S2S SOAP Web Services

Version 4

S2S SOAP API v4

Revision History

Date	Version	Description	Author
2012-10-23	1.0	Initial version	Björn Beskow
2013-02-08	1.1	Web Service version update	Andreas Kaltenbach
2013-02-14	1.2	Authentication and Exception handling	Andreas Kaltenbach
2013-08-28	1.3	RejectDetail, Fee, Error codes, Authentication	Erik Mellegård
2013-10-17	1.4	Added HTTPS endpoint URLs	Erik Mellegård
2014-09-09	1.5	Added missing implementation details	Andreas Johansson
2014-10-20	1.6	Added information about demo users	Andreas Johansson
2016-05-03	1.7	Added information regarding StockPriceQueryExtension	Martin Björkman
2017-08-30	2.0	Updates for version 4.0	Anders Jacobsson Martin Björkman
2018-09-27	2.1	Updates for version 4.1	Anders Jacobsson
2018-10-18	2.2	Added ReleaseOrder interaction	Anders Jacobsson
2019-02-21	2.3	Added new error code for inactive articles	Philip Tham
2020-02-27	2.4	Added updated GetOrder, updated PlaceOrder, SimulateOrder and GetAlternativeArticles interactions	Anders Jacobsson
2021-10-31	2.5	Added support for custom delivery addresses	Anders Jacobsson

1. Introduction

This document provides a specification of Papyrus' S2S SOAP Web Services interfaces. The intended audience of this document is system integrators and software application partners.

1.1 Scope

Papyrus provides a SOAP-based Web Service interface that can be accessed by external applications.

1.2 References

[1] SOAP 1.1 specification, http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

[2] WSDL 1.1 specification, http://www.w3.org/TR/wsdl

[3] Web Services Interoperability Organization (WS-I), http://www.ws-i.org

[4] W3C report on extensible schemas, http://www.w3.org/2001/tag/doc/versioning-xml

[5] Unique article partition, http://www.w3.org/TR/xmlschema-1/#cos-nonambig

2. Overview

Papyrus provides a SOAP-based Web Service interface that can be accessed by external applications. The applications can be used by Papyrus' customers to query prices, stock availability and delivery dates for articles from Papyrus' assortment, to submit new orders to Papyrus, and to make changes to existing orders. Papyrus can also send notifications when the order status changes for a previously placed order, by calling a SOAP Web Service provided by the software partner.

2.1 Quick Start

You need:

- a copy of soap-api-v4-schemas.zip containing the files listed below

```
message_headers_4_0.xsd
order_placement_4_0.xsd
DeleteOrderInteraction_4_0.wsdl
DeleteOrderResponder_4_0.xsd
GetOrderInteraction_4_0.wsdl
GetOrderResponder_4_0.xsd
PlaceOrderInteraction_4_0.wsdl
PlaceOrderResponder_4_0.xsd
StatusNotificationInteraction_4_0.wsdl
StatusNotificationResponder_4_0.xsd
AtpQueryInteraction_4_0.wsdl
AtpQueryResponder_4_0.xsd
PriceQueryInteraction_4_0.wsdl
PriceQueryResponder_4_0.xsd
StockPriceQueryInteraction_4_0.wsdl
StockPriceQueryResponder_4_0.xsd
StockQueryInteraction_4_0.wsdl
StockQueryResponder_4_0.xsd
```

- a *username* and *password* as well as a *delivery address id (*all to be provided by Papyrus)
    - The authentication scheme used is HTTP Basic Authentication (see chapter 2.4)
    - Note that the password will be different in the test environment and the production environment
- a price file containing article numbers (see chapter 2.2)
- an endpoint
    - for test: https://s2s-test.papyrus.com/soap/
    - for production: https://s2s.papyrus.com/soap/

When you have everything listed above, it is possible to start trying things out.

> ⓘ **Note**
>
> **Placing orders in the production system will result in deliveries, so be careful when developing**.

A good and easy way to get to know the interfaces is to use SoapUI (http://www.soapui.org). Add the WSDL of the service you wish to try out into a project and explore the interface (using the *test* environment!).

2.2 Price Files

In order to use the S2S SOAP Web Services interface, the external application will need information about Papyrus's assortment, e.g. article numbers. This is available in so called price files which are available in various machine-readable format. A price file contains at a minimum article names and numbers but may (depending on the format) also contain additional product and category information. It may also contain customer unique prices.
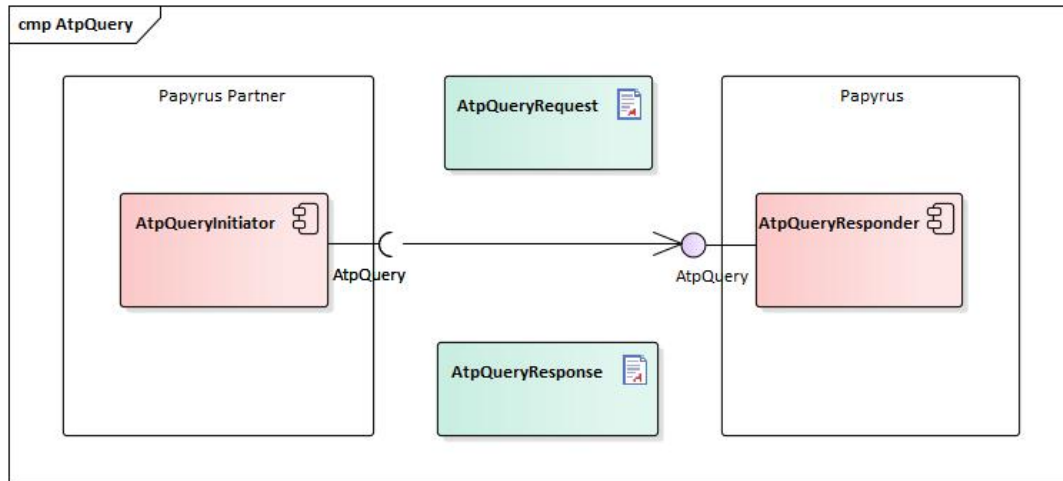
Customers manually download their price files from Papyrus' e-shop and must be imported into their respective external application.

2.3 Services

For information on exception handling and reject reasons/details, see chapter 2.6 and 2.7.

2.3.1 AtpQuery

The *AtpQuery Service Interaction* allows the client to request ATP (Available To Promise) information.

AtpQuery Request

Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the ATP for	The unit of the quantity is specified in the price file for each article

AtpQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
AtpLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the ATP for	The same as sent in the request
RejectReason	Reason for rejection	See chapter 2.7
Price		
Price	Price	
Currency	Currency	ISO 4217
AvailableDeliveryDate	Available delivery date	
RejectDetails	Reject details	See chapter 2.7
Key	Key	
Value	Value	

2.3.1.1 AtpQuery v4.3

ⓘ   Available in namespace 4.3.

The *AtpQuery Service Interaction* allows the client to request ATP (Available To Promise) information.

