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# Handbook

# Protected Services

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# Table of Contents

# Publication history

The following table lists the *Unified Assurance and Analytics: Protected Services - Handbook* publication history.

*Table 1. Publication history*

| DATE | VERSION | NOTES |
|---|---|---|
| 21-Nov-2023 | 1.0 | Maintainence release 23.08.64 (MR2) |
| 25-Oct-2023 | 1.0 | Maintainence release 23.08.61 (MR1) |
| 24-Aug-2023 | 1.0 | Initial release 23.08 |

# Overview

A protected service is a group of a set of services that can protect each other (such as HA feature) or can share the network load within themselves. The protected service contains a circuit or path that traverses one or more nodes. When a service becomes inactive the other services can take over active service to ensure continuity of the network.

This document describes protected service in Unified Assurance and Analytics (UAA), how to create the service and he types of protected services.

# Requirements

The requirements for the Protected Services are as follows:

- For Trail and SNC Protected Services, UAA version 22.12 or higher is required.
- For RING protection, UAA version 23.04 or higher is required.

# Assumptions

As Protected service is not a service in itself but is group of services that provide a protection strategy.

The assumptions for Unified Assurance and Analytics Protected Services are:

- Protected service does not have endpoints.
- Performance collection is not be done on a protected service.

# Approach

There are two different approaches to achieve Protected Services which are listed below:

- High Level Design
- Detailed Design

## High Level Design

The following tables are used to store data related to protected services under High Level Design:

1. protected_service
2. service_protected_service

The table structure in High level design will be similar to the Detailed design.

# Detailed Design

The following table illustrates the Detailed Design approach of a Protected Service.

| REQUIREMENTS | DB CHANGES | UI CHANGES | CODE CHANGES |
|---|---|---|---|
| User will be able to implement Protection strategy for a Service/Connection i.e., will be able to specify ACTIVE_ACTIVE/ACTIVE-STANDBY protection strategy for a particular service/connection<br><br>User will be able to differentiate active and standBy paths for a service/connection | **Table1 name:** protected_service<br><br>**columns:** id, name type:[Gr302_ring,trail,trail_group,SNC,SNC_group]<br><br>isworkerActive:{True/False} <used only in case of group protections><br><br>**Table2 name:** service_protected_service<br><br>**columns:** serviceid: <holds the value of id column from service table><br><br>serviceMode:[active,standBy]<br><br>protectedserviceid:<holds the vaule of id column from protection_path table><br><br>servicePathType:[worker,protected,diverse,diverse_protected] | | protected_service will extend service object just as existing network connection.<br><br>CRUD operations will be implemented on both tables when<br>• protected service is created either by User manually/import/<br>• service/connection is getting assigned/deassigned to/from protected_service either by import or swagger<br>• when protection switching happens i.e., if active path goes to stand-by and vice versa , 'serviceMode' column in 'service_protected_service' will be updated. |

| REQUIREMENTS | DB CHANGES | UI CHANGES | CODE CHANGES |
|---|---|---|---|
| Continued… | Above 2 new tables will be created with the afore mentioned columns<br>• In Table2 columns, serviice_id will be the id of worker/protected paths/services/connections<br>• serviceMode defines if that particular service_id is ACTIVE/STAND-BY there by achieving requirement-2<br>• service_ids belonging to same worker-protected protection will have the same 'protection_path_id'. This 'protection_path_id' will be equal to id column of 'protection_path' table which stores the meta data of a protection path like id,name. this implementation leads to fulfilment of requirement-3<br>• servicePathType defines if the particular service is either worker/protected/diverse/Diverse protected paths | | |

| REQUIREMENTS | DB CHANGES | UI CHANGES | CODE CHANGES |
|---|---|---|---|
| SIA calculation needs to be altered to show that protection is down only when both worker and protected paths are down | | Default Protected Path Service Template will be created.<br><br>All the following widgets will be non editable<br><br>• Data source Expression<br>• Conformance<br>• Quality | |

| REQUIREMENTS | DB CHANGES | UI CHANGES | CODE CHANGES |
|---|---|---|---|
| Continued… | | For Availability widget<br><br>• Event policy will be non editable<br>• Enable Aggregation policy will be enabled with criteria as shown below and will be non-editable<br>• carry node availability will be disabled by default and will be non-editable<br><br>  | • Need to add support in Neo4j to fetch higher level protected path associated to worker-protected services or Main/Diverse services<br>• default protected_path service template will be added with aggregation policy where protected path will be unavailable only when all of the services associated with that protected path goes unavailable i.e., in UAA aggregation policy will be added selecting 'Percentage of child' and criteria as 'unavailable when 100% of child goes unavailable as shown under UI changes section |

