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Feedback on OpenLDAP Password Policy usage in 2026 and possible evolutions

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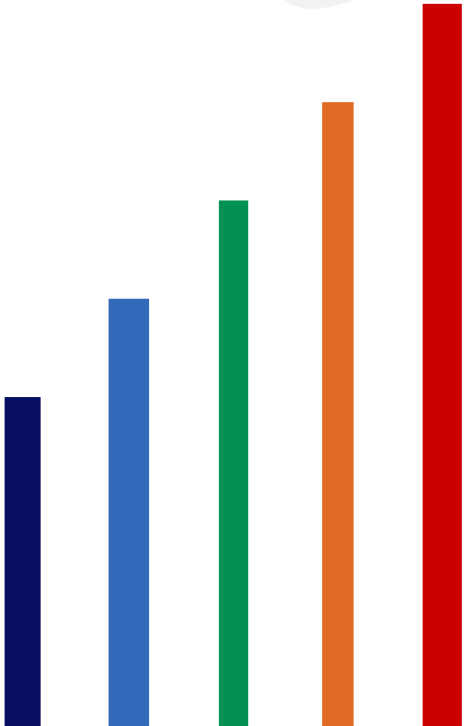

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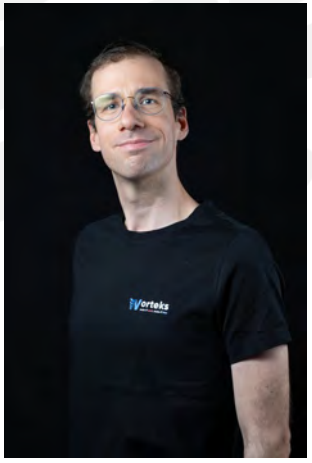
Presentation

David Coutadeur



Architect specialized in identity management

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LemonLDAP::NG
LTB-Project : OpenLDAP-LTB, SSP, SD
LSC
FusionIAM

Worteks

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Identity and access management solution

V'Opla

Complex infrastructure deployment solution

Presentation

LTB-project

- Community around LDAP integration:
  - **OpenLDAP-LTB**: Debian / Red-Hat packages for OpenLDAP
  - LDAP monitoring modules
  - **Self Service Password**: Web interface to reset password
  - **Service-desk**: directory management for admins
  - **White Pages**: directory management for users
  - Various scripts helping LDAP integration and management
  - OpenLDAP overlays:
    - **ppm**: Password Policy Module

One URL: https://ltb-project.org

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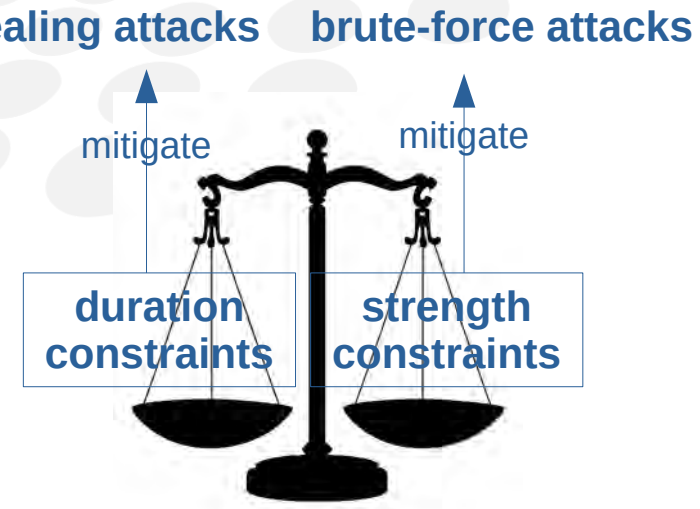
Password policies

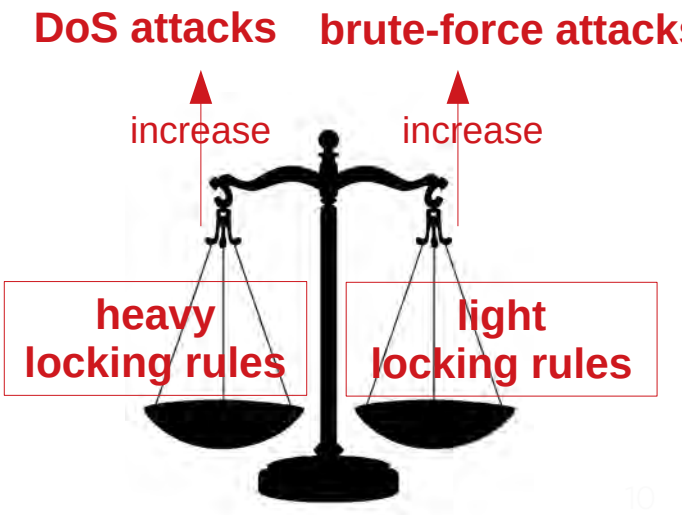
Password policies

What is a password policy?

