INTEROPERABILITY UNIT			
TAP TSI ANNEX B.52 **RESERVATION APPLICATION GUIDE**			
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Version	Date	Section number	Modification/description
1.0 DRAFT	01.08.2012	All	Import from TAP TSI phase 1 delivery
1.0 FINAL	06.12.2013	All	Final publication

1 Table of Contents

2 Introduction

The present document belongs to the set of Technical Documents described in Annex III „List of Technical Documents referenced in this TSI" of the COMMISSION REGULATION (EU) No 454/2011.

3 References

3.1 References

Ref. N°	Document Reference	Last Issue
[1]	Directive 2008/57/EC on the interoperability of the rail system within the Community	
[2]	Commission Regulation (EU) No 454/2011 of 5 May 2011 on the technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system	
[3]	TAP TSI: ANNEX B.5 - Electronic Reservation of Seats/Berths and Electronic Production of Travel Documents	Version 1.1.0
[4]	TAP TSI: ANNEX B.8 - Standard Numerical Coding for Railway Undertakings, Infrastructure Managers and Other Companies Involved in Rail-Transport Chains	Version 1.1.0
[5]	TAP TSI: ANNEX B.9 - Standard Numerical Coding of Locations	Version 1.1.0
[6]	Directory of Passenger Code Lists for the ERA Technical Documents used in TAP TSI	Version 1.1.1
[7]	TAP IT Specifications Overview	Version 1.0
[8]	TAP Retail Architecture Description	Version 1.0
[9]	TAP Governance	Version 1.0

The above documents can be downloaded from the website of the European Rail Agency at https://www.era.europa.eu/Document-Register/Pages/TAP-TSI.aspx.

An additional legal document having relevance in particular for the reservation of places dedicated to PRM is Commission Decision 2008/164/EC of 21 December 2007 concerning the technical specification of interoperability relating to 'persons with reduced mobility' in the trans-European conventional and high-speed rail system (PRM TSI) - chapter 4.2.4

4 Particular description of the subject

This IT specification is dedicated for the implementation of the TAP TSI technical document B.5 for reservation message exchange. The IT-specification describe additional information's and procedures how to implement the requirements of the technical document B.5.

5 Updating

The document has to be updated according to the TAP TSI change control management process, described in chapter 7.5 of Commission Regulation (EU) No 454/2011 of 5 May 2011 [2].

6 Purpose

Commission Regulation (EU) No 454/2011 (TAP TSI) requires at the end of Phase One the issuing of deliverables on three areas:

- detailed IT specifications
- governance
- master plan

In particular "The detailed IT specifications shall describe the system and shall indicate in a clear and unambiguous manner how the system fulfils the requirements of the TAP TSI. The development of such specifications requires a systematic analysis of the relevant technical, operational, economic and institutional issues that underpin the process of implementing the TAP TSI. Therefore, deliverables shall include, but shall not be limited to, the following:

1. Functional, technical and performance specifications, the associated data, the interface requirements, the security and the quality requirements.
2. The outline of the global architecture of the system. It shall describe how the requisite components interact and fit together. This shall be based on the analysis of the system configurations capable of integrating the legacy IT facilities, while delivering the required functionality and performance."

The purpose of this document is to provide specifications, in addition to what is already stated in the TAP itself and its accompanying Technical Documents (TDs), in order to facilitate all stakeholders involved in the TAP process, and in particular in the exchange of reservation messages, to correctly fulfil their obligations or assert their rights.

Since the TAP Basic Parameters and Technical Documents have been established largely on the basis of the current way of operation of the incumbent European RUs, the specifications of this document are intended mainly for the use of the RUs entering the market ("newcomers") and of the small RUs and RUs that are not members of rail sector representative bodies.

Nevertheless part of the specifications will benefit all RUs, including the incumbent ones, in fulfilling the new requirements introduced from scratch by the TAP TSI.

At the same time, this document intends to give detailed specifications on how third parties identified by the TAP as legitimate actors of the reservation process can participate, from a technical and organisational point of view. The TAP TSI provides the framework for future enhancements of data exchange between RUs and/or Third Parties.

Chapter 10 "Current situation" provides an overview, for information purpose only, on how the subject is currently managed by the main European RUs, in case a new or smaller RU would like to adopt the same solution. Of course the only legal obligation remains the compliance with TAP TSI.

7 Rights & obligations, actors

The present Implementation Guide deals with the exchange of on-line messages between IT systems for the scope of getting information and possibly buy rail products which can only be sold by access to an IT system holding the inventory (or catalogue) of those products.

The main types of such products are:

- Accommodations for passengers (seats, couchettes, sleepers, priority seats, wheelchair spaces, universal sleeping compartments
- Space for transport of vehicles (cars, boats, bicycles)
- Ancillary services (meals).

The reservation of assistance for PRMs is a special ancillary service, described in a separate Implementation Guide.

The TAP is very flexible about reservations. In fact:

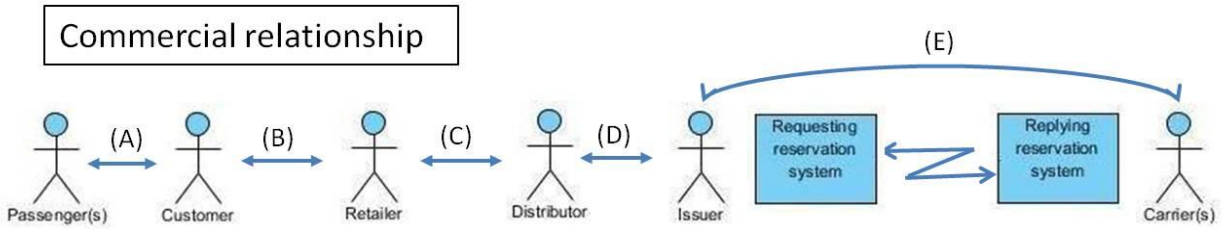
- Each carrier can freely decide which of its trains is subject to mandatory reservation, or may be reserved if the customer so wants, or is not open at all to reservation;
- Each carrier can freely decide how many days before departure its trains open to reservation can be booked;
- Each carrier can freely decide which distributors, on basis of purely commercial agreements, can book services on its trains open to reservation.

The TAP only sets the obligation to use the messages defined in B.5 for the dialogue between requesting and attributing systems, unless there is a specific agreement between requesting and attributing systems to use an otherwise defined standard. In theory therefore, if one of the two parties wants to use the B.5 messages and the other wants to use a different standard, the one wanting B.5 should prevail, but in this case the counterpart is free to not sign the distribution agreement. In practice the decision will depend on the commercial interest of one party to do business with the other.

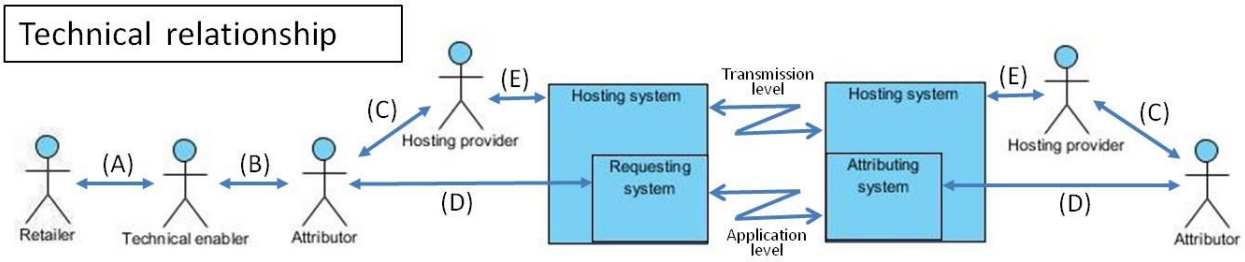
The actors of the process of reservation are listed below (see also fig. below). It must be noted that those actors represent roles that are played in the process, and not necessarily different persons or companies. One same person or company may act as one or more of the mentioned actors (for example a RU's sales outlet selling transport services where the same RU is retailer, distributor, issuer, attributor and carrier).

- A customer who requires information and/or buys the product
- One or more passengers who will use the transport services (can include or not the customer)
- The retailer, being the interface between the customer and the distributor, selling to the customer a travel against payment and possibly delivering a travel document. The retailer can be a salesperson interacting face to face with the customer, or staff working in a call center or even a sales website. The retailer's role is in any case to secure the customer's payment and then either deliver directly the ticket if face to face, or authorise an indirect delivery (sending by mail, print@home, ticket on departure, etc.)

- The distributor, a company providing legal and technical capacity to retailers to sell rail products or to provide on line-facilities to customers to buy rail products. The distributor is responsible towards the issuer for the retailers it has accredited. The distributor can be in practice a hierarchical chain of distributors, with one main distributor (responsible towards the issuer) who avails of one or more sub-distributors (sometimes called General Sales Agents or GSAs) to serve different clusters of retailers (divided by geographical area, by market segments, etc.)
- An issuer, having an agreement with all carriers involved in the transport services to which the travel document gives right. The agreement may be a specific contract or a general authorisation given by the carrier. The issuer is the company whose code and logo appear on top left corner of the issued RCT2 ticket, and the company responsible for collecting from the distributor the revenue of the sale, and for making it available to the accounting body linked to the attributing system.
- Two reservation systems (RS), connected by a transmission line or network. An RS is in general an IT system capable of sending and/or receiving reservation messages. All RS are listed in the ERA code list B.5.1. When an RS performs the function of sending reservation requests and receiving replies it is called requesting RS; when it performs the function of receiving reservation requests and sending replies it is called replying or attributing or allocating RS. Most RSs perform both functions, but there exist RSs only able to act as requesting RS, and others only able to act as replying RS. A requesting system is the RS where the customer's request is transformed in B.5 compliant message to be sent to the attributing system. An attributing/replying /allocating system is the RS hosting the catalogue of products and the inventory of places for which a carrier authorises issuers to issue travel documents through distributors/retailers. From those products and places the attributing system selects, if possible, the ones to be sold to the customer in reply to his/her request. An attributing/replying /allocating system can manage the trains of one or more carriers, and one carrier can have its trains managed in more than one attributing system.
- The attributor is a company responsible for an attributing system.
- The hosting system, an IT system where one or more attributing systems are hosted (see above)
- The hosting provider, a company managing a hosting system
- The carrier, an RU providing (part of) the transport services open to reservation. The provision of transport services can also be offered by an Entity (or Business unit), a grouping of RUs which make a joint train service offer which may be branded
- The accounting system, an IT system managed by the attributor (or a company acting on behalf of it), used to correctly apportion the sales income crediting the carriers involved in the sold transport services, and debiting the issuer deducting the issuer's commission according to the commercial agreements.
- There can also exist a technical enabler, a person or company providing technical services to any of the above actors to facilitate the exchange of messages and data among them, but not participating in the commercial agreements related to the sales of tickets.



(A) : Personal relationship, based on which a customer buys a ticket for one or more persons who will travel (e.g. a secretary for her boss, a father for his children)
(B) : Interactive purchase phase
(C) : Agreement by which a distributor provides legal and technical capacity to retailers (possibly through sub-distributors) to sell products of one or more carriers, on behalf and under the responsibility of an issuer
(D) : Agreement by which an issuer provides legal and technical capacity to a distributor to sell products of one or more carriers
(E) : Agreement by which a carrier authorizes an issuer to sell the carrier's products



(A/B) : The Technical enabler provides a communication channel to the Retailer to access the Attributor and its Requesting system, without being commercial part of the sales process. Its services are paid by the retailer and/or the Attributor
(C) : The Hosting provider provides to the Attributor a technical environment where its Requesting/Attributing system can operate
(D) : The Attributor manages the reservation application and the inventory of its trains in the Requesting/Attributing system, with the related functions (dialog at application level with remote system, yield management, accounting, etc.)
(E) : The Hosting provider manages the Hosting system and provides connection at transmission level to the Requesting/ Attributing system

NB : little men represent physical persons or organisations, boxes represent IT systems

8 Structure and content of messages

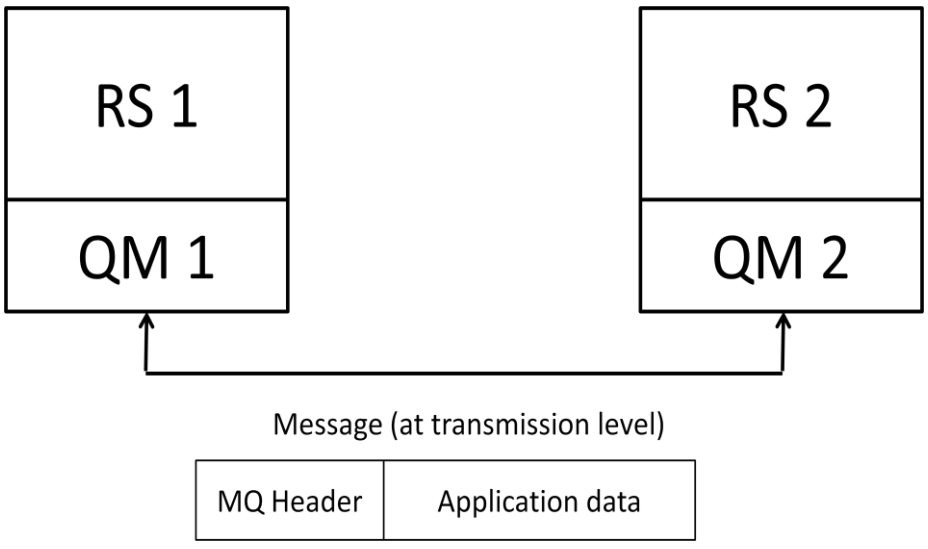
8.1 Overview

The exchange of messages for request and reply of reservations is based on a layered structure where the application data are transmitted by means of a transmission layer, where the application data are encapsulated inside a message of the transmission layer.

In the architecture currently adopted by all European interconnected rail reservation systems the transmission layer uses the so called Message Queuing method (MQ), better described in 8.1.

