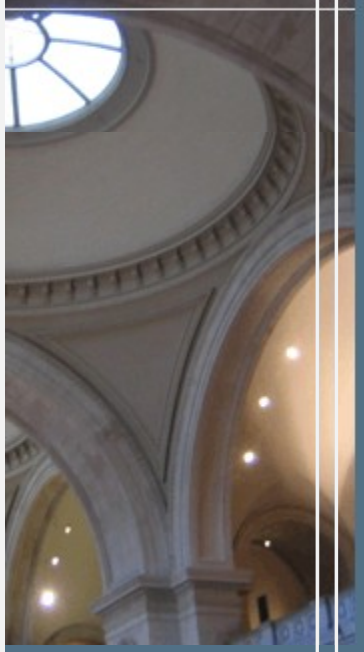
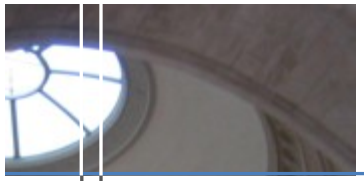


Technology Transfer Partners

Advancements in Linux Authentication and Authorisation using SSSD

Lawrence Kearney
System Support Specialist, Georgia Regents University
TTP Advisory Board Member for Higher Education, Americas

e. lawrence.kearney@earthlink.net
w. www.lawrencekearney.com

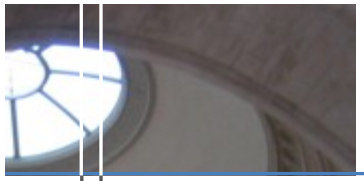


Origins in the freeIPA project (**I**dentity, **P**olicy and **A**udit)

There is a freeIPA client

Red Hat originates a new client project

Narrower in scope
Provided funding and (2) dedicated developers
Commercially viable software base to bubble up from the Cent OS and Fedora projects



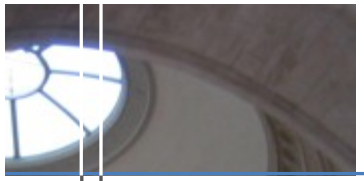
SSSD package description:

Provides a set of daemons to manage access to remote directories and authentication mechanisms.

Provides an NSS and PAM interface toward the system and a pluggable backend system to connect to multiple different account sources.

It is also the basis to provide client auditing and policy services for projects like FreeIPA.

Thank goodness! A name change opportunity is upon us!



Seriously ?!

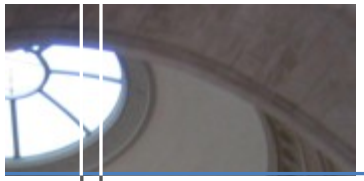
“System Security Services Daemon”

We would have very happily accepted:

“Single Sign on Service Daemon”
“Simple Sign on Solution Daemon”

Even:

“Simplesmente Autenticação Servicos Daemon”



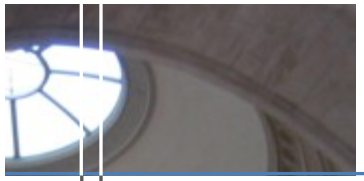
What need is SSSD addressing?

PAM and NSS frameworks have scaling caveats, and are becoming legacy as identity management frameworks evolve

Linux servers currently aren't ideal federation platform candidates as a result

LDAP directories are becoming more specialised and are proliferating

Better Active Directory integration is more mission critical



Local files

☑ … ticked, next

Network Information Service (NIS)

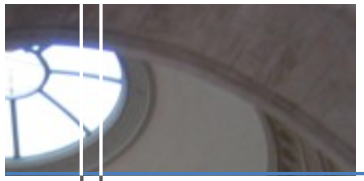
☑ … ticked, next

pam_unix nss_ldap

Local authentication, remote user store
Password management
No session management

