IP CAM Scenarios

Revision History

Revision	Date	Author(s)	Description
1.4	2019-12-29	Oguzhan E.	Created.
1.5	2019-12-29	Sertac A.	Add ipcam json commands. Add Hard reset procedure. Add boot up event.
1.6	2020-02-25	Sertac A.	Section reorganized to have boot up before onboarding. applianceId and primaryToken is added to the header in Chapter 8.

Contents

1 BOOT UP

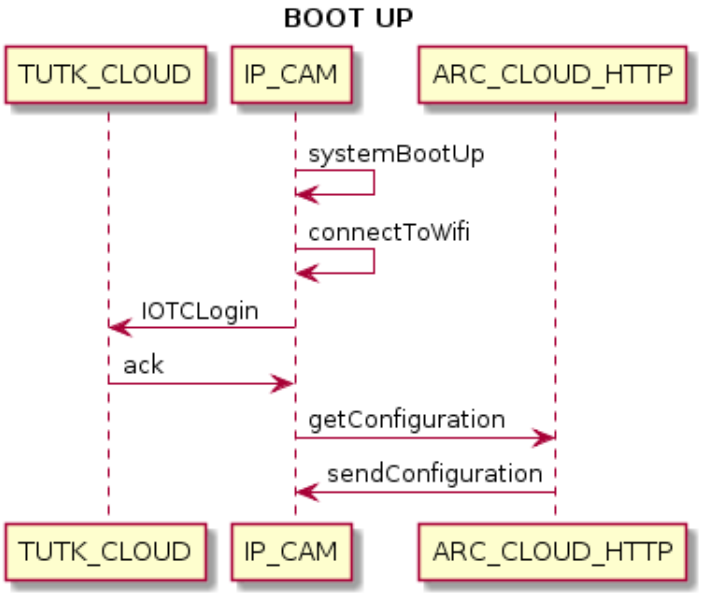

Figure 1: Boot Up Concept

getConfiguration : Below link should be requested to retrieve configurations https://idexchange.arcelikiot.com/GetApplianceId?macaddress=11:22:33:44:55:66

sendConfiguration : Below JSON message will be responded to the request {”br”:1,”ty”:1,”m”:”7776665544”,”appId”:”F999987964511667152384”}

- br:brand
- ty:type
- m:model sku
- appId:appliance id (ipcamId)