With this method, each Reservation System (RS) must have in place one or more Queue Managers (QM). The QMs exchange messages (at transmission level) composed of a header and application data. The content of the application data is described in 6.2.

It must be noted that the TAP, and in particular the TD B.5, only describe the format that the application data must have. The following description of the MQ method is therefore given for a better understanding of the complete process, but this method could be replaced by a different one, if the RUs so wished, without so losing the TAP compliance.

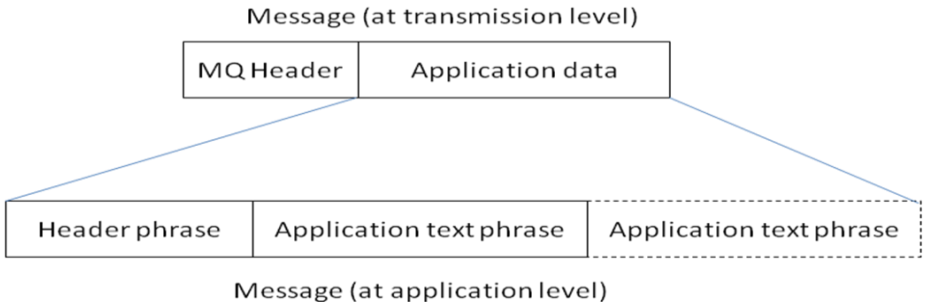


8.2 Application level

8.2.1 Message structure

The Application data transmitted between two QMs are reservation messages (messages at application level). In the following the term “message” will refer to messages at application level, unless otherwise specified.

A message may be made up of one or more “phrases”. In particular the first phrase is always a mandatory Header phrase, which can be followed by one or more Application text phrases.



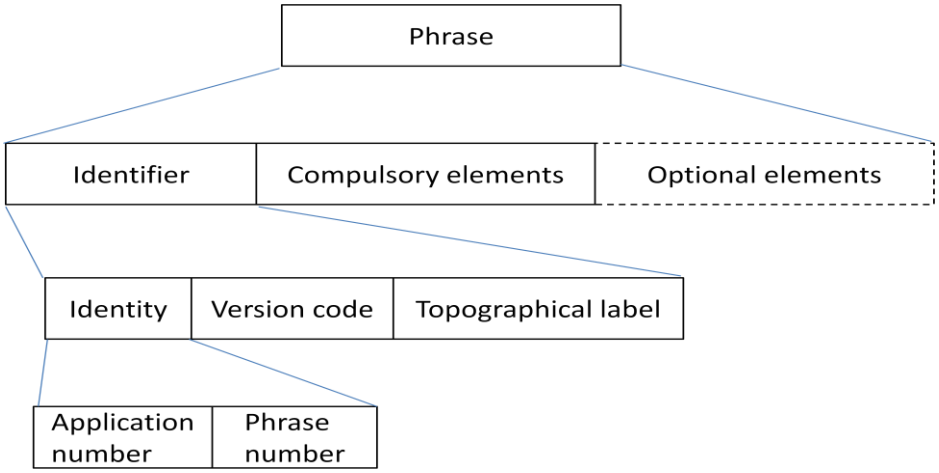
A phrase (of any type) is composed of:

- an Identifier
- a series of compulsory elements
- if needed, a series of optional elements.

An element can be:

- A basic element, i.e. an indivisible item of data (for example, the code for a year, a station or a railway)
- A group of elements, i.e. the combination of several elements to form another item of data belonging to a specific phrase (for example: the year + the month + the day, forming "the date").

The identifier of a phrase is made up of 9 bytes, and is sub-divided into 3 parts: the identity, the version code, the topographical label.



The identity of the phrase consists of 4 digits. The first two digits from the left represent the application number. The application number for the reservation application is « 01 ». The next two digits contain the number of the phrase within the application always set to "00".

The version code is expressed by 1 digit. It is used to differentiate between versions of the same phrase if these versions differ only slightly from each other.

The topographical label contains information showing the difference between the content of the specific phrase exchanged between two reservation systems and that of the standard phrase, since the latter contains some items of information which may be unnecessary or may not be available at the time the phrase is formed.

This label consists of 32 bits, which is equivalent to 4 bytes, and is used to indicate the presence (bit with the value 1) or absence (bit with the value 0) of a maximum of 32 optional elements (or groups of elements) in a phrase. It is therefore merely a mask indicating the composition of the phrase transmitted, and thus makes it possible to process phrases of variable length easily. Superfluous bits systematically assume the value 0.

The items whose presence or absence is indicated by the bits of the topographical label are the ones indicated as optional by means of a number in each phrase of B.5.

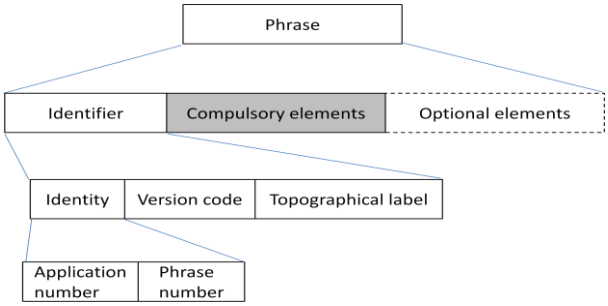
8.2.2 918 standard example

Let's consider e.g. the phrase 2.5 - Partial cancellation request :

No.	Element	L+C	ASS	CC	VL	RP	AUT	VR
20A	Train number	5 A	O	O	O	O	O	O
21A	Departure date	4 N	O	O	O	O	O	O
23A	Number of seats	2 N	O	O	O	O	-	-
25A	Type and number of berths	12N	-	-	O	-	-	-
26A	Type and number of meals	6 N	-	-	-	O	-	O
34A	Reference number of reservation ticket to be cancelled	12 N	O	O	O	O	O	O
36	Position of seat	4 N	1	1	1	1	-	-
38A	Position of compartment/request	1 N	A	-	2	a	-	-
40	Compartment characteristics b	1 N	-	-	3	-	-	-
42A	Tariff 1	9N	2	2	4	2	-	-
42B	Tariff 2	9N	3	3	5	3	-	-
47A	Requesting reservation system	2 N	4	4	6	4	-	1
74	Reason for cancellation	2 N	5	5	7	5	-	-
76	Code of the travel agent"s organisation	5 N	6	6	8	6	-	2
38A	Position of compartment/request	1 N	7	-	a	7	-	-
80	Country code of requesting terminal	2 A	8	7	9	8	2	3

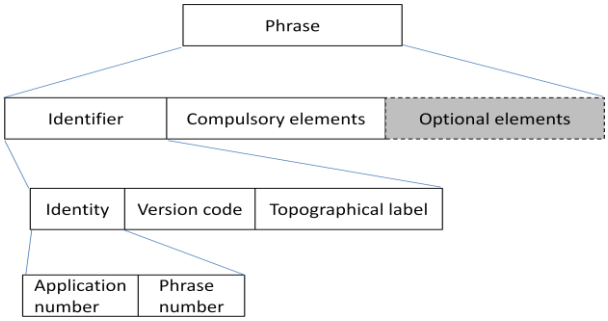
Assuming we are sending a partial cancellation request for berths (VL, see highlighted column), the compulsory elements are the ones mark with O (= Obligatory) in the VL

column, therefore “Train number”, “Departure date”, “Number of seats”, “Type and number of berths” and “Reference number of reservation ticket to be cancelled”. The lengths of the corresponding fields are 5, 4, 2, 12, 12 for a total of 35 bytes. These 35 bytes, plus the 5 or 7 of the prefix (explained in chapter 2.3 of TD B.5), will constitute the Compulsory elements section of the phrase (grey area in figure below).



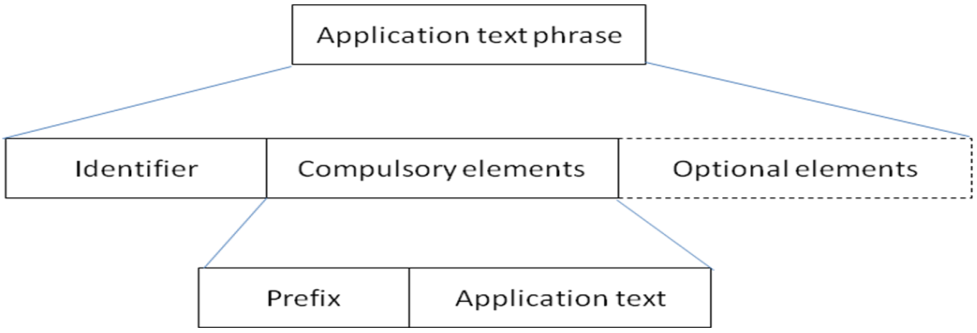
Then in the lower part of the VL column, below the compulsory elements, there are 9 optional elements, marked with numbers 1 to 9 (the cell where appears an “a” is just a reminder that the corresponding element “Position of compartment/request” was already present seven lines above, and the corresponding value in column VL was 2. This solution is adopted when there is a need of repeating a given element more than once in the list on the left).

If e.g. the phrase is transmitted with topographical label 22 80 00 00 , corresponding to a bit sequence 0010 0010 1000 0000 0000 0000 0000 0000, only the the 3rd, 7th and 9th optional elements are present, i.e. “Compartment characteristics b”, “Reason for cancellation” and “Country code of requesting terminal”. The lengths of the corresponding fields are 1, 2, 2 for a total of 5 bytes. These 5 bytes will constitute the Optional elements section of the phrase (grey area in figure below).



In Application text phrases, the compulsory elements must always begin with a Prefix.

If a message contains several "Application text" phrases, they must be linked by the prefix serial number. The phrases must be numbered in decreasing order and end with 1. If there is only one "Application text" phrase, the serial number shall be 1.



The following example shows one Application data, containing 2 phrases.

```
Byte | hex display                                                    | ASCII display
-------------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 39 33 | 01000....54800093
0011 | 31 32 37 31 31 33 30 30 30 30 31 30 30 30 30 30 30 | 12711300001000000
0022 | 30 30 31 30 30 30 22 80 00 00 30 33 30 30 31 34 34 | 001000"_..0300144
0033 | 35 20 20 31 30 31 30 30 32 30 30 30 30 30 30 30 30 | 5  101002000000000
0044 | 30 32 30 30 35 34 36 30 31 31 30 35 31 39 37 30 32 | 02005460110519702
0055 | 30 34 44 45                                        | 04DE
```

The grey shows the Identity + Version code, and is the start of a phrase.

The sections (....) and ("_..) are topographical labels.

The header phrase (2.2 of TD B.5) is marked in green.

The prefix is marked in yellow.

The Application text is the string not highlighted

The hex display in the middle is the hexadecimal representation of the message, which helps to see the real value of the topographical labels. The value 22 80 00 00 (in purple) for the second topographical label corresponds to the bit sequence 0010 0010 1000 0000 0000 0000 0000 0000 and indicates that the 3rd, 7th and 9th optional elements in this application text are present, as in the example above.

The process is quite similar for all other phrases of B.5, additional usage examples are given in appendix B. The only significant difference concerns phrases 2.14 “Distribution message description (DMD)” and 2.16 “Enquiry about availability and reply”.

8.2.3 918 extended example

The phrase 2.16 is a type of phrase called “918 extended”, or 918E. This type of phrase is indicated by the code “8” in the element 6 “Type of service” of the Header. In this case the “Application text” prefix contains also the element 18, displaying one of the codes of code list B.5.18.

The application text ‘DMD’ is mandatory for an availability enquiry/reply. It must be the first phrase of the message, followed by all phrases ‘availability’. Both the DMD and the

availability phrases are composed of an identifier, an Application text prefix and then the Application text.

The following shows an example of Availability enquiry:

Element	Value	Remarks
Identifier of phrase 2.2 Header		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	All zeroes because the Header does not have optional elements
Phrase 2.2 Header		
Receiving reservation system	18	
Sending reservation system	80	
Dialogue number	00986	
Julian date	026	
Type of message	1	
Type of service	8	This identifies a 918E message
Number of the requesting terminal	0020100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Identifier of phrase 2.14 DMD		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text prefix (DMD)		
Service	00	
Type of request or reply	1	
Serial number	02	When there are > 1 phrases in the message, the serial number is in decreasing order
Type of text	10	10 = DMD (only with service type =8)
Application text (DMD)		
Starting station	0000000	
Final station	0000000	
Return station	0000000	
Journey code	0	
Product code	10 hex ’20’	
Identifier of phrase 2.16 Availability enquiry		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label (4 bytes)	Hex 00 00 00 00	no facultative elements
Application text prefix		

Availability enquiry		
Service	01	
Type of request or reply	1	
Serial number	01	
Type of text	12	12 = availability req (only with service type =8)
Application text Availability enquiry		
Train number	9429	
Boarding station	8700015	
Destination station	8050500	
Departure date	290212	
Departure time	0000	
Service code 1	00	