AtpQuery Request

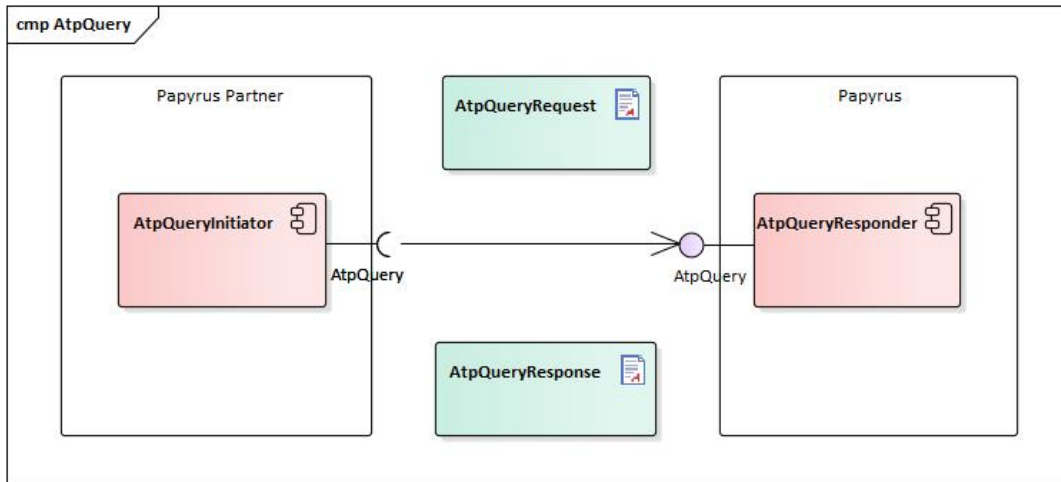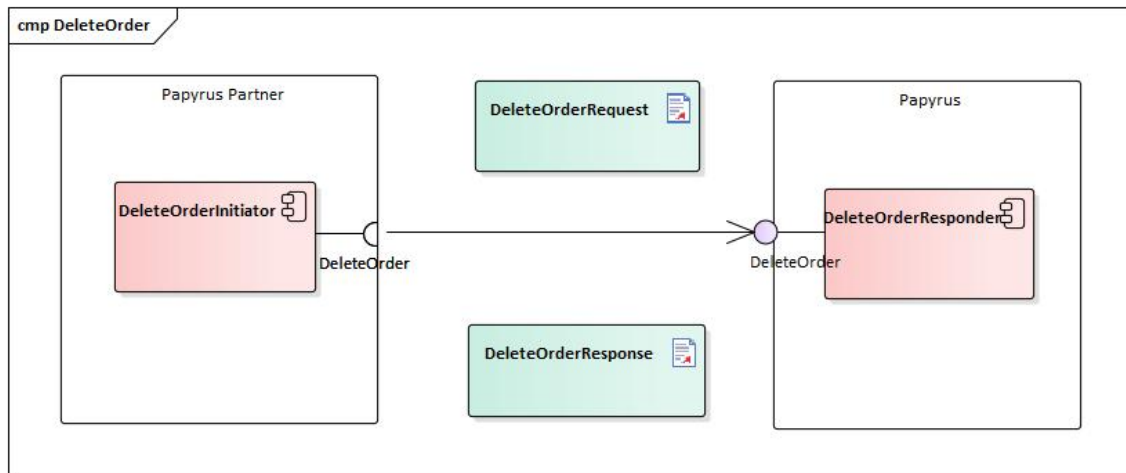| Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress		
CompanyName1	Company name 1	
CompanyName2	Company name 2	
CompanyName3	Company name 3	
Street	Street address	
PostalCode	Postal code	
City	City	
Country	Country	ISO 3166
ContactName	Contact name	
ContactPhone	Contact phone number	
ContactEmail	Contact email address	
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the ATP for	The unit of the quantity is specified in the price file for each article

AtpQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
AtpLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the ATP for	The same as sent in the request
RejectReason	Reason for rejection	See chapter 2.7
Price		
Price	Price	
Currency	Currency	ISO 4217
AvailableDeliveryDate	Available delivery date	
RejectDetails	Reject details	See chapter 2.7
Key	Key	
Value	Value	

2.3.2 DeleteOrder

The *DeleteOrder Service Interaction* allows the client to cancel existing (but not yet locked) order.

DeleteOrder Request

Element	Description	Comment
OrderId	Order id	Obtained via the *PlaceOrder Service Interaction*
OrderReferenceId	Order reference id	Max 35 characters

DeleteOrder Response

Element	Description	Comment
OrderId	Order id	The same as sent in the request
OrderReference Id	Order reference id	The same as sent in the request
DeleteStatus	Deletion status	Can be `DeleteConfirmed` or `DeleteRejected`
RejectReason	Reason for rejection	If deletion status is `DeleteRejected`, this element will specify the reason why the order could not deleted

2.3.3 GetOrder

The *GetOrderQuery Service Interaction* allows the client to request order details.

GetOrder Request

Element	Description	Comment
OrderId	Order id	Obtained via the *PlaceOrder Service Interaction*

GetOrder Response

Element	Description	Comment
OrderId	Order id	The same as sent in the request
OrderReferenceId	Order reference id	Max 35 characters
DeliveryAddressId	Papyrus delivery address id	
LastUpdated	When order was last updated	
Price		
Price	Total price for the whole order	
Currency	Currency	ISO 4217
ShippingTour	At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
ProductionPlanning	Flag telling whether the order is a production planning order or not	
DeliveryNote	Delivery note	Max 360 characters
InvoiceNote	Invoice note	Max 132 characters
OrderStatus	Order status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered

OrderLine			
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	
	Price		
		Price	Price	
		Currency	Currency	ISO 4217
	RequestedDeliveryDate	Requested delivery date and time	
	DeliveryDate	Delivery date	
	OrderStatus	Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	OrderLineNote	Order line note	Max 35 characters
	Fee		
		Id	Fee id	See chapter 2.8 for possible values
		Price		
			Price	Price	
			Currency	Currency	ISO 4217
		Description	Description	Localized
	PalletFlags		
		Customer	Customer	Max 40 characters
		MachineNumber	Machine number	Max 40 characters
		Object	Object	Max 40 characters
		Reference	Reference	Max 40 characters
	Cutting		
		Length	Daughter length	
		Width	Daughter width	
		DustFree	Flag telling whether dust free cutting is enabled or not	
		InAngle	Flag telling whether in angle cutting is enabled or not	
		Packaging	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
		NumberOfCuts	Number of cuts	Per sheet
		NumberOfDaughters	Number of daughters	Per sheet

Extensions

Element	Description	Comment	Version
OrderReferenceName	Order reference name	Max 35 characters	4.1
OrderLine			
OrderLineReferenceItem Number	Order line reference item number	Max 6 characters	4.1

2.3.3.1 GetOrder v4.2

ⓘ   Available in namespace 4.2.

The *GetOrderQuery Service Interaction* allows the client to request order details.