2 ON BOARDING

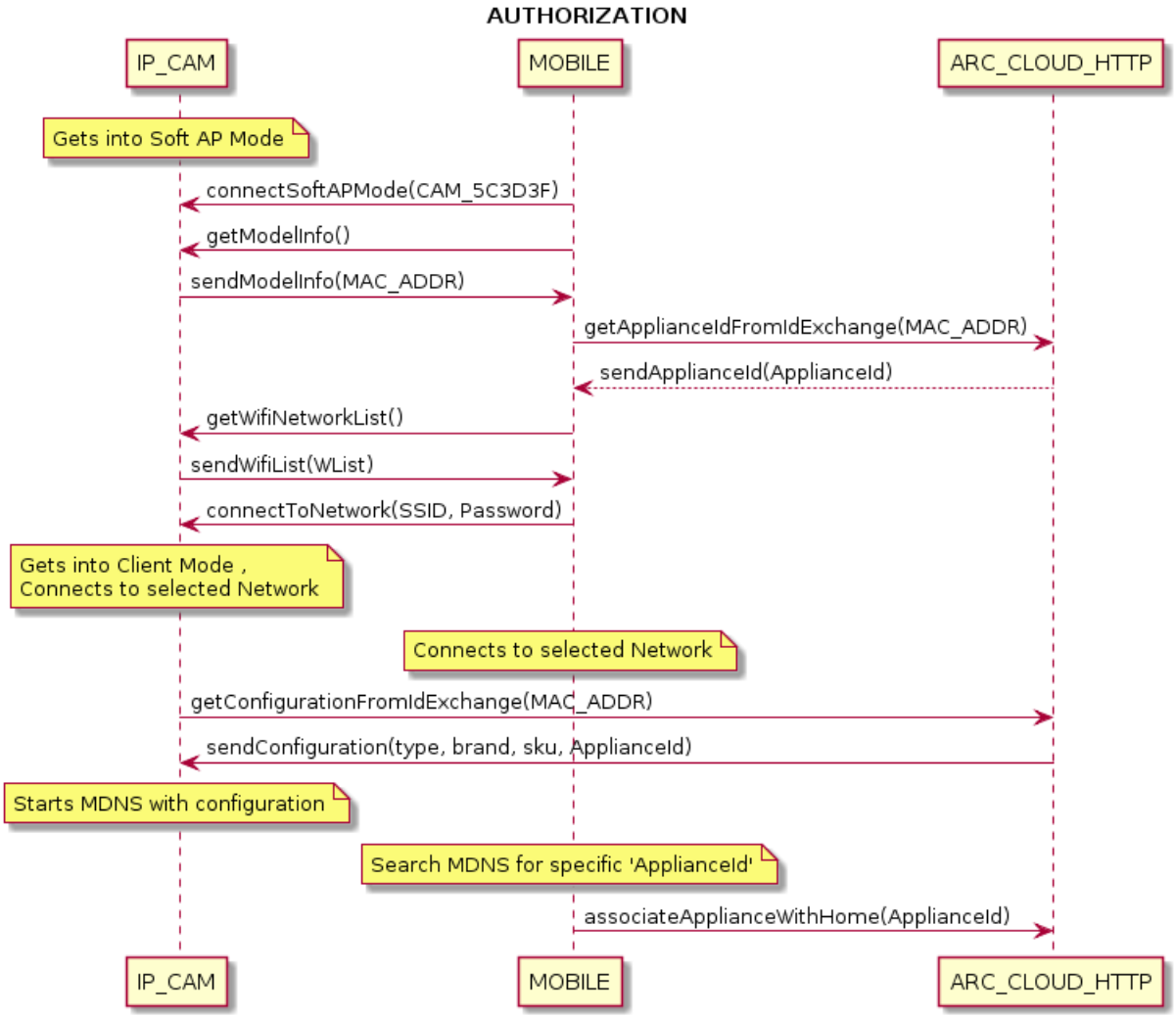

Figure 2: On Boarding

3 HARD RESET

Hard reset of factory reset introduces certain procedures such as de-associate user with the device, invalidate device token and removal of ipcam password. The procedure itself is critical in order to prevent vulnerable content to distribute among unauthorized users. It is crucial to de-associate the old users and invalidate the token to enable ipcam to change owner.

There is a possibility that a hard reset occurs at a time when the device if offline. The proposed method is that the device remembers the hard reset is occurred and informs the Arcelik cloud via idex API as soon as it goes online. The details of the method is provided below:

METHOD: GET

URL: https://idexchange.arcelikiot.com/GetApplianceId?macaddress=<mac_address_of_ipcam>&rst=1

PARAMETERS:

macaddress: Required! The mac address of the ipcam.

rst: Not Required! If the parameter is set and is 1 it means that a hard reset is occurred. It should not be set otherwise.