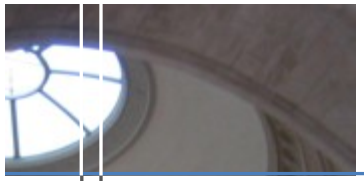
pam_ldap nss_ldap

Secure remote user lookup and authentication
Password management
No session management



pam_ldap pam_krb5 nss_ldap

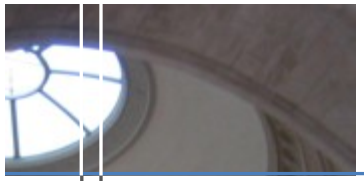
- Secure remote user lookup and authentication
- Password management
- Session management (SSO capable)
- MIT kerberos capable
- MS Windows® and Active Directory for Domains capable



The usual suspects

pam_ldap pam_krb5 pam_winbind nss_ldap

- Secure remote user lookup and authentication
- Password management
- Session management (SSO capable)
- MIT/MS Windows® kerberos capable
- MS Windows® RPC capable
- MS Windows® and Active Directory for Domains capable
- MS Windows® file share participation



Name Service Caching daemon (nscd)

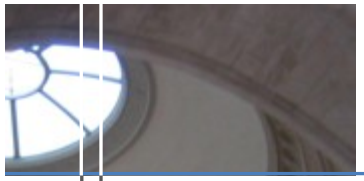
- Next query caching for users, groups, hosts and services
- No offline authentication but can maintain active sessions

Windows Bind daemon (winbindd)

- Does not require remote posix attributes
- Requires AD Domain joining
- Serves as a front end for PAM, NSS and Samba

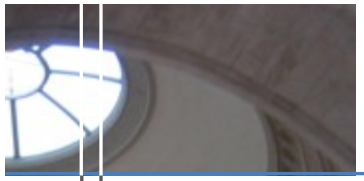
LDAP Name Service daemon (nslcd)

- Simplified configuration file
- Requires remote posix attributes
- Does not require AD Domain joining



Large scale deployments become complex

Workforce and administrator skill set considerations

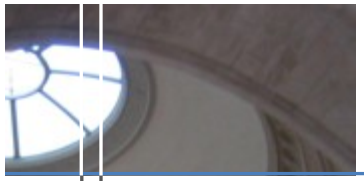


Authentication service enhancements

- Greater extensibility
- Multiple concurrently available identity stores
- ID collision features
- SSL/TLS or SASL/GSSAPI is required
- Kerberos and SSO features
- Reduced server loads
- Offline authentication

Configuration consolidation

- Backward compatible with legacy PAM / NSS stacks
- Legacy PAM / NSS / winbindd[1] modules not required
- Integrates with windbindd if necessary
- Integrated service configurations (ssh, sudo, autofs etc.)
- Single configuration file, reduced complexity



MS Windows® or Samba file shares

Still require winbindd be configured and used

NFS file shares

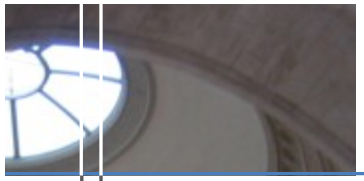
May still require nscd but without user and group caching

Interactions with some older linux applications

Those that aren't flexible concerning case

Those that will only talk to legacy PAM and NSS modules

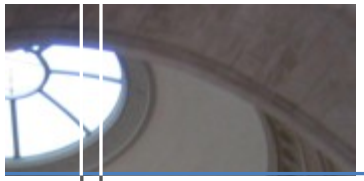
Migrating from configurations using id mapping can be more complex



Seriously, if I type:

“SSSH” or “SSSL”

One more time I may scream !!

