OpenLDAP Retrospective

Howard Chu
CTO, Symas Corp. hyc@symas.com
Chief Architect, OpenLDAP hyc@openldap.org

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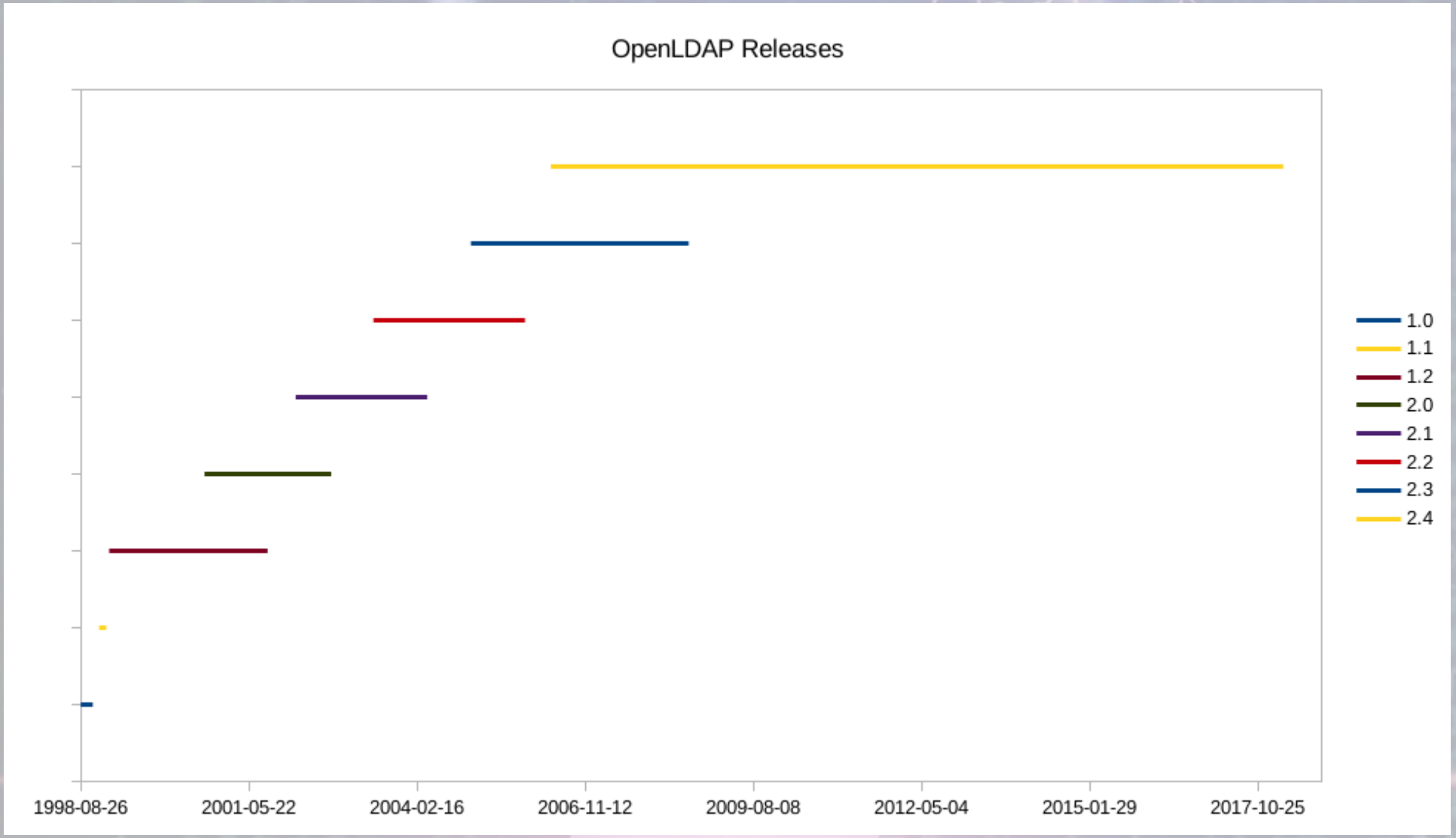
HTTP://SYMAS.COM

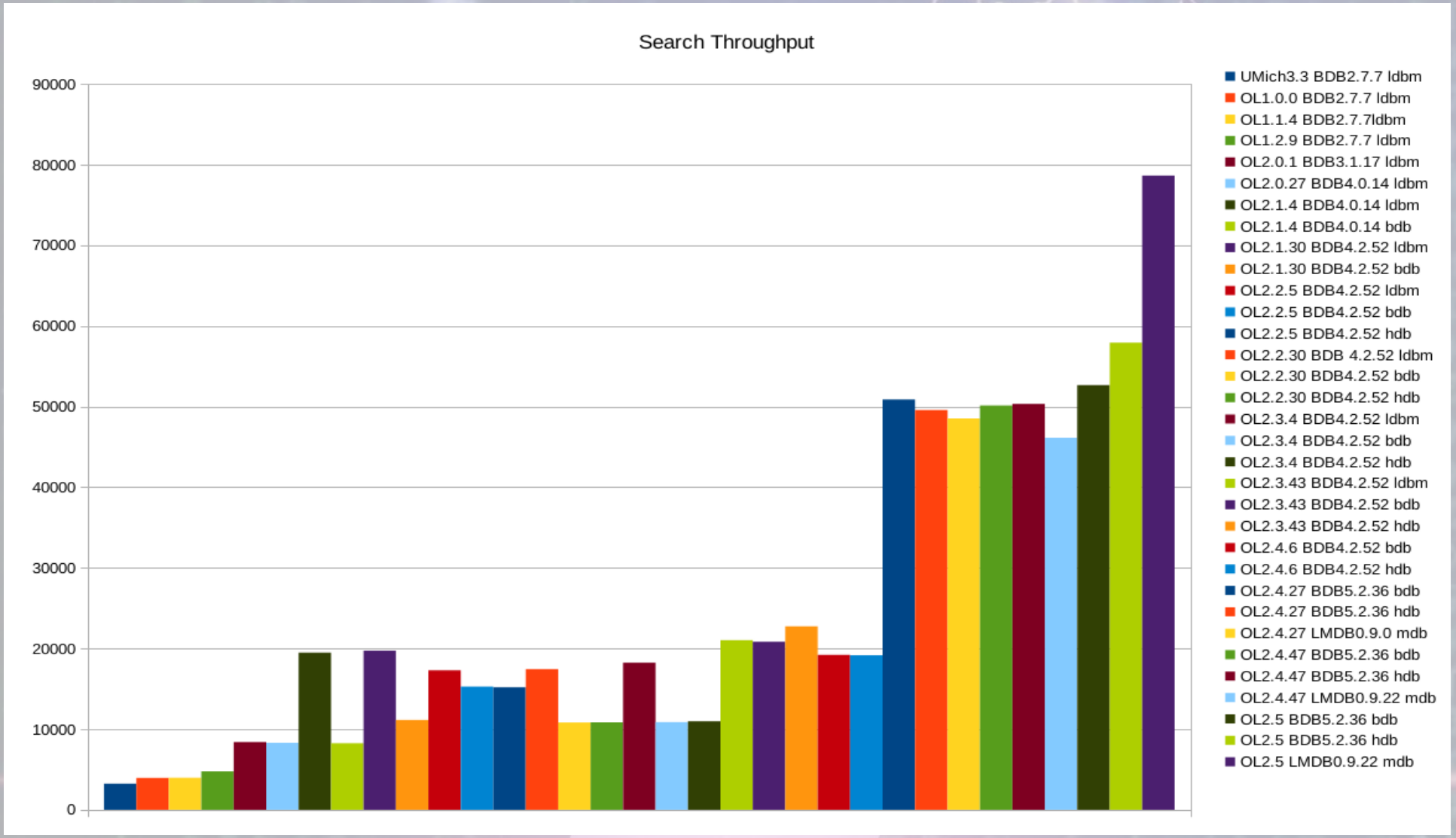
Release Timeline



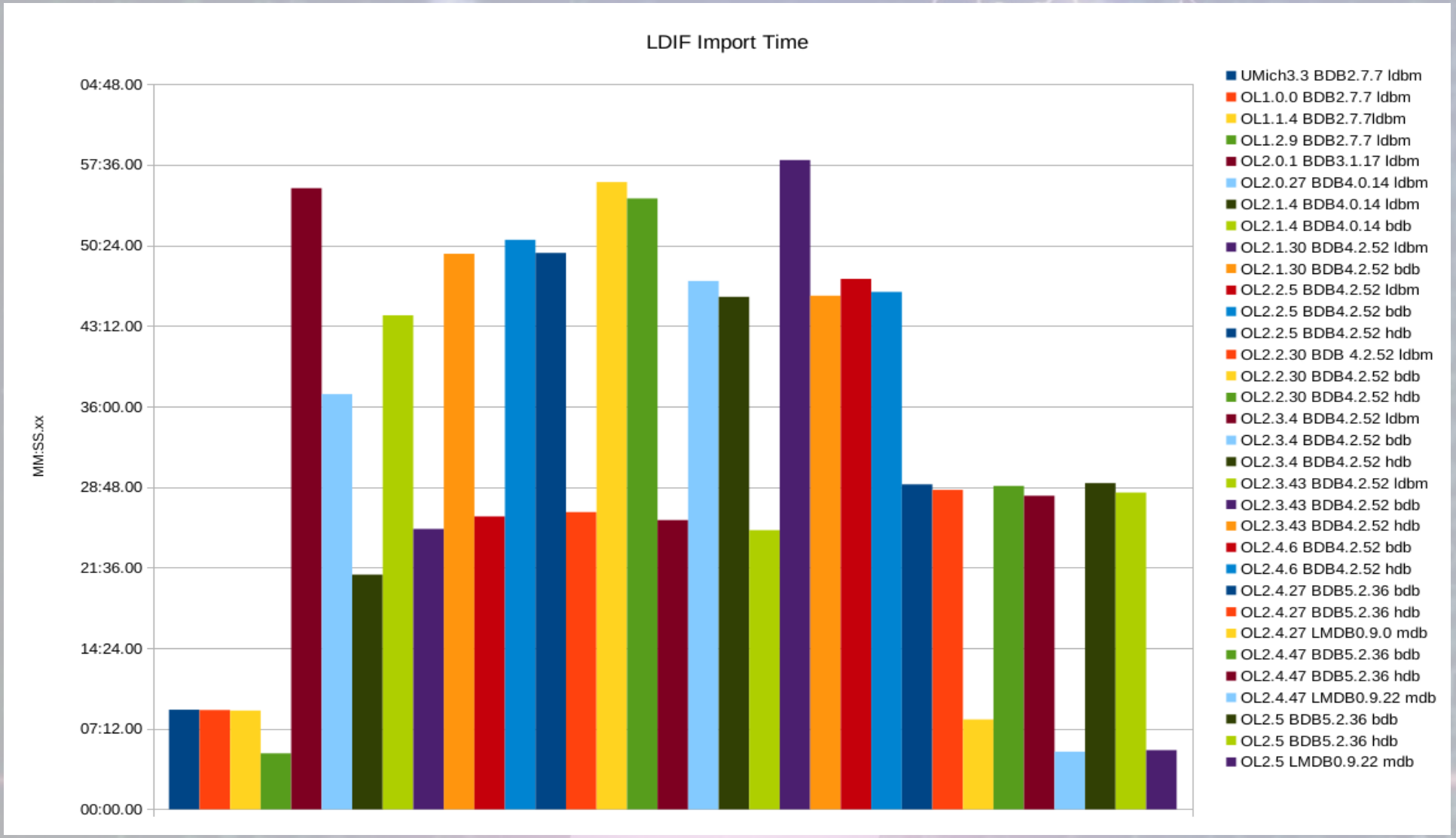
Performance Model

- All builds are 32bit
  - Earlier versions aren't 64bit clean
- Testing with a 1 million entry database
  - Just under 2GB in size
  - 32bit fopen refuses to read LDIF bigger than 2GB
- The cache sizes used here are slightly smaller than optimal, max process size stays under 1.8GB