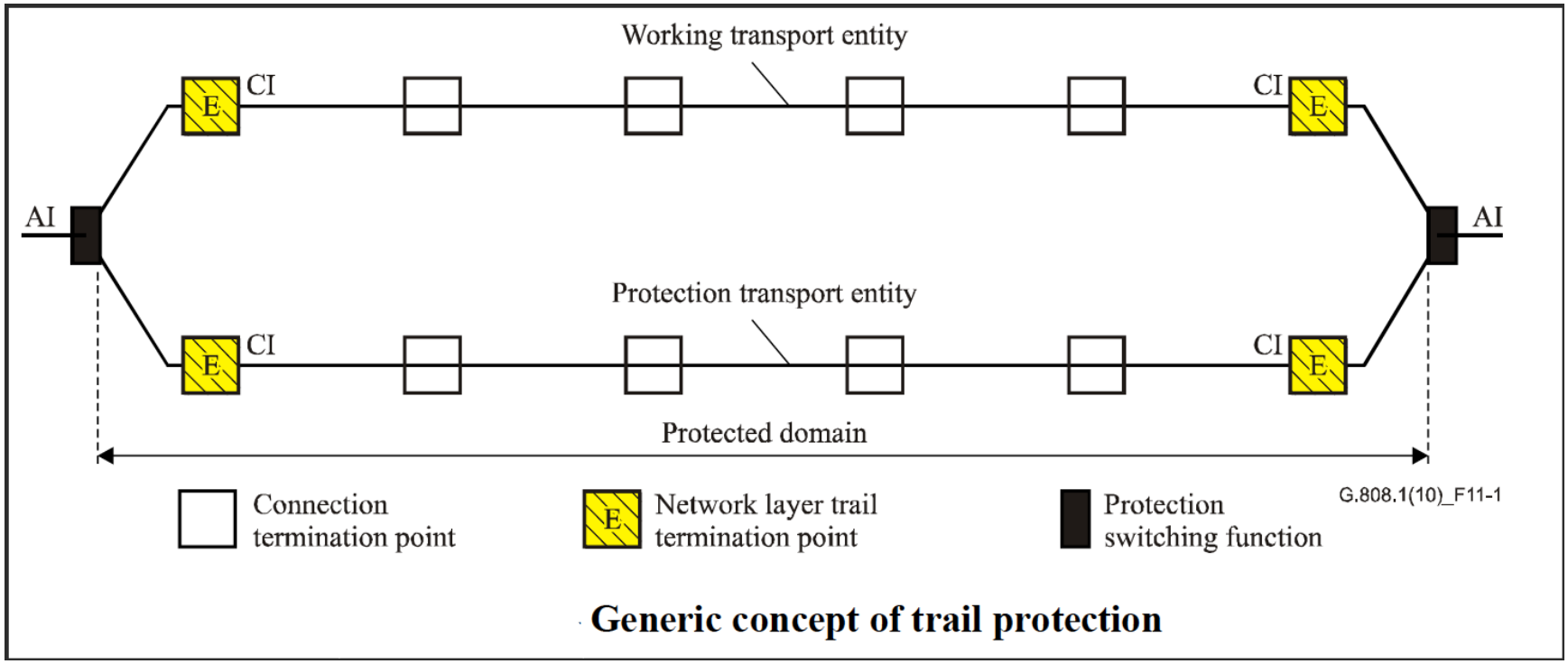
# Types of Protected Services

Protected Services are classified into the following groups:

- Trial Protected Services
- SNC Protected Services
- Ring Protected Services

# Trial Protected Services

Trial Protected Services are also called Worker Protect Services. The following image describes the Trial Protected Service.




Generic concept of trail protection

Different aspects depicted in this scenario are as follows:

- There are two services or connections. For example, S1 and S2 added in UAA with same A,Z end points
- A protection_path (pp_1 ) service is created in UAA, s1 and s2 are segments of the service.
- The s1 service is a worker path service type and the s2 service is a protected service type.
- Of s1 or s2, the one that is up is the active path. The other path is the standby path.

In the previous example, *protection_path* and *protection_path_service* table are defined as shown in the following table:

**protected_service table data**

| ID | NAME | TYPE | IS WORKER ACTIVE |
|---|---|---|---|
| pp_1_id | pp_1 | trail | null |

In the following cases, only one service is exists. The service that exists is the one whose path is up.

**Case 1**

| SERVICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | Active | pp_1_id | worker |
| s2_id | Standby | pp_1_id | protected |

**Case 2**

| SERVICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | Standby | pp_1_id | worker |
| s2_id | Active | pp_1_id | protected |

**Case 3**

| SERVICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | Active | pp_1_id | worker |
| s2_id | Active | pp_1_id | protected |