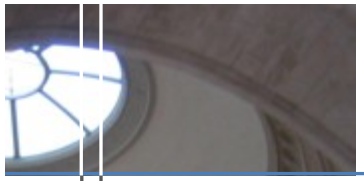


[sssd] Global parameters
services =
domains =

[nss], [pam], [sudo] Service parameters
reconnection_retries =
filter_users =

[domain/NAME] SSSD domain parameters
id_provider =
auth_provider =
chpass_provider =
access_provider =

SSSD Domain = Identity Provider + Authentication provider



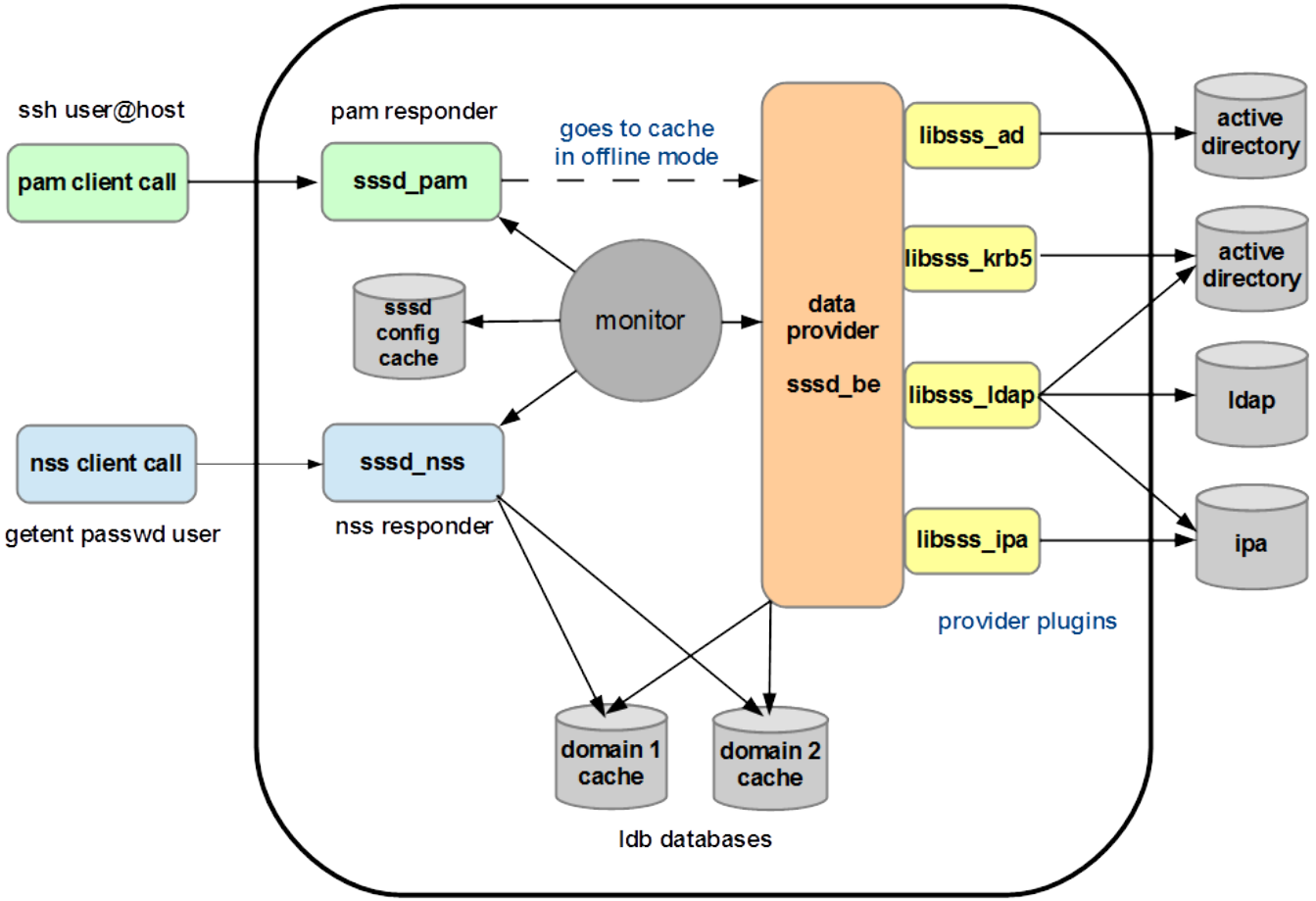
SSSD uses a parent/child process monitoring model