4 P2P SESSION AUTHORIZATION

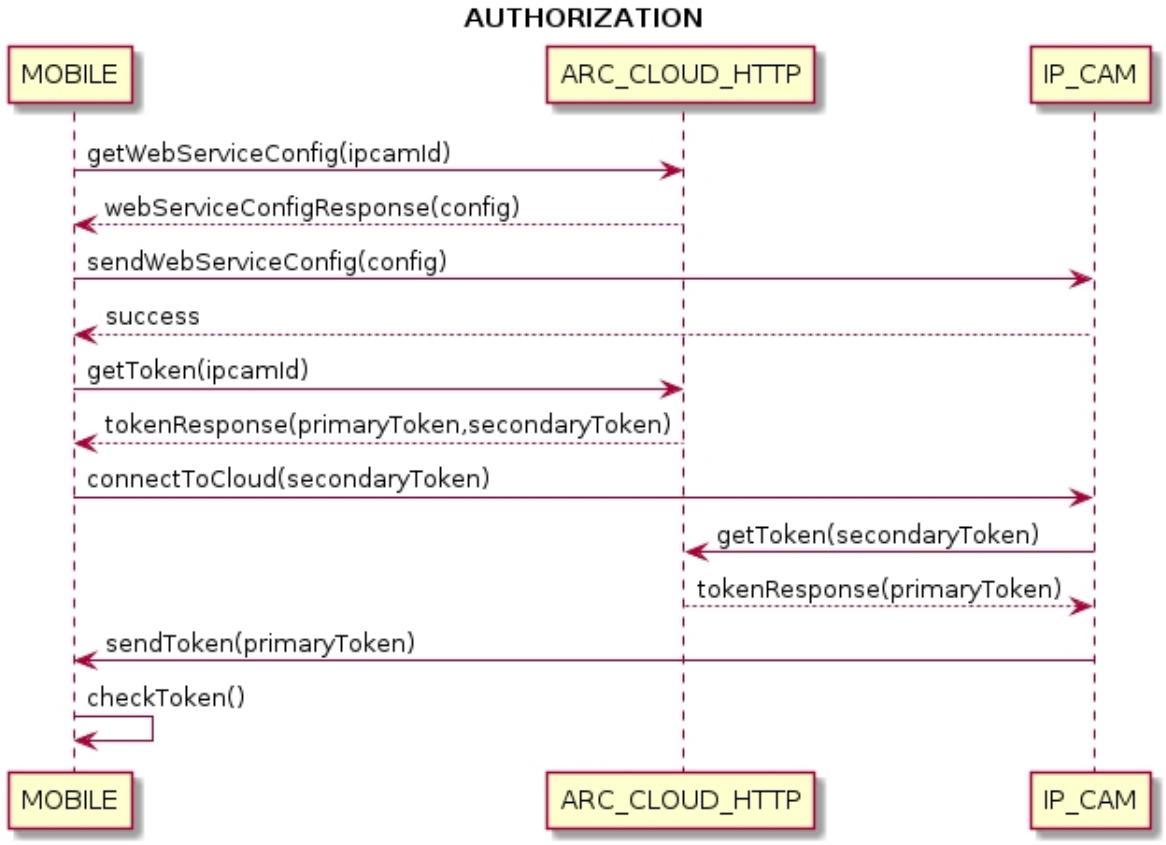

Figure 3: Authorization

sendWebServiceConfig:

Mobile to Ipcam:

```
{
  "baseUrl":"ipcam.arcelikiot.com",
  "endpoints":{
    "auth" :"/auth",
    "events" : "/events"
  }
}
```

Ipcam to Mobile:

```
{
   "receivedConfig" : "success"
}
```

connectToCloud: This message contains JSON message similar to below one:

```
{
    "secondaryToken" : "qwe564wetqwe564y"
}
```

getToken: IPCAM should make a HTTP POST request to obtain its own token by using secondary token

https://ipcam.arcelikiot.com/auth

body message of the post request:

```
{
    "secondaryToken" : "qwe564wetqwe564y"
}
```

Arcelik Cloud Response

```
{
  "primaryToken": "PSQagfwoMphwQnTW3OIJ0h8UN3j1Y7B9",
  "secondaryToken": "qwe564wetqwe564y",
  "success": true,
  "responseMessage": "success"
}
```

