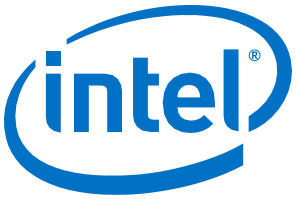
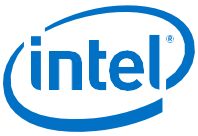


Visual Cloud Accelerator Card - Analytics

Release Notes

Rev. 5.0

May 2020



Contents

Revision History

Date	Revision	Description
May 2020	5.0	1.1 Supported Features on page 5: Updated section. 1.2 What's New on page 6: Updated OpenVINO release information. 2.0 VCAC-A Release 5.0 Content on page 7: Updated to include the VPU metrics 3.0 Fixed Issues on page 9: Added fixed issues since last release 4.0 Known Issues on page 10: Updated Known Issues table.
March 2020	4.0	1.1 Supported Features on page 5: Updated section. 1.2 What's New on page 6: Updated OpenVINO release information. 3.0 Fixed Issues on page 9: Added issues VCASS-3060, VMPI-1084, and CVS-24899. 4.0 Known Issues on page 10: Updated Known Issues table. 5.0 Acronyms and Terms on page 11: Added NFD to Acronym list.
November 2019	3.0	1.2 What's New on page 6: Updated section to list new features for R3. 2.0 VCAC-A Release 4.0 Content on page 7: Updated for release R3.
September 2019	1.5	1.1 Supported Features on page 5: Added JPEG acceleration. 1.2 What's New on page 6: Updated section to list new features. 2.0 VCAC-A Release 4.0 Content on page 7: Updated to include HOST and OpenVINO R2 details and pacakage and file information. 3.0 Fixed Issues on page 9: Updated section to add issues fixed since the last release. 4.0 Known Issues on page 10: Updated issue IDs, added issues VMPI-570 and VCASS-2857, and moved issues VCASS-1771, VCASS-2576, VCASS-2563, VCASS-2577, VCASS-2564, VCASS-1552, and VCASS-1621 Fixed Issues. 5.0 Acronyms and Terms on page 11: Added HOST to Acronym list.
August 2019	1.1	4.0 Known Issues on page 10: Added new items to Known Issues table.
July 2019	1.0	Initial document version.

1.0 Introduction

NOTE

This document provides a brief introduction to the Visual Cloud Accelerator Card - Analytics, lists known and fixed issues, and provides available workarounds. In addition, a list of important acronyms and terminology is provided. The content of this document will be updated as applicable and updates will be reflected in the Revision History.

The Visual Cloud Accelerator Card - Analytics (VCAC-A) equips 2nd Generation Intel® Xeon® Scalable Processor based platforms with Iris® Pro Graphics and Intel Movidius VPU to enhance the video decoder, computer vison, and inference capabilities. Comprised of one Intel i3-7100U CPU and 12 Movidius VPU, this PCIe add-in card deliveries competent stream inference capability and outstanding total cost of ownership. The applications focus on computer vision, video decode, and media analytics but is not limited to these items.

This release is a software package that includes OpenVINO, Intel Media Server Studio, FFMPEG, etc. The software package supports VCAC-A easy installation, friendly customization, and convenient deployment.

1.1 Supported Features

- VCAC-A card driver and utility to control VCAC-A card.
- Inference Engine supported by OpenVINO.
- Hardware acceleration for h.264, h265, and JPEG decoder.

NOTE

HOST and VCAA agent mentioned below are available in IPS, please contact your Intel® representative.

- Sample for implementation of Video Surveillance: Face/Car Detection on top of VCAC-A software stack.
- VCAC-A Service-to-VCAC-A agent workload dispatch through gRPC/Restful API.
- Enabled HOST pipelines of three use cases (emotion recognition, crowd counting and pedestrian detection).
- Refined VCAA agent feasibility to download pipeline configuration files through gRPC.
- Enhanced HOST robustness for multi-network/multi-density/multi-thread use.
- The following features are enabled to support OpenNESS:
  - Add Myraidx VPU Kubernetes Plugin to expose VPU resources to OpenNESS/ Kubernetes, which is open sourced to https://github.com/intel/intel-device-plugins-for-kubernetes/tree/master/cmd/vpu_plugin
  - Expose VPU and GPU resources to OpenNESS/Kubernetes through NFD.
  - Microbenchmark tool interfaces provide pipeline latency data to OpenNESS.