Corresponding message in format dump, with the same colour code as above

```
Byte | hex display                                                    | ASCII value
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 31 38 38 30 30 30 39 38 | 01000....18800098
0017 | 36 30 32 36 31 38 30 30 32 30 31 30 30 30 30 30 30 | 6026180020100000
0034 | 30 30 31 30 30 30 00 00 00 00 30 30 31 30 32 31 30 | 001000....0010210
0051 | 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 | 00000000000000000
0068 | 30 30 30 30 30 20 20 20 20 20 20 20 20 20 20 30 31 | 00000           01
0085 | 30 30 30 00 00 00 00 30 31 31 30 31 31 32 39 34 32 | 000....0110112942
0102 | 39 20 38 37 30 30 30 31 35 38 30 35 30 35 30 30 32 | 9 870001580505002
0119 | 39 30 32 31 32 30 30 30 30 30 30                   | 90212000000
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

The following is the example of the Availability reply to the enquiry above, with 4 application texts, one DMD and 3 availability texts

Element	**Value**	**Remarks**
Identifier of phrase 2.2 Header		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Phrase 2.2 Header		
Receiving reservation system	80	
Sending reservation system	18	

Dialogue number	00986	
Julian date	026	
Type of message	2	
Type of service	8	
Number of the requesting terminal	0020100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Identifier of phrase 2.14 DMD		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text prefix (DMD)		
Service	00	
Type of request or reply	4	
Serial number	04	
Type of text	10	10 = DMD (only with service type =8)
Application text (DMD)		
Starting station	0000000	
Final station	0000000	
Return station	0000000	
Journey code	0	
Product code	10 hex ’20’	
Identifier of phrase 2.16 Availability reply		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label (4 bytes)	Hex ‘E7 FF 80 00’	elts 1,2,3,6,7,8,9,10,11,12,13,14,15,16,17
Application text prefix Availability reply		
Service	01	
Type of request or reply	4	
Serial number	03	
Type of text	12	12 = availability req (only with service type =8)
Application text Availability reply		
Train number	09429	
Name of boarding station	PARIS NORD	
Name of destination station	KOELN HBF	
Departure date	290212	
Departure time	1201	
Arrival date	290212	
Arrival time	1515	
Service code 1	00	
Availability information 1	A W 0000	Element 300A, composed of elements

		308A Fare code 1 23D Number of smoking seats 23E Number of non-smoking seats Element 308 in its turn is composed of 2 parts: - the first two positions indicate the accommodation category according to code list B.5.308 (in this case "A " means "Seat 1st Class") - the following two positions (in this case "W ") contain an arbitrary code used to provide a unique link between the availability information elements (element 300) and the tariff information element (element 328) in one application text. The code is unique within one application text only. The code has no meaning as a standalone code.
Text groups - identifier	11	
Product code	TH	
Train category	11	
Availability information 2	A Y 0000	
Availability information 3	A F 0054	
Availability information 4	A R 0011	
Availability information 5	A T 0003	
Availability information 6	A Z 0000	
Availability information 7	A X 0000	
Tariff table	A W 117535763	
Tariff table 2	A W 181 A Y 107263239	
Tariff table 4	A Y 1404252 A F 105060910 A F 111222345 A F 171727390	
Tariff table 8	A F 1969799 A R 115295579 A T 116192834 A T 135364451 A T 156687886 A T 19495 A Z 113141846 A Z 148495866	
Tariff table 16	A Z 19192 A X 125335960 A X 169707588 A X 18998	"Tariff table 16" is element 332 of TD B.5. Each line represents an elementary tariff table ("Element 328"), consisting of different sub-elements: No. Element L + C 308A Fare code 1 4A 67 Type of price 1 N 327A Tariff code 1 2A 327B Tariff code 2 2 A 327C Tariff code 3 2 A 327D Tariff code 4 2 A The meaning of element 308A is as in above explanation. Element 67 shows the type of price according to the code list B.5.67, 1 means "Ticket price + reservation". The elements 327 show the tariff codes that can be associated to this price. In this example the booking class "A X " can

		be booked with tariff codes 25, 33, 59, 60, 69, 70, 75, 88, 89, 98
Service brand information	0082TGHTHALYS	
Identifier of phrase 2.16 Availability reply		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label (4 bytes)	Hex ‘E7 FF 80 00’	elts 1,2,3,6,7,8,9,10,11,12,13,14,15,16,17
Application text prefix Availability reply		
Service	01	
Type of request or reply	4	
Serial number	02	
Type of text	12	12 = availability req (only with service type =8)
Application text Availability reply		
Train number	09429	
Name of boarding station	PARIS NORD	
Name of destination station	KOELN HBF	
Departure date	290212	
Departure time	1201	
Arrival date	290212	
Arrival time	1515	
Service code 1	00	
Availability information 1	B W 0000	
Text groups - identifier	11	
Product code	TH	
Train category	11	
Availability information 2	B Z 0000	
Availability information 3	B I 0000	
Availability information 4	B G 0000	
Availability information 5	B Y 0000	
Availability information 6	B F 0074	
Availability information 7	B R 0012	
Tariff table	B W 119364647	
Tariff table 2	B W 165668691 B W 19293	
Tariff table 4	B Z 113141753 B Z 1575963 B I 118253350 B I 158606975	
Tariff table 8	B I 181878998 B G 107083240 B G 14274 B Y 126273952 B Y 177 B F 105060910 B F 111122223 B F 145727390	
Tariff table 16	B F 19799 B R 115295571	

	B R 1798044	
Service brand information	0082TGHTHALYS	
Identifier of phrase 2.16 Availability reply		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label (4 bytes)	Hex 'E4 1C 80 00'	elts 1,2,3,6,12,13,14,17
Application text prefix Availability reply		
Service	01	
Type of request or reply	4	
Serial number	01	
Type of text	12	12 = availability req (only with service type =8)
Application text Availability reply		
Train number	09429	
Name of boarding station	PARIS NORD	
Name of destination station	KOELN HBF	
Departure date	290212	
Departure time	1201	
Arrival date	290212	
Arrival time	1515	
Service code 1	00	
Availability information 1	B T 0006	
Text groups - identifier	11	
Product code	TH	
Train category	11	
Availability information 2	B V 0006	
Tariff table	B T 116285156	
Tariff table 2	B T 16878 B V 134354448	
Tariff table 4	B V 149546494 B V 195	
Service brand information	0082TGHTHALYS	

Corresponding message in format dump, with the same colour code as above:

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

```
Byte | hex display                                          | ASCII value
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 31 38 30 30 39 38 | 01000.....80180098
0017 | 36 30 32 36 32 38 30 30 32 30 31 30 30 30 30 30 30 | 602628002010000000
0034 | 30 30 31 30 30 30 00 00 00 00 30 31 34 30 34 31 30 | 001000....0140410
```

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0051 | 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 | 0000000000000000
0068 | 30 30 30 30 30 20 20 20 20 20 20 20 20 20 30 31 | 00000          01
0085 | 30 30 30 E7 FF 80 00 30 31 34 30 33 31 32 30 39 34 | 000....0140312094
0102 | 32 39 50 41 52 49 53 20 4E 4F 52 44 20 20 20 20 20 | 29PARIS NORD
0119 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 4B 4F |               KO
0136 | 45 4C 4E 20 48 42 46 20 20 20 20 20 20 20 20 20 20 | ELN HBF
0153 | 20 20 20 20 20 20 20 20 20 20 20 20 32 39 30 32 31 32 |           290212
0170 | 31 32 30 31 32 39 30 32 31 32 31 35 31 35 30 30 41 | 1201290212151500A
0187 | 20 57 20 30 30 30 30 31 31 54 48 20 20 20 20 20 20 |  W 000011TH
0204 | 20 20 31 37 41 20 59 20 30 30 30 30 41 20 46 20 30 |   17A Y 0000A F 0
0221 | 30 35 34 41 20 52 20 30 30 31 31 41 20 54 20 30 30 | 054A R 0011A T 00
0238 | 30 31 41 20 5A 20 30 30 30 30 41 20 58 20 30 30 30 | 01A Z 0000A X 000
0255 | 30 41 20 57 20 31 31 37 35 33 35 37 36 33 41 20 57 | 0A W 117535763A W
0272 | 20 31 38 31 20 20 20 20 20 20 41 20 59 20 31 30 37 |  181      A Y 107
0289 | 32 36 33 32 33 39 41 20 59 20 31 34 30 34 32 35 32 | 263239A Y 1404252
0306 | 20 20 41 20 46 20 31 30 35 30 36 30 39 31 30 41 20 |   A F 105060910A
0323 | 46 20 31 31 31 32 32 32 33 34 35 41 20 46 20 31 37 | F 111222345A F 17
0340 | 31 37 32 37 33 39 30 41 20 46 20 31 39 36 39 37 39 | 1727390A F 196979
0357 | 39 20 20 41 20 52 20 31 31 35 32 39 35 35 37 39 41 | 9  A R 115295579A
0374 | 20 54 20 31 31 36 31 39 32 38 33 34 41 20 54 20 31 |  T 116192834A T 1
0391 | 33 35 33 36 34 34 35 31 41 20 54 20 31 35 36 36 38 | 35364451A T 15668
0408 | 37 38 38 36 41 20 54 20 31 39 34 39 35 20 20 20 20 | 7886A T 19495
0425 | 41 20 5A 20 31 31 33 31 34 31 38 34 36 41 20 5A 20 | A Z 113141846A Z
0442 | 31 34 38 34 39 35 38 36 36 41 20 5A 20 31 39 31 39 | 148495866A Z 1919
0459 | 32 20 20 20 20 41 20 58 20 31 32 35 33 33 35 39 36 | 2    A X 12533596
0476 | 30 41 20 58 20 31 36 39 37 30 37 35 38 38 41 20 58 | 0A X 169707588A X
0493 | 20 31 38 39 39 38 20 20 20 20 20 20 20 20 20 20 20 |  18998
0510 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0527 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0544 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0561 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0578 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0595 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0612 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0629 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0646 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 30 30 38 32 |             0082
0663 | 54 47 48 54 48 41 4C 59 53 20 20 20 20 20 20 20 20 | TGHTHALYS
0680 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0697 | 20 20 30 31 30 30 30 E7 FF 80 00 30 31 34 30 32 31 |   01000....014021
0714 | 32 30 39 34 32 39 50 41 52 49 53 20 4E 4F 52 44 20 | 209429PARIS NORD
0731 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0748 | 20 20 4B 4F 45 4C 4E 20 48 42 46 20 20 20 20 20 20 |   KOELN HBF
0765 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 32 39 |                29
0782 | 30 32 31 32 31 32 30 31 32 39 30 32 31 32 31 35 31 | 02121201290212151
0799 | 35 30 30 42 20 57 20 30 30 30 30 31 31 54 48 20 20 | 500B W 000011TH
0816 | 20 20 20 20 20 20 31 37 42 20 5A 20 30 30 30 30 42 |       17B Z 0000B
0833 | 20 49 20 30 30 30 30 42 20 47 20 30 30 30 30 42 20 |  I 0000B G 0000B
0850 | 59 20 30 30 30 30 42 20 46 20 30 30 37 34 42 20 52 | Y 0000B F 0074B R
0867 | 20 30 30 31 32 42 20 57 20 31 31 39 33 36 34 36 34 |  0012B W 11936464
0884 | 37 42 20 57 20 31 36 35 36 36 38 36 39 31 42 20 57 | 7B W 165668691B W
0901 | 20 31 39 32 39 33 20 20 20 20 42 20 5A 20 31 31 33 |  19293    B Z 113
0918 | 31 34 31 37 35 33 42 20 5A 20 31 35 37 35 39 36 33 | 141753B Z 1575963
0935 | 20 20 42 20 49 20 31 31 38 32 35 33 33 35 30 42 20 |   B I 118253350B
0952 | 49 20 31 35 38 36 30 36 39 37 35 42 20 49 20 31 38 | I 158606975B I 18
0969 | 31 38 37 38 39 39 38 42 20 47 20 31 30 37 30 38 33 | 1878998B G 107083
0986 | 32 34 30 42 20 47 20 31 34 32 37 34 20 20 20 20 42 | 240B G 14274    B
1003 | 20 59 20 31 32 36 32 37 33 39 35 32 42 20 59 20 31 |  Y 126273952B Y 1
1020 | 37 37 20 20 20 20 20 20 42 20 46 20 31 30 35 30 36 | 77      B F 10506
1037 | 30 39 31 30 42 20 46 20 31 31 31 31 32 32 32 32 33 | 0910B F 111122223
1054 | 42 20 46 20 31 34 35 37 32 37 33 39 30 42 20 46 20 | B F 145727390B F
1071 | 31 39 37 39 39 20 20 20 20 42 20 52 20 31 31 35 32 | 19799    B R 1152
1088 | 39 35 35 37 31 42 20 52 20 31 37 39 38 30 34 34 20 | 95571B R 1798044
1105 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1122 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1139 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1156 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1173 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
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1190 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1207 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1224 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1241 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1258 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1275 | 30 30 38 32 54 47 48 54 48 41 4C 59 53 20 20 20 | 0082TGHTHALYS
1292 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1309 | 20 20 20 20 20 20 30 31 30 30 30 E4 1C 80 00 30 31 |       01000....01
1326 | 34 30 31 31 32 30 39 34 32 39 50 41 52 49 53 20 4E | 40112094 29PARIS N
1343 | 4F 52 44 20 20 20 20 20 20 20 20 20 20 20 20 20 20 | ORD
1360 | 20 20 20 20 20 20 4B 4F 45 4C 4E 20 48 42 46 20 20 |       KOELN HBF
1377 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1394 | 20 20 32 39 30 32 31 32 31 32 30 31 32 39 30 32 31 |   290212120129021
1411 | 32 31 35 31 35 30 30 42 20 54 20 30 30 30 36 31 31 | 2151500B T 000611
1428 | 54 48 20 20 20 20 20 20 20 20 31 37 42 20 56 20 30 | TH        17B V 0
1445 | 30 30 36 42 20 54 20 31 31 36 32 38 35 31 35 36 42 | 006B T 116285156B
1462 | 20 54 20 31 36 38 37 38 20 20 20 20 42 20 56 20 31 |  T 16878    B V 1
1479 | 33 34 33 35 34 34 34 38 42 20 56 20 31 34 39 35 34 | 34354448B V 14954
1496 | 36 34 39 34 42 20 56 20 31 39 35 20 20 20 20 20 20 | 6494B V 195
1513 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
1530 | 20 20 20 20 20 20 20 20 20 30 30 38 32 54 47 48 54 |          0082TGHT
1547 | 48 41 4C 59 53 20 20 20 20 20 20 20 20 20 20 20 20 | HALYS
1564 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20       |
```

8.3 Mapping with Technical Document B.5

The elements (basic or grouped) used in the reservation application are the ones listed in B.5 chapter 3, in particular:

- The Header phrase has only compulsory elements, numbered 1 to 11 (see B.5 chapter 2.2)
- The Application text phrases have:
  - Elements composing the Prefix, numbered 15 to 18 (see B.5 chapter 2.3)
  - Remaining compulsory elements composing the Application text, numbered 20 and upwards (elements present in each Application text phrase depend from the phrase type, see B.5 chapters 2.4 to 2.16 - NB : chapters 2.7, 2.11 and 2.15 are intentionally not present)
  - If needed optional elements. Their position within the phrase is numbered from 1 up to maximum 32, while the elements themselves are numbered 20 and upwards.

