



Change Management REST API Specification

TMF655
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1 Introduction

The following document is the specification of the REST API for the change request resource. It includes the model definition as well as all available operations. Possible actions are creating and retrieving a change request, updating a rejected change request and, partially updating an approved change request. Furthermore, the GET allows filtering using standard filter criteria.

The Change Management API provides a standardized client interface to the Change Management Systems for creating, tracking and managing change requests as a result of a change requested by a customer.

The API supports the ability to send requests to create a new change specifying the nature and severity of the change as well as all necessary related information. The API also includes mechanisms to search for and update existing change requests. Notifications are defined to provide information when a change request has been updated, including status changes.

The Change Management API manages change request resources:

- A change request represents a request for a change in service being raised by a requester.
- The main change request attributes are its description, priority, type, related dates (planned start date, planned end date), state and related information (change reason), related parties(originator, owner, reviser, etc.), related entities (configuration item, etc.) and notes

Change Management API performs the following operations:

- Partial update on a change request
- Full update on a rejected change request
- Creation of a change request
- Notification of events on a change request:
 - Change request state change
 - Change request implemented
 - Change request created
 - Change request Information required

Bell customers will be required to conform to the Bell TMF API as described in our swagger files and API specification. The customer must inform Bell if they do not intend to conform to the Bell TMF API, as different measures will be required to meet the customer's needs. This includes inbound and outbound transactions.

The Change Request API supports the following functions:

Sr No.	Operation	Flow	Origin	Description
1	CreateChangeManagement	Partner -> Bell	Customer Initiated	Partner initiates a creation of Change Request. The API offer guaranteed message delivery.
2	PatchChangeManagement	Partner -> Bell	Customer Initiated	Customer requests to update an existing Change into Bell (by Bell Change ID). The API offers guaranteed message delivery. In a Patch request, the customer should only be sending fields that need to be changed/updated and not the entire payload.
3	Publish Notification	Bell -> Partner	Bell Initiated	Bell sends update notifications, status change notifications, outbound communications or BELL initiated Change Request notification via registered listener on Hub

3 Sample Use Cases

The customer wants to create a change ticket that will be executed by Bell

- There is an ongoing project and changes are required
- There is a request provided by the customer to proceed with a modification / addition / change on their environment and executed by Bell

Bell has to create a change ticket and get the customer approval:

- There is an emergency change that needs to be performed to resolve an incident
- There is a maintenance required on the network managed by Bell

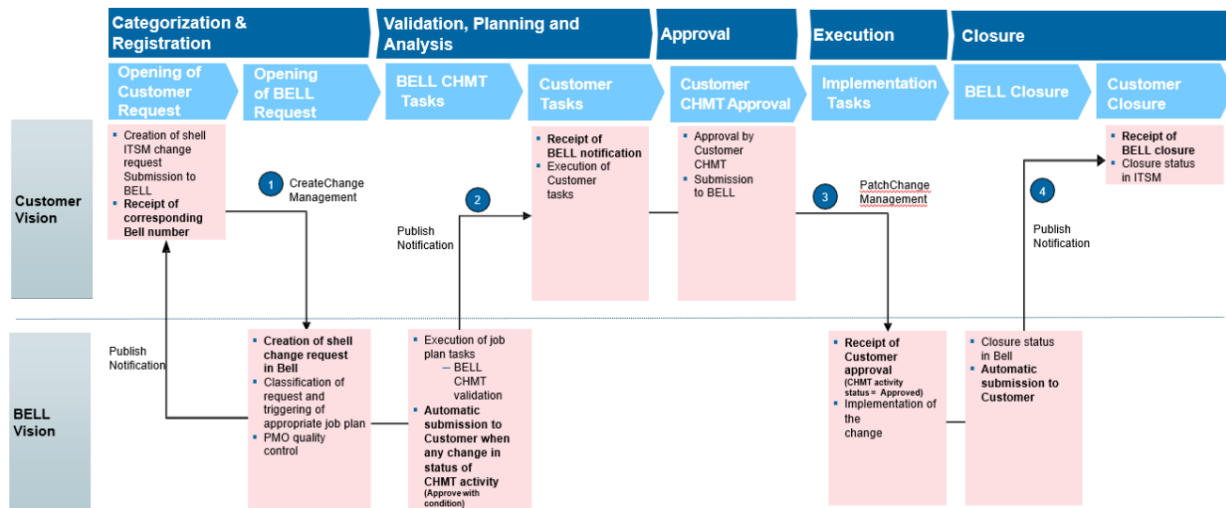
The TMF655 Change Management API is to allow customers submitting RFC (Request for Change) to a Service Provider such as Bell Canada.

