



ARGOS

Interface Specification

MYDEFENCE

v5.2.0 2024.09

About MyDefence

MyDefence was founded by military officers with insight into military operations and advanced radio technology. We specialize in developing, producing and selling anti-drone products for detection, tracking and jamming of Unmanned Aerial Systems (UAS) to mitigate the threat of malicious drones.

MyDefence protects those who protect us. Our field proven products provide end-users with state-of-the-art technology for enhanced protection and situational awareness. By listening to our end-users and combining their learnings with our technology, we are producing innovative and versatile Counter UAS solutions for any type of scenario.

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1. Introduction

This document serves as a specification to the developer who wants to communicate with the ARGOS API, to control networked devices or get information or data related devices or mission setup.

The version of the specification follows the version of the ARGOS backend, and information about changes is found in the accompanying release note.

2. Concept

ARGOS main purpose is to simplify the communication between client applications (Backend/Frontend) and the attached physical devices. Furthermore, it is also the purpose of ARGOS to store and enrich data collected or calculated by one of the services inside of ARGOS or from a connected 3rd part.

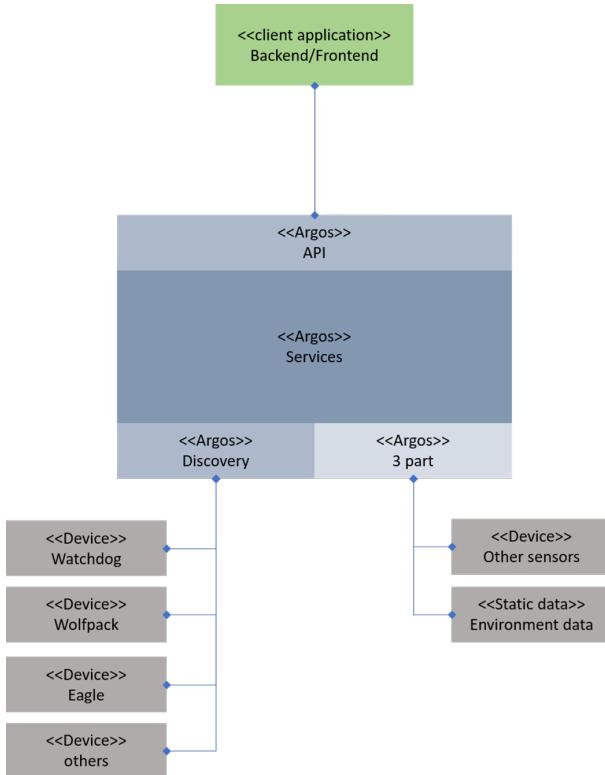


Figure 2.1: Conceptual model of ARGOS system.

ARGOS is internally built as a micro-service architecture so that it can be customized with different features and in different scales, depending upon the individual use case.

ARGOS consists of 4 high level elements which takes care of the following things:

- API exposes the event handles available for communicating with the attached devices and the stored and enriched data.
- Services is a bundle of micro-services that takes care of communicating, collecting, storing, analyzing, enriching data and communication.
- Discovery make sure that any recognized device is automatically attached to ARGOS and communicate if any device is removed or connection is lost.
- 3rd party handles communicate with 3rd party applications and the ARGOS micro-services.

2.1 Connecting to ARGOS API

The standard ARGOS API use a real time, bi-directional bus for communication named socket.IO. Socket.IO primarily uses the WebSocket protocol with polling as a fallback option.

ARGOS API can be reached on port **5050** (HTTP) and port **5051** (HTTPS). The IP address is that of the host machine. To use HTTPS you must install an additional root CA on the client PC. This can be downloaded from the system manager, normally running on port 8080.

The typical use-case for the ARGOS API is illustrated in the message sequence diagram in fig. 2.2 on page 10.

2.2 JSON Schema

All ARGOS messages are defined according to the <http://json-schema.org/draft-07/schema> standard. For each of the messages described in this document a schema and sample of the document can be found in the available ARGOS-schema archive.

In addition, the schemas are used to generate typescript types, which can be located in the documentation package (interface_examples directory).

2.3 Message structure

All messages are wrapped into a common message structure when send and received from the ARGOS API interface. Each individual event will use this message structure and handle the specific details for the specific event like event (name) and message payload. For more information about the individual events can be found in the following sections.

ARGOS employs two message concepts - "request/response" and "push". Push messages are sent from ARGOS to all connected clients when an event occurs, e.g. a threat is started («threatStarted»). They are sent as an event named as the message name. A client should set up permanent listeners for each push message it is interested in. Push message events can occur at any time. Request/response messages are initiated by the client. When sending a request to ARGOS, the client must set the "responseld" field in the API message object. ARGOS will reply with a response to the client sent as an event named as this "responseld". After sending the request the client should setup a one-time listener for the event named by the "responseld". In the message sequence charts in this interface specification push messages are set in regular font and request/response messages are set in italic font. Figure 2.2 on page 10 shows this, where all request/response messages flows between ARGOS and Client

1, and push messages flows to both connected clients.

For schema and samples, see file in ARGOS-schema archive: schema/Socket_io_message.json.

Messages not complying to the schema are rejected with an «apiError» message:
schema/messages/ApiError.json

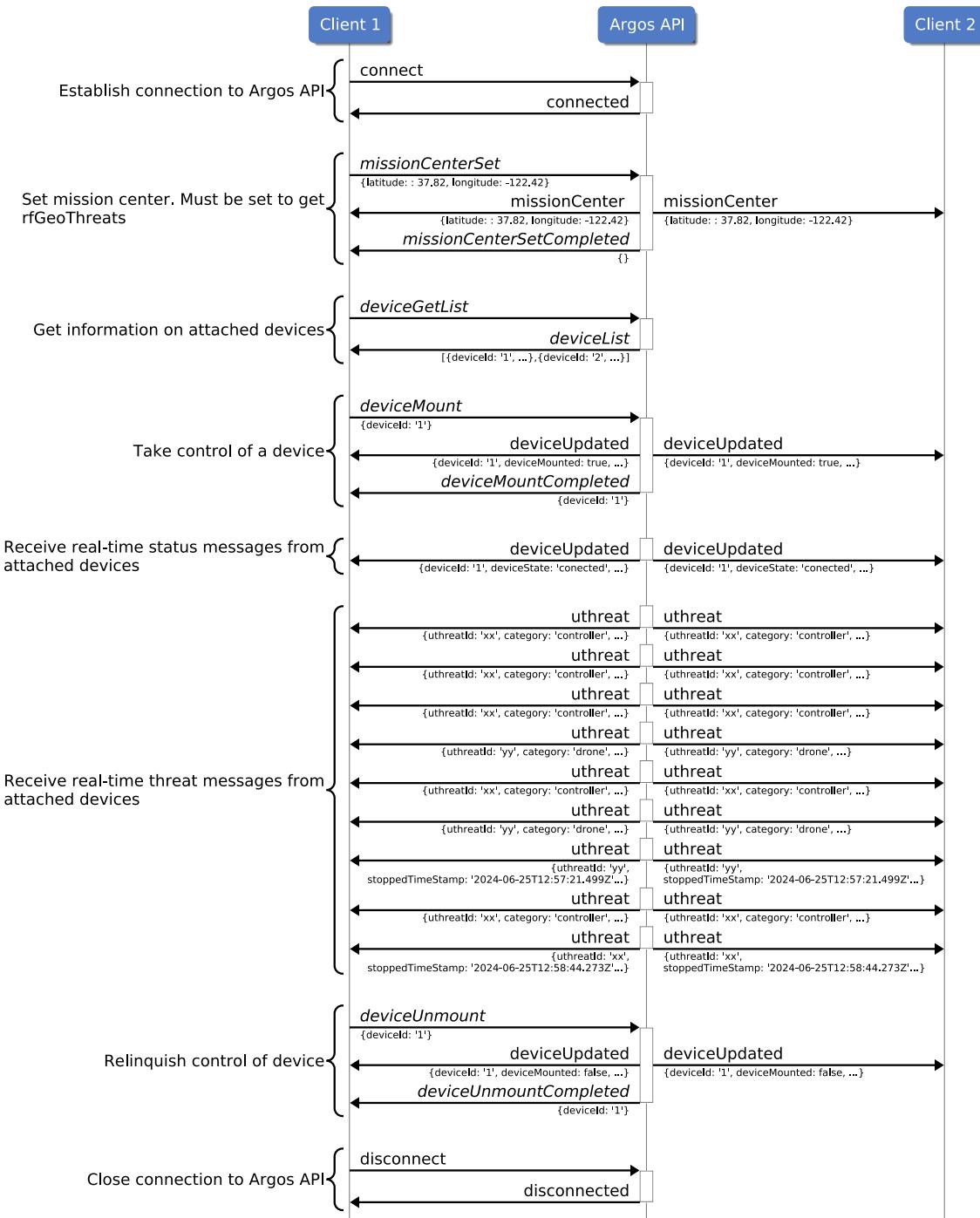


Figure 2.2: Example of connection and message exchange between client and AR-GOS API.

3. Event overview

The ARGOS API supports several events to discover and control the device(s), detect threats and communicating with ECM devices. Each type of event is implemented either using a push pattern or a request/response pattern.

3.1 Discovering a device

These events are common for all devices.

Request	Push/Response	Type	Description
	deviceAdded	Push	Information about the device is added
	deviceRemoved	Push	Information about the device is removed
	deviceUpdated	Push	Information about the device is updated
	deviceList	Push	A list of all currently attached devices
deviceGetList	deviceList	Request/Response	A list of all currently attached devices
deviceAdd	deviceAddCompleted deviceAddError	Request/Response	Used when adding a device manually
deviceRemove	deviceRemoveCompleted deviceRemoveError	Request/Response	Used when a device needed to be removed

3.2 Controlling a device

These events are common for all devices.

Request	Push/Response	Type	Description
deviceMount	deviceMountCompleted deviceMountError	Request/Response	Taking control of the device deviceMountError and start receiving threat information when threats are detected
deviceUnmount	deviceUnmountCompleted deviceUnmountError	Request/Response	Relinquish control of the device and stop receiving threat information
deviceLocationChange	deviceLocationChangeCompleted deviceLocationChangeError	Request/Response	Placing a device in a geo-location and setting the direction of the device
deviceMiscellaneousChange	deviceMiscellaneousChangeCompleted deviceMiscellaneousChangeError	Request/Response	Modifying one of the miscellaneous attributes related to a device
deviceGetLocations	deviceLocations	Request/Response	A list of all device locations for a specific device
deviceGetMiscellaneous	deviceMiscellaneous	Request/Response	A list of all device miscellaneous attributes for a specific device
	deviceLocationChanged	Push	Information about the device location is updated
	deviceMiscellaneousChanged	Push	Information about the device miscellaneous data is updated

3.3 Receiving uthreats

These events are specifically for uthreats.

Request	Push/Response	Type	Description
	uthreat	Push	Information about a threat
	uthreatConfiguration	Push	Configuration of the uthreat interface
uthreatConfigure	uthreatConfigureCompleted uthreatConfigureError	Request/Response	Configure the uthreat interface
uthreatSetMute	uthreatSetMuteCompleted uthreatSetMuteError	Request/Response	Mute/unmute a specific uthreat
uthreatGetHistory	uthreatHistory uthreatGetHistoryError	Request/Response	An overview of uthreats for a given time frame
uthreatGetHistoryData	uthreatHistoryData uthreatGetHistoryDataError	Request/Response	A detailed list of updates for a given uthreat

3.4 Receiving alarms

These events are specifically for alarms caused by geo-located threats that enter or leave alarm zones.

Request	Push/Response	Type	Description
alarmStarted		Push	Information about a new alarm is detected
alarmStopped		Push	Information about an existing alarm is stopped
alarmUpdated		Push	Updated information about an existing alarm

3.5 Communicating with ECM

These events are specifically for ECM (Electronic Countermeasures) devices.

Request	Push/Response	Type	Description
ecmStart	ecmStartCompleted ecmStartError	Request/Response	Starting an ECM device/asset
ecmStop	ecmStopCompleted ecmStopError	Request/Response	Stopping an ECM device/asset
ecmGetState	ecmState	Request/Response	Getting the current state of an ECM device/asset
ecmConfigure	ecmConfigureCompleted ecmConfigureError	Request/Response	Configure ECM settings
ecmGetHistory	ecmHistory	Request/Response	An overview of ecmStart events for a given time frame
	ecmUpdated	Push	Current state of an ECM device/asset
	ecmConfiguration	Push	Current ECM configuration

3.6 RF threat types

These events are specifically handling RF threat type information.

Request	Push/Response	Type	Description
	threatTypeList	Push	Current list of threat types
threatTypeGetList	threatTypeList	Request/Response	Get list of threat types
threatTypeMute	threatTypeMuteCompleted threatTypeMuteError	Request/Response	Mute a specific threat type
threatTypeUnMute	threatTypeUnMuteCompleted threatTypeUnMuteError	Request/Response	Unmute a specific threat type

3.7 Alarm zones

These events are specifically for setting up, manipulating and removing alarm zones

Request	Push/Response	Type	Description
	alarmZoneAdded	Push	An alarm zone has been created
	alarmZoneUpdated	Push	An alarm zone has been updated
	alarmZoneRemoved	Push	An alarm zone has been Removed
	alarmZoneList	Push	List of alarm zones
alarmZoneAdd	alarmZoneAddCompleted alarmZoneAddError	Request/Response	Add an alarm zone
alarmZoneUpdate	alarmZoneUpdateCompleted alarmZoneUpdateError	Request/Response	Update an alarm zone
alarmZoneRemove	alarmZoneRemoveCompleted alarmZoneRemoveError	Request/Response	Remove an alarm zone
alarmZoneGetList	alarmZoneList	Request/Response	Get list of alarm zones

3.8 PTZ

These events are specifically for controlling PTZ (pan-tilt-zoom) devices.

Request	Push/Response	Type	Description
ptzGetDeviceList	ptzDeviceList	Request/Response	Get list of PTZ devices
	ptzDeviceInfo	Push	PTZ device information
	ptzDeviceUpdate	Push	Change to PTZ device state
ptzSetVelocity	ptzSetVelocityCompleted	Request/Response	Turn PTZ device in a specific direction
ptzMoveAbs	ptzMoveAbsCompleted	Request/Response	Turn PTZ device in a specific direction
ptzDeviceSet	ptzDeviceSetCompleted	Request/Response	Change PTZ setting
	ptzFollowStarted	Push	PTZ follow instance has been started
	ptzFollowStopped	Push	PTZ follow instance has been stopped
	ptzFollowList	Push	List of PTZ follow instances
ptzFollowStart	ptzFollowStartCompleted ptzFollowStartError	Request/Response	Follow a device
ptzFollowStop	ptzFollowStopCompleted ptzFollowStopError	Request/Response	Stop following a device
ptzFollowGetList	ptzFollowList	Request/Response	Get list of PTZ follow instances

3.9 Firmware update

These events are specifically for adding FWU images and performing FWU.

Request	Push/Response	Type	Description
	fwulImageAdded	Push	An FWU image has been added
	fwulImageRemoved	Push	An FWU image has been removed
	fwulImageList	Push	List of FWU images
	fwuUpdateableList	Push	List of updateable devices
fwulImageAdd	fwulImageAddCompleted fwulImageAddError	Request/Response	Add an FWU image
fwulImageRemove	fwulImageRemoveCompleted fwulImageRemoveError	Request/Response	Remove an FWU image
fwulImageGetList	fwulImageList	Request/Response	Get list of FWU images
fwuUpdateableGetList	fwuUpdateableList	Request/Response	Get list of updateable devices
fwuStart	fwuStartCompleted fwuStartError	Request/Response	Start FWU process for device(s)

3.10 System state

These events are specifically used for informing the API client of the system state.

Request	Push/Response	Type	Description
	systemState	Push	Information about system state
getSystemState	systemState	Request/Response	Information about the system state
	time	Push	Information about the server time
getTime	time	Request/Response	Information about the server time

3.11 rfGeoThreat simulation

These events are specifically used for simulating RF geo-location coverage for a given setup.

Request	Push/Response	Type	Description
rfGeoThreatSimulationStart	rfGeolocationSimulationStartCompleted rfGeolocationSimulationStartError	Request/Response	Start coverage simulation
	rfGeoThreatSimulationResult	Push	Coverage simulation results

3.12 Mission Center Handling

These events are used to get and set mission center.

Request	Push/Response	Type	Description
	missionCenter	Push	Current mission center
missionCenterSet	missionCenterSetCompleted	Request/Response	Set mission center
missionCenterGet	missionCenter	Request/Response	Get mission center

3.13 Video Management System

These events are used to handle video.

Request	Push/Response	Type	Description
	vmsStreamList	Push	List of current video streams
vmsStreamGetList	vmsStreamList	Request/Response	Get list of video streams
vmsSdpInit	vmsSdpInitCompleted	Request/Response	WebRTC initialization

3.14 Features

These events are specifically used for informing the API client about the available features.

Request	Push/Response	Type	Description
	featureList	Push	List of features
featureGetList	featureList	Request/Response	Get list of features

3.15 Origin Filters

These events are specifically for setting up, manipulating, and removing radar origin filters.

Request	Push / Response	Type	Description
originFilterAdd	originFilterAddCompleted originFilterAddError	Request / Response	Add an origin filter
originFilterUpdate	originFilterUpdateCompleted originFilterUpdateError	Request / Response	Modify an existing origin filter
originFilterRemove	originFilterRemoveCompleted originFilterRemoveError	Request / Response	Remove an origin filter
	originFilterAdded	Push	The origin filter has been added
	originFilterUpdated	Push	The origin filter has been modified
	originFilterRemoved	Push	The origin filter has been removed
originFilterGetList	originFilterList	Request / Response	Get list of origin filters
	originFilterList	Push	List of origin filters

3.16 Sapient

These events are specifically for setting up and monitoring Sapient connections.

Request	Push / Response	Type	Description
sapientConfigure	sapientConfigureCompleted sapientConfigureError	Request / Response	Configure Sapient connections
sapientGetConfiguration	sapientConfiguration	Request / Response	Get Sapient connection configuration
	sapientConfiguration	Push	Sapient connections has been configured
sapientNodeGetList	sapientNodeList	Request / Response	Get list of Sapient nodes
	sapientNodeList	Push	List of Sapient nodes
	sapientNodeUpdated	Push	Sapient node has been updated

3.17 System Log

These messages are notifications of system events.

Request	Push / Response	Type	Description
	systemLog	Push	A System Log event has been pushed
systemLogGetList	systemLogList	Request / Response	Get list of active system log events
	systemLogList	Push	A System Log event is pushed upon service start

4. Discovering a device

When ARGOS is running an automatic discovery service will detect if a MyDefence device is attached to the network or if an attached device is detached from the network. This discovery service is by default running and broadcasting UDP messages to discover MyDefence devices. If for some reason this is not an option, it is possible to contact MyDefence to have this service disabled.

Auto discovered composite devices, are added to the device list, when the first child is discovered. I.e. composite devices usually starts out as partially discovered for a short time. They can still be used normally. If you want to know if the composite device is fully discovered, then test that all children have non-null IP address.

4.1 deviceAdded

Pattern: Push

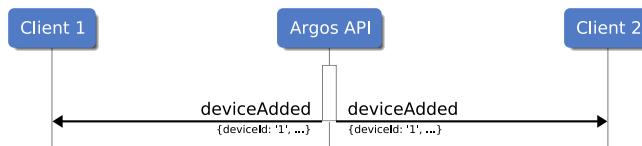


Figure 4.1: Example of deviceAdded message communication from ARGOS API to a connected client when a new device is attached to the network.

