

# TM Forum Specification

## Resource Pool Management API REST Specification

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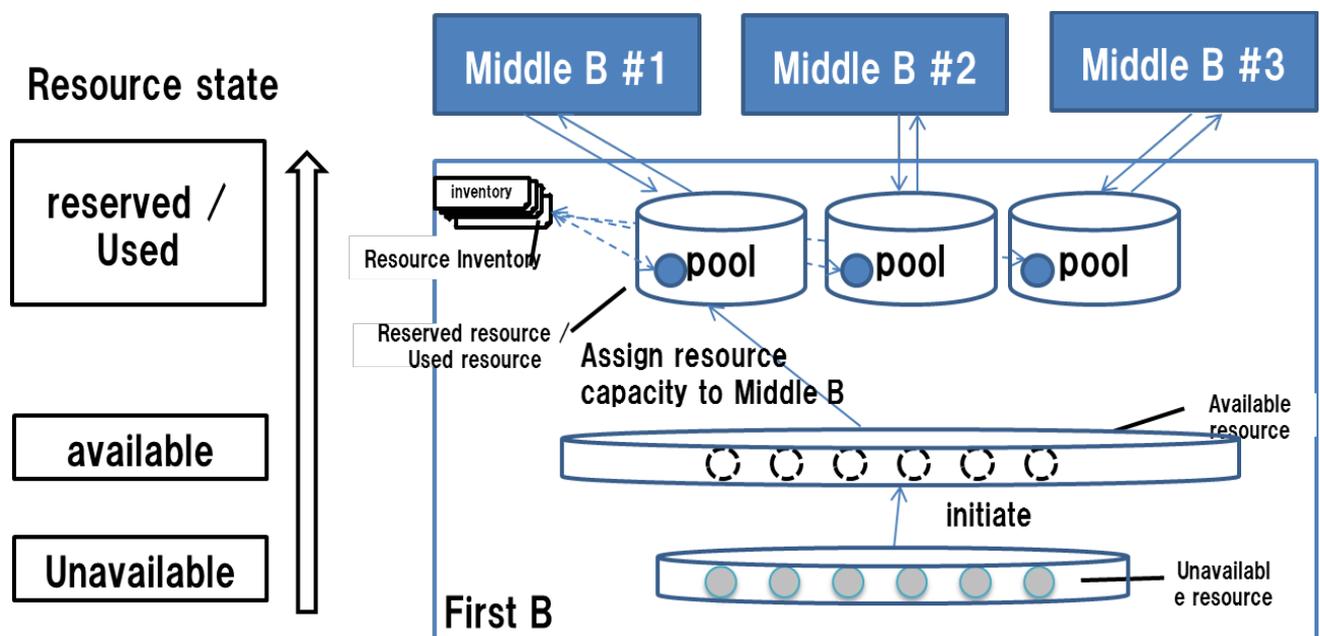
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## INTRODUCTION

The following document is the specification of the REST API for Resource Pool management. It includes the model definition as well as all available operations.

This Resource Pool management API provides feature of resource reservation at pre-order phase. In order to reserve physical product, logical product, and virtual product, the API uses the idea of resource pool.



Among the relationships of B2B2X, First B is a provider that provides resources or Service as CSP.

Middle B is an Enterprise customer or retailer that provides services or products to users by utilizing what First B provides.

In the Resource Pool, First B manages the Pool of Resource or Service, and assigns a part of it to Middle B based on requirement. ( Middle B makes a request of Resource or Service, and has the assignment done. )

Therefore First B has Resource Pool for each Middle B.

Resource Pool manages resource capacity with the resource state

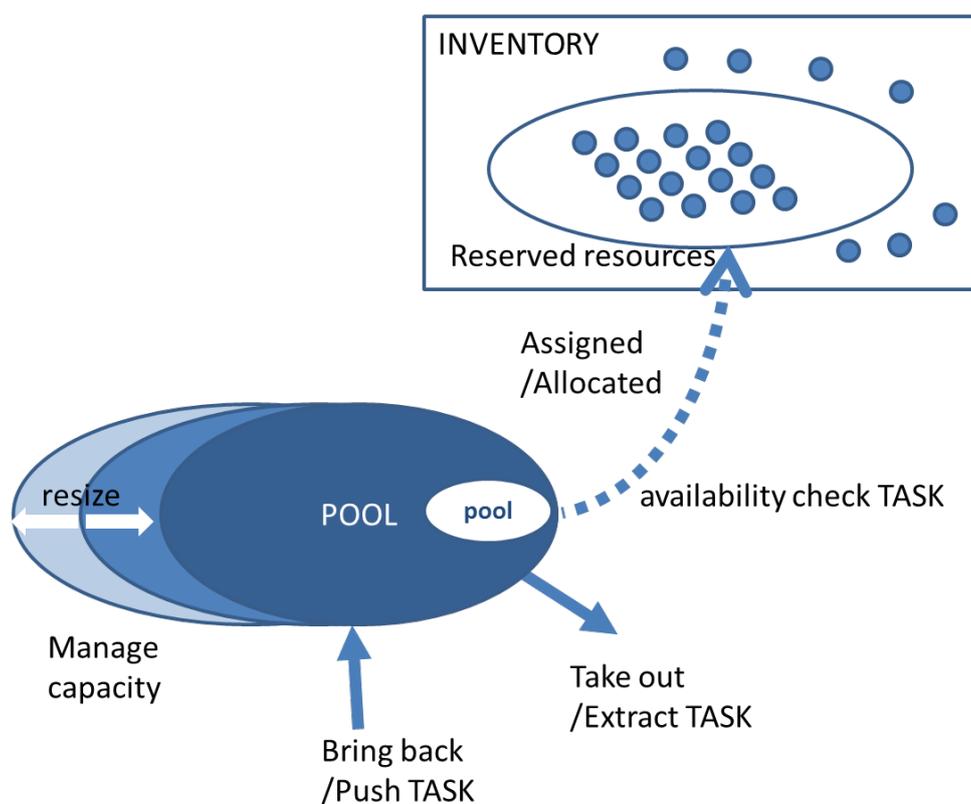
When First B assigns resource capacity for reserved resource to Middle B sub pool, First B can create the reserved resource entity in Resource Inventory.

state mgt. for each resource is not independent from that in Resource Inventory.

The Resource Pool Management API has the Resource Pool API Resource and the Reservation API Resource.

In order to operate the Resource Pool API resource, the RPM API has the TASK of push, extract, and availability check.

Reservation API Resource is used to reserve resources or resource capacity to be assigned / allocated from First B Pool according to request from Middle B.



The Push TASK increases the size of the Pool by adding resources to the Middle B assignment Pool according to the request of Middle B.

The Extract TASK reduces the size of the Pool by extracting resources of the Middle B assignment Pool according to the request of Middle B.

The available check TASK obtains a list of newly assignable / allocatable resources in First B Pool as requested by Middle B.

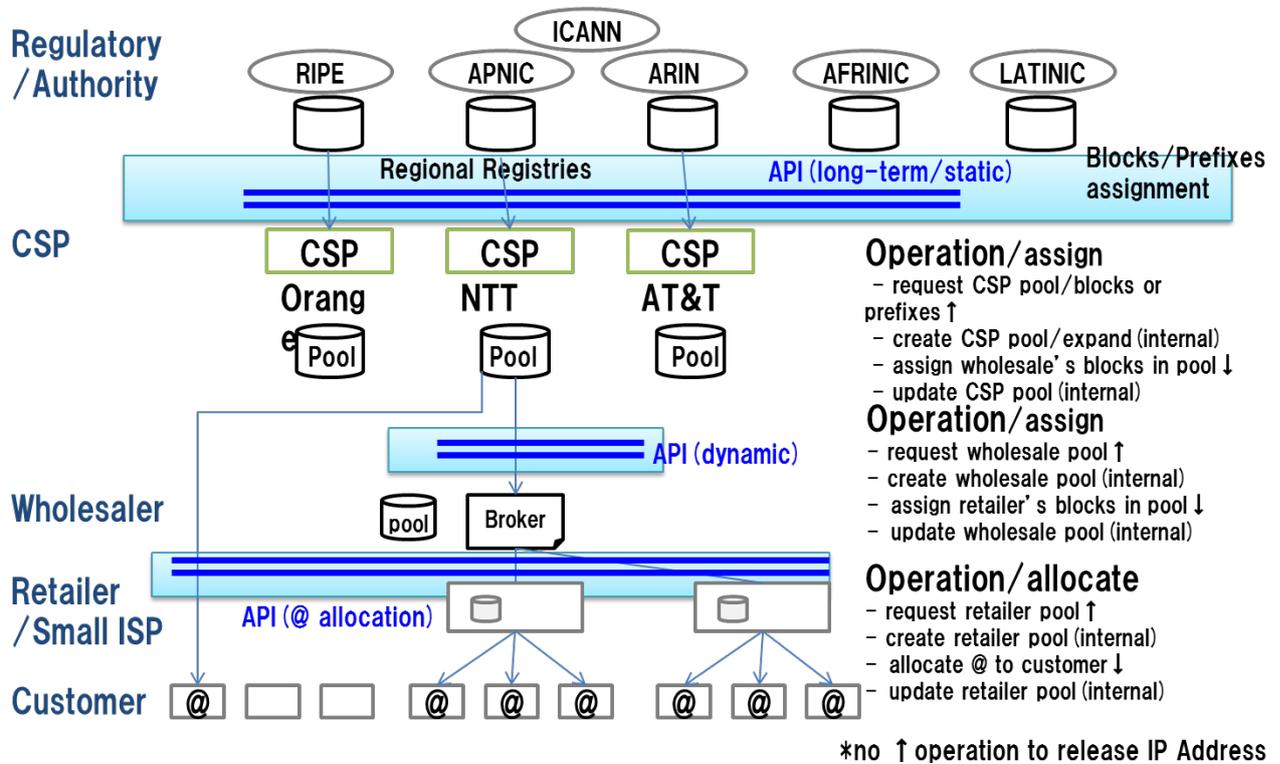
In addition, there is a function to update Pool management information.