set of rules about the user password

- **rules about strength**
  - length (minimum, maximum)
  - character classes (upper, lower, digit, special)
  - word blacklist
- **rules about password duration**
  - requirement to change the password after a delay (fixed or inactivity delay)
  - prohibition of password history reuse
  - prohibition to change password before a delay
- **locking rules**
  - locking after some bad authentications
  - locking because of unusual activity detection





Password policies

Normalizations

- No universal password policy!
- Recommandations / standards:
  - **NIST**, password guidelines, august 2024:
    - length (long passphrase) over complexity (too predictable)
    - no character classes required
    - no frequent change required
    - block common or compromised password
  - **IETF internet draft: "Password Policy for LDAP Directories"**

    draft-behera-ldap-password-policy (version 00: october 1999, version 11: february 2022), implemented into main directories:
    - OpenLDAP password policy overlay, SUN DS, Tivoli DS, Fedora DS, RH DS

Password policies

draft-behera-ldap-password-policy

- version 11, february 2022 (version 10 was released in 2009)
- Defines:
  - ☑ functional specifications of the password policy
  - ☑ LDAP schema for password policies and operationnal attributes
  - ☑ extended request and response controls
  - ☑ the way server should / must include ppolicy into LDAP operations (bind, modify,...)
  - ☑ the way clients should / must include ppolicy into LDAP operations (bind, modify,…)

Password policies

draft-behera-ldap-password-policy

- Does **not** define:
  - ☒ general considerations for managing policies (scope defined by SubtreeSpecification attribute, ppolicy overload)
  - ☒ replication and security considerations
  - ☒ the enforcement of password quality criteria, which are implementation specific
  - ☒ an automatic way to force password reset after a modification is performed by admin

Password policies

Password policy overlay implements the IETF draft:

- ☑ the LDAP schema for password policies and operationnal attributes
- ☑ the extended request and response controls
- ☑ the server implementation
- ☑ the client implementation (ldapsearch, ldapmodify,…)
- ☑ protection against brute-force, based upon pwdMinDelay, pwdMaxDelay — New in 2.5!
- ☑ support of locking based upon pwdLastSuccess, pwdMaxIdle attributes — New in 2.6! New in 2.5!
- ☑ support of pwdMaxLength attribute — New in 2.5!
- ☑ support of pwdStartTime, pwdEndTime attributes — New in 2.5!
- ☑ password policies managed by scope in the DIT or by group — New in 2.7!