5 STREAMING, CONTROL AND MONITOR OVER P2P

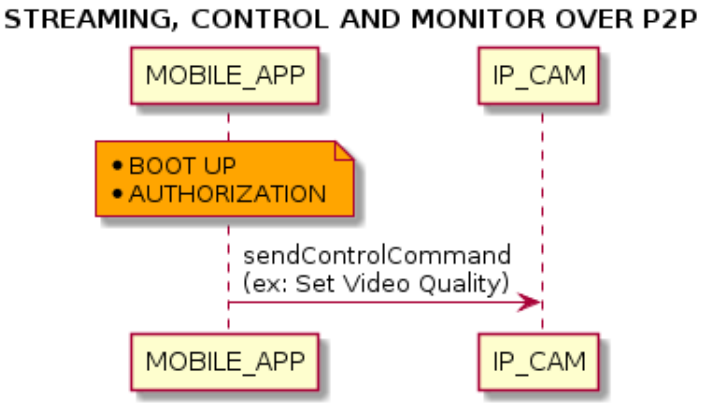

Figure 4: Streaming, Control and Monitor Over P2P

6 MONITOR FROM CLOUD

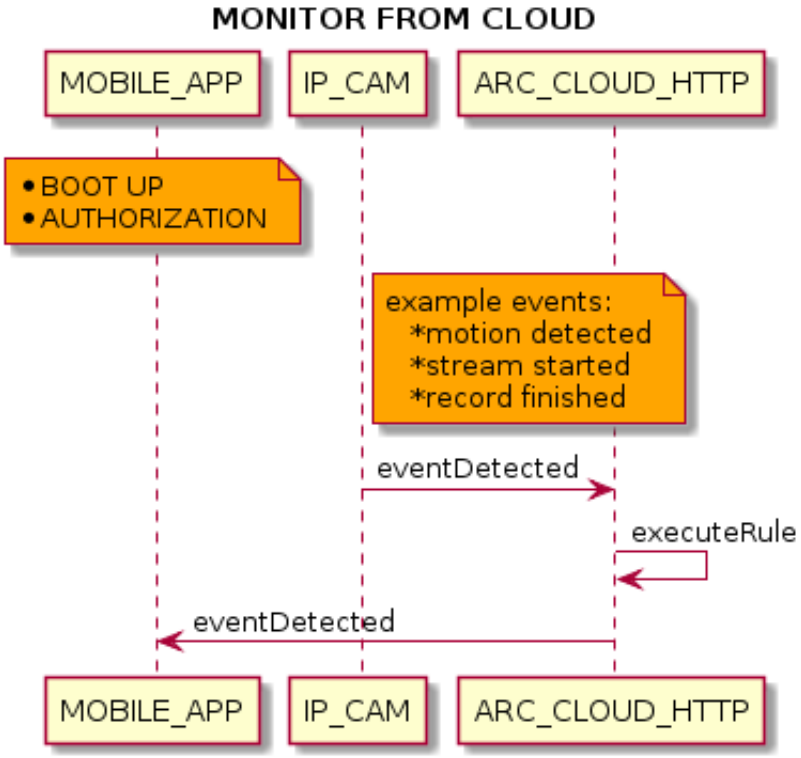

Figure 5: Monitor From Cloud

eventDetect: IPCAM should make a HTTP POST request to report the events.

https : //ipcam.arcelikiot.com/events

Example Request Body:


```
{
  "header": {
    "msgId": 305,
    "primaryToken": "PSQagfwoMphwQnTW3OIJ0h8UN3j1Y7B9",
    "applianceId": "F999975862293242461111",
    "msgType": "userFullStateReport"
  },
  "payload": {
    "data": {
      "functions": [
        {
          "func": "STT_MOTION_ACTIVE",
          "val": false
        }
      ],
      "versions": [
        {
          "ver": "STT_FW_VERSION",
          "val": "0.0.2"
        }
      ]
    }
  }
}
```

7 RESTART

The IPCam device may encounter restarting for some certain cases such as, electricity cut out, successful OTA etc. After every restart the ipcam device is responsible to inform Arcelik Cloud about the occured boot up event. This information procedure is just an http call to the events endpoint with a certain function:

restart occured: IPCAM should make a HTTP POST request to report the events.