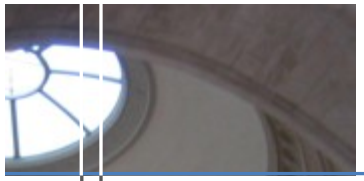
[sssd]	Parent process, Monitor
[nss]	Child process, Responder
[domain/LDAP]	Child process, Provider

SSSD process example:

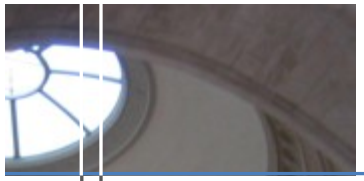
```
ps -eaf | grep sssd

root        1476       1          0     /usr/sbin/sssd
root        1478       1476       0     /usr/libexec/sssd/sssd_nss
root        41279      1476       0     /usr/libexec/sssd/sssd_be --domain LDAP


pstree -A -p 1476

sssd (1476)     -  +  - sssd_be (41279)
                   |  - sssd_nss (1478)
```

“SSSD” architecture overview





Local	Accounts are kept in a local ldb database
LDAP	Relies on installed extensions of target directory
Kerberos	Relies on installed extensions of target directory
AD	Supports many native Active Directory features
iPA	Supports trusts with Active Directory domains
IdM	Integrates tightly with RHEL IdM implementations
Proxy	Permits integration of other provider modules



Id, Authentication, Access and Changing Passwords

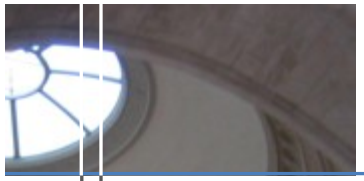
id_provider = ldap, ipa, krb5, ad, proxy

auth_provider = ldap, ipa, krb5, ad, proxy

access_provider = permit, deny, ldap, ipa, ad, simple

chpass_provider = ldap, ipa, krb5, ad, proxy, none

- Most providers fulfill multiple roles
- Different providers can, and often are be combined