Search Performance



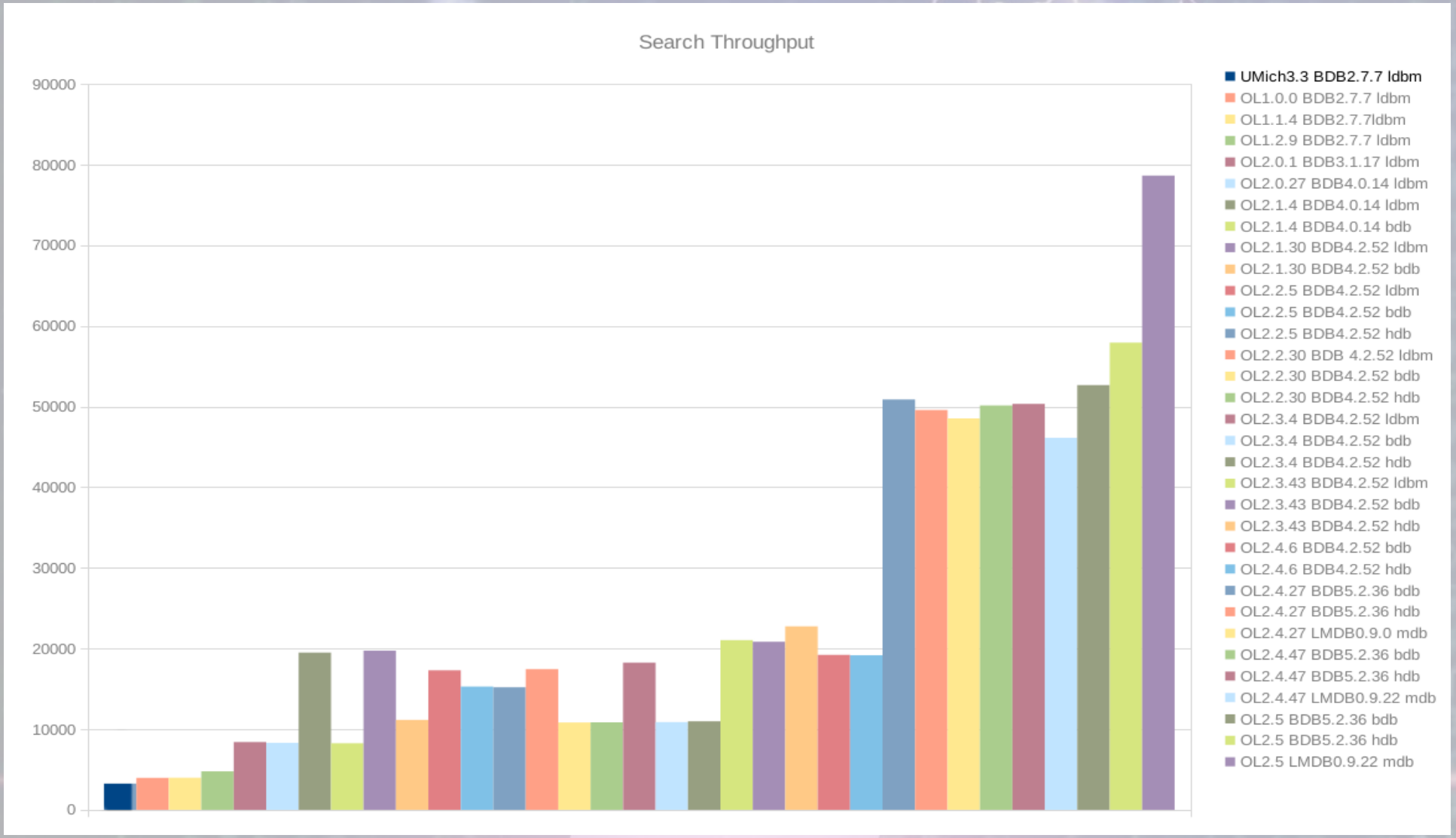
LDIF Import Time



In the beginning...

- OpenLDAP started from the last release from the University of Michigan LDAP team
  - v3.3 from 1996
  - The UMich team had been hired by Netscape and went on to create the Netscape Directory Server
- Founded by Kurt Zeilenga in 1998
  - Needed a directory server for his company NetBoolean

In the beginning...



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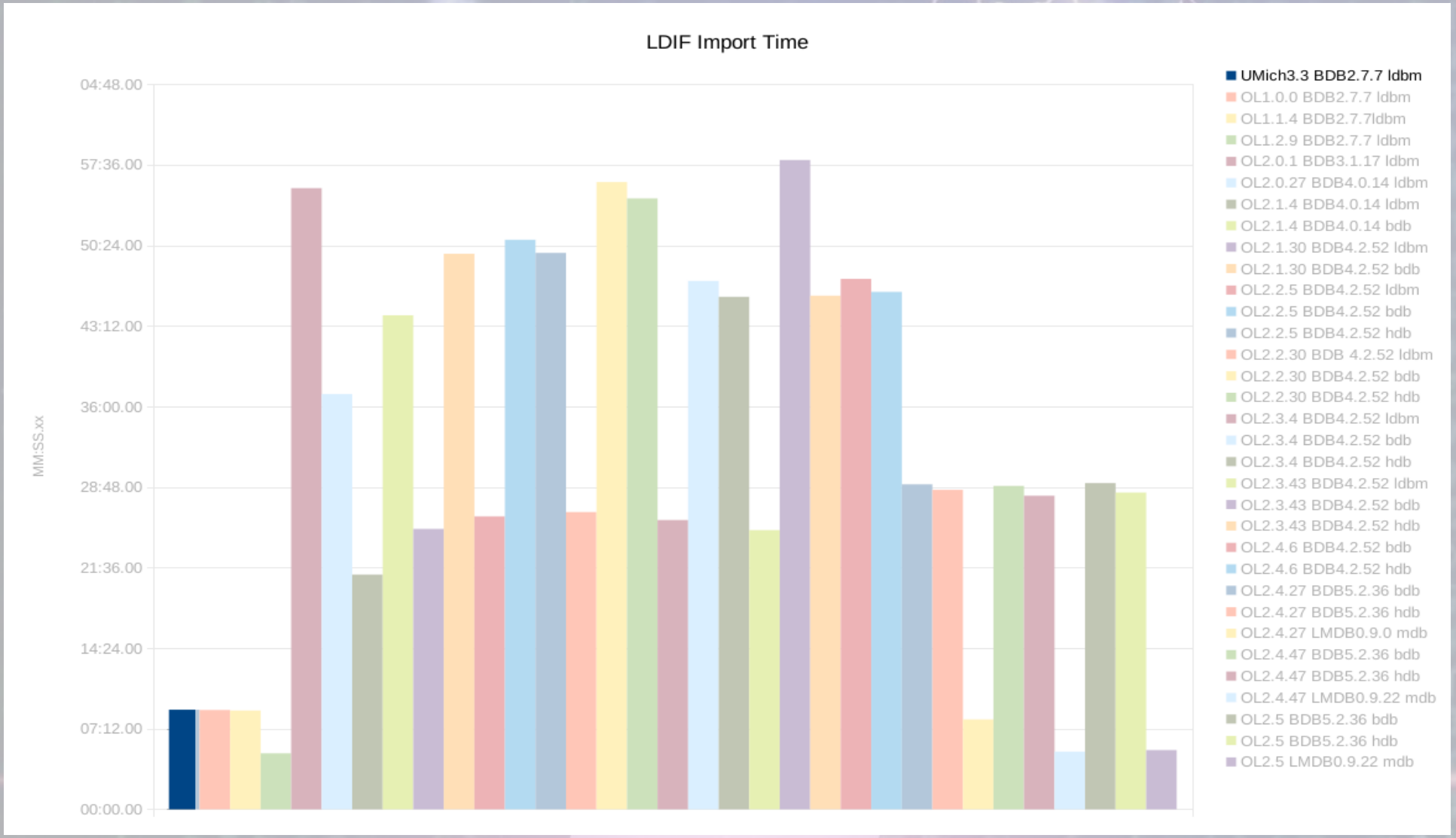
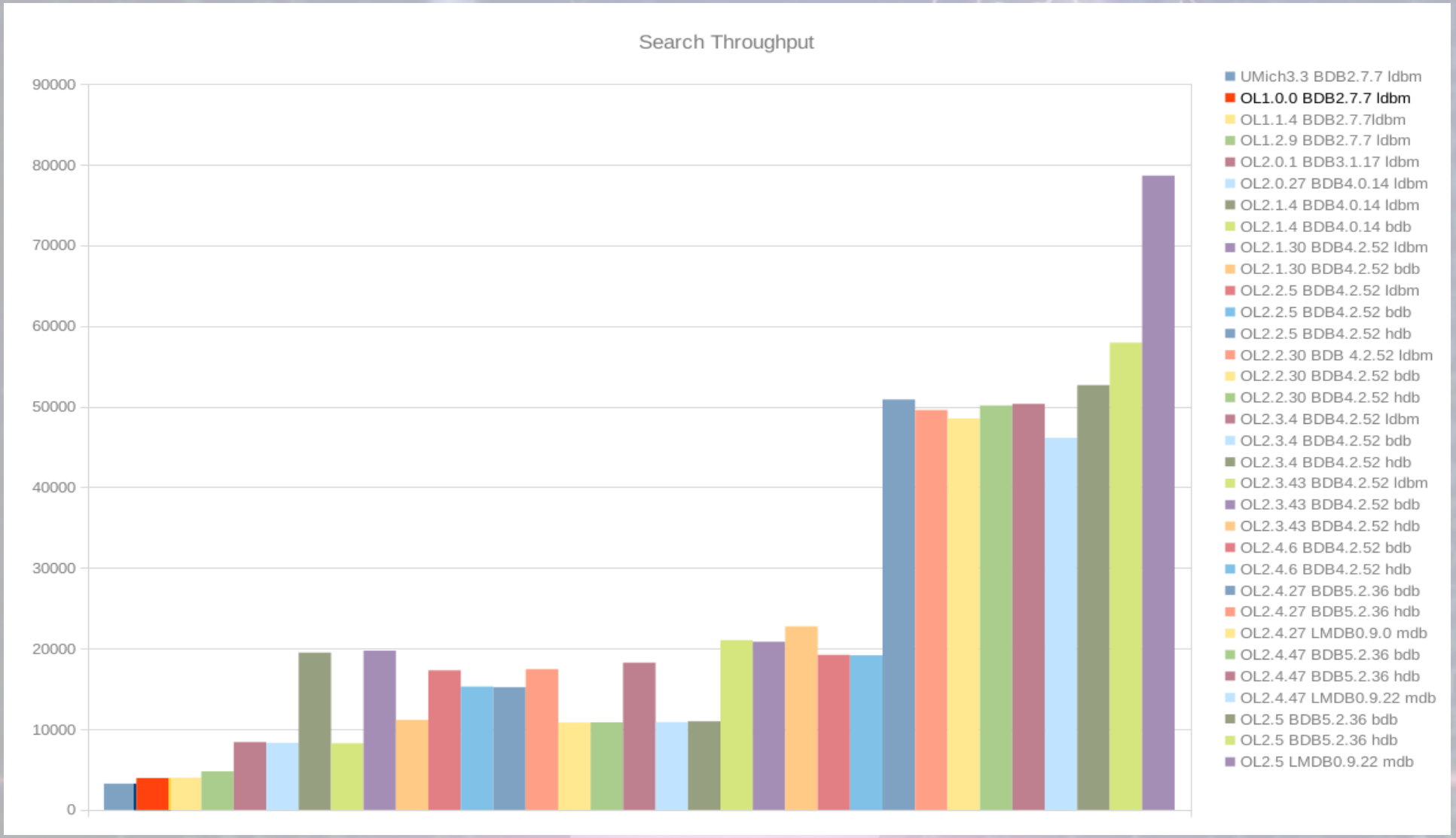


In the beginning...

