



## AMPS 2.0 User Guide 1.0



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# 1 Introduction

The SEQUIN project<sup>[1]</sup> (Service Quality across Independent Networks) defined the Premium IP (PIP) service. When implemented, this service guarantees an uncongested path for a specified, privileged IP traffic flow.

PIP has two requirements:

- The PIP flow has to be prioritised over non-privileged (or “Best Effort”) flows, using a method such as Differentiated Services (DiffServ)<sup>[2]</sup>.
- The amount of PIP traffic must be carefully controlled so that it does not congest itself. An implication of this requirement is that all PIP instances must be requested in advance, and that the total amount of PIP on any given link in the network is limited to a pre-defined threshold (typically 30% of link capacity).

Following the SEQUIN recommendations, in 2004 the GÉANT<sup>1</sup> network created the GÉANT Provisioning System to receive, assess and accept or reject PIP requests. Subsequently, GN2<sup>2</sup> (the successor project to GÉANT) expanded the service to cover multiple domains, and created the GÉANT2 Advance Multi-domain Provisioning System (AMPS).

This User Guide describes the operation of the AMPS Graphical User Interface (GUI), which is how an end user interacts with AMPS to request a PIP service.

## 1.1 What is AMPS?

AMPS enables authorised users to reserve PIP capacity across the GÉANT2 network and adjoining PIP-capable domains. Each PIP-capable domain must deploy its own instance of AMPS. These instances operate in a federated (rather than hierarchical) manner, and this federation of PIP-capable domains is called the extended AMPS domain.

AMPS is made up of six independent modules, using web services to communicate. This modular approach allows any given National Research and Engineering Network (NREN) to replace one or more of the modules with their own implementation if required.

The modules are:

- **Interdomain:** The interdomain service (multi-domain service) enables communication between PIP domains. In particular, it enables the forwarding of users’ PIP requests (each AMPS in turn receives and assesses each request, and the request is accepted only if all approve it).

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<sup>1</sup> <http://www.geant.net>

<sup>2</sup> <http://www.geant2.net/>

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- **Intradomain:** The intradomain service (single-domain service) manages the PIP reservation database. If a new request for PIP is acceptable (in terms of local policy), the intradomain service checks that there is capacity for the request. If there is no spare capacity, the request is denied. If there is capacity, the request is marked as accepted. Note, however, that final acceptance is dependent on the other involved PIP domains also having capacity. While the request can be accepted initially by a local service that has capacity, it can be rejected later by another service that does not have capacity. This means that the request appears to be accepted at first, but is later be rejected by the transaction manager when the subsequent service with insufficient capacity rejects the request.
- **Pathfinder:** This service uses topology data from NIS to determine what path through a network a given IP flow would take.
- **NIS-NDM** (Network Information System and Network Discovery Module): This service allows the AMPS administrator to semi-automatically discover their network's IP topology using SNMP and SSH, or telnet. If the AMPS server is not able to use SSH or telnet for any reason, the web interface allows the operator to manually add router interface IGP routing costs (the only topology information that requires SSH/telnet access). NIS requires access to an appropriate database (for example, MySQL).
- **Policy:** The policy module allows the service provider to apply different policies to different groups of users. User group names have a hierarchical structure (similar to the dotted format of a web address), and it is possible to apply general polices to the top level user groups, and/or more specific policies to fully specified user groups.
- **Configuration:** Due for release in mid 2008, the Configuration Service will be able to produce the required Juniper or Cisco configurations needed to implement a given PIP service instance. When building a new configuration, the CM will use a vendor independent pseudo-code so configurations can be produced for other vendors, if an appropriate plugin is written for it. Note that currently AMPS uses the original GÉANT Provisioning System sub-module for generating configurations, which means only Juniper configurations can be produced.

The AMPS GUI Client is not an official AMPS module, but is normally deployed at the same time (and on the same machine) as the AMPS instance:

- **GUI Client:** This is the web-based interface for users to submit new PIP requests and check the status of existing requests.

### 1.1.1 How to Use This Guide

This guide is aimed at the **AMPS end users**. The chapters are set out in the general order in which AMPS users will use the service.


It describes:

- How to log on to AMPS. See 2.1 "Logging on to AMPS" on page 4.
- How to create a reservation. See 2.2 "Creating a Reservation" on page 5.
- How to query a reservation. See 2.3 "Querying a Reservation" on page 9.
- How to cancel a reservation. See 2.4 "Cancelling a Reservation" on page 9.
- How to log out of AMPS. See 2.5 "Logging out of AMPS" on page 10.