When a new MyDefence device is attached to the network a «deviceAdded» message is pushed to the client. The detection cycle is up to 30 second from attaching a MyDefence device to the network, to a «deviceAdded» message is sent to the client. A MyDefence device or supported 3rd-party device can also be attached manually through use of the «deviceAdd» message, which will also result in an «deviceAdded» message.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Device.json`

4.2 deviceRemoved

Pattern: Push

When an added device is removed by e.g. a «deviceRemove» a «deviceRemoved» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Device.json`

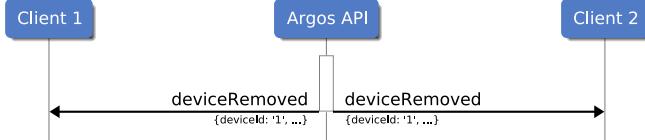


Figure 4.2: Example of deviceRemoved message communication from ARGOS API to a connected client.

4.3 deviceUpdated

Pattern: Push

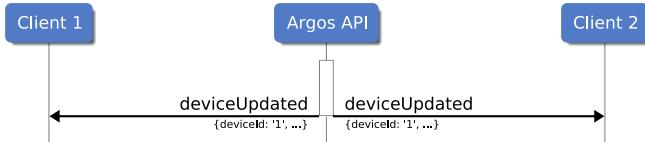


Figure 4.3: Example of deviceUpdated message communication from ARGOS API to a connected client.

When an added device is updated by e.g. a «deviceMount», «deviceUnmount» or another attribute changes a «deviceUpdated» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Device.json

4.4 deviceGetList

Pattern: Request/Response

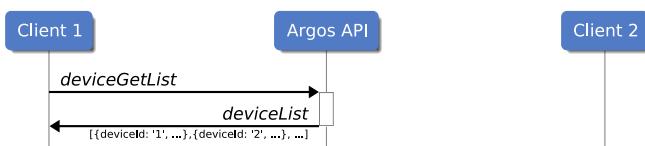


Figure 4.4: Example of deviceGetList message communication between the client and the ARGOS API.

If the full list of all devices added to ARGOS is needed the «deviceGetList» command must be sent and a response with «deviceList» will be send back with the current list of all devices. Devices that are included in a composite device will not be returned.

Request: deviceGetList

It is possible to send a request to get all devices added to ARGOS.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: deviceList

When a «deviceGetList» request command is successfully registered it will respond with a «deviceList» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceList.json

5. Controlling a device

When ARGOS has discovered a MyDefence device, it is possible to take control of the device and thereby starting or stopping detection of threats. It is also possible to add the actual geo-location manually if the device does not provide it automatically and virtually rotating the device if not placed directly phasing north. It is also possible to add supported devices manually and creating composite devices from existing devices.

5.1 deviceAdd

Pattern: Request/Response

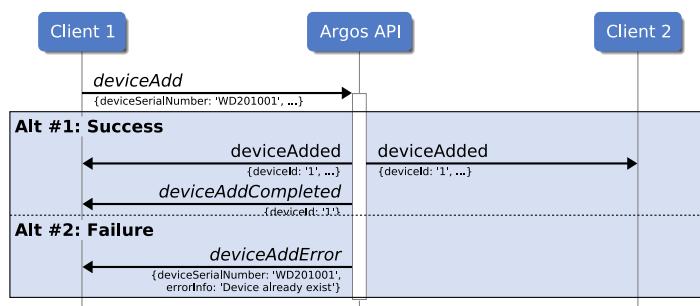


Figure 5.1: Example of deviceAdd message communication between the client and the ARGOS API.

When a supported device is manually added a «deviceAdd» command must be sent and a response with «deviceAddCompleted» will be send back to show that the device has been added. The operation causes a push message with a «deviceAdded» to be sent with information about the device that has been added. In case an error occurs during the «deviceAdd» a «deviceAddError» message will be sent as response.

Request: deviceAdd

It is possible to send a request to create a new supported device and have it added to the list of available devices.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceAdd.json`

When the «deviceAdd» request has been processed a «deviceAdded» message will be pushed with information about the device.

Response: deviceAddCompleted

When a «deviceAdd» request command is successfully registered it will respond with a «deviceAddCompleted» response and if an error occurs a «deviceAddError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or
schema/messages/DeviceSerialNumberError.json

5.2 deviceRemove

Pattern: Request/Response

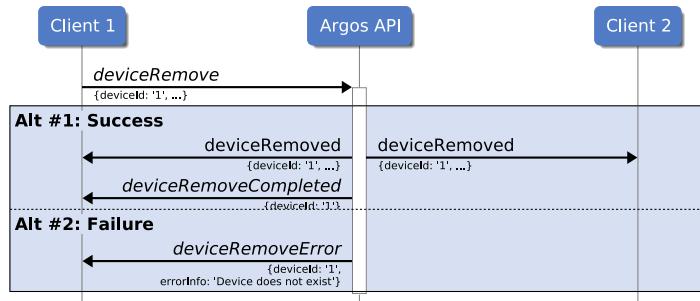


Figure 5.2: Example of `deviceRemove` message communication between the client and the ARGOS API.

When a device needs to be removed a «`deviceRemoved`» command must be sent and a response with «`deviceRemoveCompleted`» will be send back to show that the device has been removed. The operation causes a push message with a «`deviceRemoved`» to be sent with information about the device that has been removed. In case an error occurs during the «`deviceRemove`» a «`deviceRemoveError`» message will be sent as response.

Request: `deviceRemove`

It is possible to send a request to remove a previous added device. When a «`deviceRemove`» request is processed all data related to the device is deleted and can not be recovered afterwards. That is both the device itself and any location or miscellaneous data attached to the device.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

When the «`deviceRemove`» request has been processed a «`deviceRemoved`» message will be pushed with information about the device.

Response: `deviceRemoveCompleted`

When a «`deviceRemove`» request command is successfully registered it will respond with a «`deviceRemoveCompleted`» response and if an error occurs a «`deviceRemoveError`» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

5.3 compositeDeviceAdd

Composite devices are used to group multiple co-located physical devices, e.g. on a tower or a vehicle, into one virtual (composite) device. For MyDefence RF sensors, this is required to filter out detections coming from outside the sensor's field of view. (Note, that a WolfPack unit will automatically create a composite device).

Other benefits include:

- Easy to present a single device in your UI.
- Move or rotate all devices only requires moving the composite device.
 - Note, that child devices headings are relative to the composite device.
- Automatic update of position or heading from one of the children will be applied to the entire composite. (Requires useGPSLocation to be set to enabled in deviceMiscellaneous interface.)

Pattern: Request/Response

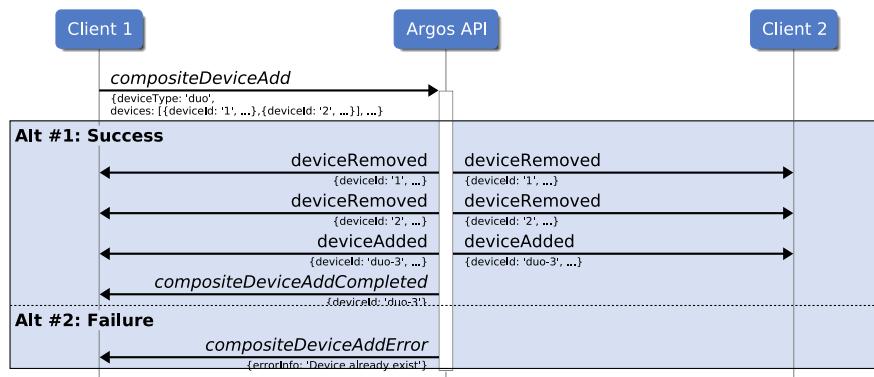


Figure 5.3: Example of message communication between the client and the ARGOS API when adding a new composite device.

When a new composite device is added a «compositeDeviceAdd» request message is sent from the client to the ARGOS API. ARGOS responds with a «compositeDeviceAddCompleted» message. During the add operation a «deviceRemoved» message for each of the devices that should be joined is pushed to all the clients listening and afterwards a «deviceAdded» message is pushed to all the clients listening to inform about the device just added. In case of error during the operation a «compositeDeviceAddError» message is sent as a response.

Request: compositeDeviceAdd

The request creates a new composite device and the device is added to the list of available devices.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/CompositeDeviceAdd.json

The deviceType can be set to one of the predefined composite types listed in the

schema, in which case you get checks, that the correct device types are used. Alternatively deviceType can be set to the generic "composite" type. If choosing "composite" as type, you may compose any devices you like. Location and heading updates for type "composite" will be taken from the first device in the list with GPS capability. (For a predefined type, GPS source is selected according to the predefined template.) Generic composites may even include existing composites. It is possible to include a partially discovered composite device, but its non-discovered children will be ignored, even if they are later discovered.

When the «compositeDeviceAdd» request has been processed a «deviceAdded» message is pushed to clients containing information about the created device.

Response: compositeDeviceAddCompleted

When a «compositeDeviceAdd» request is successfully handled by the ARGOS API a «compositeDeviceAddCompleted» response is returned to the client. In case of error during the add operation a «compositeDeviceAddError» is returned.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/Error.json

5.4 deviceMount

Pattern: Request/Response

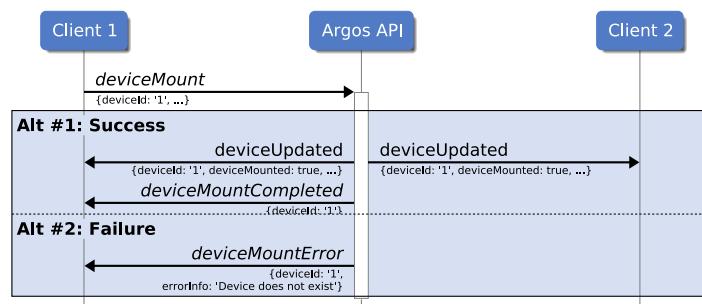


Figure 5.4: Example of deviceMount message communication between the client and the ARGOS API.

When a device is discovered it must be mounted before it can start detecting threats. When using the «deviceMount» command a response with «deviceMountCompleted» will be sent back to show that the device has been mounted. The operation causes a push message with a «deviceUpdated» to be sent with information about the device that has been mounted. In case an error occurs during the «deviceMount» a «deviceMountError» message will be sent as response.

Composite devices start with all their children mounted. If a child has been unmounted, it can be mounted again with this command. See 5.5 for more information.

Request: deviceMount

The «deviceMount» request command will set the device in a state where it tries to create a connection to the physical device and will continue trying to create the connection until a connection is created or the device is unmounted. If a connection is lost e.g. due to a cable is unplugged, it will try to reconnect to the device again when the device is in a mounted state.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

When the «deviceMount» request has set the state and the process of trying to establish the connection to the physical device a «deviceUpdated» message will be pushed with information about e.g. the deviceMounted state and the deviceState.

Response: deviceMountCompleted

When a «deviceMount» request command is successfully registered it will respond with a «deviceMountCompleted» response and if an error occurs a «deviceMountError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

5.5 deviceUnmount

Pattern: Request/Response

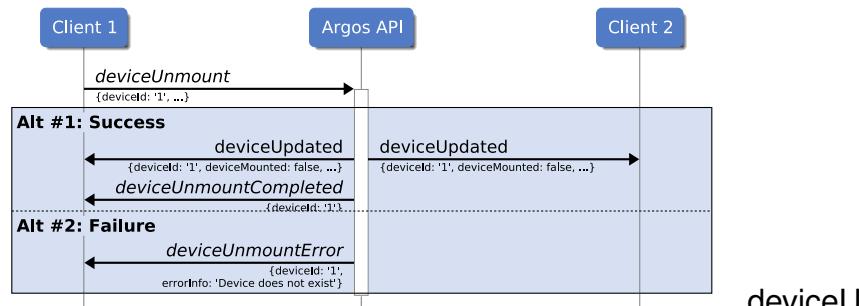


Figure 5.5: Example of deviceUnmount message communication between the client and the ARGOS API.

When a device is unmounted it releases the any connection it previously has created to the physical device. Using the «deviceUnmount» command a response with «deviceUnmountCompleted» will be sent back to show that the device has been unmounted. The operation causes a push message with a «deviceUpdated» to be sent with information about the device that has been unmounted. In case an error occurs during the «deviceUnmount» a «deviceUnmountError» message will be sent as response.

A child device of a composite device may also be unmounted. This can be used to

disable only this child while keeping the rest of the composite device active. A composite device is created with all its children mounted. Children may be unmounted at any time. Mounting/unmounting the parent device does not affect the children's mount status.

Request: deviceUnmount

The «deviceUnmount» request command will set the device in a state where it stops any connection to the physical device and first try to reconnect to the device if a new «deviceMount» is sent.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

When the «deviceUnmount» request has set the state and any previous created connections to the physical devices is stopped a «deviceUpdated» message will be pushed with information about e.g. the deviceMounted state and the deviceState.

Response: deviceUnmountCompleted

When a «deviceUnmount» request command is successfully registered it will respond with a «deviceUnmountCompleted» response and if an error occurs a «deviceUnmountError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

5.6 deviceLocationChange

Pattern: Request/Response

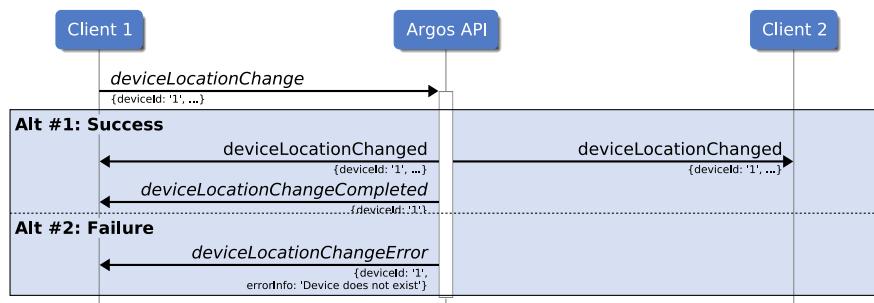


Figure 5.6: Example of deviceLocationChange message communication between the client and the ARGOS API.

When a device needs to be geographically set or updated to a physical geo-location and or heading a «deviceLocationChange» command must be used and a response with «deviceLocationChangeCompleted» will be send back to show that the device has been relocated. The operation causes a push message with a «deviceLocationChanged» to be sent with information about the device that has been relocated. In case

an error occurs during the «deviceLocationChange» a «deviceLocationChangeError» message will be sent as response. This command can also be used on devices that are included in composite devices.

Request: deviceLocationChange

The «deviceLocationChange» request command will set the device location to a new geo-location.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceLocationChange.json

Response: deviceLocationChangeCompleted

When a «deviceChange» request command is successfully registered it will respond with a «deviceLocationChangeCompleted» response and if an error occurs a «deviceLocationChangeError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

5.7 deviceMiscellaneousChange

Pattern: Request/Response

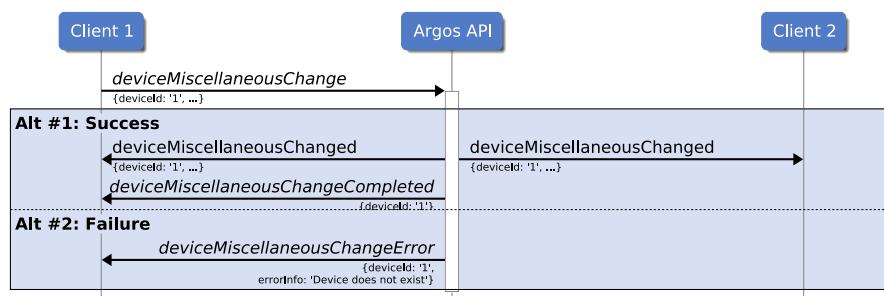


Figure 5.7: Example of deviceMiscellaneousChange message communication between the client and the ARGOS API.

When a device needs to change one of the miscellaneous attributes a «deviceMiscellaneousChange» command must be used and a response with «deviceMiscellaneousChangeCompleted» will be send back to show that the device has changed the miscellaneous attribute. The operation causes a push message with a «deviceMiscellaneousChanged» to be sent with information about the device that has changed miscellaneous data. In case an error occurs during the «deviceMiscellaneousChange» a «deviceMiscellaneousChangeError» message will be sent as response. This command can also be used on devices that are included in composite devices.

Request: deviceMiscellaneousChange

The «deviceMiscellaneousChange» request command will set the device miscella-

neous data.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/DeviceMiscellaneousInfo.json

Refer to the descriptions in the schema files for information on the different miscellaneous data. «deviceMiscellaneousUpdate» schema is generated from «deviceMiscellaneous»/«deviceMiscellaneousUpdateInfo» schema. All properties in the latter or included in the former, except those with the comment tag "read-only".

Response: deviceMiscellaneousChangeCompleted

When a «deviceMiscellaneousChange» request command is successfully registered it will respond with a «deviceMiscellaneousChangeCompleted» response and if an error occurs a «deviceMiscellaneousChangeError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

5.8 deviceGetLocations

Pattern: Request/Response

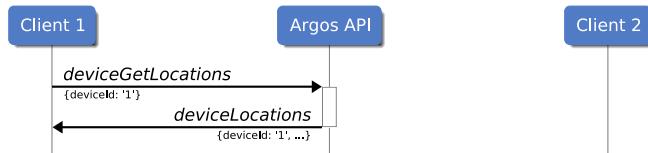


Figure 5.8: Example of deviceGetLocations message communication between the client and the ARGOS API.

If the full list of all locations for a single device is needed the «deviceGetLocations» command must be sent and a response with «deviceLocations» will be send back with the current list of all locations for that device. This command can also be used for devices included in a composite device.

Request: deviceGetLocations

It is possible to send a request to receive the actual list added devices.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

Response: deviceLocations

The response will be a list of all the current locations for the requested device and if no locations is added an empty array will be returned.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceLocationList.json

5.9 deviceGetMiscellaneous

Pattern: Request/Response

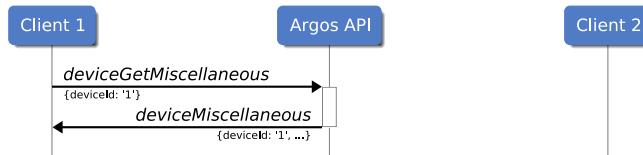


Figure 5.9: Example of deviceGetMiscellaneous message communication between the client and the ARGOS API.

If the full list of all miscellaneous data for a single device is needed the «deviceGetMiscellaneous» command must be sent and a response with «deviceMiscellaneous» will be send back with the current list of all miscellaneous data for that device. This command can also be used for devices included in a composite device.

Request: deviceGetMiscellaneous

It is possible to send a request to receive the actual list added devices.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

Response: deviceMiscellaneous

The response will be a list of all the currently miscellaneous data for the requested device and if no miscellaneous data is added an empty array will be returned.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceMiscellaneousList.json

Miscellaneous types not included in the list above can occur and should be ignored and should not be modified. The types are for internal use only and related to the MyDefence IRIS application.

5.10 deviceCalibrationStart

Pattern: Request/Response

When using the «deviceCalibrationStart» command, a response «deviceCalibrationStartCompleted» message will be sent back as confirm. The status of the calibration is signalled using «deviceUpdated» messages (section 4.3). In case an error occurs during «deviceCalibrationStart» processing, the «deviceCalibrationStartError» message will be sent as response.

Devices supporting calibration will have a deviceCalibration property in their device data.