- OpenLDAP 1.0.0 released 1998-08-26
  - Essentially UMich LDAP 3.3 plus unofficial patches that had been floating around mailing lists for years
  - 1.0.0 - 1.0.3, 1998-08-26 to 1998-11-06
  - 3 committers
    - Kurt Zeilenga (297)
    - Hallvard Furuseth (20)
    - Stuart Lynne (3)

Release 1.0


Search Throughput
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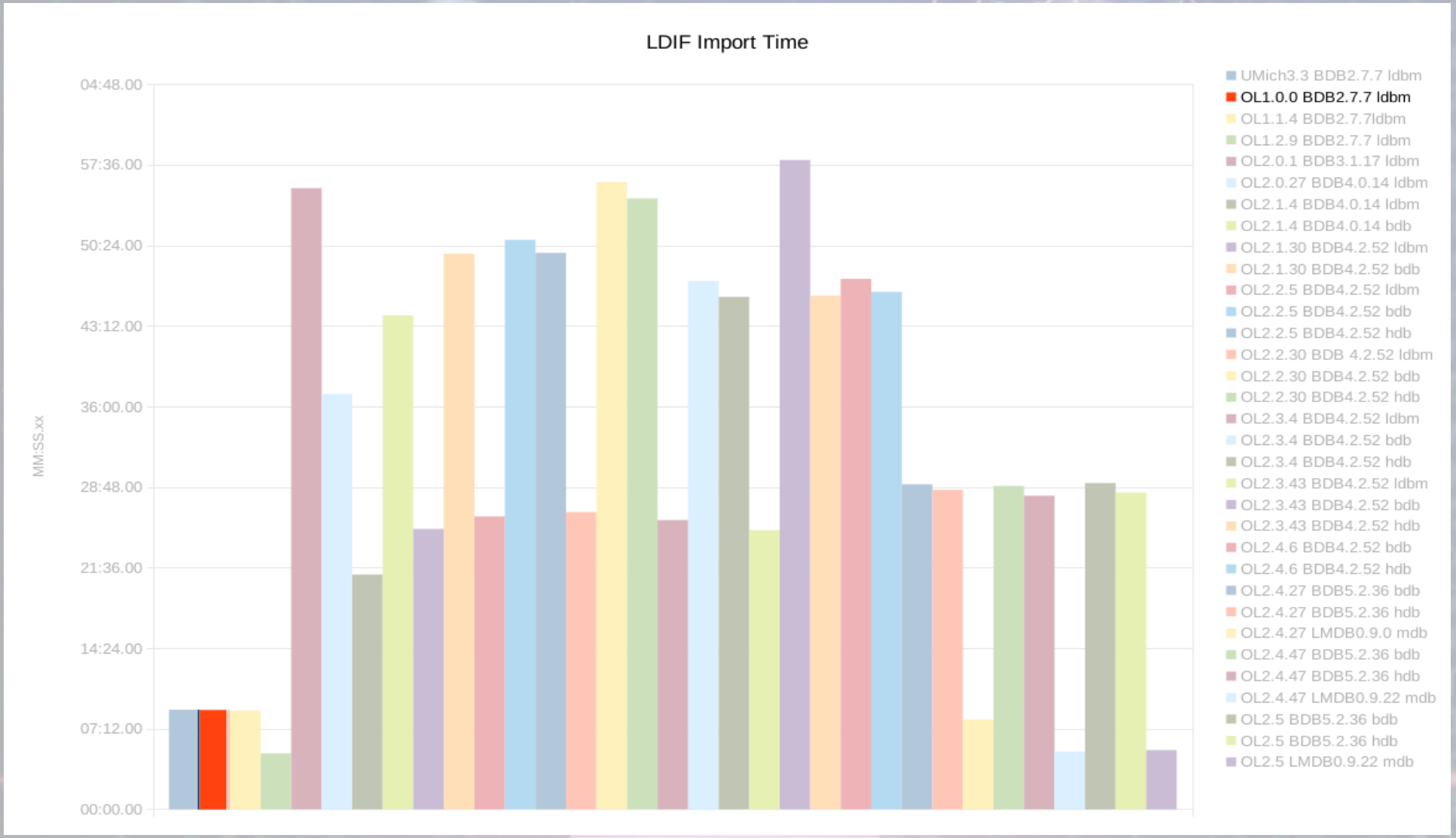
Release 1.0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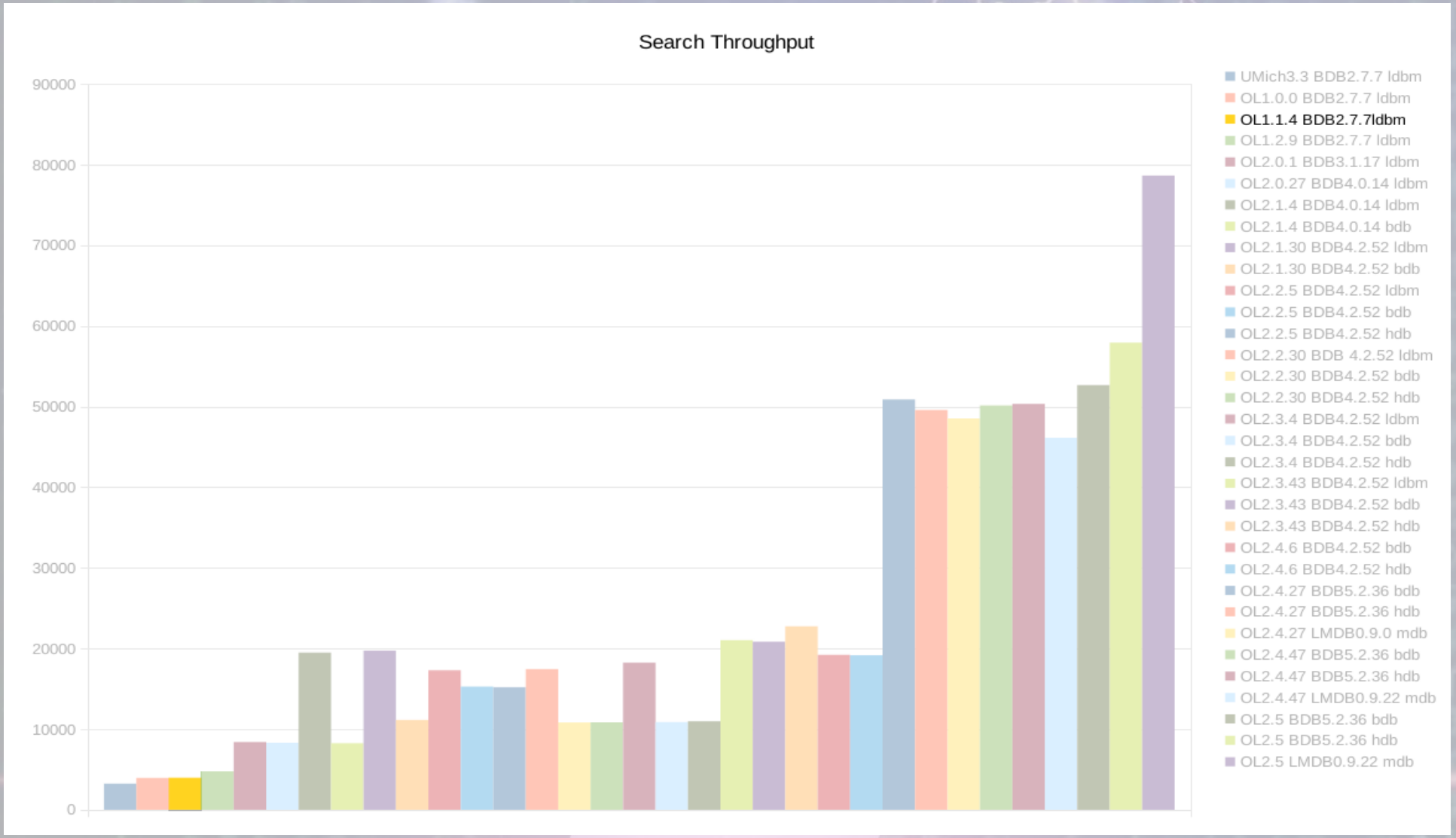
Release 1.0

- Added POSIX(final) threads support
- Various Y2K fixes
- Mainly supported on Linux and FreeBSD
- (Tested here using BDB 2.7.7's db1.85 compat wrapper)