8.4 Notes to Technical Document B.5

The following indications only complement the already detailed explanations provided in B.5, without repeating what is already there. Therefore for a good understanding of what follows it is necessary to already have a sufficient knowledge of B.5. The following indications include clarifications where the text of B.5 could generate doubts (indicated by 💡), or detailed IT specifications where the text of B.5 is not detailed enough to guarantee a full interoperability (indicated by ☞).

💡 Chapter 2.13

The Correction message is sent by the requester to the attributor in two cases:

- If the answer sent by the attributor contained errors (e.g. date 30th February)
- If the answer sent by the attributor arrived late, when the timeout at the requesting system had already expired and it had informed the remote requesting terminal that there was no answer

On receiving a correction message the attributor cancels the reservations done.

9 Process

9.1 How to start a reservation system

A reservation system can act as requesting system, when sends info or booking requests for trains hosted in a remote inventory, as attributing system when it offers to remote systems info or booking for trains hosted on its inventory, or as both.

An attributing reservation system can obviously only belong to an RU, because it must be associated to trains stored in the inventory and only RUs are licensed to run trains. The term “belong” refers to the responsibility of operating the trains in the inventory, the system can formally belong to an IT company running it for the benefit of one or more RUs (see real life examples in chapter 10.1).

A requesting system can belong in principle to any actor interested in addressing an attributing system, and having a commercial agreement with at least one such system. In practice, since performing a booking implies money transfers (from the customer to the retailer and then to the carrier(s) involved in the transport), and since the current version of TAP does not provide any standard for money transfers, it is more complicated for a third party to join directly the reservation community with a reservation system used to make bookings, while it could be easier to reach agreements for implementing a system to request availability information.

It is anyway clear that no RU is obliged to allow anybody, RU or third party, to access its own system neither for asking info nor for making bookings. The RU owner of the inventory has commercial freedom to decide whom to authorise, for which trains, for which tariffs, from which geographical areas, by which distribution channel and at which commission rates.

A new RU or a third party wanting to start a new reservation system must get a company code according to Technical Document B.8, a reservation system code according to code list B.5.1, a suitable transmission channel agreed between the parties and follow the steps described in chapter 12; before starting operations must pass the technical and functional tests (and accounting tests, if the connection is used also for sales and not only for info requests) to be agreed with the partner(s) with whom it will exchange reservation messages (see chapter 11.3).

Chapter 10 gives details on the procedures currently in place among the reservation systems participating in the Hermes community.

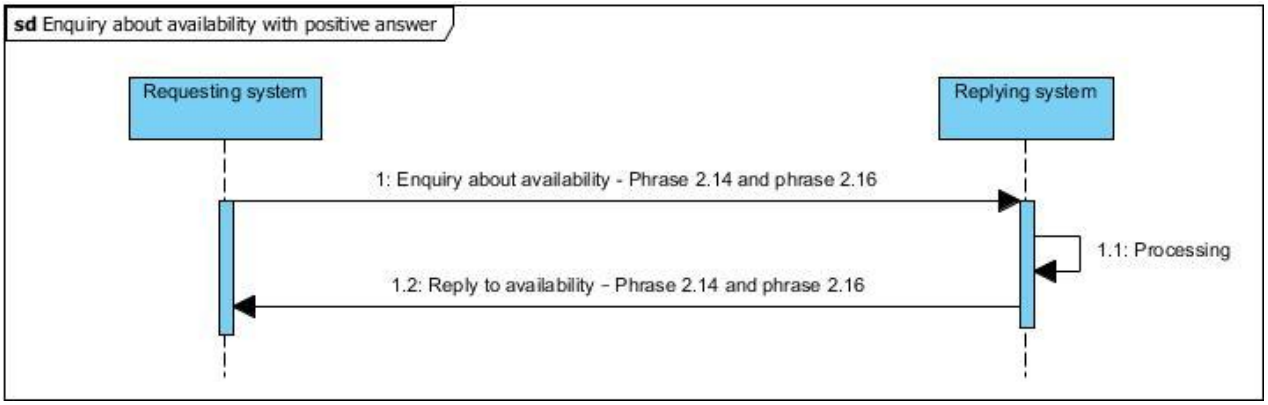
9.2 How to run the reservation application in regular operation

9.2.1 Positive replies

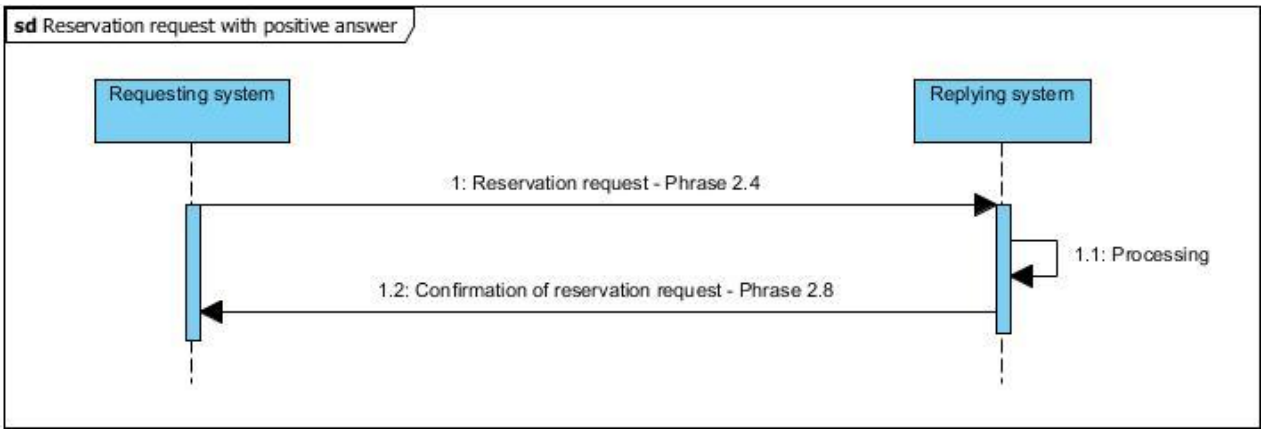
The most common workflow with a positive reply would look like this, once the customer has determined which train he/she intends to travel on:

Optional enquiry about availability, according to B.5.

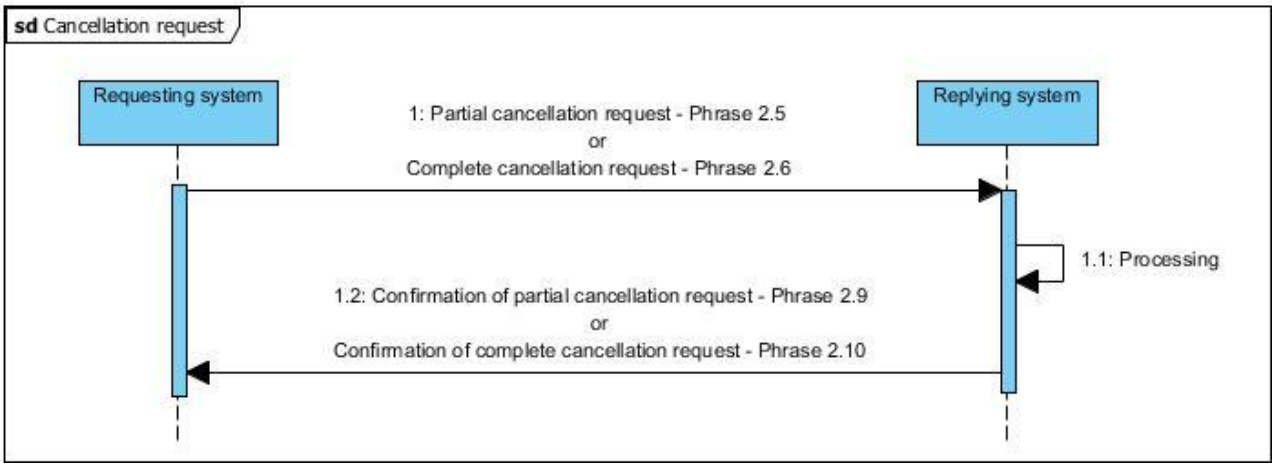
Enquiry about availability



Reservation request with positive answer



In case the customer changes mind and wants to cancel the reservation partially or completely, the exchange is as follows:



9.2.2 Negative/alternative replies

If the requesting system receives a negative reply (phrase 2.12 type RN), it informs the requesting terminal that the request cannot be fulfilled.

If the requesting system receives a proposal of alternative reservation system (phrase 2.12 type PRR), it can send its reservation request to the proposed alternative system.In order to avoid an endless circuit, in this case the requesting system must make sure that the request is not transferred to a system which it has already asked.

If the requesting system receives a proposal of alternative train (phrase 2.12 type PRT) or alternative accommodation (phrase 2.12 type PRP), it can inform the requesting terminal of such proposal, for the customer to accept or not the proposed alternative. If accepted, the requesting system sends a reservation request for the new train/accommodation.

9.3 How to behave in case of transmission errors, litigation file

For the technical workflow (late replies, no reply at all), see Appendix A of B.5 and Appendix D of this document.

The litigation file is intended to be used in investigations initiated by the accounting system responsible, so that errors can be investigated quite a long time after reservation has been made.

It is the reservation system applications that must create new records in the litigation file, in the specified situations. The structure of the litigation file can be defined in proprietary way by each attributor, there are no common standards.

The elements that should be registered in the litigation file are at least:

- local date and time of the problem

- dialogue number and attributing system

- description of the problem (type of message that was sent/received, anomaly detected, recovery attempts performed, etc.)

- ...

10 Current situation

10.1 Explanation of Hermes system

As already said, in the architecture currently adopted by all European interconnected rail reservation systems the transmission layer uses the so called Message Queuing method (MQ).

The basic idea for MQ (and all middleware) is to keep the application separated from the communication and thus let the application do what it is best at, handling the data.

The base in MQ is the Queue Manager (QM), the manager of all queues and connections. MQ handles the configuration and management of queues and channels. It gives the API (MQI) through which an application can access a queue. It can also start an application when a message has arrived on a queue. This function is called triggering.

Many providers of QMs are on the market. The choice of one product must be made taking care that it be compatible with the partners with whom a new actor intends to exchange messages, and with the provider of the transmission network.

Normally, there is one QM on one host, but there is no limitation. Queues are defined in a QM. The queues can be local (on this QM) or remote (on another QM). A Local Queue is a queue from which an application can read a message. A Remote Queue is a definition of a queue that exists on another QM. An application can put a message on this queue. When a message is put on the queue, QM takes care of the message and transmits it to its destination.

To read or put a message on a queue, an application accesses the QM and the queue over an API, MQI (Messaging and Queuing Interface). It is always the application that accesses the queue.

When a message is received by a receiving queue, the QM can start an application that reads the queue. To do this, the local queue has to be configured as a triggered queue and know the application to be started (reservation in this case). Only one application can be started to read from one queue.

To establish a communication between two QMs, channels must be defined. One channel is needed for sending to the other QM its own requests and the replies to the other's requests, and one used for receiving from the other QM its requests and replies. The channel is handled by a Message Channel Agent (MCA). The MCA establishes the channels to other QMs, and restarts the channel if necessary. The MCA handles all messages to queues on other QMs.

A channel can be configured in principle to be established all the time, or it can be configured to be established only when a message is to be sent. For the reservation application the channel should be configured to be established all the time.

Transmit Queues are defined for each channel designated for sending to a remote QM. If a message is destined to a queue on a remote QM, the local QM puts the message on the appropriate transmit queue. The MCA then reads the message and transports it to its destination. Channels and transmit queues are hidden to the application.

MQ transports messages. A message consists of a MQ header and application data. The MQ header is called Message Descriptor (MQMD). The Message Descriptor contains

information about the message which is used by both MQs and the receiving application. It is set by MQ and the sending application. MQ only reads the header. It never reads the application data. The receiving application can read both application data and header. The Message Descriptor is a set of attributes that describe the message and how the message is going to be treated by MQ and the receiving application.

The application data contain the data used by the application to perform its functions. By default those data must comply with the specifications given in Technical Document B.5. Since TAP leaves freedom to use an otherwise defined standard, on specific agreement between requesting and attributing systems, the application data could be exchanged in other formats, e.g. with XML messages.

For the transport of data between the QMs, the architecture currently adopted by all European interconnected rail reservation systems uses a VPN (Virtual Private Network) called Hermes and managed by a private company owned by part of the European RUs and IMs, called HIT Rail.

The use of a VPN offers better security, better performances and the possibility of monitoring the status of each connection and of collecting traffic statistics.

10.2 Examples of existing reservation systems

The following real examples help to understand how the roles described in chapter 5 are interpreted in case of complex reservation systems.

Case of RESARAIL in France:

Reservation System code	Hosted carriers / service brands
87	Domestic SNCF
	Lyria
	TGV Fr-Italie
	TGV Paris-Luxembourg
	TGV Bruxelles-Province
	ALLEO
15	EUROSTAR (carrier)
18	THALYS

In this case, SNCF is the hosting provider, and Resarail is the Hosting System.

SNCF (87), Eurostar (15) and Thalys (18) are 3 different attributors and 3 different attributing systems are used.

Case of PETRA in Sweden:

Reservation System code	Hosted carriers / service brands
74	SJ (carrier)
	Veolia (carrier)

	Oresundtog (carrier)

In this case Linkon is the hosting provider, PETRA is hosting system and attributing system.