## SAMPLE USE CASES

Among the listed use cases, 2, 3, and 4 will be described as sample use cases covering requirements.

Resource type	Use case	Requirement Feature
countable logical resource	1.IP address assignment	<ul style="list-style-type: none"> <li>- Request Resource block</li> <li>- Assign Resource</li> </ul>
	2.IP address allocation	<ul style="list-style-type: none"> <li>- Request Specific Resource</li> <li>- Assign Resource</li> </ul>
	3.Phone Number allocation	<ul style="list-style-type: none"> <li>- Check Resource Availability               <ul style="list-style-type: none"> <li>- reserve candidate resource</li> <li>- return available resource list</li> <li>- retrieve next candidate resource list</li> </ul> </li> <li>- Reserve Resource               <ul style="list-style-type: none"> <li>- release reserved candidate resource that is not use</li> </ul> </li> </ul>
uncountable logical/virtual resource	4.Virtual Resource assignment ( virtual storage )	<ul style="list-style-type: none"> <li>- Check Resource Availability</li> <li>- Reserve Resource and Trigger Inventory Mgt.</li> </ul>
	5.Virtual Resource assignment (VPN bandwidth)	<ul style="list-style-type: none"> <li>- Check Resource Availability</li> <li>- Reserve Resource and Trigger Inventory Mgt.</li> </ul>
physical resource	6.physical resource assignment	<ul style="list-style-type: none"> <li>- Assign Resource</li> </ul>

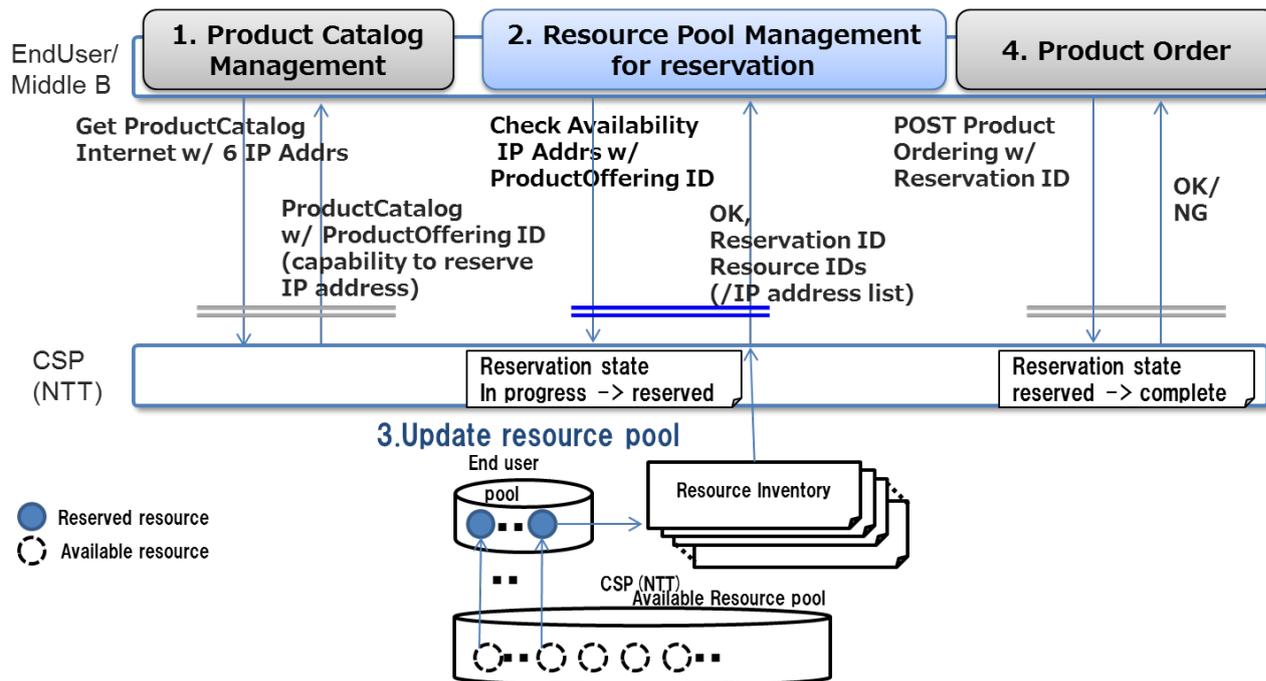
IP ADDRESS ALLOCATION



Resource Pool API use at following cases.

The CSP is assigned the IP Address blocks from ICANN and manages the blocks at IP address pool. The CSP assigns part of the IP address blocks to wholesaler. The CSP also can allocate IP addresses to customer.

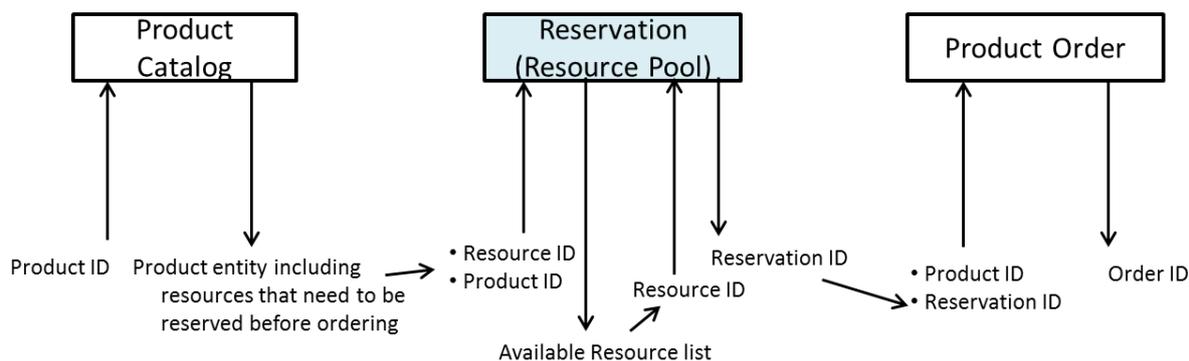
The following sequence represents that IP address allocation from CSP as First B to enterprise customer as Middle B for an internet service which requires static IP address.



CSP check available IP addresses before ordering an internet service with multiple IP addresses

1. Get Product catalog of Internet service get structured resource info that need to reserve.
2. Availability check and reserve IP address. State of specified address change to reserved state.
3. CSP update resource pool table and resource inventory table.
4. (Order an internet service using Product Ordering API with reserved resource information.)

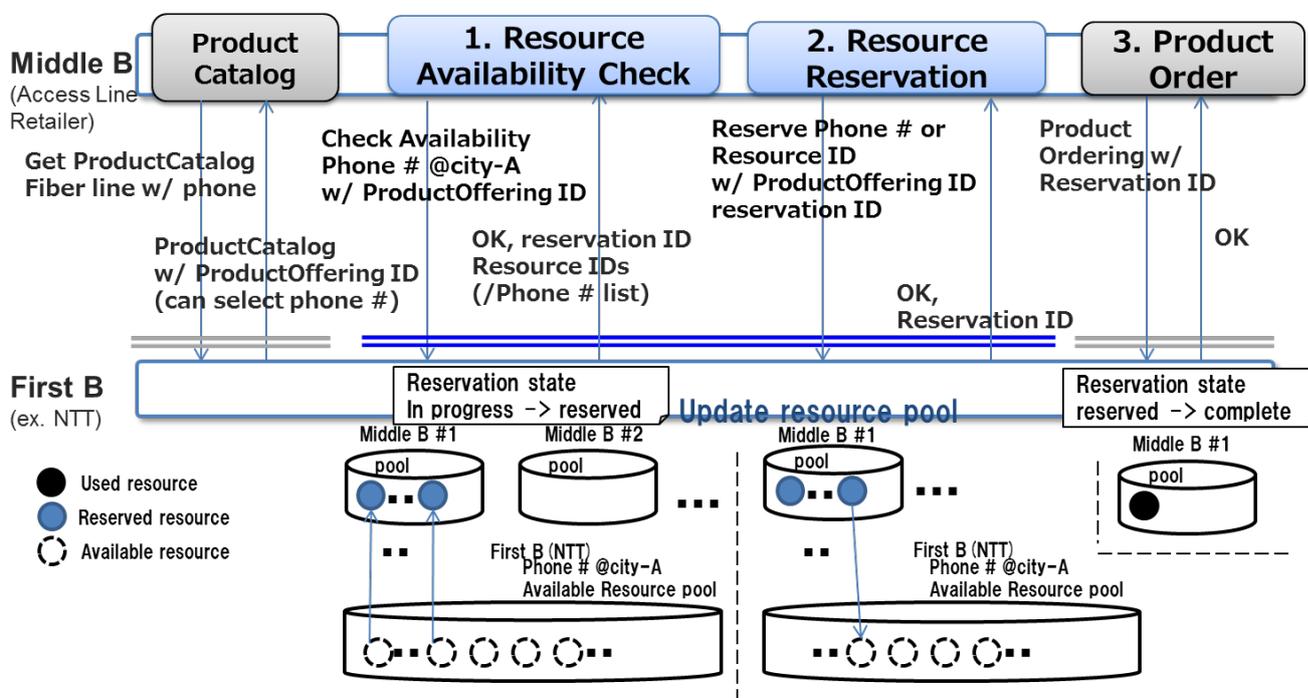
## PHONE NUMBER ALLOCATION



In this Usecase in the figure above, Middle B can check the resource information that needs to be reserved before ProductOrder.

Middle B reserves the corresponding resource based on the information acquired from ProductCatalog.

At that time, especially for a phone number, Middle B can check the resource information in ProductCatalog to make sure the resource has been reserved for ProductOrder.