Release 1.1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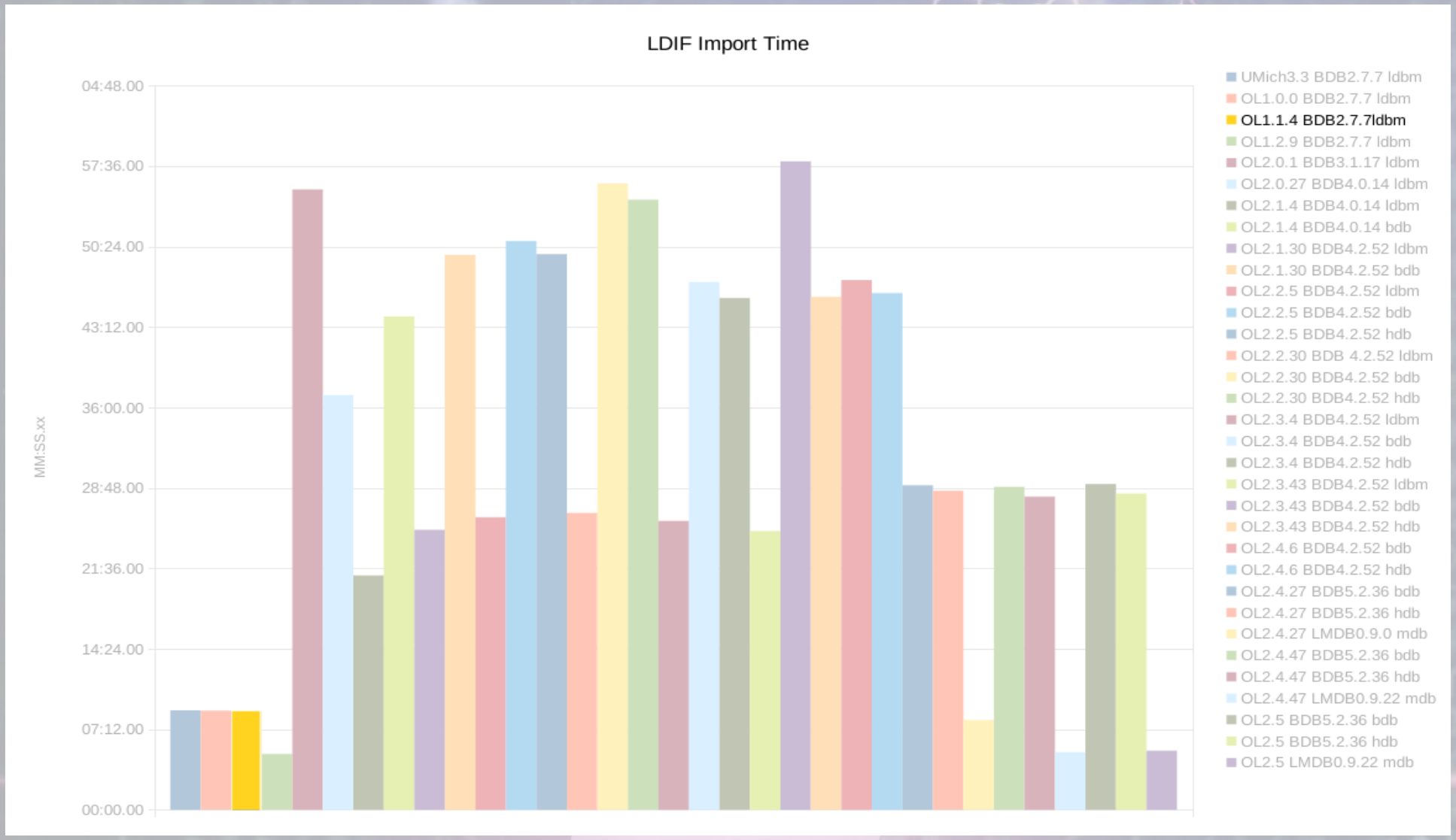
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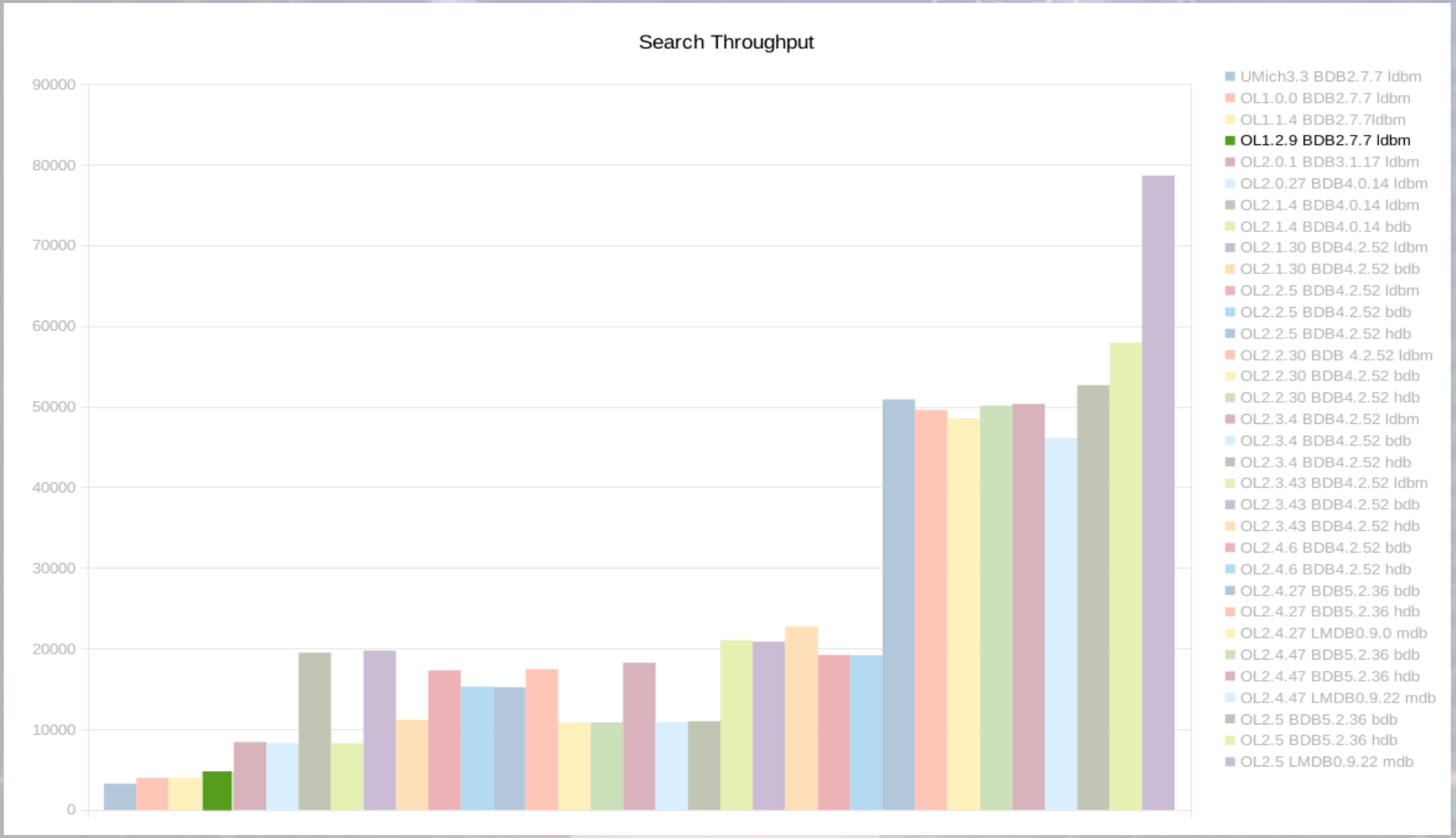
Release 1.1

- Added initial Windows NT support
- Adopted autoconf build tools
- Support for BerkeleyDB 2.x
- Seven contributors
  - Kurt Zeilenga (359)
  - Hallvard Furuseth (57)
  - Predrag "Pele" Balorda (26)
  - Dave Storey (13)
  - Bart Hartgers (11)
  - Kurt Spanier (9)
  - Randy Kunkee (2)

Release 1.2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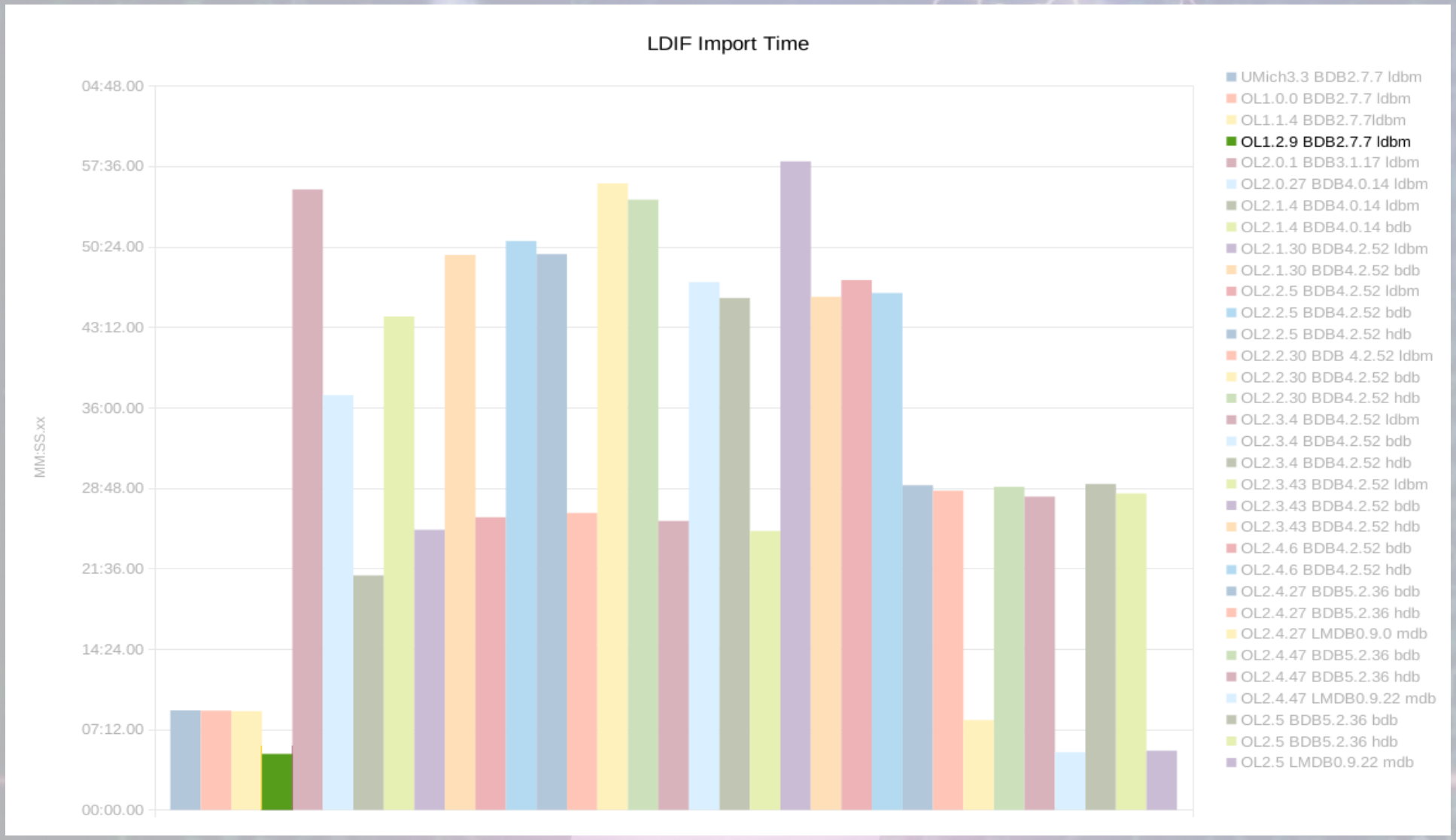
Release 1.2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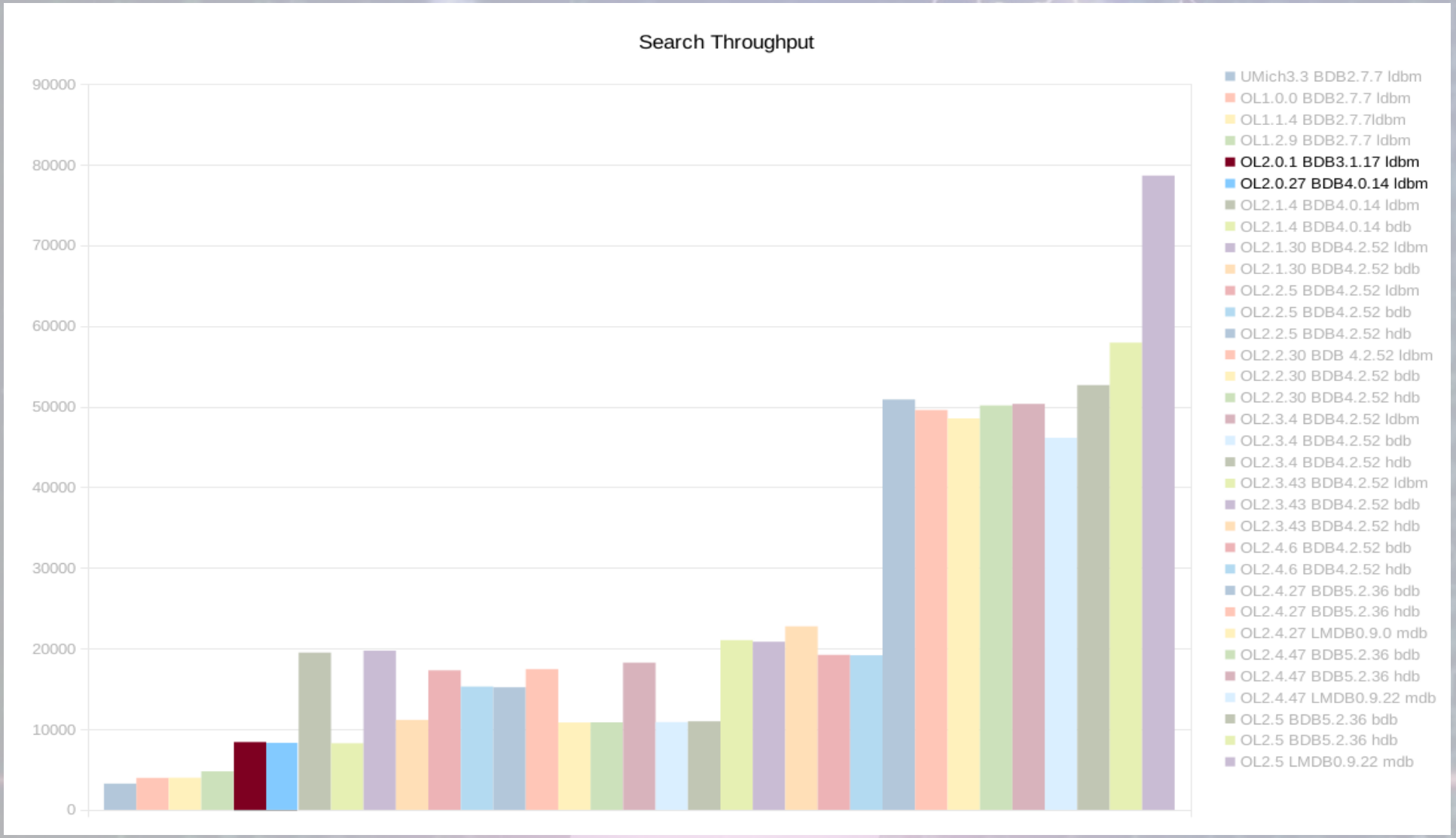
Release 1.2

- 21 contributors
  - Kurt Zeilenga, Hallvard Furuseth. Julio Sanchez Fernandez, Howard Chu, Gary Williams, Mark Valence, Ben Collins, Juan Gomez, Pierangelo Masarati, Randy Kunkee, Stig Venaas, Kurt Spanier, Dmitry Kovalev, Mark Adamson, Predrag "Pele" Balorda, Ralf Haferkamp, Luke Howard, Will Ballantyne, Bart Hartgers, Bastiaan Bakker, John Quillan
- From here on out the community just keeps growing...

