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API Guide

Trouble Ticket

February 2018

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1. List of Contributing Members

The following member of MEF participated in the development of this document and have requested to be included in this list.

AT&T
Cataworks
Colt

Orange
Telus

Table 1 Contributing Member Companies

2. Abstract

This API Guide is intended to help companies to implement the MEF Trouble Ticket Management API. The API swagger is available on MEF GitHub. In order to help API adoption this document provides:

- API Resource Model
- Resource Trouble Ticket lifecycle
- Resource Trouble Ticket full representation
- Detailed description of all API Operations provided

3. Scope

The scope of the project for the initial release is the ability for a Service Provider's system to create and manage trouble tickets with Partner's system, over an interface, related to Access E-Line products. The following operations are included in the scope of this project:

- Create a new trouble ticket
- Retrieve an existing trouble ticket(s)
- Partial modification of an open trouble ticket
- Close an open trouble ticket
- Cancel an open trouble ticket
- Trouble ticket related notifications.

Specifically, out of scope for this release are the following operations:

- Scheduled Maintenance & Outages related notifications and management.

4. Trouble Ticket Resource model

The API Trouble Ticket resource model is the following:

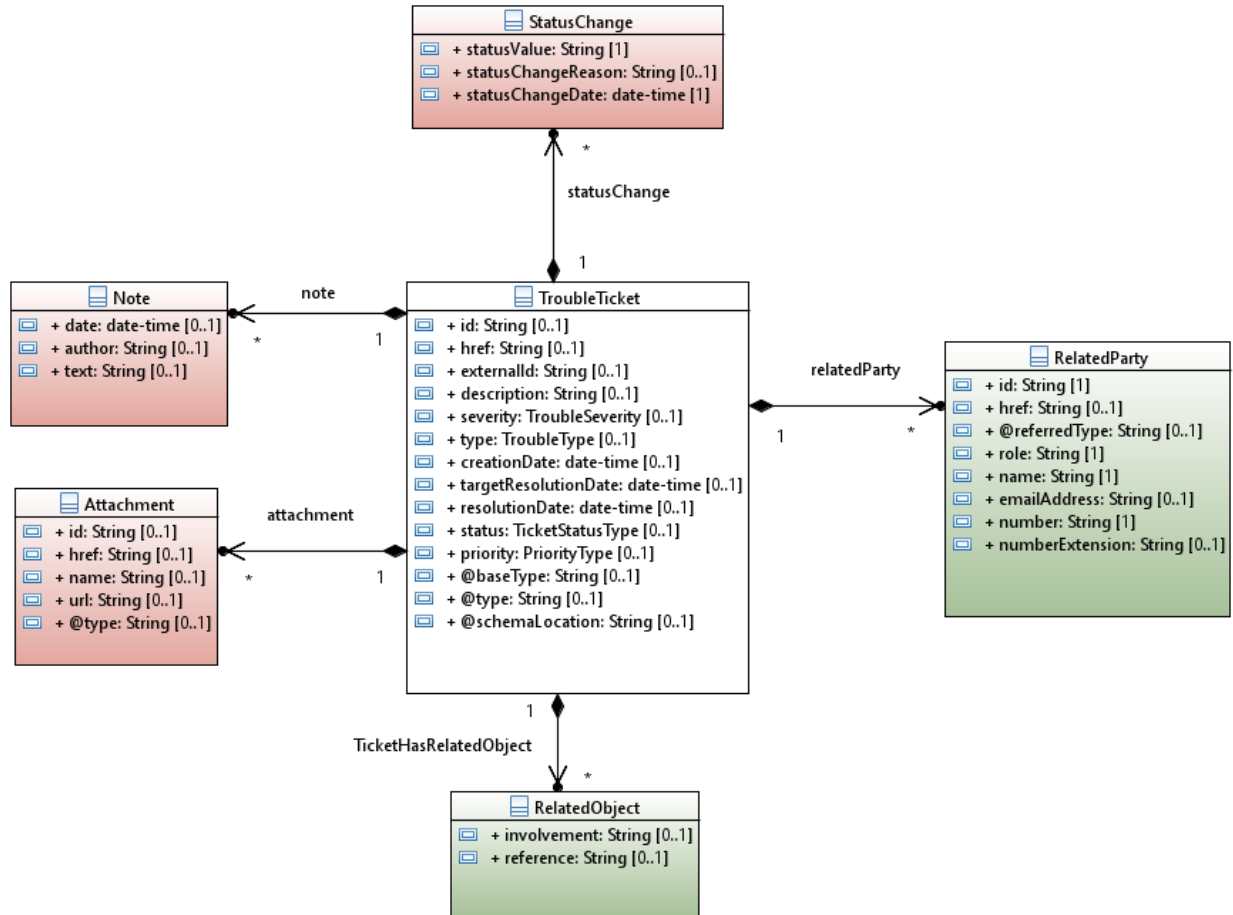


Figure 1 Trouble Ticket Resource Model

Color coding scheme:

- White box: API main resource
- Pink box: API sub resource(s)
- Green box: API related/referred resource(s)

5. State Diagrams

Following diagram shows the state machine for a Trouble Ticket:

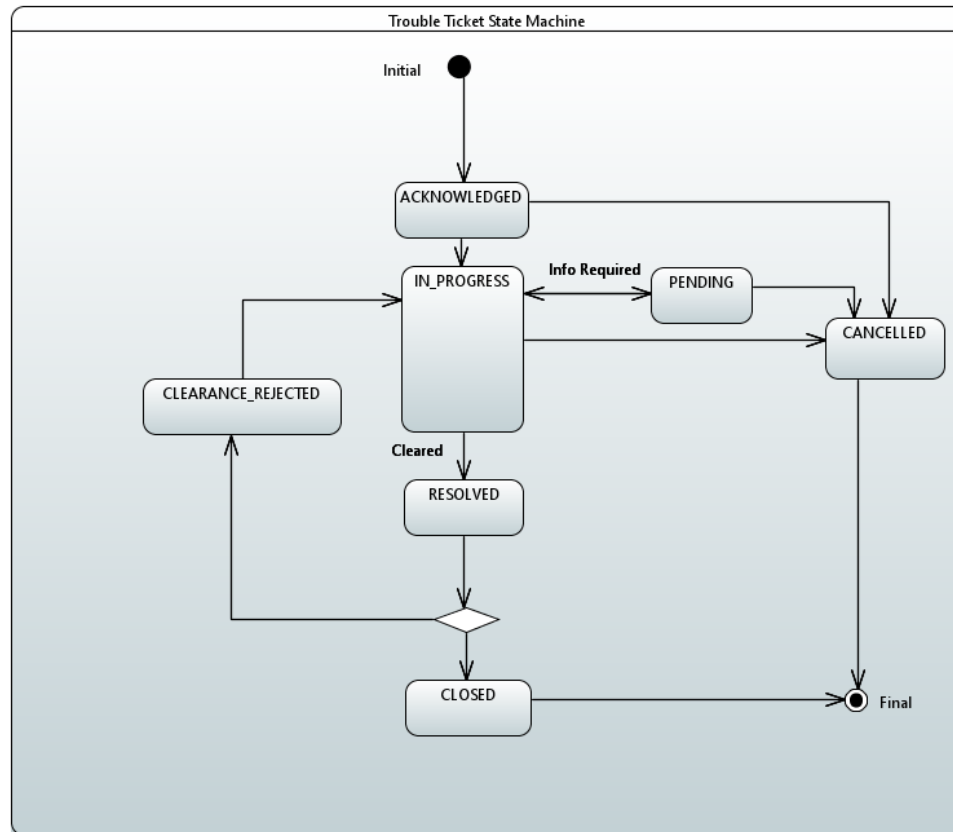


Figure 2 Trouble Ticket State Machine

6. Notifications

The following notifications are managed in this API:

- TicketStateChangeNotification
- TicketUpdateNotification
- TicketClearanceRequestNotification
- TicketInformationRequiredNotification

In order to receive Notifications, the Service Provider needs

- to subscribe to a notification
- to provide an Event API in order to allow the Partner to post notifications

6.1 Subscribe to notification:

By doing the following request Service Provider will subscribe to trouble ticket state changes:

```
POST {api_url}/HUB
Accept: application/json

{"callback": http://in.listener.com,
 "query": "eventType = TicketStateChangeNotification"
}
```

In yellow, this is the address where the Service Provider wants to receive the ticket state change notifications.

The response will be:

```
201
Content
-
Type:
application/json
Location: /api/hub/42
{"id": "42", "callback": "http://in.listener.com", "query": "eventType =
TicketStateChangeNotification"}
```

Note: 42 is the id of an HUB resource not a trouble ticket id.

The Partner provides GET and DELETE operations on HUB resources in order to allow the Service Provider to retrieve his hub and delete them if necessary:

```
GET {api_url}/HUB
Accept: application/json
```

You will have a list of your HUB on this API

```
[
  {
    "id": "42",
    "query": "eventType = TicketStateChangeNotification",
```

```
171     "callback": " http://in.listener.com "
172   },
173   {
174     "id": "56",
175     "query": " eventType = TicketUpdateNotification",
176     "callback": " http://in.listener.com "
177   }
178   {
179     "id": "72",
180     "query": " eventType = TicketClearanceRequestNotification",
181     "callback": " http://in.listener.com "
182   }
183   {
184     "id": "88",
185     "query": " eventType = TicketInformationRequiredNotification",
186     "callback": " http://in.listener.com "
187   }
188 ]
189
190 ]
```

If the Service Provider does not want to receive any more notifications for trouble ticket updates:

```
194 DELETE {api_url}/HUB/56
195 Accept: application/json
```

6.2 Receive Notification:

Now that the Service Provider has subscribed to notifications for trouble ticket state changes for example, let's suppose that he posted a trouble ticket and this one is processed by the Partner. The trouble ticket state changes. The Partner will POST an Event to the Service Provider:

```
201 POST {callback}/event
202 {
203   "eventType": " TicketStateChangeNotification",
204   "eventTime": "2017-09-27T05:46:25.0Z",
205   "eventId": "92445",
206   "event":
207   {
208     "troubleTicket": {
209       "id": "24"
210       (all trouble ticket attributes including...)
211       "status": "RESOLVED"
212     }
213   }
214 }
```

The Service Provider will respond with a standard HTTP 201 if the event is received.

7. JSON Representation Sample

Example of the JSON representation of a trouble ticket:

```
{
  "id": "62",
  "href": "www.mef.att.com/troubleTicketManagement/62",
  "externalId": "T-Mobile-EU-BOA-02",
  "description": "T-Mobile has raised the ticket on its customer Bank of
America's circuit.",
  "severity": "CRITICAL",
  "type": "FAILURE",
  "creationDate": "2018-02-02T18:40:23.283Z",
  "targetResolutionDate": "2018-02-04T18:40:23.283Z",
  "resolutionDate": "",
  "status": "IN_PROGRESS",
  "relatedParty": [
    {
      "id": "13",
      "role": "Originator",
      "name": "Joe Blau",
      "emailAddress": "jb3434@tmz.com",
      "number": "932-883-8723",
    }
  ],
  "priority": "HIGH",
  "relatedObject": [
    {
      "involvement": "ProductInventory",
      "reference": "34"
    }
  ],
  "statusChange": [
    {
      "statusValue": "ACKNOWLEDGED",
      "statusChangeReason": "Initial state",
      "statusChangeDate": "2018-02-02T18:41:23.283Z"
    },
    {
      "statusValue": "IN_PROGRESS",
      "statusChangeReason": "Technician assigned and Changed from
ACKNOWLEDGED",
      "statusChangeDate": "2018-02-02T19:41:23.283Z"
    }
  ],
  "note": [
    {
      "date": "2018-02-02T21:41:23.283Z",
      "author": "Liz Lamar",
      "text": "The Test failed indicating a potential fiber cut."
    }
  ],
  "attachment": [
    {
      "id": "2",
      "name": "SLA Agreement",
    }
  ]
}
```

```

    "@type": "PDF"
  }
],
"@type": "MEFTroubleTicket",
"@schemaLocation": "http://www.mef.net/sonata/TroubleTicket"
}

