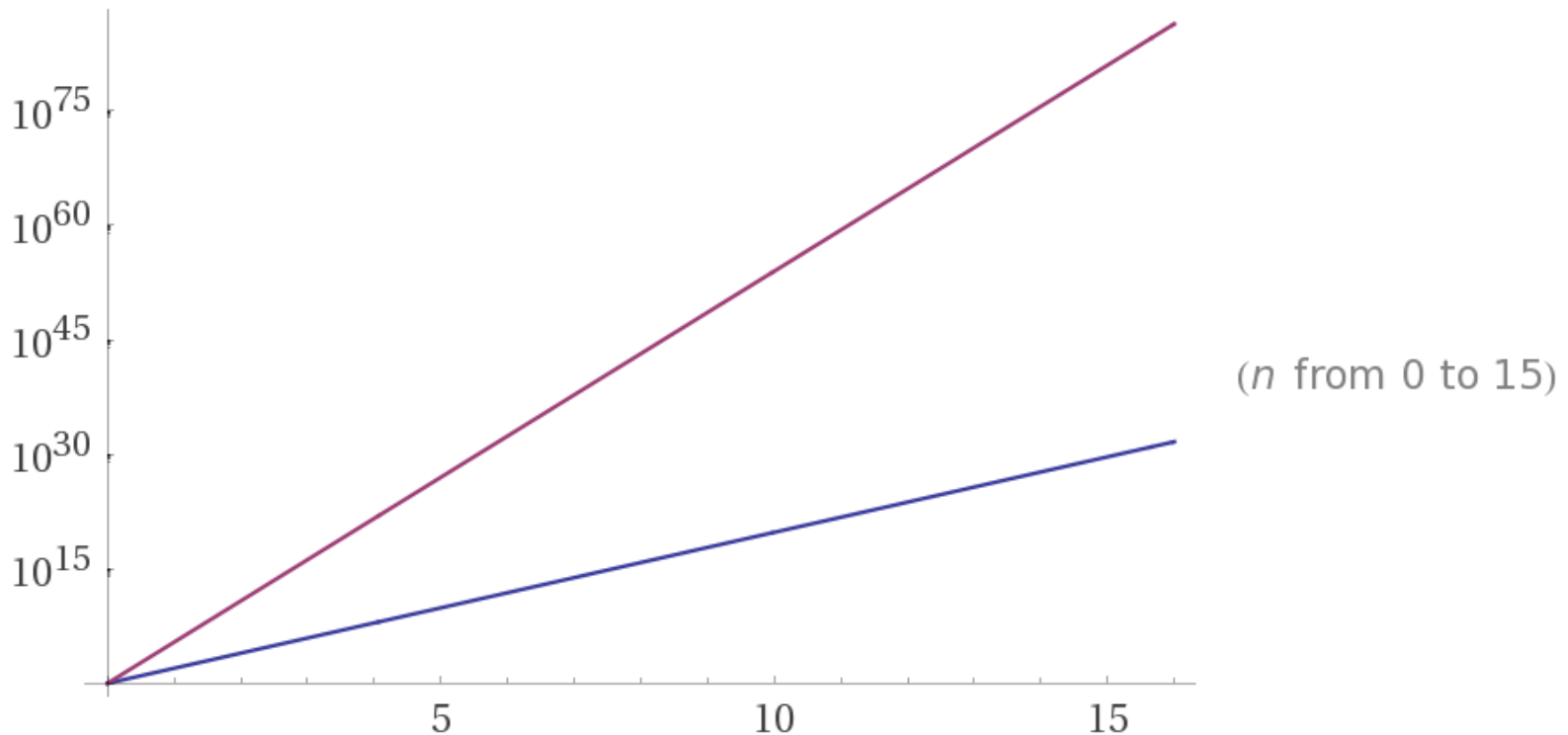
- Our basic latin set is in the lower portion of Unicode
- In Unicode 7.0 released this June, there are 250,000+ assigned code points
- Imagine that:  $250,000^n$  vs  $95^n$ , what would that look like?  
a five character unicode password gives you the same complexity at a 16 char ascii password

