

# ksmbd status update

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# Topic

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- **ksmbd overview**
- **Rename kcidfsd to ksmbd**
- **New features**
- **Test automation**
- **Stability**
- **Future plan**

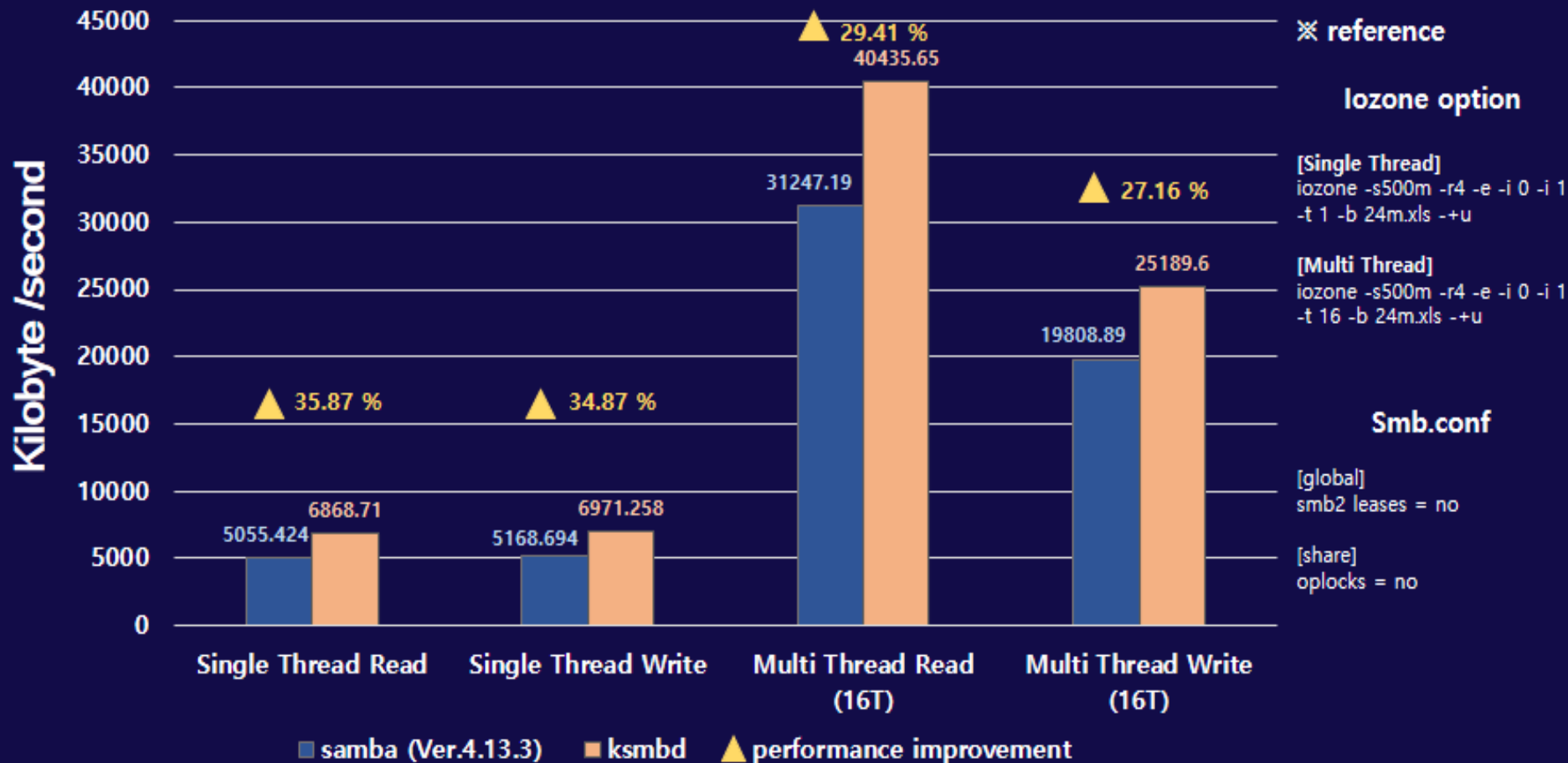
# ksmbd overview - What is ksmbd ?

