

Directory Services and MySQL

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LDAP vs SQL

- Standard Protocol
- Fast concurrent reads
- AuthN and AuthZ
- Complex, hard to learn
- Enterprise Architects
- Query Language
- Fast frequent writes
- Join and Complex query
- Simple, tables
- Web 2.0 developers



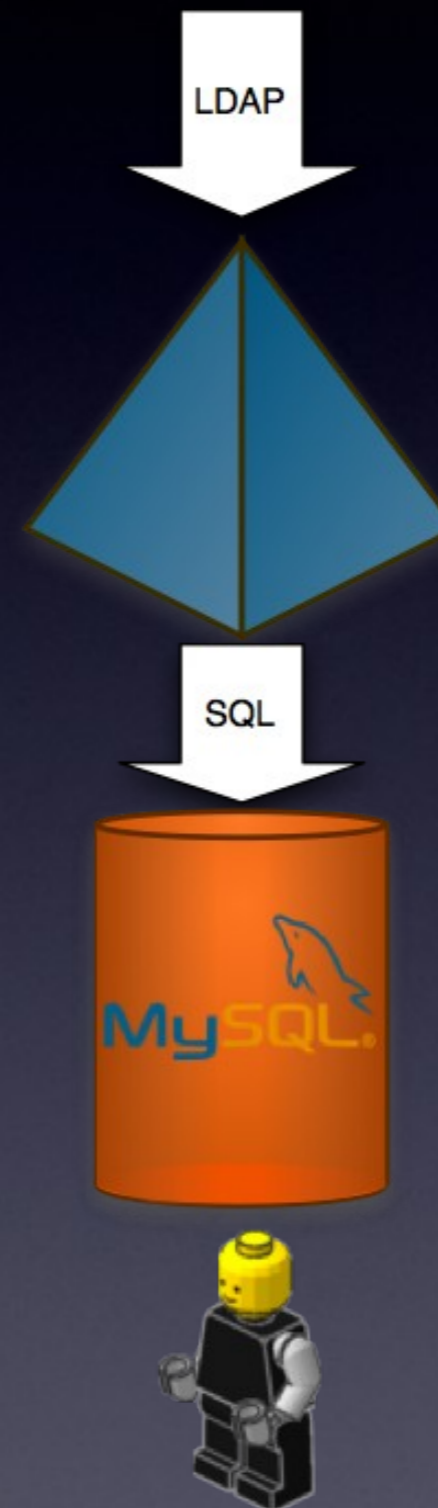
LDAP and SQL

- Both are DATA Stores
- Data is often duplicated
- At the cost of complexity, errors
- Provision, Synchronize, De-provision



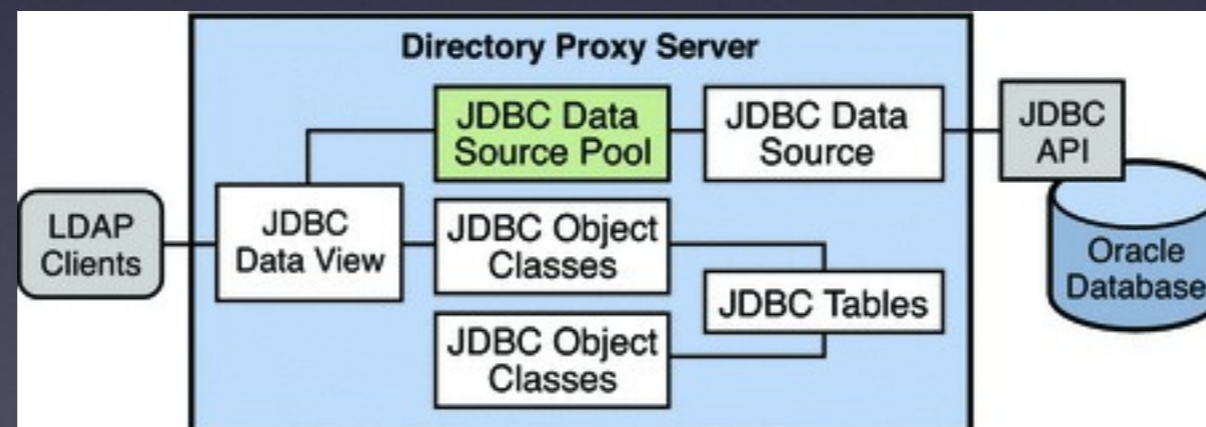
Virtual Directory

- Provide LDAP access to the Data
- Through translation to SQL
- Map Relational Model to LDAP Data Model