Access Line Retailer selects and reserves a phone number before ordering a fixed IP phone service

1. Get available phone number list for the specified area with requested start date.
2. Reserve phone number selected from the available phone number list. State of specified number change to reserved state.
3. (Order a telephone service using Product Ordering API with reserved resource information.)

(In this use case, it indicates that user executes availability check and reservation consecutively.)

However, there are cases where the user does not execute the availability check, or Availability check and reservation may not be contiguous.)

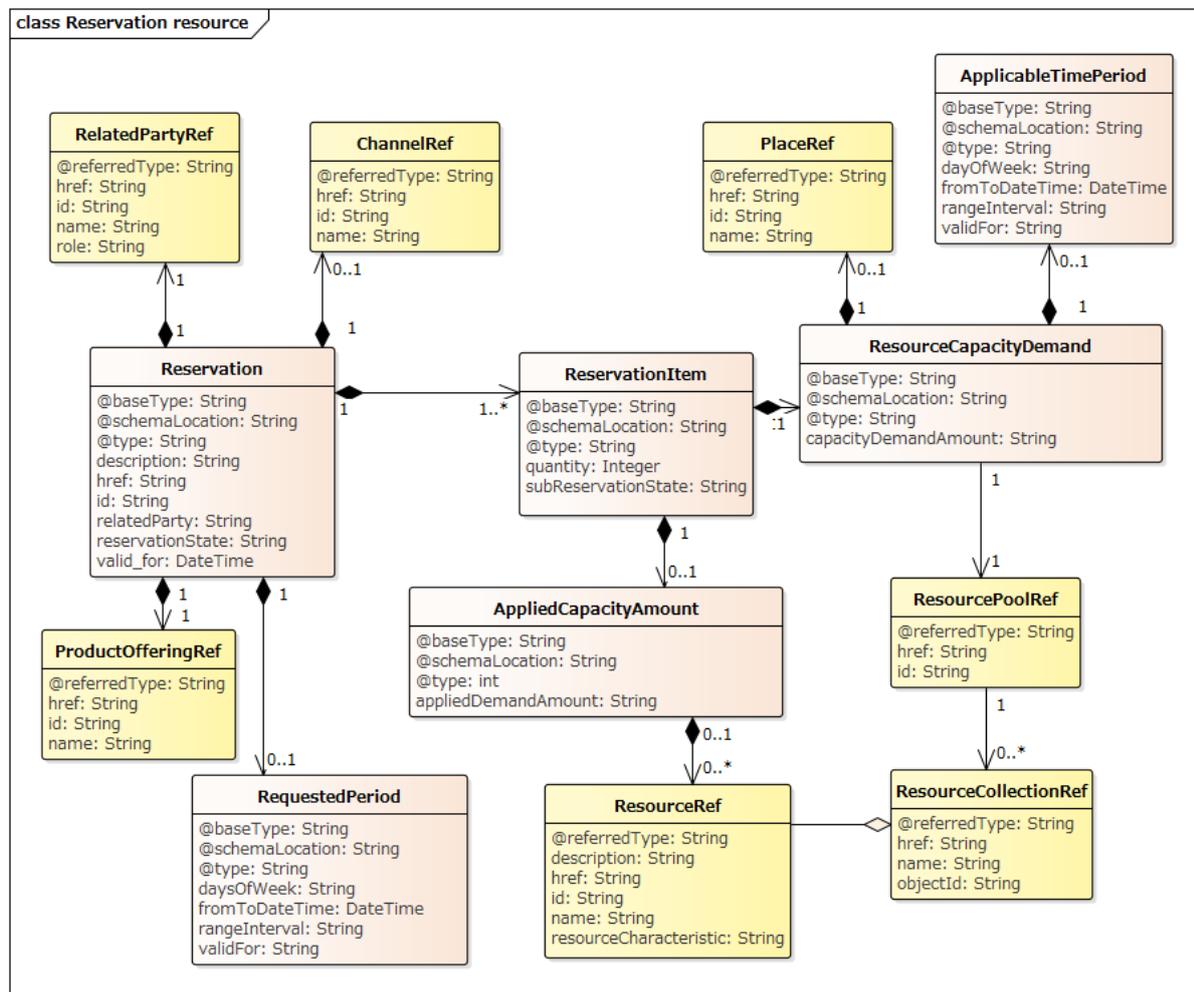
**RESOURCE MODEL**

Managed Entity and Task Resource Models

**RESERVATION RESOURCE**

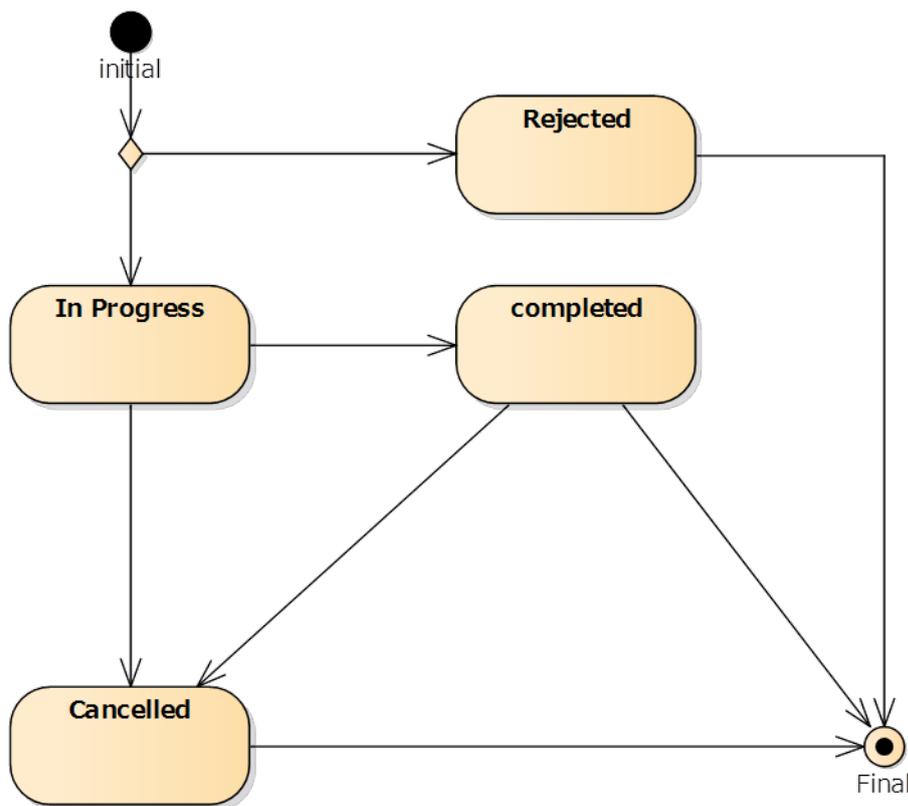
**API Resource Model**

Reservation API resource in Resource Pool Management API provides a UML model:



Reservation Lifecycle

Following is core reservation lifecycle. The state expansion as sub-state is also acceptable



state	description
Rejected	The reservation request is rejected.
In progress	The resource reservation request is in progress Acknowledge is added to sub-states as a checking state when it takes time to check the normality of the requested resource, such as the relationship with the construction date of the reservation resource.
Completed	The resource reservation request is completed, and resources had been reserved in the inventory. Completed status may have sub-states of fully successful, partially successful, failed depending on conditions.
Cancelled	The resource reservation request is cancelled, and resources are made available (released) in the inventory

Field descriptionsReservation fields

Field	Description
<b>id</b>	A string. Identifier of an instance of the Reservation.
<b>href</b>	A string. Hyperlink to access the reservation.
<b>description</b>	A string. free-text description of the reservation.
<b>valid_for</b>	The period of time for which the reservation is applicable.
<b>reservationState</b>	A string. The life cycle state of the reservation.
<b>relatedParty</b>	A list of related party references (RelatedPartyRef [*]). A related party defines party or party role linked to a specific entity.
<b>requestedPeriodRef</b>	The period of time for which user requested to use the resources. The user can request on the start date without the end date.
<b>channelRef</b>	A list of channel references (ChannelRef [*]). The channel defines the channel for selling product offerings.
<b>@baseType</b>	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
<b>@schemaLocation</b>	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
<b>@type</b>	A string. Indicates the (class) type of reservation. Ex. serviceItemReservation, resourceItemReservation
<b>relatedproductOfferingRef</b>	Related ProductOffering

Reservation item fields

An identified part of the reservation. A reservation is decomposed into one or more reservation items.

Field	Description
<b>quantity</b>	Represents the number of reservationItems that make up the reservation.
<b>resourceCapacityDemand</b>	The amount of capacity that is planned to be consumed or has been consumed.
<b>appliedCapacityAmount</b>	The amount of CapacityDemand applied to a CapacityAmount.
<b>subReservationState</b>	A string. The life cycle state of each reservation item.
<b>@baseType</b>	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
<b>@schemaLocation</b>	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
<b>@type</b>	A string. Generic attribute containing the name of the resource class type.

Resource Collection ref

A ResourceCollection is an entity that is individually manageable. It is an aggregate entity consisting of ResourceElement and optionally ResourceCollection entities.

Field	Description
<b>name</b>	Represents a user-friendly identifier of an object.
<b>objectId</b>	A list of consisted Resources.
<b>href</b>	A string. Hyperlink to access the Resource collection.
@referredType	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.

ResourceCapacityDemand

The amount of capacity that is planned to be consumed or has been consumed.

Field	Description
<b>resourceCapacityDemandAmount</b>	A value and units that define the CapacityDemand, such as 10000 ea, 10B Mb.  Instance values are mutually exclusive with From and To capacityDemandAmounts and range interval.
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Indicates the (class) type of reservation.
<b>applicableTimePeriod</b>	The period of time for which Capacity or CapacityDemand applies.
<b>place</b>	Used to define a place useful for the resource Used to indicate reserved resources
<b>pattern</b>	A string. Following regular expression (RegEx) syntax. E.g. /^(074){0-9}{8}\$ Used to indicate reserved resources
<b>category</b>	A string. The category of resources that is being asked for. E.g. :Regular/ Gold for Logical Resources Used to indicate reserved resources

AppliedResourceCapacity

The amount of CapacityDemand applied to a CapacityAmount.