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## 1.1.2 Document Conventions

This documentation uses the following typographic conventions for menus, commands, keyboard keys, and items in the program interface:

<b>Boldface</b>	Commands and names of interface items. For example option buttons, menu options, and so on.
<i>Italics</i>	Placeholders for information or parameters that you provide. For example, <i>filename</i> in a procedure means you type the actual name of a file. Italics are also used for new terms and the titles of books.
... > ...	Used to indicate selecting an option in a hierarchical menu structure. For example:  Select <b>Insert &gt; Picture &gt; From File</b>  This instructs you to select the <b>Insert</b> option, followed by the <b>Picture</b> option, and finally the <b>From File</b> option.
	Any hints, tips or comments will be indicated by this symbol.

## 2 Using AMPS

This section describes the basic use of AMPS.

### 2.1 Logging on to AMPS



This varies with domain. Here we describe the authentication procedure used in GÉANT2.

To log on to AMPS:

1. Start your web browser.
2. Navigate to the AMPS URL. If you do not know this URL, please contact the AMPS administrator.

For GÉANT2 the URL is: <http://stats.geant2.net/amps/>

The **GÉANT2 Portal Login** page is displayed:

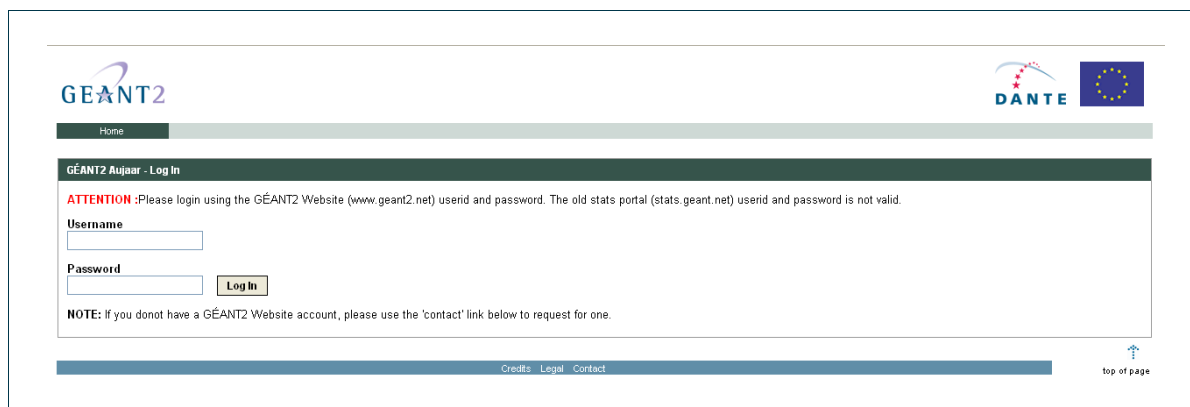


Figure 2.1: Login Page

3. Type your allocated **User ID** and **Password** into their respective fields, and click **Login**. If your login is successful, the **AMPS Home** page is displayed:

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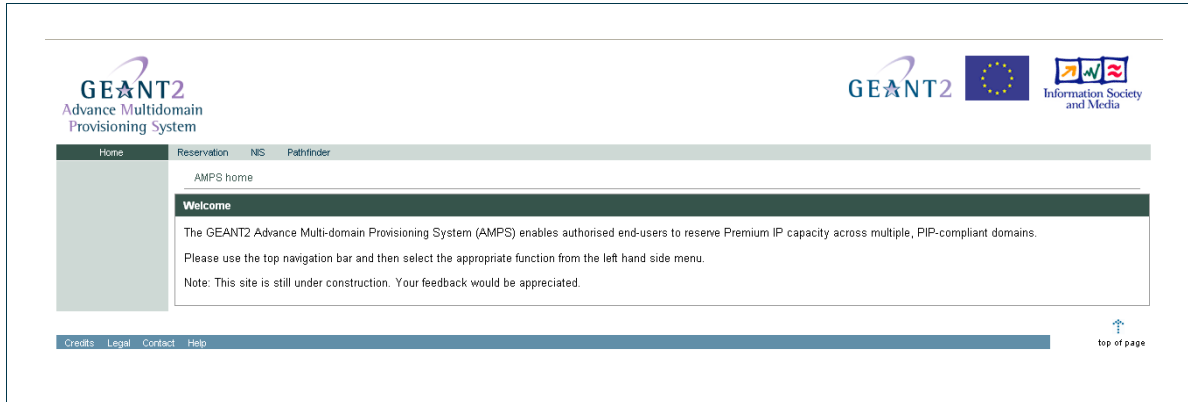


Figure 2.2: AMPS Home Page

If your login is not successful an appropriate error message is displayed (see Figure 3).