https://ipcam.arcelikiot.com/events

Example Request Body:


```
{
  "header": {
    "msgId": 305,
    "primaryToken": "PSQagfwoMphwQnTW3OIJ0h8UN3j1Y7B9",
    "applianceId": "F999975862293242461111",
    "msgType": "userFullStateReport"
  },
  "payload": {
    "data": {
      "functions": [
        {
          "func": "STT_DEVICE_BOOT_UP",
          "val": false
        }
      ],
      "versions": [
        {
          "ver": "STT_FW_VERSION",
          "val": "0.0.2"
        }
      ]
    }
  }
}
```

8 CONTROL AND MONITOR FROM GATEWAY

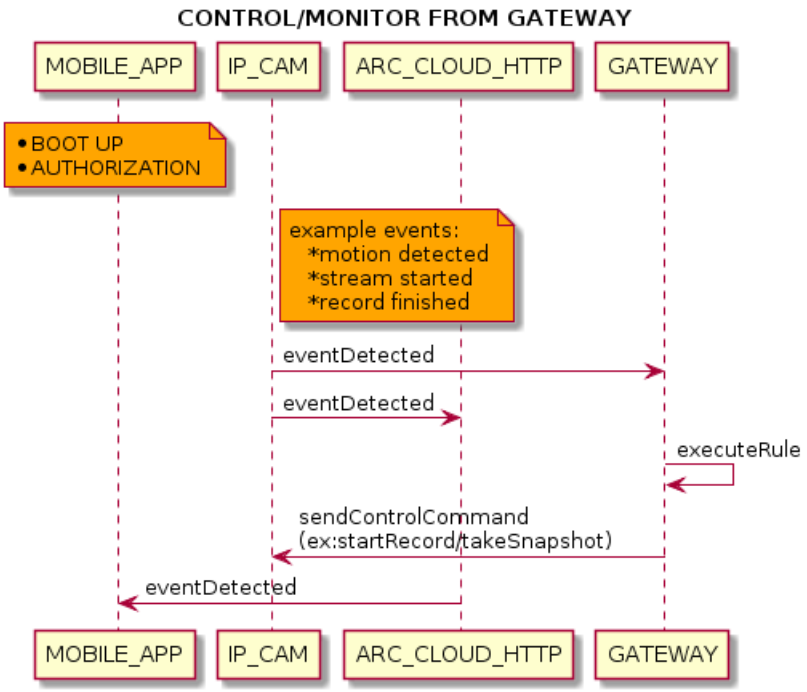

Figure 6: Control and Monitor From Gateway

eventDetect: IPCAM should report the events to the Gateway.


```
{
  "header": {
    "msgId": 305,
    "primaryToken": "PSQagfwoMphwQnTW3OIJ0h8UN3j1Y7B9",
    "applianceId": "F999975862293242461111",
    "sourceDeviceId": "F999975862293242461111",
    "msgType": "userFullStateReport"
  },
  "payload": {
    "data": {
      "functions": [
        {
          "func": "STT_MOTION_ACTIVE",
          "val": false
        }
      ]
    }
  }
}
```

sendSystemControlCommand: Gateway may send a control command


```
{
  "header": {
    "msgId": 5,
    "targetDeviceId": "F999975862293242461111",
    "msgType": "sendSystemControlCommand"
  },
  "payload": {
    "data": {
      "functions": [
        {
          "func": "CMD_START_RECORDING",
          "val": 0
        }
      ]
    }
  }
}
```