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- **SMB3 kernel server**
- **Project target**
  - **Optimize performance for Linux workload**
  - **GPLv2 SMB Server**
  - **Better lease handling**
  - **Easy to develop new features(e.g. RDMA aka smb-direct)**
- **Very optimal for embedded device**
  - **Small memory footprint and binary size**
  - **Low CPU usage and better performance**
  - **Easy cross compile without special handling**

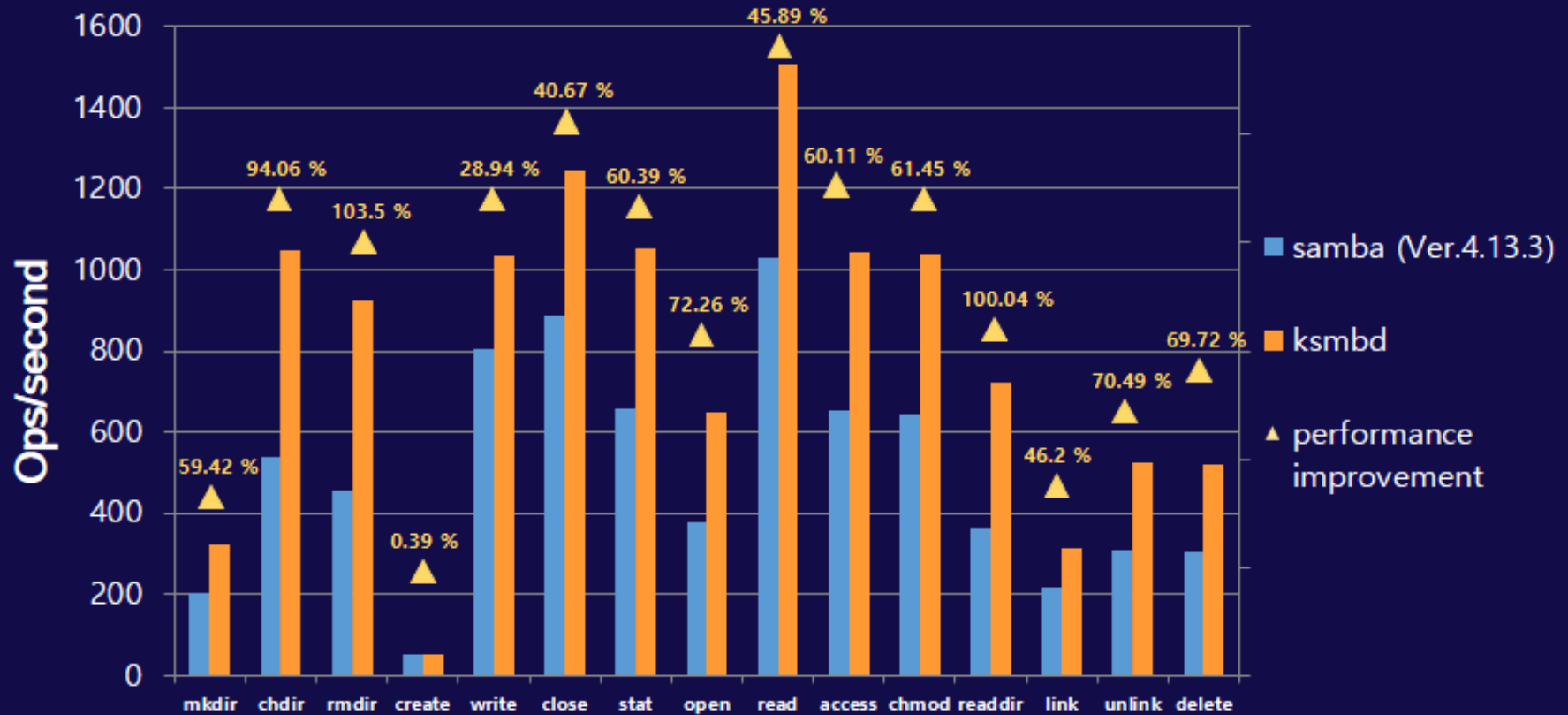
# ksmbd overview - performance

## 4K Read/Write performance



# ksmbd overview - performance

## Fileop throughput



# ksmbd overview - performance



# Status update – rename kcidfsd to ksmbd

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- **Rename kcidfsd.ko to ksmbd.ko**
- **Rename kthread name prefix to ksmbd**
- **Rename function and structure prefix to ksmbd**
- **Directory name is cifsd to align with client cifs**
- **cifs\_common for shared code and definitions between cifs and ksmbd like nfs/nfsd/nfs\_common**
- **Rename ucifsd to ksmbd.mountd**

# Status update - New features – buffer cache pool

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- **Huge read/write/trans buffers, default: 4MB**
- **vmalloc allocation is expensive and not fast**
- **Allocation can fail on memory fragmentation**
- **Introduce buffer cache pool for fast allocation and to avoid allocation failure.**