For composite devices, deviceld in the «deviceCalibrationStart» command must be the

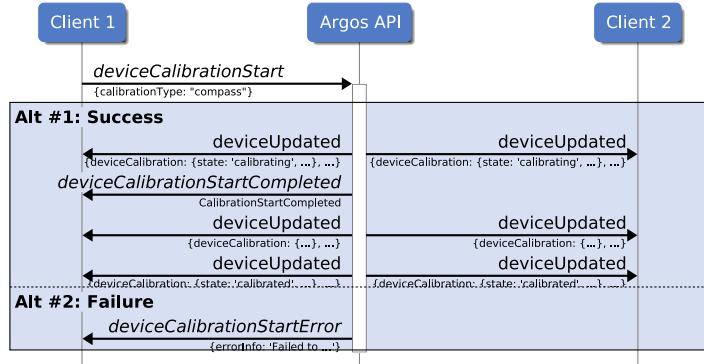


Figure 5.10: Example of `deviceCalibrationStart` message communication between the client and the ARGOS API.

deviceID of a child device supporting calibration.

Request: `deviceCalibrationStart`

It is possible to send a request to start the calibration process for a device.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceCalibrationStart.json` or

Response: `deviceCalibrationStartCompleted`

When a «`deviceCalibrationStart`» request command is successfully registered it will respond with a «`deviceCalibrationStartCompleted`» response and if an error occurs a «`deviceCalibrationStartError`» response.

`schema/messages/DeviceDeviceId.json` or

`schema/messages/DeviceDeviceIdError.json` or

6. Receiving threats

The threat interface delivers a unified threat interface across the system irrespective of the kind of sensor device(s) delivering the raw detection information to ARGOS. Furthermore, the threat interface can be configured to deliver various levels of fused data. The levels are:

- none** No fusing of threats. Threats are delivered per sensor and intended for 3rd party integrators wishing to do their own fusing of threats.
- rf** Fusing of threats for MyDefence RF sensors only. Threats from other sources like radars are delivered separately on a per device level.
- all** Fusing of data from sensors. Where possible, threats from different kinds of sensors (e.g. radar and rf) will be fused and delivered as a single threat series.

For all fusion levels, the threat interface is the same, and delivers threat information in four levels according to the following scheme:

1. Location
2. Direction
3. Zone
4. Presence

When one of the fusing levels (rf, all) have been configured, a given threat series related to a particular physical threat may go up or down through these levels in its lifetime, all depending on the collective information available to ARGOS at any given time. Going up in level can be exemplified by multiple directions being combined via triangulation to form a location. Similarly going down in level could be because direction data becomes uncertain and therefore a presence level is emitted.

To facilitate the functionality of the threat interface the mission center has to be configured (described in chapter 16 on page 86).

6.1 uthreat

Pattern: Push

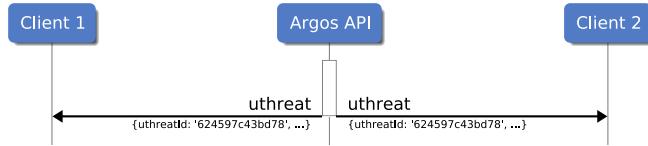


Figure 6.1: Example of uthreat message communication from ARGOS API to a connected client.

When a physical threat is detected by one or more components in the system «uthreat» messages starts being sent. Every time an update to the related physical threat is made a «uthreat» message is sent. In the first «uthreat» message the createdTimeStamp and updatedTimeStamp fields are identical and stoppedTimestamp is not present. In the following «uthreat» messages where updates have been made, the updatedTimeStamp is updated accordingly and the stoppedTimestamp is not present. When the physical threat is not detected by any component in the system anymore the «uthreat» is stopped and the stoppedTimestamp field is set.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Uthreat.json

6.2 uthreatConfigure

Pattern: Request/Response

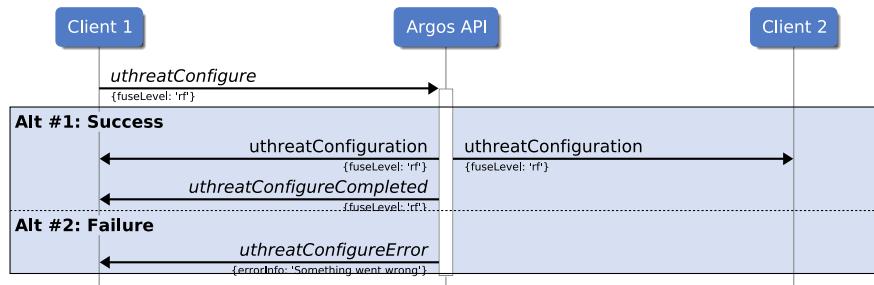


Figure 6.2: Example of uthreatConfigure message communication between the client and the ARGOS API.

Configuration of the uthreat layer can be set via the «uthreatConfigure» command. ARGOS sends a response with «uthreatConfigureCompleted» back to the requesting client. The operation causes a «uthreatConfiguration» push message with the current configuration to be sent. In case an error occurs during the «uthreatConfigure» a «uthreatConfigureError» message will be sent as response. Sending uthreatConfigure may result in current threats being reset.

Request: uthreatConfigure

A «uthreatConfigure» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatConfig.json

Response: uthreatConfigureCompleted

When a «uthreatConfigure» request command is successfully registered it will respond with a «uthreatConfigureCompleted» response and if an error occurs a «uthreatConfigureCompletedError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatConfig.json or

schema/messages/Error.json

6.2.1 uthreatConfiguration

Pattern: Push

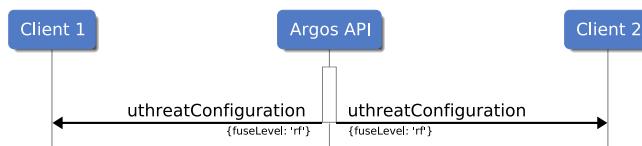


Figure 6.3: Example of uthreatConfiguration message communication from ARGOS API to a connected client.

When the uthreat configuration is updated by a «uthreatConfigure» a «uthreatConfiguration» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatConfig.json

6.2.2 uthreatGetConfiguration

Pattern: Request/Response

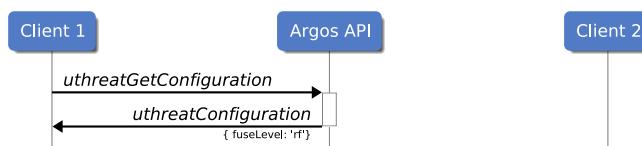


Figure 6.4: Example of uthreatGetConfiguration message communication between the client and the ARGOS API.

To get the current uthreat configuration the following message must be sent. The device will then return the current uthreat configuration.

Request: uthreatGetConfiguration

It is possible to send a request to get the current uthreat configuration.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/Empty.json

Response: uthreatConfiguration

When an «uthreatGetConfiguration» request command is successfully registered it will respond with an «uthreatConfiguration» response.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/UthreatConfig.json

6.3 uthreatSetMute

Pattern: Request/Response

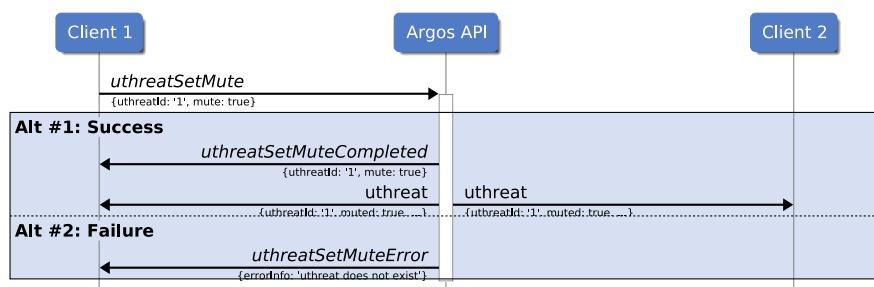


Figure 6.5: Example of uthreatSetMute message communication between the client and the ARGOS API.

Mute/unmute of a uthreat can be requested via a «uthreatSetMute» command. ARGOS sends a response with «uthreatSetMuteCompleted» back to the requesting client. The mute setting is reflected in subsequent «uthreat» push messages for the given uthreatId. In case an error occurs during the «uthreatSetMute» a «uthreatSetMuteError» message will be sent as response.

Request: uthreatSetMute

A «uthreatSetMute» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/UthreatSetMute.json

Response: uthreatSetMuteCompleted

When a «uthreatSetMute» request command is successfully registered it will respond with a «uthreatSetMuteCompleted» response and if an error occurs a «uthreatSetMuteError» response.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/UthreatSetMute.json or
schema/messages/Error.json

6.4 uthreatGetHistory

Pattern: Request/Response

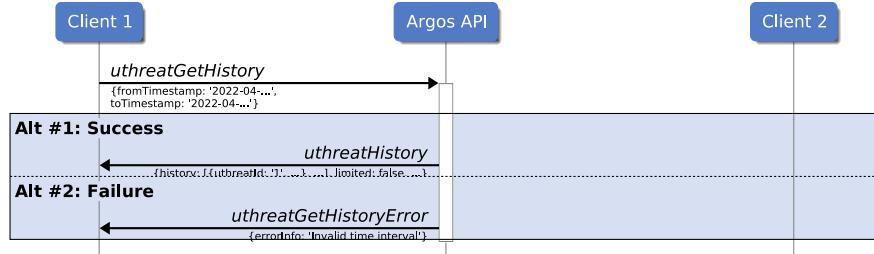


Figure 6.6: Example of uthreatGetHistory message communication between the client and the ARGOS API.

An overview of the uthreats that were registered in a given time frame can be requested via a «uthreatGetHistory» command. ARGOS sends a response with «uthreatHistory» back to the requesting client.

Request: uthreatGetHistory

A «uthreatGetHistory» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/TimeInterval.json

Response: uthreatHistory

When a «uthreatGetHistory» request command is successfully registered it will respond with a «uthreatHistory» response and if an error occurs a «uthreatGetHistoryError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatHistory.json or

schema/messages/Error.json

6.5 uthreatGetHistoryData

Pattern: Request/Response

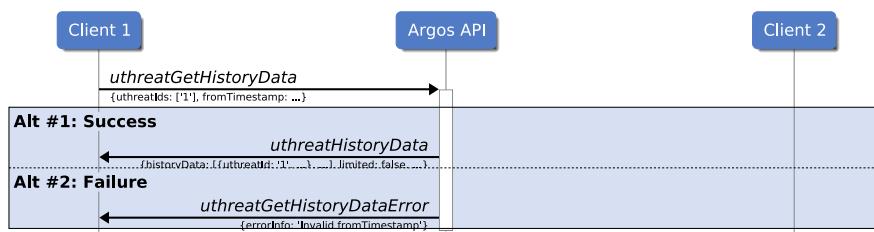


Figure 6.7: Example of uthreatGetHistoryData message communication between the client and the ARGOS API.

A list of all the data for a given set of uthreats can be requested via a «uthreatGetH-

istoryData» command. ARGOS sends a response with «uthreatHistoryData» back to the requesting client.

Request: uthreatGetHistoryData

A «uthreatGetHistoryData» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatGetHistoryData.json

Response: uthreatHistoryData

When a «uthreatGetHistoryData» request command is successfully registered it will respond with a «uthreatHistoryData» response and if an error occurs a «uthreatGetHistoryDataError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/UthreatHistoryData.json or

schema/messages/Error.json

7. Receiving alarms

There are 3 types of alarm messages «alarmStarted», «alarmStopped» and «alarmUpdated».

7.1 alarmStarted

Pattern: Push

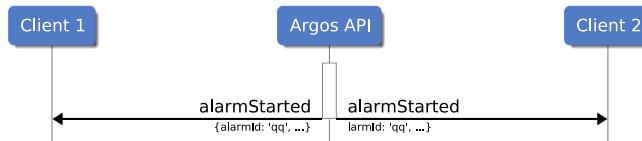


Figure 7.1: Example of alarmStarted message communication from ARGOS API to a connected client.

When a alarm is detected for the first time a «alarmStarted» message is sent. The `stopTimeStamp` will be null.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Alarm.json`

7.2 alarmStopped

Pattern: Push

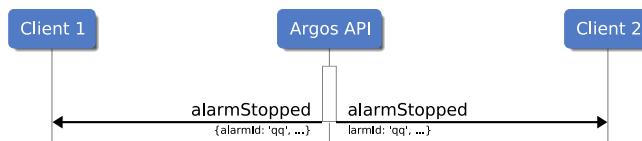


Figure 7.2: Example of alarmStopped message communication from ARGOS API to a connected client.

When a alarm is detected for the last time a «alarmStopped» message is sent. The `stopTimeStamp` will be filled with a value.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Alarm.json`

7.3 alarmUpdated

Pattern: Push

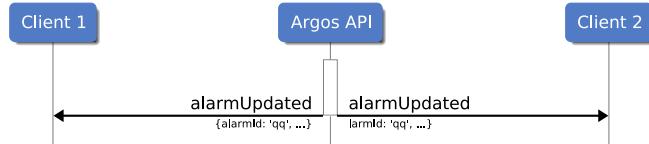


Figure 7.3: Example of alarmUpdated message communication from ARGOS API to a connected client.

When a alarm is updated but not stopped a «alarmUpdated» message is sent. The createdTimeStamp and the updatedTimeStamp will be different.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Alarm.json`

8. Alarm Zones

8.1 alarmZoneAdd

Pattern: Request/Response

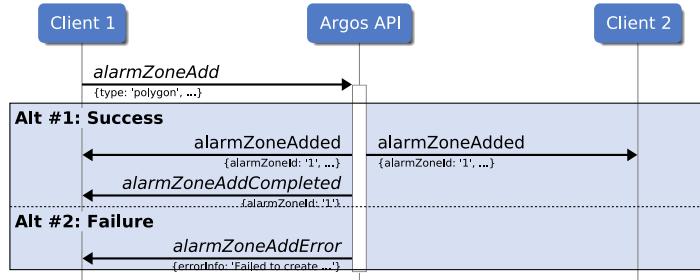


Figure 8.1: Example of `alarmZoneAdd` message communication between the client and the ARGOS API.

An alarm zone can be created with the «`alarmZoneAdd`» request. When using the «`alarmZoneAdd`» command a response with «`alarmZoneAddCompleted`» will be sent back to show that the alarm zone has been created. The operation causes a push message with a «`alarmZoneAdded`» to be sent with information about the alarm zone that has been created. In case an error occurs during the «`alarmZoneAdd`» an «`alarmZoneAddError`» message will be sent as response.

Request: `alarmZoneAdd`

The «`alarmZoneAdd`» request will create the alarm zone.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneCreate.json`

When the «`alarmZoneAdd`» request has processed correctly an «`alarmZoneAdded`» message will be pushed with information about the created alarm zone.

Response: `alarmZoneAddCompleted`

When an «`alarmZoneAdd`» request command is successfully registered it will respond with an «`alarmZoneAddCompleted`» response and if an error occurs an «`alarmZoneCreateError`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneId.json` or

`schema/messages/Error.json`

8.2 alarmZoneUpdate

Pattern: Request/Response

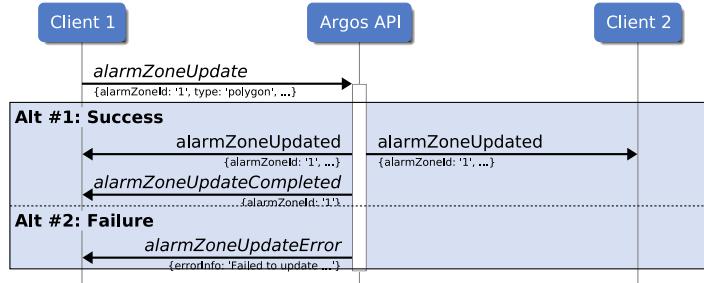


Figure 8.2: Example of `alarmZoneUpdate` message communication between the client and the ARGOS API.

An alarm zone can be updated with the «`alarmZoneUpdate`» request. When using the «`alarmZoneUpdate`» command a response with «`alarmZoneUpdateCompleted`» will be sent back to show that the alarm zone has been updated. The operation causes a push message with a «`alarmZoneUpdated`» to be sent with information about the alarm zone that has been updated. In case an error occurs during the «`alarmZoneUpdate`» an «`alarmZoneUpdateError`» message will be sent as response.

Request: `alarmZoneUpdate`

The «`alarmZoneUpdate`» request will update the alarm zone.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZone.json`

When the «`alarmZoneUpdate`» request has processed correctly an «`alarmZoneUpdated`» message will be pushed with information about the updated alarm zone.

Response: `alarmZoneUpdateCompleted`

When an «`alarmZoneUpdate`» request command is successfully registered it will respond with an «`alarmZoneUpdateCompleted`» response and if an error occurs an «`alarmZoneUpdateError`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneId.json` or

`schema/messages/Error.json`

8.3 `alarmZoneRemove`

Pattern: Request/Response

An alarm zone can be removed with the «`alarmZoneRemove`» request. When using the «`alarmZoneRemove`» command a response with «`alarmZoneRemoveCompleted`» will be sent back to show that the alarm zone has been removed. The operation causes a push message with a «`alarmZoneRemoved`» to be sent with information about the alarm zone that has been removed. In case an error occurs during the «`alarmZoneRemove`» an «`alarmZoneRemoveError`» message will be sent as response.

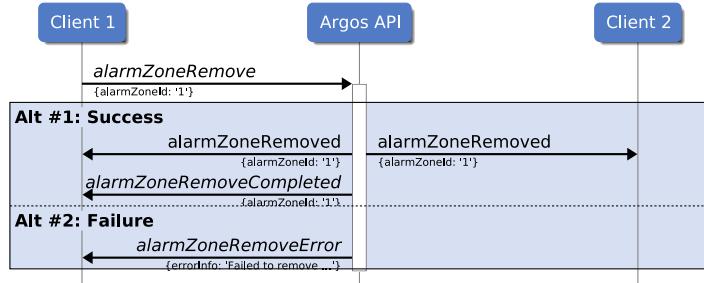


Figure 8.3: Example of `alarmZoneRemove` message communication between the client and the ARGOS API.

Request: `alarmZoneRemove`

The «`alarmZoneRemove`» request will remove the alarm zone.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneId.json`

When the «`alarmZoneRemove`» request has processed correctly an «`alarmZoneRemoved`» message will be pushed with information about the removed alarm zone.

Response: `alarmZoneRemoveCompleted`

When an «`alarmZoneRemove`» request command is successfully registered it will respond with an «`alarmZoneRemoveCompleted`» response and if an error occurs an «`alarmZoneRemoveError`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneId.json` or

`schema/messages/Error.json`

8.4 `alarmZoneAdded`

Pattern: Push

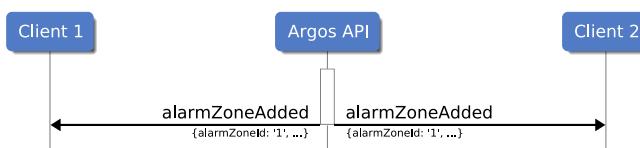


Figure 8.4: Example of `alarmZoneAdded` message communication from ARGOS API to a connected client when a new alarm zone has been created.

When a new alarm zone is created an «`alarmZoneAdded`» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZone.json`

8.5 alarmZoneUpdated

Pattern: Push

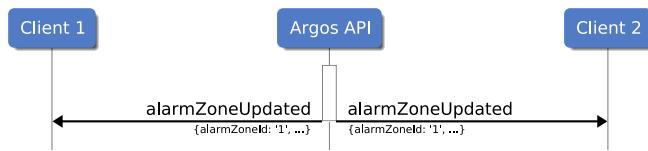


Figure 8.5: Example of alarmZoneUpdated message communication from ARGOS API to a connected client when an alarm zone has been updated.