GetOrder Request

Element	Description	Comment
OrderId	Order id	Obtained via the *PlaceOrder Service Interaction*

GetOrder Response

Element	Description	Comment
OrderId	Order id	The same as sent in the request
OrderReferenceId	Order reference id	Max 35 characters
DeliveryAddressId	Papyrus delivery address id	
LastUpdated	When order was last updated	
Price		
Price	Total price for the whole order	
Currency	Currency	ISO 4217
ShippingTour	At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
ProductionPlanning	Flag telling whether the order is a production planning order or not	
DeliveryNote	Delivery note	Max 360 characters
InvoiceNote	Invoice note	Max 132 characters

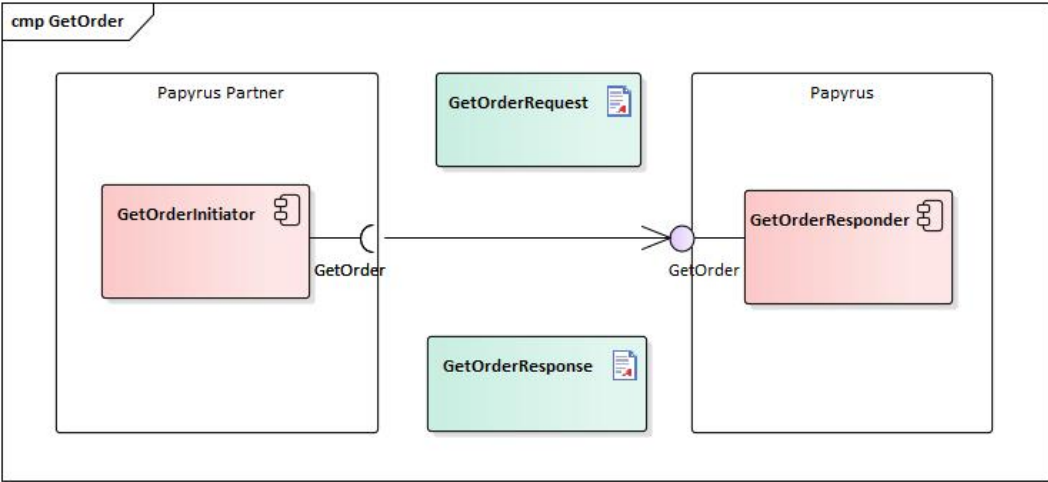|			
OrderStatus		Order status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
OrderReferenceName		Order reference name	Max 35 characters
Fee			
	Id	Fee id	See chapter 2.8 for possible values
	Price		
		Price	Price
		Currency	Currency	ISO 4217
	Description	Description	Localized
OrderLine			
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	
	Price		
		Price	Price
		Currency	Currency	ISO 4217
	RequestedDeliveryDate	Requested delivery date and time	
	DeliveryDate	Delivery date	
	OrderStatus	Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	OrderLineNote	Order line note	Max 35 characters
	Fee		
		Id	Fee id	See chapter 2.8 for possible values
		Price	
			Price	Price
			Currency	Currency	ISO 4217
		Description	Description	Localized
	PalletFlags		
		Customer	Customer	Max 40 characters
		MachineNumber	Machine number	Max 40 characters
		Object	Object	Max 40 characters
		Reference	Reference	Max 40 characters
	Cutting		
		Length	Daughter length	
		Width	Daughter width	

		DustFree	Flag telling whether dust free cutting is enabled or not	
		InAngle	Flag telling whether in angle cutting is enabled or not	
		Packaging	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
		NumberOfCuts	Number of cuts	Per sheet
		NumberOfDaughters	Number of daughters	Per sheet
	OrderLineReferenceItemNumber		Order line reference item number	Max 6 characters

2.3.3.2 GetOrder v4.3

> ⓘ   Available in namespace 4.3.

The *GetOrderQuery Service Interaction* allows the client to request order details.

GetOrder Request

Element	Description	Comment
OrderId	Order id	Obtained via the *PlaceOrder Service Interaction*

GetOrder Response

Element	Description	Comment
OrderId	Order id	The same as sent in the request
OrderReferenceId	Order reference id	Max 35 characters
DeliveryAddressId	Papyrus delivery address id	When set to 0, a custom delivery address will be supplied in the CustomerDeliveryAddress element
CustomDeliveryAddress		
CompanyName1	Company name 1	
CompanyName2	Company name 2	
CompanyName3	Company name 3	
Street	Street address	
PostalCode	Postal code	
City	City	
Country	Country	ISO 3166
ContactName	Contact name	
ContactPhone	Contact phone number	
ContactEmail	Contact email address	

LastUpdated			When order was last updated	
Price				
	Price		Total price for the whole order	
	Currency		Currency	ISO 4217
ShippingTour			At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
ProductionPlanning			Flag telling whether the order is a production planning order or not	
DeliveryNote			Delivery note	Max 360 characters
InvoiceNote			Invoice note	Max 132 characters
OrderStatus			Order status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
OrderReferenceName			Order reference name	Max 35 characters
Fee				
	Id		Fee id	See chapter 2.8 for possible values
	Price			
		Price	Price	
		Currency	Currency	ISO 4217
	Description		Description	Localized
OrderLine				
	ArticleNumber		Papyrus article number	
	Quantity		Quantity	
	Price			
		Price	Price	
		Currency	Currency	ISO 4217
	RequestedDeliveryDate		Requested delivery date and time	
	DeliveryDate		Delivery date	
	OrderStatus		Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	OrderLineNote		Order line note	Max 35 characters
	Fee			
		Id	Fee id	See chapter 2.8 for possible values
		Price		
			Price	Price	

		Currency	Currency	ISO 4217
	Description		Description	Localized
PalletFlags				
	Customer		Customer	Max 40 characters
	MachineNumber		Machine number	Max 40 characters
	Object		Object	Max 40 characters
	Reference		Reference	Max 40 characters
Cutting				
	Length		Daughter length	
	Width		Daughter width	
	DustFree		Flag telling whether dust free cutting is enabled or not	
	InAngle		Flag telling whether in angle cutting is enabled or not	
	Packaging		Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
	NumberOfCuts		Number of cuts	Per sheet
	NumberOfDaughters		Number of daughters	Per sheet
OrderLineReferenceItemNumber			Order line reference item number	Max 6 characters

2.3.4 OrderStatusNotification

The *OrderStatusNotification Service Interaction* allows the client to receive notifications when a significant status change has happened on a previously placed order (such as the order being locked for modifications).
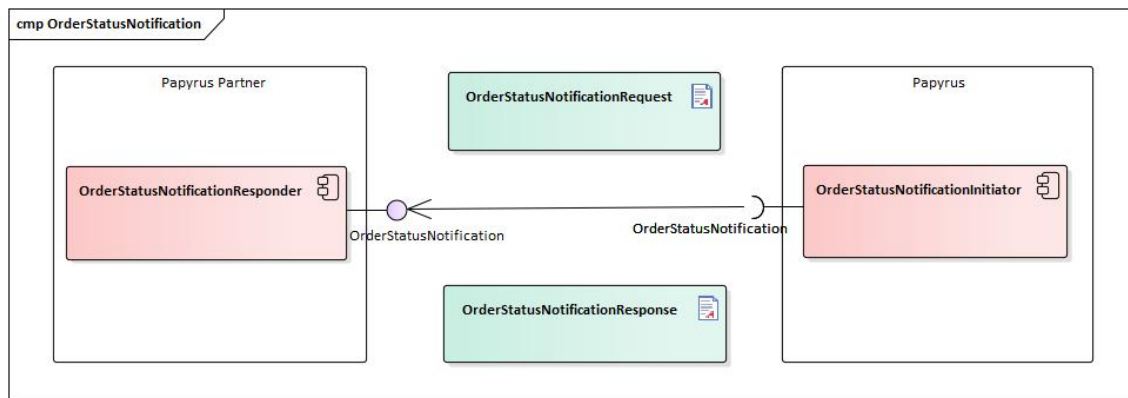
A customer that wishes to receive notifications must implement the *OrderStatusNotification Service Interaction*, and have a URL to that implementation configured on in Papyrus' systems. Papyrus will then send notifications to that configured URL whenever an order for that specific customer changes status.