The RFC shall be part of an existing Change Catalog, this represents all possible changes that was agreed between Customer and Bell Canada. Moving equipment from one floor to another, add new site etc.. is an example of a Change Request.

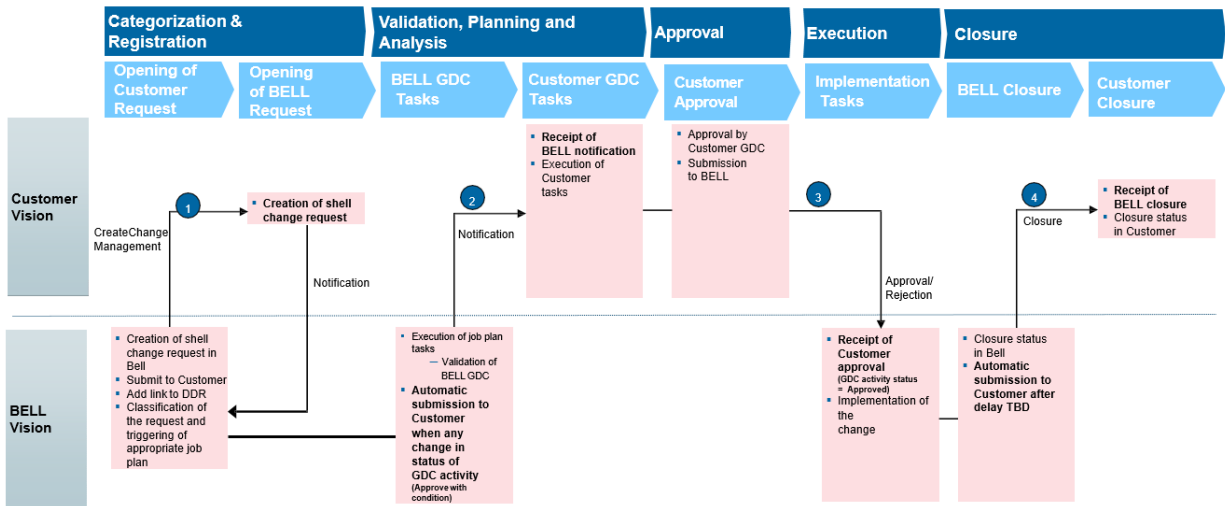
This can be initiated by Bell Canada (Bell initiated Change or BIC), such BIC can be such as a planned outage to upgrade infrastructure/platform by Service Provider (Bell Canada).

The RFC and later the CR will follow the ITIL Change management best practice where the customer will have the say as part of CAB to approve/reject the implementation plan / dates.