When an alarm zone is updated an «alarmZoneUpdated» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZone.json`

8.6 alarmZoneRemoved

Pattern: Push

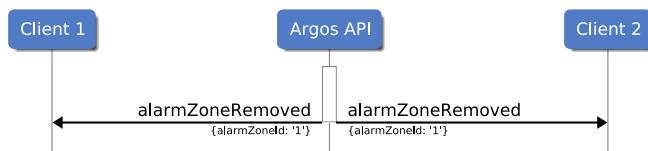


Figure 8.6: Example of alarmZoneRemoved message communication from ARGOS API to a connected client when an alarm zone has been removed.

When an alarm zone is removed an «alarmZoneRemoved» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/AlarmZoneId.json`

8.7 alarmZoneGetList

Pattern: Request/Response

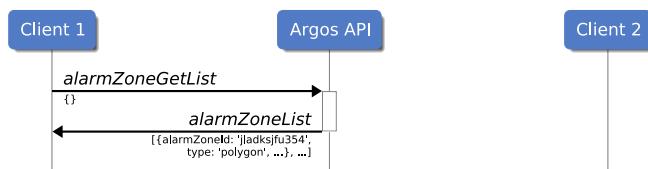


Figure 8.7: Example of alarmZoneGetList message communication between the client and the ARGOS API.

A list of the currently existing alarm zones can be requested via an «alarmZoneGetList» command. ARGOS sends a response with «alarmZoneList» back to the requesting client.

Request: alarmZoneGetList

An «alarmZoneGetList» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: alarmZoneList

When an «alarmZoneGetList» request command is successfully registered it will respond with an «alarmZoneList» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/AlarmZoneList.json

8.8 alarmZoneList

Pattern: Push

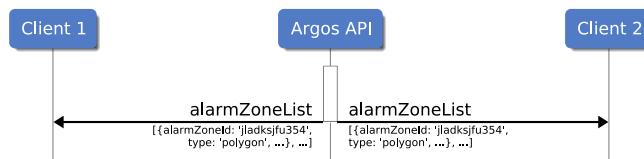


Figure 8.8: Example of alarmZoneList message communication from ARGOS API to a connected client.

During ARGOS startup or if an unforeseen error causes a restart of the internal alarm zone service an «alarmZoneList» message is pushed to all connected clients. The list describes all the currently existing alarm zones. This list can also be requested via «alarmZoneGetList» described in section 8.7 on the previous page.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/AlarmZoneList.json

9. Origin Filters

Origin filters are used with radars to filter tracks from zones with many false (non-drone) tracks. The need for origin filters will depend on the different radar's ability to separate drones from other tracks. It has no effect for RF sensors.

For example cars on a road may generate tracks. In that case put an origin filter zone around the part of the road visible from the radar. Origin filters will only filter out threats, that start (originate) in the specified zone. Threats starting outside a zone and passing through are not affected.

Another special example is that ventilation fans may confuse some radars: They generate false tracks starting at the fan, but the radar may see the track as moving. In that case creating an origin filter, with a distance setting of e.g. some hundred meters, will filter all tracks that started at that fan, also when moving out of the filter zone, unless the track is more than the distance away from the zone.

Note: If multiple origin filters match a threat, then an arbitrary will be selected for distance measurement, not all. Typically it is not needed to make overlapping origin filter zones.

The API to specify origin filter zones is similar to the alarm zone API, but also supports height information.

9.1 originFilterAdd

Pattern: Request/Response

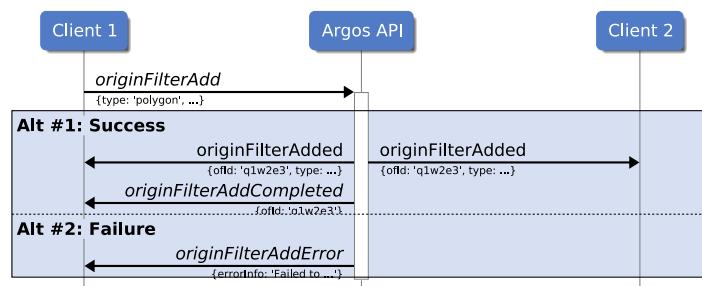


Figure 9.1: Example of `originFilterAdd` message communication between the client and the ARGOS API.

Use «`originFilterAdd`» to create and activate an origin filter.

When using the «`originFilterAdd`» command, a response «`originFilterAddCompleted`» message will be sent back as confirm. The operation causes a push «`originFilterAdded`» message to be sent with information about the update. In case an error occurs during «`originFilterAdd`» processing, the «`originFilterAddError`» message will be sent

as response.

Request: originFilterAdd

The «originFilterAdd» request creates an origin filter zone.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilter.json

When the «originFilterAdd» request has processed correctly the «originFilterAdded» message will be pushed with information about the update.

Response: originFilterAddCompleted

When «originFilterAdd» request command is successfully registered it will respond with the «originFilterAddCompleted» response, or if an error occurs the «originFilterAddError» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilterId.json or

schema/messages/Error.json

9.2 originFilterUpdate

Pattern: Request/Response

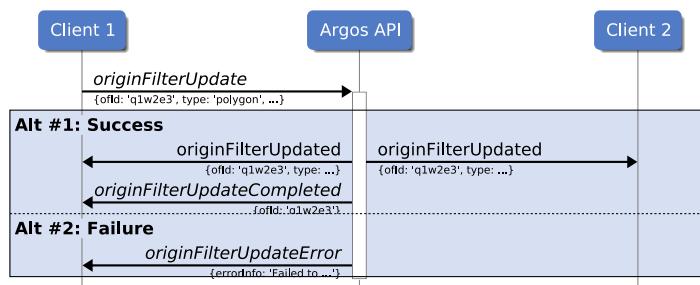


Figure 9.2: Example of originFilterUpdate message communication between the client and the ARGOS API.

The filters can be modified using «originFilterUpdate»

When using the «originFilterUpdate» command, a response «originFilterUpdateCompleted» message will be sent back as confirm. The operation causes a push «originFilterUpdated» message to be sent with information about the update. In case an error occurs during «originFilterUpdate» processing, the «originFilterUpdateError» message will be sent as response.

Request: originFilterUpdate

For schema and samples, see file in ARGOS - schema archive:
schema/messages/OriginFilter.json

When the «originFilterUpdate» request has processed correctly the «originFilterUpdated» message will be pushed with information about the update.

Response: originFilterUpdateCompleted

When «originFilterUpdate» request command is successfully registered it will respond with the «originFilterUpdateCompleted» response, or if an error occurs the «originFilterUpdateError» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilterId.json or

schema/messages/Error.json

9.3 originFilterRemove

Pattern: Request/Response

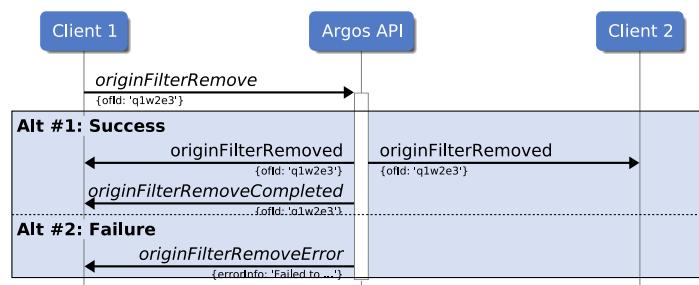


Figure 9.3: Example of originFilterRemove message communication between the client and the ARGOS API.

The filters can be removed using «originFilterRemove»

When using the «originFilterRemove» command, a response «originFilterRemoveCompleted» message will be sent back as confirm. The operation causes a push «originFilterRemoved» message to be sent with information about the update. In case an error occurs during «originFilterRemove» processing, the «originFilterRemoveError» message will be sent as response.

Request: originFilterRemove

For schema and samples, see file in ARGOS - schema archive:
schema/messages/OriginFilterId.json

When the «originFilterRemove» request has processed correctly the «originFilterRemoved» message will be pushed with information about the update.

Response: originFilterRemoveCompleted

When «originFilterRemove» request command is successfully registered it will respond with the «originFilterRemoveCompleted» response, or if an error occurs the «originFilterRemoveError» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilterId.json or

schema/messages/Error.json

9.4 originFilterAdded

Pattern: Push

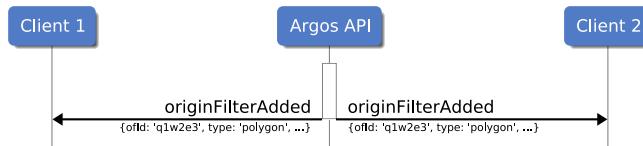


Figure 9.4: Example of originFilterAdded message communication from ARGOS API to a connected client when a new alarm zone has been created.

When a «originFilterAdd» has been processed, a «originFilterAdded» message is pushed to all connected clients. For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilter.json

9.5 originFilterUpdated

Pattern: Push

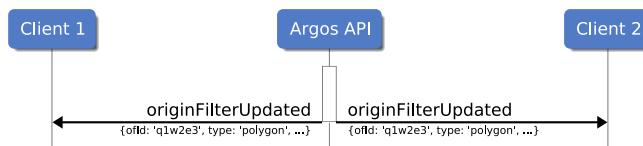


Figure 9.5: Example of originFilterUpdated message communication from ARGOS API to a connected client when a new alarm zone has been created.

When a «originFilterUpdate» has been processed, a «originFilterUpdated» message is pushed to all connected clients. For schema and samples, see file in ARGOS - schema archive: schema/messages/OriginFilter.json

9.6 originFilterRemoved

Pattern: Push

When a «originFilterRemove» has been processed, a «originFilterRemoved» message is pushed to all connected clients. For schema and samples, see file in ARGOS - schema archive: schema/messages/OriginFilterId.json

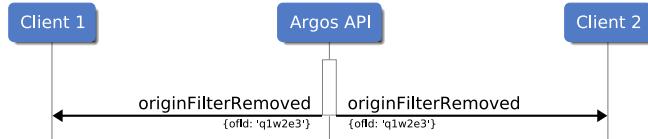


Figure 9.6: Example of originFilterRemoved message communication from ARGOS API to a connected client when a new alarm zone has been created.

9.7 originFilterGetList

Pattern: Request/Response

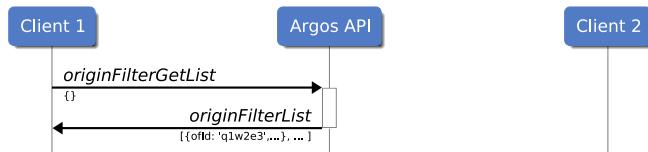


Figure 9.7: Example of originFilterGetList message communication between the client and the ARGOS API.

Use «originFilterGetList» to get a list of all existing filters.

When using the «originFilterGetList» command a response with «originFilterList» will be sent back as response.

Request: originFilterGetList

«originFilterGetList» may be sent at any time.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/Empty.json

Response: originFilterList

When «originFilterGetList» request command is successfully registered it will respond with the «originFilterList» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/OriginFilterList.json

9.8 originFilterList

Pattern: Push

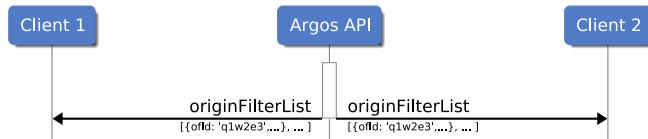


Figure 9.8: Example of originFilterList message communication from ARGOS API to a connected client when a new alarm zone has been created.

During ARGOS startup or if an unforeseen error causes a restart of the internal origin filter service an «originFilterList» message is pushed to all connected clients. The list describes all the currently existing filters. This list can also be requested via «originFilterGetList» described in section 9.7 on the preceding page.

For schema and samples, see file in ARGOS - schema archive: [schema/messages/OriginFilterList.json](#)

10. Threat type handling

When a RF sensor is mounted in the system ARGOS retrieves a list supported threat types from the device. A complete list of supported threat types is maintained in ARGOS. Thus, multiple RF sensors possibly with different firmware version is supported. Each threat type can be muted/unmuted separately.

10.1 threatTypeList

Pattern: Push

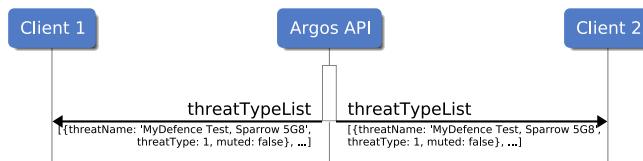


Figure 10.1: Example of threatTypeList message communication from ARGOS API to a connected client when a new device is attached to the network.

When a new MyDefence RF device is mounted the internally maintained list of supported threat types is updated. When the list is updated a «threatTypeList» message is pushed to all clients.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/ThreatTypeList.json

10.2 threatTypeGetList

Pattern: Request/Response

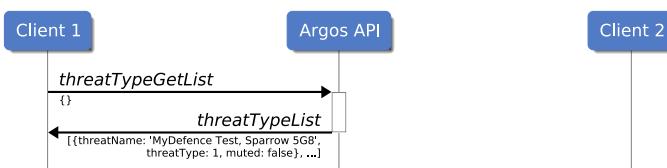


Figure 10.2: Example of threatTypeGetList message communication between the client and the ARGOS API.

A list of the currently supported threat types can be requested via a «threatTypeGetList» command. ARGOS sends a response with «threatTypeList» back to the requesting client.

Request: threatTypeGetList

A «threatTypeGetList» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/Empty.json

Response: threatTypeList

When a «threatTypeGetList» request command is successfully registered it will respond with a «threatTypeList» response.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/ThreatTypeList.json

10.3 threatTypeMute

Pattern: Request/Response

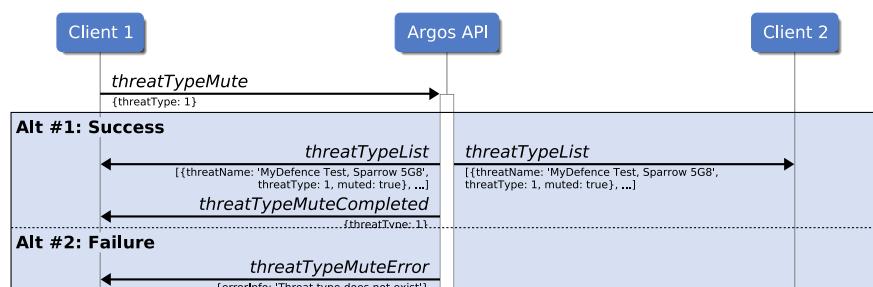


Figure 10.3: Example of threatTypeMute message communication between the client and the ARGOS API.

Mute of a threat type can be requested via a «threatTypeMute» command. ARGOS sends a response with «threatTypeMuteCompleted» back to the requesting client. The change is pushed to all clients with a «threatTypeList». The mute setting is reflected in subsequent «uthreat» push messages for the given threat type. In case an error occurs during the «threatTypeMute» a «threatTypeMuteError» message will be sent as response.

Request: threatTypeMute

A «threatTypeMute» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/ThreatType.json

Response: threatTypeMuteCompleted

When a «threatTypeMute» request command is successfully registered it will respond with a «threatTypeMuteCompleted» response and if an error occurs a «threatTypeMuteCompletedError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/ThreatType.json or
schema/messages/Error.json

10.4 threatTypeUnMute

Pattern: Request/Response

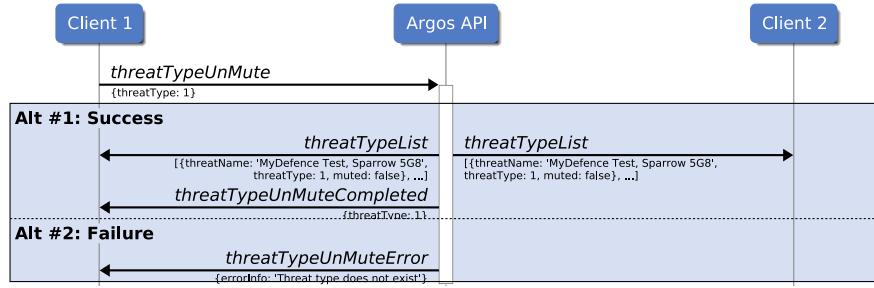


Figure 10.4: Example of threatTypeUnMute message communication between the client and the ARGOS API.

UnMute of a threat type can be requested via a «threatTypeUnMute» command. AR-GOS sends a response with «threatTypeUnMuteCompleted» back to the requesting client. The change is pushed to all clients with a «threatTypeList». The Unmute setting is reflected in subsequent «threatTypeList» push messages for the given threat type. In case an error occurs during the «threatTypeUnMute» a «threatTypeUnMuteError» message will be sent as response.

Request: threatTypeUnMute

A «threatTypeUnMute» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/ThreatType.json

Response: threatTypeUnMuteCompleted

When a «threatTypeUnMute» request command is successfully registered it will respond with a «threatTypeUnMuteCompleted» response and if an error occurs a «threatTypeUnMuteCompletedError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/ThreatType.json or

schema/messages/Error.json

11. Communicating with an ECM devices

When an ECM device is mounted in ARGOS and a connection is made between ARGOS and the device it is possible to use the ECM capability. Currently only ‘Manual’ mode is supported. The frequency band to use is configured via the miscellaneous data for the ECM device. See section 5.7 on page 28 for details regarding this. The overall flow of controlling an ECM device is shown in fig. 11.1.

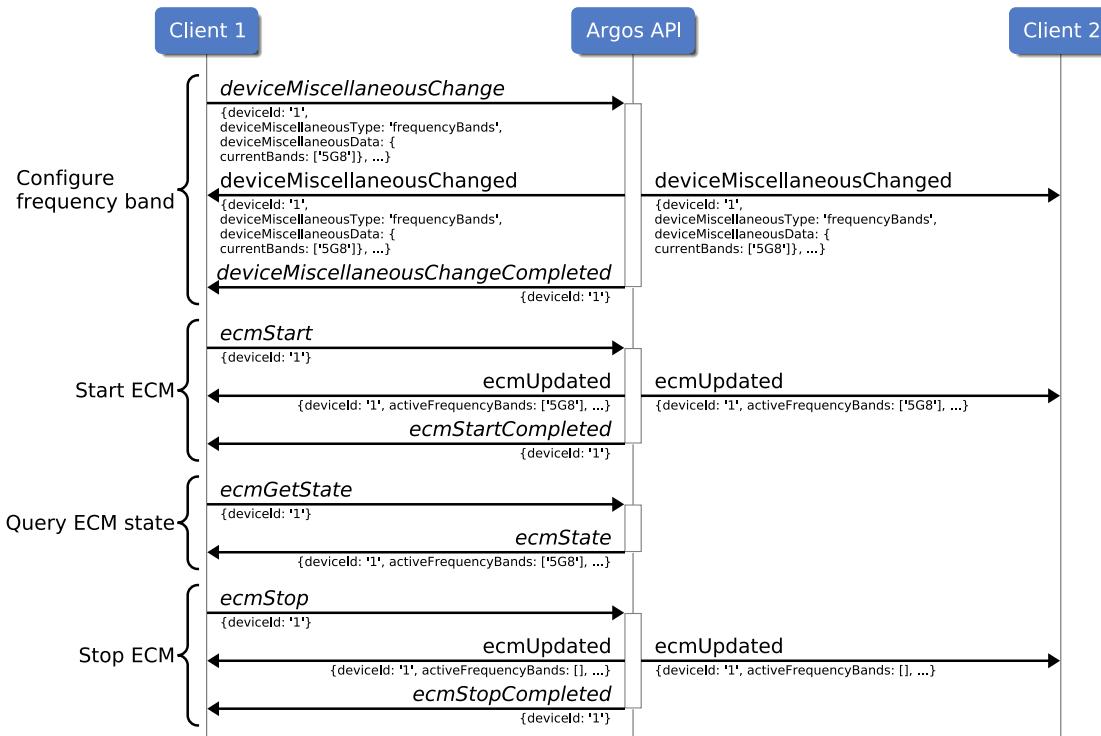


Figure 11.1: Example ECM control communication between the client and the ARGOS API.