Local

- Enhanced local account features
- Familiar local user management tools

LDAP

- Flexible attribute mapping capabilities

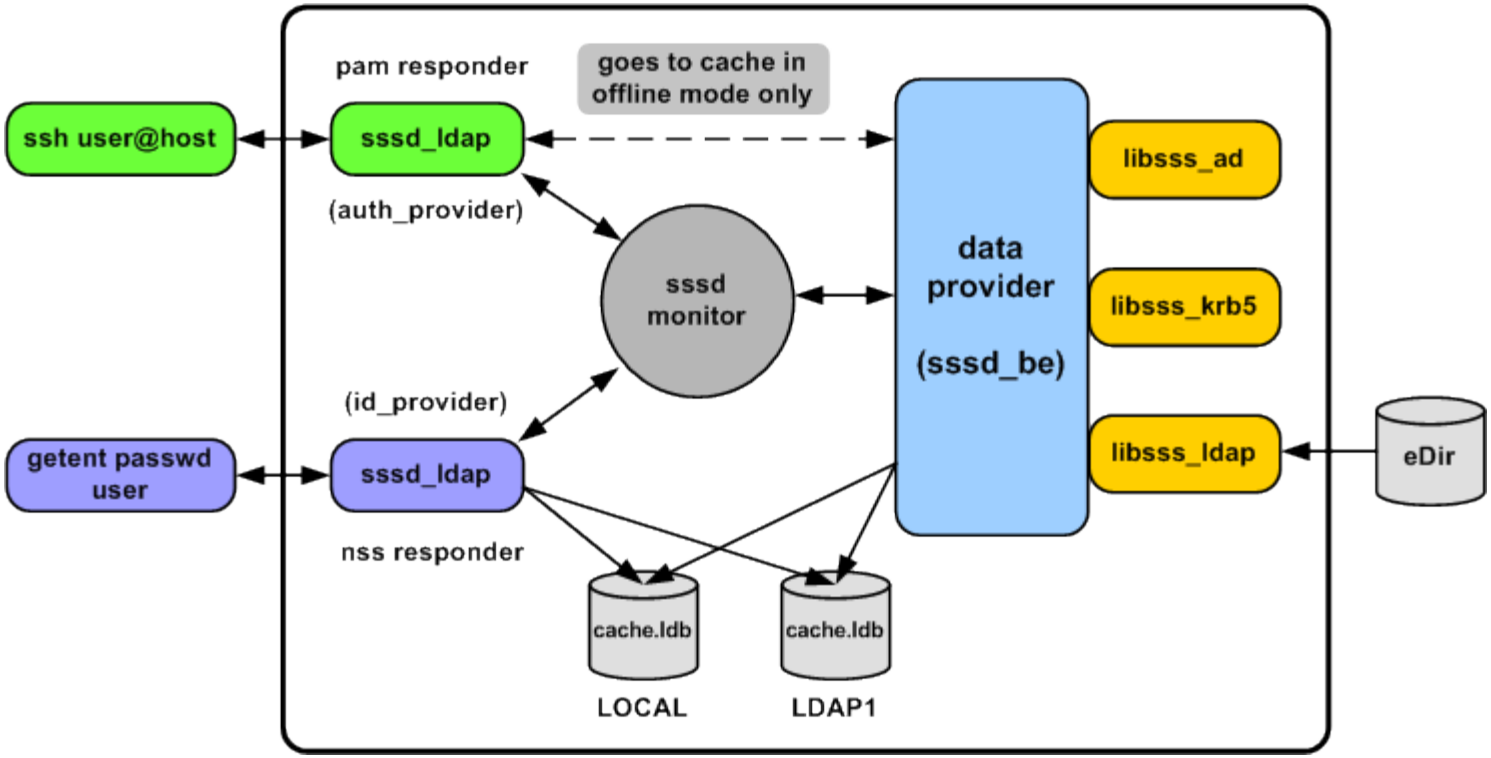
Kerberos

