Mobiliya

Security & Surveillance

Setup and installation guide

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1. About this Document

This document explains steps needed to setup and configure Security and Surveillance solution.

2. Intended Audience

This document is intended for IT administrators who will be setting up required on-premise modules and cloud services.

3. Introduction

Security and surveillance solution is based on 3 pillars

1) Aggregator – Connects with existing infrastructure. Fetches Camera streams and integrates them in system. A solution can consist of one or more aggregators.
2) ComputeEngine – Core module responsible for detection and tracking. A solution can consist of one or more compute-engines.
3) Backend Server – REST api server which acts as a coordinator and gatekeeper for overall solution.

4. Prerequisite

Below prerequisites should be addressed before starting deployment and configuration.

1) Nvidia Jetson board
2) Linux Machine
3) Jetson jetpack
4) Azure account
5) Camera rtsp urls

5. Take one step at a time

Overall setup and configuration can be divided as per below steps.

1) Packaging cloud services
2) Azure cloud Setup
3) PowerBI Deployment
4) Preparing Jetson board
5) Installing Aggregator module
6) Installing ComputeEngine

5.1 Packaging cloud services

We are going to upload our Webapp, BackendServer (BS) and CloudComputeEngine(CCE) to azure.

Prerequisite:

1) Azure Account
2) Visual Studio 2017 with NodeJS
3) NodeJS
4) Angular cli for package creation

Please refer to 'Step 1 Package Creation 1.0.0' to complete this step.

Note:

a) Same procedure needs to be followed for packaging and uploading CCE and BS (any node module)
b) Keep note of deployment urls, we will need it while deploying to azure.

5.2 Azure Cloud Setup

We are going to configure and deploy Azure Active Directory B2C and other required Azure resources in this step. We will also deploy packages uploaded in previous step.

Prerequisite:

1) Azure Account
2) Deployment urls for webapp, cloud compute engine, and backend server.

Please follow companion document titled 'Step 2 ARM Deployment 1.0.0' to complete this step.

5.3 PowerBI Deployment

We are going to deploy PowerBI reports in this step.

Prerequisite:

1) Credentials for signing to https://app.powerbi.com
2) PowerBI Desktop (> April 2018)
3) PowerBI Template file ($(repo_url)/SnSPowerBI/Templates)

Please refer to 'Step 3 PowerBI Deployment 1.0.0' to complete this step.

5.4 Preparing Jetson board

In this step, we are going to flash Nvidia Jetson board.

Prerequisite:

1) Nvidia Jetson board
2) Host Linux machine
3) Nvidia Jetson Jetpack

Please refer to 'Step 4 Jetson Flashing 1.0.0' to complete this step.

5.5 Installing Aggregator Module

We will setup aggregator module in this step.

Prerequisite:

1) Linux machine/Jetson flashed with Ubuntu
2) NodeJS 4.0 or above
3) Python 2.7 or above
4) OpenCV 3 or above
5) git

Install NodeJS (if not available)

1. $ curl -sL https://deb.nodesource.com/setup_6.x | sudo -E bash -
2. $ sudo apt-get install -y nodejs

Install OpenCV (if not available)

1. $ git clone $(repo_url)/jetson-device-client
2. $ cd jetson-device-client
3. $ mv install-opencv.sh ~/
4. $ cd ~/
5. $ chmod +x install-opencv.sh
6. $ ./install-opencv.sh

Please follow below steps (in terminal) to install aggregator.

1) Clone Repository

i. $ git clone $(repo_url)/jetson-device-client. [Note: use 'jetson-only' branch if we want to run aggregator on jetson]

2) Install npm packages

i. $ cd jetson-device-client
ii. $ npm run pythonPackages
iii. $ npm install

3) Start Aggregator (follow for development setup)

i. $ node aggregatorServer.js

4) Start Aggregator in background (follow for production setup)

i. $ sudo npm install forever -g
ii. $ forever start aggregatorServer.js

5.6 Installing Compute Engine

In this step, we will install basic compute engine responsible to Human and object detection.

Prerequisite:

1) Nvidia Jetson with ubuntu
2) git

Please follow below steps (Jetson command-line) to install Compute Engine.

1) **Clone Repository**
    i. $ git clone $(repo_url)/Compute-Engine-Yolo [Note: use 'jetson-only' branch if we want to run aggregator on jetson]
2) **Install required packages**
    i. $ sudo apt-get install cmake curl
    ii. $ curl -sL https://deb.nodesource.com/setup_6.x | sudo -E bash –
    iii. $ sudo apt-get install -y nodejs
    iv. $ sudo apt-get install -y libjson0 libjson0-dev
    v. $ sudo apt-get install -y libjson0-dbg
    vi. $ sudo apt-get install -y libcurl4-gnutls-dev
3) **Install Base64 library**
    i. $ git clone https://github.com/bartobri/base64-simple.git
    ii. $ cd base64-simple
    iii. $ make
    iv. $ sudo make install
4) **Build Executable**
    i. $ cd Compute-Engine-Yolo
    ii. $ cd darknet
    iii. $ make
5) **Install node modules**
    i. $ cd ../jetsonNodeServer
    ii. $ sudo npm install
6) **Start server (follow for development setup)**
    i. $ node jetsonserver.js
7) **Start server in background (follow for production setup)**
    i. $ sudo npm install forever -g
    ii. $ forever start aggregatorServer.js

6. Verification

Please refer [Demo video]/[User guide] for Solution overview.

Note: User guide is not part of setup and configuration documents.

7. Troubleshooting

1. Bad request on sign in

   Cause: Request too long.

   Res: Clear Browsing data and retry

2. Loader stays for long time after sign in
   Cause:
   i. Backend not responding
   ii. Connectivity issues with backend server
3. Dashboard bar chart not displaying for

   Cause: DB query timed out

   Res: Increase timeout or increase RUs for cosmos db

4. Report tab not loading

   Cause: PowerBI not configured

   Res: configure PowerBI reports and add correct url in report ‘settings’

5. Raw image not displayed

   Cause:

   a. Aggregator not able to connect with camera
   b. Aggregator not working
   c. Backend not responding

   Res: Restart Aggregator

6. Not able to connect camera

   Cause:

   a. Aggregator not able to connect with camera
   b. Backend not responding
   c. Aggregator not responding

   Res:

d. Verify rtsp url
e. Restart aggregator
f. Restart Backend server

7. Start streaming not working. No live feed

   Cause:

   a. Aggregator not able to communicate with cameras
   b. Aggregator cannot communicate to Compute Engine
   c. Compute Engine not responding
   d. Backend server not responding

   Res:

   Aggregator is working fine if raw images are updated. Reason could be c, and d

   Aggregator not responding if raw images are not updating

8. Not able to see video retention result

   Cause: Blob storage not accessible

   Res: Verify blob storage credentials in aggregator configuration file.