



EOS on ARM

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On behalf of EOS team

EOS Workshop 2024

ARM64 builds for EOS

- **Motivated by heterogeneous architecture support**
 - Experiment aarch64 test setups needing clients
 - lxplus-arm needing clients & mounts
- **Initial set of changes thanks to IHEP**
 - Talk/Paper at CHEP 2021
 - Code changes for CRC32 which had x86 specific intrinsics; mainly in eos-common
- **CMake changes to detect machine architecture & intrinsics**
 - Also helped when different intrinsics are used by cryptographic libraries - for eg. blake3
 - Tested on Apple M1 1st gen ;)
 - Merged in EOS5

```
-- Performing Test HAVE_SSE42
-- Performing Test HAVE_SSE42 - Success
-- Performing Test HAVE_AVX512F
-- Performing Test HAVE_AVX512F - Success
-- Performing Test HAVE_AVX512L
-- Performing Test HAVE_AVX512L - Success
-- Performing Test HAVE_AVX2
-- Performing Test HAVE_AVX2 - Success
```

```
-- Performing Test HAVE_ARMV8_CRC_CRYPT0
-- Performing Test HAVE_ARMV8_CRC_CRYPT0 - Success
-- Performing Test HAVE_ARMV8_CRC
-- Performing Test HAVE_ARMV8_CRC - Success
-- Performing Test HAVE_ARM_NEON
-- Performing Test HAVE_ARM_NEON - Failed
```

```
-- Building Blake3 on x86_64 with intrinsics AVX2=1 AVX512=1 SSE42=1
```

ARM64 builds for EOS

- **Docker-arm runner introduced at CERN circa 2021**
 - Very limited runners available
 - Client/FUSEX builds pushed to koji and available for lxplus-arm
 - Summer student project to build/test the dependency chain for full EOS-server
- **Client/FUSEX builds available since EOS5**
 - Koji already builds multiple architectures
 - Lxplus-arm has been configured with both the fusex mount and eos cli
- **Gitlab ARM CI runners available since mid 2023**
 - Needed the full chain of EOS dependencies built
 - Thanks to [reduced dependencies](#) (EOS 5.2), it was easy to write both the build and publish routine to handle multiple architectures
 - EOS Dependencies fully ported to ARM64 with minimal patches
- **Generally available since 5.2.13 for CentOS7 & AlmaLinux 9**
 - Only compile tested at this moment

Future work

- Hardware/Quota request with the Openstack team - in the queue
- Testing performance of FSTs when using EC
- Testing MGM workloads with namespace and other benchmarks
- We'd love to hear from you if you have deployments/requirements for ARM64!