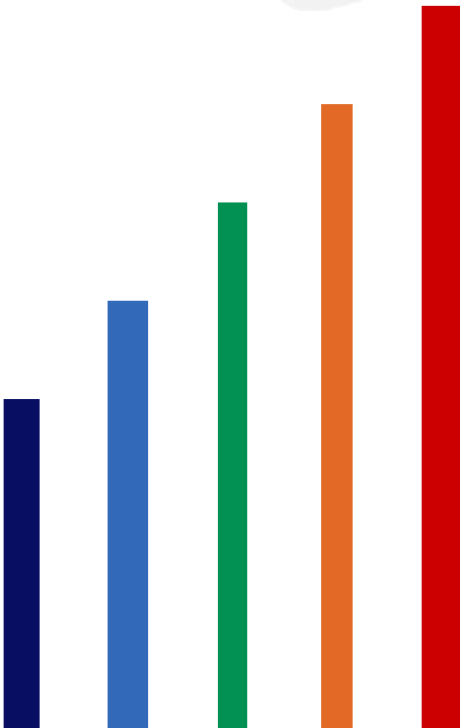




Feedback on OpenLDAP Password Policy usage in 2026 and possible evolutions

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Presentation

David Coutadeur



Architect specialized in identity management
open-source enthusiast
~ 15 years of experience in IT



david.coutadeur@worteks.com



[@dcoutadeur](https://twitter.com/dcoutadeur)



[david-coutadeur](https://www.linkedin.com/in/david-coutadeur)



LemonLDAP::NG

LTB-Project : OpenLDAP-LTB, SSP, SD

LSC

FusionIAM

Worteks

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LSC, LemonLDAP::NG, LDAP Tool Box, FusionIAM and OpenStack

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Collaborative platform



Identity and access management solution



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>

Password policies

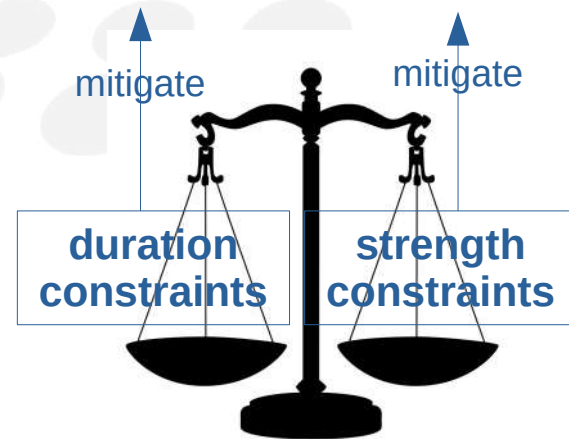
Password policies

What is a password policy?

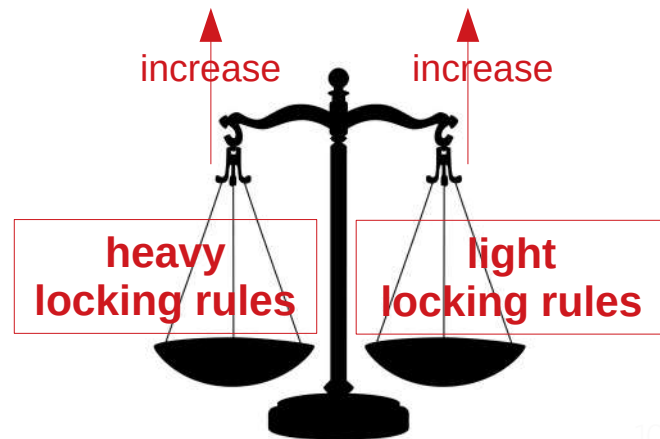
set of rules about the user password

- **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

stealing attacks brute-force attacks



DoS attacks brute-force attacks



Password policies

Normalizations

- No universal password policy!
- Recommendations / 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 operational 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 operational attributes
- ✓ the extended request and response controls
- ✓ the server implementation
- ✓ the client implementation (ldapsearch, ldapmodify,...)
- ✓ protection against brute-force, based upon pwdMinDelay, pwdMaxDelay
- ✓ support of locking based upon pwdLastSuccess, pwdMaxIdle attributes
- ✓ support of pwdMaxLength attribute
- ✓ support of pwdStartTime, pwdEndTime attributes
- ✓ password policies managed by scope in the DIT or by group

New in 2.5!

New in 2.6!

