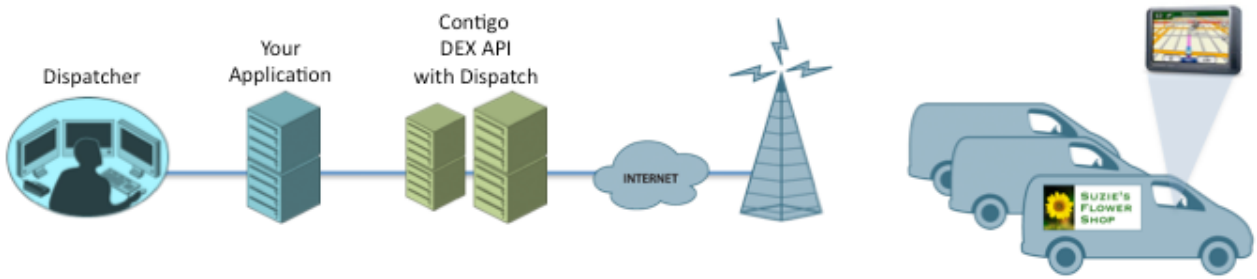
Introduction

Fleet Managers need to be able to dispatch drivers and their vehicles to a variety of locations: jobs, deliveries, service locations, etc. Contigo CONNECT provides a way to track vehicle locations, and communicate with drivers wirelessly via a Garmin® Personal Navigation Device (PND) connected to a Contigo 6100 or 6150 GPS tracking beacon installed in a vehicle.

The beacon provides the function of a wireless modem and GPS location device, while the Garmin PND provides a graphical display unit and messaging terminal for the driver – in addition to it's function as a navigation device.

Fleet Managers typically use dispatching applications that are tailored specifically to their business. In such cases, it is convenient to allow Fleet Managers to continue to use the application with which they are most familiar. In this case, Contigo's Data Exchange (DEX) Application Programming Interface (API) with Dispatch is designed to provide developers with a method to exchange information asynchronously between their software and the in-vehicle equipment.

This document provides a design overview of the dispatch functions and methods available to developers.



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Glossary of Terms

API	Application Programming Interface
Beacon	An in-vehicle device featuring a GPS receiver, GPRS wireless data modem, external GPS and GPRS antenna and electrical wiring harness for power, ground, inputs and outputs.
CannedMessage	Messages that are provisioned to the PND remotely and stored for future use by the driver when composing a message on the PND. Up to 120 Canned Messages of 49 characters in length are supported.
CannedResponse	Messages that are sent as "multiple choice responses" with an outbound message to the driver. Allows driver to pick from list of desired responses, reducing keystrokes. Up to 50 CannedResponse messages of 49 characters are permitted for a single outbound message to the PND
DEX	Data Exchange
Driver ID	A string of alphanumeric characters entered into the PND interface to identify a specific driver. May also be remotely set programmatically
Driver Status	An alphanumeric string that may be selected by a driver on the PND to indicate status (e.g. "Off Duty", "At Job", "On Duty", "Driving" etc. List of Driver Status values may be defined programmatically and pushed to the PND
ESN	Electronic Serial Number
GPRS	General Packet Radio Service – A data communications system supported on GSM networks
GPS	Global Positioning System
GSM	Global System for Mobile – a wireless voice and data network
Job	A message sent to a PND consisting of a destination, a message body, and a priority

PND	Personal Navigation Device (e.g. Garmin Satellite Navigation device)
REST	Representational State Transfer

Overview

The Contigo DEX API provides a method to securely exchange information from the Contigo CONNECT system for a given fleet of vehicles via an asynchronous REST interface. The DEX interface allows developers to send and retrieve data in an XML-based format. The basic DEX API is documented [here].

The Dispatch enhancements to the DEX API, as proposed in this document, provide a method to submit well-formed data to a vehicle or driver asynchronously via a REST interface using a new XML format, and receive acknowledgements or data in response also in XML format. This data may consist of jobs (destinations), messages (i.e. mail), or command messages sent to a PND.

The API is designed to function asynchronously as it must handle situations in which the beacon goes out of wireless coverage (such as when a vehicle is parked in an underground garage), and the PND is disconnected (such as when the driver removes the PND from the dashboard and stores out of sight for security reasons).