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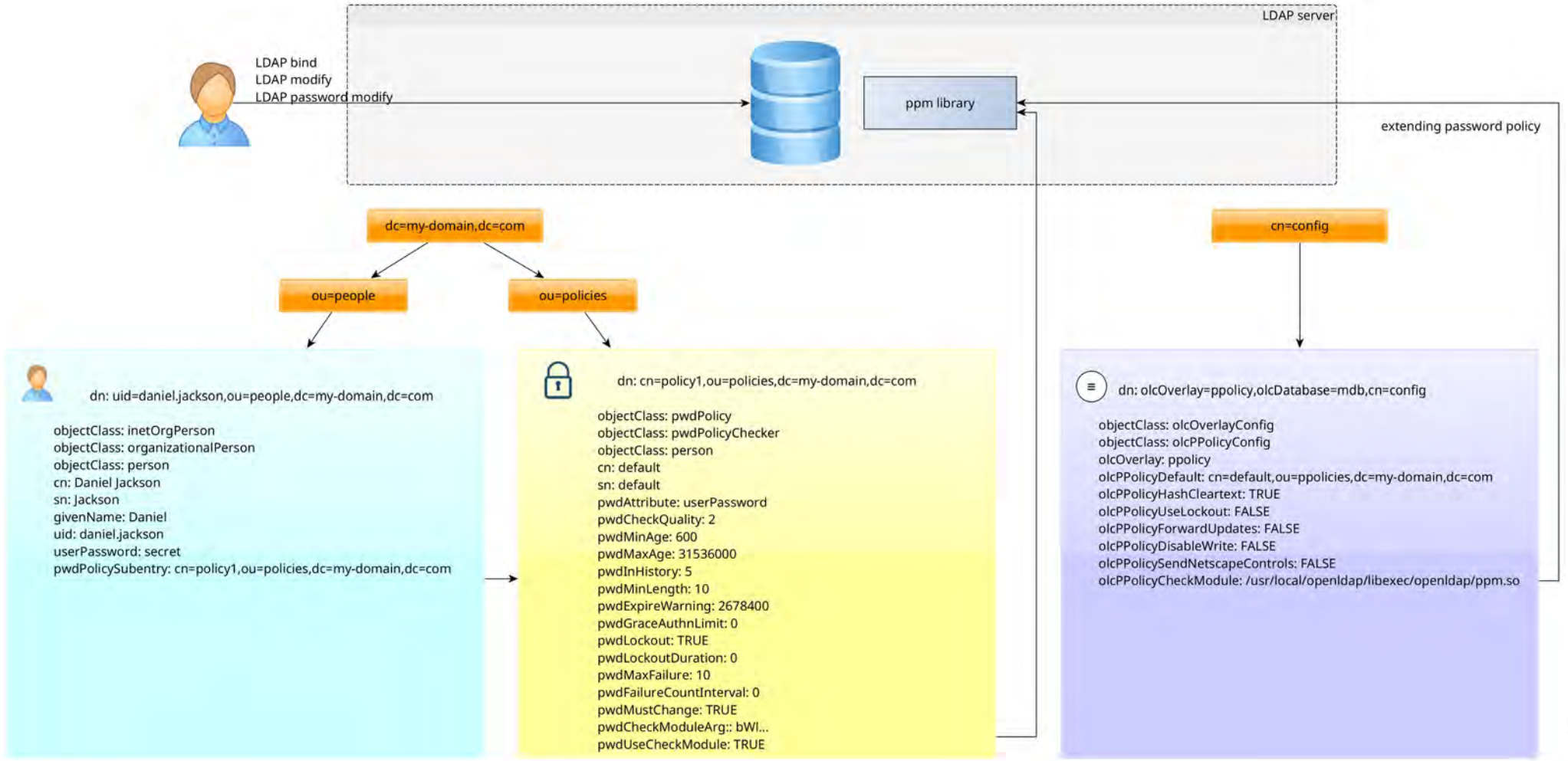
Ppolicy implementation (2.6)



