Introduction to ROCm

ROCm Tutorial – Part 1
Part 1: ROCm™ and ROCm™ modules
What is ROCm™?

An Open Software Platform for GPU-accelerated Computing

Features:
- Frameworks
  - TensorFlow, PyTorch, Kokkos
- Libraries
  - MIOpen, roc* libraries
- Programming models
  - HIP, OpenCL
- Intermediate runtimes/compilers
  - LLVM based Clang(HIP-Clang)
- Runtimes
  - ROCm

Programmer and system tools:
- debug
- profile
Supported GPUs

Radeon GPUs
- R9 Nano & R9 Fury X (Fiji)
- R9 480 & R9 580 (Polaris 10)
- RX Vega 56 & RX Vega 64 (Vega 10)
- Radeon VII (Vega 20)

Radeon Instinct GPUs
- MI8 (Fiji)
- MI6 (Polaris 10)
- MI25 (Vega 10)
- MI50 & MI60 (Vega 20)
Device Driver

- ROCm GPU Driver
- Supported in:
  - Ubuntu
  - Red Hat Enterprise Linux
  - CentOS Linux
- Thunk Driver Interface

- Development/Management Tools
- Application Frameworks
- Libraries
- Programming Frameworks
- System Runtime
- Supported GPUs
System Runtimes – HSA Runtime

- Low-level device manipulation
- Interoperability for layers above

Development/Management Tools
Application Frameworks
Libraries
Programming Frameworks
System Runtime
Device Driver
Supported GPUs
Programming Frameworks

- HIP
- OpenCL

Development/Management Tools
Application Frameworks
Libraries
Programming Frameworks
System Runtime
Device Driver
Supported GPUs
Libraries

- MIOpen
- MIOpenGEMM
- rocBLAS, hipBLAS
- rocSPARSE, hipSPARSE
- rocFFT
- rocRAND
- RCCL

Development/Management Tools

Application Frameworks

Libraries

Programming Frameworks

System Runtime

Device Driver

Supported GPUs
Application Frameworks

- TensorFlow
- Caffe
- PyTorch

Development/Management Tools
Applications Frameworks
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Supported GPUs
Development Tools

- Assembler and Disassembler
- roc-prof, roc-tracer
- ROCr Debug Agent
- rocm-smi

Development/Management Tools

- Application Frameworks
- Libraries
- Programming Frameworks
- System Runtime
- Device Driver
- Supported GPUs
Conclusion

- In this module we have looked at what is the ROCm framework.
- We looked at the different layers involved in the framework.
- ROCm supports numerous application frameworks and provides lots of useful libraries.
- ROCm enriches the programming experience through debugging and profiling tools.
- In the next module, we are going to take a look at what are the basics involved in installing ROCm on a system with supported hardware.