Notification messages will be reliably delivered to the external system, even though the client might not be reachable when the status change occurs. In case of failure, 10 retry attempts are made with 5 minutes interval. If all retry attempts fail, system administrators at Papyrus can manually trigger another retry attempt or mark the message for deletion.
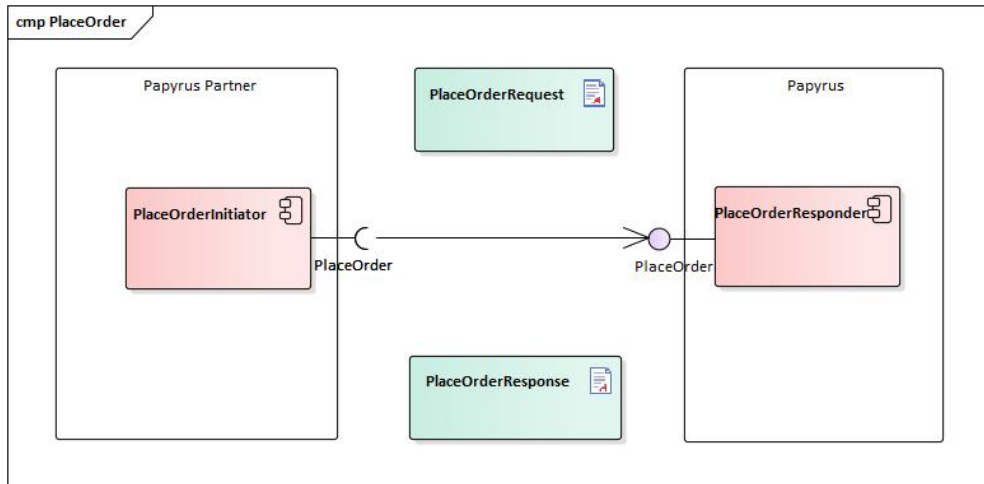
OrderStatusNotification Request

Element	Description	Comment
OrderId	Order id	
OrderReferenceId	Order reference id	Max 35 characters
LastUpdated	When order was last updated	
Price		
Price	Total price for the whole order	
Currency	Currency	ISO 4217
ShippingTour	At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderLine		
ArticleNumber	Papyrus article number	
Quantity	Quantity	
Price		
Price	Price	
Currency	Currency	ISO 4217
RequestedDeliveryDate	Requested delivery date and time	
DeliveryDate	Delivery date	
OrderStatus	Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
RejectReason	Reason for rejection	See chapter 2.7
RejectDetails	Reject details	See chapter 2.7
Key	Key	
Value	Value	
Fee		
Id	Fee id	See chapter 2.8 for possible values
Price		
Price	Price	
Currency	Currency	ISO 4217
Description	Description	Localized
Cutting		
NumberOfCuts	Number of cuts	Per sheet
NumberOfDaughters	Number of daughters	Per sheet

OrderStatusNotification Response

Element	Description	Comment
StatusNotificationReceived	Timestamp when notification was received	

2.3.5 PlaceOrder

The *PlaceOrder Service Interaction* allows the client to create and update orders.

PlaceOrder Request

Element		Description	Comment
DeliveryAddress Id		Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
LastUpdated		Timestamp	Not used at the moment
OrderId		Order id	When updating an existing order, a value must be specified. Only production planning orders may be updated.
OrderReferenceId		Order reference id	Max 35 characters
ProductionPlann ing		Flag telling whether the order is a production planning order or not	A production planning order can be changed a later point in time. Production planning orders may only contain a single order line.
DeliveryNote		Delivery note	Max 360 characters
InvoiceNote		Invoice note	Max 132 characters
OrderLine			
	Article Number	Papyrus article number	
	Quantity	Quantity	
	Request edDeliv eryDate	Requested delivery date and time	• For production planning orders What delivery date and shipping tour the order will be delivered by is calculated using this date and time. The date and time part, converted to customers local time zone, will be used to fulfill the commitment 'Goods is supposed to be at the dock no later than the requested date and time'. • For normal S2S orders The date part is used after converting the date time to customers local time zone. Shipping condition will be selected as 'earliest possible on that date'. If no value is provided, the earliest possible delivery date will be selected. However, all order lines either have to specify a date or all order line delivery dates are empty. Depending on market, it may be possible to specify different delivery dates on each order line. Please contact your Papyrus representative for more information.

		OrderLi neNote	Order line note	Max 35 characters
		PrintSt art	Hint to indicate when printing will start for the order line	Not used at the moment
		PalletF lags		
		Cust omer	Customer	Max 40 characters
		Mach ineN umber	Machine number	Max 40 characters
		Obje ct	Object	Max 40 characters
		Refe rence	Reference	Max 40 characters
		Cutting Instruc tions		
		Leng th	Daughter length	
		Width	Daughter width	
		Dust Free	Flag telling whether dust free cutting should be enabled or not	
		InAn gle	Flag telling whether in angle cutting should be enabled or not	
		Pack aging	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED

Extensions

Element		Description	Comment	Version
OrderReferenceName		Order reference name	Max 35 characters	4.1
OrderLine				
	OrderLineRef erenceItemNu mber	Order line reference item number	Max 6 characters	4.1

PlaceOrder Response

Element			Description	Comment
OrderId			Order id	The same as sent in the request
OrderReferenceId			Order reference id	Max 35 characters
LastUpdated			When order was last updated	
Price				
	Price		Total price for the whole order	
	Currency		Currency	ISO 4217
ShippingTour			At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderLine				
	ArticleNumber		Papyrus article number	
	Quantity		Quantity	
	Price			
		Price	Price	
		Currency	Currency	ISO 4217
	RequestedDeliveryDate		Requested delivery date and time	
	ConfirmedDeliveryDate		Confirmed delivery date	
	OrderStatus		Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	RejectReason		Reason for rejection	See chapter 2.7
	RejectDetails		Reject details	See chapter 2.7
		Key	Key	
		Value	Value	
	Fee			
		Id	Fee id	See chapter 2.8 for possible values
		Price		
			Price	Price	
			Currency	Currency	ISO 4217
		Description	Description	Localized
	Cutting			
		NumberOfCuts	Number of cuts	Per sheet
		NumberOfDaughters	Number of daughters	Per sheet

Extensions

Element		Description	Comment	Version
OrderReferenceName		Order reference name	Max 35 characters	4.1
OrderLine				
	OrderLineReferenceItemNumber	Order line reference item number	Max 6 characters	4.1

2.3.5.1 PlaceOrder v4.2

ⓘ   Available in namespace 4.2.

The *PlaceOrder Service Interaction* allows the client to create and update orders.