Sun DPS

- JDBC Data View
- Fully Tested with MySQL Enterprise 5.0
- No intrusion to the DB
- Available NOW



Sun DPS Pro & Cons

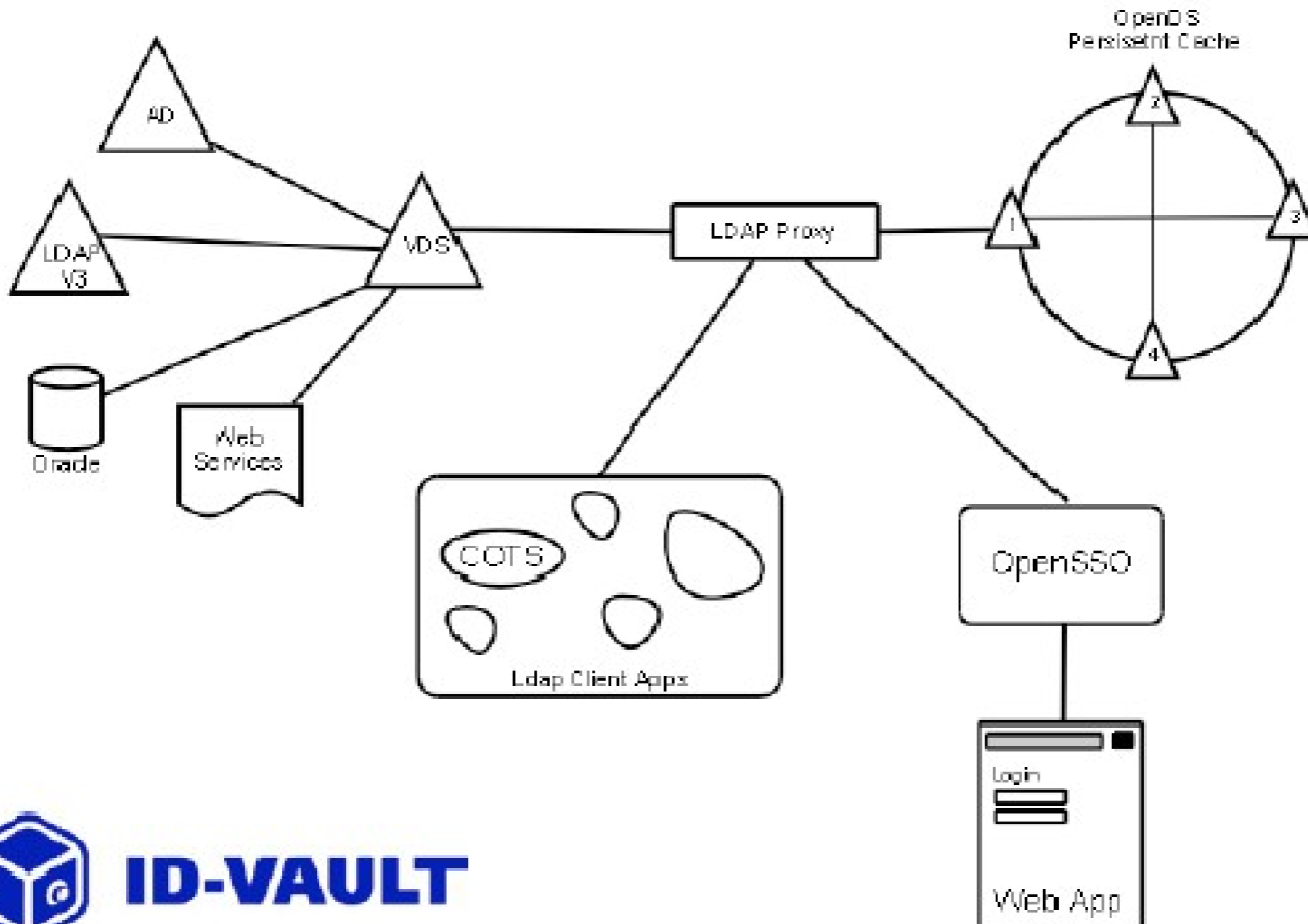
- Pros

- Almost out of the box
- Not intrusive
- Transparent for the DBA
- It works and is available NOW !