1.2 What's New

- Upgraded OpenVINO to 2020.2 release (`l_openvino_toolkit_p_2020.2.120.tgz`).
- Add VPU metric support telemetry request by OpenNESS, which exports VPU utilization, thermal and memory usage data.
- Support HKH SW stack deployment via KVM VM on Xeon host

1.3 Supporting Documentation

Please see the following documents for more information on the Analytics card:

- *Visual Cloud Accelerator Card - Analytics Software Installation Guide*, Doc# 611894
- https://hardwaresupport.celestica.com (please contact your Celestica™ representative for access)

2.0 VCAC-A Release 5.0 Content

The package delivered with this release includes the following folder structure.

The package delivered with this release includes the following folder structure. Download the release content from the following link: https://github.com/OpenVisualCloud/VCAC-SW-Analytics/archive/VCAC-A-R5.tar.gz.

Table 1. Release Package Folder Structure

Ingredient	Path	Contents
VCAC-A Host Files	Intel_Media_Analytics_Host/scripts	build.sh Dockerfile-CentOS8 Dockerfile-CentOS7
	Intel_Media_Analytics_Host/tar/CentOS8	centos8.1-kernel4.18.0-147-patch.tar.gz vcass-modules-R4-patch.tar.gz vca_query-1.0_centos8-1.x86_64.rpm
	Intel_Media_Analytics_Host/tar/CentOS7	centos7.4-kernel3.10.0-patch.tar.gz vcass-modules-3.10.0-patch.tar.gz vca_query-1.0_centos7-1.x86_64.rpm
VCAC-A Software Installation Packages	Intel_Media_Analytics_Node/scripts/	vcad_build.sh Dockerfile
	Intel_Media_Analytics_Node/tar/	ubuntu18.04_kernel4.19.97_patch.tar.gz intel-vpu-metric-ubuntu18.04-amd64.deb
VCAC-A Documents	Documents/	VCAC-Analytics_releasenotes_rev5-0.pdf VCAC-Analytics-software-installation-guide-rev5-0.pdf

The following bullets provide a list of detailed components included in the package.

- VCAC-A Host files consist of:
  - Scripts to build kernel and VCAC-A PCIE driver modules.
  - Dockerfile for creating the docker container of CentOS 8.1 and CentOS 7.4, called by the script to build kernel and driver modules.
  - VCAC-A host support package:
    - kernel patch
    - VCAC-A PCIE driver patch
    - vca_query to support NFD

- VCAC-A software installation package contains the following components:
  - Script to build the system image to be loaded on VCAC-A card.
  - Dockerfile for creating the docker container of Ubuntu 18.04, called by the script to build the system image to be loaded on VCAC-A.
  - VCAC-A card support package:
    - kernel patch
    - VPU metric installation package.

Refer to the *VCAC-Analytics Software Installation Guide*, (https://github.com/OpenVisualCloud/VCAC-SW-Analytics/blob/release/VCAC-A/R5/VCAC-A/Documents/VCAC-Analytics-software-installation-guide-rev5-0.pdf) for information on how to setup the environment with the release packages.

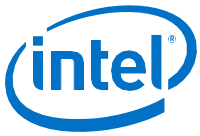
Media Analytics end-to-end pipeline construction solution package is available in IPS. Please contact your Intel® representative for access to the package.

