RouteMatch WebPortal – Fixed Route Feed Protocol Specification

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This document specifies how the RouteMatch Web Portal (RMWP) provides real-time Fixed Route information to clients. The payload is delivered as REST Web Service using the JSON format. At this point, only the GET request type is supported; all others will be ignored.

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REQUEST TYPES

Two types of request are available: META and QUERY

META – Provides meta-data about the service provided by RMWP.
URL: http://*<BASE_URL>*/portal/frfeed/meta/*< RESOURCE>*

QUERY – Provides agency (database) pacific Fixed Route information.
URL: http ://*<BASE_URL>*/portal/frfeed/query/*<WEB_KEY>*/*< RESOURCE>*
<WEB_KEY> - Unique key assigned to agency to identify the context of query.
<RESOURCE> - Requested resource name.
NOTE: The finalized URL (where <WEB_KEY> & <RESROUCE> part are substituted with appropriate values) is CASE-SENSITIVE.

Example
If the name of hosting web site is "www.myagency.org" and the assigned "web key" is "star", the resulting base URL for data request will be:

META: http://*www.myagency.com*/portal/frfeed/meta/*< RESOURCE>*

QUERY: http ://*www.myagency.com*/portal/frfeed/query/*star*/*< RESOURCE>*

Date Formatting

All fields returning a date-time value will use ISO 8601. Specifically the profile described at http://www.w3.org/TR/NOTE-datetime.

Example:

2013-09-12T07:31:23-05:00

This value corresponds to September 12th, 2013 7:31:23 am CDT

META REQUESTS

Meta requests return information about FRFeed in general and do not provide any agency specific data.

URL: http://*<BASE_URL>*/portal/frfeed/meta/*< RESOURCE>*

Example:

If the name of hosting web site is “www.myagency.org” and the assigned “web key” is “star”, the resulting base URL for data request will be:

http://*www.myagency.com*/portal/frfeed/meta/*< RESOURCE>*

Version

Returns version number of the Feed Specification

Return Fields

- version_major
- version_minor

Example JSON Payloads

Request:

http://*www.myagency.com*/portal/frfeed/meta/*Version*

Output:


```
{"version_minor":3,"version_major":1}
```

QUERY REQUESTS

Query requests provide agency (database) specific Fixed Route information.

URL: http ://*<BASE_URL>*/portal/frfeed/query/*<WEB_KEY>*/*< RESOURCE>*

<WEB_KEY> - Unique key assigned to agency to identify the context of query.
<RESOURCE> - Requested resource name.
NOTE: The finalized URL (where <WEB_KEY> & <RESROUCE> part are substituted with appropriate values) is CASE-SENSITIVE.

Example
If the name of hosting web site is "www.myagency.org" and the assigned "web key" is "star", the resulting base URL for data request will be:

http ://*www.myagency.com*/portal/frfeed/query/*star*/*< RESOURCE>*

MasterRoute

The MasterRoute query returns an array of MasterRoute objects.

Return Fields

- id – key for this Master Route
- description – text description of the route
- longName – the MasterRoute long name in GTFS
- shortName – the MasterRoute short name in GTFS
- color – 24bit color, in RGB hex notation, for the route
- subroute – contains an array of subroute objects
    - id – subroute id
    - description – text description of the subroute
    - direction – Inbound/Outbound
    - longName
    - shortName
    - color – 24bit color, in RGB hex notation for the route

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*MasterRoute*

Output:


```
[
{
"id":"479",
"description":"157th-Minneapolis",
"color":"#224455",
"subroute":[{"id":"479","description":"228","direction":"Inbound","color":"#D24855"}, …]
},
{
"id":"465",
"description":"Apple Valley-Burnsville-Mpls-U of M",
"color":"#AA44EE",
"subroute":[{"id":"465","description":"114","direction":"Inbound","color":"#CC4455"}, …}]
},
…
]
```

LandRoute

The land route query returns shape/land route data for a master route.
When a master route has more than one land route, an array with multiple point lists is returned.

This query takes the MasterRouteID as the last part of the query URL:
http://<BASE_URL>/portal/frfeed/query/<WEB_KEY>/landRoute/<MASTER_ROUTE_ NAME>

Return Fields

- lat – decimal latitude of the point
- lon – decimal longitude of the point
- seq – the order in which points should be connected/drawn

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*LandRoute*/*479*

Output:


```
[

[
{ "lat":0.0, "lon":0.0},
{ "lat":0.0, "lon":0.0},
…
],
[
{ "lat":0.0, "lon":0.0},
{ "lat":0.0, "lon":0.0},
…
],
…
]
```

Stop

The stop query returns an array of Stop objects.