The API also provides the developer with a method to register for notifications of certain supported messages that may be received from the PND. When a supported message is received from the PND on the Contigo CONNECT server, the API will send a notification message to the developer's application with:

- Vehicle ID
- Driver ID (if applicable)
- Job or message ID
- Event timestamp

The developer's application may then submit a request to retrieve outstanding events, responses, or inbound messages from the API for a given vehicle, driver, job and/or message – or for all messages.

For the API to be functional, some preconditions must be met, including:

- A Contigo beacon and PND are installed in one or more vehicles.
- Beacon is provisioned in the Contigo CONNECT system, and is enabled for Dispatch.
- Vehicle records are provisioned in the Contigo CONNECT system.
- User accounts are established in the Contigo CONNECT system – at least one defined with DEX access.
- A URL and User Account Credentials are provided to the developer to access the vehicle-specific information for given fleet vehicles and to submit messages to PNDs in those vehicles.

Once these preconditions are in place, the DEX API may be accessed.

The DEX API enhancements for Dispatch allow for the following new functions:

- Register for Notifications
- Send Job to PND (by address or by Lat/Long coordinates)
- Send outbound Message through to PND
- Send / update list of canned messages to device
- Send Message with CannedResponses to PND
- Detect presence or absence of PND
- Detect presence of Vehicle (beacon) on network
- Delete selected Jobs
- Delete all Jobs
- Delete all Messages
- Change Priority of Jobs
- Request Driver ID
- Send Driver ID (over-ride Driver ID on PND)
- Send / update list of Driver Status options
- Set Auto Arrival
- Request Job Status
- Request Job Estimated Time of Arrival (ETA)

Messages that may be received from the PND include:

- Job status updates:
  - Job received on PND (pending)
  - Job read on PND (acknowledged)
  - Driver navigating to job (en-route)
  - Job marked as completed on PND (done)
  - Job deleted on PND
- Messages (mail)
  - Message received on PND
  - Message read
  - Message response from PND:
    - Reply to a specific message with an OK, Yes or No response
    - Reply to a specific message with a CannedResponse
    - Reply to a specific message with a CannedMessage
    - Reply to a specific message with free-form text
  - New inbound message from PND (unsolicited)
- Driver ID (login)
- Driver Status change

Communication

The following figures provide a high-level overview of sample communications between your client application and the PND.