- Cons

- Performance limited, no caching
- Not optimized
- No GUI to Map models

Need performance ?



ID-VAULT

Embracing MySQL

- Sharing the data storage
- Concurrent access
- Choose best access for each application



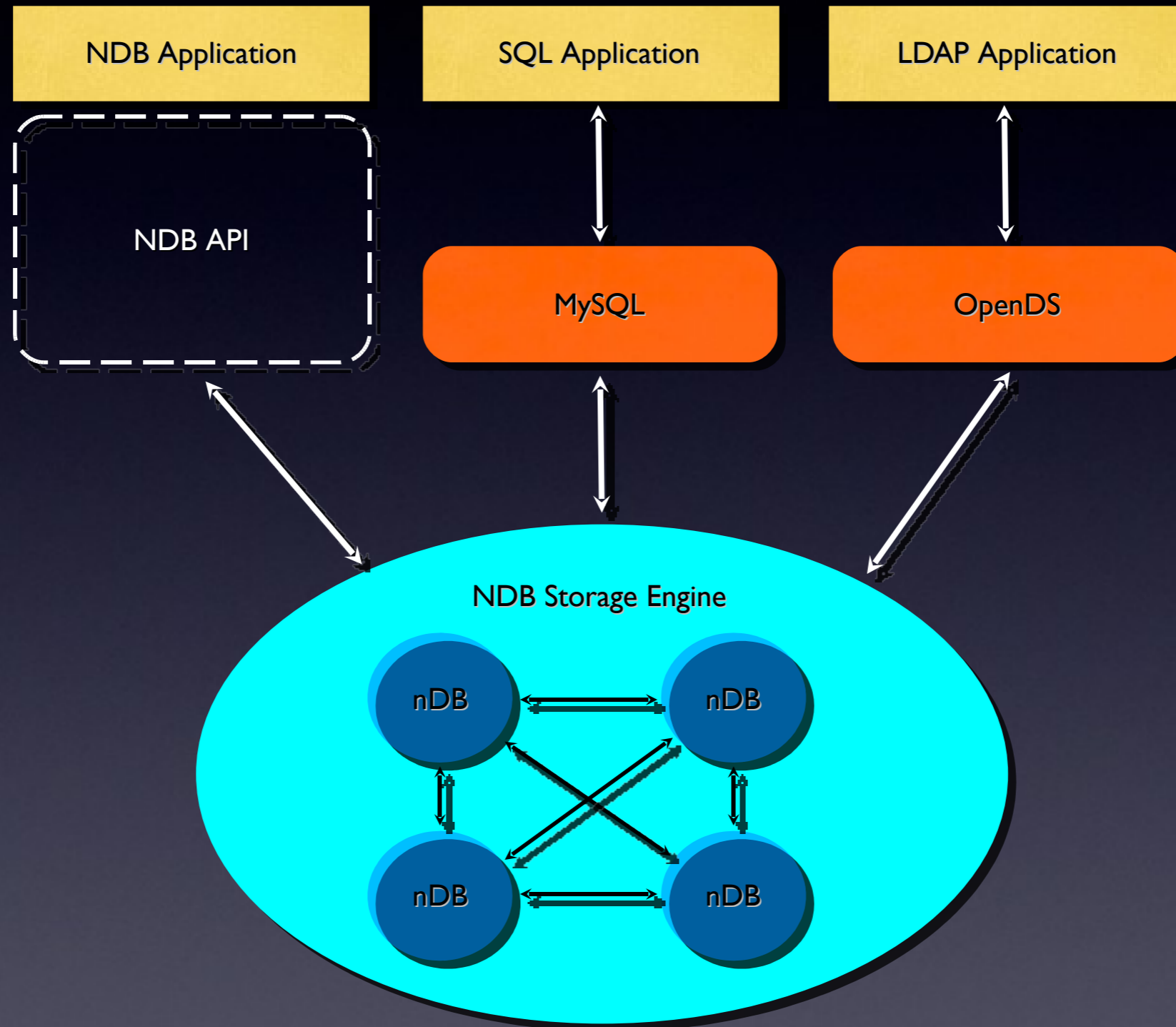
OpenDS NDB Backend

Design and Implementation Overview