Release 1.2

- Significant improvement in import speed
  - multiple indexing fixes
  - removal of DN substring index
- Added creator/modifier attributes

OpenLDAP 2.0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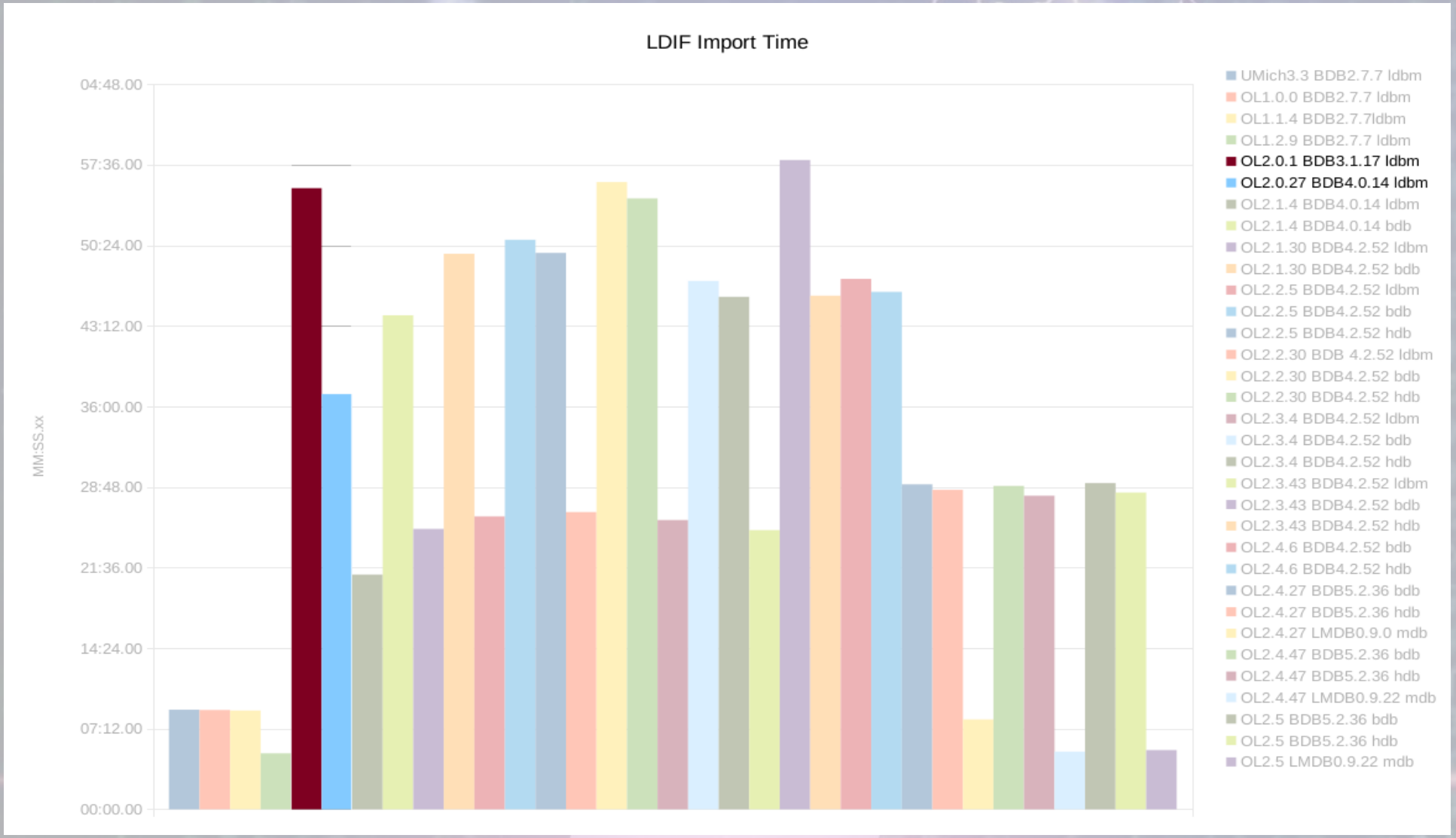
OpenLDAP 2.0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OpenLDAP 2.0

- The main thrust of OpenLDAP 2.0 was support for LDAPv3
- Also added SSL/TLS support, strong authentication support via Cyrus SASL
- Use a threadpool instead of spawning a thread per op
- Introduced back-sql

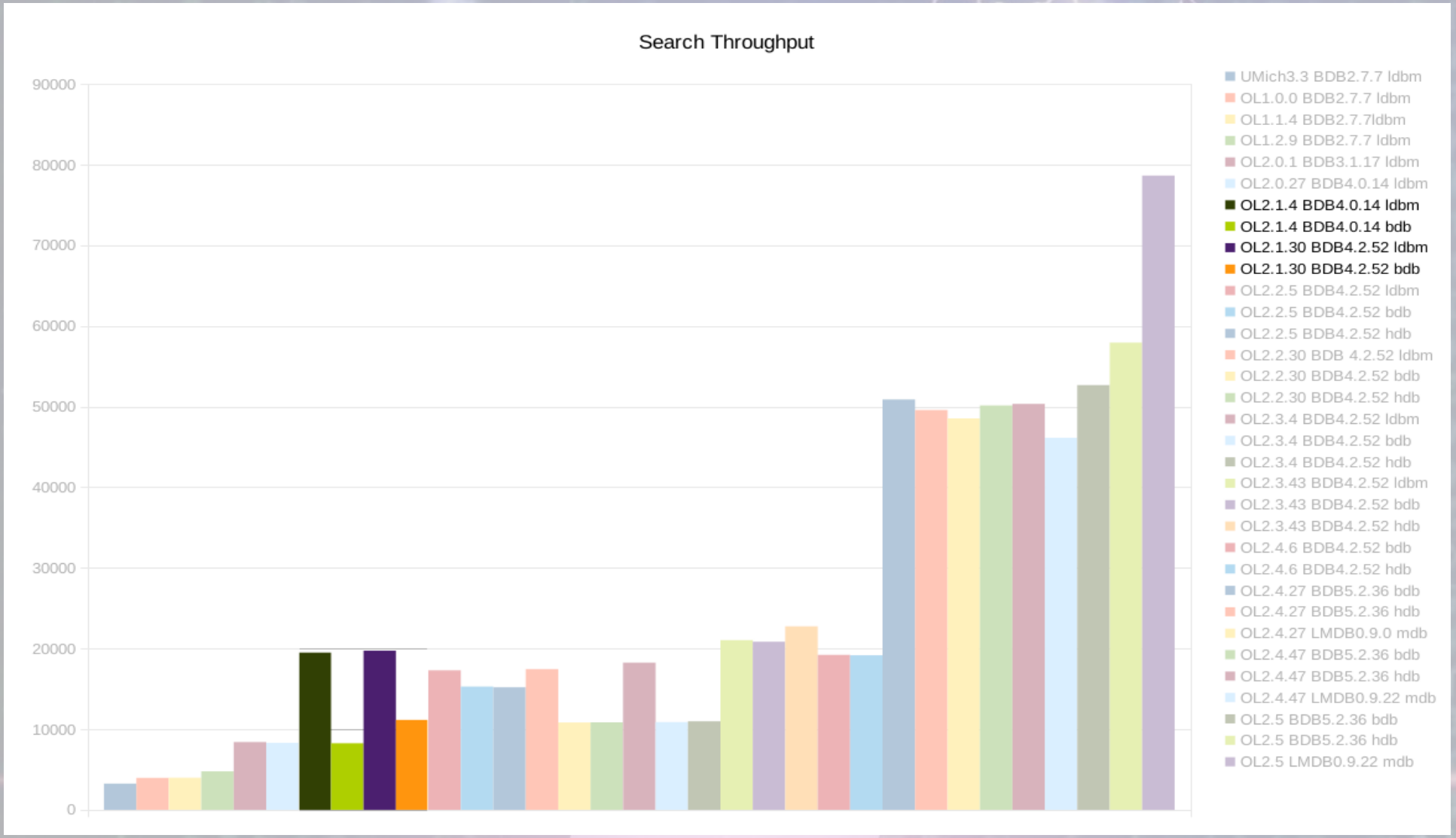
OpenLDAP 2.0

- Significant slowdown in import speed
  - mainly due to schema validation
    - one of the defining differences between OpenLDAP and all of the other UMich-derived projects
  - also due to Unicode / UTF8 support
    - normalization / canonicalization of DirectoryStrings

OpenLDAP 2.0

- This is where my/Symas' involvement really begins
  - Symas was building an enterprise resource management system on top of a directory
  - We wanted X.500-style chaining, the ability for a collection of servers to serve separate pieces of a single DIT
  - I wrote back-ldap based on OL1.2; it was released as part of 2.0
  - Had no desire/intention to touch back-ldbm or any database code