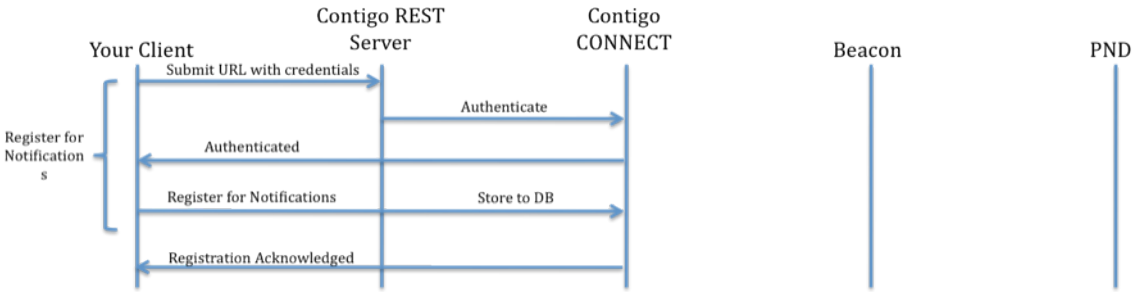

Figure 1: Sample of registering for notifications

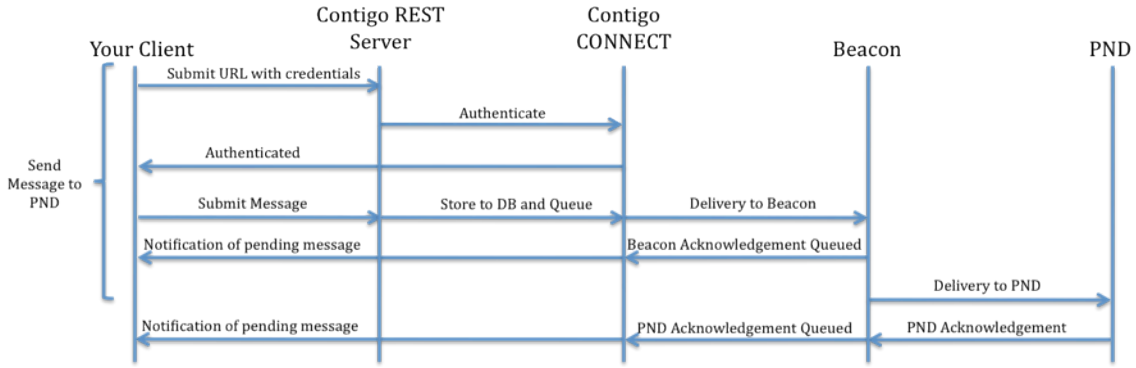

Figure 2: Sample of sending a message to the PND

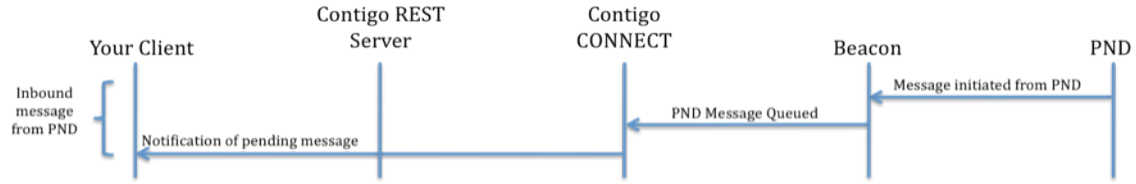

Figure 3: Sample of an inbound message coming from the PND

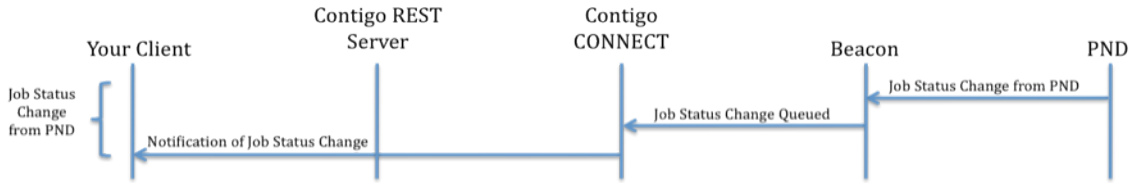

Figure 4: Sample of a Job Status Change on the PND

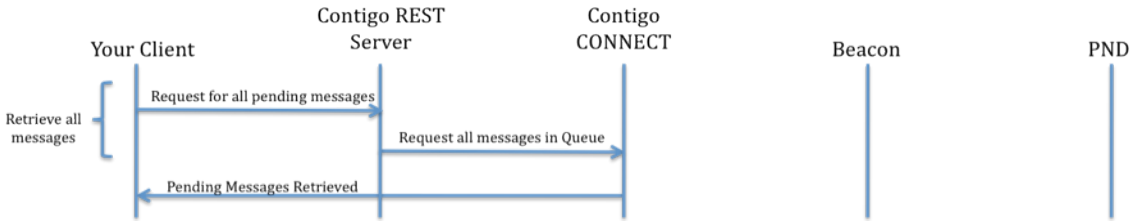

Figure 5: Sample of requesting all inbound messages/notifications etc

API Definition – Outbound

SendJobByAddressToVehicle

Description Sends a job to PND using an address.

URL POST dept/{deptID}/v/{vehicleID}/dispatch/job

Permission

Parameters Vehicle id

XML containing:

- Job id
- Address
- Description – message associated with this job
- (Optional) Job Priority - order in the Job queue
- Sample:

```
<job_by_address>
  <job_id>55</job_id>
  <address>
    <street>795 Farrow Street</street>
    <city>Coquitlam</city>
    <state>BC</state>
    <country>CA</country>
    <zip_code>V3J 7V4</zip_code>
  </address>
  <description>Pick up the package</description>
  <priority>1</priority>
</job_by_address>
```

Response

Field	Description
Result	Contains the result of the request
Success	true – if the request was queued properly false – otherwise
Failure Reason (optional)	A failure reason could be that the address is incorrect.

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors Address not found

SendJobByCoordinatesToVehicle

Description Sends job to PND using latitude and longitude.