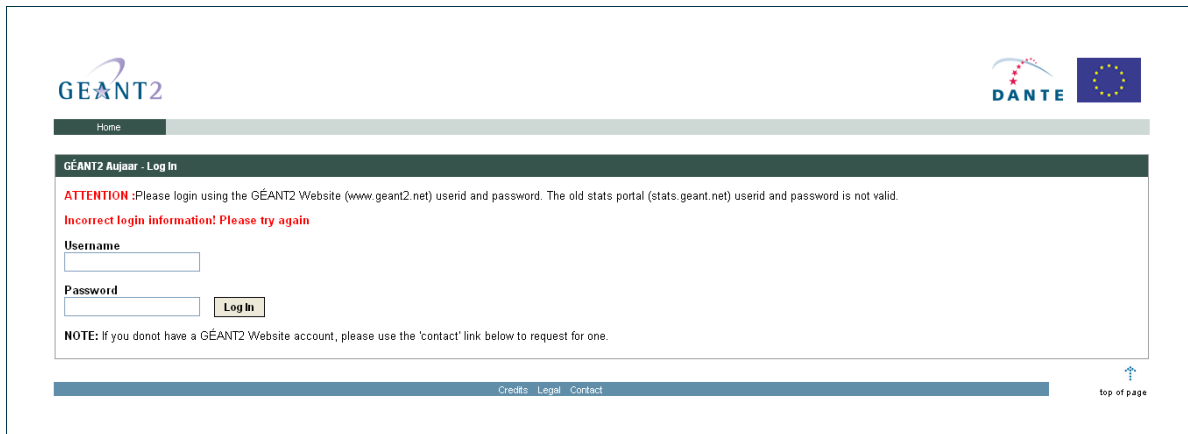


Figure 2.3: Login Error



Please check if your username and password are correct or contact the AMPS administrator.

## 2.2 Creating a Reservation

To create a new reservation:

1. Log on to AMPS as described in 2.1 “Logging on to AMPS”.
2. The **AMPS Home** page (see Figure 2.2) is displayed.
3. Select **Reservation > Create**. The **Create Reservation** page is displayed:

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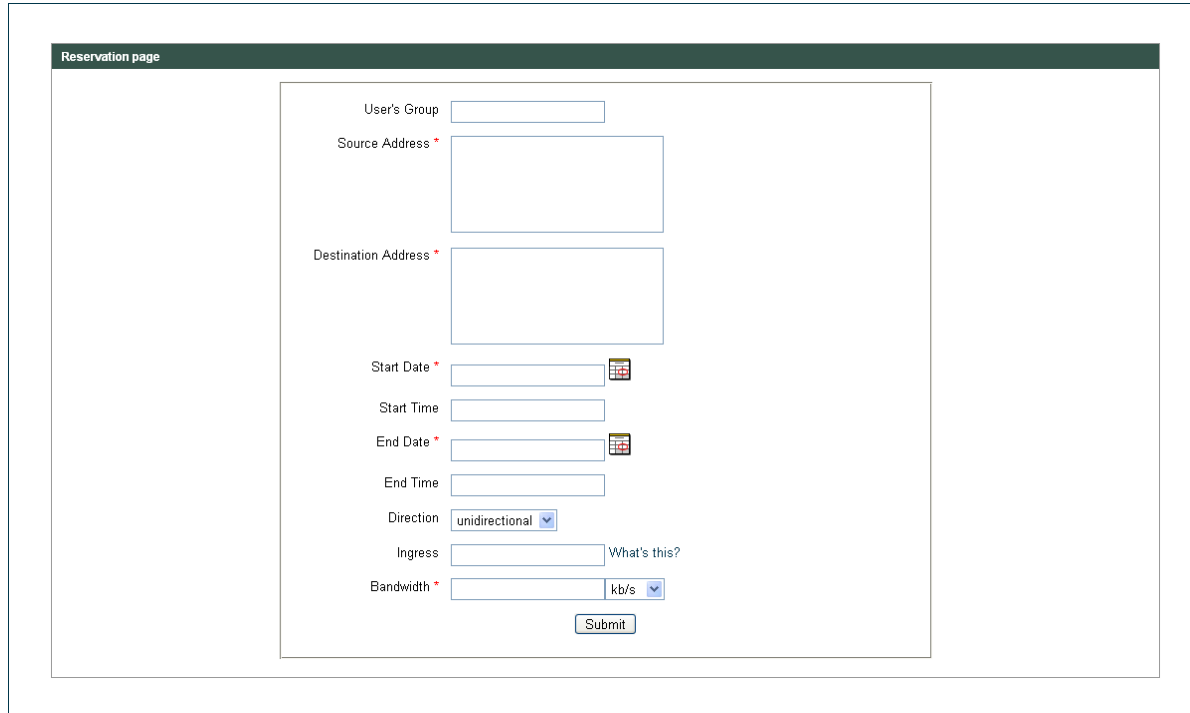