11.1 ecmStart

Pattern: Request/Response

To start an ECM on a device the following message must be sent. The device will then start the ECM and run for up to 5 minutes or until it is stopped. Only available in manual mode.

Request: `ecmStart`

It is possible to send a request to start an effector jamming on a specific frequency band.

For schema and samples, see file in ARGOS-schema archive:
`schema/messages/DeviceId.json`

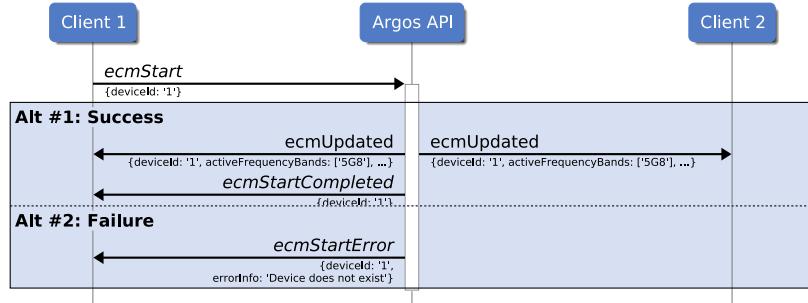


Figure 11.2: Example of `ecmStart` message communication between the client and the ARGOS API.

Response: `ecmStartCompleted`

When a «`ecmStart`» request command is successfully registered it will respond with a «`ecmStartCompleted`» response and if an error occurs a «`ecmStartError`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceId.json` or

`schema/messages/DeviceDeviceIdError.json`

11.2 `ecmStop`

Pattern: Request/Response

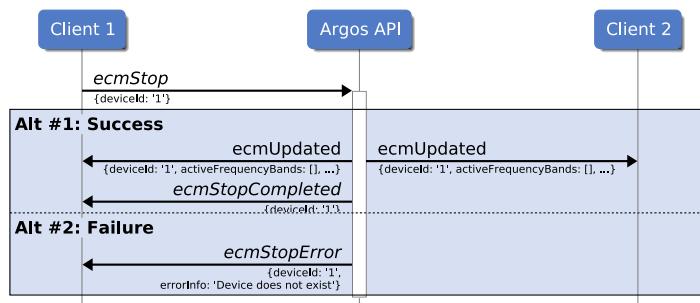


Figure 11.3: Example of `ecmStop` message communication between the client and the ARGOS API.

To stop an ECM on a device the following message must be sent. The device will then stop the ECM. Only available in manual mode.

Request: `ecmStop`

It is possible to send a request to stop an effector jamming.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceId.json`

Response: `ecmStopCompleted`

When a «`ecmStop`» request command is successfully registered it will respond with a «`ecmStopCompleted`» response and if an error occurs a «`ecmStopError`» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json or

schema/messages/DeviceDeviceIdError.json

11.3 ecmGetState

Pattern: Request/Response

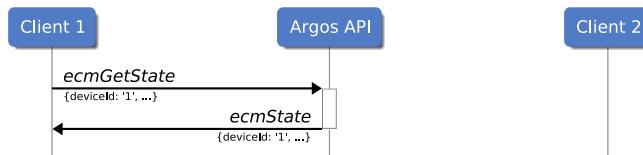


Figure 11.4: Example of ecmGetState message communication between the client and the ARGOS API.

To get the current state of an ECM device the following message must be sent. The device will then return the current state of the ECM device.

Request: ecmGetState

It is possible to send a request to get the current state of an effector.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/DeviceId.json

Response: ecmState

When a «ecmGetState» request command is successfully registered it will respond with a «ecmState» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/EcmState.json

11.4 ecmUpdated

Pattern: Push

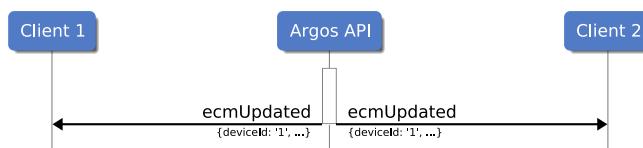


Figure 11.5: Example of ecmUpdated message communication from ARGOS API to a connected client.

When an ecm device is updated by e.g. an «ecmStart» an «ecmUpdated» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/EcmState.json

11.5 ecmGetHistory

Pattern: Request/Response

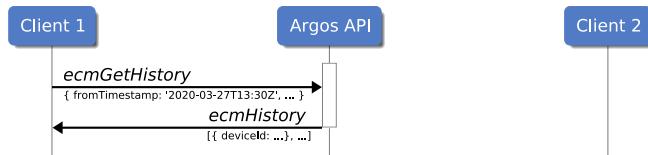


Figure 11.6: Example of ecmGetHistory message communication between the client and the ARGOS API.

Request: ecmGetHistory

Historical ECM events are logged in ARGOS and can be fetched using «ecmGetHistory».

For schema and samples, see file in ARGOS-schema archive:
schema/messages/TimeInterval.json

Response: ecmHistory

When a «ecmGetHistory» request command is successfully registered it will respond with a «ecmHistory» response.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/EcmHistory.json

11.6 Automatic Jamming

The ECM service can handle requests to a virtual device "auto", which will start/stop automatic ECM on all devices according to the configuration. The "auto" device can be used with the commands ecmStart, ecmStop, ecmUpdated, and ecmGetState.

11.6.1 ecmConfigure

The functionality of the "auto" device is configurable.

Request: ecmConfigure

Set or query the configuration (see table below).

For schema and samples, see file in ARGOS-schema archive:
schema/messages/EcmConfig.json

Response: ecmConfigureCompleted

When an «ecmConfigure» request command is successfully handled it will respond

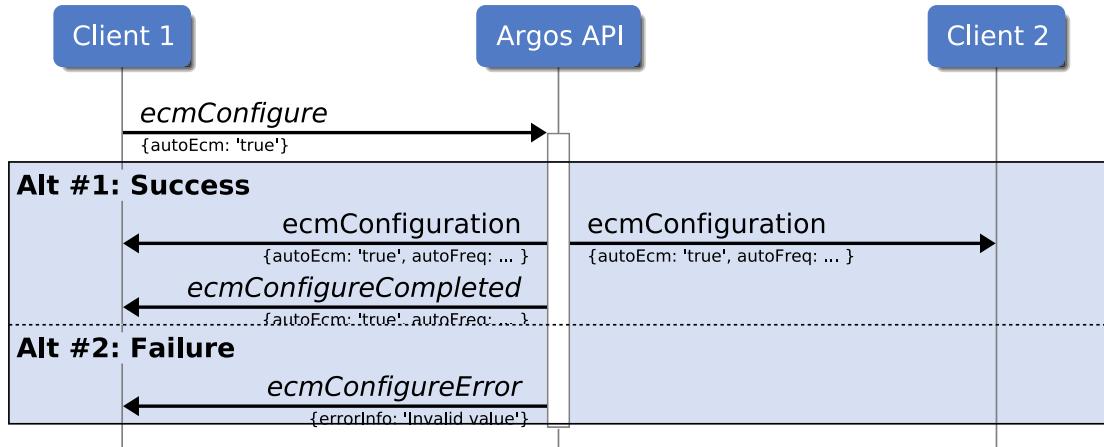


Figure 11.7: Example of `ecmConfig` message communication between the client and the ARGOS API.

with an «`ecmConfigureCompleted`» response containing all configuration parameters, or if an error occurs an «`ecmConfigureError`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/EcmConfig.json` or
`schema/messages/Error.json`

The «`ecmConfigure`» message must contain one or more of the following properties. The `auto*` properties are only used with the virtual device "auto".

Name	Type	Default	Description
autoStart	"off" "all" [zones]	"off"	Allow ARGOS to autonomously activate ECM. Activation can be triggered always or when the threat is identified to be in one of the listed alarm zone IDs.
autoFreq	"off" "noGnss" "allowGnss"	"off"	Let ARGOS continuously determine the best frequencies to jam. If set to "off", the configured frequency bands for all individual devices will be used. If no RF information is available (e.g. radar), 2G4 and 5G8 will be jammed. If set to "allowGnss" (and GNSS is supported by the ECM device) GNSS will always have first priority to be jammed. If set to "noGnss" GNSS jamming is never activated. Enabling GNSS jamming will for some ECM device reduces the number of other frequency bands, that can be jammed.
auto-Timeout	int	120	Used after ecmStart(deviceId="auto"): With autoStart=false jamming will stop after auto-Timeout seconds with no drone detection, and requires a new ecmStart to start again. With autoStart=true jamming will stop after auto-Timeout seconds with no drone detection. If a drone is later detected ECM will be started again.

The configuration will be stored and loaded in case of ARGOS restart.

«ecmConfiguration» always contains all configuration parameters

11.6.2 ecmConfiguration

Pattern: Push

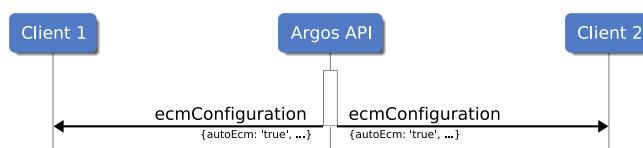


Figure 11.8: Example of ecmConfiguration message communication from ARGOS API to a connected client.

When the ECM configuration is updated by an «ecmConfigure» an «ecmConfiguration» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/EcmConfig.json

11.6.3 ecmGetConfiguration

Pattern: Request/Response

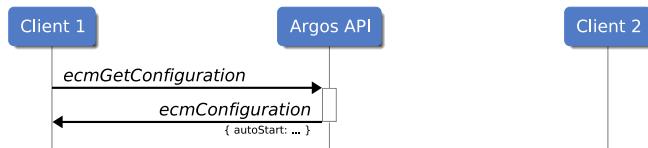


Figure 11.9: Example of ecmGetConfiguration message communication between the client and the ARGOS API.

To get the current ECM configuration the following message must be sent. The device will then return the current ECM configuration.

Request: ecmGetConfiguration

It is possible to send a request to get the current ECM configuration.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: ecmConfiguration

When an «ecmGetConfiguration» request command is successfully registered it will respond with an «ecmConfiguration» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/EcmConfig.json

11.6.4 Semi Automatic Operation

In a semi automatic use case, the operator is notified of an alert, and actively has to enable jamming. In the following example ARGOS selects frequencies because ecmConfig.autoFreq is set.

Current implementation always uses all ECM devices. With ecmConfig.autoFreq = "off", the operation is (currently) equivalent to sending ecmStart to all individual ECM devices. In the future it is possible that ARGOS will use a subset ECM devices when using the "auto" device.

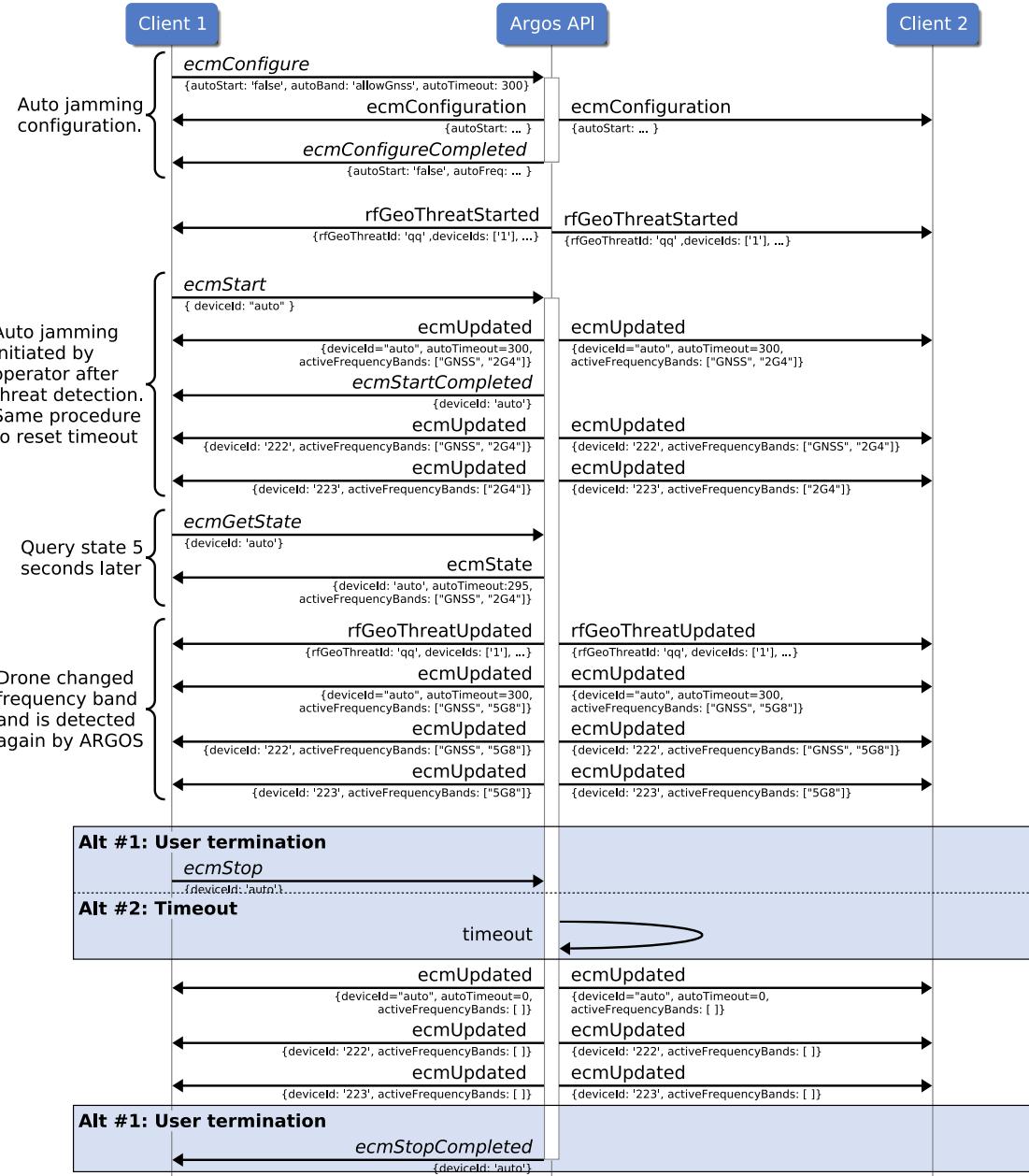


Figure 11.10: Example of message flow using the "auto" device to control jamming.

Timeout is configurable (`ecmConfig.autoTimeout`). In these examples 2 minutes is assumed. Jamming will continue for the specified time. The time may be extended by user interaction, or by the system detecting a drone.

Sending `ecmStart(deviceld="auto")` will only start jamming if drones are detected by the system. To force jamming send `ecmStart` to the individual ECM devices.

Example: No Drone Detection During Jamming

1. Drone detected.
2. Operator enables jamming.
3. Timeout is set to 2 minutes.

4. Due to jamming, the system cannot detect the drone.
5. After the timeout, the system stops the jamming, but the drone is still present.
6. System is now back to initial state.
7. Drone detected. Goto 2. (*Operator must manually re-enable jamming*).

Example: Drone Detection During Jamming

1. Drone detected.
2. Operator enables jamming.
3. Timeout is set to 2 minutes.
4. The system can detect the drone on a non-jammed frequency, or using radar.
While detection goto 3.
5. After the timeout, the system stops the jamming.
6. System is now back to initial state.

Example: Operator Can See the Drone

1. Drone detected.
2. Operator enables jamming.
3. Timeout is set to 2 minutes.
4. Due to jamming, the system cannot detect the drone.
While visual contact operator regularly clicks 'extend'. Goto 3.
5. The operator visually follows the Drone.
6. After the timeout, the system stops the jamming.
7. System is now back to initial state.

11.6.5 Fully Automatic Operation

ARGOS autonomously enables jamming when a threat is detected. ARGOS selects frequencies if ecmConfig.autoFreq is enabled.

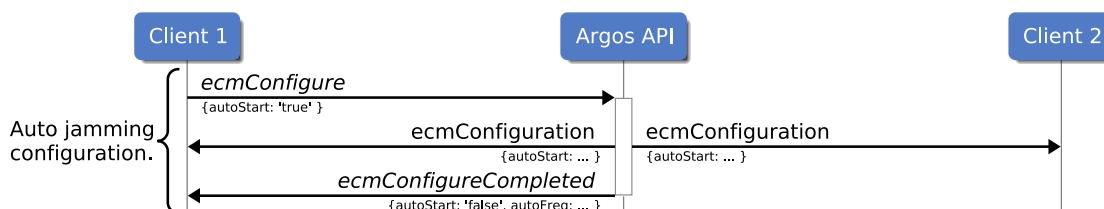


Figure 11.11: Configuration for fully automatic jamming.

The message flow is identical to the semi automatic flow in 11.10, with the following exceptions:

- The `ecmConfigure` settings.

- No ecmStart and ecmStartCompleted messages.

«ecmStop» is normally not needed when ecmConfig.autoStart is enabled. It may be used, but if the threat is still present jamming will be restarted. To completely stop jamming ecmConfig.autoStart must be disabled.

12. System-state

Several messages are used to inform the API client of the state of the system.

12.1 getSystemState

Pattern: Request/Response

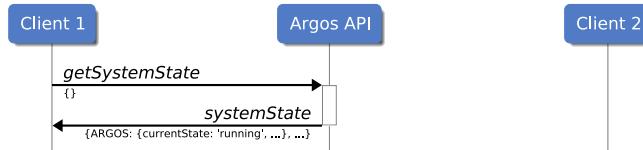


Figure 12.1: Example of getSystemState message communication between the client and the ARGOS API.

It is possible to fetch state of the backend system on the server by sending the event «getSystemState». ARGOS will respond with the «systemState» message, which is an overview of the system. Contained in the message are fields describing the state of each sub-component of ARGOS.

Request: getSystemState

It is possible to send a request to get the current state of the backend system on the server.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: systemState

When a «getSystemState» request command is successfully registered it will respond with a «systemState» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/SystemState.json

12.2 getTime

Pattern: Request/Response

It is possible to fetch the time of the server by sending the event «getTime». ARGOS will respond with the time formatted in ISO8601-format.

Request: getTime

It is possible to send a request to get the current server time.

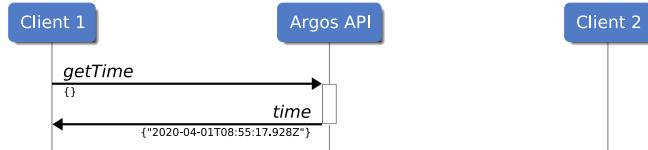


Figure 12.2: Example of `getTime` message communication between the client and the ARGOS API.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Empty.json`

Response: time

When a «`getTime`» request command is successfully registered it will respond with a «`time`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Time.json`

12.3 systemLog

Pattern: Push

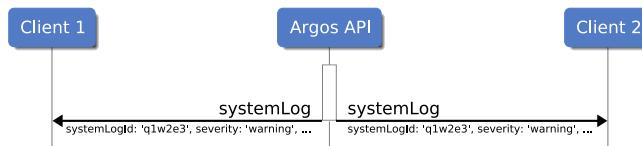


Figure 12.3: Example of `systemLog` message communication from ARGOS API to a connected client when a new alarm zone has been created.