PlaceOrder Request

Element		Description	Comment
DeliveryAddressId		Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
LastUpdated		Timestamp	Not used at the moment
OrderId		Order id	When updating an existing order, a value must be specified. Only production planning orders may be updated.
OrderReferenceId		Order reference id	Max 35 characters
ProductionPlanning		Flag telling whether the order is a production planning order or not	A production planning order can be changed a later point in time. Production planning orders may only contain a single order line.
DeliveryNote		Delivery note	Max 360 characters
InvoiceNote		Invoice note	Max 132 characters
OrderReferenceName		Order reference name	Max 35 characters
OrderLine			
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	

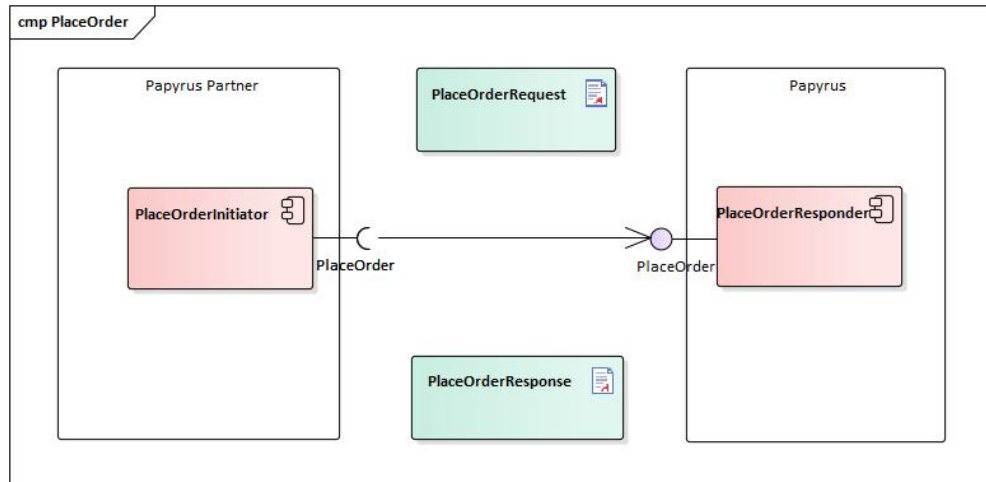|			
	`Requested DeliveryDate`	Requested delivery date and time	• For production planning orders What delivery date and shipping tour the order will be delivered by is calculated using this date and time. The date and time part, converted to customers local time zone, will be used to fulfill the commitment 'Goods is supposed to be at the dock no later than the requested date and time'. • For normal S2S orders The date part is used after converting the date time to customers local time zone. Shipping condition will be selected as 'earliest possible on that date'. If no value is provided, the earliest possible delivery date will be selected. However, all order lines either have to specify a date or all order line delivery dates are empty. Depending on market, it may be possible to specify different delivery dates on each order line. Please contact your Papyrus representative for more information.
	`OrderLine Note`	Order line note	Max 35 characters
	`PrintStart`	Hint to indicate when printing will start for the order line	Not used at the moment
	`PalletFla gs`		
	`Custom er`	Customer	Max 40 characters
	`Machin eNumber`	Machine number	Max 40 characters
	`Object`	Object	Max 40 characters
	`Refere nce`	Reference	Max 40 characters
	`CuttingIn structions`		
	`Length`	Daughter length	
	`Width`	Daughter width	
	`DustFr ee`	Flag telling whether dust free cutting should be enabled or not	
	`InAngle`	Flag telling whether in angle cutting should be enabled or not	
	`Packag ing`	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
	`OrderLine Reference ItemNumber`	Order line reference item number	Max 6 characters

PlaceOrder Response

Element			Description	Comment
OrderId			Order id	The same as sent in the request
OrderReferenceId			Order reference id	Max 35 characters
LastUpdated			When order was last updated	
Price				
	Price		Total price for the whole order	
	Currency		Currency	ISO 4217
ShippingTour			At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderReferenceName			Order reference name	Max 35 characters
OrderLine				
	ArticleNumber		Papyrus article number	
	Quantity		Quantity	
	Price			
		Price	Price	
		Currency	Currency	ISO 4217
	RequestedDeliveryDate		Requested delivery date and time	
	ConfirmedDeliveryDate		Confirmed delivery date	
	OrderStatus		Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	RejectReason		Reason for rejection	See chapter 2.7
	RejectDetails		Reject details	See chapter 2.7
		Key	Key	
		Value	Value	
	Fee			
		Id	Fee id	See chapter 2.8 for possible values
		Price		
			Price	Price	
			Currency	Currency	ISO 4217
		Description	Description	Localized
	Cutting			
		NumberOfCuts	Number of cuts	Per sheet
		NumberOfDaughters	Number of daughters	Per sheet
	OrderLineReferenceItemNumber		Order line reference item number	Max 6 characters

2.3.5.2 PlaceOrder v4.3

ⓘ   Available in namespace 4.3.

The *PlaceOrder Service Interaction* allows the client to create and update orders.

PlaceOrder Request

Element		Description	Comment
DeliveryAddressId		Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress			
	CompanyName1	Company name 1	
	CompanyName2	Company name 2	
	CompanyName3	Company name 3	
	Street	Street address	
	PostalCode	Postal code	
	City	City	
	Country	Country	ISO 3166
	ContactName	Contact name	
	ContactPhone	Contact phone number	
	ContactEmail	Contact email address	
LastUpdated		Timestamp	Not used at the moment
OrderId		Order id	When updating an existing order, a value must be specified. Only production planning orders may be updated.
OrderReferenceId		Order reference id	Max 35 characters

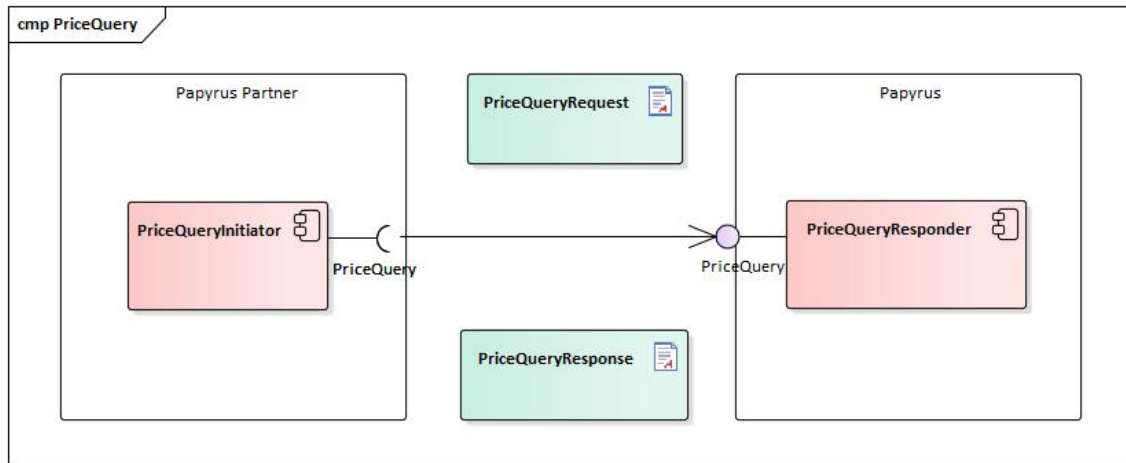| ProductionPlanning	Flag telling whether the order is a production planning order or not		A production planning order can be changed a later point in time. Production planning orders may only contain a single order line.
DeliveryNote	Delivery note		Max 360 characters
InvoiceNote	Invoice note		Max 132 characters
OrderReferenceName	Order reference name		Max 35 characters
OrderLine			
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	
	RequestedDeliveryDate	Requested delivery date and time	• For production planning orders What delivery date and shipping tour the order will be delivered by is calculated using this date and time. The date and time part, converted to customers local time zone, will be used to fulfill the commitment 'Goods is supposed to be at the dock no later than the requested date and time'. • For normal S2S orders The date part is used after converting the date time to customers local time zone. Shipping condition will be selected as 'earliest possible on that date'. If no value is provided, the earliest possible delivery date will be selected. However, all order lines either have to specify a date or all order line delivery dates are empty. Depending on market, it may be possible to specify different delivery dates on each order line. Please contact your Papyrus representative for more information.
	OrderLineNote	Order line note	Max 35 characters
	PrintStart	Hint to indicate when printing will start for the order line	Not used at the moment
	PalletFlags		
		Customer	Customer	Max 40 characters
		MachineNumber	Machine number	Max 40 characters
		Object	Object	Max 40 characters
		Reference	Reference	Max 40 characters
	CuttingInstructions		
		Length	Daughter length	
		Width	Daughter width	
		DustFree	Flag telling whether dust free cutting should be enabled or not	
		InAngle	Flag telling whether in angle cutting should be enabled or not	