Figure 2.4: Create Reservation

4. Enter details for all the mandatory fields (labelled with a red asterisk):

- **Source Address:** Enter one or more IPv4 host and/or network addresses in the form *X.X.X.X/N* (the */N* can be omitted for individual hosts), on separate lines.
- **Destination Address:** Enter one or more IPv4 host and/or network addresses in the form *X.X.X.X/N* on separate lines.



The */N* can be omitted for individual hosts.



AMPS only calculates the path to the first address shown for source and destination, and assumes that the user has checked to make sure all other (secondary) addresses share the same path. If the addresses do not share the same path, you must make multiple reservations.

- **Start Date:** Enter the date the reservation should start in the form *DD/MM/YYYY*, or click the calendar icon to select a date from a popup calendar.
- **End Date:** Enter the date the reservation should end in the form *DD/MM/YYYY*, or click the calendar icon to select a date from a popup calendar.
- **Direction:** Use the drop-down list to select either a uni-directional or bi-directional reservation. If you are unsure which you need, select bi-directional. If you select bi-directional, two additional fields are displayed: **Reverse Bandwidth** and **Reverse Ingress**. These fields apply to the reverse route of PIP traffic, travelling from destination to source.

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- **Bandwidth:** Enter the maximum data rate required for the PIP reservation. Use the drop-down list to switch between kilobits per second and megabits per second.
5. Complete any optional fields:
- **User Group:** Enter the name of a valid user group to allocate a specific policy to your request, or leave this field blank to apply a default policy



If you leave the User Group field blank, a default policy is applied to your request. If you specify a group here, the policy linked to the specified group is applied. If no specific policy is applied to the group entered, the default policy is applied. The implementation of eduGAIN negates the requirement for this field. See 1.1 “What is AMPS?” on page 1 for a description of the AMPS modules.

- **Start Time:** Enter the time at which the reservation should start, in the form *HH:MM*. The default start time is 0000 hours.
  - **End Time:** Enter the time at which the reservation should end, in the form *HH:MM*. The default end time is 2359 hours.
  - **Ingress:** If you know the address of the router interface where your PIP flow will enter the extended AMPS domain, and if there is a risk of asymmetric routing between the AMPS server and the source of your PIP flow (which might mean that AMPS wrongly identifies this router interface), you should enter the IP address in the form *X.X.X.X*. If either one of the above conditions is not true, leave this field blank.
6. If necessary, complete the **Reverse bandwidth** and **Reverse Ingress** fields.
7. Click **Submit**.



If there are any data entry errors, an error message appears. Correct any errors and click **Submit** again.

8. Click **Yes** on the popup that warns: **This operation may take several minutes to complete – do you wish to continue?**



It is possible that this request generates a very large number of computations across multiple domains before the reservation can be accepted or rejected. These calculations could take five minutes or longer.

9. Your request is allocated a service ID (for example [s38@amps.geant2.net](mailto:s38@amps.geant2.net)) and a status screen is displayed, as shown in Figure 2.5. Click **Check Details** to confirm the full details of the reservation:

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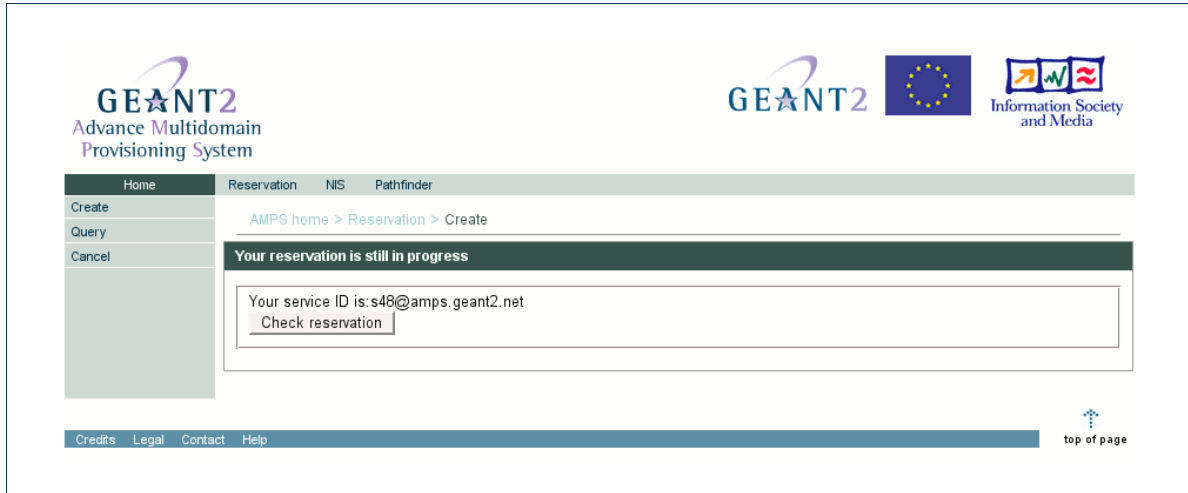


Figure 2.5: Service request progress display

10. If the reservation is not possible then an appropriate message is displayed. Click **Why Not?** to show why it was not possible to create the reservation (typically because there was insufficient spare PIP capacity on one or more links). See Figure 2.6.