# Complexity of PINs vs our basic set



Computed by Wolfram|Alpha

# Complexity of basic latin vs Unicode



Computed by Wolfram|Alpha

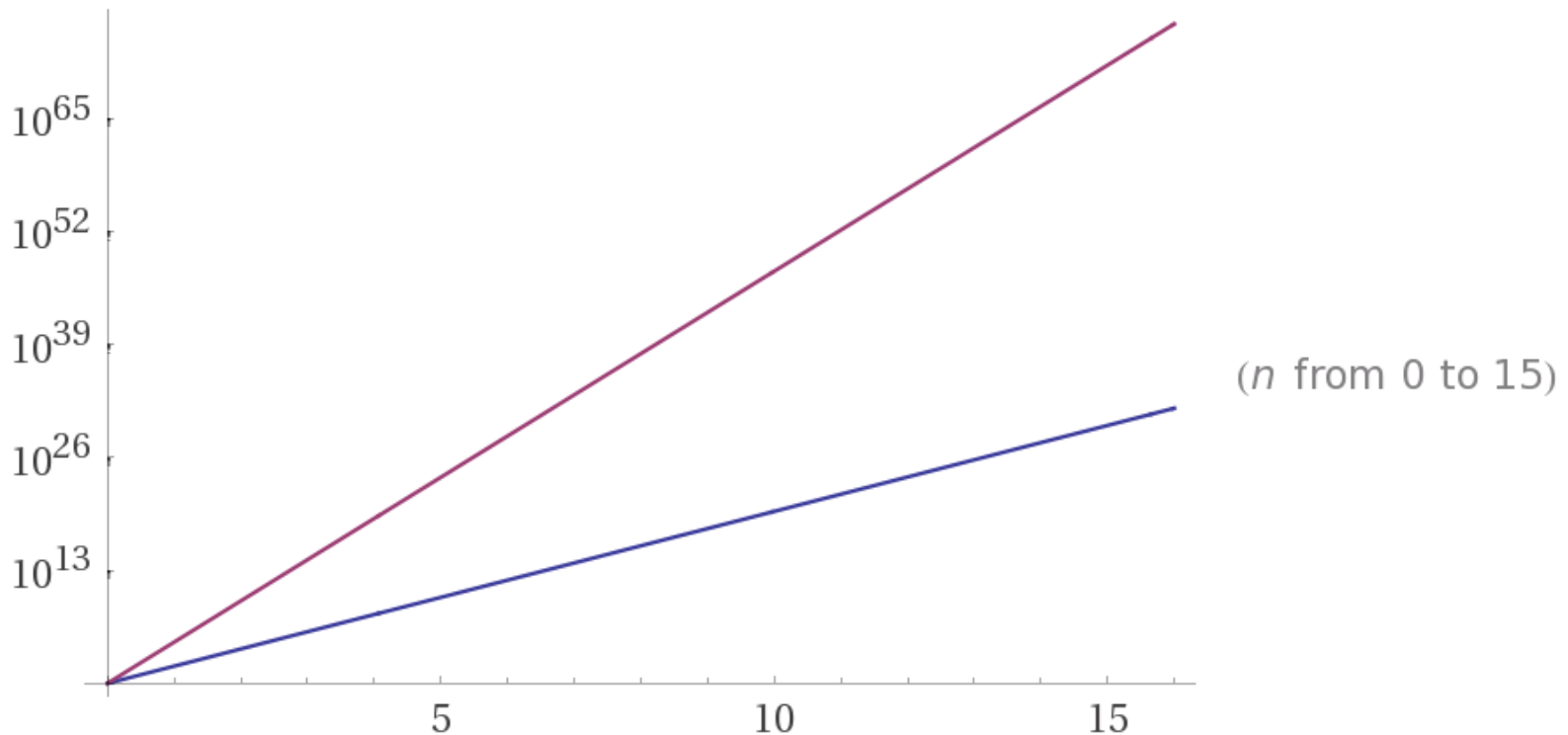
# Something must be done!



- Let's start generating ridiculous passwords we can't even type
- This is a sample project, it selects randomly from over 55,000 Unicode characters
- BLASTER GITHUB URL GOES HERE
- This isn't hard to do



# Complexity of basic latin vs Blaster



Computed by Wolfram|Alpha

# But is it useful?

## DECISION POINTS

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- We surveyed 25 popular websites, from Alexa top 100 and personal favorites
- We suspected many would not accept these passwords
- We also thought that maybe by including common restrictions they might work
- By that I mean, 1 digit, 1 upper, 1 lower, 1 meta from the basic set

# You Betcha!

- 14 of the 25 accepted Unicode chars beyond our basic set
- All disallowing these chars also rejected even if restrictions were met
- Those accepting Unicode had the least restrictions, most liberal policies

# Things are gonna change, I can feel it



Plan:

- 1. Make this an option in YOUR password generator
- 2. People will start using them!
- 3. They will find sites where they can't and then they'll...
- EMAAAAAAIL! All those sites and complain complain complain!

# Questions? Thoughts?

*I meant what I said, and I said what I meant*

- <http://zetetic.net>
- @TeamZetetic
- @billymeltdown