System Log messages will be pushed to clients to notify of errors and warnings detected in the system.

For example it may be that one sensor is picking up RF interference or contact to equipment has been lost etc.

When a system event is created a «`systemLog`» is pushed where `createdTimeStamp` and `updatedTimeStamp` are identical and `resolvedTimeStamp` is not present. If the event is updated e.g. a new severity or description, then `createdTimeStamp` will keep the original value while `updatedTimeStamp` is updated.

When a system event is resolved the «`systemLog`» is pushed including the `resolvedTimeStamp`.

For schema and samples, see file in ARGOS - schema archive: `schema/messages/SystemLog.json`

12.4 systemLogGetList

Pattern: Request/Response

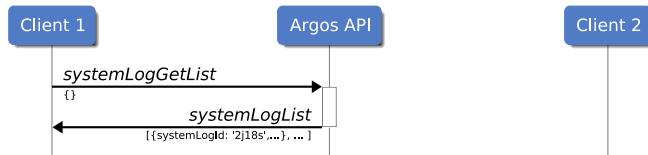


Figure 12.4: Example of systemLogGetList message communication between the client and the ARGOS API.

«systemLogList» contains an array of all active error- and warning-events in the system.

When using the «systemLogGetList» command a response with «systemLogList» will be sent back as response.

12.5 systemLogList

Pattern: Push

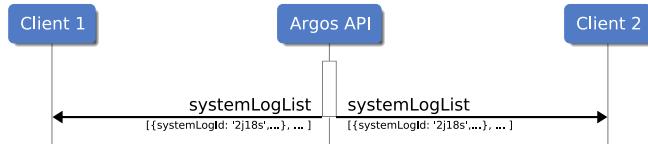


Figure 12.5: Example of systemLogList message communication from ARGOS API to a connected client when a new alarm zone has been created.

Upon service start «systemLogList» will be pushed to all connected clients.

During ARGOS startup or if an unforeseen error causes a restart of the internal service an «systemLogList» message is pushed to all connected clients. This list can also be requested via «systemLogGetList» described in section 12.4. For schema and samples, see file in ARGOS - schema archive: schema/messages/SystemLogList.json

13. PTZ

The PTZ service provides generic control of pan-tilt-zoom devices (including focus control), such as rotators for jammers or video cameras.

13.1 ptzGetDeviceList

Pattern: Request/Response

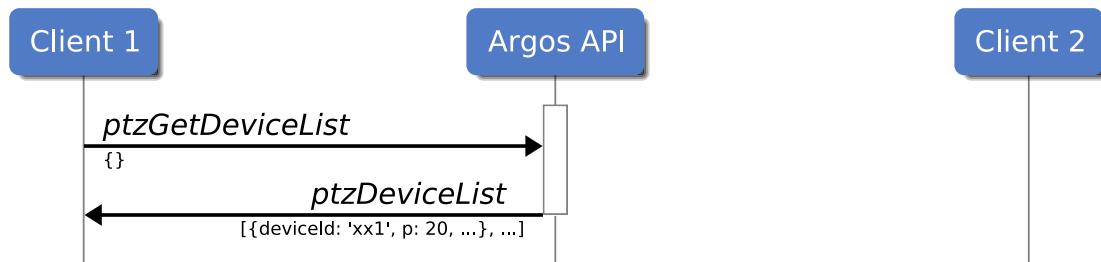


Figure 13.1: Example of the ptzGetDeviceList message communication between the client and the ARGOS API.

Request: ptzGetDeviceList

Request a list of all connected PTZ devices and their capabilities. Entries in the list has the same format as «ptzDeviceInfo».

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Empty.json`

Response: ptzDeviceList

When a «ptzGetDeviceList» request command is successfully registered a «ptzDeviceList» response will be returned.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzDeviceList.json`

Changes to the list will be signalled with «ptzDeviceInfo».

13.2 ptzDeviceInfo

Pattern: Push

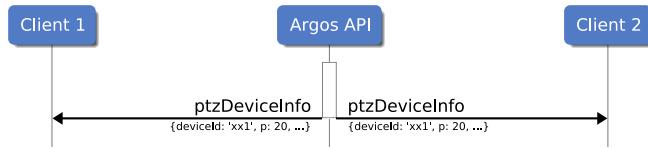


Figure 13.2: Example of ptzDeviceInfo message communication from ARGOS API to a connected client.

When a PTZ device comes online a «ptzDeviceInfo» message is pushed to all connected clients. From this message current setting of all controllable dimensions of the PTZ device can be seen, and thus also which dimensions can be controlled.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzDeviceInfo.json`

13.3 ptzDeviceUpdate

Pattern: Push

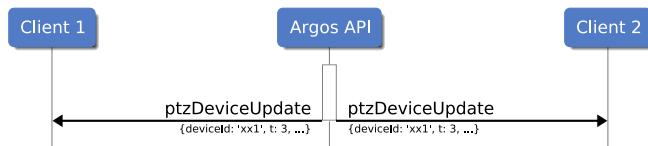


Figure 13.3: Example of ptzDeviceUpdate message communication from ARGOS API to a connected client.

When a PTZ device is changed, e.g. moved using a joystick, a «ptzDeviceUpdate» is used to inform of the changed values. The format is the same as «ptzDeviceInfo», but only changed values are included.

Also see the MSCs for «ptzMoveAbs» in fig. 13.4 on the following page and for «ptzSetVelocity» in fig. 13.5 on page 70.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzDeviceInfo.json`

13.4 ptzMoveAbs

Pattern: Request/Response

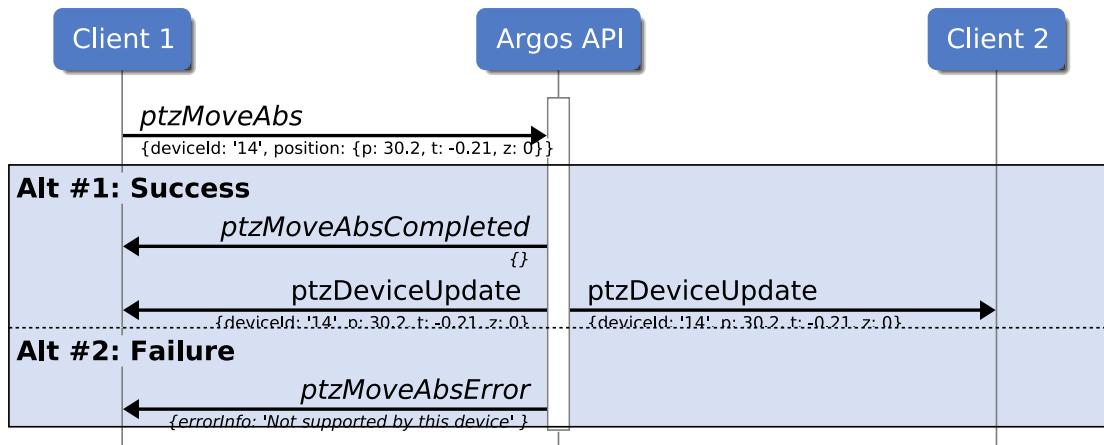


Figure 13.4: Example of the `ptzMoveAbs` message communication between the client and the ARGOS API

Request: `ptzMoveAbs`

Request ARGOS to move a PTZ device to a specific position as specified in «`ptzMoveAbs`» request.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzMoveAbs.json`

Response: `ptzMoveAbsCompleted`

When a «`ptzMoveAbs`» request command is successfully registered a «`ptzMoveAbsCompleted`» response will be returned. If the request was unsuccessful a «`ptzMoveAbsError`» will be returned.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceId.json` or

`schema/messages/Error.json`

13.5 ptzSetVelocity

Pattern: Request/Response

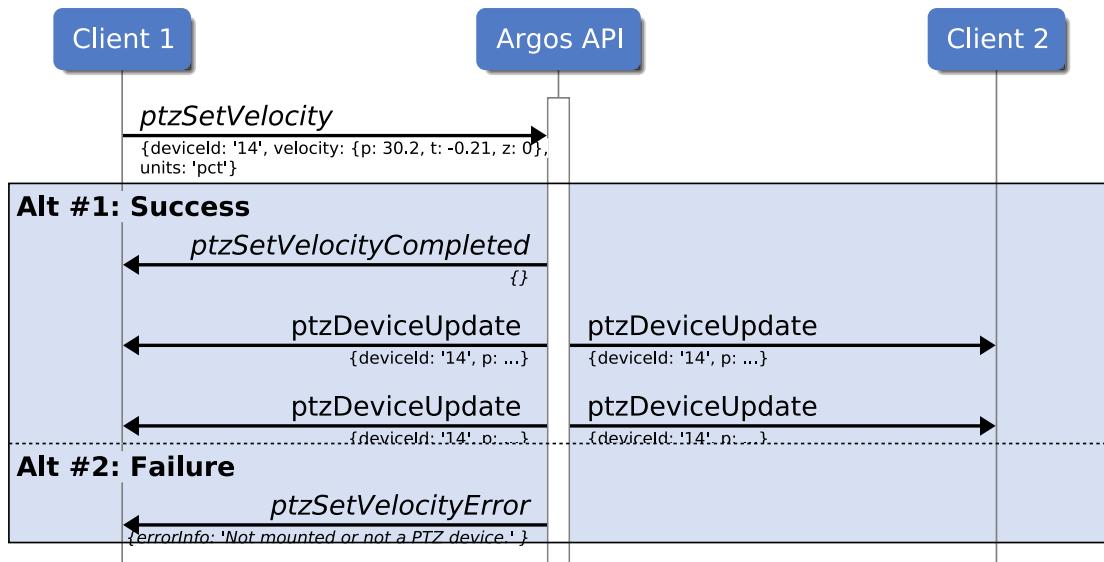


Figure 13.5: Example of the `ptzSetVelocity` message communication between the client and the ARGOS API.

Request: ptzSetVelocity

Request ARGOS to move a PTZ device at a velocity as specified in «`ptzSetVelocity`» request.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzSetVelocity.json`

'units' define the units of 'velocity' and can be either 'deg/s' or 'pct'. Default value of 'units' is 'pct'.

Note some devices may not support all 'units' options. If a 'units' is not supported «`ptzSetVelocityError`» will be returned.

Response: ptzSetVelocityCompleted

When a «`ptzSetVelocity`» request command is successfully registered a «`ptzSetVelocityCompleted`» response will be returned. If the request was unsuccessful a «`ptzSetVelocityError`» will be returned.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceId.json` or

`schema/messages/Error.json`

13.6 ptzDeviceSet

Pattern: Request/Response

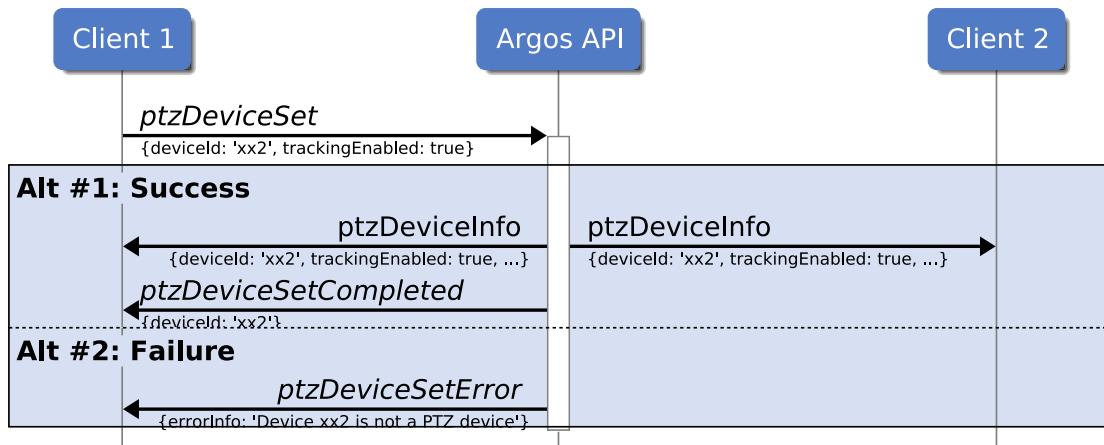


Figure 13.6: Example of the `ptzDeviceSet` message communication between the client and the ARGOS API.

Request: `ptzDeviceSet`

Set various features of PTZ devices.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzDeviceSet.json`

Response: `ptzDeviceSetCompleted`

When a «`ptzDeviceSet`» request command is successfully registered a «`ptzDeviceSetComplete`» response will be returned. If the request was unsuccessful a «`ptzDeviceSetError`» will be returned.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/DeviceId.json` or

`schema/messages/Error.json`

13.7 PTZ Following

PTZ The service can be configured to automatically use a PTZ device to follow a threat.

The overall flow of automatic following threats is shown in fig. 13.7.

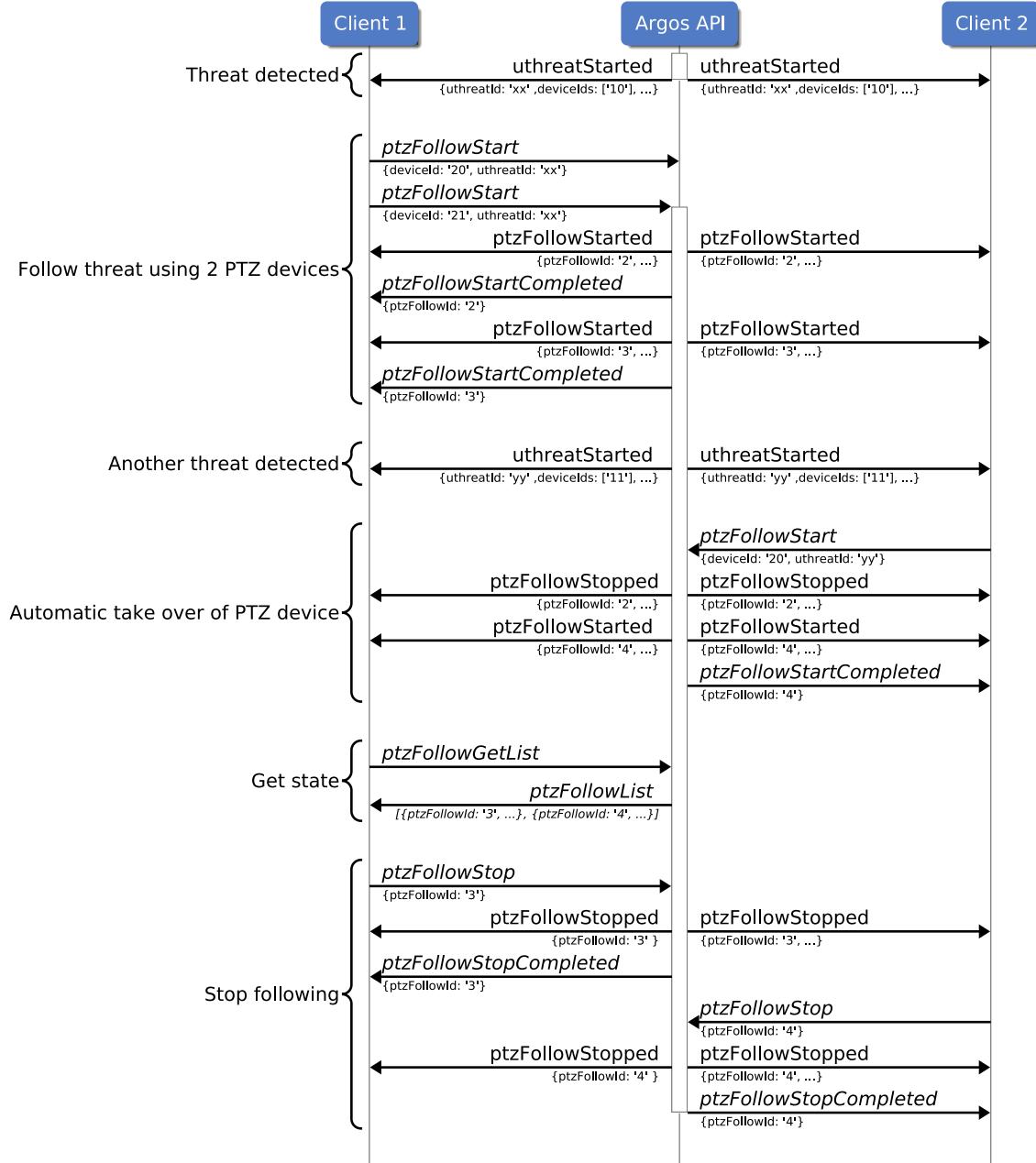


Figure 13.7: Example PTZ control communication between the client and the ARGOS API.

13.8 ptzFollowStart

Pattern: Request/Response

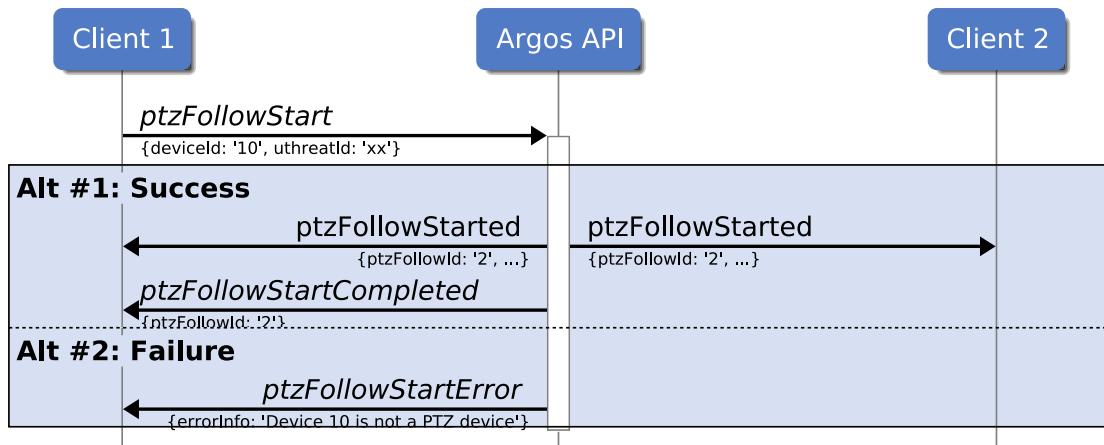


Figure 13.8: Example of the PTZ ptzFollowStart message communication between the client and the ARGOS API.

Request ARGOS to use a PTZ device for following a threat with the «ptzFollowStart» request. When using the «ptzFollowStart» command a response with «ptzFollowStartCompleted» will be sent back to show that the follow service has been activated. The operation causes a push message with a «ptzFollowStarted» to be sent with information about the follow configuration. In case an error occurs during the «ptzFollowStart» a «ptzFollowStartError» message will be sent as response.

Request: ptzFollowStart

The «ptzFollowStart» request will activate the PTZ follow service.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzFollowStart.json`

Note: One and only one of «ptzFollowStart»'s properties followUthreatId / followDeviceld of must be set.

When the «ptzFollowStart» request has been processed correctly a «ptzFollowStarted» message will be pushed with information about the new PTZ follow instance.

Response: ptzFollowStartCompleted

When a «ptzFollowStart» request command is successfully registered it will respond with a «ptzFollowStartCompleted» response and if an error occurs a «ptzFollowStartError» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/PtzFollowStartCompleted.json` or

`schema/messages/Error.json`

13.9 ptzFollowStarted

Pattern: Push

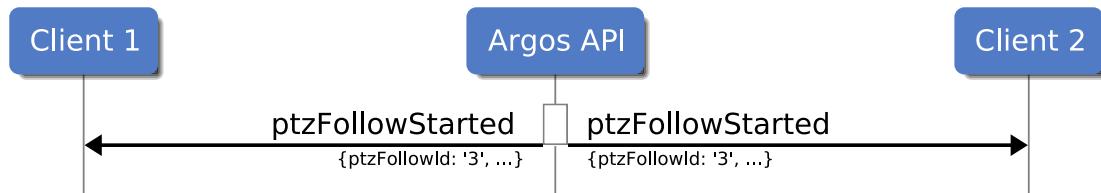


Figure 13.9: Example of the PTZ ptzFollowStarted message communication between the client and the ARGOS API.