Field	Description
<b>appliedDemandAmount</b>	An amount of demand applied to a CapacityAmount. Note that this is a composite attribute defined by CapacityAmount.
resourceRef	A list of resources being referred to in the appliedResourceCapacity
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Generic attribute containing the name of the resource class type.

### Resource Pool fields

Resource Pool can indicate total capacity, free capacity and used capacity of resource, and it takes ownership to assign resource.

Field	Description
<b>id</b>	A string. Identifier of an instance of the Resource Pool.
<b>href</b>	A string. Hyperlink to access the Resource Pool.
<b>description</b>	A string. free-text description of the Resource Pool.
<b>relatedParty</b>	A related party defines party or party role linked to a specific entity, who uses the resource of Resource Pool.
resourceCollection	an aggregate entity consisting of ResourceElement
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Generic attribute containing the name of the resource class type.

### Resource

Resource attributes description.

Field	Description
<b>id</b>	A string. Identifier of a resource instance. Required to be unique. Used in URIs as the identifier of the resource (for modify or delete use cases).
<b>href</b>	A string. Reference to the owned resource (useful for delete or modify command).
<b>description</b>	A string. A description of the resource (what it provides).
<b>name</b>	A string. Name of the resource.

<b>state</b>	A string. The lifecycle state of the resource.
<b>place</b>	A list of places (Place [*]). Used to defined places useful for the resource (for example a delivery geographical place).
@referredType	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.
<b>resourceCharacteristic</b>	A list of resource characteristics (ResourceCharacteristic[*]).A name/value pair list used to store instance specific values of attributes. The behavior is equivalent to a MAP data structure where only one entry for any given value of "name" can exist.
<b>relatedParty</b>	A list of related party references (RelatedPartyRef[*]). Parties linked at the resource level (it may be a User for example).

### ApplicableTimePeriod

The period of time for which Capacity or CapacityDemand applies.

Field	Description
<b>fromToDateTime</b>	The period of time for which the schedule is applicable. Instance values are mutually exclusive with daysOfWeek values.
<b>rangeInterval</b>	An indicator that specifies the inclusion or exclusion of the from and to DateTime attributes. Possible values are "open", "closed", "closedBottom" and "closedTop".
<b>daysOfWeek</b>	A day or days representing when the schedule is applicable. For example, 2, 3 represent Monday and Tuesday.
<b>validFor</b>	The period of time during which the schedule is considered of interest to the business.
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Generic attribute containing the name of the resource class type.

### RequestedPeriod

The period of time for which user requested to use the resources.

Field	Description
<b>fromToDateTime</b>	The period of time for which the schedule is applicable. Instance values are mutually exclusive with daysOfWeek values.

<b>rangeInterval</b>	An indicator that specifies the inclusion or exclusion of the from and to DateTime attributes. Possible values are "open", "closed", "closedBottom" and "closedTop".
<b>daysOfWeek</b>	A day or days representing when the schedule is applicable. For example, 2, 3 represent Monday and Tuesday.
<b>validFor</b>	The period of time during which the schedule is considered of interest to the business.
<b>@baseType</b>	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
<b>@schemaLocation</b>	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
<b>@type</b>	A string. Generic attribute containing the name of the resource class type.

#### RelatedPartyRef relationship

RelatedParty reference. A related party defines party or party role linked to a specific entity.

Field	Description
<b>href</b>	A string. Reference of the related party, could be a party reference or a party role reference.
<b>id</b>	A string. Unique identifier of a related party.
<b>name</b>	A string. Name of the related party.
<b>role</b>	A string. Role of the related party.
<b>@referredType</b>	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.

#### ProductOffering relationship

Field	Description
<b>href</b>	A string. Reference of the productOffering
<b>id</b>	A string. Unique identifier of a productOffering
<b>name</b>	A string. Name of the product offering
<b>@referredType</b>	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.

Channel

Field	Description
href	A string. Reference of the channel.
id	A string. Unique identifier of channel.
name	A string. Name of the channel.
@referredType	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.

**JSON representation sample #1**

For example, Reservation API *Resource* uses the following JSON code representation:

This sample code is to reserve phone number and IP address for Ordering Fiber service.

```
{
  "id" : "100001",
  "href" : "https://hostname:port/ResourcePoolManagement/reservation/100001",
  "description" : " ",
  "valid_for" : {
    "startDate" : "2017/11/12 9:00",
    "endDate" : "2017/12/12 9:00"
  },
  "reservationState" : "Completed",
  "relatedParty" : {
    "partyRole" : "EnterpriseCustomer",
    "partyId" : "EC_1002"
  },
  "productOffering" : {
    "id" : "42",
    "href" : "https://hostname:port/productOffering/42",
    "description" : "Fiber offering"
  },
  "@schemaLocation" : "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
  "@type" : "resourceItemReservation",
  "resourceReservationItem" : {
    "quantity" : "2",
    [
      {
        "resourceCapacityDemand" : {
          "resourceCapacityDemandAmount" : "1",
          "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
          "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
          "resourcePool" : { "id": "00111",
            "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
          },
        },
        "@type" : "phone number"
      }
    ],
    "appliedResourceCapacity" : {
```

```

    "appliedCapacityAmount" : "1",
    "resource" : [
      {
        "id" : "PN_000000000",
        "href" : "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000000",
        "@referredType" : "phone number",
        "value" : "07467339896"
      }
    ]
  },
  "subReservationState" : "Completed"
},
{
  "resourceCapacityDemand" : {
    "resourceCapacityDemandAmount" : "1",
    "applicableTimePeriod" : {"from": "2017/12/1 9:00", "to": "2018/12/31 9:00"},
    "place" : { "id": "00555", "type": "CITY", "name": "Mitaka" },
    "resourcePool" : { "id": "00113",
      "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00113"
    },
    "@type" : "IP address"
  },
  "appliedResourceCapacity" : {
    "appliedCapacityAmount" : "1",
    "resource" : [
      { "id" : "IP_000000000"
    }
  ],
  "subReservationState" : "completed"
}},
"requestedPeriod" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00" }
}

```

## JSON representation sample #2

For example, Reservation API *Resource* uses the following JSON code representation:

This sample code is to reserve user required Ten Telephone Numbers matching the pattern 07-4xxxxxxx.

```

{
  "id" : "100001",
  "href" : "https://hostname:port/ResourcePoolManagement/reservation/100001",
  "description" : " ",
  "valid_for" : {
    "startDate" : "2017/11/12 9:00",
    "endDate" : "2017/12/12 9:00"
  },
  "reservationState" : "Completed",
  "relatedParty": {

```

```

    "partyRole" : "Requester",
    "partyId" : "43"
  },
  "channelRef": {
    "id" : "44",
    "name" : "eShop",
    "href": "http://serverlocation:port/channel/44"
  },
  "@schemaLocation" : "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
  "@type" : "resourceItemReservation",
  "resourceReservationItem" : {
    "quantity" : "2",
    [
    {
      "resourceCapacityDemand" : {
        "resourceCapacityDemandAmount" : "10",
        "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
        "pattern": "/ ^(074)([0-9]{8})$/g",
        "resourcePool" : { "id": "00111",
          "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
        },
        "@type" : "phone number"
      },
      "appliedResourceCapacity" : {
        "appliedCapacityAmount" : "10",
        "resource" : [
          {
            "id": "1",
            "href": " http://server:port/resourceInventoryManagement/logicalResource/1",
            "@referredType":"phone number",
            "value":"07467339896"
          },
          {
            "id": "2",
            "href": " http://server:port/resourceInventoryManagement/logicalResource/2",
            "@referredType":"phone number",
            "value":"07467339896"
          },
          {
            "id": "3",
            "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
            "@referredType":"phone number",
            "value":"07467339895"
          },
          {
            "id": "4",
            "href": " http://server:port/resourceInventoryManagement/logicalResource/4",
            "@referredType":"phone number",
            "value":"07467339886"
          },
          {
            "id": "5",
            "href": " http://server:port/resourceInventoryManagement/logicalResource/5",

```

```

        "@referredType": "phone number",
        "value": "07467339796"
    },
    {
        "id": "6",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/6",
        "@referredType": "phone number",
        "value": "07467338896"
    },
    {
        "id": "7",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/7",
        "@referredType": "phone number",
        "value": "07467329896"
    },
    {
        "id": "8",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/8",
        "@referredType": "phone number",
        "value": "07467239896"
    },
    {
        "id": "9",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/9",
        "@referredType": "phone number",
        "value": "07466339896"
    },
    {
        "id": "10",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/10",
        "@referredType": "phone number",
        "value": "07467339897"
    }
    ]}
},
"subReservationState" : "Completed"
},
"requestedPeriod" : {
    "startDate" : "2017/11/12 9:00",
    "endDate" : "2017/12/12 9:00" },
}

```

### JSON representation sample #3

This sample code is to allocate physical Resources

Access Line Retailer selects and reserves CPE for fixed IP phone service.

```

{
    "id" : "100001",
    "href" : "https://hostname:port/ResourcePoolManagement/reservation/100001",
    "description" : " ",