Business flow for Customer Initiated Request



Business flow for Bell Initiated Request

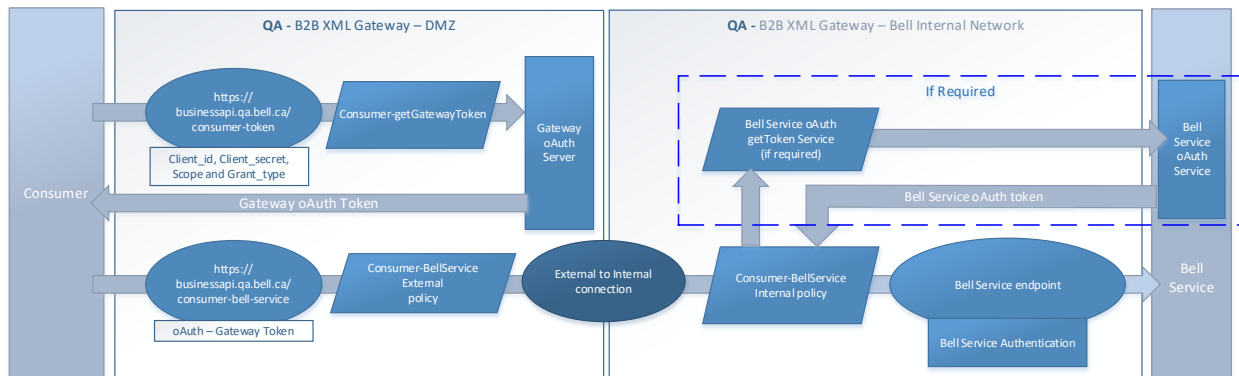


4 Authentication

Currently, Bell Gateway accepts 2 forms of authentication; Basic and OAuth. Basic is the legacy method while all new request will be made using OAuth 2.0.

For OAuth 2.0, two calls must be made to the gateway – the first call is done to retrieve the Gateway token. This call is made by passing a client_id, client_secret, scope and grant type.

Once the token is received, the main call is made with the token for authorization (Bearer Token)



4.1 Encryption

Messages exchanged with the API Gateway, both between the gateway and client, and between the gateway and the endpoint, are at minimum protected with 1-way server-style TLS. Additional TLS options are available.

The API gateway enforces:

- TLS1.2 256 bits AES256-SHA

The Bell API gateway supports the following ciphers:

- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
- TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384

5 TMF API Definition

5.1 Reactive Create Change Request (Customer to Bell)

The following table is the API definition for a POST BellChangeRequest_Create API call.

Field Name	Length	Description
externalReference[name='Customer'].externalId	1024	Identifies the External Ticket Number associated to the Change.
impactEntity.@referredType='CINUM'.id	150	Used to Identify the Configuration Item Number used in the Change.
channel	30	Used to identify the Service of the device.
description	320	Description of the change work order.
note.id='LongDescription'.text	32000	Long Description for Work Order Description
category.@referredType='ClassStructureId'.id	20	Defines the Classification used on the Change record
urgency	50	Defines the urgency of the Change
Impact	12	Defines the Impact of the Change
Risk	10	Defines the risk level of the change.
plannedStartTime	DATETIME	Date and time the work is scheduled to begin.
plannedEndTime	DATETIME	Date and time the work is scheduled to be completed.
requestType	10	Describes the type of change
requestDate	DATETIME	The date and time the change was reported.
relatedParty.[role='ReportedBy'].name	100	The Person who has Reported the Change
impactEntity[action="add/remove".role='RelatedCI'.id]	150	This section will capture multiple CI's related to the Workorder.
attachment.Value.content	BASE64	Base64 format of the attachment contents
attachment.value.name	100	The name of the attachment
note.id='WorkLog'.author	100	Defines the Person who has created the log
note.id='WorkLog'.date	DATETIME	Defines the date and time when the log is created.

note.id='WorkLog'.noteType	25	Determines the purpose of the log
note.id='WorkLog'.summary	200	Capture the details of the Log
note.id='WorkLog'.text	32000	Long Description of the Worklog details.

5.2 Proactive Create Change Request (Bell to Customer)

The following table is the API definition for a POST ChangeRequestCreateEvent API call.