		`Packaging`	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
		`OrderLine Reference ItemNumber`	Order line reference item number	Max 6 characters

PlaceOrder Response

Element			Description	Comment
OrderId			Order id	The same as sent in the request
OrderReferenceId			Order reference id	Max 35 characters
LastUpdated			When order was last updated	
Price				
	Price		Total price for the whole order	
	Currency		Currency	ISO 4217
ShippingTour			At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderReferenceName			Order reference name	Max 35 characters
OrderLine				
	ArticleNumber		Papyrus article number	
	Quantity		Quantity	
	Price			
		Price	Price	
		Currency	Currency	ISO 4217
	RequestedDeliveryDate		Requested delivery date and time	
	ConfirmedDeliveryDate		Confirmed delivery date	
	OrderStatus		Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
	RejectReason		Reason for rejection	See chapter 2.7
	RejectDetails		Reject details	See chapter 2.7
		Key	Key	
		Value	Value	
	Fee			
		Id	Fee id	See chapter 2.8 for possible values
		Price		
			Price	Price	
			Currency	Currency	ISO 4217
		Description	Description	Localized
	Cutting			
		NumberOfCuts	Number of cuts	Per sheet
		NumberOfDaughters	Number of daughters	Per sheet
	OrderLineReferenceItemNumber		Order line reference item number	Max 6 characters

2.3.6 PriceQuery

The *PriceQuery Service Interaction* allows the client to request price information.

PriceQuery Request

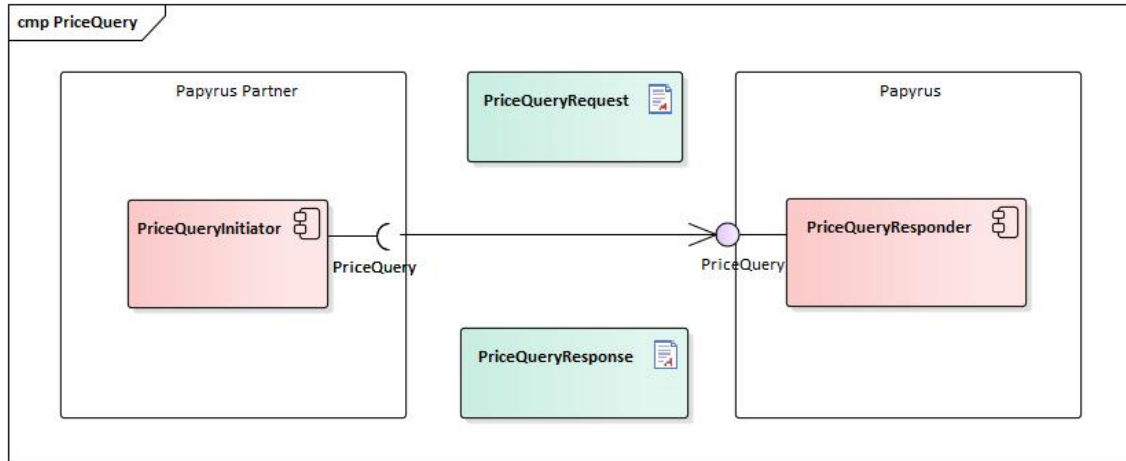| Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the price for	The unit of the quantity is specified in the price file for each article

PriceQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
PriceLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the price for	The same as sent in the request
Price		
Price	Price	
Currency	Currency	ISO 4217

2.3.6.1 PriceQuery v4.3

ⓘ Available in namespace 4.3.

The *PriceQuery Service Interaction* allows the client to request price information.
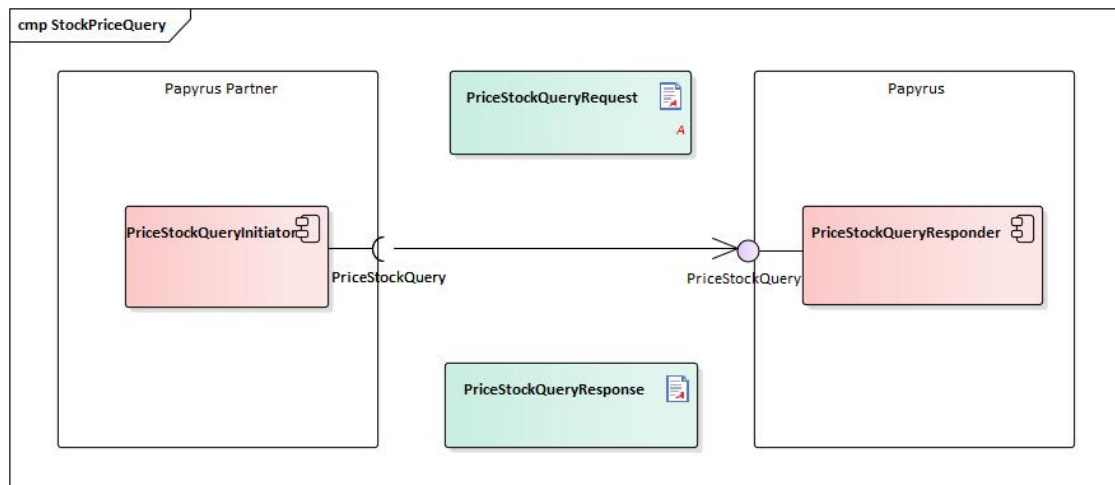
PriceQuery Request

Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress		
CompanyName1	Company name 1	
CompanyName2	Company name 2	
CompanyName3	Company name 3	
Street	Street address	
PostalCode	Postal code	
City	City	
Country	Country	ISO 3166
ContactName	Contact name	
ContactPhone	Contact phone number	
ContactEmail	Contact email address	
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the price for	The unit of the quantity is specified in the price file for each article

PriceQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
PriceLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the price for	The same as sent in the request
Price		
Price	Price	
Currency	Currency	ISO 4217

2.3.7 StockPriceQuery

The *StockPriceQuery Service Interaction* allows the client to request price and stock information.