9 OTA

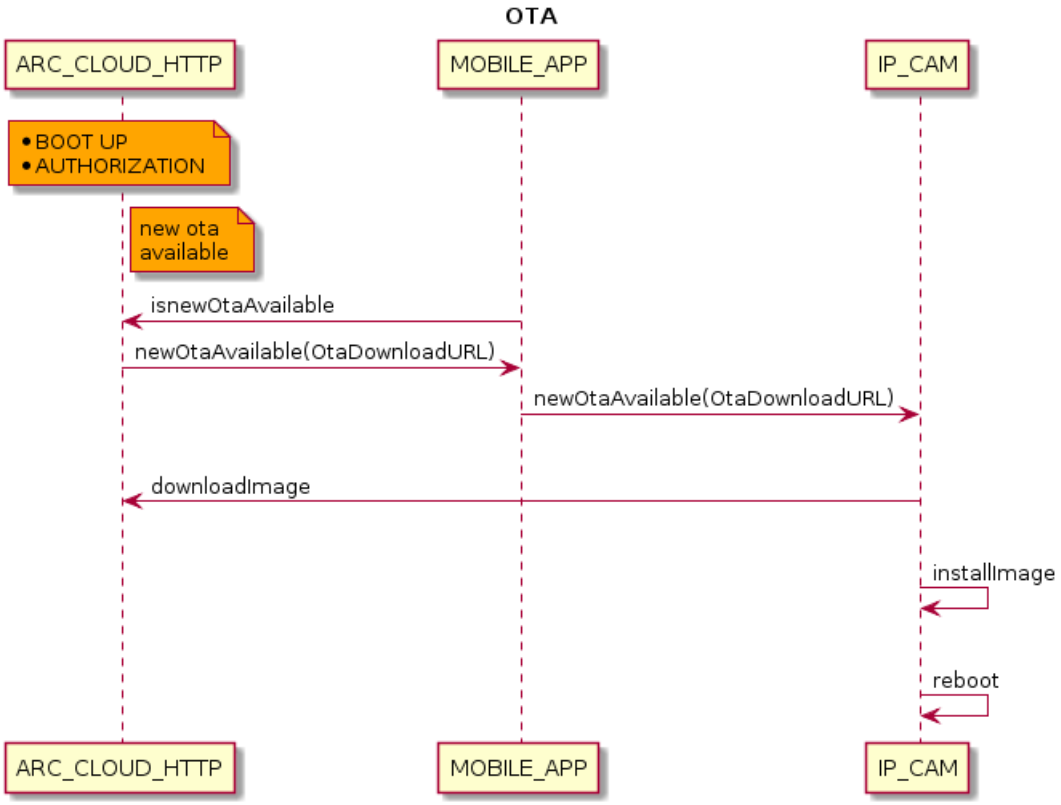

Figure 7: OTA Scenario

newOtaAvailable:

```
{
  "header": {
    "msgId": 5,
    "targetDeviceId": "F999975862293242461111",
    "msgType": "newOtaAvailable"
  },
  "payload": {
    "data": {
      "otaDownloadUrl": "otaDownloadUrl"
    }
  }
}
```

10 COMMANDS

10.1 Configuration Commands

10.1.1 Send Configuration Command


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789123467891234 5",
    "msgType": "sendConfigurationCommand"
  },
  "payload": {
    "data": {
      "configurations": [
        {
          "config": "ATR_CAMERA_DAY_NIGHT_MODE",
          "val": "day"
        },
        {
          "config": "ATR_CAMERA_SPEAKER_VOLUME",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_MICROPHONE_VOLUME",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_TAKE_SNAPSHOT_IF_EVENT_OCCURS",
          "val": true
        },
        {
          "config": "ATR_CAMERA_RECORD_VIDEO_IF_EVENT_OCCURS",
          "val": true
        },
        {
          "config": "ATR_CAMERA_SET_RECORDING_VIDEO_CHANNEL",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_RECORD_TO_SDCARD",
          "val": "START"
        },
        {
          "config": "ATR_CAMERA_SAVE_SNAPSHOT_TO_SDCARD",
          "val": true
        }
      ]
    }
```

```
    }
}
```

When IPCamera gets this command, It will generate fullStateConfigurationReport message, and send this message as result.

10.1.2 Configuration Force Read Command


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F1234567892435476 67",
    "msgType": "configurationForceRead"
  },
  "payload": {
    "data": {}
  }
}
```


When IPCamera gets this command, It will generate fullStateConfigurationReport message, and send this message as result.