Field Name	Length	Description
id	1024	Identifies the Bell Ticket Number associated to the Change Record .
impactEntity.id	150	Used to Identify the Configuration Item Number used in the Change
channel	30	Used to identify the Service of the device.
description	320	Description of the change work order.
note.noteType='LongDescription'.text	32000	Long Description for Work Order Description
category.@referredType='ClassStructureId'.id	20	Defines the Classification used on the Change record.
impact	12	Defines the Impact of the Change.
risk	10	Defines the risk level of the change.
status	16	Status of the change
plannedStartTime	DATETIME	Date the work is targeted to begin.
plannedEndTime	DATETIME	Date the work is targeted to be completed.
priority	12	The priority of the Change captures how quickly this Change needs to be implemented.
requestType	10	Describes the type of change
requestDate	DATETIME	The date and time the change was reported.
relatedParty.[role='ReportedBy'].name	100	The Person who has Reported the Change
note.id='WorkLog'.author	100	Defines the Person who has created the log

note.id='WorkLog'.date	DATETIME	Defines the date and time when the log is created.
note.id='WorkLog'.noteType	25	Determines the purpose of the log
note.id='WorkLog'.summary	200	Capture the details of the Log
note.id='WorkLog'.text	32000	Long Description of the Worklog details.

5.3 Reactive Update Change Request (Customer to Bell)

The following table is the API definition for a POST BellChangeRequest_Update API call.

Field Name	Length	Description
id	1024	Identifies the Bell Ticket Number associated to the Change Record.
externalReference[name='Customer'].externalId	1024	Identifies the External Ticket Number associated to the Change.
status	16	Status of the change
resolution.code	50	Identifies the Closure Code for the Change
plannedStartTime	DATETIME	Date and time the work is scheduled to begin.
plannedEndTime	DATETIME	Date and time the work is scheduled to be completed.
actualStartTime	DATETIME	Date and time the actual work was started.
actualEndTime	DATETIME	Date and time the actual work was complete.
impactEntity[action="add/remove".role='RelatedCI'.id]	150	This section will capture multiple CI's related to the Workorder.
attachment.Value.content	BASE64	Base64 format of the attachment contents
attachment.value.name	100	The name of the attachment
note.id='WorkLog'.author	100	Defines the Person who has created the log
note.id='WorkLog'.date	DATETIME	Defines the date and time when the log is created.
note.id='WorkLog'.noteType	25	Determines the purpose of the log
note.id='WorkLog'.summary	200	Capture the details of the Log

note.id='WorkLog'.text	32000	Long Description of the Worklog details.
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5.4 Proactive Update Change Request (Bell to Customer)

The following table is the API definition for a POST ChangeRequestAttributeValueChangeEvent API call.

Field Name	Length	Description
externalReference[name='Customer'].externalId	1024	Identifies the External Ticket Number associated to the Change.
id	1024	Identifies the Bell Ticket Number associated to the Change Record.
status	16	Status of the change
note.author	100	Defines the Person who has created the log
note.date	DATETIME	Defines the date and time when the log is created
note.notetype	25	Determines the purpose of the log
note.summary	200	Capture the details of the Log
note.text	32000	Long Description of the Worklog details

6 Endpoints

6.1 createChangeRequest

POST

Summary: Creates a 'Change Request' in Bell from a customer

Description: This API enables a customer to create a Change Request in Bell's System of Record. A customer submitted Change Request will be subject to a review for approval by Bell Operations Team before implementation.

6.1.1 Behavior

Returns HTTP/1.1 status code 202 if the request was successful.
Returns HTTP/1.1 status code 500 for Internal Error.

6.1.2 Headers and Parameters

Below is a list of header and parameter properties for Post Change Request

Name	Description	Type
X-Correlation-Id	ID used to correlate request and response payloads	Header

6.1.3 Usage samples

Here's an example of a request for creating a Change Request.

