

# **Linux Administration**

## **Regular expressions**

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# What are regular expressions?

- Regular expressions ('regex' or sometimes 'RE') are a way to create search patterns for text strings.
- Regular expressions can be used in a Linux environment, either against file names or to modify text and configuration files.
- Regular expressions are available for various programming languages (JavaScript, PHP, C, C++, Java, Perl, Python, ...). Note: the implementation is not the same across all languages.

# Basic matching

- Matching one letter:  
*grep --color a /etc/passwd*
- Matching a word:  
*grep --color bash /etc/passwd*
- Matching a phrase, with a space:  
*grep "Jane Doe" /etc/passwd*

# Matching a set of characters

- Matching from a list of characters:  
*grep --color ms-sql-[sm] /etc/services*
- Matching any character:  
*grep --color 'ft.' /etc/services*
- Listing only TCP services from the /etc/services file:  
*grep '[0-9]\{1,5\}/tcp' /etc/services*

# Boundaries

- ^ will match the beginning of a line.
- \$ will match the end of a line.
- ^\$ will match an empty line.
- Extracing the bare minimum from a configuration file (without comments):  
*sudo grep -v '#' /etc/ssh/sshd\_config | grep -v ^\$*

# Character classes

- `[[:lower:]]` equivalent to `[a-z]`
- `[[:upper:]]` equivalent to `[A-Z]`
- `[[:alpha:]]` equivalent to `[a-zA-Z]`
- `[[:digit:]]` equivalent to `[0-9]`
- `[[:alnum:]]` equivalent to `[a-zA-Z0-9]`
- `[[:blank:]]` space or tabulation
- `[[:space:]]` any whitespace character (including new lines)

# Extracting an IPv4 address

Here is one way to extract the IPv4 address from the output of the 'ip' command:

```
ip addr show eth0 | grep "inet " | grep  
-o '[0-9]\{1,3\}\.[0-9]\{1,3\}\.[0-9]\{1,3\}\.[0-9]\{1,3\}' | tr -d '/'
```