A stop (as defined by the 'id' field) may be listed more than once if it is used on multiple routes.

Optionally a MasterRouteId can be provided on the end of the query to only return stops for a specific route.

Return Fields

- id – key for this stop
- description – name of this stop
- subRouteId – id of subRoute
- masterRouteId – id of masterRoute
- latitude – in decimal format
- longitude – in decimal format

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*Stop*/route

Output:


```
[

{
"subRouteId":"464:120714-Weekday-32:104",
"id":"00001",
"masterRouteId":"464",
"description":"Irving Av at Co Rd 42 SW corner (Olive Garden)",
"longitude":-93.2981,
"latitude":44.7463
},

{
"subRouteId":"464:120714-Weekday-33:109",
"id":"00001",
"masterRouteId":"464",
"description":"Irving Av at Co Rd 42 SW corner (Olive Garden)",
"longitude":-93.2981,"latitude":44.7463},

…

]
```

Vehicle

The vehicle query returns an array of *fixed route* Vehicle objects.

This query will only return data for vehicles with a device assigned to it (or to the driver) that is on an active run and reporting gps data.

Return Fields

- masterRouteId – the master route where this vehicle is running on.
- longitude – longitude of vehicle
- latitude – latitude of vehicle
- speed – speed of vehicle in miles/hour
- heading – direction of vehicle
- internalVehicleId – agency-generated ID of the vehicle
- blockId – block ID
- internalDriverId – agency-generated ID of the driver of the vehicle
- isDeadhead – 1 if the vehicle is in between the garage and its first stop. 1 if the vehicle is in between its last stop and the garage. 0 if the vehicle is between its first stop and its last stop. In other words, 1 if the vehicle is not servicing its designated stops, and 0 if the vehicle is servicing its designated stops.
- trip – the trip the vehicle is performing. This value corresponds to the GTFS trip id.
- masterRoutelongName – the master route long name for the next stop
- masterRouteshortName – the master route short name for the next stop
- masterRoutedescription – the master route description for the next stop
- subRoutelongName – the sub route long name for the next stop
- subRouteshortName – the sub route short name for the next stop
- subRoutedescription – the sub route description for the next stop
- direction – the route direction for the route of the next stop (e.g. 'Outbound' or 'Northbound'). Note: this is distinct from the heading in that this is the direction associated with the route, not the current orientation of the vehicle.

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*Vehicle*

Output:


```
[

{
"speed":31,
"masterRouteId":"420",
"longitude":-93.2155532836914,
"latitude":44.724613189697266,
"heading":0,
"internalVehicleId":"1101",
"blockId":2102,
"internalDriverId":"3103",
"isDeadhead":0,
"trip":"abc-123"
},

{"speed":26,
"masterRouteId":"442",
"longitude":-93.22265625,
```

"latitude":44.7308349609375,
"heading":0,
"internalVehicleId":"1101",
"blockId":2102,
"internalDriverId":"3103",
"isDeadhead":0,
"trip":"abc-321"
},

…

]

ETA

The ETA query returns an array of ETA information

This query requires that you include the stop's name as the last part of the query's URL.
This corresponds to the Stop ID in GTFS, or the StopIDName field in the RM database.

Default query URL: *http://<BASE_URL>/portal/frfeed/query/<WEB_KEY>/eta/<STOP_ NAME>*

For this command, you may also provide optional parameters (rowCount, timeHorizon) to limit result set.

- rowCount – up to N elements will be returned in the set. Default is ALL.
- timeHorizon – return information for trips to occur in next N minutes. Default is 120 minutes.

Caller can use one or more parameters in any combinations.

URL format with additional parameters:
http://<BASE_URL>/frfeed/query/<WEB_KEY>/eta/<STOP_NAME>(timeHorizon!<VAL_1>,rowCount!<VAL_2>)