StockPriceQuery Request

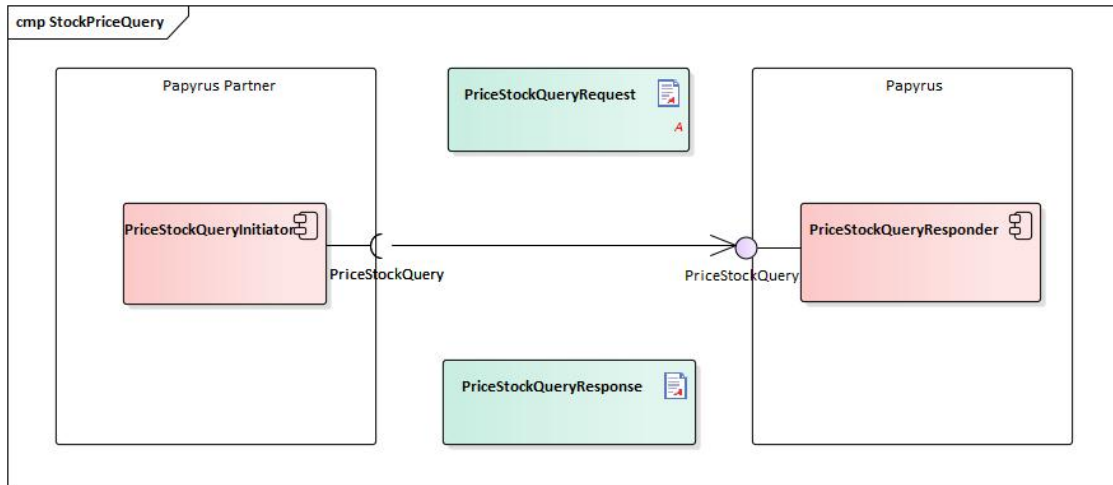| Element	Description	Comment
DeliveryAddress Id	Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the stock and price for	The unit of the quantity is specified in the price file for each article

StockPriceQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
StockPriceLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the stock and price for	The same as sent in the request
AvailableStock		Up to two warehouse stock levels may be returned
Name	Warehouse name	
StockLevel	Current stock level	
Price		
Price	Price	
Currency	Currency	ISO 4217

2.3.7.1 StockPriceQuery v4.3

ⓘ   Available in namespace 4.3.

The *StockPriceQuery Service Interaction* allows the client to request price and stock information.
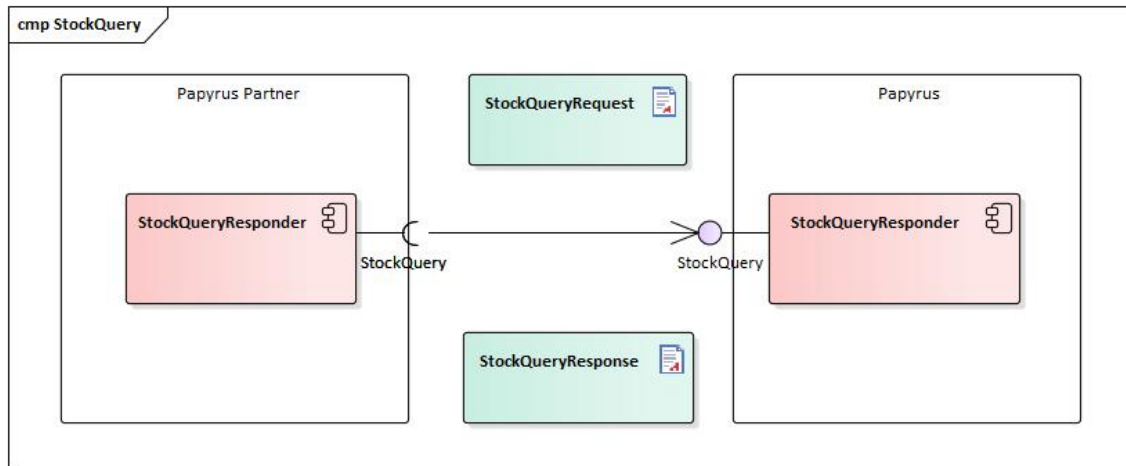
StockPriceQuery Request

Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress		
CompanyName1	Company name 1	
CompanyName2	Company name 2	
CompanyName3	Company name 3	
Street	Street address	
PostalCode	Postal code	
City	City	
Country	Country	ISO 3166
ContactName	Contact name	
ContactPhone	Contact phone number	
ContactEmail	Contact email address	
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the stock and price for	The unit of the quantity is specified in the price file for each article

StockPriceQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
StockPriceLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the stock and price for	The same as sent in the request
AvailableStock		Up to two warehouse stock levels may be returned
Name	Warehouse name	
StockLevel	Current stock level	
Price		
Price	Price	
Currency	Currency	ISO 4217

2.3.8 StockQuery

The *StockQuery Service Interaction* allows the client to request stock information.

StockQuery Request

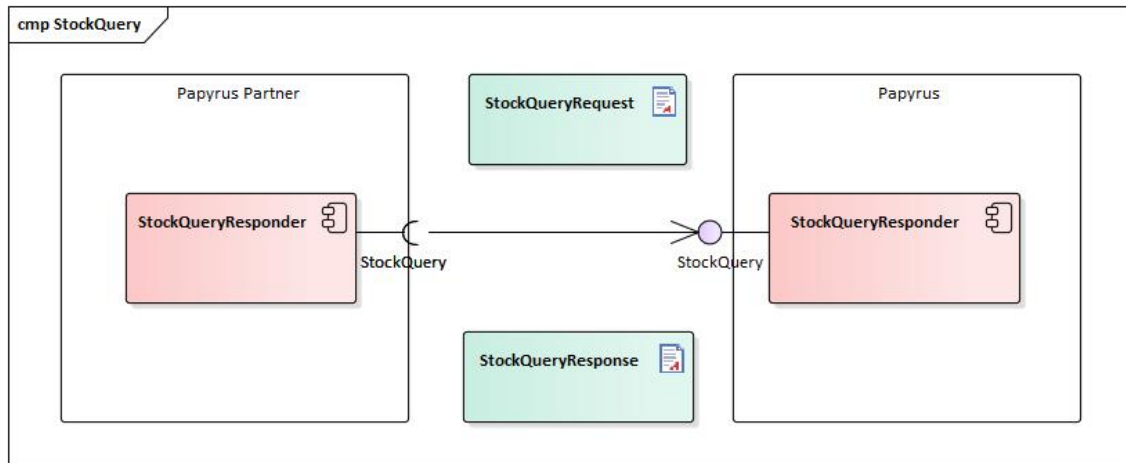| Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the stock for	The unit of the quantity is specified in the price file for each article

StockQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
StockLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the stock for	The same as sent in the request
AvailableStock		Up to two warehouse stock levels may be returned
Name	Warehouse name	
StockLevel	Current stock level	

2.3.8.1 StockQuery v4.3

ⓘ   Available in namespace 4.3.

The *StockQuery Service Interaction* allows the client to request stock information.