Table 2. Solution Packages in IPS

Ingredient	Path	Contents
Heterogeneous Optimized Scheduling Tool (HOST)	`Intel_Media_Analytics_Node/deb/`	`intel-vcaa-ddwo-ubuntu18.04-amd64.deb`
VCAA Agent	`Intel_Media_Analytics_Node/vcaa_agent/`	`vcaa_agent.tar.gz`

The following bullets provide the description of the contents:

- **Heterogeneous Optimized Scheduling Tool (HOST):**is an optimization tool to build efficient and flexible pipelines for a variety of workloads (such as decoding, inferencing, etc) based on API/SDKs (MSDK, OpenVINO). It provides a heterogeneous scheduler to deploy routines in tasks to different hardware components (GPU/CPU/VPU).
- **VCAA Agent:** Daemon service in VCAC-A card.



3.0 Fixed Issues

The following table details issues fixed previously.

Table 3. Fixed Issues

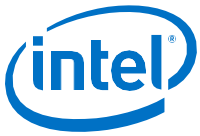
Issue ID	Exposure	Title & Workaround
CVS-25320	Medium	Multi-device inference when batchsize>1 with some models (eg: MobileNetSSD and license-plate-recognition-barrier-0001) failed for Const layer reshape error. **Workaround:** N/A
CVS-26255	Medium	Memory leak in inference engine mkldnn(tbb) and cldnn(Core::LoadNetwork) **Workaround:** N/A
CVS-25692	Medium	Error: `ncFifoDelete() failed` occurs while running stress test to start and stop Analytic pipeline on VCAC-A. **Workaround:** N/A
VMPI-1341	Medium	GPU inference does not work with Openpose Models **Workaround:** N/A

4.0 Known Issues

The following table details currently known issues effecting the accelerator card.

Table 4. Known Issues

Issue ID	Exposure	Title & Workaround
VCASS-2578	High	VCA configuration file is broken after non-graceful system shutdown (power switch restarts). **Workaround:** Execute the `vcactl config-default` command.
VCASS-3071	Medium	Sometimes the `vcactl os-shutdown` command fails. **Workaround:** Execute the `vcactl reset --force` command.
VMPI-41	Medium	Switching Plugin from HDDL to MYRAID shows error. OpenVINO design does not support switching between the hddldaemon and Myraid X plugins. A user must run bsl_reset and reboot to switch between the plugins. **Workaround:** Commands to recover that are shared by OpenVINO are: `kill -9 $(pidof hddldaemon autoboot) pidof hddldaemon autoboot`. Ensure that none of the commands are alive source `/opt/intel/openvino/bin/setupvars.sh ${HDDL_INSTALL_DIR}/bin/bsl_reset`.
VMPI-139	Medium	vgg16 could not run with density 24 due to a VCAC-A DDR memory size limitation. 24 x vgg16 density workloads cannot be run simultaneously on a VCAC-A card. **Workaround:** N/A
VMPI-570	Medium	Intel® model vehicle-license-plate-detection-barrier-0106 does not support dynamic batch size. Running OpenVINO sample benchmark_app to do inference with this model by setting batch size with the `-b` parameter will fail. **Workaround:** N/A
CVS-28988	Medium	GPU plugin (IE CLDNN) memory consumption increased since 2019 R2 release. **Workaround: N/A**
VCD-1654	Medium	GPU VCS0 hangs when running Media Analytics pipeline repeatedly. **Workaround:** N/A
VCASS-27	Low	The `vca_config_upgrade.sh` script does not recover removed option in manual mode. **Workaround:** N/A
VCASS-152	Low	Confusing message in `vca_config_upgrade.sh` script. **Workaround:** N/A



5.0 Acronyms and Terms

The following acronyms and terms are used in this document.

Acronym/Term	Description
FFMPEG	A popular media framework
HOST	Heterogeneous Optimized Scheduling Tool
IE	Inference Engine
Intel® MSS	Intel® Media Server Studio
MSDK	Media Software Development Kit
KMD	Kernel Mode Driver
NFD	Node Feature Discovery
OpenCL	Open Computing Language
OpenVINO	Open Visual Inference & Neural network Optimization
Scheduler	Load balance package
UMD	User Mode Driver
VCAC-A	Visual Cloud Accelerator Card - Analytics
VPU	Visual Process Unit