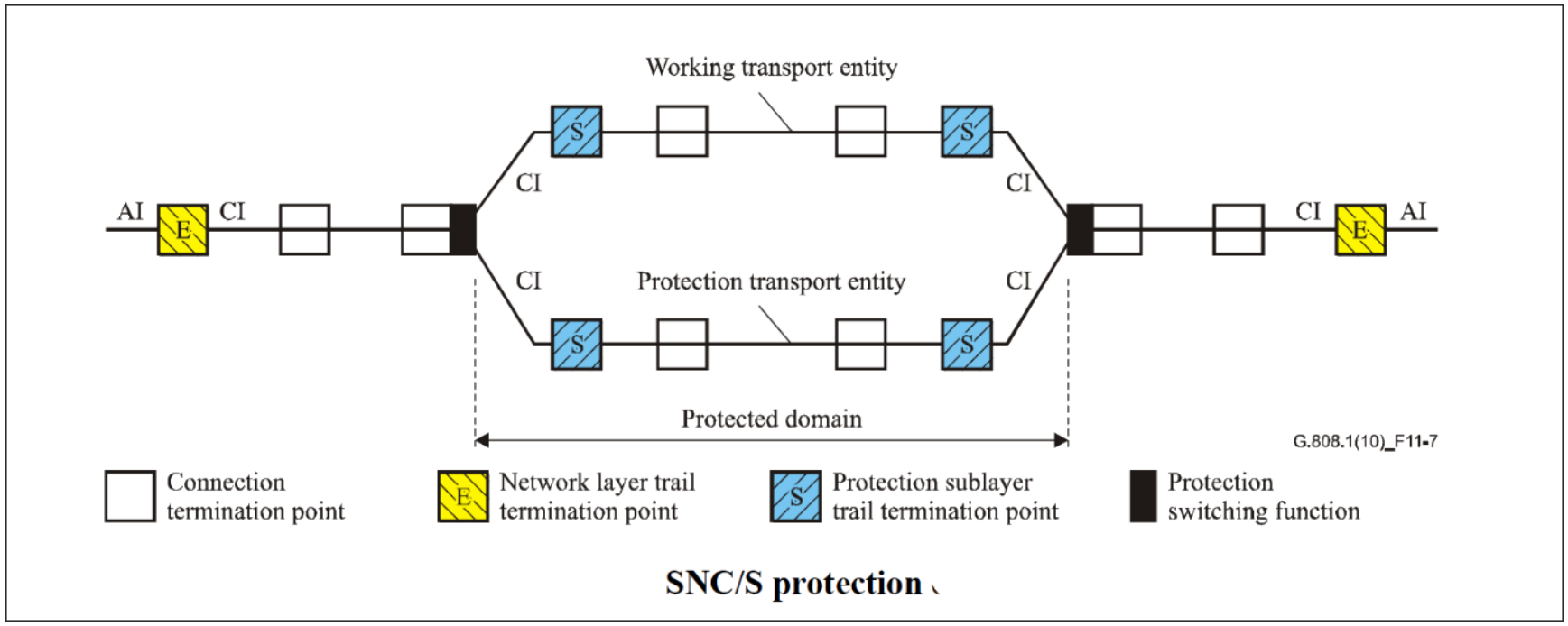
## Service Impact Analysis

The service impact analysis (SIA) shows the following availability:

- Availability of protected path is **Available** when all of the worker-protected paths or segments are **UP**.
- Availability of protected path is **AT_RISK** when any of the available worker-protected paths or segments are **DOWN**.
- Availability of protected path is **UNAVAILABLE** when all of the worker-protected paths are **DOWN**.

# SNC Protected Services

SNC Protected Services is also called as Worker Protect Services. The following image describes the SNC Protected Service.




**SNC/S protection**

Different aspects depicted in this scenario are as follows:

- There will be two services/connections lets say S1 and S2 added in UAA with same A,Z end points
- A protection_path (lets say pp_1 )which is also as service will be created in UAA to which s1,s2 are segments
- One of the services s1 will be marked as worker path and other s2 as PROTECTED
- Out of these worker and protected path whichever path currently UP will be ACTIVE and the other will be STANDBY

In the previous example, *protection_path* and *protection_path_service* table are defined as shown in the following table:

**protected_service table data**

| ID | NAME | TYPE | IS WORKER ACTIVE |
|---|---|---|---|
| pp_1_id | pp_1 | SNC | null |

In the following cases, only one of below cases 1 or 2 exists depending on the worker or protected paths is UP.

**Case 1**

| SERICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | Active | pp_1_id | worker |
| s2_id | Standby | pp_1_id | protected |

**Case 2**

| SERICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | standby | pp_1_id | worker |
| s2_id | active | pp_1_id | protected |

**Case 3**

| SERICE ID | SERVICE MODE | PROTECTED SERVICE ID | SERVICE PATH TYPE |
|---|---|---|---|
| s1_id | active | pp_1_id | worker |
| s2_id | active | pp_1_id | protected |

## Service Impact Analysis

The service impact analysis (SIA) shows the following availability:

- Availability of protected path is **Available** when all of the worker-protected paths or segments are **UP**.
- Availability of protected path is **AT_RISK** when any of the available worker-protected paths or segments are **DOWN**.
- Availability of protected path is **UNAVAILABLE** when all of the worker-protected paths are **DOWN**.

# Ring Protected Services

Ring Protected Services helps in implementing G803.2 rings as part of the Ethernet Assurance. A Protected services cannot be created via UI. It can be created only via swagger UI / import with type RING, G8302_RING. Included services can be either a service, connection, or another protected service.