Request

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Create

Create Change Request Message

```
{
  "attachment": [{"value": {
    "content": "SnVzdGlmaWNhdGlvbjogCkltcGxlbWVudGF0aW9=",
    "name": "test.txt"
  }}],
  "category": [{
    "@referredType": "ClassStructureId",
    "id": "12489"
  }],
  "channel": "commodityGroupName",
  "description": "Description of the Change Order",
  "externalReference": [{
    "externalId": "CHG0034909",
    "name": "Customer"
  }],
  "impact": "3 - Low",
  "impactEntity": [{
    "@referredType": "CINUM",
    "id": "00:18:0A:43:C7:F7",
    "role": "CINUM"
  }],
}
```

```

    {
      "action": "add",
      "id": "00:11:0A:00:C0:F0",
      "role": "RelatedCI"
    },
    "note": [{
      "id": "LongDescription",
      "text": "Long Description of the Change Order"
    }],
    {
      "id": "WorkLog",
      "author": "Customer",
      "date": "2023-02-22T14:09:23.199Z",
      "summary": "Description of the WorkLog",
      "noteType": "Customer",
      "text": "Long Description of the WorkLog"
    }],
    "plannedEndTime": "2023-03-28T20:00:22.000Z",
    "plannedStartTime": "2023-03-27T20:00:10.000Z",
    "relatedParty": [{
      "name": "John Smith",
      "role": "ReportedBy"
    }],
    "requestDate": "2023-03-22T20:00:29.000Z",
    "requestType": "4 - Low",
    "risk": "Moderate",
    "urgency": "NORMAL"
  }
}

```

Responses

Status Code: 202

Message: Accepted (An Acknowledgement to Create Request)

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Create

Successful Response Message

```

{
  "attachment": [{"value": {
    "content": "SnVzdGlmaWNhdGlvbJogCkltcGxlbWVudGF0aW9=",
    "name": "test.txt"
  }}],
  "category": [{
    "@referredType": "ClassStructureId",
    "id": "12489"
  }],
  "channel": "commodityGroupName",
  "description": "Description of the Change Order",
  "externalReference": [{
    "externalId": "CHG0034909",
    "name": "Customer"
  }],
  "impact": "3 - Low",
  "impactEntity": [{
    "@referredType": "CINUM",
    "id": "00:18:0A:43:C7:F7",
    "role": "CINUM"
  }],
  {
    "action": "add",
    "id": "00:11:0A:00:C0:F0",
    "role": "RelatedCI"
  }],
  "note": [{
    "id": "LongDescription",
    "text": "Long Description of the Change Order"
  }],
  {
    "id": "WorkLog",

```

```
        "author": "Customer",
        "date": "2023-02-22T14:09:23.199Z",
        "summary": "Description of the WorkLog",
        "noteType": "Customer",
        "text": "Long Description of the WorkLog"
    }],
    "plannedEndTime": "2023-03-28T20:00:22.000Z",
    "plannedStartTime": "2023-03-27T20:00:10.000Z",
    "relatedParty": [{
        "name": "John Smith",
        "role": "ReportedBy"
    }],
    "requestDate": "2023-03-22T20:00:29.000Z",
    "requestType": "4 - Low",
    "risk": "Moderate",
    "urgency": "NORMAL"
}
```

Message: Asynchronous Create Response with Bell Change ID

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Update

Successful Response Message

```
{
  "customerTicketId": "214702",
  "id": "214702"
}
```

Status Code: 500

Message: Asynchronous Internal Server Error

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Update

Failure Response Message – Internal server error

```
{
  "customerTicketId": "214702",
  "note": [{
    "@baseType": "Note",
    "@type": "BellNote",
    "date": "2019-02-01T00:03:00-05:00",
    "noteType": "logType1",
    "summary": "description1",
    "text": "longDescription1"
  }],
}
```

6.2 patchChangeRequest

PATCH

Summary: Request to partially update a 'Change Request' by Bell CR ID.

Description: This API enables a customer to send an Update or Update Request against a given Change Request, based on Bell CR Id. Update Requests from the customer are subject to approval by Bell Operations team. Once approved, the update will be made in Bell and a notification will be published to the customer. If the request is not approved, this will be communicated to the customer via Worklog.