When a new PTZ follow instance is created a «ptzFollowStarted» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/PtzFollow.json

13.10 ptzFollowStop

Pattern: Request/Response

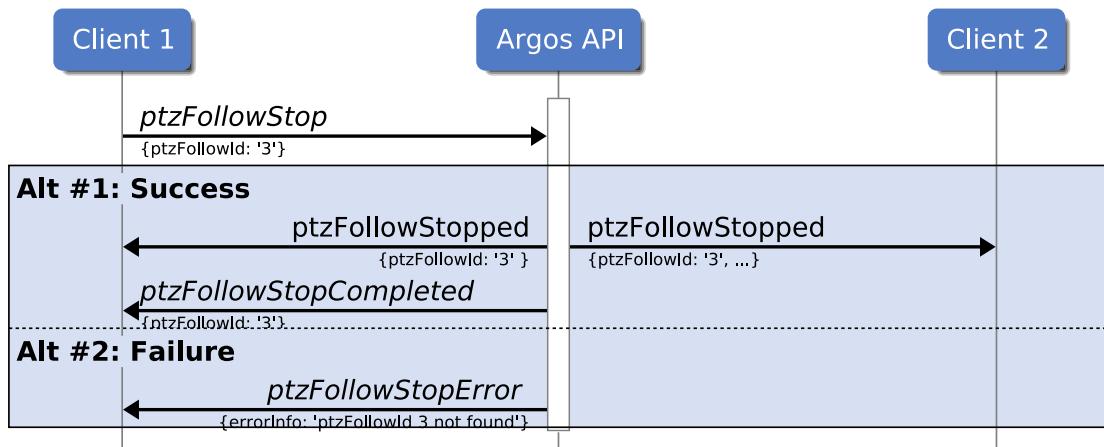


Figure 13.10: Example of the ptzFollowStop message communication between the client and the ARGOS API.

Request: ptzFollowStop

Request to end automatic following.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/PtzFollowId.json

Response: ptzFollowStopCompleted

When a «ptzFollowStop» request command is successfully handled it will respond with a «ptzFollowStopCompleted» response and if an error occurs a «ptzFollowStopError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/PtzFollowId.json or

schema/messages/Error.json

13.11 ptzFollowStopped

Pattern: Push

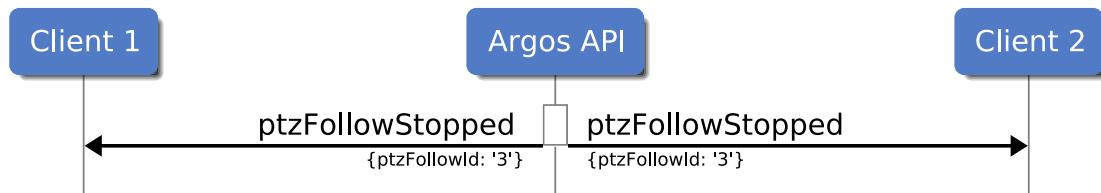


Figure 13.11: Example of the ptzFollowStop message communication between the client and the ARGOS API.

When a PTZ follow instance has been stopped «ptzFollowStopped» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/PtzFollow.json

13.12 ptzFollowGetList

Pattern: Request/Response

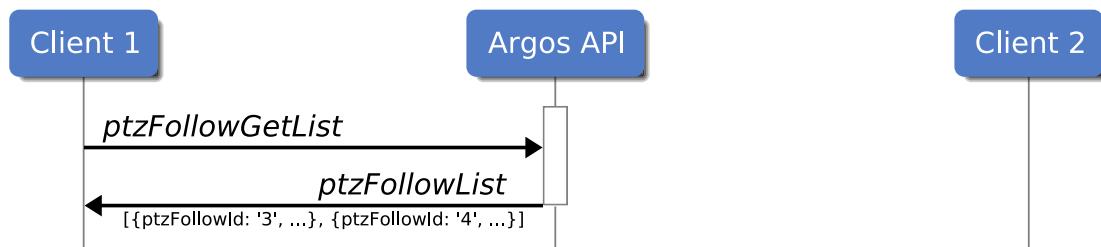


Figure 13.12: Example of the ptzFollowGetList message communication between the client and the ARGOS API.

Request: ptzFollowGetList

A list of all active PTZ follow instances can be fetched using «ptzFollowGetList».

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: ptzFollowList

The list of all active instances.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/PtzFollowList.json

13.13 ptzFollowList

Pattern: Push

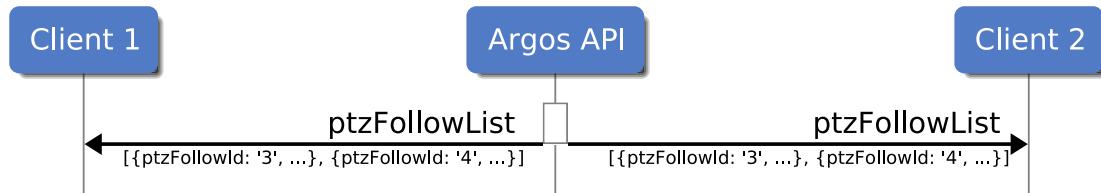


Figure 13.13: Example of the ptzFollowList message communication between the client and the ARGOS API.

During ARGOS startup or if an unforeseen error causes a restart of the internal PTZ service a «ptzFollowList» message is pushed to all connected clients. The list describes all the currently active PTZ follow instances. This list can also be requested via «ptzFollowGetList» described in section 13.12 on the previous page.

For schema and samples, see file in ARGOS-schema archive:

[schema/messages/PtzFollowList.json](#)

14. Firmware Update

The MyDefence devices connected to and controlled (mounted) by an ARGOS instance can be firmware updated (FWU). Firmware images for individual device types (RF sensors and RF effectors) can be uploaded to ARGOS. ARGOS stores these persistently continuously checks if devices in the connected state are eligible for FWU. I such is found the clients connected to ARGOS are notified. A client can then initiate the actual FWU process. The overall flow of managing FWU images is shown in fig. 14.1.

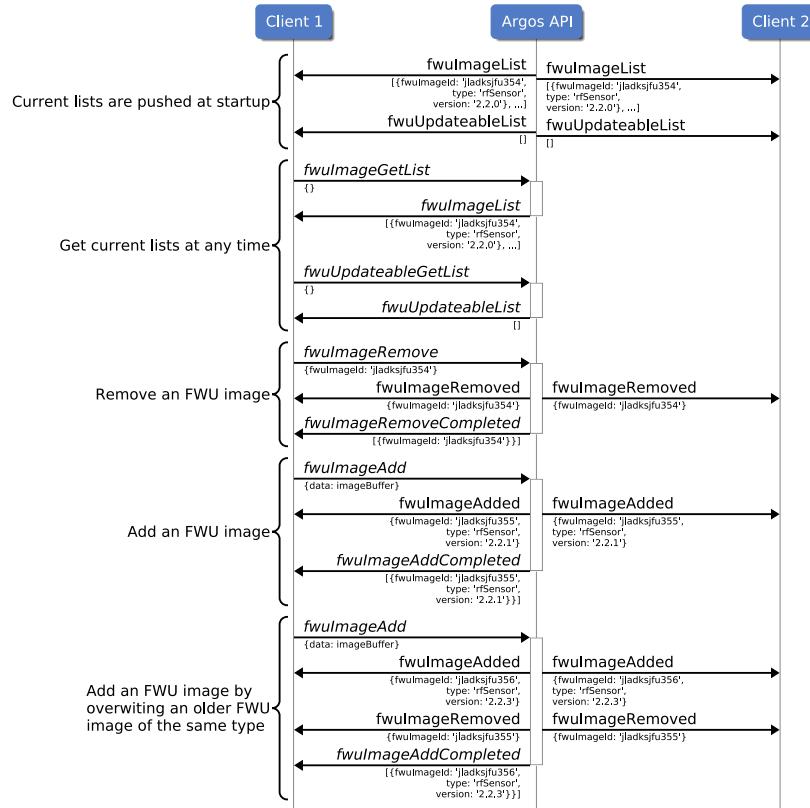


Figure 14.1: Example session showing how FWU images can be managed.

As previously stated ARGOS monitors FWU images and connected devices. When a device is in the list of updateable devices, the client can initiate the FWU process. The FWU process flow is shown in fig. 14.2 on the next page.

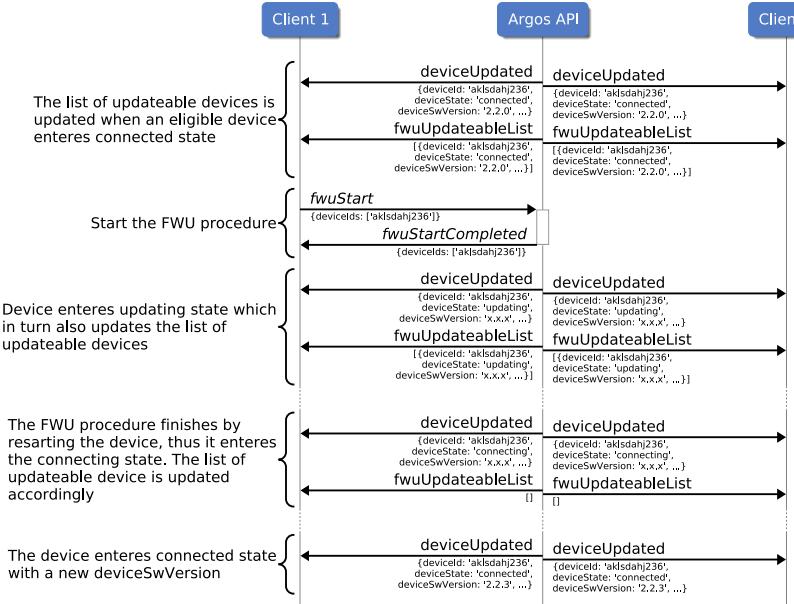


Figure 14.2: Example session showing how the FWU process is initiated.

14.1 fwulmageAdd

Pattern: Request/Response

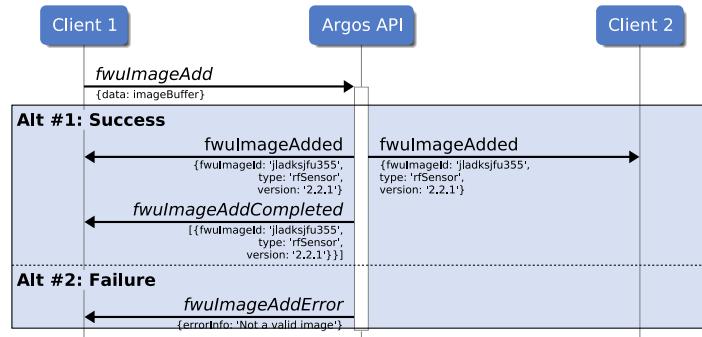


Figure 14.3: Example of fwulmageAdd message communication between the client and the ARGOS API.

When an FWU image is added an «fwulmageAdd» command must be sent and a response with «fwulmageAddCompleted» will be send back to show that the image has been added. The operation causes a push message with an «fwulmageAdded» to be sent with information about the image that has been added. In case an error occurs during the «fwulmageAdd» an «fwulmageAddError» message will be sent as response.

Request: fwulmageAdd

It is possible to send a request to upload a supported FWU image and have it added to the list of available FWU images.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/FwuImageAdd.json

When the «fwulImageAdd» request has been processed an «fwulImageAdded» message will be pushed with information about the added image.

Response: fwulImageAddCompleted

When an «fwulImageAdd» request command is successfully registered it will respond with an «fwulImageAddCompleted» response and if an error occurs an «fwulImageAddError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/FwuImage.json or
schema/messages/Error.json

14.2 fwulimageRemove

Pattern: Request/Response

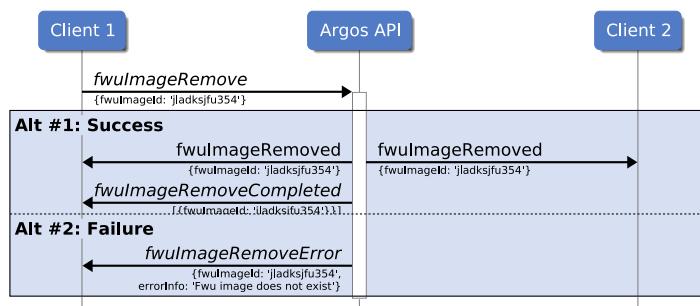


Figure 14.4: Example of fwulimageRemove message communication between the client and the ARGOS API.

When an FWU image needs to be removed an «fwulImageRemoved» command must be sent and a response with «fwulImageRemoveCompleted» will be send back to show that the image has been removed. The operation causes a push message with an «fwulImageRemoved» to be sent with information about the image that has been removed. In case an error occurs during the «fwulImageRemove» an «fwulImageRemoveError» message will be sent as response.

Request: fwulimageRemove

It is possible to send a request to remove a previous added device. When an «fwulImageRemove» request is processed all data related to the FWU image is deleted and can not be recovered afterwards.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/FwuImageId.json

When the «fwulImageRemove» request has been processed an «fwulImageRemoved» message will be pushed with information about the image.

Response: fwulImageRemoveCompleted

When an «fwulImageRemove» request command is successfully registered it will re-

spond with an «fwulImageRemoveCompleted» response and if an error occurs an «fwulImageRemoveError» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/FwuImageId.json or

schema/messages/Error.json

14.3 fwulImageGetList

Pattern: Request/Response

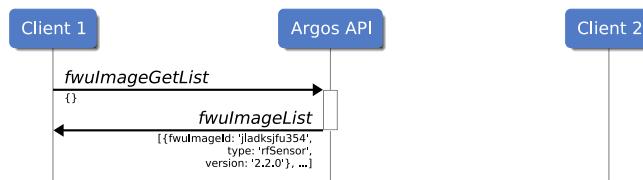


Figure 14.5: Example of fwulImageGetList message communication between the client and the ARGOS API.

A list of the currently stored FWU images can be requested via an «fwulImageGetList» command. ARGOS sends a response with «fwulImageList» back to the requesting client.

Request: fwulImageGetList

An «fwulImageGetList» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: fwulImageList

When an «fwulImageGetList» request command is successfully registered it will respond with an «fwulImageList» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/FwuImageList.json

14.4 fwuUpdateableGetList

Pattern: Request/Response

A list of the currently updateable devices can be requested via an «fwuUpdateableGetList» command. ARGOS sends a response with «fwuUpdateableList» back to the requesting client. The list describes all the currently updateable devices. A device is eligible for update if a stored FWU image supports the device type and the image version is greater than the version running in the device.

Request: fwuUpdateableGetList

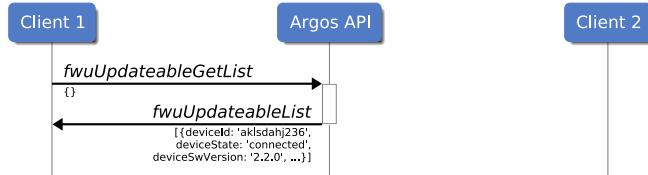


Figure 14.6: Example of `fwuUpdateableGetList` message communication between the client and the ARGOS API.

An «`fwuUpdateableGetList`» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Empty.json`

Response: `fwuUpdateableList`

When an «`fwuUpdateableGetList`» request command is successfully registered it will respond with an «`fwuUpdateableList`» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/FwuUpdateableList.json`

14.5 fwulImageAdded

Pattern: Push

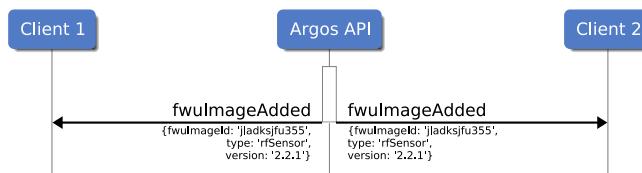


Figure 14.7: Example of `fwulImageAdded` message communication from ARGOS API to a connected client when a new FWU image has been added.

When a new FWU image is added an «`fwulImageAdded`» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/FwuImage.json`

14.6 fwulImageRemoved

Pattern: Push

When an FWU image is removed by e.g. an «`fwulImageRemove`» an «`fwulImageRemoved`» message is pushed to all connected clients.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/FwuImageId.json`

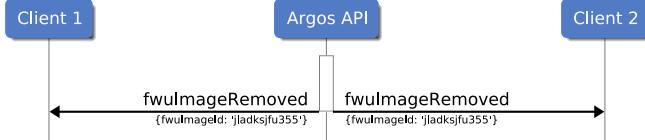


Figure 14.8: Example of fwulImageRemoved message communication from ARGOS API to a connected client.

14.7 fwulImageList

Pattern: Push

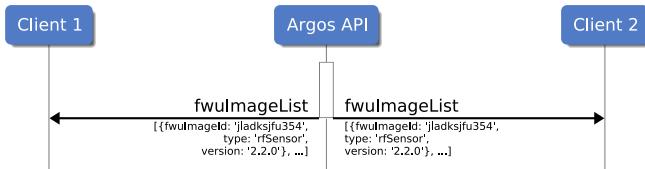


Figure 14.9: Example of fwulImageList message communication from ARGOS API to a connected client.

During ARGOS startup or if an unforeseen error causes a restart of the internal FWU service an «fwulImageList» message is pushed to all connected clients. The list describes all the currently stored FWU images. This list can also be requested via «fwulImageGetList» described in section 14.3 on page 80.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/FwuImageList.json`

14.8 fwuUpdateableList

Pattern: Push

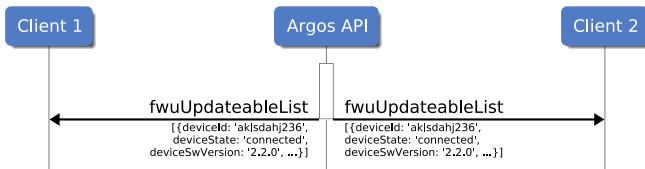


Figure 14.10: Example of fwuUpdateableList message communication from ARGOS API to a connected client.

During ARGOS startup or if an unforeseen error causes a restart of the internal FWU service an «fwuUpdateableList» message is pushed to all connected clients. The list describes all the currently updateable devices. A device is eligible for update if a stored FWU image supports the device type and the image version is greater than the version running in the device. This list can also be requested via «fwuUpdateableGetList» described in section 14.4 on page 80.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/FwuImageList.json

14.9 fwuStart

Pattern: Request/Response

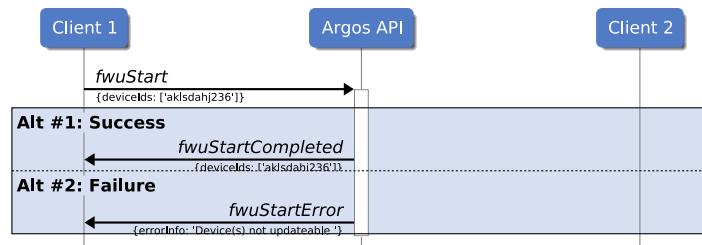


Figure 14.11: Example of fwuStart message communication between the client and the ARGOS API.