OpenLDAP 2.1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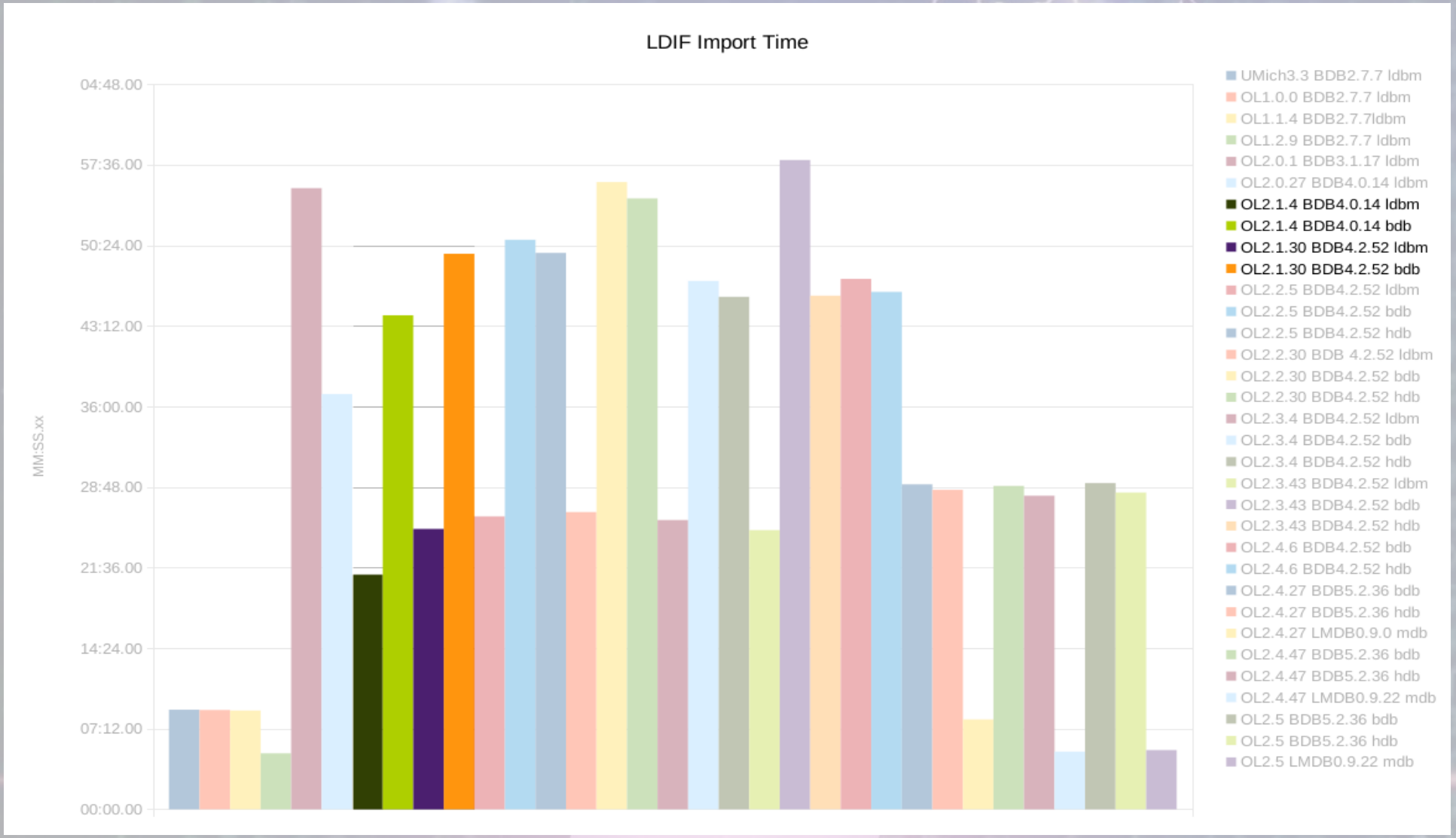
OpenLDAP 2.1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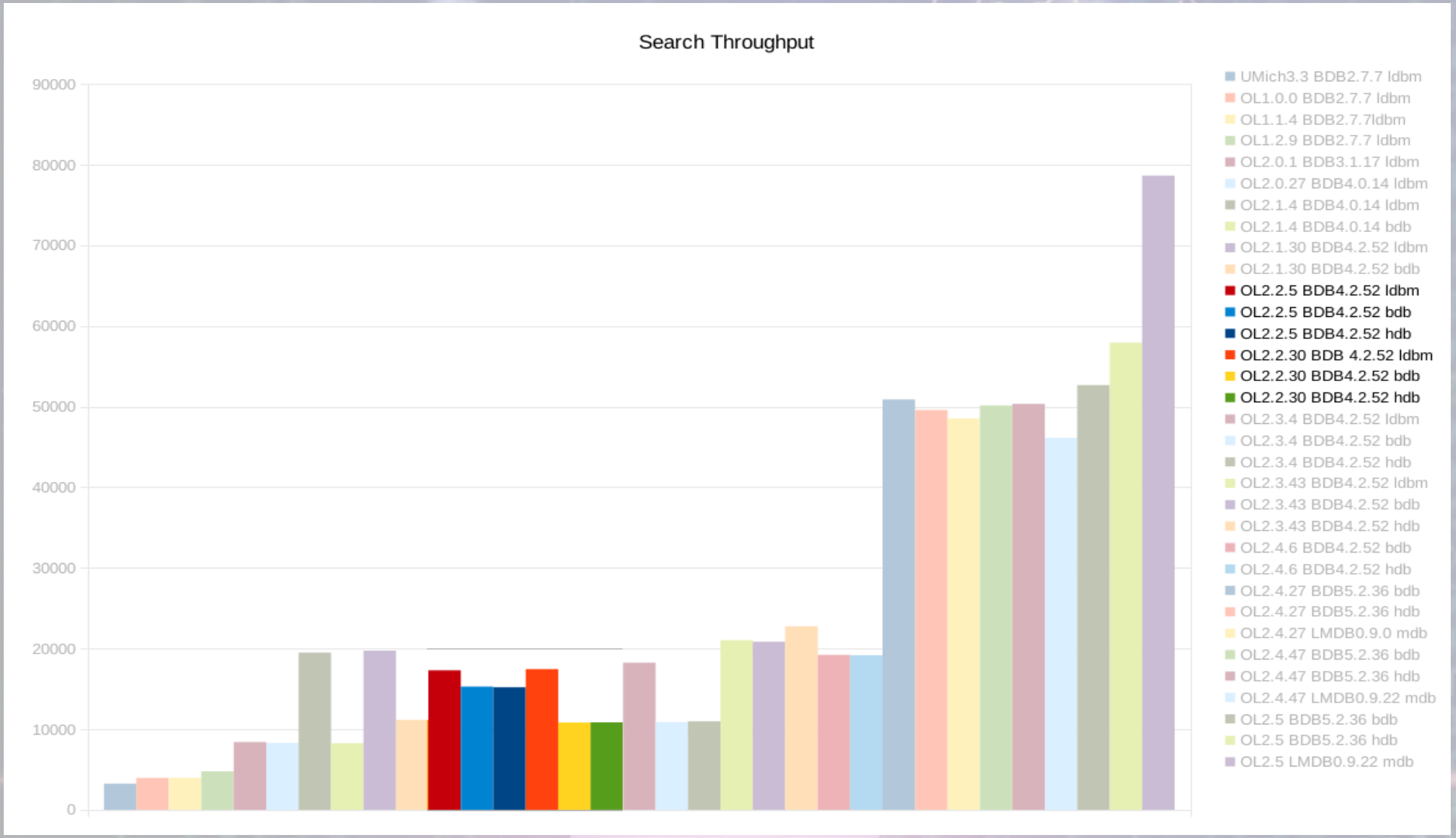
OpenLDAP 2.1

- First serious look at performance
  - Revamped memory use
  - Avoid runtime computation of string lengths
- Ported to IBM mainframe with EBCDIC
- Introduced back-bdb, using BDB's transaction support
- Introduced back-meta, back-monitor, back-null, back-perl, backglue
- First OpenLDAP Developers' Day March 2003 in San Francisco

OpenLDAP 2.2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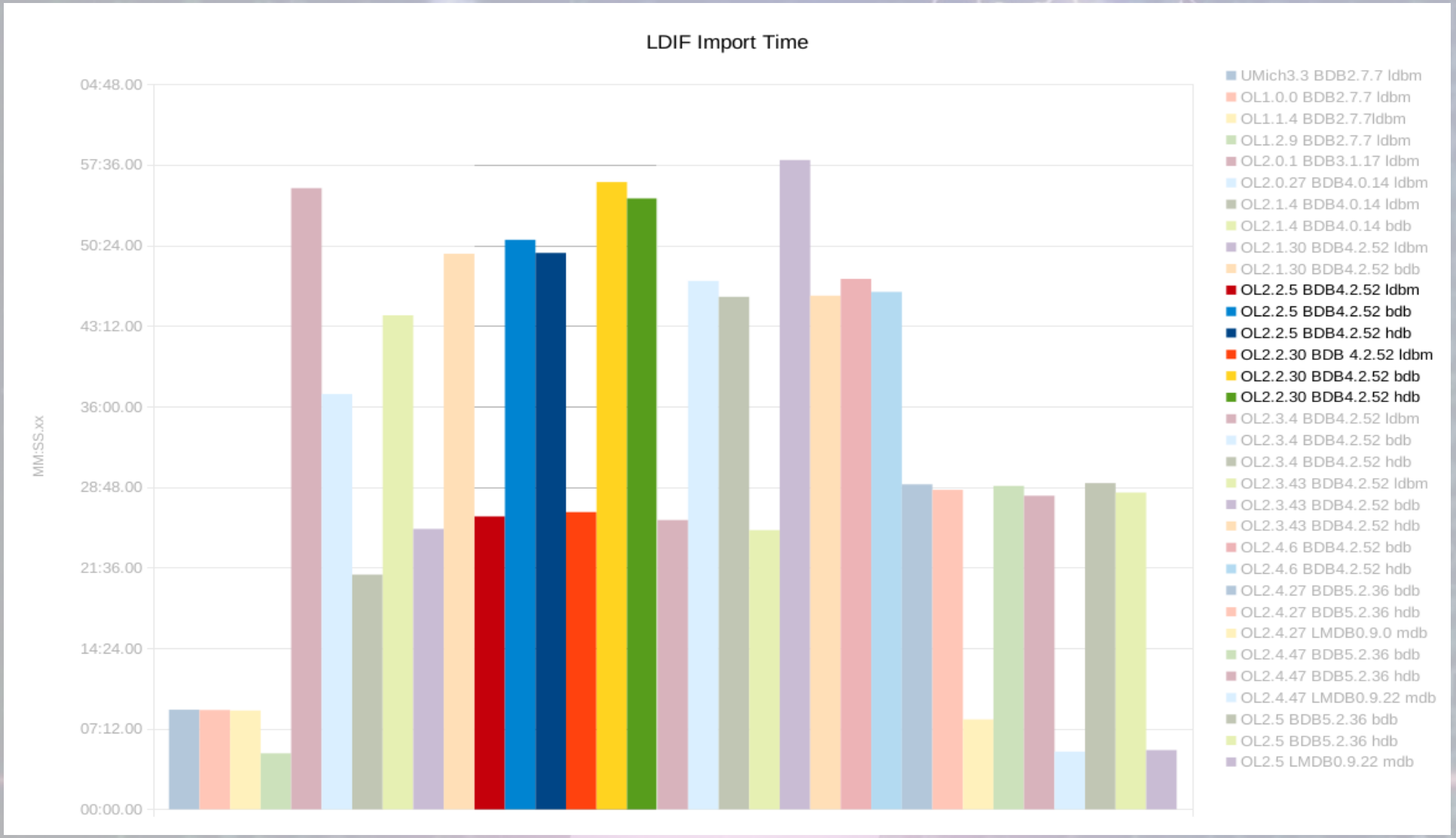
OpenLDAP 2.2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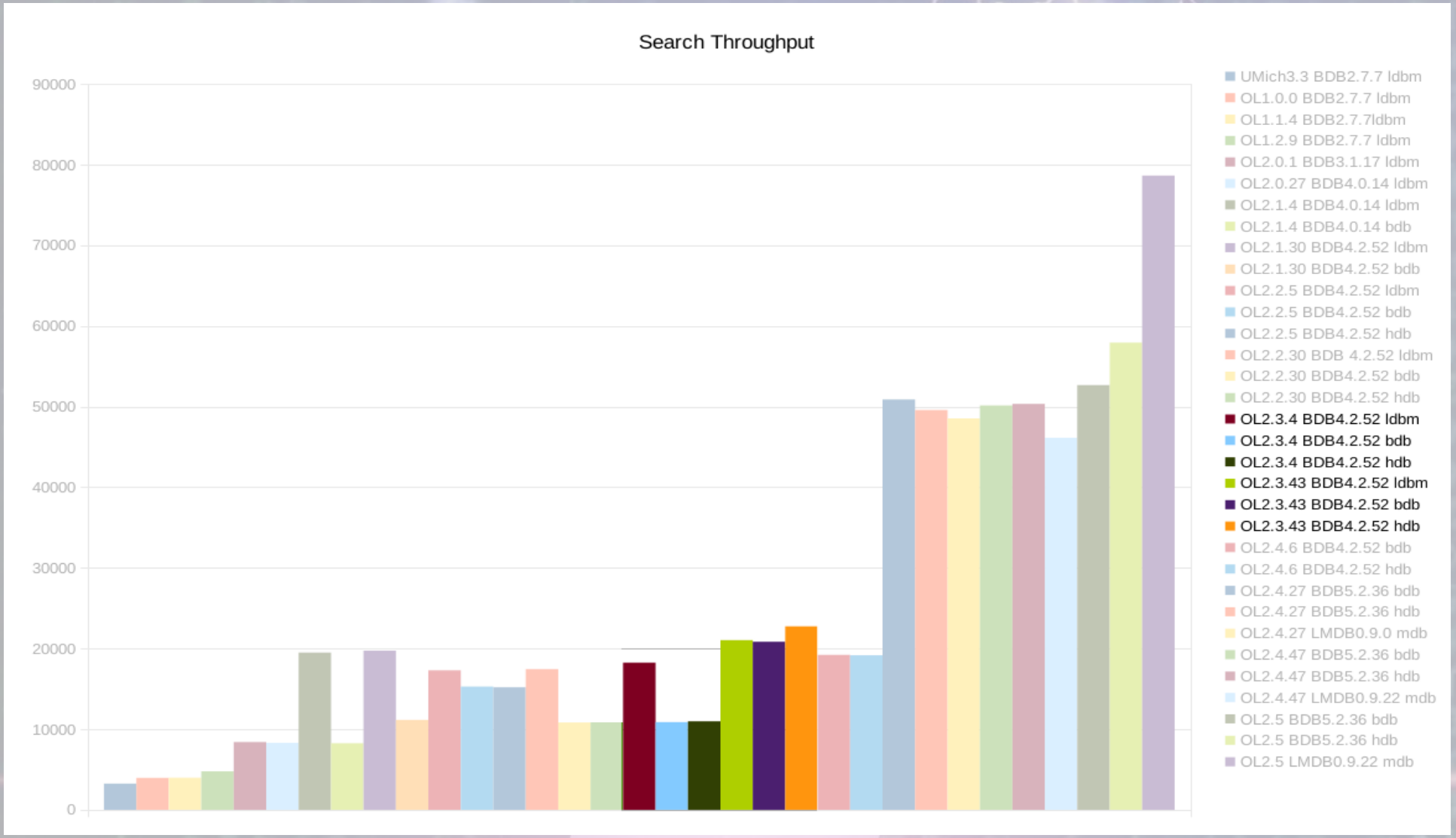
OpenLDAP 2.2