- SASL/GSSAPI support improves application support

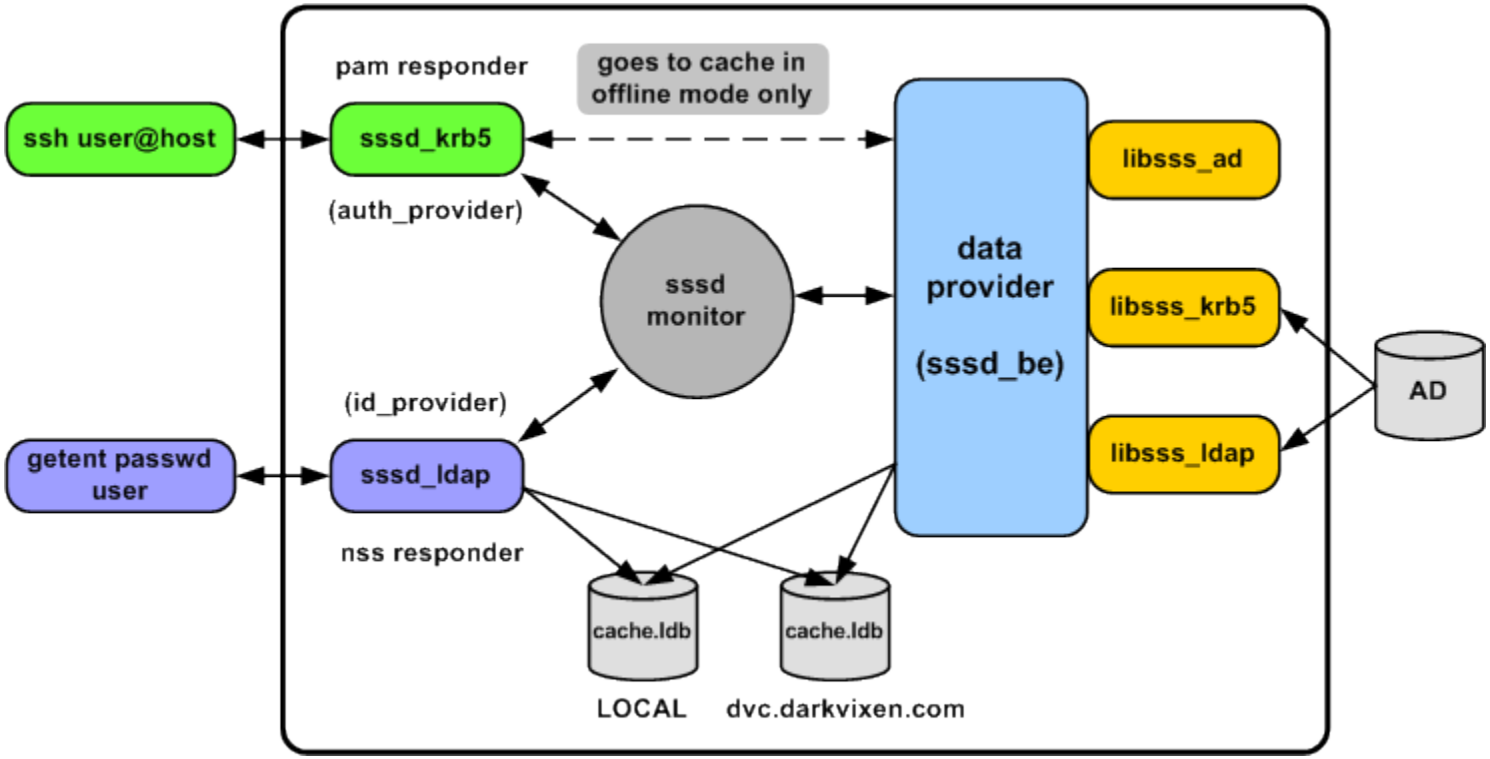
AD

- Login performance improvements
- Trust and domain auto-discovery features
- Native schema, DNS update and security support

