NVIDIA Hopper Confidential Compute

Early Access Release Notes
Overview

The NVIDIA® Confidential Computing (CC) features of the NVIDIA H100 Tensor Core GPUs are now available in this Early Access (EA) release.

This EA software release features a complete software stack that targets a single NVIDIA H100 GPU in passthrough mode with a session key for encryption and authentication and basic use of the Developer Tools. Code and data will be confidential up to the limits of the NIST SP800-38D AES-GCM standard, after which the VM should be restarted.

NVIDIA recommends that users invoke good practices, such as testing only with data that does not have cryptographic confidentiality requirements (for example, synthetic non-production data, non-confidential test vectors, and so on), while using this release.
Known Issues

- A key rotation feature is missing. A sophisticated attacker with physical access or logical superuser access to the system might be able to act as a passive adversary to capture the ciphertext and execute an attempt to break the ciphertext or the key.

  Workaround
  Only data without cryptographic confidentiality requirements should be used with this EA release.

- IV rotation exhausts early. The H100 CC modes use a 96-bit deterministic IV for each virtual copy engine used to transfer data between the GPU and CPU. It is composed of a concatenation of 64-bits of channel\_counter and 32-bits of message\_counter. As a channel reaches the 32-bit message maximum, the NVIDIA driver will not automatically roll over to a new channel.

  Depending on the workload, this may result in either returned channel error codes or silent encryption failures resulting in plaintext transfers, the latter of which presents a security risk.

  Workaround
  Only data without cryptographic confidentiality requirements should be used with this EA release. Workloads that rely heavily on many UVM page migrations will be most affected by this issue.

- Certain graphic applications will crash a guest virtual machine (VM). When trying to execute graphics interop kernels, the guest VM will crash.

  Workaround
  Graphics interop tests are not supported on Hopper CC. Resetting the GPU with a Physical Function Function Level Reset (PF-FLR) from the host will recover the GPU.
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