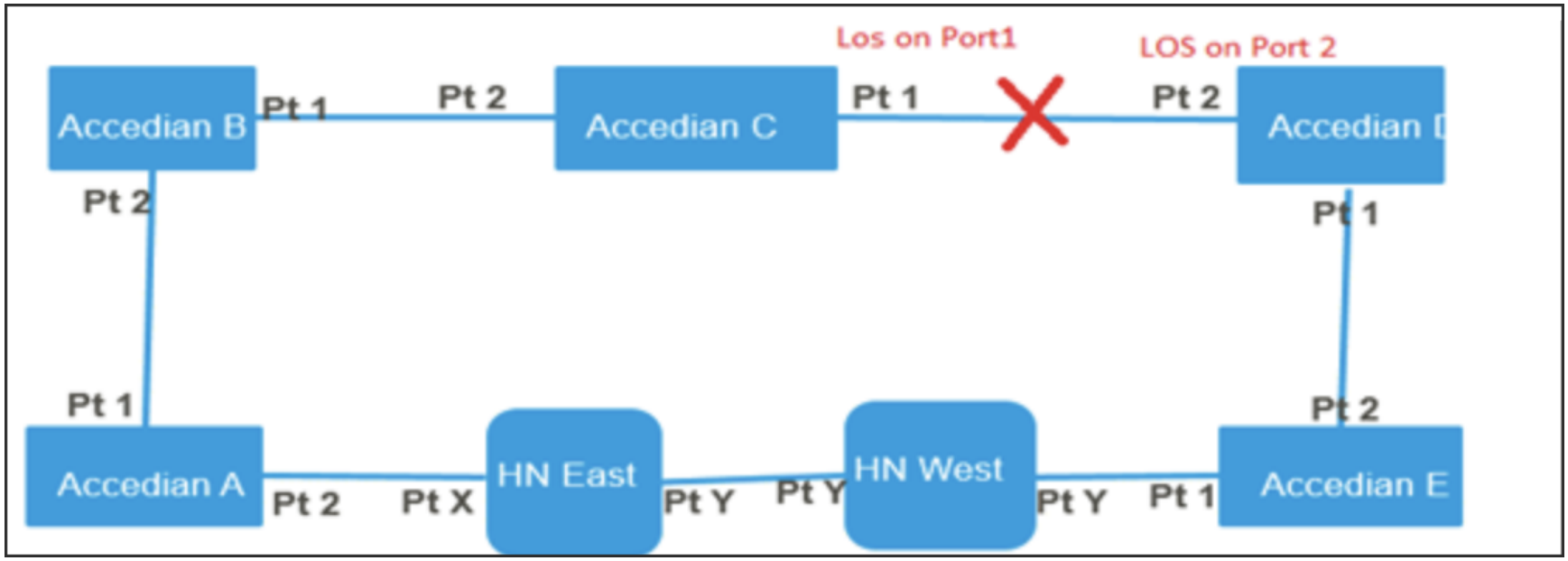
## Requirements

The ring protected service must meet the following requirements:

1. It implements the ring protection strategy.
2. It considers all the available paths in a ring, while performing SIA. If a ring is part of a service and if one of the segments of that ring is unavailable, then:
   a. Service goes **unavailable** if there is no alternate path from entry to exit of that ring.
   b. If there is one possible path from entry to exit of that ring, service becomes **at-risk**.