- Initial support for overlays
  - dyngroup, pcache
- Introduced syncrepl
- Introduced back-hdb, a hierarchical variant of back-bdb that supported atomic subtree rename
- Added SLAPI support
- Merged slap* tools support into slapd binary
- Added smbk5pwd overlay

OpenLDAP 2.3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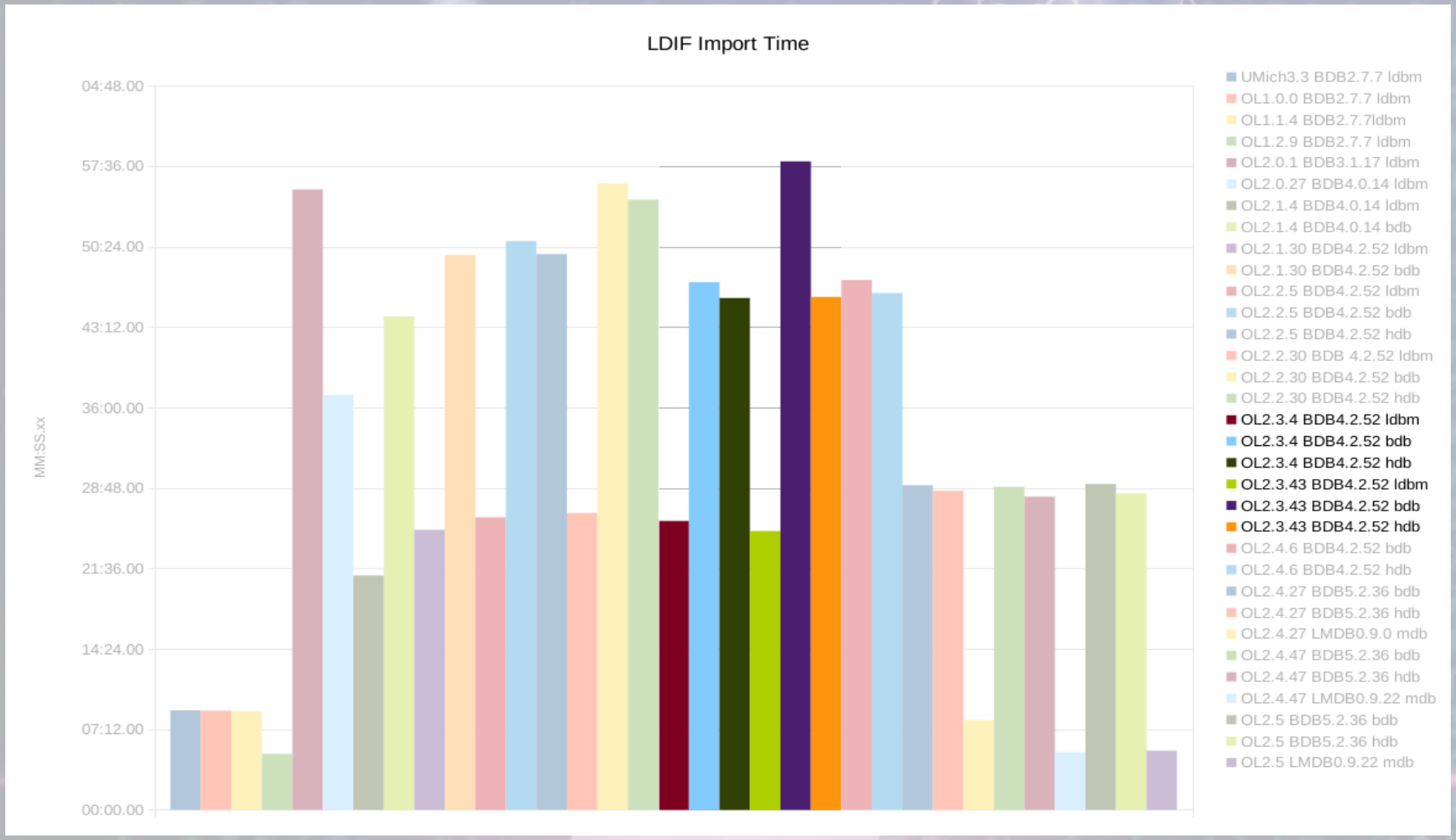
OpenLDAP 2.3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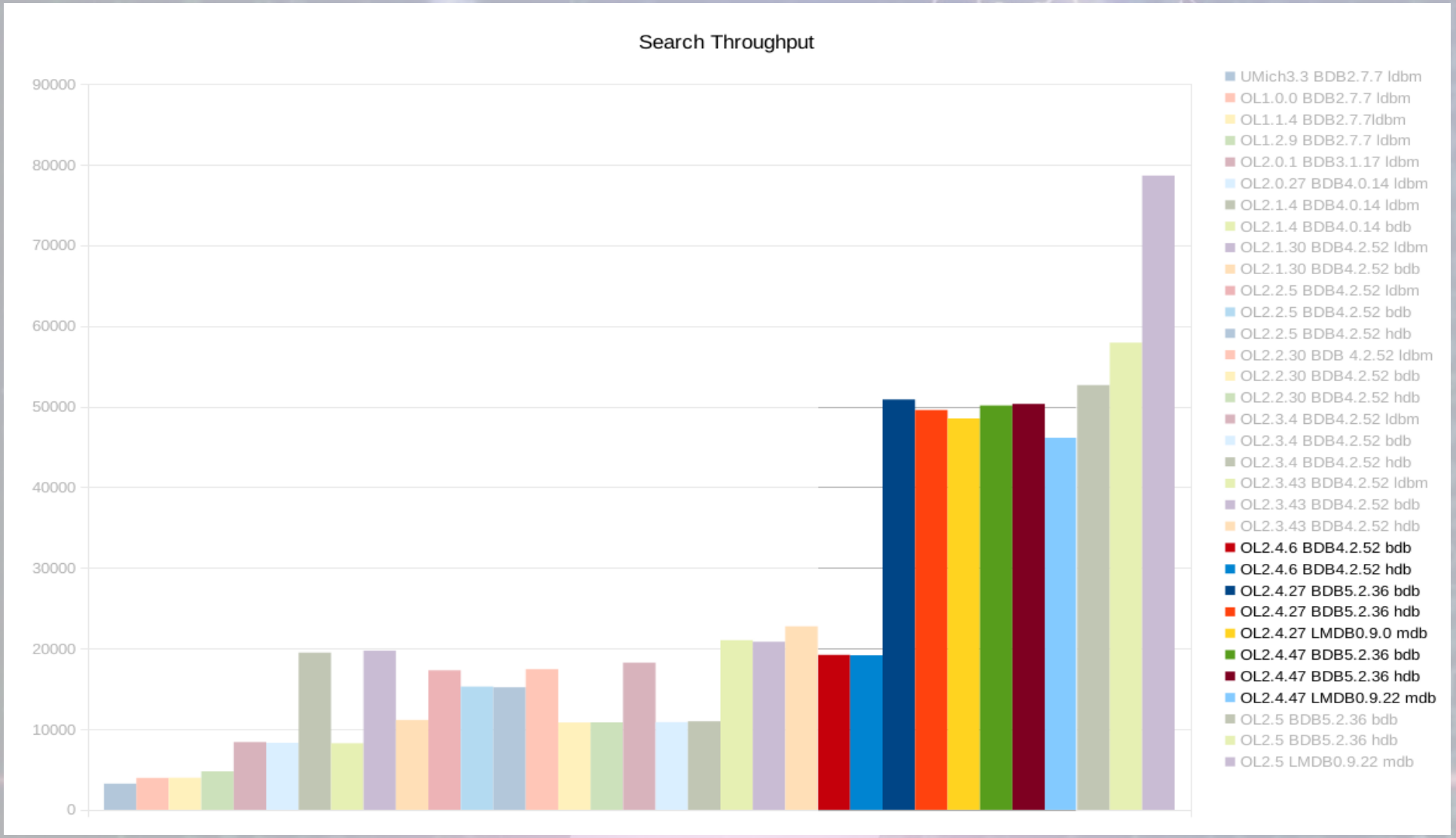
OpenLDAP 2.3

- Introduced back-ldif, cn=config, back-relay
- Added slapadd -q quick mode
- Added more overlays
  - accesslog, auditlog, collect, denyop, dynlist, lastmod, ppolicy, refint, retcode, rwm, seqmod, syncprov, translucent, unique, valsort
- Introduced delta-syncrepl
- Added threaded indexer for back-bdb/hdb

OpenLDAP 2.3

- Discovered critical bug in BDB 4.6
  - reject it in configure tests
- Added epoll support
- Added more contrib modules
- Kurt Zeilenga resigns as Project lead
  - Howard Chu takes over as Chief Architect
  - Quanah Gibson-Mount starts assisting as Release Engineer