Only a subset of Change Request elements are allowed to be updated by Bell system once the Change is approved. (Priority, contact info, Status, Notes, Attachments).

Note: When adding an Attachment or Note to a Change Request, the new object will be appended to the existing list, ie. There will be no replacement of existing Attachments/Notes.

However in the event that a Change submitted by a customer is reject by Bell an update will be send back to the Customer stating the reason for the rejection and a status of Pending. For this scenario Bell can request the Customer update any field on the change and is not limited by the list above.

6.2.1 Behavior

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

Returns HTTP/1.1 status code 500 for Internal Error.

6.2.2 Header and Parameters

Below is a list of header and parameter properties for Patch Change Request

Name	Description	Type
X-Correlation-Id	ID used to correlate request and response payloads	Header

6.2.3 Usage samples

Here's an example of a request for updating a Change Request.

Request

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Update

Update Change Request Message

```

{
  "id": "C12345678"
  "attachment": [{"value": {
    "content": "SnVzdGlmaWNhdGlvbjogCkltcGxlbWVudGF0aW9=",
    "name": "test.txt"
  }}],
  "externalReference": [{
    "externalId": "CHG0034714",
    "name": "Customer"
  }],
  "impactEntity": [{
    "action": "add",
    "id": "00:11:0A:00:C0:F0",
    "role": "RelatedCI"
  }],
  "note": [{
    "author": "Customer",
    "date": "2023-02-22T14:09:23.199Z",
    "noteType": "Customer",
    "summary": "Description of the WorkLog",
    "text": "Long Description of the WorkLog"
  }],
  "plannedEndTime": "2023-03-28T20:00:22.000Z",
  "plannedStartTime": "2023-03-27T20:00:10.000Z",
  "actualStartTime": "2023-03-27T20:00:12.000Z",
  "actualEndTime": "2023-03-27T20:00:30.000Z",
  "resolution": {
    "code": "Cancelled before maintenance window"
  },
  "status": "cancelled"
}

```

Responses

Status Code: 200

Message: Accepted

Content-Type: application/json

Schema: #/definitions/BellChangeRequest_Update

Success Response Message

```

{
  "id": "C12345678"
  "attachment": [{"value": {
    "content": "SnVzdGlmaWNhdGlvbjogCkltcGxlbWVudGF0aW9=",
    "name": "test.txt"
  }}],
  "externalReference": [{
    "externalId": "CHG0034714",
    "name": "Customer"
  }],
  "impactEntity": [{
    "action": "add",
    "id": "00:11:0A:00:C0:F0",
    "role": "RelatedCI"
  }],
  "note": [{
    "author": "Customer",
    "date": "2023-02-22T14:09:23.199Z",
    "noteType": "Customer",
    "summary": "Description of the WorkLog",
    "text": "Long Description of the WorkLog"
  }],
  "plannedEndTime": "2023-03-28T20:00:22.000Z",
  "plannedStartTime": "2023-03-27T20:00:10.000Z",
  "actualStartTime": "2023-03-27T20:00:12.000Z",
  "actualEndTime": "2023-03-27T20:00:30.000Z",
  "resolution": {
    "code": "Cancelled before maintenance window"
  }
}

```



```
    },
    "status": "cancelled"
  }
```

Status Code: 404

Message: Not Found

Content-Type: application/json

Schema: #/definitions/Error

Failure Response Message – Not found

```
{
  "code": 404,
  "message": "Not found",
  "status": "FAIL"
}
```

Status Code: 500

Message: Internal Server Error

Content-Type: application/json

Schema: #/definitions/Error

Failure Response Message – Internal Server Error

```
{
  "code": 500,
  "status": "FAIL",
  "reason": "Internal Server Error : ITSM system unavailable"
}
```

6.3 Notifications – publish events

Notifications are published to the customer URL whenever there is a create or update on the Change Request triggered in Bell ITSM. Different types of notifications will be raised for different types of events.