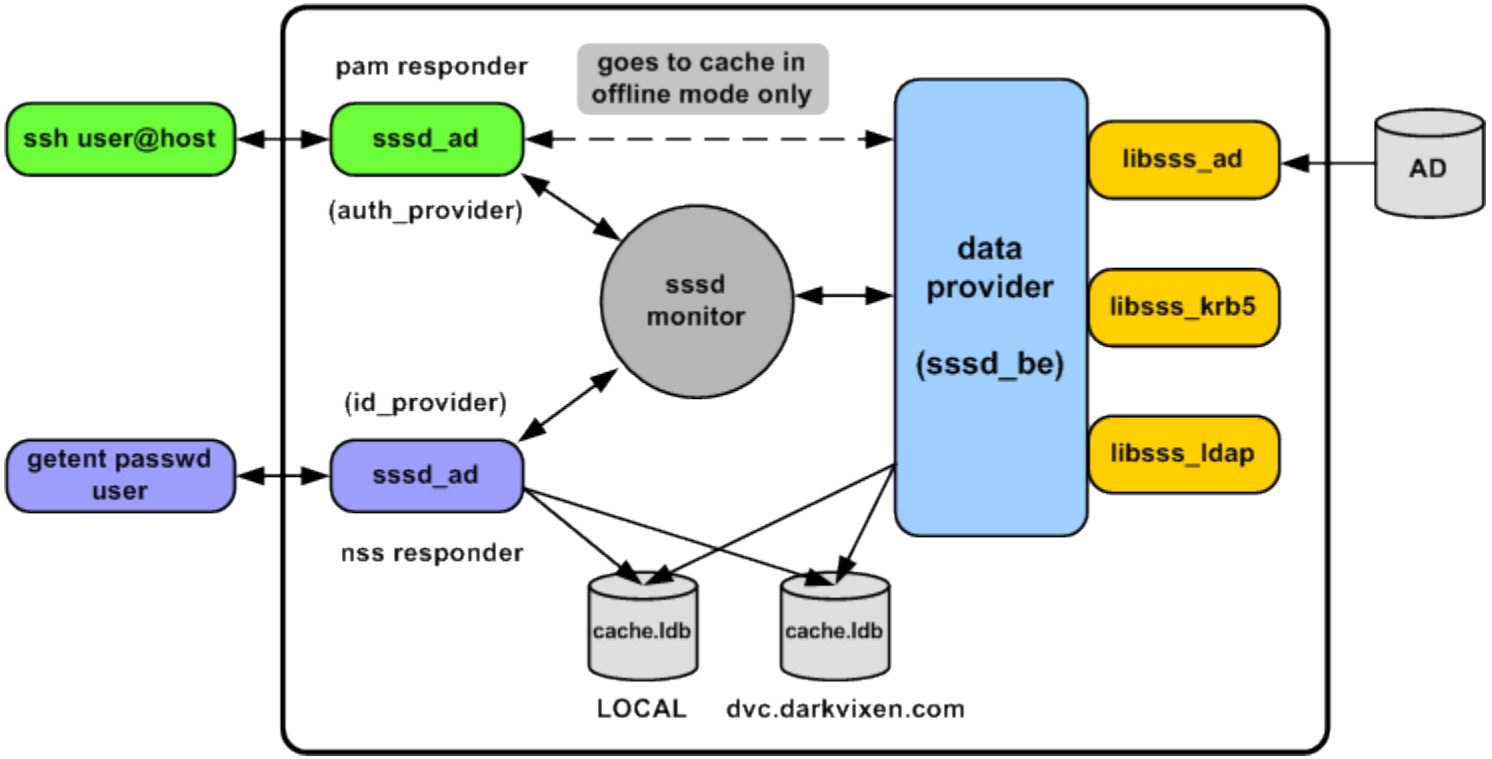
SSSD identity provider example



SSSD identity provider example



SSSD identity provider example



Many linux distributions are now SSSD aware

Auto-configuration using native distribution utilities

Enterprise linux distributions include

Red Hat Enterprise Linux 5.6:	SSSD 1.5
Red Hat Enterprise Linux 6:	SSSD 1.9
Red Hat Enterprise Linux 7:	SSSD 1.11
Suse Linux Enterprise Server 11.2:	SSSD 1.9
Suse Linux Enterprise Server 12:	SSSD 1.11

Identify existing services that should be modified

PAM LDAP and NSS LDAP configurations

NSCD user, group, host or service caching

Determine how posix attributes will be provided

- Provided by directory service or linux ID mapping

Install software on your platform

- Typically samba and kerberos are required for initial setup[2]
- Not all distributions package the SSSD similarly

Configure transport security

- TLS/SSL for eDir over LDAP
- TLS/SSL for AD over LDAP
- SASL/GSSAPI for AD over LDAP/kerberos

Configure SSSD identity providers and access control

- Identity and access control providers can be mixed

Suse and Red Hat are aligning with AD integration maturity

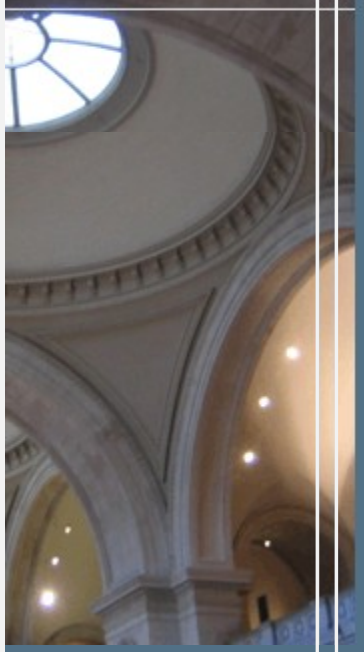
Would like to see the AD id provider included in SLES 11.3

SSSD 1.11

- Realmd utility will auto-configure AD id provider
- Expanded AD access control provider
- NetBIOS/DNS domain name auto-discovery

Beyond 1.11

- AD access control provider will include group policy support
- SSSD CIFS integration



Questions

Lawrence Kearney

e. lawrence.kearney@earthlink.net
w. www.lawrencekearney.com