10.1.3 Full Configuration Report


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789243547667",
    "msgType": "fullConfigurationReport"
  },
  "payload": {
    "data": {
      "configurations": [
        {
          "config": "ATR_DAY_NIGHT_MODE",
          "val": "DAY"
        },
        {
          "config": "ATR_CAMERA_SPEAKER_VOLUME",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_MICROPHONE_VOLUME",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_TAKE_SNAPSHOT_IF_EVENT_OCCURS",
          "val": true
        },
        {
          "config": "ATR_CAMERA_RECORD_VIDEO_IF_EVENT_OCCURS",
          "val": true
        },
        {
          "config": "ATR_CAMERA_SET_RECORDING_VIDEO_CHANNEL",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_RECORD_TO_SDCARD",
          "val": "START"
        },
        {
          "config": "STT_RECORDING_ELAPSED_TIME",
          "val": 1234
        },
        {
          "config": "ATR_CAMERA_SAVE_SNAPSHOT_SDCARD",
          "val": true
        }
      ]
```

```
        }
    }
}
```

10.1.4 Configuration Commands Limits

This sections contains the minimum and maximum possible values of configuration commands.

- $ATR\_CAMERA\_BRIGHTNESS$: 0..100
- $ATR\_CAMERA\_SHARPNESS$: 0..100
- $ATR\_CAMERA\_CONTRAST$: 0..100
- $ATR\_CAMERA\_DAY\_NIGHT_MODE$: "day","$auto$","$night$"
- $ATR\_CAMERA\_SPEAKER\_VOLUME$: 0..100
- $ATR\_CAMERA\_MICROPHONE\_VOLUME$: 0..10
- $ATR\_CAMERA\_TAKE\_SNAPSHOT\_IF\_EVENT\_OCCURS$: $true, false$
- $ATR\_CAMERA\_RECORD\_VIDEO\_IF\_EVENT\_OCCURS$: $true, false$
- $ATR\_CAMERA\_SET\_RECORDING\_VIDEO\_CHANNEL$: $0, 1, 2$
- $ATR\_CAMERA\_RECORD\_TO\_SDCARD$: "$START$","$STOP$"
- $ATR\_CAMERA\_SAVE\_SNAPSHOT\_TO\_SDCAR$: $true, false$

10.2 File Commands

10.2.1 Get File List Command Request


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789123467891234 5",
    "msgType": "getSDCardFileList"
  },
  "payload": {
    "data": {
      "configurations": [
        {
          "config": "ATR_CAMERA_GET_RECORD_TYPE",
          "val": 0
        },
        {
          "config": "ATR_CAMERA_GET_RECROD_START_TIME",
          "val": "2018-08-01 00:00:00"
        },
        {
          "config": "ATR_CAMERA_GET_RECORD_END_TIME",
          "val": "2019-09-01 00:00:00"
        }
      ]
    }
  }
}
```


10.2.2 Get File List Command Response


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789123467891234 5",
    "msgType": "getSDCardFileList"
  },
  "payload": {
    "data": {
      "files": [
        "/mnt/storage/2019/09/02/09/59/2019-09-02_095905_CH01.avi",
        "/mnt/storage/2019/09/02/09/59/2019-09-02_105302_CH01.avi",
        "/mnt/storage/2019/09/02/09/59/2019-09-02_112366_CH01.avi"
      ]
    }
  }
}
```

10.2.3 Remove File(s) Request


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789123467891234 5",
    "msgType": "removeSDCardFile"
  },
  "payload": {
    "data": {
      "files": [
        "/mnt/storage/2019/09/02/09/59/2019-09-02_095905_CH01.avi",
        "/mnt/storage/2019/09/02/09/59/2019-09-02_105302_CH01.avi",
        "/mnt/storage/2019/09/02/09/59/2019-09-02_112366_CH01.avi"
      ]
    }
  }
}
```