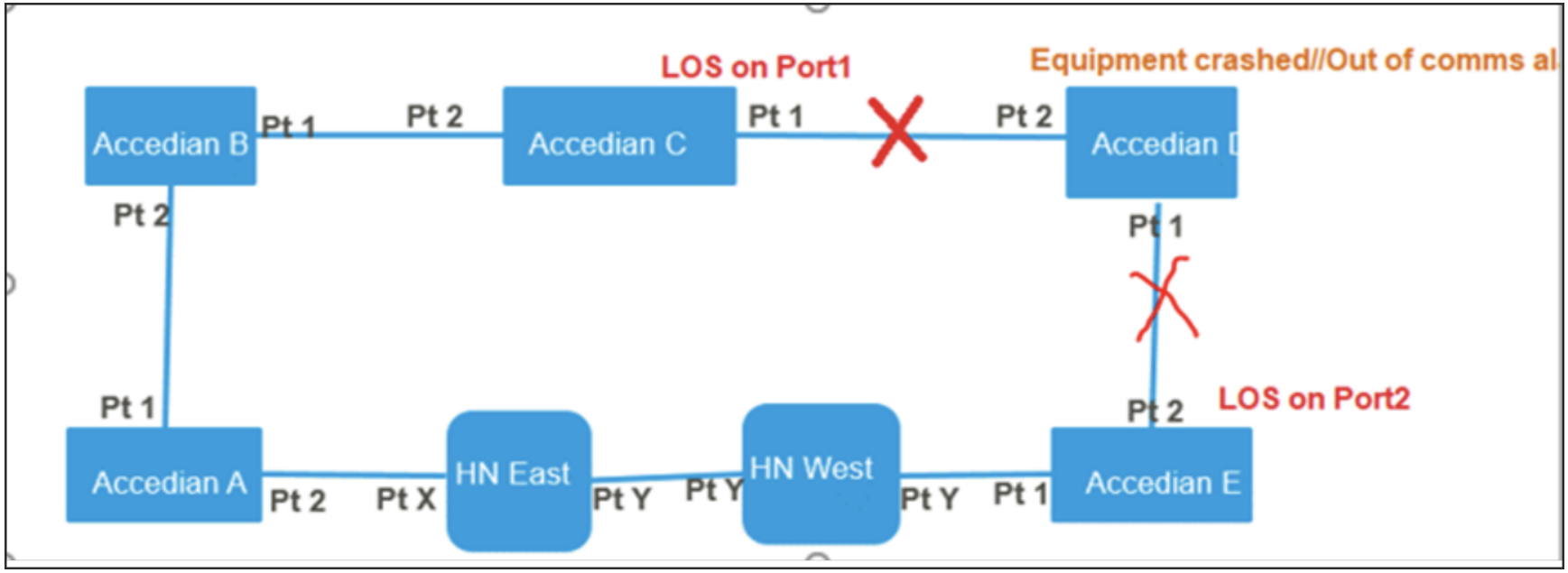
**Case 1**

In the following image, if there is a fault between C and D device in the ring, then the service takes the other path.


Los on Port1
LOS on Port 2
Accedian B
Pt 1
Pt 2
Accedian C
Pt 1
Pt 2
Accedian D
Pt 2
Pt 1
Pt 1
Pt 2
Accedian A
Pt 2
Pt X
HN East
Pt Y
Pt Y
HN West
Pt Y
Pt 1
Accedian E

**Case 2**

If there is a fault, then the service impacted are only the ones on Device D.




## Assumptions

- No entry and exit points for Ring protection. Service can enter/exit from any node in a ring.

## Approach

1. The ring will be added as a protected service and is stored under the protected_service table with the type **Ring**.
2. All the services/connections that are part of ring will be stored under **service_protected_service**.

## Normal Services

1. Where rings and normal services/ connections are segments of Parent/ Main service,
    a. Parent service availability will be set to UNAVAILABLE, if,
        i. Case A: Atleast one of immediate segment services (both ring and non-ring) is UNAVAILABLE
        ii. Case B: No path is found between source and destination nodes of a parent service.
    b. Parent service availability will be set to AT_RISK, if,
        i. Case A: Atleast one of non-ring segment services is AT_RISK and atleast one path is found between source and destination nodes of a parent service.
        ii. Case B: If all non-ring segments are AVAILABLE and atleast one of the included services of ring segment is UNAVAILABLE and atleast one path is found between source and destination Nodes of a Parent Service.
    c. Parent service availability will be AVAILABLE, if,
        i. All of the non ring segments are AVAILABLE and all ring segments are AVAILABLE.

## Rings

1. AT_RISK & AVAILABLE will not be considered for RING availability
2. Possible availability states for RING are UNKNOWN AND UNAVAILABLE
3. RING will be UNAVAILABLE when
    a. All the included services are UNAVAILABLE OR
    b. Atleast one of the included sub-ring of type G8032_RING is UNAVAILABLE
4. When RING is not UNAVAILABLE it will be UNKNOWN.

# Implementing a Protected Service

Currently, the protected services can only be created using Swagger API or Import/Export (Refer import and export guide for help) of services.

There could be more than 1 active service between the endpoints/nodes.

The scope of improvement under the topology is to implement Protection switching, Active or Standby, whichever applicable, for services and connections. It also helps in defining the endpoints for a service or a connection.

- A single service or a connection can be formed either by single direct path connecting both sides trail endpoints ie.(source and destination points), or with a group of intermediate services which is a segment between the trail endpoints. A particular service/ connection can have multiple paths.
- For **services**, the service_id will be updated on the corresponding endpoint in the end_point table (i.e., endpoint-to-service is a many-to-one relation) and also in network_connection_end_point table.
- For **connections**, the connection_id and associated endpoint_id will be stored in intermediate relational table (network-connection_end_point) between NetworkConnection and EndPoint (i.e., network connectiion-to-end point relation is many-to-many).

# Create and Edit Protected Services

User can create, edit, and delete protected services using the following formats:

- Rest API
- CSV Import
- Json Import

# Rest API

The Protected Services can be created through Rest API also known as Swagger Ui.

The following table illustrates how a Protected Services can be created, edited and deleted using Rest API.

