Intel® oneAPI Analysis Tools Workshop

**System Setup**

1. Log into [https://SouthPass.arcc.uwyo.edu](https://southpass.arcc.uwyo.edu/) and select “Beartooth Shell Access”
2. Get onto a compute node with Cascade Lake CPU

$salloc -A arccanetrain --mem=0 -t 120 -C cascade

1. Load the following oneAPI Modules

$module load oneapi/2023.0

$module load compiler/2023.0.0

$module load vtune/2023.0.0

$module load advisor/2023.0.0

**Intel® Advisor Analysis**

**Sample Setup**

1. Copy the code sample we will analyze with Intel Advisor to your home directory

$cp -r /project/arccanetrain/intel\_workshop\_101/oneAPI-samples/DirectProgramming/C++SYCL/StructuredGrids/guided\_iso3dfd\_GPUOptimization .

1. navigate to “guided\_iso3dfd\_GPUOptimization” sample directory and run the code sample

$cd guided\_iso3dfd\_GPUOptimization

$./build/src/1\_CPU\_only 256 256 256 100

**Advisor CPU Roofline**

1. Run a Roofline analysis

$advisor --collect=roofline --project-dir=./cpu\_roofline -- ./build/src/1\_CPU\_only 256 256 256 100

**Offload Advisor**

1. Run Offload Advisor

$advisor --collect=offload --accuracy=low --target-device=gen9\_gt2 --project-dir=./offload\_advisor -- ./build/src/1\_CPU\_only 256 256 256 100

**GUI Access**

1. Go back to [https://SouthPass.arcc.uwyo.edu](https://southpass.arcc.uwyo.edu/) and select “Beartooth Xfce Desktop”
2. Open Terminal, Load the same modules as “System Setup” section, and access the Intel Advisor GUI

$module load oneapi/2023.0

$module load compiler/2023.0.0

$module load vtune/2023.0.0

$module load advisor/2023.0.0

$advisor-gui

1. Import result by navigating to File -> open -> result

**Intel VTune Analysis**

**System Setup**

1. Log into [https://SouthPass.arcc.uwyo.edu](https://southpass.arcc.uwyo.edu/) and select “Beartooth Shell Access”
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$salloc -A arccanetrain --mem=0 -t 120 -C cascade

1. Load the following oneAPI Modules

$module load oneapi/2023.0

$module load compiler/2023.0.0

$module load vtune/2023.0.0

**Building sample**

cp -r /project/arccanetrain/intel\_workshop\_101/vtune .

cd vtune

make

**Show List**

**List of Analysis Types**

vtune --help collect

**List of Knobs**

vtune –-help collect hotspots

**Run VTune on Baseline Version**

**Hotspots**

vtune –collect hotspots –search-dir=. –source-search-dir=. -- ./MatrixMultiplication\_icc

**HPC-Performance**

vtune -collect hpc-performance –search-dir=. –source-search-dir=. -- ./MatrixMultiplication\_icc

**Visualize VTune Results**

1. Go back to [https://SouthPass.arcc.uwyo.edu](https://southpass.arcc.uwyo.edu/) and select “Beartooth Xfce Desktop”
2. Open Terminal, Load the same modules as “System Setup” section, and access the Intel Advisor GUI

$module load oneapi/2023.0

$module load compiler/2023.0.0

$module load vtune/2023.0.0

$vtune-gui

1. Open .vtune file from the vtune results folder

**Run VTune on Optimized Version**

**Hotspots**

vtune –collect hotspots –search-dir=. –source-search-dir=. -- ./MatrixMultiplicationOpt\_icc

**HPC-Performance**

vtune -collect hpc-performance –search-dir=. –source-search-dir=. -- ./MatrixMultiplicationOpt\_icc

**Visualize VTune Results**

**Launch the VTune GUI and Observe the Differences**

vtune-gui