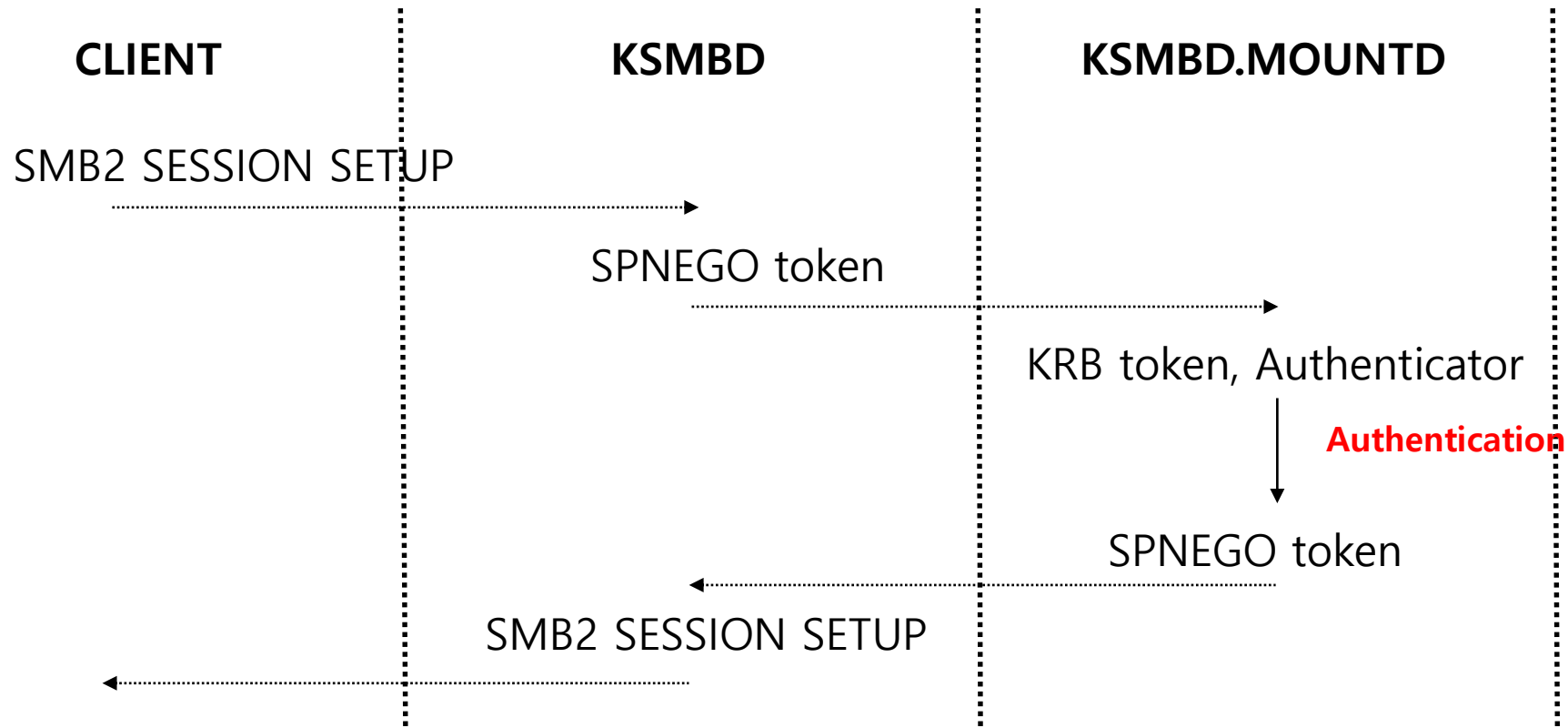
# Status update - New features – ACLs

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- **Standalone server**
- **Only DACLs available**
- **Store both posix acls(acl) and ntacl(xattr)**
- **Add translation between unix permission and access mask**
- **Encode/decode NDR format to compatible with samba**
- **Add support for SAMR/LSARPC rpc protocol to provide registered users info and domain info to client**

# Status update - New features – Kerberos

- Support authentication with Kerberos
- ksmbd transmit kerberos msg to ksmbd.mountd
- ksmbd.mountd use libkrb5



# Status update - New features – samba meta format

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- **Compatibility of xattr meta-format between samba and ksmbd**
- **Make same xattr meta format with samba's one**
- **Use same v3 and v4 dos attribute and ntACL structure of samba**
- **Need NDR encode/decode xattr metadata**