SJ is the attributor.

Case of EPA in Germany

Reservation System code	Hosted carriers / service brands
80	Domestic Germany
	City Night Line
	ICE Intl
81	ÖBB (carrier)
85	SBB (carrier)
	.....

EPA is the Hosting system, DB is the hosting provider

EPA DB (80) is the attributing System for DB trains, EPA ÖBB (81) is another attributing system, etc.

DB is one Attributor, ÖBB is another attributor, etc.

10.3 Explanation of current settlement system

In the community of currently interconnected European rail reservation systems the accounting is the responsibility of the attributor.

The attributor collects from the issuer the amount of money paid by the customer (that the issuer has on its turn collected from the retailer), leaving with the retailer its sales commission; at the same time the attributor apportions the same amount of money, less the commission, to the carriers that have operated the transport.

Let's consider e.g. a Thalys running between Amsterdam and Paris via Brussels, and a German customer buying at a DB counter a ticket Amsterdam - Brussels for that train. Let's imagine that the cost of the ticket is 50 €, that the sales commission of DB is 6% and that the revenue of an Amsterdam - Brussels ticket is shared at 50% between NS and SNCB. Since the attributor for the Thalys trains is SNCF, this RU will debit DB for 47 € (50 - 3), and will credit NS and SNCB for 23.50 € each.

11 Data quality

11.1 Security rules

The use of a VPN as transmission network offers a sufficient level of security in the exchanges of reservation messages.

11.2 Data quality

Differently from the case of the timetable and tariff data, where large amounts of data are made available off line by each RU for the download and successive use by other resource consumers, the reservation messages are short data strings exchanged on line, therefore it would be impossible to submit them to a Data Quality Management tool as the others.

The data quality has to be ensured by a complete and careful campaign of compliance tests, as described in the following chapter, to be passed before putting in service a new or renewed reservation system and by a professional management (e.g. change management) of the reservation system.

The compliance tests have to check the correctness of the syntax of the messages and of the business rules; the other necessary component is the use in all messages of valid data, both in terms of codes contained in the directory of code lists, and in terms of reference data such as company codes and location codes.

In particular the locations data will be centrally stored, and will be commonly used by all IT applications needing them (also for freight and infrastructure domains). This will avoid the risk of creating inconsistencies, especially considering that with the market liberalisation more than one RU will operate trains in the same station.

It has therefore been agreed that the locations database will be unique and centralised, procured by the Governance Entity, with different parts of the content defined by different actors (National Entities, Infrastructure Managers, Railway Undertakings) according to well defined governance rules.

Currently the locations database is being created as Common Repository Domain (CRD) by the stakeholders implementing the TAF Regulation. This CRD is part of the Retail Reference Data (RRD) described in the document “TAP Retail Architecture description”.

The data from the RRD to be taken into account for a reservation system are the company codes, the location codes (including specific codes for reservation) and all code lists of the type B.5.xx contained in the Directory of Passenger Code Lists for the ERA Technical Documents used in TAP TSI.

The RRD will be further detailed by the Governance Entity when the procurement team will prepare the tender for the Common Component.

11.3 Compliance tests

There is no established set of compliance tests when a new or changed reservation system has to be put in operation. The tests must be agreed between the manager of the new reservation system and the managers of the system(s) with which the new one intends to perform the tests. Given the wide variety of options that the B.5 messages allow, the tests obviously depend also largely from the range of functionalities implemented by the new system and its testing partners.

General recommendations about such tests are collected in Appendix C.

12 Architecture and Governance aspects

The exchange of data concerning Reservation (Availability, Reservation, Cancellation) needs a connection between 2 systems as it relies on an interactive exchange of messages defined in TD B.5.

Most of the existing RUs at time of writing this document are using the same exchange protocol (described in this document).

Should newcomers be willing to use this protocol or another, it has to be first agreed with each other system they want to connect to between the 2 parties. Different communication can be used for the different connections, but of course that may make things more complicated.

The Architecture is not imposing any specific solution and leaves room to innovative ones for the future.

12.1 Organisational steps for a new issuer to get started

1. A new actor (RU or third party), once it has its Company code (see TAP Implementation Guides Overview on how to get a Company code), will need first to contact the Governance Entity who will offer its services, according to a Chart Agreement to be signed between the two.
2. The Governance Entity will then make available to the new actor services such as:
   - The Regulation, Technical Documents and Implementation guides
   - Access to reference data (country codes, company codes, location codes, different code lists, retail specific codes)
   - Commercial and technical contacts for each RU regarding the different subjects (timetables, Tariffs/Fares, Reservation/ticketing)
   - Information on FTP server addresses where to find Timetables, Tariffs/Fares, Reservation system addresses, Public keys FTP addresses for DST Print@home ticketing
   - Additional services such as notification for changes
   - Etc.
3. The new issuer will contact whichever carrier (sometimes via the attributor) it wants to distribute and whose information data (timetables and Tariffs/Fares only) it wants to use, and create an Agreement, unless the carrier concerned provides a general authorisation to other RUs
4. The Agreement will give the new issuer access to what was negotiated (login/Password for FTP servers and addresses for MQ to communicate under reservation protocols)
5. The Agreement might be bilateral which will give reciprocal exchanges (of course only in case the new issuer is an RU)

6. In case a Travel Distribution Enabler is needed, there will be an additional agreement between the Travel Distribution Enabler and the new issuer and possibly an additional agreement between the Travel Distribution Enabler and the retailers

12.2 Organisational steps for a new attributor to get started

1. A new actor (RU), once it has its Company code (see TAP Implementation Guides Overview on how to get a Company code), will need first to contact the Governance Entity who will offer its services, according to a Chart Agreement to be signed between the two.
2. The Governance Entity will then make available to the new actor services such as:
   - The Regulation, Technical Documents and Implementation guides
   - Access to reference data (country codes, company codes, location codes, different code lists, retail specific codes)
   - Commercial and technical contacts for each RU regarding the different subjects (timetables, Tariffs/Fares, Reservation/ticketing)
   - Additional services such as notification for changes
   - Etc…
3. The new actor will contact whichever issuers it wants and create Agreements, unless the new actor provides a general authorisation to other RUs
4. The Agreement will give the user access to what was negotiated (addresses for MQ to communicate under reservation protocols)
5. The Agreement might be bilateral which will give reciprocal exchanges
6. In case RU A hosts trains of RU B in its system, RU A cannot give access to the data of RU B to third RUs or third parties unless it has a formal delegation from RU B (this delegation being a signed legal paper that could be requested in the Agreement).

For all other governance information of general character, that can apply to all IT specifications, see the “TAP IT specifications Overview”.

Appendix A - Glossary

TERM	EXPLANATION
Accommodation	A type of physical location that can be booked on a train (a seat, a couchette, a berth, a space for bicycle, etc.)
Accounting system	An IT system managed by the attributor (or a company acting on behalf of it), used to correctly apportion the sales revenue, crediting the carriers involved in the sold transport services, and debiting the issuer deducting the issuer's commission according to the commercial agreements
Allocating reservation system	See Attributing reservation system
API	Application Programming Interface
Application layer	In the stack of protocols, the component that manages and interprets the data specific of an application. The exchange of data between the application layers of two connected systems takes place at application level
ASS	Abbreviation in B.5 for "seat" (place ASSise)
Attributing reservation system	Means an electronic system hosting the catalogue of transport services for which a transport service provider authorises distributors to issue travel documents (1)
Attributor	A company responsible for an attributing system
AUT	Abbreviation in B.5 for "Car-carrying train" (train AUTo)
Booking	Synonym of reservation
Carrier	Means the contractual railway undertaking with whom the passenger has concluded a transport contract or a series of successive railway undertakings which are liable on the basis of such a contract (1)
CC	Abbreviation in B.5 for "Couchette"
CRD	Central Repository Domain - The reference file for locations
Customer	Means a person who intends to buy, is buying, or has bought a railway product for him/herself or for other person(s). May therefore be different from passenger (see passenger) (1)
Distribution channel	Means the method (such as ticket office machine, on-train media, public web services, telesales, mobile ticketing) by which a service (information, ticket sale, ticket refund, response to complaints, etc.) is provided to the passenger by a railway undertaking (1). Complementary info : the service can be provided to the customer by a railway undertaking directly or through a distributor and/or a travel distribution enabler and/or a retailer
Distributor	Means an undertaking providing legal and technical capacity to issuers to sell rail products or to provide on line-facilities to customers to buy rail products. Besides, the distributor can offer services to issuers by assembling O-Ds carried out by different carriers into complete journeys as required by the traveller. The distributor may be a carrier (1)
DMD	Distribution Message Description
Dump	Sequence of hexadecimal values representing data or messages exactly as they are stored or transmitted in an IT system; each hexadecimal value represents 4 bits
Entity	Grouping of railway undertakings which make a joint train service offer

ERA	European Railway Agency
Fare	Means a charge to be paid for transportation or service (1)
Governance Entity	A regulatory entity for the governance of the telematics TSIs (TAP TSI and TAF TSI) This entity will address both RU/IM and passenger retail business. It will procure and provide the services needed by TAP TSI and TAF TSI stakeholders without which RUs and IMs cannot meet their regulatory obligations. The entity will facilitate the work needed in common amongst RUs and IMs
Header	A group of data transmitted at the beginning of a message, to provide technical information about the following application data (sent by whom to whom, consisting of which components, etc.)
Hermes	The name of the European rail VPN provided by the company HIT Rail, used among others for the exchange of reservation requests and replies
Hermes community	The group of RUs using the Hermes network for exchange of reservation messages
Hosting provider	A company managing a hosting system
Hosting system	An IT system where one or more attributing systems are hosted
Inventory	The list of accommodations offered on the trains of an RU that can be booked. Each accommodation of each train is stored in the inventory separately per each day of train running
Issuer	Means an undertaking selling the ticket and receiving payment. May be a carrier and/or a distributor. The issuer is the undertaking indicated on the ticket with its code and possibly its logo (1)
L + C	Abbreviation in B.5 for “Length + Coding”
Litigation file	A file maintained by a reservation system where the RS registers any anomaly encountered during operation
MCA	Message Channel Agent
MQ	Message Queuing
MQMD	Message Queuing Message Descriptor
Passenger	Means a person who intends to make, or is making, or has made a journey using the transport services and other services of one or more railway undertakings May be different from customer (see customer) (1)
Passenger type	Categorisation of passengers defined in code list B.4.5261
Phrase	Functional unit of application data
Price	See Fare
PRM	Person with Reduced Mobility
PRP	Replacement proposal for other service
PRR	Replacement proposal for other RS
PRT	Replacement proposal for other train
Product	Means a type of train with determined types of services (e.g. high speed, bicycle storage places, PRM accommodation, couchette and/or sleeping cars, dining cars, take-away facilities, etc.) which are linked to relevant prices and may be linked to specific conditions (1)
QM	Queue Manager
Requesting	The reservation system sending a request to the attributing system

reservation system	
Reservation system	Means a computerised system used to store and retrieve information and conduct transactions related to travel. A reservation system is capable of keeping inventory correct in real time, and is accessible to agents/retailers around the world (1)
Retailer	Means a person or an undertaking that sells to the customer a ticket without or with a reservation for a rail service. A retailer can be a railway undertaking (agent) or an accredited travel agent (1)
RP	Abbreviation in B.5 for “Seat with at-seat meal” (Repas à la Place)
RS	Reservation System
RU	Railway Undertaking
Tariff	Means a specific set of fares available on a given train, on a given day for a given O-D leg of the journey. Tariffs may be grouped in different categories (such as public fares, Group fares, etc.) (1)
TD	Technical Document
Technical enabler	A person or company providing technical services to any of the actors to facilitate the exchange of messages and data among them, but not participating in the commercial agreements related to the sales of tickets
Topographical label	Sequence of 32 bits showing the presence or absence of a maximum of 32 optional elements (or groups of elements) in a phrase
Train category	Categorisation of trains defined in code list B.4.7009
Transmission layer	In the stack of protocols, the component that transmits data independently from their meaning. The exchange of data between the transmission layers of two connected systems takes place at transmission level
VL	Abbreviation in B.5 for “berths” (Vagon Lit)
VR	Abbreviation in B.5 for “Meal in restaurant car” (Voiture Restaurant)

(1) From the TAP glossary

Appendix B - Examples of messages

B.1 Reservation message

B.1.1 Reservation message seat

Request: Reservation for seat from CD to DB

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00650	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	1	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 10 00 00	Optional element 12
Application text prefix		
Service	01	seat
Type of request or reply	1	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Boarding station	5457076	
Destination station	5613600	
Number of seats	02	
Class	2	
Country code of requesting terminal	DE	Optional element 12

```
Byte | hex dispay                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 36 35 | 01000....54800065
0011 | 30 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 02711100001000000
0022 | 30 30 31 30 30 30 00 10 00 00 30 31 31 30 31 34 34 | 001000....01101144
0033 | 35 20 20 31 30 31 30 35 34 35 37 30 37 36 35 36 31 | 5  10105457076561
0044 | 33 36 30 30 30 32 32 44 45                         | 3600022DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response: Confirmation

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00650	
Number of the day in the year	271	
Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	1	
Phrase 2.8 - Confirmation of reservation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 20 09 10 00	Optional elements 3, 13, 16, 20
Application text prefix		
Service	01	seat
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	The recommended value is "445 " but some systems reply like this, with "00445"
Train category	23	
Departure date	1010	10.10.2011
Departure time	2209	22:09
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	546011050593	
Coach number	369	
Number of seats	02	
Accommodations allocated	02560266	Places 25 and 26
Class	2	
Type of compartment allocated	010000	
Price (reservation charge, supplement)	0000600	6 €
Arrival time	0725	Optional element 3 7:25
Partial price 1	00000020000300	Optional element 13 Tariff 00 2 passengers 3 € each

Arrival date	1110	Optional element 16 11.10.2011
Service brand information	0070EN EURONIGHT	Optional element 20 Code 0070 Abbreviation EN