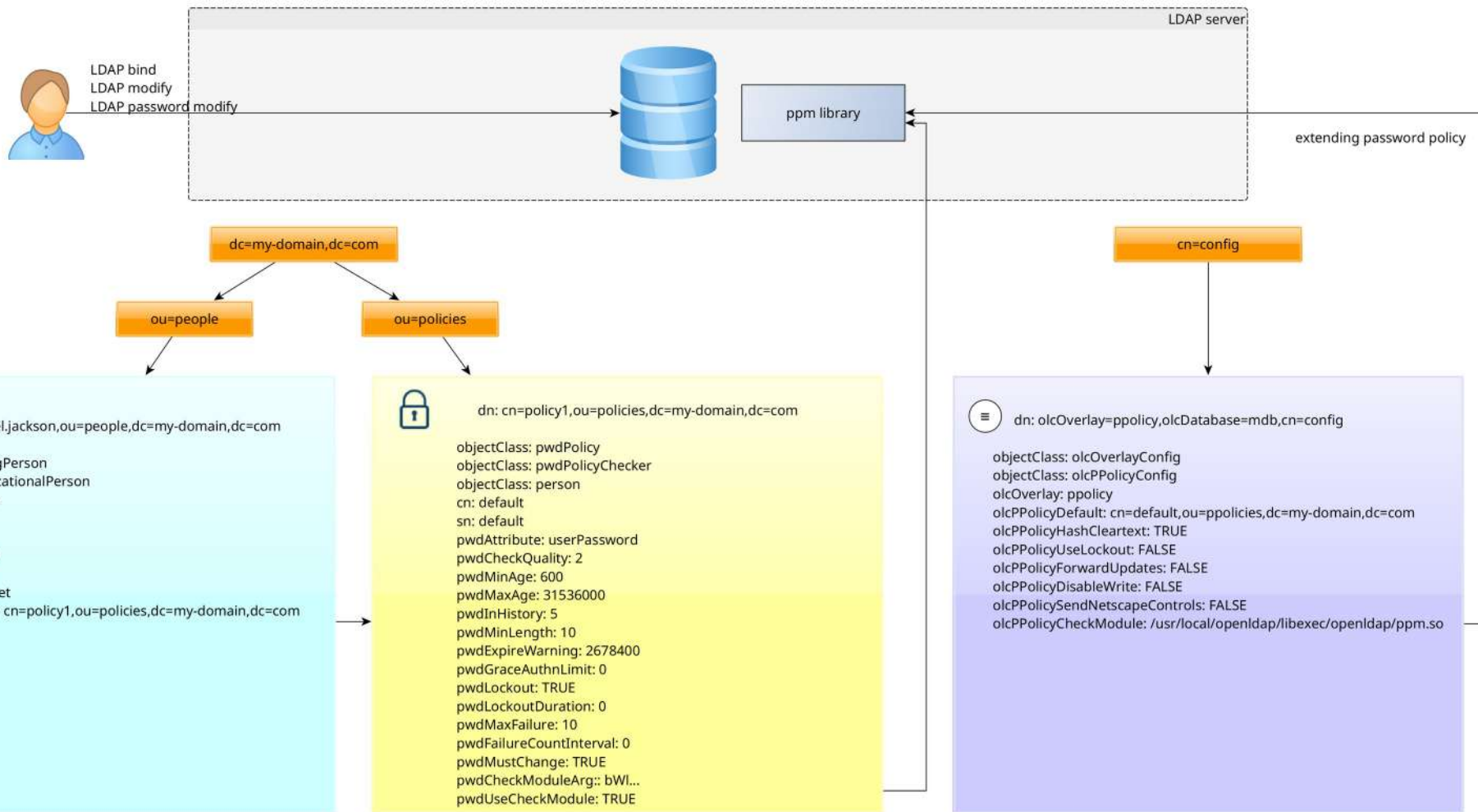
New in 2.5!

New in 2.5!