URL POST dept/{deptID}/v/{vehicleID}/dispatch/job

Permission

Parameters Vehicle id

XML Containing:

- Job id

- Latitude
- Longitude
- Description – message associated with this job
- (Optional) Job Priority - order in the Job queue
- Sample:

```
<job_by_coords>
    <job_id>55</job_id>
    <lat>49.26293</lat>
    <lon>-122.89143</lon>
    <description>Pick up the package</description>
    <priority>1</priority>
 </job_by_coords>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

Address not found

SendMessage

Description Sends a simple message to the PND

URL POST dept/{deptID}/v/{vehicleID}/dispatch/message

Permission

Parameters Vehicle id

XML Containing:

- Message Id
- Text Message
- Sample:

```
<message>
   <msg_id>5</msg_id>
   <text>Please make sure to fill-up on the way back.</text>
 </message>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

SendCannedMessage

Description Creates a canned message for the PND.

URL POST dept/{deptID}/v/{vehicleID}/dispatch/canned_message

Permission

Parameters Vehicle id

XML Containing:

- Message Id
- Text message
- Sample:

```
<message>
   <msg_id>5</msg_id>
   <text>Stuck in traffic</text>
</message>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

SendMessageWithCannedResponse

Description Sends a message with an associated canned response to the PND.

URL POST dept/{deptID}/v/{vehicleID}/dispatch/message/canned_response

Permission

Parameters Vehicle id

XML Containing:

- Message Id
- Text message
- Canned Response ID List – the list of response id (see SendCannedResponse); note: minimum value is 4
- Sample:

```
<message>
   <msg_id>5</msg_id>
   <text>What's the traffic situation right now?</text>
   <canned_response_list>
      <response>4</response>
      <response>6</response>
      <response>9</response>
   </canned_response_list>
</message>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false – otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

DeleteCannedMessage

Description Deletes a canned message

URL DELETE dept/{deptID}/v/{vehicleID}/dispatch/canned_message

Permission

Parameters Vehicle id

XML containing:

- Message id
- Sample:

```
<canned_message>
    <msg_id>5</msg_id>
</canned_message>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

RefreshCannedMessage

Description Replaces an existing canned message for the PND.

URL PUT dept/{deptID}/v/{vehicleID}/dispatch/canned_message

Permission

Parameters Vehicle id

XML Containing:

- Message Id
- Text message
- Sample:

```
<canned_message>
   <msg_id>5</msg_id>
   <text>Stuck in traffic in major road</text>
</canned_message>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

SendCannedResponse

Description Sends canned response to the vehicle.

URL POST dept/{deptID}/v/{vehicleID}/dispatch/canned_response

Permission

Parameters Vehicle Id

XML Containing:

- Canned Response id – NOTE: minimum value is 4
- Canned Response
- Sample:

```
<canned_response>
   <response_id>4</response_id>
   <text>Zero</text>
</canned_response>
```

Response

Field	Description
Result	Contains the result of the request
Success	true – if the request was queued properly false – otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>
```

```
</result>
```

Errors

DetectPND

Description Detects presence of PND connected to the device.

URL GET dept/{deptID}/v/{vehicleID}/dispatch/pnd/connection

Permission

Parameters Vehicle id

Response

Field	Description
Connection	Contains the Connected flag
Connected	True – if a PND is connected False – if the PND is not connected

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<connection xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<connected>true</connected>

</connection>
```

Errors

DeleteVehicleJob

Description Deletes a job in vehicle

URL DELETE dept/{deptID}/v/{vehicleID}/dispatch/job/{id}

Permission

Parameters Vehicle id

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

DeleteAllJobs

Description Deletes all jobs

URL DELETE dept/{deptID}/v/{vehicleID}/dispatch/job

Permission

Parameters Vehicle id

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

DeleteAllMessages

Description Deletes all messages on the PND.

URL DELETE dept/{deptID}/v/{vehicleID}/dispatch/message

Permission

Parameters Vehicle id

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly

	false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

ChangeJobPriority

Description Changes the job's priority.