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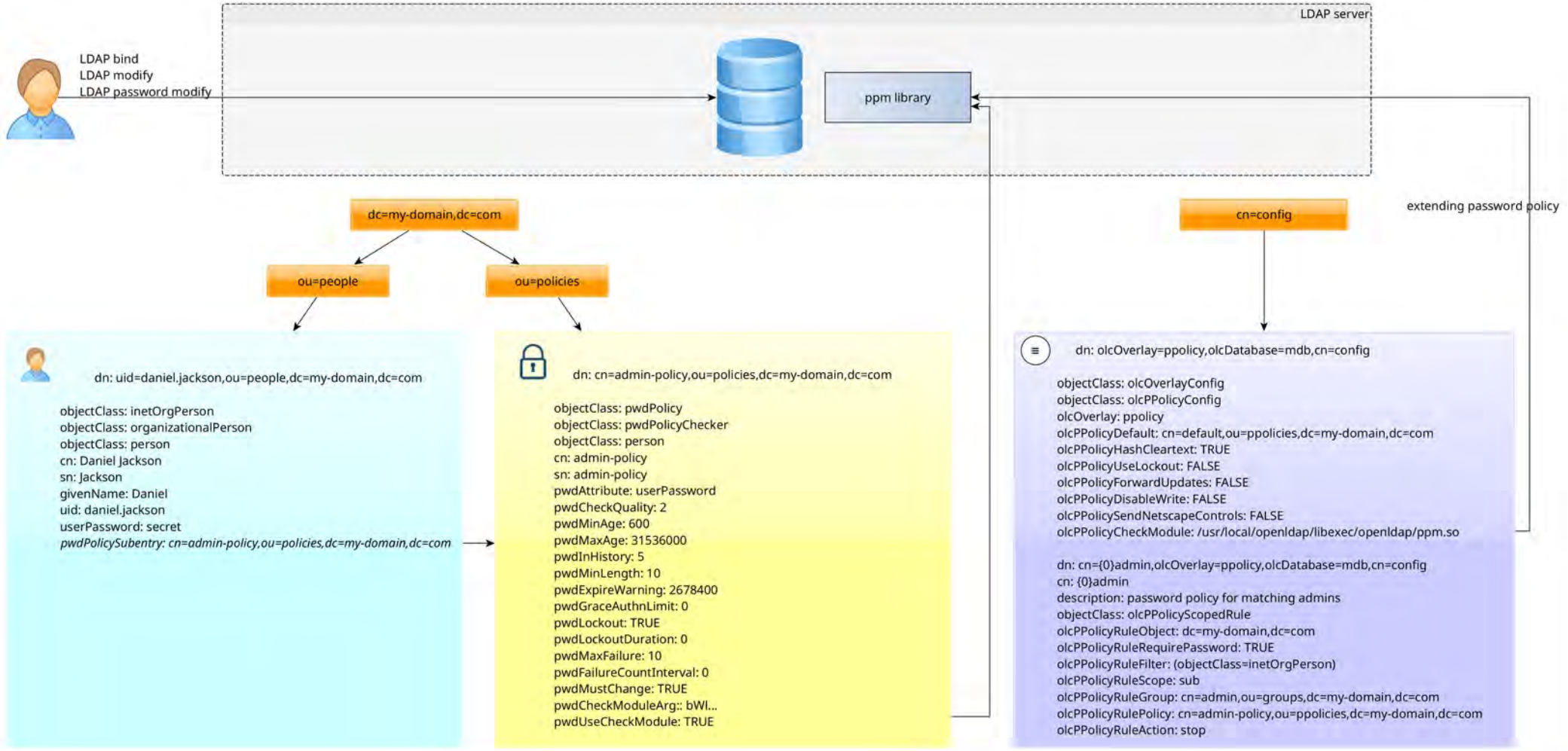
Ppolicy implementation (2.7)



Ppolicy implementation

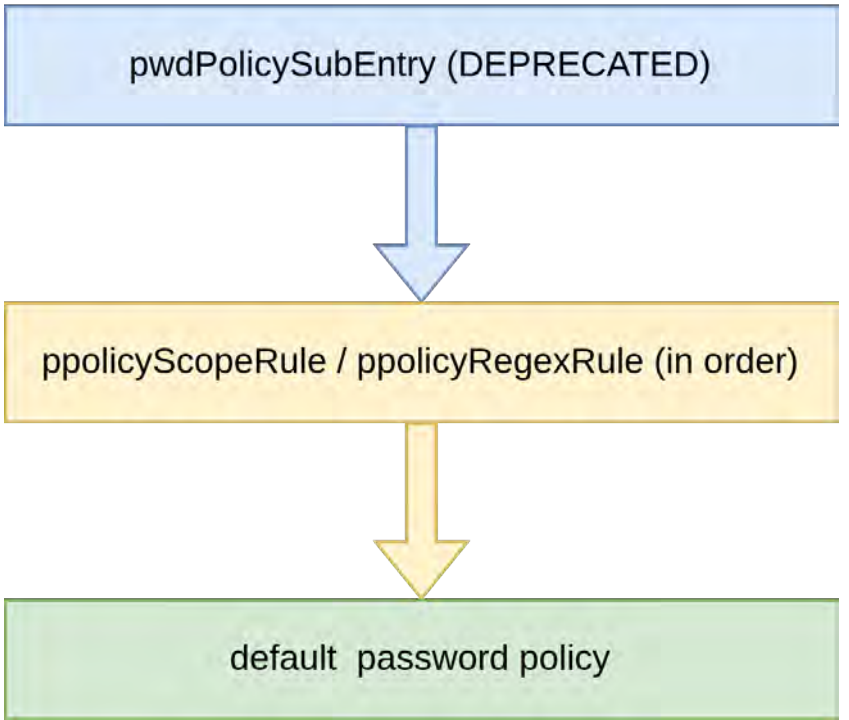
News in 2.7

- Ppolicy rules
  - list of rules
  - scope or regex rule
  - first match when rule=stop
  - default match when rule=continue

- Rehash feature
  - rehash user password at bind
  - defined in a password policy:

```
pwdRehashOnBind=TRUE
pwdDefaultHash={ARGON2}
```