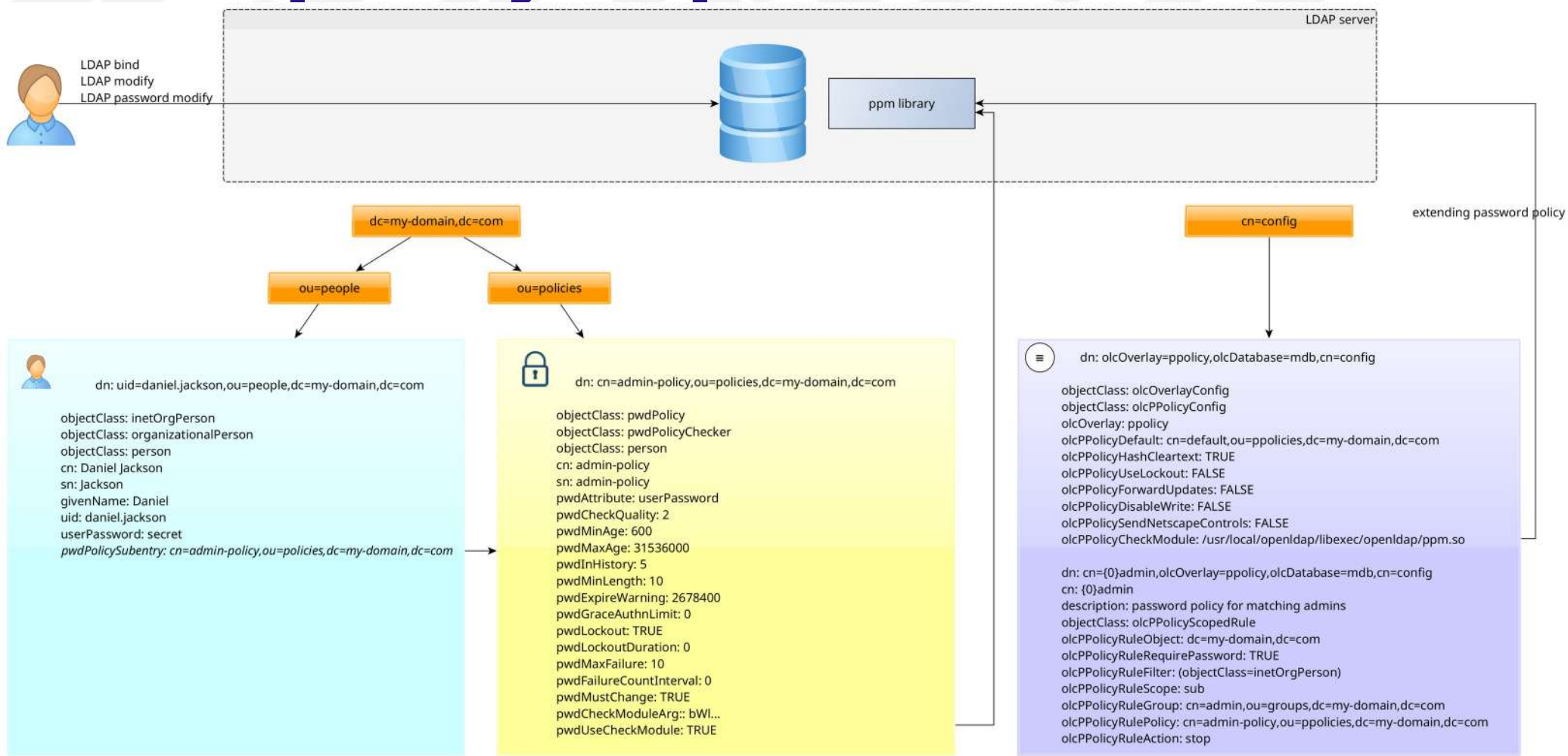
New in 2.5!

New in 2.7!

Ppolicy implementation (2.6)



Ppolicy implementation (2.7)