```

8. API Operations

In the following table, the use cases and operations defined in the IPS are mapped to the API operations:

Use Case	Operation	Uniform API Operation	Description
UC_SONATA_TROUBLE_0001	Trouble Ticket Create	POST	Creation of a trouble ticket.
UC_SONATA_TROUBLE_0002	Trouble Ticket Find	GET	Retrieval of trouble ticket(s) without an id but with criteria
UC_SONATA_TROUBLE_0003	Trouble Ticket Get	GET	Retrieval of a trouble ticket with an id
UC_SONATA_TROUBLE_0004	Trouble Ticket Update	PATCH	Partial update of a trouble ticket
UC_SONATA_TROUBLE_0005	Ticket Clearance Request Notification	No operation	Notification sent to indicate a request to clear a trouble ticket
UC_SONATA_TROUBLE_0006	Close Trouble Ticket	PATCH	Update request sent with “requestedStatus” set to “CLOSED”, or “CLEARANCE_REJECTED”
UC_SONATA_TROUBLE_0007	Cancel Trouble Ticket	PATCH	Update request sent with “requestedStatus” set to “CANCELLED”
UC_SONATA_TROUBLE_0008	Ticket Information Required Notification	No operation	Notification sent to indicate additional information is required.
UC_SONATA_TROUBLE_0009	Ticket Update Notification	No operation	Notification sent to indicate that an update has occurred on the ticket.
UC_SONATA_TROUBLE_0010	State Change Notification	No operation	Notification sent to indicate that a state change has occurred on the ticket.

Table 2 Mapping UC – API operations

8.1 Create Trouble Ticket

POST {apiRoot}/troubleTicket

Description

This operation creates a trouble ticket entity

Behavior

Standard 201 response if trouble ticket created

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity (see below)

Specific business errors will be encapsulated in HTTP Response 422 Unprocessable entity:

None.

Usage Sample

T-Mobile (Service Provider) is submitting a new trouble ticket on Access E-Line service provided by AT&T (Partner). T-Mobile has raised the ticket on its customer Bank of America's circuit.

Request:

```
POST {api_url}/troubleTicket
Content-Type: application/json
{
  "externalId": "T-Mobile-EU-BOA-02",
  "description": "T-Mobile has raised the ticket on its customer Bank of
America's circuit.",
  "severity": "CRITICAL",
  "type": "FAILURE",
  "priority": "HIGH",
  "relatedParty": [
    {
      "id": "13",
      "role": "Originator",
      "name": "Joe Blau",
      "emailAddress": "jb3434@tmz.com",
      "number": "932-883-8723",
    }
  ]
}
```

```
317 ],
318 "relatedObject": [
319   {
320     "involvement": "ProductInventory",
321     "reference": "34"
322   }
323 ],
324 "attachment": [
325   {
326     "id": "2",
327     "name": "SLA Agreement",
328     "@type": "PDF"
329   }
330 ],
331 "@type": "MEFTroubleTicket",
332 "@schemaLocation": "http://www.mef.net/sonata/TroubleTicket"
333 }
```

Response:

201

```
338 {
339   "id": "62",
340   "href": "www.mef.att.com/troubleTicket/62",
341   "externalId": "T-Mobile-EU-BOA-02",
342   "description": "T-Mobile has raised the ticket on its customer Bank of
343 America's circuit.",
344   "severity": "CRITICAL",
345   "type": "FAILURE",
346   "creationDate": "2018-02-02T18:40:23.283Z",
347   "targetResolutionDate": "2018-02-04T18:40:23.283Z",
348   "resolutionDate": "",
349   "status": "ACKNOWLEDGED",
350   "relatedParty": [
351     {
352       "id": "13",
353       "role": "Originator",
354       "name": "Joe Blau",
355       "emailAddress": "jlb3434@tmz.com",
356       "number": "932-883-8723",
357     }
358   ],
359   "priority": "HIGH",
360   "relatedObject": [
361     {
362       "involvement": "ProductInventory",
363       "reference": "34"
364     }
365   ],
366   "statusChange": [
367     {
368       "statusValue": "ACKNOWLEDGED",
369       "statusChangeReason": "Initial state",
370       "statusChangeDate": "2018-02-02T18:41:23.283Z"
371     }
372   ],
373 }
```

```
"attachment": [  
  {  
    "id": "2",  
    "name": "SLA Agreement",  
    "@type": "PDF"  
  }  
],  
"@type": "MEFTroubleTicket",  
"@schemaLocation": "http://www.mef.net/sonata/TroubleTicket"  
}
```

8.2 Retrieve Trouble Tickets

GET {apiRoot}/troubleTicket?{filtering}

Description

This operation is used to retrieve ticket(s) corresponding to search criteria. The response will be a trouble ticket summary. All attributes of the trouble ticket could be used as search criteria.

Only the following attributes will be retrieved in the summary view:

- id
- href
- status
- severity
- target resolution date
- resolution date
- priority
- related object

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Note: if no trouble tickets match the criteria an empty list is retrieved with a 200 status code (not considered as a fail)

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity

404 Usage Samples

405 T-Mobile (Service Provider) is retrieving trouble tickets in "IN-PROGRESS" status on Access
406 E-Line service provided by AT&T (Partner).

407 Request:

```
408 GET {api_url}/troubleTicket?status=IN_PROGRESS  
409 Accept: application/json
```

410 Response:

411 200

```
412 [  
413 {  
414   "id": "62",  
415   "href": "www.mef.att.com/troubleTicket/62",  
416   "severity": "CRITICAL",  
417   "creationDate": "2018-02-02T18:40:23.283Z",  
418   "targetResolutionDate": "2018-02-06T18:40:23.283Z",  
419   "resolutionDate": "",  
420   "status": "IN_PROGRESS",  
421   "priority": "HIGH",  
422   "relatedObject": [  
423     {  
424       "involvement": "ProductInventory",  
425       "reference": "34"  
426     }  
427   ]  
428 },  
429 ],  
430 {  
431   "id": "43",  
432   "href": "www.mef.att.com/troubleTicket/43",  
433   "severity": "MINOR",  
434   "creationDate": "2018-02-01T18:43:23.283Z",  
435   "targetResolutionDate": "2018-02-07T18:56:23.283Z",  
436   "resolutionDate": "",  
437   "status": "IN_PROGRESS",  
438   "priority": "MEDIUM",  
439   "relatedObject": [  
440     {  
441       "involvement": "ProductInventory",  
442       "reference": "76"  
443     }  
444   ]  
445 }  
446 ]  
447
```

448

449

8.3 Retrieve a single trouble ticket by ticket identifier

GET {apiRoot}/troubleTicket/{id}

Description

This operation is used to retrieve a single trouble ticket.

Behavior

- Returns HTTP/1.1 status code 200 if the request was successful

Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity (see below)

Usage Sample

Request

```
GET {api_url}/troubleTicketManagement/troubleTicket/62
Accept: application/json
```

Response

See JSON illustrating trouble ticket resource (JSON representation sample \$)

8.4 Update Trouble Ticket

PATCH {apiRoot}/troubleTicket

Description

This operation updates a trouble ticket entity. It can be used to update an attribute(s), in particular the “requestedStatus” when the Service Provider wishes to close or cancel an existing trouble ticket.