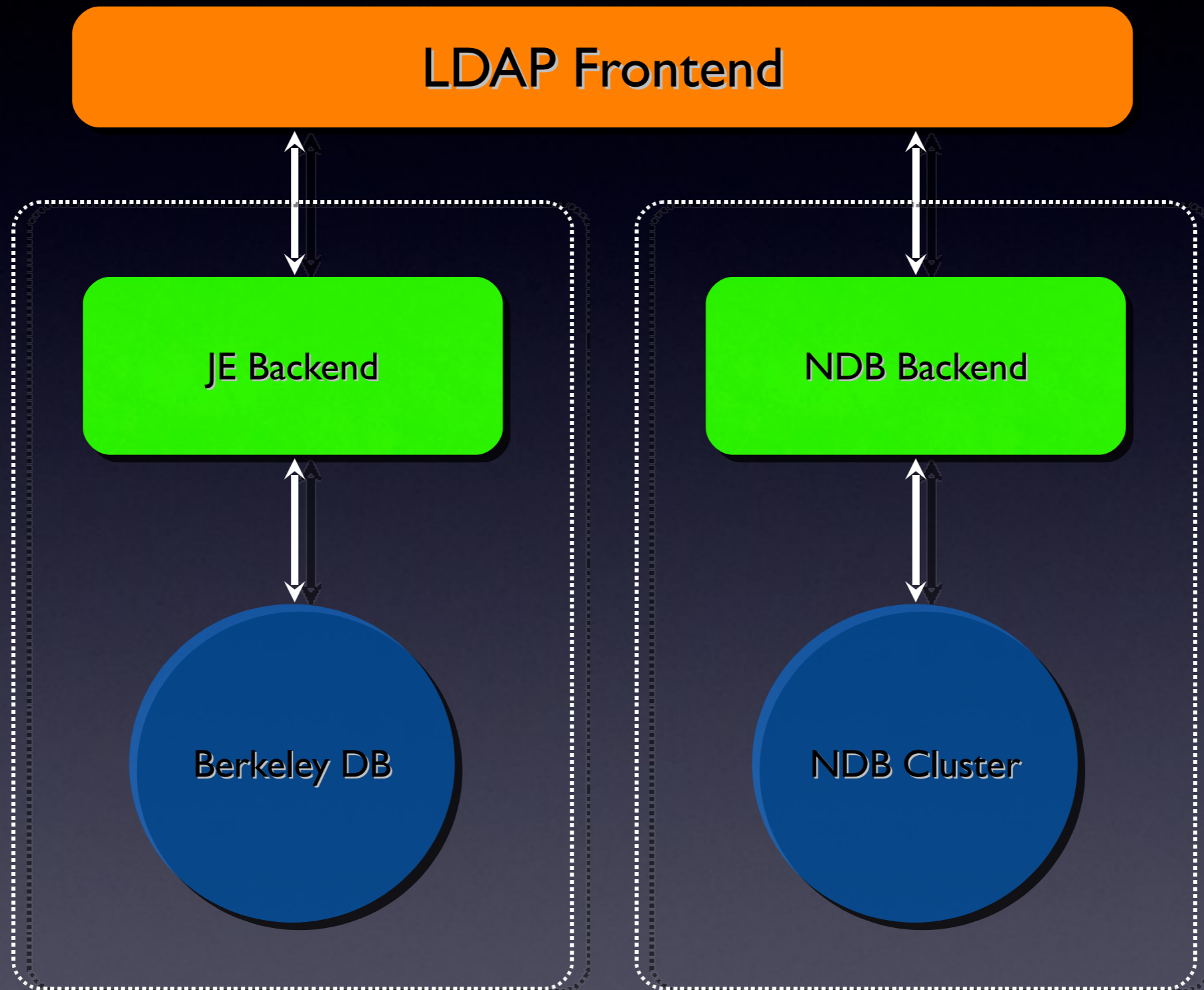
Why

- Simultaneous read-write access to the same data via LDAP and SQL as well as NDB API
- NDB Cluster is very lucrative as database engine due to its scalability and high availability features
- Existing NDB Cluster deployments that require LDAP access and consolidated datastore