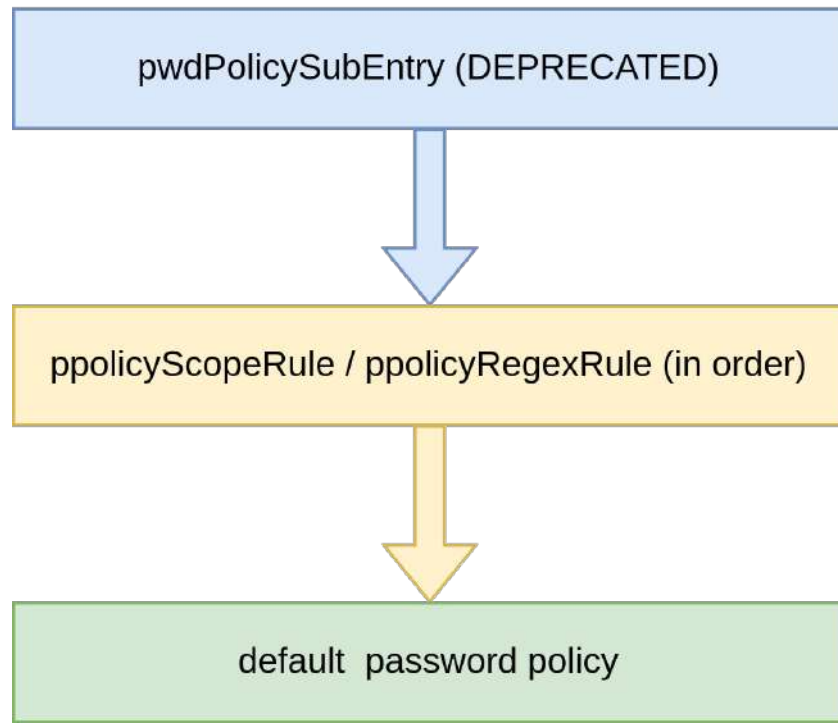
Ppolicy implementation

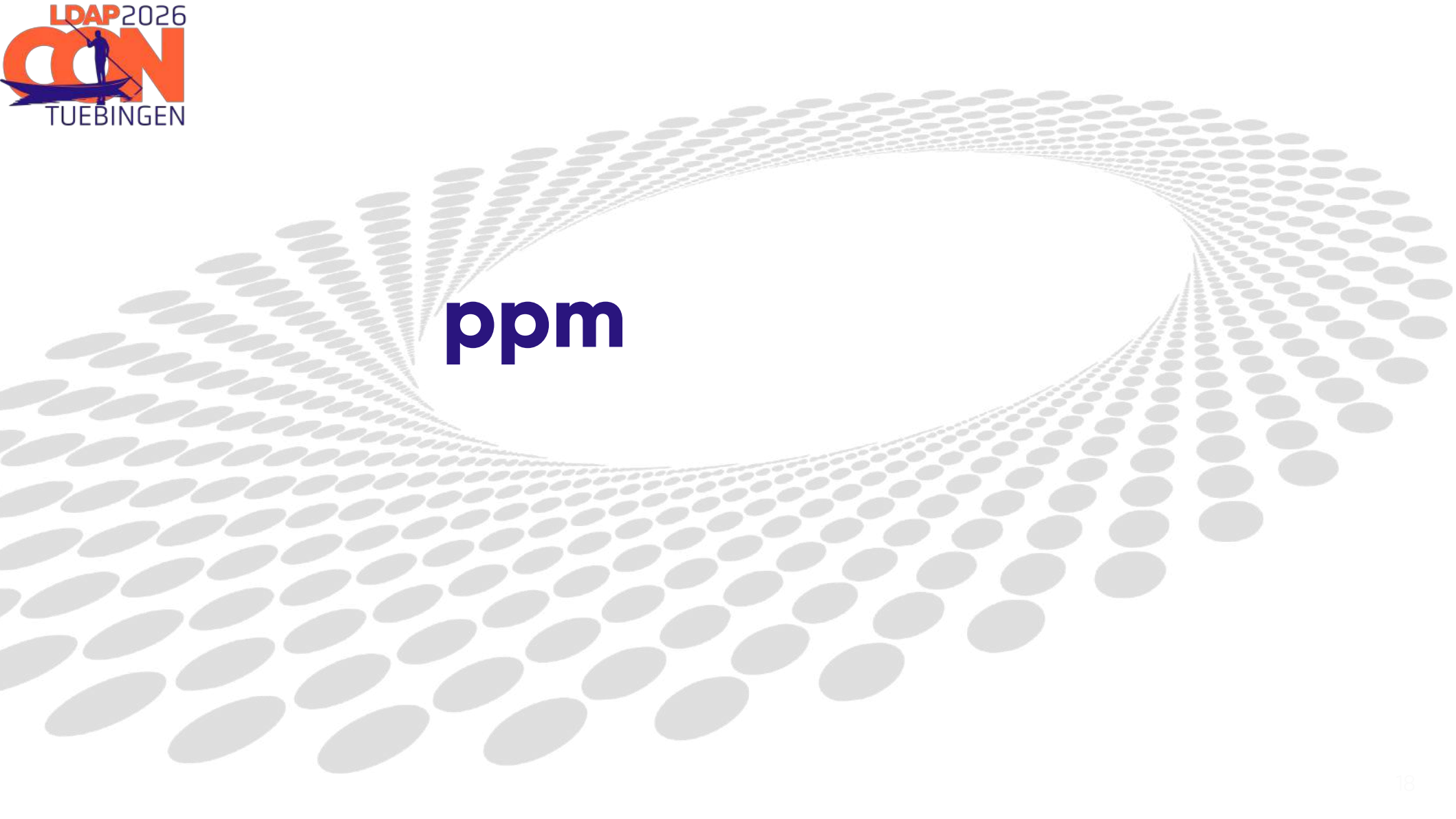
News in 2.7

- 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





ppm

Character classes parameters

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

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
```

S 3 c u r 3 P 4 s s

re-organize by character classes

S P c u r s s 3 3 4

2 5 3

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

Criteria:

2 ≥ min_{uppercase}

5 ≥ min_{lowercase}

3 ≥ min_{digit}

quality_{uppercase} + quality_{lowercase} + quality_{digit} ≥ minQuality

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
```

Evolutions

Evolutions

List for Santa

- Fix replication issues for operational attributes, like `pwdLastSuccess`
 - Issue when huge authentication traffic (`lastBindPrecision`)
 - Replication slave → master (doc about `updateRef` + chain overlay?)
- new parameter for account disabling: `pwdAccountDisabled`
 - `pwdAccountLockedTime` exists for temporary or 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?)



**Thank you
for your
attention**

www.vorteks.com

 info@vorteks.com

 +33 1 84 20 86 47

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