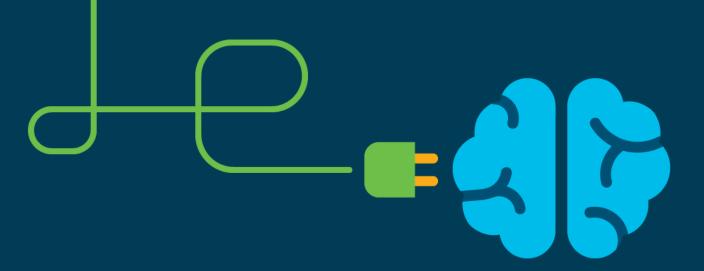
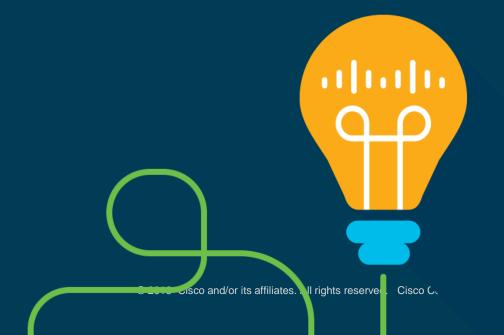
CISCO Academy



Password Cracking using Hashcat

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Introduction to Hash



What is Hash

Hash is the simplest type of cryptographic operation which is the result of hashing algorithm.



Hash Algorithm

Hashing algorithm:

- 1. NT hash
- 2. MD5
- 3. SHA 128
- 4. SHA 256
- 5. SHA 512



Hash Example

MD5

5f4dcc3b5aa765d61d8327deb882cf99

SHA-256

5E884898DA28047151D0E56F8DC6292773603D0D6AABBDD62A11EF721D1542D8

SHA-512

B109F3BBBC244EB82441917ED06D618B9008DD09B3BEFD1B5E07394C706A8BB980B1D7785 E5976EC049B46DF5F1326AF5A2EA6D103FD07C95385FFAB0CACBC86



Hash Characteristics

- Fixed Length
- One way process
- Same word always gives identical hash value



Salt

Adding random value characters to the hash.

Characteristics:

- 1. Often is not secret
- 2. Must be unique to each password



Salt Example

Password: abcde

Salt: K56Khj

Salted Password: abcdeK56Khj

MD5 Hash: 6718dc2b249d3f9cfd1d55f4774718fe



Hash Location

Linux: /etc/shadow

Windows: C:\windows\system32\config\SAM

Active Directory NTDS.dit in %SystemRoot%/NTDS

SQL database

Router



Cracking the Hash

- The most realistic way to crack the hash is by using dictionary or brute force.
- The latter is effective for relatively short plain-text/password
- Dictionary attack itself is divided into different methods
 - 1. "Basic" dictionary attack
 - 2. Rainbow attack (pre-calculated hashes)
 - Mask attack (dictionary + rules)



Tools

Hashcat

JohnTheRipper

Online Tools



Hashcat



Hashcat Strength

- Cracking password using GPU is the trend
- Modular



The Four Arguments of Hashcat

Hashcat –m <hash-type> -a <attack-mode> <file-name> <dictionary>

The four essential arguments are

- 1. Hash type
- 2. Attack mode
- 3. File name (target hashes)
- 4. Dictionary



First Argument: Hash type

https://hashcat.net/wiki/doku.php?id=hashcat

Option = -m, hash type example

- 1. MD5 = 0
- 2. NT-Hash = 1000
- 3. SHA1 = 100
- 4. SHA-512 = 1700
- 5. SHA512crypt = Unix

Second Argument: Attack Mode

Option= -a, Attack mode

- 0 = Straight
- 1 = Combination
- 3 = Brute-force
- 6 = Hybrid wordlist + mask
- 7 = Hybrid mask + wordlist



Third Argument: File Name

Replace filename with list of hashes or you can input a single hash here



Fourth Argument: Dictionary

Lab purpose:

- 1. Rockyou
- 2. Using your own

Great dictionary for a real password cracking activity:

- 1. Rockyou
- 2. Geovedi Indonesian wordlist
- Danielmiessler SecLists



Demo



Feel Free to Access File

https://github.com/devismail2y/hashcatlab



Basic Password Cracking

hashcat -m 0 -a 0 BasicPasswordCracking.txt ezwordlist.txt



Masking Attack

hashcat -m 0 -a 1 BasicPasswordCracking.txt CommonEnglishWords.txt BasicPasswordCracking.txt



Password Cracking with Rule

hashcat -m 0 -a 0 BasicPasswordCracking.txt ezwordlist.txt -r /usr/share/hashcat/rules/dive.rule



Brute-Forcing

Basic:

hashcat -m 0 -a 3 BasicPasswordCracking.txt ?a?a?a?a

Increment:

hashcat -m 0 -a 3 BasicPasswordCracking.txt -i ?a?a?a?a



Terimakasih