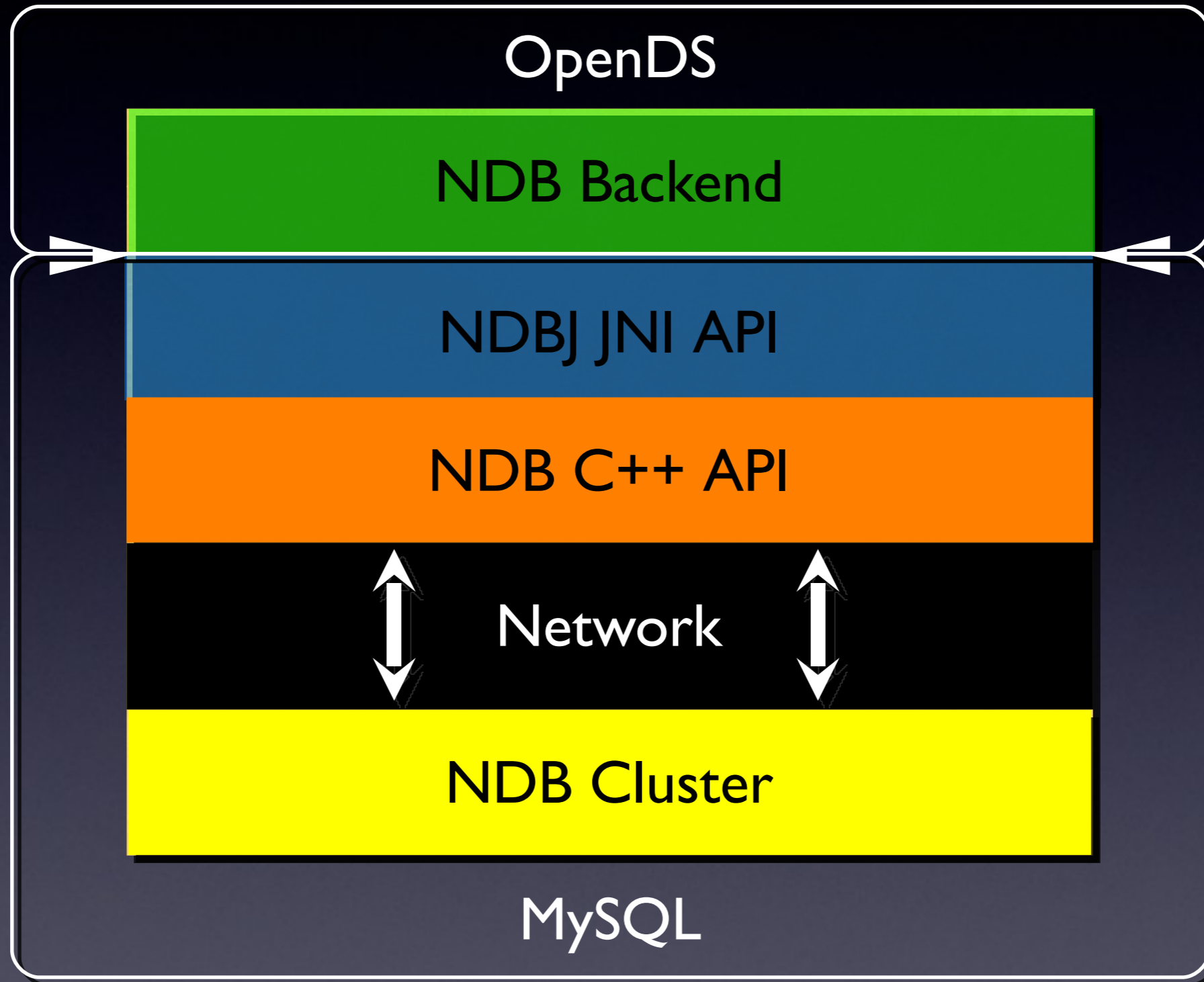
How



OpenDS



Inside



Features

- All standard core LDAP features supported
- LDAP features not supported for now
 - Online schema changes
 - Page results / VLV
 - Persistent Search
 - Entry level ACI
 - Dynamic groups
 - Virtual Static groups
- All standard SQL features supported
 - Given SQL applications adhere to the datamodel