```

```

"valid_for" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00"
},
"reservationState" : "in progress",
"relatedParty" : {
  "partyRole" : "Enterprise User",
  "partyId" : "EU_2001"
},
"productOffering" : {
  "id" : "42",
  "href" : "https://hostname:port/productOffering/42",
  "description" : "fixed IP phone service"
},
"@schemaLocation" : "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
"@type" : "resourceItemReservation",
"resourceReservationItem" : {
  "quantity" : "1",
  [{
    "resourceCapacityDemand" : {
      "resourceCapacityDemandAmount" : "1 ",
      "applicableTimePeriod" : { "from":"2017/12/1 9:00", "to":"2018/12/31 9:00" },
      "resourcePool" : { "id": "02151",
        "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/02151"
      },
      "category" : "type-A",
      "@type" : "CPE "
    },
    "appliedResourceCapacity" : {
      "appliedCapacityAmount" : "1",
    },
    "subReservationState" : "in progress"
  ]},
  "requestedPeriod" : {
    "startDate" : "2017/11/12 9:00",
    "endDate" : "2017/12/12 9:00" },
}

```

#### JSON representation sample #4

This sample code is to allocate Virtual Resources

This sample code is to assign desired storage capacity. it can also be extended to block IP addresses or pattern designation of desired phone numbers.

```

{
  "id" : "100001",
  "href" : "https://hostname:port/ResourcePoolManagement/reservation/100001",
  "description" : "Virtual Storage Reservation for Contents Service",

```

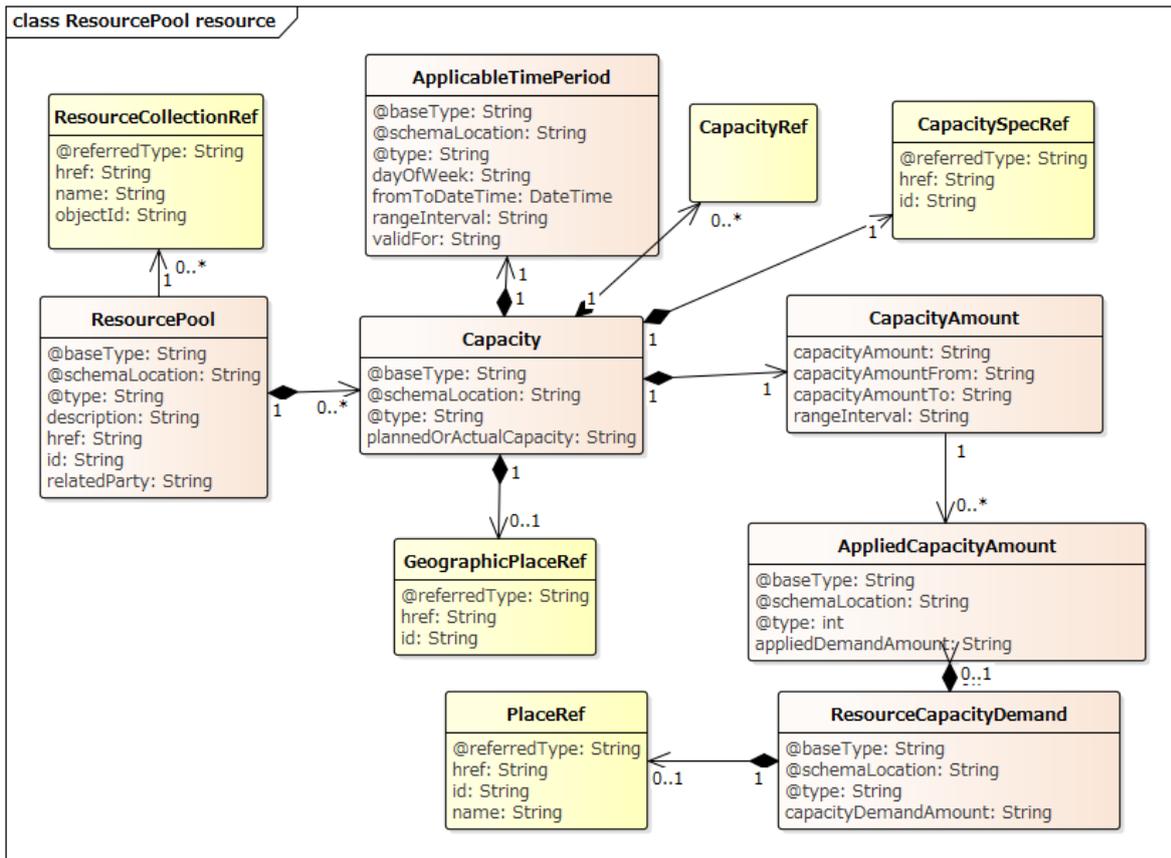
```

"valid_for" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00"
},
"reservationState" : "in progress",
"relatedParty" : {
  "partyRole" : "Enterprise User",
  "partyId" : "EU_2001"
},
"productOffering" : {
  "id" : "42",
  "description" : "Contents Service"
},
"@schemaLocation" : "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
"@type" : "resourceItemReservation",
"resourceReservationItem" : {
  "quantity" : "2",
  [
    {
      "resourceCapacityDemand" : {
        "resourceCapacityDemandAmount" : "10gb",
        "applicableTimePeriod" : {"from":"","to":""},
        "resourcePool" : { "id": "00151",
          "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00151"
        }
      },
      "@type" : "Storage"
    },
    {
      "appliedResourceCapacity" : {
        "appliedCapacityAmount" : "10gb"
      },
      "subReservationState" : "in progress"
    }
  ],
  {
    "resourceCapacityDemand" : {
      "resourceCapacityDemandAmount" : "100mbps",
      "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
      "place" : { "id": "00555", "type": "CITY", "name":"Mitaka" },
      "resourcePool" : { "id": "00171",
        "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00171"
      },
      "@type" : "bandwidth"
    },
    {
      "appliedResourceCapacity" : {
        "appliedCapacityAmount" : "100mbps" }
      "subReservationState" : "in progress"
    }
  ]
},
"requestedPeriod" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00" },
}

```

## RESOURCE POOL RESOURCE

### API Resource Model



### Field descriptions

#### Capacity

Specific ability of an entity measured in quantity and units of quantity over an extended period.

Field	Description
<b>plannedOrActualCapacity</b>	An indicator that specifies whether the capacity is planned or actual.
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Generic attribute containing the name of the resource class type.

CapacityAmount

Field	Description
capacityAmount	A value and units that define the CapacityAmount, such as 10000 ea, 10B Mb.  Instance values are mutually exclusive with From and To capacityAmounts and range interval.
@baseType	A string. Generic attribute indicating the base class type of the extension class of the current object. Useful only when the class type of the current object is unknown to the implementation.
@schemaLocation	A string. Generic attribute containing the link to the schema that defines the structure of the class type of the current object.
@type	A string. Generic attribute containing the name of the resource class type.

CapacitySpecRef

Field	Description
id	A string. Unique identifier of the capacity specification
href	A string. Reference of the capacity specification
@referredType	A string. Indicates the type of the referred object. This attribute is to be used when the object is representing a reference to an existing object instead of the of the object itself.

**JSON representation sample**

This sample code represents Virtual Storage Resources Pool.

```
{
  "id" : "42"
  "href" : "/hostname:port/ResourcePoolManagement/resourcePool/42",
  "name" : "StorageCapacity",
  "@schemaLocation" : "http://hostname:port/ResourcePoolManagement/v1/schema/storageCapacity",
  "@type" : "Storage",
  "capacity" : [{
    "capacitySpec" : {
      "id" : "44",
      "href" : "http://hostname:port/ResourcePoolManagement/capacitySpecificatoin/44",
    },
    "capacityAmount": "500GB",
    "relatedParty" : {
      "partyRole" : "EnterpriseCompany",
    }
  }
  "place" : { "id": "00555", "type" : "CITY", "name": "Mitaka" },
  "aplicableTimePeriod" : { "from" : "2017.11.11 11:11"},
}
```

```

"appliedCapacitylist":[
  {
    "appliedCapacityamount" : "200GB",
    "capacityDemand" : {
      "capacityDemandAmount" : "200GB"
    },
    "Resource" : [
      {
        "id": "3",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/3",
      },
    ]
  },
  {
    "appliedCapacityamount" : "300GB",
    "capacityDemand" : {
      "capacityDemandAmount" : "300GB",
    },
    "resource" : [
      {
        "id": "3",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
      },
      {
        "id": "5",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
      }
    ]
  }
]
"resourceRef" : [
  {
    "id": "3",
    "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
  },
  {
    "id": "5",
    "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
  }
]
},
{
  "capacitySpec" : {
    "id" : "54",
    "href": "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/54"
  },
  "capacityAmount" : "1TB",
  "relatedParty" : {
    "partyRole" : "EnterpriseCompany",
  },
  "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
  "aplicableTimePeriod" : {"from" : "2017.12.11 11:11"},
  "appliedCapacitylist":[

```

```

    ]
    "resourceRef" : [
      {
        "id": "9",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/9",
      }
    ]
  ]]
}

```

---

## RESOURCE POOL AVAILABILITYCHECK TASK

ResourcePoolAvailabilityCheckTask obtains a list of newly assignable / allocatable resources.

Below is the JSON API Resource Model for ResourcePoolAvailabilityCheckTask.

```

{
  "resourceCapacityDemand" : {
    "resourceCapacityDemandAmount" : "5",
    "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
    "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
    "resourcePool" : { "id": "00111",
      "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
    },
    "@type" : "phone number"
  }
}

```

---

## RESOURCE POOL PUSH TASK

ResourcePoolPushTask expands the size of Pool by adding assigned resources.

Below is the JSON API Resource Model for ResourcePoolPushTask.

```

{
  "resourcePool" : {
    "id" : "42"
  }
  "capacity" : [
    "capacitySpec" : {
      "id" : "44",
      "href": "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/44"
    },
    "capacityAmount" : "1TB",
    "ResourceRef" : [
      {

```

```

        "id": "109",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/109"
    }
  ]
}
]]
}

```

---

## RESOURCE POOL EXTRACT TASK

ResourcePoolExtractTask reduces the size of the Resource Pool by designating resources to reduce the number of management resources as a result of allocation to other Pool.