```
Byte | hex dispay                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 36 35 | 01000....80540065
0011 | 30 32 37 31 32 31 30 30 30 30 31 30 30 30 30 30 30 | 02712100001000000
0022 | 30 30 31 30 30 30 20 09 10 00 30 31 34 30 31 30 30 | 001000 ...0140100
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 4452310102209PRAH
0044 | 41 20 48 4c 2e 4e 2e 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4b 4f 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 36 30 31 31 30 35 30 35 39 33 |      546011050593
0088 | 33 36 39 30 32 30 32 35 36 30 32 36 36 20 20 20 20 | 3690202560266
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 32 30 31 30 30 30 30 30 30 30 30 36 30 30 |    20100000000600
00BB | 30 37 32 35 30 30 30 30 30 30 32 30 30 30 30 33 30 | 07250000002000030
00CC | 30 31 31 31 30 30 30 37 30 45 4e 20 45 55 52 4f 4e | 011100070EN EURON
00DD | 49 47 48 54 20 20 20 20 20 20 20 20 20 20 20 20 20 | IGHT
00EE | 20 20 20 20 20 20 20 20 20 20                       |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.1.2 Reservation message couchette

Request:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00653	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	1	
Phrase 2.4 - Reservation request Identifier		

Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 20 00 00	Optional element 11
Application text prefix		
Service	02	Couchette
Type of request or reply	1	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Boarding station	5457076	
Destination station	5613600	
Number of seats	02	
Class	2	
Country code of requesting terminal	DE	Optional element 11

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 36 35 | 01000....54800065
0011 | 33 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 32711100001000000
0022 | 30 30 31 30 30 30 00 20 00 00 30 32 31 30 31 34 34 | 001000. ..02101144
0033 | 35 20 20 31 30 31 30 35 34 35 37 30 37 36 35 36 31 | 5  10105457076561
0044 | 33 36 30 30 30 32 32 44 45                         | 3600022DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response: Couchette confirmation

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00653	
Number of the day in the year	271	
Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal		
Test	0	
Phrase 2.8 - Confirmation of reservation requests Identifier		
Application number	01	

Number of sentence	00	
Version	0	
Topographical label	Hex 20 89 20 00	Optional elements 3, 9, 13, 16, 19
Application text prefix		
Service	02	couchette
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Departure time	2209	
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	544011050600	
Coach number	373	
Number of seats	02	
Accommodations allocated	06560666	Places 65 and 66
Class	2	
Type of compartment allocated	000000	
Price (reservation charge, supplement)	0002680	26,80 €
Arrival time	0725	Optional element 3 7:25
Number of night sectors	1	Optional element 9
Partial price 1	00000020001340	Optional element 13 Tariff 00 2 Persons 13,40 € each
Arrival date	1110	Optional element 16
Service brand information	0070EN EURONIGHT	Optional element 19

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 36 35 | 01000....80540065
0011 | 33 32 37 31 32 31 30 30 30 30 31 30 30 30 30 20 20 | 3271210000010000
0022 | 30 30 31 30 30 30 20 89 20 00 30 32 34 30 31 30 30 | 001000 % .0240100
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 4452310102209PRAH
0044 | 41 20 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4B 4F 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 34 30 31 31 30 35 30 36 30 30 |      544011050600
0088 | 33 37 33 30 32 30 36 35 36 30 36 36 36 20 20 20 20 | 3730206560666
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 32 30 30 30 30 30 30 30 30 30 32 36 38 30 |    20000000002680
00BB | 30 37 32 35 31 30 30 30 30 30 30 32 30 30 30 31 33 | 07251000000200013
00CC | 34 30 31 31 31 30 30 30 37 30 45 4E 20 45 55 52 4F | 4011100070EN EURO
00DD | 4E 49 47 48 54 20 20 20 20 20 20 20 20 20 20 20 20 | NIGHT
00EE | 20 20 20 20 20 20 20 20 20 20 20 20                |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.1.3 Reservation message berth

Request:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00655	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 08 08 00 00	Optional elements 5, 13
Application text prefix		
Service	03	Berth
Type of request or reply	1	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Boarding station	5457076	
Destination station	5613600	
Number of seats	01	
Class	0	
Type and number of berths	000001000000	1 place in double
Compartment characteristics b	1	Male - optional element 5
Country code of requesting terminal	DE	Optional element 13

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 36 35 | 01000....54800065
0011 | 35 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 52711100001000000
0022 | 30 30 31 30 30 30 08 08 00 00 30 33 31 30 31 34 34 | 001000....03101344
0033 | 35 20 20 31 30 31 30 35 34 35 37 30 37 36 35 36 31 | 5  10105457076561
0044 | 33 36 30 30 30 31 30 30 30 30 30 30 31 30 30 30 30 | 360001000000010000
0055 | 30 30 31 44 45                                     | 001DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response: Berth confirmation

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00655	
Number of the day in the year	271	
Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal		
Test	0	
Phrase 2.8 - Confirmation of reservation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 20 14 88 00	Optional elements 3, 12, 14, 17, 21
Application text prefix		
Service	03	berth
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Departure time	2209	
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	548011050604	
Coach number	374	
Number of seats	01	
Accommodations allocated	0367	Place 36
Class	0	
Type of compartment allocated	000000	
Price (reservation charge, supplement)	0003000	30,00 €
Undertaking providing the service	0	
Arrival time	0725	Optional element 3
Compartment characteristics	1	Optional element 12 male
Partial price 1	00000010003000	Optional element 14 Tariff 00 1 Person 30,00 €
Arrival date	1110	Optional element 17
Service brand information	0070EN EURONIGHT	Optional element 21

```
Byte | hex display                                           | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 36 35 | 01000....80540065
0011 | 35 32 37 31 32 31 30 30 30 30 31 30 30 30 30 20 20 | 5271210000010000
0022 | 30 30 31 30 30 30 20 14 88 00 30 33 34 30 31 30 30 | 001000 .^.0340100
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 4452310102209PRAH
0044 | 41 20 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4B 4F 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 38 30 31 31 30 35 30 36 30 34 |      548011050604
0088 | 33 37 34 30 31 30 33 36 37 20 20 20 20 20 20 20 20 | 374010367
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 30 30 30 30 30 30 30 30 30 30 33 30 30 30 |    00000000003000
00BB | 30 30 37 32 35 31 30 30 30 30 30 30 31 30 30 30 33 | 00725100000010003
00CC | 30 30 30 31 31 31 30 30 30 37 30 45 4E 20 45 55 52 | 00011100070EN EUR
00DD | 4F 4E 49 47 48 54 20 20 20 20 20 20 20 20 20 20 20 | ONIGHT
00EE | 20 20 20 20 20 20 20 20 20 20 20 20 20              |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.1.4 Reservation message car carriage

Request:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00659	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 02 40 00 00	Optional elements 7, 10
Application text prefix		
Service	06	Car carriage
Type of request or reply	1	

Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Boarding station	5457076	
Destination station	5613600	
Vehicle category	3	
Vehicle registration	F	
Number and ages of the passengers	00000000	
Journey number	0	
Journey code	1	
Height	150	Optional element 7
Country code of requesting terminal	DE	Optional element 10

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 36 35 | 01000....54800065
0011 | 39 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 92711100001000000
0022 | 30 30 31 30 30 30 02 40 00 00 30 36 31 30 31 34 34 | 001000.@..0610144
0033 | 35 20 20 31 30 31 30 35 34 35 37 30 37 36 35 36 31 | 5  10105457076561
0044 | 33 36 30 30 33 46 20 20 20 20 20 20 20 20 20 30 30 | 36003F         00
0055 | 30 30 30 30 30 30 30 31 31 35 30 44 45             | 00000001150DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response: Car carriage confirmation

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00659	
Number of the day in the year	271	
Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal		
Test	0	
Phrase 2.8 - Confirmation of reservation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	

Topographical label	Hex 00 0A 40 00	Optional elements 13, 15, 18
Application text prefix		
Service	06	Car carriage
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Reference number of accommodations	540011050623	
Price (reservation charge, supplement)	0011980	119,80€
Name of loading station	PRAHA HL.N.	
Loading date	1010	
Start of loading period	1930	
End of loading period	2030	
Name of unloading station	KOSICE	
Unloading date	1110	
Start of unloading period	0745	
End of unloading period	0815	
Vehicle registration	F	
Number of the entry in loading list	001	
Journey number	0	
Vehicle category	3	
Price calculation code	1	
Number of passengers	0010	
Height	150	Optional element 13
Arrival date	1110	Optional element 15
Service brand information	0070EN EURONIGHT	Optional element 18

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 36 35 | 01000....80540065
0011 | 39 32 37 31 32 31 30 30 30 30 31 30 30 30 30 20 20 | 9271210000010000
0022 | 30 30 31 30 30 30 00 0A 40 00 30 36 34 30 31 30 30 | 001000..@.064010 0
0033 | 34 34 35 32 33 31 30 31 30 35 34 30 30 31 31 30 35 | 445231010540011 05
0044 | 30 36 32 33 30 30 31 31 39 38 30 50 52 41 48 41 20 | 06230011980PRAHA
0055 | 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 20 20 | HL.N.
0066 | 20 20 20 20 20 20 20 31 30 31 30 31 39 33 30 32 30 |        1010193020
0077 | 33 30 4B 4F 53 49 43 45 20 20 20 20 20 20 20 20 20 | 30KOSICE
0088 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 31 31 |                11
0099 | 31 30 30 37 34 35 30 38 31 35 46 20 20 20 20 20 20 | 1007450815F
00AA | 20 20 20 30 30 31 30 33 31 30 30 31 30 31 35 30 31 |    00103100101501
00BB | 31 31 30 30 30 37 30 45 4E 20 45 55 52 4F 4E 49 47 | 1100070EN EURONIG
00CC | 48 54 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 | HT
00DD | 20 20 20 20 20 20 20 20 20                         |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.2 Complete cancellation message

Request: Cancellation for seat:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00651	
Number of the day in the year	271	
Type of message	1	
Type of service	2	Complete cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.6 - Complete cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 50 00 00 00	Optional elements 2, 4
Application text prefix		
Service	01	
Type of request or reply	0	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Reference number of reservation ticket to be cancelled	546011050593	
Requesting reservation system		
Reason for cancellation	04	Optional element 2 (04 = cancellation before payment)
Country code of requesting terminal	DE	Optional element 4

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 36 35 | 01000....54800065
0011 | 31 32 37 31 31 32 30 30 30 30 31 30 30 30 30 30 30 | 12711200001000000
0022 | 30 30 31 30 30 30 50 00 00 00 30 31 30 30 31 34 34 | 001000P...0100144
0033 | 35 20 20 31 30 31 30 35 34 36 30 31 31 30 35 30 35 | 5  101054601105 05
0044 | 39 33 30 34 44 45                                  | 9304DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response: Cancellation confirmation

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00651	
Number of the day in the year	271	
Type of message	2	
Type of service	2	Complete cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal		
Test	0	
Phrase 2.10 - Confirmation of complete cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 02 00 00 00	Optional element 7
Application text prefix		
Service	01	
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Departure date	1010	
Departure time	2209	
Class	2	
Reference number of cancelled reservation ticket	546011050593	
Amount of refund	0000600	3,00 €
Number of cancelled seats	02	
Date of the original reservation	11271	Year 2011 Day 271
Partial price 4	00000020000300	Optional element 7 Tariff 00 2 persons 3,00 € each

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 36 35 | 01000.....80540065
0011 | 31 32 37 31 32 32 30 30 30 30 31 30 30 30 30 20 20 | 12712200001000
0022 | 30 30 31 30 30 30 02 00 00 00 30 31 34 30 31 30 30 | 001000....0140100
0033 | 34 34 35 31 30 31 30 32 32 30 39 32 35 34 36 30 31 | 44510102209254601
0044 | 31 30 35 30 35 39 33 30 30 30 30 36 30 30 30 32 31 | 10505930000600021
0055 | 31 32 37 31 30 30 30 30 30 30 32 30 30 30 30 33 30 | 12710000002000030
0066 | 30                                                 | 0
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.3 Partial Cancellation message

B.3.1 Seat

Request

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00921	
Number of the day in the year	271	
Type of message	1	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.5 - Partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 09 00 00 00	Optional elements 5, 8
Application text prefix		
Service	01	seat
Type of request or reply	0	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Number of seats	01	One seat to be kept
Reference number of reservation ticket to be cancelled	548011051945	
Reason for cancellation	04	Optional element 5
Country code of requesting terminal	DE	Optional element 8

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 39 32 | 01000....54800092
0011 | 31 32 37 31 31 33 30 30 30 30 31 30 30 30 30 30 30 | 12711300001000000
0022 | 30 30 31 30 30 30 09 00 00 00 30 31 30 30 31 34 34 | 001000....0100144
0033 | 35 20 20 31 30 31 30 30 31 35 34 38 30 31 31 30 35 | 5  10100154801105
0044 | 31 39 34 35 30 34 44 45                            | 194504DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00921	
Number of the day in the year	271	
Type of message	2	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.9 - Confirmation of partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 40 12 22 00	Optional elements 2, 12, 15, 19, 23
Application text prefix		
Service	01	
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Departure time	2209	
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	543011051949	
Coach number	369	
Number of seats	01	
Accommodation allocated	0256	Place 25
Class	2	
Type of compartment allocated	010000	
Price (reservation charge, supplement)	0000300	New Price: 3,00 €
Reference number of cancelled reservation	548011051945	
Amount of refund	0000900	9,00 €
Number of cancelled seats	02	
Date of the original reservation	11271	Year 2011 Day 271

Arrival time	0725	Optional element 2
Partial price 1	00000010000300	Optional element 12 Tariff 00 1 person 3,00 € each
Partial price 4	00000020000300	Optional element 15 Tariff 00 2 persons 3,00 € each
Arrival date	1110	Optional element 19
Service brand information	0070EN EURONIGHT	Optional element 23

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 39 32 | 01000....80540092
0011 | 31 32 37 31 32 33 30 30 30 30 31 30 30 30 30 20 20 | 1271230000010000
0022 | 30 30 31 30 30 30 40 12 22 00 30 31 34 30 31 30 30 | 001000@.".01401 00
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 44523101022209PRAH
0044 | 41 20 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4B 4F 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 33 30 31 31 30 35 31 39 34 39 |      543011051949
0088 | 33 36 39 30 31 30 32 35 36 20 20 20 20 20 20 20 20 | 369010256
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 32 30 31 30 30 30 30 30 30 30 30 33 30 30 |    20100000000300
00BB | 35 34 38 30 31 31 30 35 31 39 34 35 30 30 30 30 39 | 548011051945000 09
00CC | 30 30 30 32 31 31 32 37 31 30 37 32 35 30 30 30 30 | 00021127107250000
00DD | 30 30 31 30 30 30 30 30 33 30 30 30 30 30 30 30 32 | 00100003000000002
00EE | 30 30 30 30 33 30 30 31 31 31 30 30 30 37 30 45 4E | 000030011100070EN
00FF | 20 45 55 52 4F 4E 49 47 48 54 20 20 20 20 20 20 20 |  EURONIGHT
0110 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.3.2 Couchette

Request

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00928	
Number of the day in the year	271	
Type of message	1	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	

Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.5 - Partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 0A 00 00 00	Optional elements 5, 7
Application text prefix		
Service	02	couchette
Type of request or reply	0	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Number of seats	02	
Reference number of reservation ticket to be cancelled	548011051963	
Reason for cancellation	04	Optional element 5
Country code of requesting terminal	DE	Optional element 7

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 39 32 | 01000....54800092
0011 | 38 32 37 31 31 33 30 30 30 30 31 30 30 30 30 30 30 | 827113000010000000
0022 | 30 30 31 30 30 30 0A 00 00 00 30 32 30 30 31 34 34 | 001000....02001 44
0033 | 35 20 20 31 30 31 30 30 32 35 34 38 30 31 31 30 35 | 5  101002548011 05
0044 | 31 39 36 33 30 34 44 45                            | 196304DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00928	
Number of the day in the year	271	
Type of message	2	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	

Field at disposal	00	
Test	0	
Phrase 2.9 - Confirmation of partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 41 12 24 00	Optional elements 2, 8, 12, 15, 19, 22
Application text prefix		
Service	02	
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Departure time	2209	
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	540011051964	
Coach number	373	
Number of seats	02	
Accommodation allocated	06370656	Places 63 and 65
Class	2	
Type of compartment allocated	000000	
Price (reservation charge, supplement)	0002680	26,80 €
Reference number of cancelled reservation	548011051963	
Amount of refund	0004020	40,20 €
Number of cancelled seats	01	
Date of the original reservation	11271	Year 2011, day 271
Arrival time	0725	Optional element 2
Number of night sectors	1	Optional element 8
Partial price 1	00000020001340	Optional element 12 Tariff 00 2 persons 13.40 € each
Partial price 4	00000010001340	Optional element 15 Tariff 00 1 person 13.40 € each
Arrival date	1110	Optional element 19
Service brand information	0070EN EURONIGHT	Optional element 22

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 39 32 | 01000....80540092
0011 | 38 32 37 31 32 33 30 30 30 30 31 30 30 30 30 20 20 | 827123000010000
0022 | 30 30 31 30 30 30 41 12 24 00 30 32 34 30 31 30 30 | 001000A.$.0240100
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 4452310102209PRAH
0044 | 41 20 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4B 4F 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 30 30 31 31 30 35 31 39 36 34 |      540011051964
0088 | 33 37 33 30 32 30 36 33 37 30 36 35 36 20 20 20 20 | 3730206370656
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 32 30 30 30 30 30 30 30 30 30 32 36 38 30 |    20000000002680
00BB | 35 34 38 30 31 31 30 35 31 39 36 33 30 30 30 34 30 | 54801105196300040
00CC | 32 30 30 31 31 31 32 37 31 30 37 32 35 31 30 30 30 | 20011127107251000
```

```
00DD | 30 30 30 32 30 30 30 31 33 34 30 30 30 30 30 30 30 | 00020001340000000
00EE | 31 30 30 30 31 33 34 30 31 31 31 30 30 30 37 30 45 | 10001340111000070E
00FF | 4E 20 45 55 52 4F 4E 49 47 48 54 20 20 20 20 20 20 | N EURONIGHT
0110 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0121 | 20                                                |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.3.3 Berth

Request:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	00931	
Number of the day in the year	271	
Type of message	1	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.5 - Partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 22 80 00 00	Optional elements 3, 7, 9
Application text prefix		
Service	03	berth
Type of request or reply	0	
Serial number	01	
Application text		
Train number	445	
Departure date	1010	
Number of seats	02	
Type and number of berths	000000000200	2 places in T3
Reference number of reservation ticket to be cancelled	546011051970	
Compartment characteristics b	2	2 Optional Element 3 Female
Reason for cancellation	04	Optional element 7
Country code of requesting terminal	DE	Optional element 9