Precedence of ppolicy assignment



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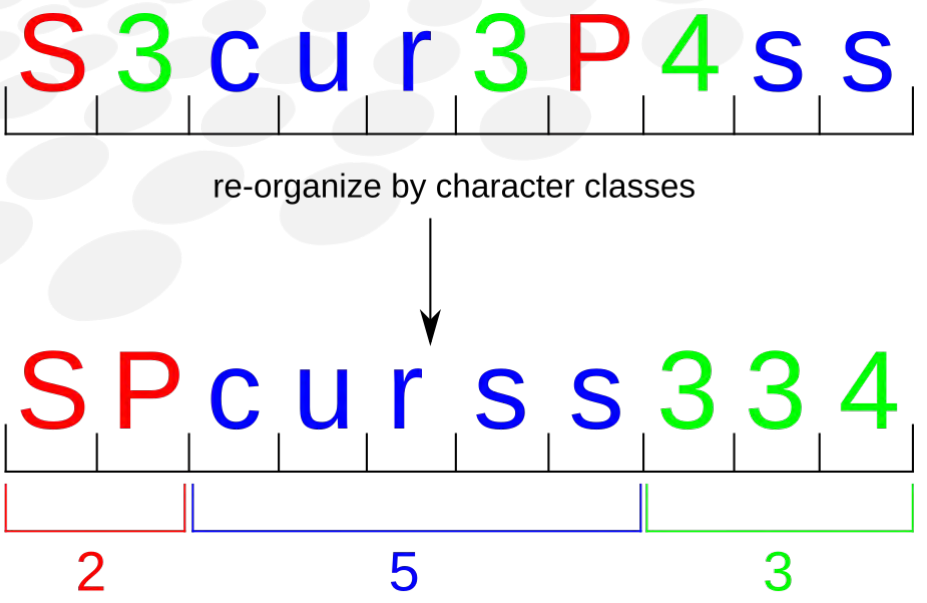

Character classes parameters

- definition of character classes
- minQuality
- min_for_point (for each character class)
- min (for each character class)

$quality_{uppercase}$ = 1 if 2 >= $min_for_point_{uppercase}$, else 0
$quality_{lowercase}$ = 1 if 5 >= $min_for_point_{lowercase}$, else 0
$quality_{digit}$ = 1 if 3 >= $min_for_point_{digit}$, else 0

Policy example:

```
minQuality 3
class-upperCase ABCDEFGHIJKLMNOPQRSTUVWXYZ 0 1
class-lowerCase abcdefghijklmnopqrstuvwxyz 0 1
class-digit 0123456789 0 1
class-special <>,?;.:/!§ù%*µ^¨$£²&é~"#' 0 1
```

Criteria:

2 >= $min_{uppercase}$

5 >= $min_{lowercase}$

3 >= min_{digit}

$quality_{uppercase}$ + $quality_{lowercase}$ + $quality_{digit}$ >= minQuality

ppm

Other strength parameters

- maxLength
- checkRDN
- forbiddenChars
- maxConsecutivePerClass
- useCracklib
- cracklibDict

CheckRDN criteria:

dn: uid=daniel.jackson,ou=people,dc=my-domain,dc=com

- new password: secret → OK
- new password: daniel → KO

Policy example:

```
maxLength 12
checkRDN 1
forbiddenChars ££
maxConsecutivePerClass 8
useCracklib 1
cracklibDict /var/cache/cracklib/cracklib_dict
```

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Evolutions

Evolutions

List for Santa

- Fix replication issues for operational attributes, like pwdLastSuccess
  - Issue when huge authentication trafic (lastBindPrecision)
  - Replication slave → master (doc about updateRef + chain overlay?)
- new parameter for account disabling: pwdAccountDisabled
  - pwdAccountLockedTime exists for temporary of permanent locking
  - most of the time, it allows automatic unlock, from user or admin
  - pwdAccountDisabled would be more restrictive
  - proposition of IETF ppolicy draft evolution for standardization of the schema
  - can also be achieved with custom schema and some ACL

Evolutions

List for Santa

- Write a standard for strength policy rules
- Reject password changes according to context criteria:
  - attributes in LDAP entry
  - attributes linked to LDAP entry (group,…)
  - environment: client IP address range, date and time of request
- Reject password with insufficient entropy (external library / API for entropy check?)

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Thank you for your attention

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