Below is the JSON API Resource Model for ResourcePoolExtractTask.

```

{
  "resourcePool" : {
    "id" : "42"
  }
  "capacity" : [
    "capacitySpec" : {
      "id" : "44",
      "href" : "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/44"
    },
    "capacityAmount" : "400GB",
    "ResourceRef" : [
      {
        "id": "4",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/4",
      }
    ]
  }
}
]]
}

```

## Notification Resource Models

4 notifications are defined for this API

Notifications related to API *Resource*:

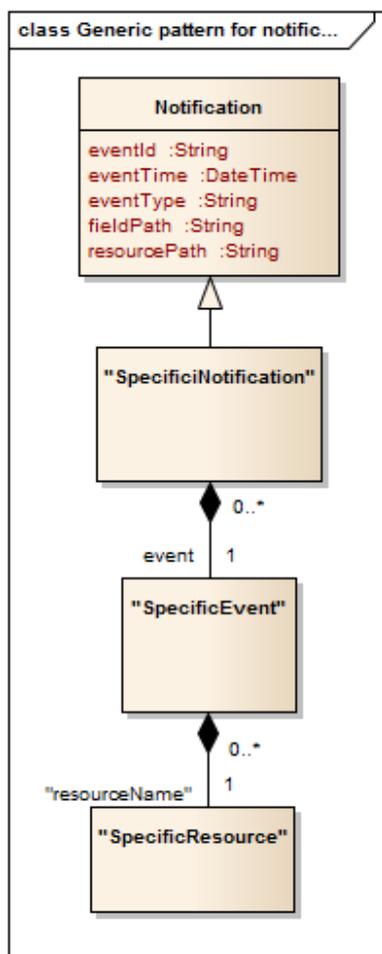
- ReservationStateChangeNotification
- InformationRequiredNotification
- ResourceReservationCreationNotification

## - ResourceReservationRemoveNotification

The notification structure for all notifications in this API follow the pattern depicted by the figure below.

A notification API *resource* (depicted by "SpecificNotification" placeholder) is a sub class of a generic Notification structure containing an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the notification API *resource* (eventType).

This notification structure owns an event structure ("SpecificEvent" placeholder) linked to the API *resource* concerned by the notification using the API *resource* name as access field ("resourceName" placeholder).




---

## RESERVATION STATE CHANGE NOTIFICATION

Notification sent when changing the state of a Reservation API *resource*.

### JSON representation sample

We provide below the JSON representation of an example of a 'ReservationStateChangeNotification' notification object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ResourceReservationStateChangeNotification",
  "event": {
    "reservation" :
      [-- SEE Reservation RESOURCE SAMPLE --]
  }
}
```

---

## INFORMATION REQUIRED NOTIFICATION

Notification sent when additional information is required to reserve resource.

### JSON representation sample

We provide below the JSON representation of an example of an 'InformationRequiredNotification' notification object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":" InformationRequiredNotification ",
  "event": {
    "reservation" :
      [-- SEE Reservation RESOURCE SAMPLE --]
  }
}
```

---

## RESOURCE RESERVATION CREATION NOTIFICATION

Notification sent when a new ResourceReservation API *resource* is created.

### JSON representation sample

We provide below the JSON representation of an example of a 'ResourceReservationCreationNotification' notification object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ResourceReservationCreationNotification",
  "event": {
    "reservation" :
      {-- SEE Reservation RESOURCE SAMPLE --}
  }
}
```

---

## RESOURCE RESERVATION REMOVE NOTIFICATION

Notification sent when removing a ResourceReservation API *resource*.

### JSON representation sample

We provide below the JSON representation of an example of a 'ResourceReservationRemoveNotification' notification object

```
{
  "eventId":"00001",
  "eventTime":"2015-11-16T16:42:25-04:00",
  "eventType":"ResourceReservationRemoveNotification",
  "event": {
    "reservation" :
      {-- SEE Reservation RESOURCE SAMPLE --}
  }
}
```

## API OPERATIONS

Remember the following Uniform Contract:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET API <i>Resource</i>	GET must be used to retrieve a representation of a API <i>resource</i> .
Create Entity	POST API <i>Resource</i>	POST must be used to create a new API <i>resource</i>
Partial Update of an Entity	PATCH API <i>Resource</i>	PATCH must be used to partially update a API <i>resource</i>
Complete Update of an Entity	PUT API <i>Resource</i>	PUT must be used to completely update a API <i>resource</i> identified by its API <i>resource</i> URI
Remove an Entity	DELETE API <i>Resource</i>	DELETE must be used to remove a API <i>resource</i>
Execute an Action on an Entity	POST on TASK API <i>Resource</i>	POST must be used to execute Task API <i>Resources</i>
Other Request Methods	POST on TASK API <i>Resource</i>	GET and POST must not be used to tunnel other request methods.

Filtering and attribute selection rules are described in the TMF REST Design Guidelines.

Notifications are also described in a subsequent section.

## GET /resourcePoolManagement/Reservation

**Description**

This operation retrieves a resource reservation entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

**Usage Samples**

In the following example, in order to check the reservation status, retrieve the reservation details of specified reservation id.

<b>Request</b>
<pre>GET /resourcePoolManagement/reservation/100001 Accept: application/json</pre>
<b>Response</b>
<pre>200  {   "id" : "100001",   "href" : "https://hostname:port/ResourcePoolManagement/reservation/100001",   "description" : "Phone Number Reservation for Fiber line w/ phone",   "valid_for" : {     "startDate" : "2017/11/12 9:00",     "endDate" : "2017/12/12 9:00"   },   "reservationState" : "Completed",   "relatedParty" : {     "partyRole" : "EnterpriseCustomer",     "partyId" : "EC_1002"   },   "productOffering" : {     "id" : "42",     "href" : "https://hostname:port/productOffering/42",     "description" : "Fiber offering"   },   "@schemaLocation" : " https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",   "@type" : "resourceItemReservation",   "resourceReservationItem" : {     "quantity" : "2",     [{"</pre>

```

"resourceCapacityDemand" : {
  "resourceCapacityDemandAmount" : "1",
  "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
  "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
  "resourcePool" : { "id": "00111",
    "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
  },
  "@type" : "phone number"
},
"appliedResourceCapacity" : {
  "appliedCapacityAmount" : "1",
  "resource" : [
    {
      "id": "PN_000000000",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000000",
      "@referredType" : "phone number",
      "value": "07467339896"
    }
  ]
},
"subReservationState" : "Completed"
},
{
  "resourceCapacityDemand" : {
    "resourceCapacityDemandAmount" : "1",
    "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
    "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
    "resourcePool" : { "id": "00113",
      "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00113"
    },
    "@type" : "IP address"
  },
  "appliedResourceCapacity" : {
    "appliedCapacityAmount" : "1",
    "resource" : [
      "id" : "IP_000000000"
    ]
  },
  "subReservationState" : "completed"
}},
"requestedPeriod" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00" }
}

```

## POST /resourcePoolManagement/Reservation

### Description

This operation creates reservation instance.

### Mandatory and Non Mandatory Attributes

Field	Mandatory	Rule
id	N	id is generated by server
href	N	
description	N	
valid_for	N	
reservationState	N	
relatedParty	Y	
channel	N	
productOffering	N	
reservationItem	Y	
resourceCapacityDemand	Y	
appliedResourceCapacity	N	

### Usage Samples

Here's an example of a request for reservation API *resource* creation.

Reserve the selected phone number from the list of phone numbers returned by Available Check.

#### Request

```
POST /resourcePoolManagement/
Accept: application/json

{
  "relatedParty": {
    "partyRole": "EnterpriseCustomer",
    "partyId": "EC_1002"
  },
  "productOffering": {
    "id": "42"
    "href": "https://hostname:port/productOffering/42",
    "description": "Fiber offering"
  },
  "@schemaLocation": "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
  "@type": "resourceItemReservation",
  "resourceReservationItem": {
    "quantity": "2",
    [
      {
        "resourceCapacityDemand": {
          "resourceCapacityDemandAmount": "1",
          "applicableTimePeriod": {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
          "place": {"id": "00555", "type": "CITY", "name": "Mitaka"},
          "resourcePool": {"id": "00111",
            "href": "https://hostname:port/ResourcePoolManagement/resourcePool/00111",
            "resource":
```

```

    {
        "id": "PN_000000000",
        "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000000",
        "@referredType": "Phone number",
        "value": "07467339896"
    },
    {
        "@type": "phone number"
    },
    {
        "resourceCapacityDemand": {
            "resourceCapacityDemandAmount": "1",
            "applicableTimePeriod": {"from": "2017/12/1 9:00", "to": "2018/12/31 9:00"},
            "place": {"id": "00555", "type": "CITY", "name": "Mitaka"},
            "resourcePool": {"id": "00113",
                "href": "https://hostname:port/ResourcePoolManagement/resourcePool/00113"
            },
            "@type": "IP address"
        },
    },
    }},
    "requestedPeriod": {
        "startDate": "2017/11/12 9:00",
        "endDate": "2017/12/12 9:00" },
    }

```

## Response

200

```

{
    "id": "100001",
    "href": "https://hostname:port/ResourcePoolManagement/reservation/100001",
    "description": "",
    "valid_for": {
        "startDate": "2017/11/12 9:00",
        "endDate": "2017/12/12 9:00"
    },
    "reservationState": "Completed",
    "relatedParty": {
        "partyRole": "EnterpriseCustomer",
        "partyId": "EC_1002"
    },
    "productOffering": {
        "id": "42",
        "href": "https://hostname:port/productOffering/42",
        "description": "Fiber offering"
    },
    "@schemaLocation": "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
    "@type": "resourceItemReservation",
    "resourceReservationItem": {

```