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Create Protected Service | **URL:** /uaa-ui/network/protected services<br><br>**Method:** POST | [ { "name": "New Protected Service", "description": "New Protected Service", "discard-events": false, "customer-description": "", "service-template-id": "Default Protected Service Template", "customer": { "id": "f940c608-7146-4876-b0b8-bdb373cad736", "name": "customer", "object-type": "customer" }, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "xid": "12345", "availability": "Available", "serviceXid": "546eab2e-0518-4614-b351-c2871e62bfb5", "serviceType_id": "c65fef8d-fa9f-4123-a7e8-ea84a26920bb", "physicalConnection": true, "serviceType": "Fiber", "serviceTemplateName": "Default Protected Service Template", "protectionType": "TRAIL", "isWorkerActive": true, "includedServices": [ { "serviceId": "308c1c17-a879-411d-8530-426c8280d5ed", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "New Service", "object-type": "service-protected-service" } ], "object-type": "protected-service" } | Create Protected Service - Successfully created Protected Services: [ [New Protected Service] ] |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Edit Protected Services | **URL:** /uaa-ui/network/protectedservices<br><br>**Method:** PUT | [ { "name": "Updated Protected Service", "id": "23360e4c-6dd9-4d28-a048-8bc300e24f98", "description": null, "discard-events": null, "availability": "Available", "customer-description": null, "service-template-id": "Default Layer2 LAG Service Template", "customer": null, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": true, "serviceTemplateName": "Default Layer2 LAG Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [ { "serviceId": "db758df8-677b-4b6d-a327-e4939207e79f", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "Service2", "object-type": "service-protected-service" }, { "serviceId": "4a406ef6-0416-41e3-a829-31f64babf564", "serviceMode": "STANDBY", "servicePathType": "PROTECTED", "serviceName": "Service 1", "object-type": "service-protected-service" } ], "object-type": "protected-service" } ] | Modify protected service for [Updated Protected Service] is/are successful. |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Edit Protected Services with one or more property fields. | **URL:** /uaa-ui/v2/network/protectedservices<br><br>**Method:** PUT | [ { "name": "Modified Protected Service", "id": "23360e4c-6dd9-4d28-a048-8bc300e24f98", "description": null, "discard-events": null, "availability": "Available", "customer-description": null, "service-template-id": "Default Layer2 LAG Service Template", "customer": null, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": true, "serviceTemplateName": "Default Layer2 LAG Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [ { "serviceId": "db758df8-677b-4b6d-a327-e4939207e79f", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "Service2", "object-type": "service-protected-service" }, { "serviceId": "4a406ef6-0416-41e3-a829-31f64babf564", "serviceMode": "STANDBY", "servicePathType": "PROTECTED", "serviceName": "Service 1", "object-type": "service-protected-service" } ], "object-type": "protected-service" } ] | Modify protected service for [Modified Protected Service] is/are successful. |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Get Protected Services | **URL:** /uaa-ui/network/protectedservices<br><br>**Method:** GET | Filters supported:<br>• Name<br>• Availability<br>• Service Xid<br>• Limit | [ { "name": "Graph PS Protection with Services", "id": "07ede9cb-d781-4446-942b-ad453dfdf120", "description": "New Protected Service", "discard-events": false, "availability": "Available", "customer-description": "", "service-template-id": "Default Protected Service Template", "customer": { "id": "f940c608-7146-4876-b0b8-bdb373cad736", "name": "customer", "object-type": "customer" }, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": null, "serviceTemplateName": "Default Protected Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [ { "serviceId": "db758df8-677b-4b6d-a327-e4939207e79f", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "Service2", "object-type": "service-protected-service" }, { "serviceId": "4a406ef6-0416-41e3-a829-31f64babf564", "serviceMode": "STANDBY", "servicePathType": "PROTECTED", "serviceName": "Service 1", "object-type": "service-protected-service" } ], "object-type": "protected-service" }, |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Continued… | | | { "name": "Graph PS Protection without any Service", "id": "5d27582e-ef38-4239-b979-a7989e47102f", "description": null, "discard-events": null, "availability": "Available", "customer-description": null, "service-template-id": "Default Layer2 LAG Service Template", "customer": null, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": true, "serviceTemplateName": "Default Layer2 LAG Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [], "object-type": "protected-service" } ] |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Get Protected Services With ID | **URL:** /uaa-ui/network/protected services/{id}<br><br>**Method:** GET | Param: Protected Service Id | [ { "name": "Graph PS Protection with Services", "id": "07ede9cb-d781-4446-942b-ad453dfdf120", "description": "New Protected Service", "discard-events": false, "availability": "Available", "customer-description": "", "service-template-id": "Default Protected Service Template", "customer": { "id": "f940c608-7146-4876-b0b8-bdb373cad736", "name": "customer", "object-type": "customer" }, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": null, "serviceTemplateName": "Default Protected Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [ { "serviceId": "db758df8-677b-4b6d-a327-e4939207e79f", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "Service2", "object-type": "service-protected-service" }, { "serviceId": "4a406ef6-0416-41e3-a829-31f64babf564", "serviceMode": "STANDBY", "servicePathType": "PROTECTED", "serviceName": "Service 1", "object-type": "service-protected-service" } ], "object-type": "protected-service" } ] |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Get Protected Services using search query | **URL:** /uaa-ui/v2/network/protectedservices<br><br>**Method:** GET | Filters supported:<br>• Name<br>• Availability<br>• Service Xid<br>• Limit<br>• Search query | [ { "name": "Graph PS Protection with Services", "id": "07ede9cb-d781-4446-942b-ad453dfdf120", "description": "New Protected Service", "discard-events": false, "availability": "Available", "customer-description": "", "service-template-id": "Default Protected Service Template", "customer": { "id": "f940c608-7146-4876-b0b8-bdb373cad736", "name": "customer", "object-type": "customer" }, "administrativeDomain": { "id": "f0d23460-0d52-45e5-b579-fe262920c983", "name": "Default", "object-type": "administrative-domain" }, "config": "SINGLE_POINT", "physicalConnection": null, "serviceTemplateName": "Default Protected Service Template", "protectionType": "NONE", "isWorkerActive": false, "includedServices": [ { "serviceId": "db758df8-677b-4b6d-a327-e4939207e79f", "serviceMode": "ACTIVE", "servicePathType": "WORKER", "serviceName": "Service2", "object-type": "service-protected-service" }, { "serviceId": "4a406ef6-0416-41e3-a829-31f64babf564", "serviceMode": "STANDBY", "servicePathType": "PROTECTED", "serviceName": "Service 1", "object-type": "service-protected-service" } ], "object-type": "protected-service" } ] |