Behavior

Standard 201 response if trouble ticket successfully updated.

470 Otherwise:

400	Bad Request
401	Unauthorized
403	Forbidden
405	Method Not Allowed
408	Request Time-out
422	Unprocessable entity (see below)

471 Usage Samples

472 T-Mobile (Service Provider) is updating an existing trouble ticket on Access E-Line service
473 provided by AT&T (Partner). T-Mobile had raised the ticket on its customer Bank of America's
474 circuit.

475 Request:

```
476 PATCH {api_url}/troubleTicket/62
477 Accept: application/json
478
479 {
480   "relatedParty": [
481     {
482       "id": "13",
483       "role": "Originator",
484       "name": "Mary Joe",
485       "emailAddress": "mb3345@tmz.com",
486       "number": "932-883-8722",
487     },
488     {
489       "id": "15",
490       "role": "Reviser",
491       "name": "Jill Smith",
492       "emailAddress": "js2345@tmz.com",
493       "number": "932-883-8422",
494     }
495   ],
496   "note": [
497     {
498       "date": "2018-02-02T21:41:23.283Z",
499       "author": "Liz Lamar",
500       "text": "The Test failed indicating a potential fiber cut."
501     },
502     {
503       "date": "2018-02-04T11:41:23.283Z",
504       "author": "Jill Smith",
505       "text": "Originator left the company and replaced relatedParty."
506     }
507   ],
508   "@type": "MEFTroubleTicket",
509   "@schemaLocation": "http://www.mef.net/sonata/TroubleTicket"
510 }
511
512
```

Response:

200

```
{
  "id": "62",
  "href": "www.mef.att.com/troubleTicket/62",
  "externalId": "T-Mobile-EU-BOA-02",
  "description": "T-Mobile (Service Provider) is retrieving a trouble ticket
on Access E-Line service provided by AT&T (Partner). T-Mobile has raised the
ticket on its customer Bank of America's circuit.",
  "severity": "CRITICAL",
  "type": "FAILURE",
  "creationDate": "2018-02-02T18:40:23.283Z",
  "targetResolutionDate": "2018-02-04T18:40:23.283Z",
  "resolutionDate": "",
  "status": "IN_PROGRESS",
  "relatedParty": [
    {
      "id": "13",
      "role": "Originator",
      "name": "Mary Joe",
      "emailAddress": "mb3345@tmz.com",
      "number": "932-883-8722",
    },
    {
      "id": "15",
      "role": "Reviser",
      "name": "Jill Smith",
      "emailAddress": "js2345@tmz.com",
      "number": "932-883-8422",
    }
  ],
  "priority": "HIGH",
  "relatedObject": [
    {
      "involvement": "ProductInventory",
      "reference": "34"
    }
  ],
  "statusChange": [
    {
      "statusValue": "ACKNOWLEDGED",
      "statusChangeReason": "Initial state",
      "statusChangeDate": "2018-02-02T18:41:23.283Z"
    },
    {
      "statusValue": "IN_PROGRESS",
      "statusChangeReason": "Technician assigned and Changed from
ACKNOWLEDGED",
      "statusChangeDate": "2018-02-02T19:41:23.283Z"
    }
  ],
  "note": [
    {
      "date": "2018-02-02T21:41:23.283Z",
```

```
568     "author": "Liz Lamar",
569     "text": "The Test failed indicating a potential fiber cut."
570   },
571   {
572     "date": "2018-02-04T11:41:23.283Z",
573     "author": "Jill Smith",
574     "text": "Originator left the company and replaced relatedParty."
575   }
576 ],
577 "attachment": [
578   {
579     "id": "2",
580     "name": "SLA Agreement",
581     "@type": "PDF"
582   }
583 ],
584 "@type": "MEFTroubleTicket",
585 "@schemaLocation": "http://www.mef.net/sonata/TroubleTicket"
586 }
587 }
588 }
```

589

590