```

"quantity" : "2",
  {
    "resourceCapacityDemand" : {
      "resourceCapacityDemandAmount" : "1",
      "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},
      "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
      "resourcePool" : { "id": "00111",
        "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
      },
      "@type" : "phone number"
    },
    "appliedResourceCapacity" : {
      "appliedCapacityAmount" : "1",
      "resource" : [
        {
          "id": "PN_000000000",
          "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000000",
          "@referredType ":"phone number",
          "value":"07467339896"
        }
      ]
    },
    "subReservationState" : "Completed"
  },
  {
    "resourceCapacityDemand" : {
      "resourceCapacityDemandAmount" : "1",
      "applicableTimePeriod" : {"from":"","to":""},
      "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
      "resourcePool" : { "id": "00113",
        "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00113"
      },
      "@type" : "IP address"
    },
    "appliedResourceCapacity" : {
      "appliedCapacityAmount" : "1",
      "resource" : [
        {
          "id" : "IP_000000000"
        }
      ]
    },
    "subReservationState" : "Completed"
  }
},
"requestedPeriod" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00" },
}

```

## PATCH /resourcePoolManagement/Reservation

### Description

This operation updates reservation instance.

### Patchable and Non Patchable Attributes

Field	Patchable	Rule
id	N	
href	N	
description	Y	
valid_for	N	
reservationState	N	
relatedParty	Y	user identity
channel	N	
productOffering	Y	
reservationItem	Y	
resourceCapacityDemand	Y	In case of Changes to resources belonging to the same category
appliedResourceCapacity	N	

### Usage Samples

Here's an example of a request for updating reservation API *resource*.

Change the reserved phone number to another number returned by available check

Request
PATCH /resourcePoolManagement/reservation/100001 Accept: application/json-patch+json  <pre>{   "path" : "/resourceReservationItem/0/resourceCapacityDemand/resource",   "value" : {     "id": "PN_000000001",     "href": " http://server:port/resourceInventoryManagement/logicalResource/PN_000000001",     "@type": "Phone number",     "value": "07467339896"   },   "op" : "replace" }</pre>
Response
200

```

{
  "id": "100001",
  "href": "https://hostname:port/ResourcePoolManagement/reservation/100001",
  "description": "",
  "valid_for": {
    "startDate": "2017/11/12 9:00",
    "endDate": "2017/12/12 9:00"
  },
  "reservationState": "Completed",
  "relatedParty": {
    "partyRole": "EnterpriseCustomer",
    "partyId": "EC_1002"
  },
  "productOffering": {
    "id": "42",
    "href": "https://hostname:port/productOffering/42",
    "description": "Fiber offering"
  },
  "@schemaLocation": "
https://hostname:port/ResourcePoolManagement/v1/schema/resourceItemReservation",
  "@type": "resourceItemReservation",
  "resourceReservationItem": {
    "quantity": "2",
    [
      {
        "resourceCapacityDemand": {
          "resourceCapacityDemandAmount": "1",
          "applicableTimePeriod": {"from": "2017/12/1 9:00", "to": "2018/12/31 9:00"},
          "resourcePool": { "id": "00111",
            "href": "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
          },
          "@type": "phone number"
        },
        "appliedResourceCapacity": {
          "appliedCapacityAmount": "1",
          "resource": [
            {
              "id": "PN_000000001",
              "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000001",
              "@referredType": "phone number",
              "value": "07467339896"
            }
          ]
        },
        "subReservationState": "Completed"
      }
    ],
    {
      "resourceCapacityDemand": {
        "resourceCapacityDemandAmount": "1",
        "applicableTimePeriod": {"from": "2017/12/1 9:00", "to": "2018/12/31 9:00"},
        "place": { "id": "00555", "type": "CITY", "name": "Mitaka" },
        "resourcePool": { "id": "00113",
          "href": "https://hostname:port/ResourcePoolManagement/resourcePool/00113"
        }
      }
    }
  }
}

```

```

    },
    "@type" : "IP address"
  },
  "appliedResourceCapacity" : {
    "appliedCapacityAmount" : "1",
    "resource" : [
      "id" : "IP_000000000"
    ],
  },
  "subReservationState" : "Completed"
}}
"requestedPeriod" : {
  "startDate" : "2017/11/12 9:00",
  "endDate" : "2017/12/12 9:00" },
}

```

## POST /resourcePoolManagement/resourcePool/

### Description

This operation creates new Resource Pool.

It is assumed to be executed by the administrator.

### Usage Samples

To start managing capacity of pool, Administrator creates Resource Pool.

Request
POST /resourcePoolManagement/resourcePool/ Accept: application/json  <pre> {   "name" : "Storage Pool",   "capacity" : [{     "capacitySpec" : "0"   }] } </pre>
Response
202  <pre> {   "id" : "42",   "href" : "/hostname:port/ResourcePoolManagement/resourcePool/42", </pre>

```

"name" : "Storage Pool",
"capacity" : [{
  "capacitySpec" : {
    "id" : "54",
    "href" : "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/54",
  },
  "capacityAmount" : "0",
  "relatedParty" : {},
  "place" : {},
  "aplicableTimePeriod" : {},
  "capacityRef" : {},
  "appliedCapacitylist":[],
  "ResourceRef" : []
}
}

```

## PATCH /resourcePoolManagement/resourcePool/[id]

### Description

This operation provides resize capacity of resource pool

Although it is assumed to be executed by the administrator, consumer can operate the resource pool is assigned.

### Usage Samples

In order to increase the Capacity of the Pool, Administrator of First B updates the maximum capacity of the Pool.

#### Request

PATCH /resourcePoolManagement/resourcePool/42  
Accept: application/json

```

{
  "capacityAmount": "800GB"
}

```

#### Response

200

```

{
  "id" : "42"
  "href" : "/hostname:port/ResourcePoolManagement/resourcePool/42",
}

```

```

"name" : "StorageCapacity",
"@schemaLocation" : "http://hostname:port/ResourcePoolManagement/v1/schema/storageCapacity",
"@type" : "Storage",
"capacity" : {
  "capacitySpec" : {
    "id" : "44",
    "href" : "http://hostname:port/ResourcePoolManagement/capacitySpecificatoin/44",
  },
  "capacityAmount" : "800GB",
  "relatedParty" : {
    "partyRole" : "EnterpriseCompany",
  }
}
"place" : { "id" : "00555", "type" : "CITY", "name" : "Mitaka" },
"aplicableTimePeriod" : { "from" : "2017.11.11 11:11" },
"appliedCapacitylist" : [
  {
    "appliedCapacityamount" : "200GB",
    "capacityDemand" : {
      "capacityDemandAmount" : "200GB"
    },
    "resource" : [
      {
        "id" : "3",
        "href" : "http://server:port/resourceInventoryManagement/logicalResource/3",
      },
    ]
  },
  {
    "appliedCapacityamount" : "300GB",
    "capacityDemand" : {
      "capacityDemandAmount" : "300GB",
    },
    "resource" : [
      {
        "id" : "3",
        "href" : "http://server:port/resourceInventoryManagement/logicalResource/3",
      },
      {
        "id" : "5",
        "href" : "http://server:port/resourceInventoryManagement/logicalResource/5",
      },
    ]
  }
]
"resourceRef" : [
  {
    "id" : "3",
    "href" : "http://server:port/resourceInventoryManagement/logicalResource/3",
  },
  {
    "id" : "5",
    "href" : "http://server:port/resourceInventoryManagement/logicalResource/5",
  },
]

```

```

    }
  ]
},
{
  "capacitySpec" : {
    "id" : "54",
    "href": "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/54"
  },
  "capacityAmount" : "1TB",
  "relatedParty" : {
    "partyRole" : "EnterpriseCompany",
  },
  "place" : { "id": "00555", "type" : "CITY", "name": "Mitaka" },
  "apricableTimePeriod" : { "from" : "2017.12.11 11:11"},
  "capacitylist": [
  ]
  "resourceRef" : [
    {
      "id": "9",
      "href": "http://server:port/resourceInventoryManagement/logicalResource/9",
    }
  ]
}
}]
}

```

## DELETE /resourcePoolManagement/resourcePool/[id]

### Description

This operation removes Resource Pool.

it is assumed to be executed by the administrator.

### Usage Samples

Since management with Resource Capacity is no longer necessary, the administrator deletes the target resource pool.

<b>Request</b>
DELETE /resourcePoolManagement/resourcePool/42 Accept: application/json
<b>Response</b>

200

## POST /resourcePoolManagement/AvailabilityCheck

### Description

This operation executes task to retrieve available Resource entities or to check resource pool has available Resource capacity.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation.

### Usage Samples

Here's an example of a request for retrieving available Resource entity.

make available five phone number resource collections included in the area code that the user needs.

In the reservation task, user specifies the actually used telephone number among the obtained telephone number.

Request
POST /resourcePoolManagement/availabilityCheck/ Accept: application/json  <pre>{   "resourceCapacityDemand" : {     "resourceCapacityDemandAmount" : "5",     "applicableTimePeriod" : {"from":"2017/12/1 9:00", "to":"2018/12/31 9:00"},     "place" : {"id": "00555", "type" : "CITY", "name":"Mitaka" },     "resourcePool" : { "id": "00111",       "href" : "https://hostname:port/ResourcePoolManagement/resourcePool/00111"     },     "@type" : "phone number"   } }</pre>
Response
200  <pre>{</pre>

```

"appliedResourceCapacity": {
  "appliedCapacityAmount": "5"
  "resource": [
    {
      "id": "PN_000000000",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000000",
      "@referredType": "phone number",
      "value": "07467339896"
    },
    {
      "id": "PN_000000001",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000001",
      "@referredType": "phone number",
      "value": "07467339896"
    },
    {
      "id": "PN_000000002",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000002",
      "@referredType": "phone number",
      "value": "07467339896"
    },
    {
      "id": "PN_000000003",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000003",
      "@referredType": "phone number",
      "value": "07467339896"
    },
    {
      "id": "PN_000000004",
      "href": "
http://server:port/resourceInventoryManagement/logicalResource/PN_000000004",
      "@referredType": "phone number",
      "value": "07467339896"
    }
  ]
}

```

It retrieves 10 available telephone numbers that match the pattern 07 - 4 xxxxx specified by the user.

<b>Request</b>
POST /resourcePoolManagement/availabilityCheck/ Accept: application/json