URL PUT dept/{deptID}/v/{vehicleID}/dispatch/job/{id}

Permission

Parameters Vehicle id

XML containing:

- New priority number
- Sample:

```
<priority>5</priority>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

RequestDriverID

Description

Request the driver ID. Note that the response will be delivered asynchronously by the Contigo server via RequestDriverIDNotification (see below).

URL

POST dept/{deptID}/v/{vehicleID}/dispatch/driver/getId

Permission

Parameters

Vehicle ID

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

SendDriverID

Description Send the driver ID

URL POST dept/{deptID}/v/{vehicleID}/dispatch/driver/id

Permission

Parameters Vehicle ID

XML containing:

- Driver ID to send
- Sample:

```
<driver>
    <driver_id>5</driver_id>
</driver>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

SendDriverStatus

Description

Send a list of canned driver status types that the driver may select from when specifying his status (such as "Driving", "On Duty (Not Driving) "Sleeper Berth", "Off Duty", etc).

URL

POST dept/{deptID}/v/{vehicleID}/dispatch/driver/status

Permission

Parameters

Vehicle ID

XML containing:

- Status Id
- Text – status id
- Sample:

```
<driver_status_list>
   <driver_status>
      <status_id>5</status_id>
      <text>Driving</text>
   </driver_status>
   <driver_status>
      <status_id>6</status_id>
      <text>On Duty (Not Driving)</text>
   </driver_status>
</driver_status_list>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly

	false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

DeleteDriverStatus

Description Deletes one or more driver status messages.

URL DELETE dept/{deptID}/v/{vehicleID}/dispatch/driver/status/{statusId}

Permission

Parameters Vehicle ID

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>
```

```
<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

RequestJobStatus

Description Requests the current status of a particular job.

URL GET dept/{deptID}/v/{vehicleID}/dispatch/job/<job_id>

Permission

Parameters Vehicle id

Job id

Response

Field	Description
	Contains: • job id • pnd esn – the ESN of the Garmin PND where this job status was sent from • beacon – the beacon where this job status was sent from • driver id • job status (could be one of: pending, ack, enroute, done, deleted_by_driver) • (optional; will only appear if the job

	status is 'enroute') ETA in seconds
	• job priority – starts with 1
	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<job xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://beta.contigo.com/dex/schema/08/1/xsd/job.xsd">

    <job_id>120</job_id>
    <pnd_esn>3261962918</pnd_esn>
    <beacon>011070000406124</beacon>
    <driver_id>Joe</driver_id>
    <job_status>enroute</job_status>
    <eta>1850</eta>
    <priority>1</priority>
    <gps_related_info>
        <is_valid>true</is_valid>
        <lat>49.26293</lat>
        <lon>-122.89143</lon>
        <address>
            <street>795 Farrow Street</street>
            <city>Coquitlam</city>
            <state>BC</state>
            <country>CA</country>
            <zip_code>V3J 7V4</zip_code>
        </address>
        <speed>50</speed>
        <gps_ts>1277148205</gps_ts>
    </gps_related_info>
    <ts>1277148206</ts>
```

```
</job>
```

Errors

RequestETA

Description Get the ETA of the current job. Note that the response will be delivered asynchronously via the RequestETANotification (see below).

URL POST dept/{deptID}/v/{vehicleID}/dispatch/pnd/eta

Permission

Parameters Vehicle id

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

EnableAutoArrival

Description Enables the auto-arrival feature on the PND.

URL POST dept/{deptID}/v/{vehicleID}/pnd/autoarrival

Permission

Parameters Vehicle id

If set to 1, then auto-arrival is turned on. If set to 0, then auto-arrival is turned off.

Sample:

```
<autoarrival>1</autoarrival>
```

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

RequestDriverMessage

Description Requests the message which the driver sent in response to the dispatcher message. This works with the MessageNotification Inbound method mentioned below.

URL GET dept/{deptID}/v/{vehicleID}/dispatch/message/<id>

Permission

Parameters Vehicle id

Message id

Response

Field	Description

Driver message	Contains:
	• pnd esn – the ESN of the Garmin PND where this job status was sent from
	• beacon – the beacon where this job status was sent from
	• (optional) dispatcher msg id – if this message is a response to a dispatcher message
	• message
	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<driver_message xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">
```

```
<pnd_esn>3261962918</pnd_esn>
<beacon>011070000406124</beacon>
<dispatcher_msg_id>17</dispatcher_msg_id>
<msg>yes</ msg>
<gps_related_info>
    <is_valid>true</is_valid>
    <lat>49.25267</lat>
    <lon>-122.91252</lon>
    <address>
        <street>9897 Gaglardi Way</street>
        <city>Burnaby</city>
        <state>BC</state>
        <country>CA</country>
        <zip_code>V5A4N7</zip_code>
     </address>
    <speed>0</speed>
    <gps_ts>1285058280</gps_ts>
</gps_related_info>
<ts>1285058280</ts>