| OPERATIONS | URL AND METHOD | REQUEST BODY | RESPONSE |
|---|---|---|---|
| Delete Protected services | **URL:** /uaa-ui/network/protectedservices<br><br>**Method:** DELETE | { "ids": [ "2e83243c-921c-436d-953d-3f7e8578190a" ], "protectedservice": true } | Successfully Deleted Protected services: [ Protected Service 247 ] |

# CSV Import

The Protected Services can also be created using the CSV Import also called Importing.

Following are the steps to import the protected service:

1. Import Protected Service at first with *isWorkerActive & ProtectionType* fields along with other required properties.
2. Then get that Protected Service *id* to Import the Protected Services (i.e., included services) along with Protection Service Id to link together.

Following examples and formats illustrated how the Protected Services can be imported.

## Creating Protected Service using CSV Import

```
protected-service,,,,,,,,,,,,
name,description,administrativeDomain,administrativeDomain|name,protection-type,is-worker-active
Imported Protected Service,Importing PS,administrative-domain,Default,TRAIL,false
```

## Modifying Protected Service using CSV Import

```
protected-service,,,,,,,,,,,,
id,name,protection-type,is-worker-active
39f4891e-4eaa-4989-934a-c060ec9faac7,Modified Imported Protected Service,TRAIL_GROUP,true
```

## Deleting Protected Service using CSV Import

- Delete only if there are no included services associated, if not then it throws an error.

If the delete protected service fails, then the object in use remove all included services and allows the user to try again.

```
delete--protected-service,,
name
Modified Imported Protected Service
```

- Force Deleting the Protected Service

It detaches the included services first then deletes protected service Object.

```
force-delete--protected-service,,
name
Modified Imported Protected Service
```

## Create/Modify Included Services using CSV Import

- Using Ids of both Protected Service and Included service.

```
service-protected-service,,,,,
protectedServiceId,serviceId,serviceMode,servicePathType
39f4891e-4eaa-4989-934a-c060ec9faac7,4a406ef6-0416-41e3-a829-31f64babf564,ACTIVE,WORKER
39f4891e-4eaa-4989-934a-c060ec9faac7,db758df8-677b-4b6d-a327-e4939207e79f,STANDBY,PROTECTED
```

- Using Xids of both Protected Service & Included service.

```
service-protected-service,,,,,
protectedServiceXid,serviceXid,serviceMode,servicePathType
957456,2472,STANDBY,PROTECTED
957456,2471,ACTIVE,WORKER
```

- Using Names of both Protected Service & Included service.

```
service-protected-service,,,,,
protectedServiceName,serviceName,serviceMode,servicePathType
Final Test,47_1,ACTIVE,WORKER
Final Test,47_2,STANDBY,PROTECTED
```

Service Id/name/externalId, ProtectedService Id/name/externalId can be used to import Included Services in any possible combinations.

# Json Import

The Protected Services can also be created using the Json Import.

Following are the steps to import the protected service:

1. Import Protected Service at first with isWorkerActive & ProtectionType fields along with other required properties.
2. Then get that Protected Service id to Import the Protected Services (i.e., included services) along with Protection Service Id to link together.

Following examples and formats illustrated how the Protected Services can be imported:

## Creating Protected Service using Json Import

```
{
  "class-tag": "protected-service",
  "group-tag": "device-load",   //optional
  "object": {
    "object-type": "protected-service",
    "name": "<Protcted service name>",
    "domain": "default",
    "description": "T<description>",
    "protection-type": "RING/TRAIL/TRAIL_GROUP/G8032_RING/SNC/SNC_GROUP",
    "is-worker-active": false
  }
}
```

## Create/Modify Included Services using Json Import

```
{
  "class-tag": "service-protected-service",
  "group-tag": "device-load", //optional
  "object": {
    "object-type": "service-protected-service",
    "serviceId": "<included service id>",
    "serviceMode": "NONE",
    "servicePathType": "NONE",
    "protectedServiceId": "<protected service id>"
  }
}
```

## Modifying Protected Service using Json Import

```
{
  "class-tag": "protected-service",
  "group-tag": "device-load",   //optional
  "object": {
    "object-type": "protected-service",
    "id": "<Protcted service id>",
    "domain": "default",
    "description": "T<description>",
    "protection-type": "RING/TRAIL/TRAIL_GROUP/G8032_RING/SNC/SNC_GROUP",
    "is-worker-active": false
  }
}
```

## Deleting Protected Service using Json Import

- Deletes when there are **NO** included services.