```

{
  "relatedParty": {
    "partyRole": "Requester",
    "partyId": "43"
  },
  "channelRef": {
    "id": "44",
    "name": "eShop",
    "href": "http://serverlocation:port/channel/44"
  },
  "resourceCapacityDemand": {
    "resourceCapacityDemandAmount": "10",
    "applicableTimePeriod": {"from": "2017/12/1 9:00", "to": "2018/12/31 9:00"},
    "place": { "id": "00555", "type": "CITY", "name": "Mitaka" },
    "resourcePool": { "id": "00111",
      "href": "https://hostname:port/ResourcePoolManagement/resourcePool/00111"
    },
    "@type": "phone number"
  }
}

```

## Response

200

```

{
  "appliedResourceCapacity": {
    "appliedCapacityAmount": "10",
    "resource": [
      {
        "id": "1",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/1",
        "@referredType": "phone number",
        "value": "07467339896"
      },
      {
        "id": "2",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/2",
        "@referredType": "phone number",
        "value": "07467339896"
      },
      {
        "id": "3",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
        "@referredType": "phone number",
        "value": "07467339895"
      },
      {
        "id": "4",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/4",

```

```

        "@referredType ":"phone number",
        "value":"07467339886"
    },
    {
        "id": "5",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
        "@referredType ":"phone number",
        "value":"07467339796"
    },
    {
        "id": "6",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/6",
        "@referredType ":"phone number",
        "value":"07467338896"
    },
    {
        "id": "7",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/7",
        "@referredType ":"phone number",
        "value":"07467329896"
    },
    {
        "id": "8",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/8",
        "@referredType ":"phone number",
        "value":"07467239896"
    },
    {
        "id": "9",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/9",
        "@referredType ":"phone number",
        "value":"07466339896"
    },
    {
        "id": "10",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/10",
        "@referredType ":"phone number",
        "value":"07467339897"
    },
    ],
}
}
}

```

## POST /resourcePoolManagement/push

### Description

This operation runs TASK, which adds the capacity of the new resource to the resource pool.

It is assumed to be executed by the administrator.

**Usage Samples**

As Storage was additionally procured, Administrator reflects the increase in resource capacity of the Pool.

<b>Request</b>
<pre> POST /resourcePoolManagement/push/ Accept: application/json  {   "resourcePool" : {     "id" : "42"   }   "capacity" : [     "capacitySpec" : {       "id" : "44",       "href" : "http://hostname:port/ResourcePoolManagement/CapacitySpecifcatoin/44"     },     "capacityAmount" : "1TB",     "ResourceRef" : [       {         "id": "109",         "href": "http://server:port/resourceInventoryManagement/logicalResource/109"       }     ]   ] } </pre>
<b>Response</b>
<pre> 200  {   "id" : "42"   "href" : "/hostname:port/ResourcePoolManagement/push/42",   "resourcePool" : {     "id" : "42"     "name" : "StorageCapacity",   }   "capacity" : [{     "capacitySpec" : {       "id" : "44",       "href" : "http://hostname:port/ResourcePoolManagement/capacitySpecifcatoin/44",     },     "capacityAmount": "1.5TB",     "relatedParty" : {       "partyRole" : "EnterpriseCompany", </pre>

```

}
"place" : { "id": "00555", "type": "CITY", "name": "Mitaka" },
"aplicableTimePeriod" : { "from": "2017.11.11 11:11" },
"appliedCapacitylist": [
  {
    "appliedCapacityamount": "200GB",
    "capacityDemand": {
      "capacityDemandAmount": "200GB"
    },
    "resource": [
      {
        "id": "3",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/3",
      },
    ]
  },
  {
    "appliedCapacityamount": "300GB",
    "capacityDemand": {
      "capacityDemandAmount": "300GB",
    },
    "resource": [
      {
        "id": "3",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
      },
      {
        "id": "5",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
      }
    ]
  }
]
"resourceRef": [
  {
    "id": "3",
    "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
  },
  {
    "id": "5",
    "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
  },
  {
    "id": "109",
    "href": " http://server:port/resourceInventoryManagement/logicalResource/109",
  }
]
},
{
  "capacitySpec": {
    "id": "54",
    "href": "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/54"
  },
  "capacityAmount": "1TB",

```

```

    "relatedParty" : {
      "partyRole" : "EnterpriseCompany",
    },
    "place" : { "id": "00555", "type" : "CITY", "name": "Mitaka" },
    "apricableTimePeriod" : { "from" : "2017.12.11 11:11"},
    "capacitylist": [
    ]
    "resourceRef" : [
      {
        "id": "9",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/9",
      }
    ]
  }
}

```

## POST /resourcePoolManagement/extract

### Description

In this operation, TASK is executed to extract the capacity of the resource from the resource pool to another pool.

It is assumed to be executed by the administrator.

### Usage Samples

A part of storage was isolated due to a fault, so the administrator reflects the decrease in resource capacity of the pool.

### Request

POST /resourcePoolManagement/extract/  
Accept: application/json

```

{
  "resourcePool" : {
    "id" : "42"
  }
  "capacity" : [
    "capacitySpec" : {
      "id" : "44",
      "href" : "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/44"
    },
    "capacityAmount" : "400GB",
    "ResourceRef" : [
      {
        "id": "4",
        "href": "http://server:port/resourceInventoryManagement/logicalResource/4",

```

```

    }
  ]
}
}}
}

```

**Response**

200

```

{
  "id" : "42"
  "href" : "/hostname:port/ResourcePoolManagement/extract/42",
  "resourcePool" : {
    "id" : "42"
    "name" : "StorageCapacity",
  }
  "capacity" : [{
    "capacitySpec" : {
      "id" : "44",
      "href" : "http://hostname:port/ResourcePoolManagement/capacitySpecificatoin/44",
    },
    "capacityAmount": "500GB",
    "relatedParty" : {
      "partyRole" : "EnterpriseCompany",
    }
  }
  "place" : { "id": "00555", "type": "CITY", "name": "Mitaka" },
  "aplicableTimePeriod" : { "from" : "2017.11.11 11:11"},
  "appliedCapacitylist": [
    {
      "appliedCapacityamount" : "200GB",
      "capacityDemand" : {
        "capacityDemandAmount" : "200GB"
      },
      "resource" : [
        {
          "id": "3",
          "href": "http://server:port/resourceInventoryManagement/logicalResource/3",
        },
      ],
    },
    {
      "appliedCapacityamount" : "300GB",
      "capacityDemand" : {
        "capacityDemandAmount" : "300GB",
      },
      "resource" : [
        {
          "id": "3",
          "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
        },
      ],
    }
  ]
}

```

```

        "id": "5",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
    }
    ]
}
]
"resourceRef" : [
    {
        "id": "3",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/3",
    },
    {
        "id": "5",
        "href": " http://server:port/resourceInventoryManagement/logicalResource/5",
    }
]
},
{
    "capacitySpec" : {
        "id" : "54",
        "href": "http://hostname:port/ResourcePoolManagement/CapacitySpecificatoin/54"
    },
    "capacityAmount" : "1TB",
    "relatedParty" : {
        "partyRole" : "EnterpriseCompany",
    },
    "place" : { "id": "00555", "type" : "CITY", "name":"Mitaka" },
    "aplicableTimePeriod" : {"from" : "2017.12.11 11:11"},
    "capacitylist":[
    ]
    "resourceRef" : [
        {
            "id": "9",
            "href": "http://server:port/resourceInventoryManagement/logicalResource/9",
        }
    ]
}
}
}

```

## API NOTIFICATIONS

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.

### REGISTER LISTENER

#### POST /hub

##### Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

##### Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 409 if request is not successful.

##### Usage Samples

Here's an example of a request for registering a listener.

<b>Request</b>
<pre>POST /api/hub Accept: application/json  {"callback": "http://in.listener.com"}</pre>
<b>Response</b>
<pre>201 Content-Type: application/json Location: /api/hub/42  {"id": "42", "callback": "http://in.listener.com", "query": null}</pre>

## UNREGISTER LISTENER

### DELETE /hub/{id}

#### Description

Clears the communication endpoint address that was set by creating the Hub.

#### Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 404 if the API *resource* is not found.

#### Usage Samples

Here's an example of a request for un-registering a listener.

<b>Request</b>
DELETE /api/hub/42 Accept: application/json
<b>Response</b>
204

## PUBLISH EVENT TO LISTENER

### POST /client/listener

#### Description

Clears the communication endpoint address that was set by creating the Hub.

Provides to a registered listener the description of the event that was raised. The /client/listener url is the callback url passed when registering the listener.

#### Behavior

Returns HTTP/1.1 status code 201 if the service is able to set the configuration.

#### Usage Samples

Here's an example of a notification received by the listener. In this example "EVENT TYPE" should be replaced by one of the notification types supported by this API (see Notification API *resources* Models section) and EVENT BODY refers to the data structure of the given notification type.

<b>Request</b>
POST /client/listener Accept: application/json  { "event": { EVENT BODY }, "eventType": "EVENT_TYPE" }
<b>Response</b>
201

For detailed examples on the general TM Forum notification mechanism, see the TMF REST Design Guidelines.

## ACKNOWLEDGEMENTS

## VERSION HISTORY

Version Number	Date	Release led by:	Description
1.0	June 2018	sousuke izumida (izumida.sousuke@nttcom.co.jp)	First Release of Draft Version of the Document.
1.0.1	29-Jun-2018	Adrienne Walcott	Formatting/style edits prior to R18 publishing.

## RELEASE HISTORY

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18.0.0	June 2018	sousuke izumida (izumida.sousuke@nttcom.co.jp)	Initial Release

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