</driver_message>
```

Errors

RequestDataSince

Description Requests a list of job and message data for a particular vehicle since a particular date. This is useful in the case of the customer's server going down.

URL POST dept/{deptID}/v/{vehicleID}/dispatch

Permission

Parameters Vehicle id

XML containing:

- Cutoff timestamp in epoch format
- Sample:

```
<cutoff>
    <ts>1277145205</ts>
 </cutoff>
```

Response

Field	Description
Changes	Contains a list of changes since last time

Jobs with status	Contains:
	• job id
	• pnd esn – the ESN of the Garmin PND where this job status was sent from
	• beacon – the beacon where this job status was sent from
	• driver id
	• job status (could be one of: pending, ack, enroute, done, deleted_by_driver)
	• (optional; will only appear if the job status is 'enroute') ETA in seconds
	• job priority – starts with 1
	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

	Contains: • pnd esn – the ESN of the Garmin PND

	where this job status was sent from
	• beacon – the beacon where this job status was sent from
	• msg id
	• msg status (could be one of: open, read, deleted)
	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

Driver messages	Contains: • message id • pnd esn – the ESN of the Garmin PND where this job status was sent from • beacon – the beacon where this job status was sent from • (optional) dispatcher msg id – if this message is a response to a dispatcher message • message

	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

Driver Id Messages	Contains:
	• driver id
	• pnd esn – the ESN of the Garmin PND where this job status was sent from
	• beacon – the beacon where this job status was sent from
	• GPS-related information
	  ○ is GPS valid
	  ○ latitude and longitude
	  ○ address
	  ○ speed – in km/hr
	  ○ GPS timestamp in epoch format
	• Beacon timestamp in epoch format

	Contains:

Messages	• Connection status - online or offline • pnd esn – the ESN of the Garmin PND where this job status was sent from • beacon – the beacon where this job status was sent from • Beacon timestamp in epoch format

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<data xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<jobs>

   <job>
      <job_id>120</job_id>
      <pnd_esn>3261962918</pnd_esn>
      <beacon>011070000406124</beacon>
      <driver_id>Joe</driver_id>
      <job_status>enroute</job_status>
      <eta>1850</eta>
      <priority>1</priority>
      <gps_related_info>
            <is_valid>true</is_valid>
            <lat>49.26293</lat>
            <lon>-122.89143</lon>
            <address>
                <street>795 Farrow Street</street>
                <city>Coquitlam</city>
                <state>BC</state>
                <country>CA</country>
                <zip_code>V3J7V4</zip_code>
            </address>
            <speed>50</speed>
            <gps_ts>1277148205</gps_ts>
      </gps_related_info>
      <ts>1277148206</ts>
   </job>

   <job>
      <job_id>120</job_id>
      <pnd_esn>3261962918</pnd_esn>
      <beacon>011070000406124</beacon>
      <driver_id>Joe</driver_id>
```

```
   <job_status>done</job_status>
   <priority>1</priority>
   <gps_related_info>
      <is_valid>true</is_valid>
      <lat>49.26220</lat>
      <lon>-122.90705</lon>
      <address>
         <street>9269 Morningside Ln</street>
         <city>Burnaby</city>
         <state>BC</state>
         <country>CA</country>
         <zip_code>V5A4R3</zip_code>
      </address>
      <speed>0</speed>
      <gps_ts>1285056999</gps_ts>
   </gps_related_info>
    <ts>1285057000</ts>
</job>

<job>
   <job_id>122</job_id>
   <pnd_esn>3261962918</pnd_esn>
   <beacon>011070000406124</beacon>
   <driver_id>Joe</driver_id>
   <job_status>enroute</job_status>
   <eta>1200</eta>
   <priority>1</priority>
   <gps_related_info>
      <is_valid>true</is_valid>
      <lat>49.25267</lat>
      <lon>-122.91252</lon>
      <address>
         <street>9897 Gaglardi Way</street>
         <city>Burnaby</city>
         <state>BC</state>
         <country>CA</country>
         <zip_code>V5A4N7</zip_code>
      </address>
      <speed>30</speed>
      <gps_ts>1285058271</gps_ts>
   </gps_related_info>