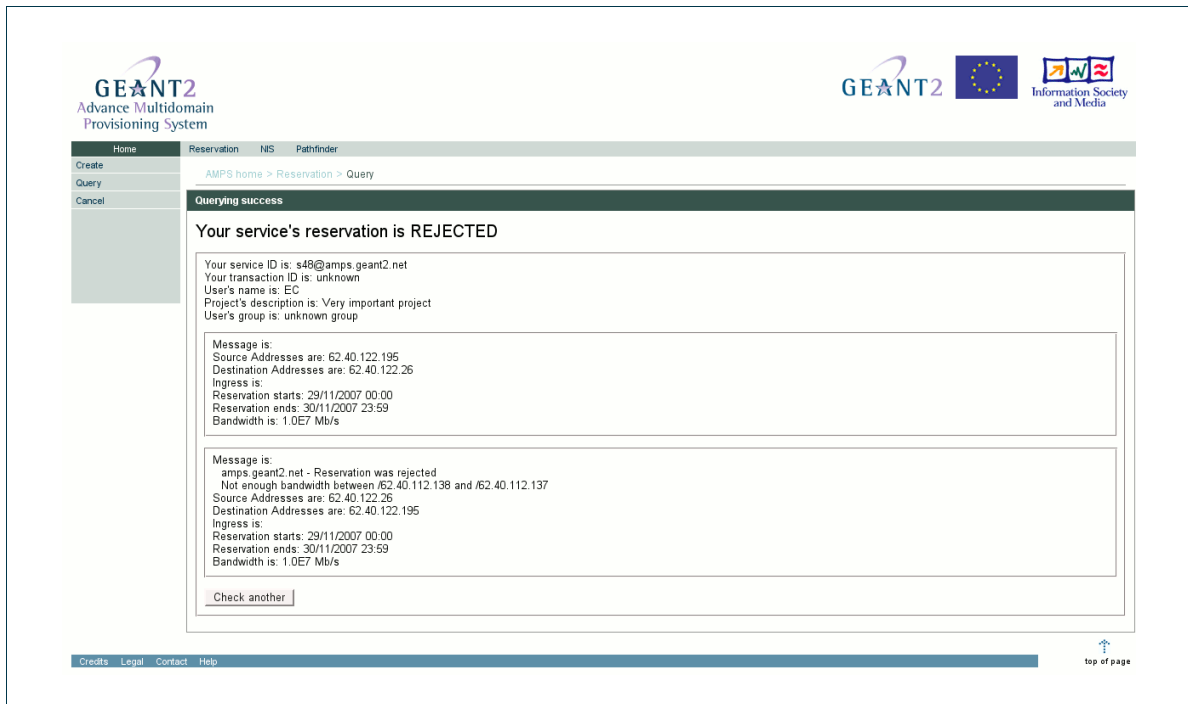


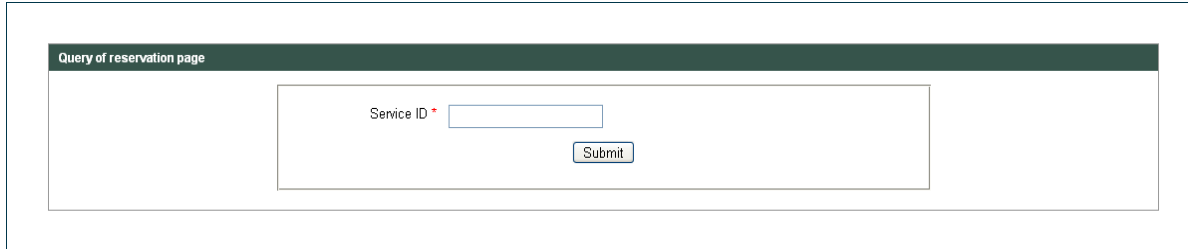
Figure 2.6: Service rejection details

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## 2.3 Querying a Reservation

To query an existing Reservation:

1. Log on to AMPS as described in 2.1 “Logging on to AMPS”. The **AMPS Home** page (see Figure 2.2) is displayed.
2. Select **Reservation > Query**. The **Query Reservation** page is displayed:



The screenshot shows a web page titled "Query of reservation page". It features a single text input field labeled "Service ID \*" and a "Submit" button positioned to its right.

Figure 2.7: Query Reservation

3. Type the service ID into the **Service ID** field.
4. Click **Submit**. The reservation details are displayed.

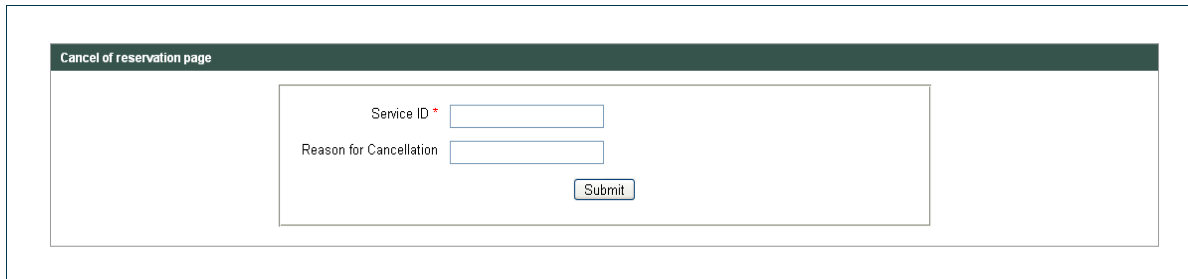


If you enter a non-existent service ID, an error message is displayed.

## 2.4 Cancelling a Reservation

To cancel an existing reservation:

1. Log on to AMPS as described in 2.1 “Logging on to AMPS”. The **AMPS Home** page (see Figure 2.2) is displayed.
2. Select **Reservation > Cancel**. The **Cancel reservation** page is displayed:



The screenshot shows a web page titled "Cancel of reservation page". It features two text input fields: "Service ID \*" and "Reason for Cancellation", with a "Submit" button positioned to the right of the second field.

3. Type the service ID into the **Service ID** field.
4. Optionally, enter a reason for cancellation.
5. Click **Submit** to cancel the reservation.

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If you enter a non-existent service ID, an error message is displayed.

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## 2.5 Logging out of AMPS

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This varies within domains. Here we describe the authentication procedure used in GÉANT2.

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On GÉANT2, it is currently not possible to log out of AMPS. Instead, you must log out of the GÉANT2 Portal, the proxy website by which you access AMPS. To log out of the GÉANT2 Portal:

- Go back to GÉANT2 Portal Home page and click on **Logout**.

### 3 Acronyms

<b>AMPS</b>	<b>Advance Multi-domain Provisioning System</b>
<b>DiffServ</b>	<b>Differentiated Services</b>
<b>PIP</b>	<b>Premium IP</b>
<b>SEQUIN</b>	<b>Service Quality across Independent Networks</b>
<b>SNMP</b>	<b>Simple Network Management Protocol</b>

## 4 References

- [1] The EU Project - SEQUIN, <http://www.dante.net/sequin>
- [2] [Black, 1998] Black, D., Blake, S., Carlson, M., Davies, E., Wang, Z. and Weiss, W., "An Architecture for Differentiated Services", RFC 2475, December 1998. Available <http://www.ietf.org/rfc/rfc2475.txt>
- [AMPS] <http://www.geant2.net/server/show/nav.1798>