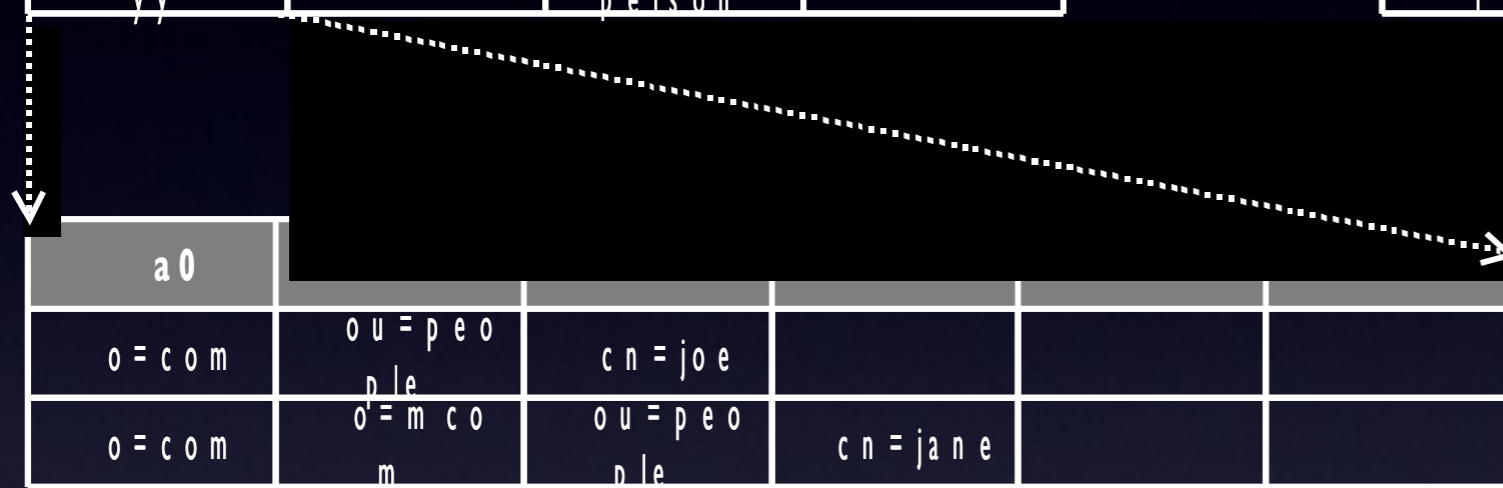
Datamodel

DN Table

DN	EID	OCS	XOCS
xxxxxxx xx	12301	top, person	profile
xxxxxxy yy	12311	top, person	profile

ObjectClass Table

EID	MID	CN	SN	ESN
1230	1	Joe	Doe	1000 02
1231	1	Jane	Smith	1000 03



NEXTID Table

A
12321

Operational Attributes Table

EID	creatorsName	createTimestamp	modifyTimestamp
12301	cn=Directory Manager	20090326151552Z	20090331102514Z
12311	cn=Directory Manager	20090326163705Z	20090331100907Z

Attribute Options / Tags

EID	MID	ATTR	TAGS
12301	1	userCertificate	;binary
12311	1	userCertificate	;binary