   <ts>1285058271</ts>
</job>

<job>
   <job_id>121</job_id>
   <pnd_esn>3261962918</pnd_esn>
   <beacon>011070000406124</beacon>
   <driver_id>Joe</driver_id>
   <job_status>pending</job_status>
   <priority>2</priority>
   <gps_related_info>
```

```
            <is_valid>false</is_valid>
            <lat>49.28165</lat>
            <lon>-123.01593</lon>
            <address>
                <street>338 Macdonald Ave</street>
                <city>Burnaby</city>
                <state>BC</state>
                <country>CA</country>
                <zip_code>V5C4N4</zip_code>
             </address>
            <speed>0</speed>
            <gps_ts>1285057700</gps_ts>
        </gps_related_info>
        <ts>1285058000</ts>
    </job>

</jobs>

<dispatcher_messages>

    <dispatcher_message>
        <pnd_esn>3261962918</pnd_esn>
        <beacon>011070000406124</beacon>
        <dispatcher_msg_id>17</dispatcher_msg_id>
        <dispatcher_msg_status>read</dispatcher_msg_status>
        <gps_related_info>
            <is_valid>true</is_valid>
            <lat>49.25267</lat>
            <lon>-122.91252</lon>
            <address>
                <street>9897 Gaglardi Way</street>
                <city>Burnaby</city>
                <state>BC</state>
                <country>CA</country>
                <zip_code>V5A4N7</zip_code>
            </address>
            <speed>0</speed>
            <gps_ts>1285058271</gps_ts>
        </gps_related_info>
        <ts>1285058271</ts>
    </dispatcher_message>

</dispatcher_messages>

<driver_messages>

    <driver_message>
        <msg_id>5</msg_id>
        <pnd_esn>3261962918</pnd_esn>
        <beacon>011070000406124</beacon>
        <dispatcher_msg_id>17</dispatcher_msg_id>
        <msg>yes</msg>
```

```
      <gps_related_info>
         <is_valid>true</is_valid>
         <lat>49.25267</lat>
         <lon>-122.91252</lon>
         <address>
            <street>9897 Gaglardi Way</street>
            <city>Burnaby</city>
            <state>BC</state>
            <country>CA</country>
            <zip_code>V5A4N7</zip_code>
          </address>
         <speed>0</speed>
         <gps_ts>1285058280</gps_ts>
      </gps_related_info>
      <ts>1285058280</ts>
   </driver_message>

   <driver_message>
      <msg_id>6</msg_id>
      <pnd_esn>3261962918</pnd_esn>
      <beacon>011070000406124</beacon>
      <msg>I picked-up an extra package from Joe.</msg>
      <gps_related_info>
         <is_valid>true</is_valid>
         <lat>49.25267</lat>
         <lon>-122.91252</lon>
         <address>
            <street>9897 Gaglardi Way</street>
            <city>Burnaby</city>
            <state>BC</state>
            <country>CA</country>
            <zip_code>V5A4N7</zip_code>
          </address>
         <speed>0</speed>
         <gps_ts>1285058280</gps_ts>
      </gps_related_info>
      <ts>1285058285</ts>
   </driver_message>

</driver_messages>

<driver_id_messages>

   <request_driver_id>
      <driver_id>john doe</driver_id>
      <pnd_esn>3261962918</pnd_esn>
      <beacon>011070000406124</beacon>
      <gps_related_info>
         <is_valid>true</is_valid>
         <lat>49.25267</lat>
         <lon>-122.91252</lon>
         <address>
```

```
                    <street>9897 Gaglardi Way</street>
                    <city>Burnaby</city>
                    <state>BC</state>
                    <country>CA</country>
                    <zip_code>V5A4N7</zip_code>
                 </address>
                <speed>0</speed>
                <gps_ts>1285058280</gps_ts>
            </gps_related_info>
            <ts>1285058280</ts>
        </request_driver_id>

</driver_id_messages>

<vehicle_presence_messages>

    < detect_vehicle_presence >
        <connection_status>offline</connection_status>
        <pnd_esn>3261962918</pnd_esn>
        <beacon>011070000406124</beacon>
        <ts>1285058280</ts>
    </detect_vehicle_presence>

    < detect_vehicle_presence >
        <connection_status>online</connection_status>
        <pnd_esn>3261962918</pnd_esn>
        <beacon>011070000406124</beacon>
        <ts>1285088280</ts>
    </detect_vehicle_presence>

</vehicle_presence_messages>

</data>
```