The FWU process can be started via an «fwuStart» command. ARGOS sends a response with «fwuStartCompleted» back to the requesting client to show that the process has been started. In case an error occurs during the «fwuStart» an «fwuStartError» message will be sent as response. During the FWU process the state of the updating devices will change. «deviceUpdated» messages will be pushed to all connected clients. The device states will cycle through "updating", "connecting" to "connected".

Request: fwuStart

It is possible to send a request to start the FWU process.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/DeviceIds.json

When the «fwuStart» request has been processed an «fwuStarted» message will sent back to the requesting client.

Response: fwuStartCompleted

When an «fwuStart» request command is successfully registered it will respond with an «fwuStartCompleted» response and if an error occurs an «fwuStartError» response.

For schema and samples, see file in ARGOS-schema archive:
schema/messages/DeviceIds.json or
schema/messages/Error.json

15. rfGeoThreatSimulation

15.1 rfGeoThreatSimulationStart

Pattern: Request/Response

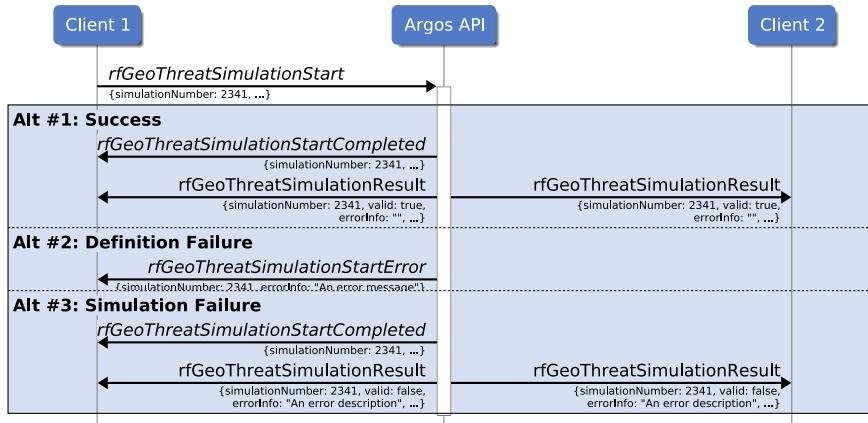


Figure 15.1: Example of rfGeoThreatSimulation message communication between the client and the ARGOS API.

A simulation of the coverage for a given setup can be requested via a «rfGeoThreatSimulationStart» command. ARGOS sends a response with «rfGeoThreatSimulationStartCompleted» back to the requesting client. Once the calculations for the simulation has completed a «rfGeoThreatSimulationResult» message is pushed to all clients. In case an error occurs during the «rfGeoThreatSimulationStart» a «rfGeoThreatSimulationStartError» message will be sent as response. In case an error occurs during the calculation for a simulation a «rfGeoThreatSimulationResult» message with the property "valid" set to false is pushed to all clients.

Request: rfGeoThreatSimulationStart

A «rfGeoThreatSimulationStart» request can be sent at any time.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/RfGeoThreatSimulationStart.json`

Response: rfGeoThreatSimulationStartCompleted

When a «rfGeoThreatSimulationStart» request command is successfully registered it will respond with a «rfGeoThreatSimulationStartCompleted» response and if an error occurs a «rfGeoThreatSetMuteCompletedError» response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/RfGeoThreatSimulationStartCompleted.json` or

`schema/messages/RfGeoThreatSimulationStartError.json`

15.2 rfGeoThreatSimulationResult

Pattern: Push

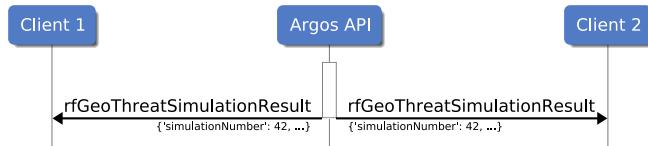


Figure 15.2: Example of rfGeoThreatSimulationResult message communication from ARGOS API to a connected client.

When a rfGeoThreatSimulation is done a «rfGeoThreatSimulationResult» message is sent.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/RfGeoThreatSimulationResult.json`

16. Mission Center

The mission center can be used by a user interface to know where to position a mission. In addition it is used internally in ARGOS, e.g. when evaluating threats and in auto jamming, to determine distance to threat. Mission center must therefore be set by the user of the API.

16.1 missionCenterSet

Pattern: Request/Response

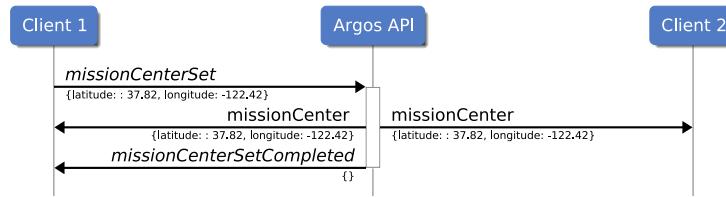


Figure 16.1: Example of `missionCenterSet` message communication between the client and the ARGOS API.

Request: missionCenterSet

Set the mission center. There are no range checks. All connected clients will be notified with a «`missionCenter`» push notification.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/missionCenter.json`

Response: missionCenterSetCompleted

Sent in response to «`missionCenterSet`».

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Empty.json`

16.2 missionCenterGet

Pattern: Request/Response

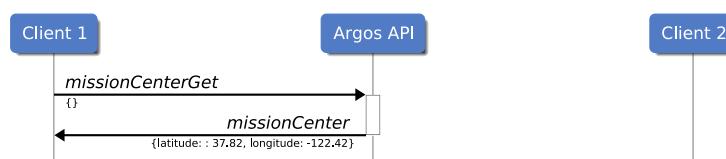


Figure 16.2: Example of `missionCenterGet` message communication between the client and the ARGOS API.

Request: missionCenterGet

Get the mission center.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: missionCenter

Sent in response to «missionCenterGet».

For schema and samples, see file in ARGOS-schema archive:

schema/messages/missionCenter.json

17. Video Management System

The ARGOS VMS (Video Management System) can be used to receive video from cameras. Some video streams will be relayed through ARGOS to enable multiple clients per camera. The video protocol used by ARGOS is WebRTC because it has very low latency. Other video streams are provided directly from the camera, and their protocol will differ from WebRTC.

WebRTC streams are started using the Session Description Protocol (SDP) (see section 17.3 on the following page), whereas other streams are started using the provided URI (see section 17.1).

Video devices may be auto discovered (if supported), or added using the normal device handling. When the device is mounted, the available streams are auto discovered. One camera device may provide multiple streams, e.g. a daylight and a thermal stream.

17.1 vmsStreamGetList

Pattern: Request/Response

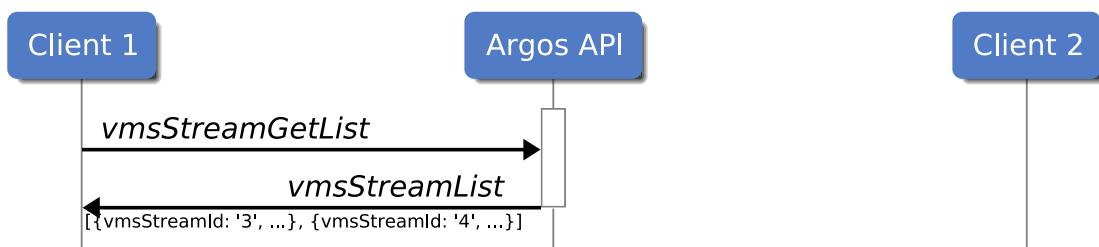


Figure 17.1: Example of the `vmsStreamGetList` message communication between the client and the ARGOS API.

Request: `vmsStreamGetList`

It is possible to send a request to get all video streams in ARGOS.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/Empty.json`

Response: `vmsStreamList`

When an «`vmsStreamGetList`» request command is successfully registered it will respond with an `vmsStreamList` response.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/VmsStreamList.json`

17.2 vmsStreamList

Pattern: Push

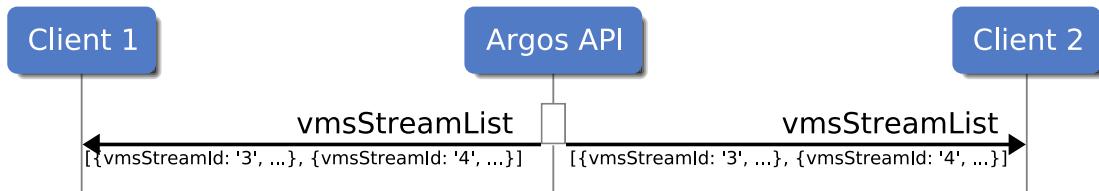


Figure 17.2: Example of the vmsStreamList message communication between the client and the ARGOS API.

During ARGOS startup and when a stream is added or removed, an «vmsStreamList» message is pushed to all connected clients, with the list of all known streams.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/VmsStreamList.json

17.3 vmsSdpInit

Pattern: Request/Response

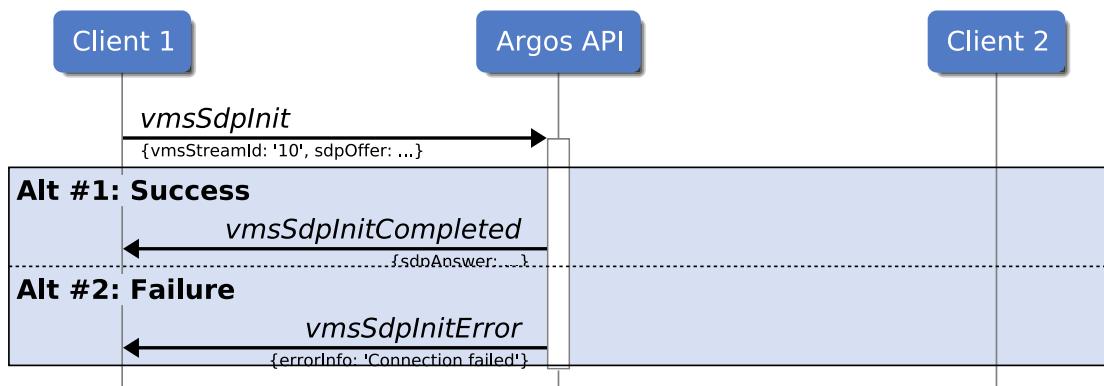


Figure 17.3: Example of the vmsSdpInit message communication between the client and the ARGOS API.

Request: vmsSdpInit

WebRTC uses the session description protocol (SDP) to establish a video link. The protocol is described on webrtc.org.

The client must create an SDP offer using the `RTCPeerConnection` class, and send the offer to ARGOS using «vmsSdpInit». ARGOS will respond with the SDP reply in «vmsSdpInitCompleted» message. You may initialize the `RTCPeerConnection` with an empty config, because no ICE servers are needed on an internal network.

The following javascript code can be used in a client to get an SDP offer.

```
const peerConnection = new RTCPeerConnection()
```

```

peerConnection.addTransceiver('video', {
  'direction': 'recvonly'
})
const offer = await peerConnection.createOffer()
await peerConnection.setLocalDescription(offer)
const sdpOffer = peerConnection.localDescription.sdp

```

For schema and samples, see file in ARGOS-schema archive:

schema/messages/VmsSdpInit.json

Response: vmsSdpInitCompleted

When an «vmsSdpInit» request command is successfully registered it will respond with an «vmsSdpInitCompleted» response and if an error occurs an vmsSdpInitError» response.

The «vmsSdpInitCompleted» response contains the SDP reply to be passed into WebRTC.

The following javascript code can be used in a client to get when receiving the SDP reply.

```

peerConnection.setRemoteDescription(
  new RTCSessionDescription({
    type: 'answer',
    sdp: sdpReply
  })
)

```

For schema and samples, see file in ARGOS-schema archive:

schema/messages/VmsSdpInitCompleted.json or

schema/messages/Error.json

18. Features

This part of the API is for informing the API client about the available features.

18.1 featureGetList

Pattern: Request/Response

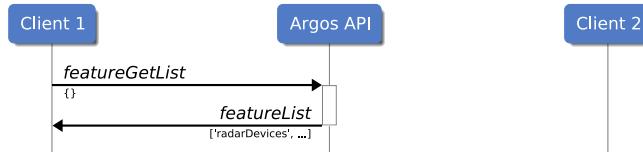


Figure 18.1: Example of featureGetList message communication between the client and the ARGOS API.

It is possible to fetch a list of the available backend features by sending the event «featureGetList». ARGOS will respond with the «featureList» message, which is a list of the available features.

Request: featureGetList

It is possible to send a request to get the list of features of the ARGOS backend.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/Empty.json

Response: featureList

When a «featureGetList» request command is successfully registered it will respond with a «featureList» response.

For schema and samples, see file in ARGOS-schema archive:

schema/messages/FeatureList.json

18.2 featureList

Pattern: Push

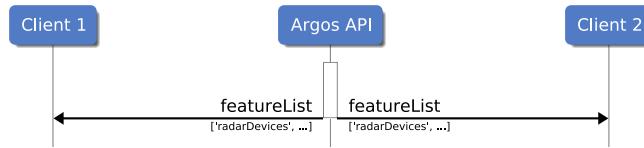


Figure 18.2: Example of featureList message communication from ARGOS API to a connected client.

During ARGOS startup or if an unforeseen error causes a restart of the internal feature management service a «featureList» message is pushed to all connected clients. The list describes all the available features of the ARGOS backend. This list can also be requested via «featureGetList» described in section 18.1 on the preceding page.

For schema and samples, see file in ARGOS-schema archive:

`schema/messages/FeatureList.json`

19. Sapient

Setup of connections to a Sapient network is possible through this API. Individual devices in ARGOS can be assigned an endpoint in one or more Sapient networks. Connections are made from ARGOS and not from the actual device itself. Once a connection is established, relevant Uthreat information from the ARGOS stack is translated and sent via the Sapient protocol to the Sapient endpoint.

19.1 sapientConfigure

Pattern: Request/Response

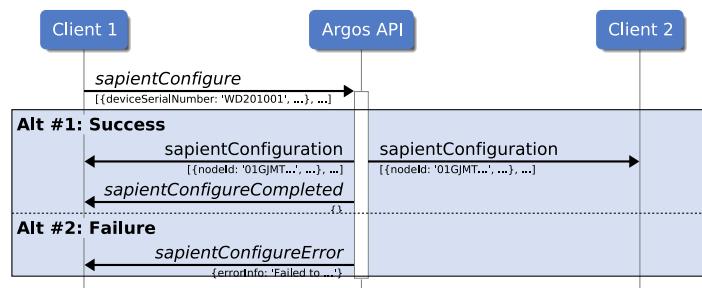


Figure 19.1: Example of sapientConfigure message communication between the client and the ARGOS API.

Use «sapientConfigure» to configure Sapient connections.

When using the «sapientConfigure» command, a response «sapientConfigureCompleted» message will be sent back as confirm. The operation causes a push «sapientConfiguration» message to be sent with information about the update. In case an error occurs during «sapientConfigure» processing, the «sapientConfigureError» message will be sent as response.

Request: sapientConfigure

The «sapientConfigure» request configures all Sapient connections.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/SapientConfigure.json

When the «sapientConfigure» request has processed correctly the «sapientConfigured» message will be pushed with information about the update.

Response: sapientConfigureCompleted

When «sapientConfigure» request command is successfully registered it will respond with the «sapientConfigureCompleted» response, or if an error occurs the «sapient-

ConfigureError» response.

For schema and samples, see file in ARGOS - schema archive:
schema/messages/Empty.json or
schema/messages/Error.json

19.2 sapientGetConfiguration

Pattern: Request/Response

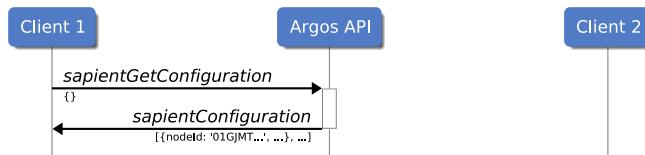


Figure 19.2: Example of sapientGetConfiguration message communication between the client and the ARGOS API.

Use «sapientGetConfiguration» to get configuration of all Sapient connections.

When using the «sapientGetConfiguration» command a response with «sapientConfiguration» will be sent back as response.

Request: sapientGetConfiguration

«sapientGetConfiguration» may be sent at any time.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/Empty.json

Response: sapientConfiguration

When «sapientGetConfiguration» request command is successfully registered it will respond with the «sapientConfiguration» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/SapientConfiguration.json

19.3 sapientConfiguration

Pattern: Push

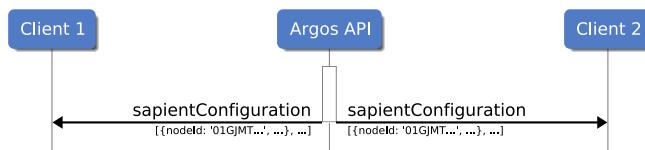


Figure 19.3: Example of sapientConfiguration message communication from ARGOS API to a connected client when a new alarm zone has been created.

When a «sapientConfigure» has been processed, a «sapientConfiguration» message

is pushed to all connected clients. For schema and samples, see file in ARGOS - schema archive: schema/messages/SapientConfiguration.json

19.4 sapientNodeGetList

Pattern: Request/Response

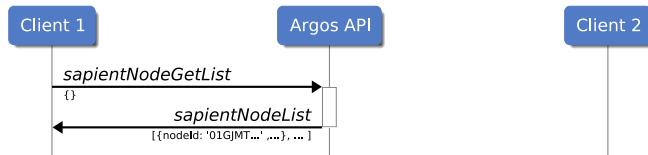


Figure 19.4: Example of sapientNodeGetList message communication between the client and the ARGOS API.

Use «sapientNodeGetList» to get a list of all Sapient nodes.

When using the «sapientNodeGetList» command a response with «sapientNodeList» will be sent back as response.

Request: sapientNodeGetList

«sapientNodeGetList» may be sent at any time.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/Empty.json

Response: sapientNodeList

When «sapientNodeGetList» request command is successfully registered it will respond with the «sapientNodeList» response.

For schema and samples, see file in ARGOS - schema archive:

schema/messages/SapientNodeList.json

19.5 sapientNodeList

Pattern: Push

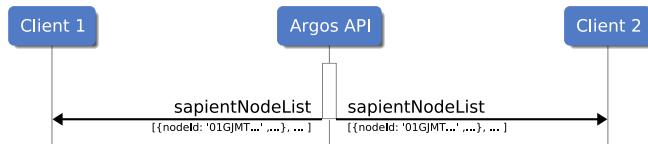


Figure 19.5: Example of sapientNodeList message communication from ARGOS API to a connected client when a new alarm zone has been created.

During ARGOS startup or if an unforeseen error causes a restart of the internal Sapient service a «sapientNodeList» message is pushed to all connected clients. This list can also be requested via «sapientNodeGetList» described in section 19.4.

For schema and samples, see file in ARGOS - schema archive: schema/messages/SapientNodeList.json

19.6 sapientNodeUpdated

Pattern: Push

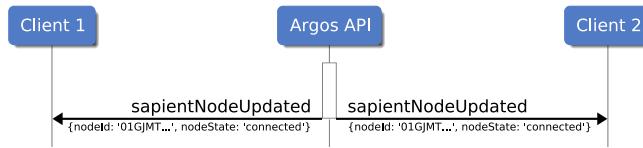


Figure 19.6: Example of sapientNodeUpdated message communication from ARGOS API to a connected client when a new alarm zone has been created.

When information regarding a Sapient node changes a «sapientNodeUpdated» is pushed to all connected clients.

For schema and samples, see file in ARGOS - schema archive: schema/messages/SapientNode.json



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