Result Fields

- route – ID name of MasterRoute
- masterRoutelongName – the master route long name for this departure
- masterRouteshortName – the master route short name for this departure
- subRoutelongName – the sub route long name for this departure
- subRouteshortName – the sub route short name for this departure
- time – Estimated Time of Depature (format: yyyy-mm-dd hh:mi am)
- direction – direction of vehicle
- trip – the trip id for the trip the vehicle is on. This value corresponds to the GTFS trip id.
- scheduledTime – the scheduled/posted time for this stop
- etaDepartTime – the early-insulated estimated depart time
- etaArriveTime – the early-insulated estimated arrive time
- realEtaArriveTime – the actual predicted arrival time (may be null)
- arriveComplete – has the stop arrival been completed
- arriveTime – the actual stop arrival time (null unless the stop arrival is complete)
- departComplete – has the stop departure been completed
- departTime – the actual stop departure time (null unless top departure is complete)
- lastTimePointCrossedId – the last Stop ID that was crossed by the vehicle that requires schedule adherence.
- lastTimePointCrossedTime – the time when the vehicle crossed lastTimePointCrossedId.
- adherence – number of minutes early based on the last time point crossed, which is a stop that requires schedule adherence – Positive numbers signify early departure. Negative numbers signify late departure.
- scheduleAdherenceEnabled – does this stop have schedule adherence enabled? i.e. is this a stop point.

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*eta*/*01541*

Output:


```
{
"stop_times":
{
"stop":
[

{
"time":"2012-07-23 02:50 PM",
```

"direction":"Inbound",
"route":"438"
"trip":"abc-123",
"lastTimePointCrossedId":01539,
"lastTimePointCrossedTime":"2012-07-23 01:50 PM",
"adherence":5
},
…

]

}
}

ParaVehicle

The ParaVehicle query returns an array of PARA-TRANSIT Vehicle objects.

Default query URL: *http://<BASE_URL>/portal/frfeed/query/<WEB_KEY>/paraVehicle*

For this command, you may provide an optional parameter called internalVehicleId to limit the result set such that only the records with the given internalVehicleId is returned.
URL format with additional parameter:
http://<BASE_URL>/frfeed/query/<WEB_KEY>/paraVehicle/<INTERNAL_VEHICLE_ID>

Result Fields

- vehicleId – ID of vehicle – RM internal ID.
- internalVehicleId – ID of vehicle; agency assigned "label" of vehicle
- onBoardDevice – ID of tracking device – RM internal ID.
- time – this information was obtained as of _____.
- latitude – latitude of vehicle
- longitude – longitude of vehicle
- speed – speed of vehicle in miles/hour
- heading – direction of vehicle
- runName – run name, which is only present when the run is named

Example JSON Payload

Request:

http://*www.myagency.com*/portal/frfeed/query/*demo*/*paraVehicle*

Output:


```
[
{
"vehicleId":10,
"internalVehilceId":"2608",
"onBoardDeviceId":27,
"time":"2012-01-20 04:07 PM",
"latitude":42.26121139526367,
"longitude":-73.36396026611328,
"speed":38,
"heading":330
"runName":ga400
},
…
]
```

Template Engine

Starting in RMWP#5.2.00 (Feed version 2.3) the Feed Portal supports server-side template processing. To use the template processor you will add a query parameter called 'templates' that contains an array of all template names, and a query parameter per template with the actual template content. The keys available to the template engine are the values listed for each query.

Example URL with one template:
http://*www.myagency.com*/portal/frfeed/query/*demo*/eta/004?templates=title&title={@time} on {@trip}

Example URL with two templates:
http://*www.myagency.com*/portal/frfeed/query/*demo*/eta/004?templates[]=title&templates[]=route&title={@time} on {@trip}&route={@masterRoutelongName}-{@ masterRouteshortName}

REVISION HISTORY

- 2013-08-26: ACornett – added columns for version 2.3 (RMWP 5.2.00) and information about the template engine
- 2013-02-25: ACornett – Formatting
    - Added color to the MasterRoute query
    - Added the LandRoute query
- 2013-02-12: ZRB – Added new fields:
    - Added internalVehicleId, blockId, internalDriverId, and isDeadhead to the return values of the Vehicle feed.
    - Added adherence, lastTimePointCrossedId, lastTimePointCrossedTime to the return values of the ETA feed.
- 2012-07-23: DWada – enhance the documentation to include more helpful examples.
- 2012-03-12: ZRB – updated to v1.4 – The paraVehicle resource has been enhanced to return runName in the result set and to be able to limit the result set by internalVehicleId.
- 2012-03-12: Dwada – updated to v1.3 – enhancing ETA requests with additional parameters: rowCount, timeHorizon
- 2012-01-20: DWada – updated to v1.2 – adding “ParaVehicle” request
- 2012-01-16: DWada – updated to v1.1 – adding “eta” request
- 2011-09-19: DWada – updated to v1.0
- 2011-08-08: DWada – created