Note: Customers should provide the root of their callback URLs at design time for Bell to configure & white-list internally. Also if customer URLs are SSL secured, the customer is responsible for providing the required SSL certificates at design time.

6.3.1 Headers and Parameters

Below is a list of header and parameter properties for Bell Event Change Request

Name	Description	Type
X-Correlation-Id	ID used to correlate request and response payloads	Header

6.3.2 ChangeRequestCreateEvent

JSON representation

This notification is published once the change is created in the Bell ITSM. Below is the JSON representation of an example of a 'ChangeRequestCreateEvent' notification object

Notification Message

Content-Type: application/json

Schema: #/definitions/EventSubscription

```
{
  "@baseType": "ChangeRequestCreateEvent",
  "@type": "ChangeRequestCreateEvent",
  "event": {"changeRequest": {
    "@baseType": "ChangeRequest",
    "@type": "BellChangeRequest",
    "category": [{
      "@baseType": "CategoryRef",
      "@referredType": "ClassStructureId",
      "@type": "CategoryRef",
      "id": "12345"
    }],
    "channel": "NSMIS",
    "description": "Description of the Change Order",
    "id": "C1234567",
    "impact": "3 - Low",
    "risk": "Moderate",
    "priority": "Low"
  },
  "impactEntity": [{
    "@baseType": "ImpactEntity",
    "@type": "ImpactEntity",
    "id": "CUST-ONTO-0000-00000"
  }],
  "note": [{
    "id": "LongDescription",
    "text": "Long Description of the Change Order"
  },
  {
    "id": "WorkLog",
    "author": "Customer",
    "date": "2023-02-22T14:09:23.199Z",
    "summary": "Description of the WorkLog",
    "noteType": "Customer",
    "text": "Long Description of the WorkLog"
  }],
  "relatedParty": [{
    "name": "John Smith",
    "role": "ReportedBy"
  }],
  "plannedEndTime": "2023-04-05T18:25:00.000Z",
  "plannedStartTime": "2023-03-29T18:25:00.000Z",
  "requestType": "4 - Low",
  "requestDate": "2023-03-22T20:00:29.000Z",
  "status": "scheduled"
}],
  "eventType": "ChangeRequestCreateEvent"
}
```

6.3.3 ChangeRequestAttributeValueChangeEvent

JSON representation

This notification is published when there is any update/patch to the change in Bell ITSM triggered either internally or externally. Below is the JSON representation of an example of a 'ChangeRequestAttributeValueChangeEvent' notification object.

Notification Message

Content-Type: application/json

Schema: #/definitions/EventSubscription

```
{
  "id": "C12345678",
  "externalReference": [{
    "externalId": "CHG00001",
    "name": "Customer"
  }],
  "note": [{
    "author": "Customer",
    "date": "2023-02-22T14:09:23.199Z",
    "noteType": "Customer",
    "summary": "Description of the WorkLog",
    "text": "Long Description of the WorkLog"
  }],
  "status": "cancelled"
}
```

7 Appendix

Below is a list of all values that are acceptable in the indicated fields, along with a description of each possible value:

Field	Value	Description
Priority	Critical	
	High	
	Medium	
	Low	
Urgency	Standard	
	Emergency	
	Normal	
Impact	1 - High	
	2 - Medium	
	3 - Low	
Risk	High	
	Moderate	
	Low	
Status	acknowledged	
	waitForApproval	
	approved	
	scheduled	
	cancelled	
	completed	
	requestForAuthorization	

8 Version history

Version	Change description	Date
0.1	Initial version	September 10 th , 2020
0.2	Updated Change Management Resource Model	November 16 th , 2020
1.0	Bell Branded	November 25 th , 2020
1.1	Updated TMF version from 18.0.0 to 18.0.1 and subsequent payload samples	March 1 st , 2023