Errors

DetectVehiclePresence

Description Use this method to get notified when a vehicle's beacon is online or offline. (See RequestVehicleNotification below)

URL POST dept/{deptID}/v/{vehicleID}/dispatch/online

Permission

Parameters Vehicle ID

Response

Field	Description
result	Contains the result of the request
success	true – if the request was queued properly false - otherwise

Sample Response

```
<?xml version='1.0' encoding='UTF-8'?>

<result xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="dispatch.xsd">

<info>success</info>

</result>
```

Errors

API Definition - Inbound

JobStatusChangeNotification

Description When Contigo gets a job-status-change message from the PND, Contigo will invoke the customer's REST server to notify the customer of the change. If the customer's REST server is down, Contigo will not attempt to retry. Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDataSince method to query the changes.

URL POST dispatch/ v/<vehicleID >/notification/job

Permission

Parameters Job id. Here's a sample:

```
<job>
   <id>4</id>
</job>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes

MessageResponseNotification

Description When Contigo gets a message response from the driver, Contigo will invoke the customer's REST server to notify the customer of the driver's response to the customer's original message. If the customer's REST server is down, Contigo will not attempt to retry. Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDriver method to query the message.

URL POST dispatch/v/<vehicleID>/notification/message

Permission

Parameters Message id. Here's a sample:

```
<message>
```

```
   <id>5</id>
</message>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes

MessageNotification

Description When Contigo gets a new message from the driver, Contigo will invoke the customer's REST server to notify the customer of this new driver message. If the customer's REST server is down, Contigo will not attempt to retry. Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDataSince method to query the changes.

URL POST dispatch/v/<vehicleID>/notification/drivermessage

Permission

Parameters Message id. Here's a sample:

```
<drivermessage>
   <id>4</id>
</drivermessage>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes

RequestETANotification

Description (See RequestETA above) When Contigo gets a job's ETA info, Contigo will invoke the customer's REST server to notify the customer that there has been a ETA change for this particular job. The customer will then need to query Contigo's server to retrieve the ETA for this job via RequestDataSince (see above).

If the customer's REST server is down, Contigo will not attempt to retry.

Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDataSince method to query the changes.

URL POST dispatch/v/<vehicleID>/notification/requestETA

Permission

Parameters Job id. Here's a sample:

```
<request_eta>
   <job_id>4</job_id>
</request_eta>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes

RequestDriverIDNotification

Description (See RequestDriverID above) When Contigo gets a job's driver-id info, Contigo will invoke the customer's REST server to notify the customer of this driver id. If the customer's REST server is down, Contigo will not attempt to retry. Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDataSince method to query the changes.

URL POST dispatch/v/<vehicleID>/notification/requestDriverID

Permission

Parameters XML containing:

- Driver id
- Vehicle ESN
- PND ESN
- Here's a sample:

```
<request_driver_id>
   <driver_id>75</driver_id>
   <vehicle_esn>010657000313413</vehicle_esn>
   <pnd_esn>21343</pnd_esn>
</request_driver_id>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes

RequestVehicleNotification

Description (See DetectVehiclePresence above) When a vehicle connects to the Contigo server or is detected to be over 1 hour without any message, Contigo will invoke the customer's REST server to notify the customer of this state. If the customer's REST server is down, Contigo will not attempt to retry. Contigo will, however, keep track of which notifications have not been sent so that the customer can use the RequestDataSince method to query the changes.

URL POST dispatch/v/<vehicleID>/notification/detectVehiclePresence

Permission

Parameters XML containing:

- 'online' or 'offline'
- Driver id
- Vehicle ESN
- PND ESN
- Here's a sample:

```
<detect_vehicle_presence>
   <connection_status>online</connection_status>
   <driver_id>75</driver_id>
   <vehicle_esn>010657000313413</vehicle_esn>
   <pnd_esn>21343</pnd_esn>a
</detect_vehicle_presence>
```

Response Standard HTTP response codes

Errors Standard HTTP error codes