OpenLDAP 2.4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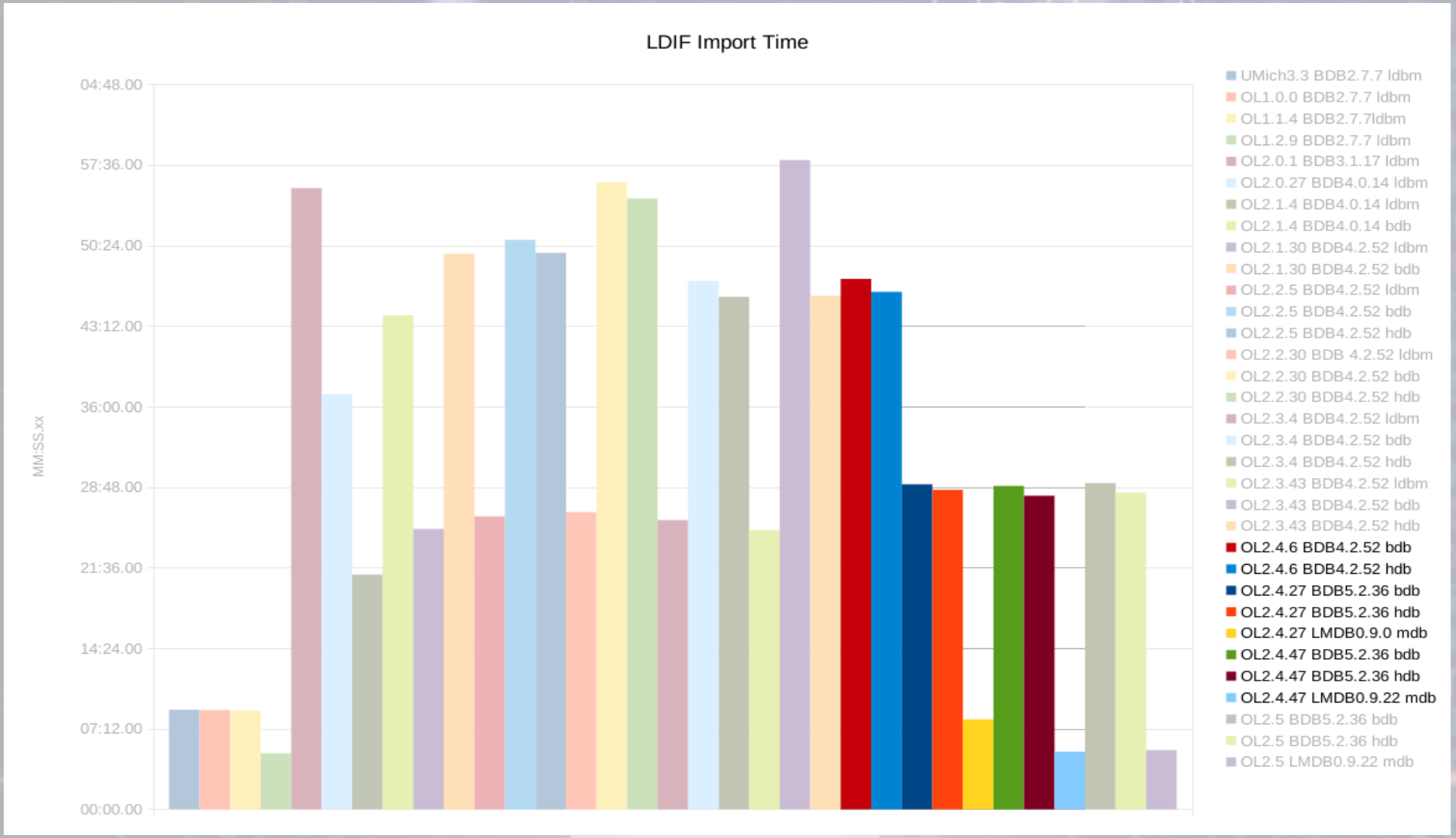
OpenLDAP 2.4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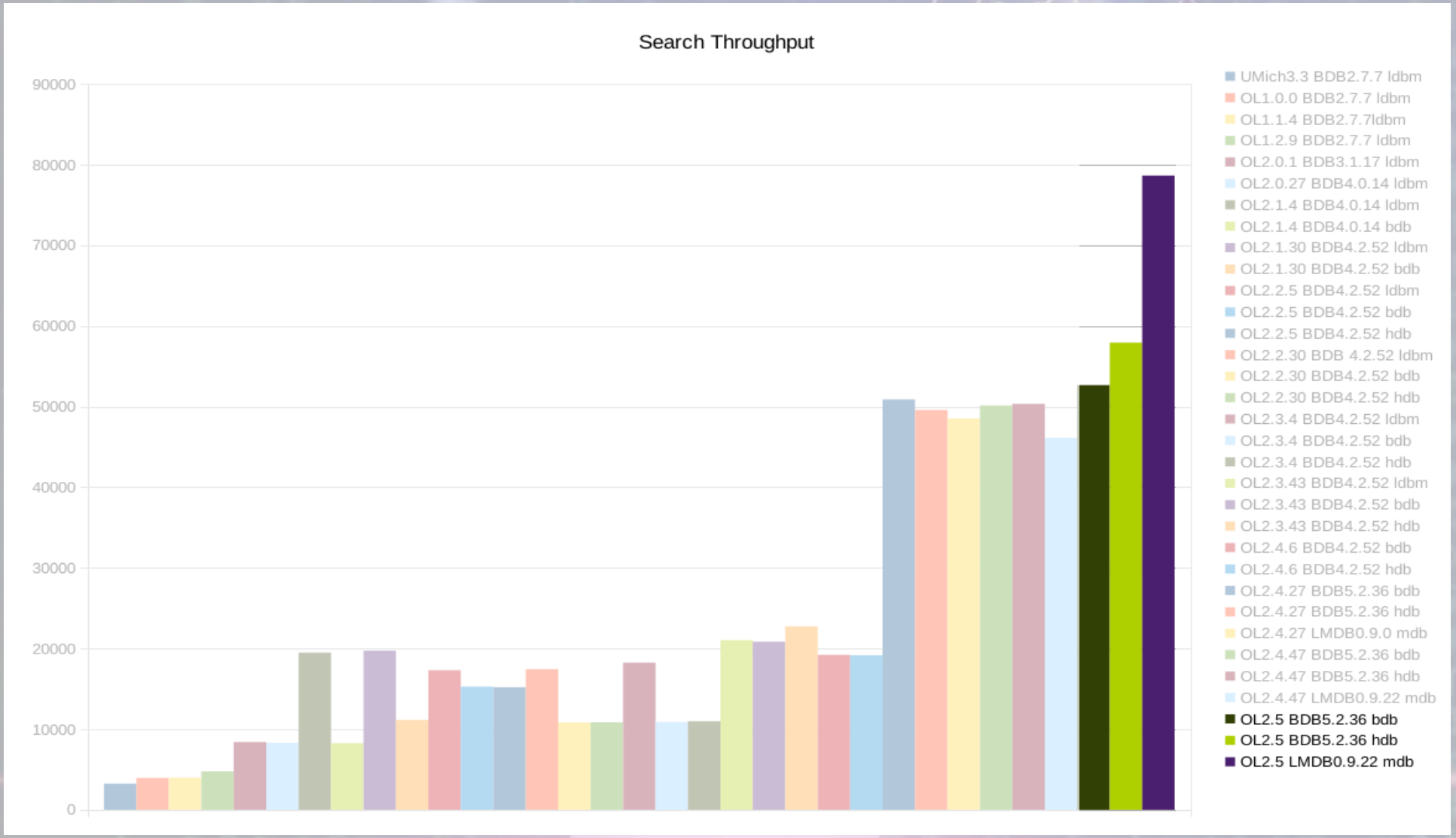
OpenLDAP 2.4

- Enabled Lightweight Dispatcher in slapd
  - faster connection management
- Introduced back-mdb
  - designed as a standalone DB library to allow reuse in other projects
  - with the functionality of back-hdb wrapped on top
- Added support for GnuTLS and MozillaNSS
- Expanded cn=config functionality

OpenLDAP 2.4

- Introduced back-ndb
  - built on MySQL Cluster backend
  - project killed when Oracle acquired Sun (which had acquired MySQL)
- Introduced back-sock
  - similar in spirit to back-shell, but sending requests to a separate process over Unix domain sockets for isolation / thread safety
- Added more overlays
  - dds, deref, sssvlv
- Added even more contrib modules
  - autogroup, cloak, dupent, kinit, lastbind,noopsrch, nops, nssov, samba4-related modules

OpenLDAP 2.5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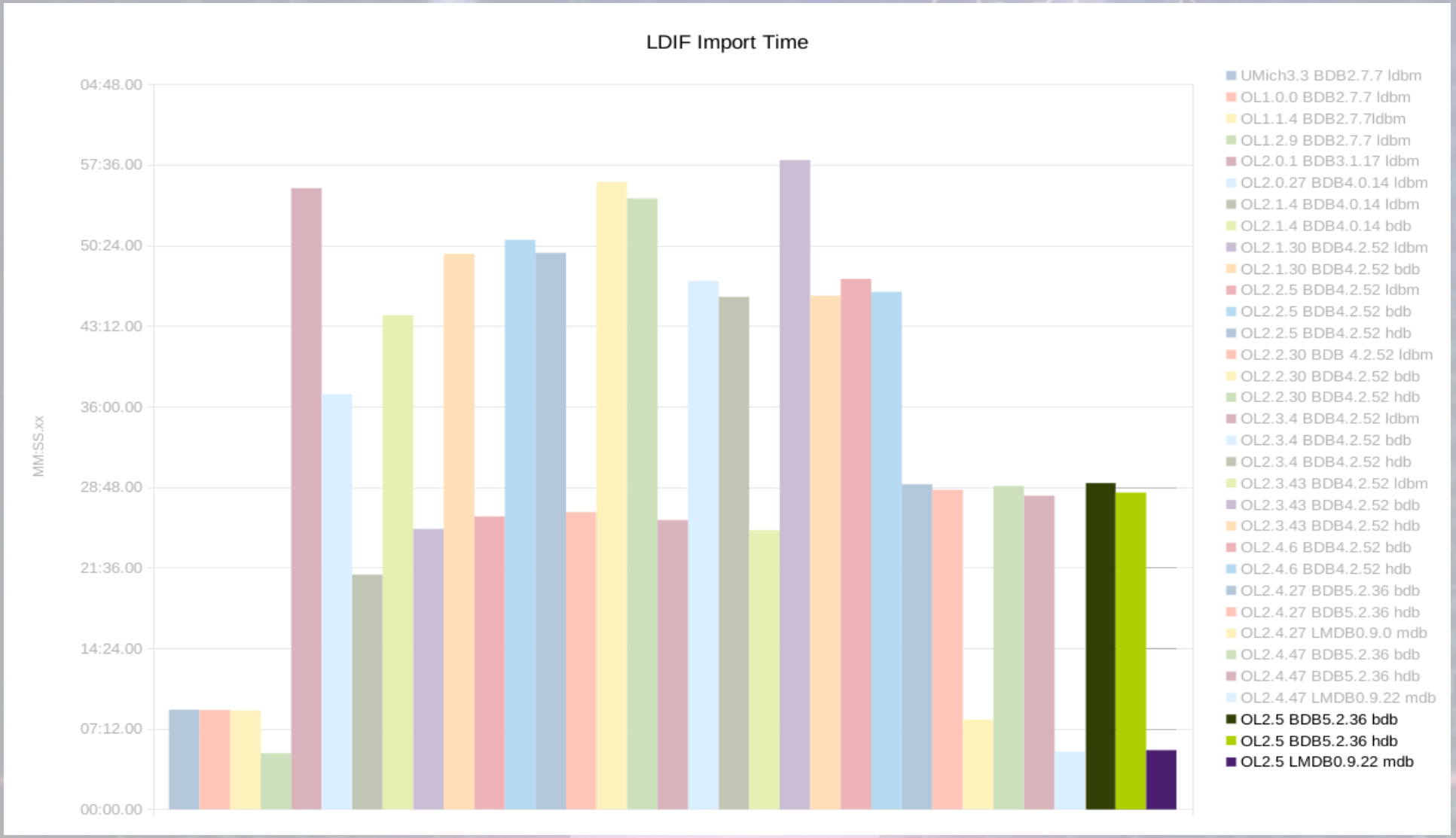
OpenLDAP 2.5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OpenLDAP 2.5

- Further analysis of mutex bottlenecks
- Added multiple queue support to threadpool
- Even lighter weight socket writer management
- More to come, but that's another talk


Questions?