Guidance to run PyTorch BERT-Large PreTraining on Intel Max 1100 GPUs-models-v2

Login to ACES cluster and run the commands below.

$cd $SCRATCH
$mkdir pvc-benchmarks
$cd pvc-benchmarks
$git clone https://github.com/IntelAI/models.git
$module purge
$ml GCCcore/11.2.0 Python/3.9.6
$python3 -m venv bert-large-pt-pretraining-trial
$source bert-large-pt-pretraining-trial/bin/activate
$pip install torch==2.1.0.post0 torchvision==0.16.0.post0 torchaudio==2.1.0.post0 intel_extension_for_pytorch==2.1.20+xpu oneccl-bind-pt==2.1.200 deepspeed==0.14.0 --extra-index-url https://pytorch-extension.intel.com/release-whl-aitools/
$./setup.sh
$deactivate

create a slurm job file test_pytorch_bert_large.slurm and copy and paste the content below to it.

$ vim test_pytorch_bert_large.slurm

```
#!/bin/bash
##NECESSARY JOB SPECIFICATIONS


#SBATCH --job-name=<job_name>
#SBATCH --time=48:00:00                 # the wallclock time for a job
#SBATCH --nodes=1                       # total number of nodes
#SBATCH --ntasks=1                      # total number of processes
#SBATCH --mem=60G
#SBATCH --output=test_data_loaders_run.%j # output of your slurm job
#SBATCH --gres=gpu:pvc:1                # for 2 gpus, set --gres=gpu:pvc:2
```

```
#SBATCH --partition=pvc                 # partition should be pvc for intel gpus


echo "Hostname: $(hostname)"

# Print the node name
echo "Node name: $SLURMD_NODENAME"
sinfo -N -p pvc -o "%8n %10f %G"


ml GCCcore/11.2.0 Python/3.9.6


source $SCRATCH/pvc-benchmarks/bert-large-pt-pretraining-trial/bin/activate


source /sw/hprc/sw/oneAPI/2024.1/setvars.sh




# set environment variales

export
DATASET_DIR=/scratch/data/pytorch-language-modelling-datasets/intel-modelsv2-prep
rocessed-dataset-04-18-2024/hdf5/training-4320/hdf5_4320_shards_varlength/
export BATCH_SIZE=32
export NUM_ITERATIONS=5000
export TF_ENABLE_ONEDNN_OPTS=0
export CCL_TOPO_FABRIC_VERTEX_CONNECTION_CHECK=0
export MULTI_TILE=True
export PLATFORM=Max
export PRECISION=BF16



export NUMBER_OF_PROCESS=1
export NNODES=1
export PROCESS_PER_NODE=1
export WORLD_SIZE=$(($NUMBER_OF_PROCESS*$NNODES))
```

```
cd $SCRATCH/pvc-benchmarks/models/

export OUTPUT_DIR=$SCRATCH/pvc-benchmarks/output_logs/bert-large-training/

bash models_v2/pytorch/bert_large/training/gpu/run_model.sh
```