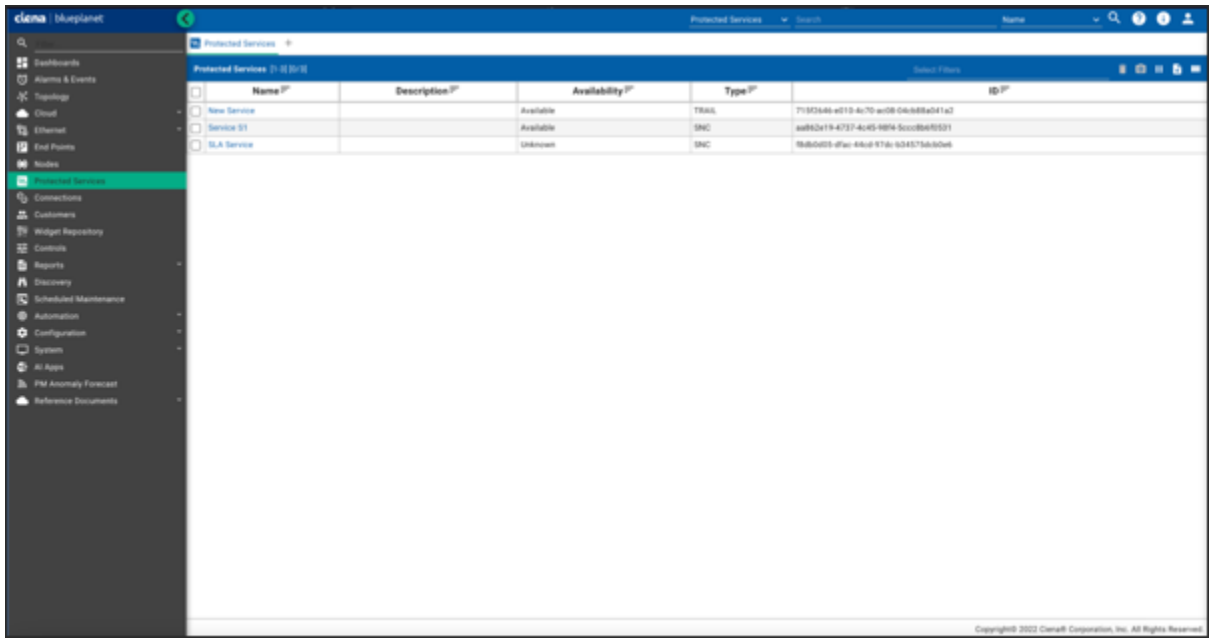
```
{
  "class-tag": "delete--protected-service",
  "group-tag": "device-load",   //optional
  "object": {
    "object-type": "protected-service",
    "id": "<Protected service id>"
  }
```

- Deletes when there are included services for it. This JSON request will detach the included services from protected service and then deletes protected service.

```
{
  "class-tag": " force-delete--protected-service",
  "group-tag": "device-load",   //optional
  "object": {
    "object-type": "protected-service",
    "id": "<Protected service id>"
  }
}
```

# Visualisation of Protected Services

In the UAA App Bar UI page the Protected Services page is added as shown in the below image:



Through this page the user can navigate through different sections of the protected services page.

Following table describes all the toolbar icons available on the Protected Services page.

| TOOLBAR ICONS | LABEL | DESCRIPTION |
|---|---|---|
|  | Delete Services | Click this icon to delete selected Protected Service |

| TOOLBAR ICONS | LABEL | DESCRIPTION |
|---|---|---|
|  | Pause or Play Pause | Play Click the Pause or Play icons to stop or start the Protected Service page refresh. |
|  | Export Table | Click this icon to export the table in<br>• CSV (All Columns)<br>• CSV (Visible Columns)<br>• PDF (Visible Columns<br>• XLS (All Columns)<br>• XLS (Visible Columns). |
|  | Manage Grid Template | This icon enables you to select the columns to be displayed in the table and define Grid Template. |

The following table describes all the columns on the Protected Services page.

| FIELD NAME | DESCRIPTION |
|---|---|
| Name | Displays the name of the protected service. |
| Description | Displays the description of the protected service. |

| FIELD NAME | DESCRIPTION |
| --- | --- |
| Availability | A protected service is available if it is up and working regardless of the quality or conformance of the service. Here, service availability could be determined from alarms.<br><br>When there is no Availability defined for a protected service, the Availability state will be shown as Unknown for the service. Different Availability states can be -<br><br>• Unknown<br>• Available<br>• Unavailable<br>• At risk |
| Protection Type | Displays the type of protection service -<br><br>• TRAIL<br>• SNC<br>• TRAIL_GROUP<br>• Ring |

# Contacting Blue Planet

| | |
|---|---|
| Blue Planet Division Headquarters | 7035 Ridge Road<br>Hanover, MD 21076<br>+1 800-921-1144 |
| Blue Planet Support | https://www.blueplanet.com/support |
| Sales and General Information | https://www.blueplanet.com/contact |
| Training | https://www.blueplanet.com/learning |

For additional information, please visit https://www.blueplanet.com.

# LEGAL NOTICES