Attribute Index Table

EID	MID	VALUE
12301	1	jdoe
12311	1	jsmith

Access

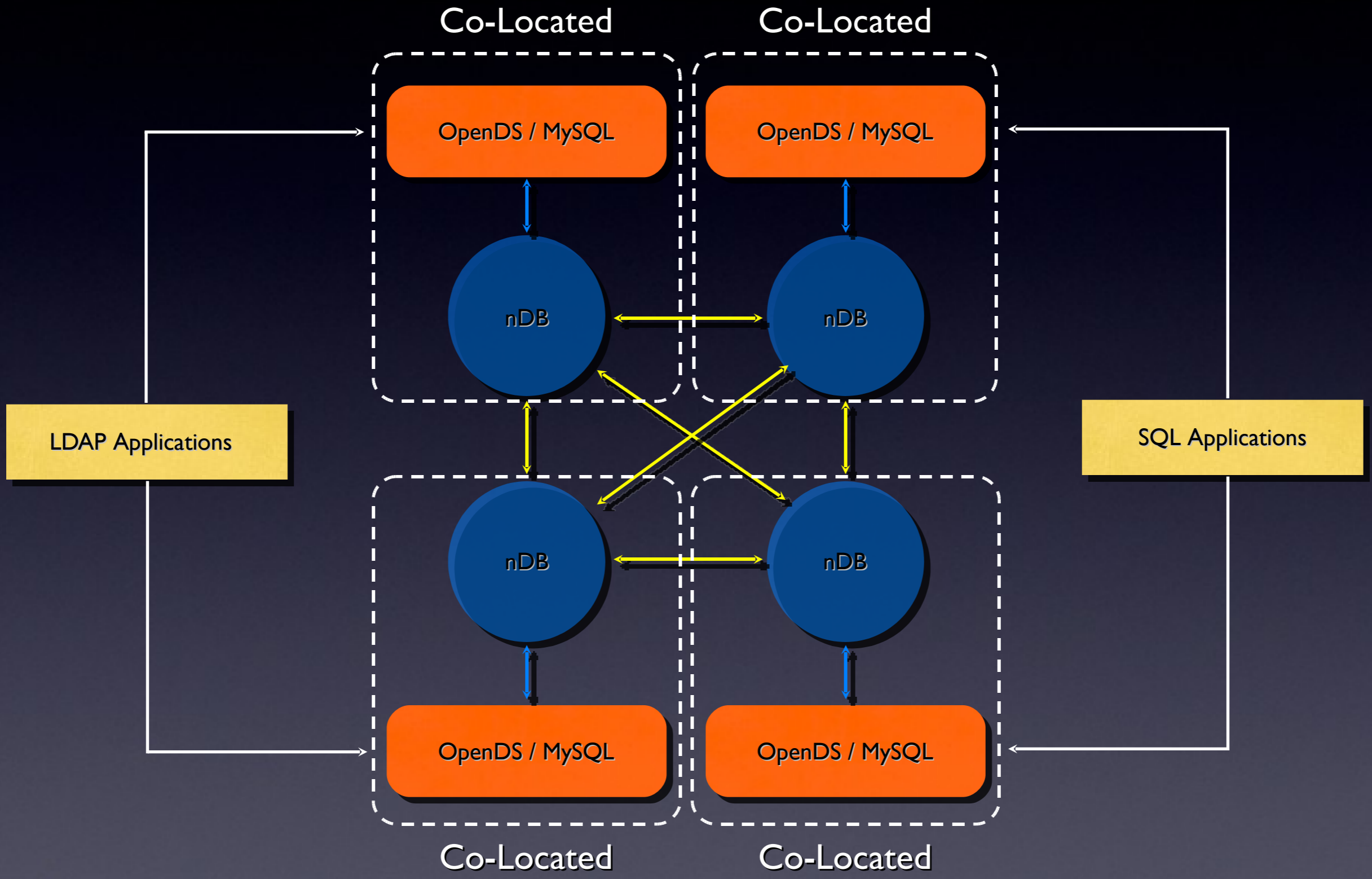
- LDAP

- Datamodel complexity is handled by the server
- Any LDAP compatible client application

- SQL

- Datamodel is exposed and handled by the client
- Requires custom SQL client applications

Deployment



Properties

- **Scalability**

- Scales with NDB by means of additional front-ends and NDB nodes
- Arbitrary number of OpenDS / MySQL front-ends either co-located with NDB nodes or standalone or a mix of both
- Requires an external load balancer or proxy to distribute the load

- **Performance**

- Network hops have their cost, even on loopback
- Stable, low latency response times
- Fast writes, slow reads

More

- OpenDS

<https://www.opensds.org/wiki/page/EnableNDBBackend>

<https://www.opensds.org/wiki/page/AdministrationGuide>

<https://www.opensds.org/wiki/page/QuickReferenceGuide>

<https://www.opensds.org/wiki/page/OpenDSUserDocumentation>

- MySQL NDB Cluster

<http://dev.mysql.com/doc/refman/5.1/en/mysql-cluster.html>

<http://dev.mysql.com/doc/refman/5.1/en/mysql-cluster-quick.html>

<http://dev.mysql.com/doc/refman/5.1/en/faqs-mysql-cluster.html>

- NDB Java Bindings

<https://launchpad.net/ndb-bindings>

Related

- OpenLDAP back-sql backend based on Mark Adamson Oracle backend to LDAP
- OpenLDAP back-ndb backend based on back-sql backend and collaboration with MySQL

Sun DSEE DPS

- Provides an LDAP access to MySQL Enterprise now
- No need to change anything in the database
- Can also merge data from other sources (LDAP, LDIF or other RDBMs)
- But not suited for high performance services

Directory Services and MySQL

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