```
Byte | hex display                                                  | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 30 39 33 | 01000....54800093
0011 | 31 32 37 31 31 33 30 30 30 30 31 30 30 30 30 30 30 | 12711300001000000
0022 | 30 30 31 30 30 30 22 80 00 00 30 33 30 30 31 34 34 | 001000"_..0300144
0033 | 35 20 20 31 30 31 30 30 32 30 30 30 30 30 30 30 30 | 5  1010020000000
0044 | 30 32 30 30 35 34 36 30 31 31 30 35 31 39 37 30 32 | 02005460110519702
0055 | 30 34 44 45                                        | 04DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Response:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	00931	
Number of the day in the year	271	
Type of message	2	
Type of service	3	Partial cancellation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.9 - Confirmation of partial cancellation requests Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 40 29 11 00	Optional elements 2, 11, 13, 16, 20, 24
Application text prefix		
Service	03	
Type of request or reply	4	
Serial number	01	
Application text		
Train number	00445	
Train category	23	
Departure date	1010	
Departure time	2209	
Name of boarding station	PRAHA HL.N.	
Name of destination station	KOSICE	
Reference number of accommodations	540011051973	
Coach number	374	
Number of seats	02	

Accommodation allocated	034(036Z	Places 34 and 36
Class	0	
Type of compartment allocated	000000	
Price (reservation charge, supplement)	0004000	40,00 €
Reference number of cancelled reservation	546011051970	
Amount of refund	0006000	60,00 €
Type and number of cancelled berths	000000000100	One place in T3
Date of the original reservation	11271	Year 2011, day 271
Arrival time	0725	Optional element 2
Compartment characteristics	2	Optional element 11 Female
Partial price 1	00000020002000	Optional element 13 Tariff 0 2 persons 20,00€ each
Partial price 4	00000010002000	Optional element 16 Tariff 0 1 person 20,00€ each
Arrival date	1110	Optional element 20
Service brand information	0070EN EURONIGHT	Optional element 24

```
Byte | hex display                                             | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 30 39 33 | 01000....80540093
0011 | 31 32 37 31 32 33 30 30 30 30 31 30 30 30 30 20 20 | 1271230000010000
0022 | 30 30 31 30 30 30 40 29 11 00 30 33 34 30 31 30 30 | 001000@)..0340100
0033 | 34 34 35 32 33 31 30 31 30 32 32 30 39 50 52 41 48 | 44523101022209PRAH
0044 | 41 20 48 4C 2E 4E 2E 20 20 20 20 20 20 20 20 20 20 | A HL.N.
0055 | 20 20 20 20 20 20 20 20 20 4B 4F 53 49 43 45 20 20 |          KOSICE
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 35 34 30 30 31 31 30 35 31 39 37 33 |      540011051973
0088 | 33 37 34 30 32 30 33 34 28 30 33 36 5A 20 20 20 20 | 37402034(036Z
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 30 30 30 30 30 30 30 30 30 30 34 30 30 30 |    00000000004000
00BB | 35 34 36 30 31 31 30 35 31 39 37 30 30 30 30 36 30 | 54601105197000060
00CC | 30 30 30 30 30 30 30 30 30 30 30 31 30 30 31 31 32 | 00000000000100112
00DD | 37 31 30 30 37 32 35 32 30 30 30 30 30 30 32 30 30 | 71007252000000200
00EE | 30 32 30 30 30 30 30 30 30 30 30 31 30 30 30 32 30 | 02000000000100020
00FF | 30 30 31 31 31 30 30 30 37 30 45 4E 20 45 55 52 4F | 0011100070EN EURO
0110 | 4E 49 47 48 54 20 20 20 20 20 20 20 20 20 20 20 20 | NIGHT
0121 | 20 20 20 20 20 20 20 20 20 20 20 20                |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.4 Replacement proposal message

DB-request to CD for train 274 from Brno hl. n. (54 33295) to Praha hl. n. (54 57076)

Request addressed to reservation system 54 because of the code of the starting station.

Request: Seat (2.4)

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	54	
Sending reservation system	80	
Dialogue number	01027	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 10 00 00	Optional element 12
Application text prefix		
Service	01	seat
Type of request or reply	0	
Serial number	01	
Application text		
Train number	274	
Departure date	1010	
Boarding station	5433295	
Destination station	5457076	
Number of seats	01	
Class	2	
Country code of requesting terminal	DE	Optional element 12

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 35 34 38 30 30 31 30 32 | 01000....54800102
0011 | 37 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 72711100001000000
0022 | 30 30 31 30 30 30 00 10 00 00 30 31 31 30 31 32 37 | 001000....0110127
0033 | 34 20 20 31 30 31 30 35 34 33 33 32 39 35 35 34 35 | 4  10105433295545
0044 | 37 30 37 36 30 31 32 44 45                         | 7076012DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

The reservations system 54 knows that this train is hosted in reservation system 56 and sends back message PRR. That means “please ask” reservation system 56 for that train.

Response: Seat (2.12 PRR)

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	01027	
Number of the day in the year	271	
Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.12 - Replacement proposals, negative replies Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text prefix		
Service	01	Seat
Type of request or reply	7	PRR reply
Serial number	01	
Application text		
Reservation system with further seat offer	56	

```
Byte | hex display                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 31 30 32 | 01000....80540102
0011 | 37 32 37 31 32 31 30 30 30 30 31 30 30 30 30 20 20 | 7271210000010000
0022 | 30 30 31 30 30 30 00 00 00 00 30 31 37 30 31 35 36 | 001000....0170156
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

2.12 PRP is a possibility to tell “other” available services to the requesting system.

2.12 PRT is in use to tell a different train number for the requested train.

B.5 Negative reply message

In this example someone tries to cancel a reservation a second time and so the reservation system answers with code 034 = “already cancelled”.

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	54	
Dialogue number	01026	
Number of the day in the year	271	
Type of message	2	
Type of service	2	
Number of the requesting terminal	8149200	
Type of requesting office	0	
Number of the application version	0	
Field at disposal		
Test	0	
Phrase 2.12 - Replacement proposals, negative replies Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text prefix		
Service	01	Seat
Type of request or reply	8	RN reply
Serial number	01	
Application text		
Reply code	034	

```
Byte | hex dispay                                                  | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 35 34 30 31 30 32 | 01000....80540102
0011 | 36 32 37 31 32 32 38 31 34 39 32 30 30 30 30 20 20 | 627122814920000
0022 | 30 30 31 30 30 30 00 00 00 00 30 31 38 30 31 30 33 | 001000....0180103
0033 | 34                                                 | 4
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Very often there are request maybe for a wrong date where the train do not run or the requested service (1. Class) is not in the train.

In this cases too this negative replies are in use.

B.6 Synchronisation message

Example original reservation request:

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	71	
Sending reservation system	80	
Dialogue number	00001	
Number of the day in the year	271	
Type of message	1	
Type of service	1	Reservation
Number of the requesting terminal	0000000	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	1	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 10 10 00 00	Optional elements 4, 12
Application text prefix		
Service	01	seat
Type of request or reply	1	
Serial number	01	
Application text		
Train number	2090	
Departure date	1010	
Boarding station	7160000	
Destination station	7151003	
Number of seats	02	
Class	T	
Tariff 1	720000002	Optional element 4 Tariff 72 2 Persons
Country code of requesting terminal	DE	Optional element 12

```
Byte | hex dispay                                                  | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 37 31 38 30 30 30 30 30 | 01000....71800000
0011 | 31 32 37 31 31 31 30 30 30 30 31 30 30 30 30 30 30 | 12711100001000000
0022 | 31 30 31 30 30 30 10 10 00 00 30 31 31 30 31 32 30 | 101000....01101120
0033 | 39 30 20 31 30 31 30 37 31 36 30 30 30 30 37 31 35 | 90 10107160000715
0044 | 31 30 30 33 30 32 54 37 32 30 30 30 30 30 30 32 44 | 100302T720000002D
0055 | 45                                                 | E
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Synchro request with the same dialog number of the reservation request.