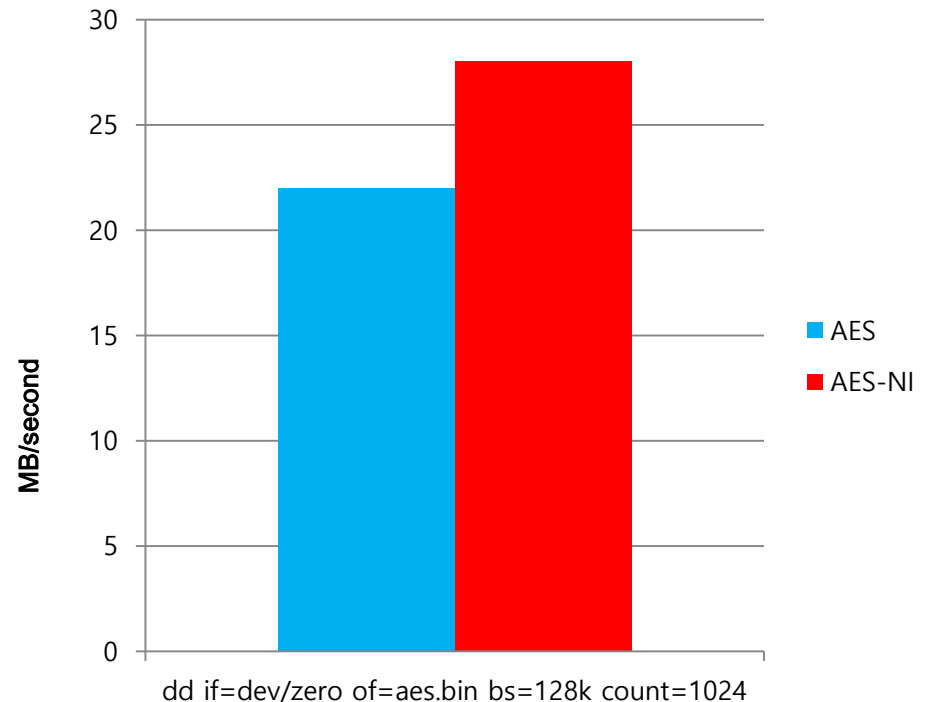
# Status update - New features – POSIX extensions

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- **Supported POSIX negotiate context and Mode bit**
- **Catching up smb3.1.1 posix extension works from cifs**
  - **Add posix query info(level 100)**
  - **Add FS\_POSIX\_INFORMATION in get info filesystem (i.e. statfs -f)**
  - **Add smb2 posix query dir**
  - **WSL reparse tags support for special files**

# Status update - New features – GCM encryption

- Performance advantage through HW acceleration
- Accelerate encryption(AES-GCM) performance with AES-NI support in kernel



# Status update - New features – SMB Direct

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- **New transport protocol for supporting SMB over RDMA**
- **Supports datagram-type send/receive for the exchange of SMB messages**
- **Supports remote direct data placement for moving data between memory buffers on each peer (RDMA read/write)**
- **SMB3 Multi-channel support is required to connect to Windows client**
- **On-going SMB3 Multichannel support work**

# Status update – Stability test – Github Test automation

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- **Use Travis CI**
  - Github integration to test per pull request and every commit
- **Build test**
  - Linux 5.4 kernel and the latest linus-tree
- **Stability test**
  - xfstests tests 91 passed
  - smb functional testsuite 141 passed

# Status update – Stability test – Buildbot

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- Test ksmbd with the latest Linux kernel
- Run xfstests more than travis-CI test
- Find issues that occur from the latest commits with cifs and ksmbd.
- Buildbot xfstests 120 test passed
  - Link: <http://smb3-test-rhel-75.southcentralus.cloudapp.azure.com/#/builders/8/builds/32>



# Status update – Linux mainline upstream

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- **Post ksmbd patch series to LKML**
- **Exclude vulnerable SMB1 protocol**
- **Fixing a lot of review comments and patches from prominent kernel developers**
- **Use generic one instead of own' asn1 decoder**
- **ksmbd/nfsd interoperability**

# Future Plan

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- **On-going SMB3 Multi-channel feature.**  
After finishing it, SMB-Direct through windows client will work with ksmbd
- **SMB2 notify**
- **Lease v2 feature**
- **Durable handle v1/v2 feature**
- **Common codes between cifs and ksmbd are moved to cifs\_common directory**
- **Add ksmbdstatus to show statistics through /proc or /sysfs**
  - **Session info (user info, number of credits, and more)**
  - **Session list**
  - **openfiles**

*Thank you!*