10.2.4 Remove File(s) Response


```
{
  "header": {
    "msgId": 111,
    "targetDeviceId": "F123456789123467891234 5",
    "msgType": "removeSDCardFile"
  },
  "payload": {
    "data": {
      "files": [
        {
          "/mnt/storage/2019/09/02/09/59/2019-09-02_095905_CH01.avi":
           "success"
        },
        {
          "/mnt/storage/2019/09/02/09/59/2019-09-02_105302_CH01.avi":
          "success"
        },
        {
          "/mnt/storage/2019/09/02/09/59/2019-09-02_112366_CH01.avi":
          "fail"
        }
      ]
    }
  }
}
```

10.3 Event Commands

10.3.1 Full State Report For Gateway


```
{
  "header": {
    "msgId": 111,
    "sourceDeviceId": "F123456789243547667",
    "msgType": "userFullStateReport"
  },
  "payload": {
    "data": {
      "functions": [
        {
          "func": "STT_MOTION_DETECTED",
          "val": true
        },
        {
          "func": "STT_SOUND_DETECTED",
          "val": true
        },
        {
          "func": "STT_PIR_DETECTED",
          "val": true
        },
        {
          "func": "STT_SDCARD_NOT_INSTALLED",
          "val": true
        },
        {
          "func": "STT_SDCARD_IS_FULL",
          "val": true
        },
        {
          "func": "STT_DEVICE_BOOT_UP",
          "val": true
        }
      ]
    }
  }
}
```

10.3.2 Full State Report For Cloud

IPCamera sends its events to Arcelik Cloud with its primaryToken. If token is not valid Arcelik Cloud will not accept incoming messages.


```
{
  "header": {
    "applianceId": "F123456789243547667",
        "applianceUID": "UID",
        "primaryToken": "examplePrimaryToken",
  },
  "payload": {
        "functions": [
        {
                "func": "STT_MOTION_DETECTED",
                "val": true
        },
        {
                "func": "STT_SOUND_DETECTED",
                "val": true
        },
        {
                "func": "STT_PIR_DETECTED",
                "val": true
        },
        {
                "func": "STT_SDCARD_NOT_INSTALLED",
                "val": true
        },
        {
                "func": "STT_SDCARD_IS_FULL",
                "val": true
        }
        ]
  }
}
```

10.4 Onboarding Messages

This message should go through with P2P Channel

10.4.1 Get Model Info Request


```
{
  "header": {
    "msgId": 1,
    "msgType": "getModelInfo"
  },
  "payload": {
    "data": {}
  }
}
```


10.4.2 Get Model Info Response


```
{
  "header": {
    "msgId": 1,
    "msgType": "modelInfo"
  },
  "payload": {
    "data": {
      "model": {
        "type": 19,
        "mac": "123456123456"
      }
    }
  }
}
```


10.4.3 Connect to Network


```
{
  "header": {
    "msgId": 1,
    "msgType": "connectToNetwork"
  },
  "payload": {
    "ssid": "arcelik-ap",
    "pass": "12345678"
  }
}
```

10.4.4 Get Wifi Network List Request


```
{
  "header": {
    "msgId": 1,
    "msgType": "getWifiNetworkList"
  },
  "payload": {
    "data": {}
  }
}
```


10.4.5 Get Wifi Network List Response


```
{
  "header": {
    "msgId": 1,
    "msgType": "sendWifiNetworkList"
  },
  "payload": {
    "data": [
      {
        "ssid": "Askey-1",
        "auth": "WPA2-PSK",
        "mode": "infra",
        "rssi": 67
      },
      {
        "ssid": "Askey-2",
        "auth": "WPA2-PSK",
        "mode": "infra",
        "rssi": 68
      }
    ],
    "ap_nums": 2
  }
}
```

10.5 OTA Commands

10.5.1 OTA Available Command


```
{
  "header": {
    "msgId": 5,
    "targetDeviceId": "F999975862293242461111",
    "msgType": "newOtaAvailable"
  },
  "payload": {
    "data": {
      "otaDownloadUrl": "otaDownloadUrl"
    }
  }
}
```