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	71	
Sending reservation system	80	
Dialogue number	00001	
Number of the day in the year	271	
Type of message	1	
Type of service	9	9 = protocoll message
Number of the requesting terminal	0000100	
Type of requesting office	7	7 = synchronisation message
Number of the application version	0	
Field at disposal	10	10 = time out
Test	1	

```
Byte | hex dispay                                                    | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 37 31 38 30 30 30 30 30 | 01000....71800000
0011 | 31 32 37 31 31 39 30 30 30 30 31 30 30 37 30 31 30 | 12711900001007010
0022 | 31                                                 | 1
```

The reply message has the same format as the request, but contains different codes in the element “Field at Disposal”

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

B.7 Correction message

DB-request to SJ with Response: Seat (2.8):

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	74	
Dialogue number	00534	
Number of the day in the year	271	

Type of message	2	
Type of service	1	Reservation
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.4 - Reservation request Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 22 19 30 00	Optional elements 3, 7, 12, 13, 16, 19, 20
Application text prefix		
Service	01	seat
Type of request or reply	4	
Serial number	01	
Application text		
Train number	531	
Train category	11	
Departure date	1010	
Departure time	1121	
Name of boarding station	STOCKHOLM C	
Name of destination station	MALMO C	
Reference number of accommodations	740045350161	
Coach number	5	
Number of seats	01	
Accommodation allocated	64 6	Place 64
Class	2	
Type of compartment allocated	020000	
Price (reservation charge, supplement)	0014440	144,40 €
Arrival time	1544	Optional element 3
Tariff 1	720000001	Optional element 7
Type of price	1	Optional element 12 1 = global price (IRT)
Partial price 1	00072010014440	Optional element 13
List of Carriers	1174	Optional element 19
Service brand information	0071X2 X 2000	Optional element 20

```
Byte | hex dispay                                              | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 37 34 30 30 35 33 | 01000....80740053
0011 | 34 32 37 31 32 31 30 30 30 30 31 30 30 30 30 30 30 | 42712100001000000
0022 | 30 30 31 30 30 30 22 19 30 00 30 31 34 30 31 35 33 | 001000".0.0140153
0033 | 31 20 20 31 31 31 30 31 30 31 31 32 31 53 54 4f 43 | 1  1110101121STOC
0044 | 4b 48 4f 4c 4d 20 43 20 20 20 20 20 20 20 20 20 20 | KHOLM C
0055 | 20 20 20 20 20 20 20 20 20 4d 41 4c 4d 4f 20 43 20 |          MALMO C
0066 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0077 | 20 20 20 20 20 37 34 30 30 34 35 33 35 30 31 36 31 |      740045350161
0088 | 35 20 20 30 31 36 34 20 36 20 20 20 20 20 20 20 20 | 5  0164 6
0099 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00AA | 20 20 20 32 30 32 30 30 30 30 30 30 30 31 34 34 34 30 |    20200000014440
00BB | 31 35 34 34 37 32 30 30 30 30 30 30 31 31 30 30 30 | 15447200000011000
00CC | 37 32 30 31 30 30 31 34 34 34 30 31 30 31 30 31 31 | 72010014440101011
00DD | 37 34 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 | 74
00EE | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
00FF | 30 30 37 31 58 32 20 58 20 32 30 30 30 20 20 20 20 | 0071X2 X 2000
0110 | 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |
0121 | 20 20 20 20 20 20                                  |
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Assuming that something went wrong with the requesting system, e.g. connection lost with requesting terminal, the requesting system would send to the attributing system a correction request:

Correction Request: Seat (2.13)

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	74	
Sending reservation system	80	
Dialogue number	00536	
Number of the day in the year	271	
Type of message	1	
Type of service	5	Correction message
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.13 - Correction message Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 80 00 00 00	Optional element 1
Application text prefix		
Service	01	seat
Type of request or reply	0	
Serial number	01	
Application text		
Number of the original dialogue	00534	
Train number	531	
Departure date	1010	
Number of seats	01	
Reference number of accommodations	740045350161	
Price (reservation charge, supplement)	0014440	
Requesting reservation system	00	
Country code of requesting terminal	DE	Optional element 1

```
Byte | hex dispay                                          | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 37 34 38 30 30 30 35 33 | 01000....74800053
0011 | 36 32 37 31 31 35 30 30 30 30 31 30 30 30 30 30 30 | 62711500001000000
0022 | 30 30 31 30 30 30 80 00 00 00 30 31 30 30 31 30 30 | 001000_...0100100
0033 | 35 33 34 35 33 31 20 20 31 30 31 30 30 31 37 34 30 | 534531  101001740
0044 | 30 34 35 33 35 30 31 36 31 30 30 31 34 34 34 30 30 | 045350161001444 00
```

```
0055 | 30 44 45                                                 | 0DE
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

Correction Response: Seat (2.13)

Element	Value	Remarks
Phrase 2.2 - Header Identifier		
Application number	01	Application = reservation
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	
Application text		
Receiving reservation system	80	
Sending reservation system	74	
Dialogue number	00536	
Number of the day in the year	271	
Type of message	2	
Type of service	5	Correction message
Number of the requesting terminal	0000100	
Type of requesting office	0	
Number of the application version	0	
Field at disposal	00	
Test	0	
Phrase 2.13 - Correction message Identifier		
Application number	01	
Number of sentence	00	
Version	0	
Topographical label	Hex 00 00 00 00	No optional elements
Application text prefix		
Service	01	
Type of request or reply	4	Confirmation
Serial number	01	
Application text		
Number of the original dialogue	00534	
Train number	531	
Departure date	1010	
Number of seats	01	
Reference number of accommodations	740045350161	
Price (reservation charge, supplement)	0014440	144,40 €
Requesting reservation system	00	

```
Byte | hex dispay                                                | ASCII display
-------------------------------------------------------------------------------
0000 | 30 31 30 30 30 00 00 00 00 38 30 37 34 30 30 35 33 | 01000.....80740053
0011 | 36 32 37 31 32 35 30 30 30 30 31 30 30 30 30 30 30 | 62712500001000000
0022 | 30 30 31 30 30 30 00 00 00 00 30 31 34 30 31 30 30 | 001000.....0140100
0033 | 35 33 34 35 33 31 20 20 31 30 31 30 30 31 37 34 30 | 534531  101001740
0044 | 30 34 35 33 35 30 31 36 31 30 30 31 34 34 34 30 30 | 04535016100144400
0055 | 30                                                 | 0
```

Purple shows a topographic label

Yellow shows a prefix

Green shows a header phrase

Grey shows the Identity + Version code at the start of a phrase

In the Application text prefix the “Type of request or reply” (which is element 16) has the value 4, which means “Confirmation”. This means that SJ, the attributing system, could cancel the seats and update the accounting.

If SJ had not been able to treat the correction request, then it would have replied with a negative reply (phrase 2.12 RN), with some error code, e.g. 001 = Syntax error, or 120 = Correction message: processing not possible.

Appendix C - Test procedures

C.1 Scope of the test

The following test procedures apply to the integration testing of two or more reservation systems. The intention of the test is to detect problems caused by different behavior of the systems which was not detected by the local tests of a single reservation system.

The test also intends to verify the correct behavior of a system, for the benefit of other systems, which want to connect to the new or changed system.

This test does not intend to replace module and system tests of the single system. The new or changed system is fully responsible for being tested completely on this level. As the tests always cause costs for all other systems, these costs should be kept at a minimum by performing complete module and system tests before. These tests should include tests of the reservation interface by simulation tools.

The prerequisite of integration tests is, that module and system tests of the single reservation system have been completed successfully. The local tests of the single reservation system are the responsibility of the RU implementing the system.

The integration tests have to be documented and repeatable.

C.2 Documentation to be provided before testing

All documentation provided should be versioned. In case of changes during the test phase a new version should be distributed.

C.2.1 Documentation to be provided by the new or changed system

- Documentation on the functionality provided by the system

  This documentation can be provided in the form of a list of functionalities

- Documentation on the trains available in the test environment

  This documentation should include a list of trains with their travel dates, stations and provided services available for testing

- Documentation of the available tariffs

  This documentation should include a full set of the available tariffs in the test environment.

- Documentation of the coach layouts

  This documentation should include coach layouts, so the tester receiving a reservation reply should be able to check the detailed place specifications (e.g. window places,..)

- Documentation of obligatory test cases

  This documentation gives a list of test cases that have to be passed successfully. For each test case the complete data for the request messages have to be specified. Each test case should have a unique identifier. If accounting data or tickets (by fax or scanned) should be returned for further checks, this should be noted in the test description.

- Documentation on additional information required for testing e.g. terminal numbers to trace, …

C.2.2 Documentation to be provided by the reference system

- Documentation on the functionality provided by the system

  This documentation can be provided in the form of a list of functionalities or as a reference to the implementation guide if the test environment provides the full functionality.

- Documentation on the trains available in the test environment

  This documentation should include a list of trains with their travel dates, stations and provided services available for testing. The list does not need to be complete, but it should include enough trains to cover tests of the different functionalities.

- Documentation of the available tariffs

  This documentation should include a set of the available tariffs in the test environment. The set of tariffs does not need to be complete, but it should include tariffs to cover the different functionalities of the system (e.g. tariffs with reservation fee, supplements and global prices).

- Documentation of the coach layouts

  This documentation should include coach layouts, so the tester receiving a reservation reply should be able to check the detailed place specifications (e.g. window places,..) The documentation does not need to be complete, but should include layouts to cover all relevant functionalities of the system (e.g. coaches with seats, berths, couchettes).

- Documentation on additional information required for testing e.g. terminal numbers to trace, …

C.3 Documentation to be exchanged during testing

In case of changes during the test phase a new version of the documents provided before the test should be distributed.

C.3.1 Documentation to be provided by the new or changed system

The new or changed system is responsible to keep track of the errors reported. All reported problems should have a unique identifier. A Documentation of all reported errors should be distributed to the reference systems to avoid tests the same error multiple times.

The documentation of the reported problems should include a status of the problem and should note the date where the error was fixed. Reported problems should not be deleted from the documentation.

The documentation should allow the identification of the problem by the tester who has reported the error and therefore should include the identifier given by the tester.

The new or changed system should inform the other systems on new releases loaded for bug fixing and the problems solved by these new releases.

C.3.2 Documentation to be provided by the reference system

All tests performed should be documented and should have a unique identifier.

Problem reports should include all data necessary to run the test (all request parameters) and additional data to fully describe the problem (e.g. ticket layouts, traces, accounting records).

C.4 Documentation to be provided after testing

The new or changed system should provide a final report for the reference systems on the test including:

- A list of the reported problems and their status
- A list of open issues (possibly empty)
- A list of the failed tests (possibly empty)

This documentation should be made available to other systems joining the test.

In case of failed tests the parties agree on a new testing calendar. They can agree on the release in production of functionalities not affected by the failed tests.

C.5 Test cases

The test cases to be defined should cover:

- Connection tests (connecting the MQ-series installations)
- Functional tests
- Application protocol tests
- Accounting tests
- Load tests (optional)

A complete set of tests cases has to be provided by the new or changed system.

The reference system can add test cases to this set.

All tests listed below must be passed only if the attributing system offers that functionality and the requesting system intends to request it.

C.5.1 Connection tests

The connection via MQ-series including the heartbeat should be tested before starting tests of the functionality.

C.5.2 Functional tests

The test should cover all accomodations and services:

- Allocation of 1st and 2nd class seats, couchettes, berths
- Allocation of seats in the neigborhood of already reserved seats
- Allocations of a specific seat, couchette, berth
- Cancellation of a seat, couchette, berth

- Partial cancellation of a seat, couchette, berth

The test should also cover the following special cases:

- Allocation of wheelchair places
- Allocations with and without specified gender in berths
- Allocation of groups
- Allocation in 4 place couchette compartments
- Allocation of bicycles
- different tariffs combined in one reservation, cancellation and partial cancellation request
- different types of berths combined in one reservation, cancellation and partial cancellation request
- sleeper compartments with connecting door
- Allocation of places for cars, motorbikes on a car-carrying train

C.5.2.1 Reservation in general

These tests should cover all messages, all functions, all offered accommodations by the referenced reservation system and all provided services and price types. The test should cover the different coach types and should check the correct display and printing of the places and their attributes.

The test should include the booking of all places in a train for all services provided, and creating requests for the maximum number of passengers.

The test should include booking of sleeper services with all kind of passenger gender.

The test should include cancellations with all types of prices combined with different reasons for cancellation. The refund amount should be send to the allocation system to be checked.

C.5.2.2 Specific rules for requesting reservation

All different special types of compartment requests should be checked to make sure that they are correctly sent. It shall be checked that every possible combination of seat numbers can be presented/printed as received and that the attributes for each seat is presented/printed as received.

C.5.2.3 Specific rules for allocating places

No specific rule defined currently.

C.5.2.4 Display availability

The test should cover all types of prices, services and accomodations. It should also cover cases where more than one application text is used to transfer the information.

The reference system should send the received data (trace or screenshot) to the new or changed system to check the displayed data for correctness.

C.5.2.5 Negative replies

The test should include the test of the appropriate negative reply in case of:

- fully booked trains
- wrong tariff codes
- unsupported functions

C.5.3 Application protocol tests

C.5.3.1 Redirection to other systems

The test should cover the functionality to redirect a request message to another reservation system. The test should also cover error conditions e.g. a circular redirection.

The test should include the reservation request, the redirection reply of the first addressed system and the second request to the new allocating system.

This integration test should be made in a test environment with at least three systems involved online.

C.5.3.2 Handling of connection errors

The tests should include the test of the application protocol behaviour in case of network or application program problems. This test should cover the correct generation of correction and synchronisation requests and the documentation of the failed transactions in the litigation file.

These tests should be arranged specially between the two systems to generate a situation where a reply message is omitted manually.

The new or changed system is responsible to provide means to create such a situation (e.g. an omitted reply message can be created by a wrong configuration of the reply queue).

The reference system should provide information on test cases where a correction message might be created.

As these tests require special test environments possibly affecting other tests all other testers should be informed previously.

C.5.4 Load test

The new or changed system is responsible for performing an appropriate load test within its own test environment via simulation tools.

In case a load test between two systems seems necessary (e.g. to test the performance of new MQ-series installations where a high load is expected via the connection) this test

has to be announced to the reference system and the test dates should be agreed bilaterally.

C.5.5 Accounting tests

Accounting is not in scope of TAP TSI and therefore those tests have to be agreed between the involved parties.

Appendix D - Flowchart of reservation process

Seen from the point of view of the requesting reservation system

RT = requesting terminal AS = attributing reservation system