StockQuery Request

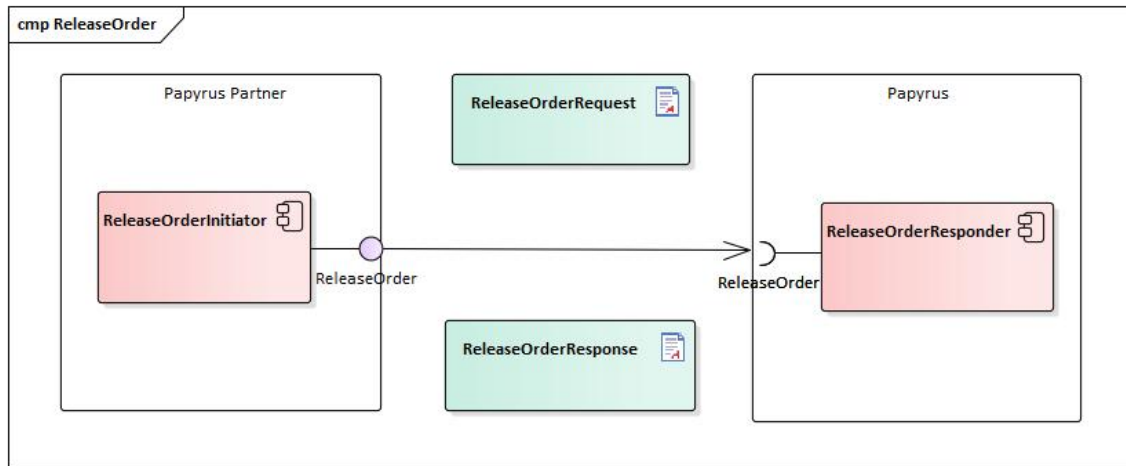| Element	Description	Comment
DeliveryAddressId	Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress		
CompanyName1	Company name 1	
CompanyName2	Company name 2	
CompanyName3	Company name 3	
Street	Street address	
PostalCode	Postal code	
City	City	
Country	Country	ISO 3166
ContactName	Contact name	
ContactPhone	Contact phone number	
ContactEmail	Contact email address	
QueryLine		
ArticleNumber	Papyrus article number	This can be obtained from a price file or by using www.papyrus.com or a product catalog
Quantity	Number of the items to query the stock for	The unit of the quantity is specified in the price file for each article

StockQuery Response

Element	Description	Comment
LastUpdated	Timestamp	Not used at the moment
StockLine		
ArticleNumber	Papyrus article number	The same as sent in the request
Quantity	Number of the items to query the stock for	The same as sent in the request
AvailableStock		Up to two warehouse stock levels may be returned
Name	Warehouse name	
StockLevel	Current stock level	

2.3.9 ReleaseOrder

ⓘ   Available in namespace 4.1.

The *ReleaseOrder Service Interaction* allows the client to release an existing (but not yet locked) order. This is not applicable for all countries so please contact your Papyrus representative for more details.

ReleaseOrder Request

Element	Description	Comment
OrderId	Order id	Obtained via the *PlaceOrder Service Interaction*
OrderReferenceId	Order reference id	Max 35 characters

ReleaseOrder Response

Element	Description	Comment
OrderId	Order id	The same as sent in the request
OrderReference Id	Order reference id	The same as sent in the request
ReleaseStatus	Release status	Can be ReleaseConfirmed or ReleaseRejected
RejectReason	Reason for rejection	If release status is ReleaseRejected, this element will specify the reason why the order could not released

2.3.10 SimulateOrder

ⓘ   Available in namespace 4.2.

The *SimulateOrder Service Interaction* allows the client to simulate orders.

SimulateOrder Request

Element		Description	Comment
DeliveryAddressId		Papyrus delivery address id	This cannot be obtained via S2S services and must be retrieved from other sources
LastUpdated		Timestamp	Not used at the moment
OrderId		Order id	Has no effect when simulating an order
OrderReferenceId		Order reference id	Max 35 characters
ProductionPlanning		Flag telling whether the order is a production planning order or not	A production planning order can be changed a later point in time. Production planning orders may only contain a single order line.
DeliveryNote		Delivery note	Max 360 characters
InvoiceNote		Invoice note	Max 132 characters
OrderReferenceName		Order reference name	Max 35 characters
OrderLine			
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	

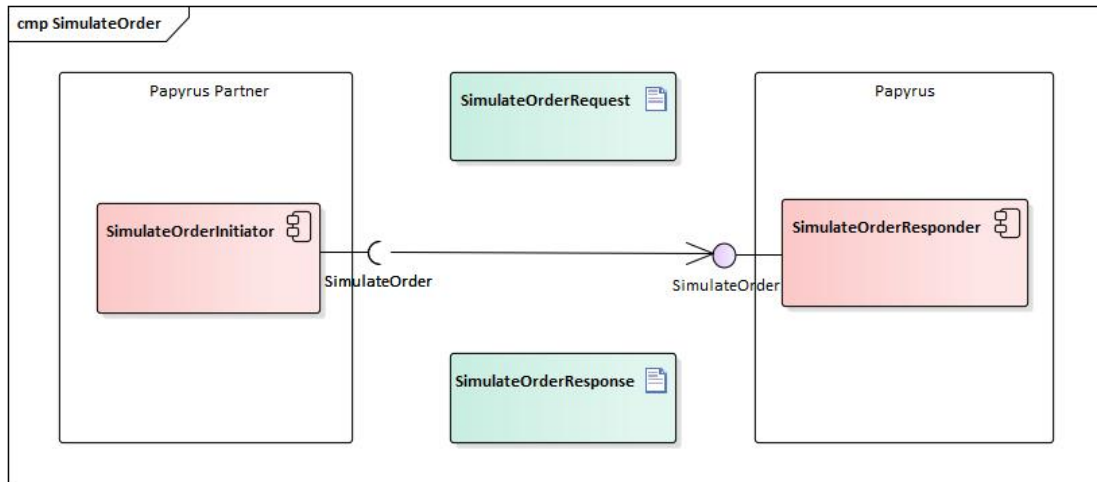|	Requested DeliveryDate	Requested delivery date and time	• For production planning orders What delivery date and shipping tour the order will be delivered by is calculated using this date and time. The date and time part, converted to customers local time zone, will be used to fulfill the commitment 'Goods is supposed to be at the dock no later than the requested date and time'. • For normal S2S orders The date part is used after converting the date time to customers local time zone. Shipping condition will be selected as 'earliest possible on that date'. If no value is provided, the earliest possible delivery date will be selected. However, all order lines either have to specify a date or all order line delivery dates are empty. Depending on market, it may be possible to specify different delivery dates on each order line. Please contact your Papyrus representative for more information.
	OrderLine Note	Order line note	Max 35 characters
	PrintStart	Hint to indicate when printing will start for the order line	Not used at the moment
	PalletFlags		
	Customer	Customer	Max 40 characters
	MachineNumber	Machine number	Max 40 characters
	Object	Object	Max 40 characters
	Reference	Reference	Max 40 characters
	CuttingInstructions		
	Length	Daughter length	
	Width	Daughter width	
	DustFree	Flag telling whether dust free cutting should be enabled or not	
	InAngle	Flag telling whether in angle cutting should be enabled or not	
	Packaging	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
	OrderLine Reference ItemNumber	Order line reference item number	Max 6 characters

SimulateOrder Response

Element	Description	Comment
OrderId	Order id	Not used
OrderReferenceId	Order reference id	Max 35 characters
LastUpdated	When order was last updated	
Price		
Price	Total price for the whole order	
Currency	Currency	ISO 4217
ShippingTour	At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderReferenceName	Order reference name	Max 35 characters
OrderLine		
ArticleNumber	Papyrus article number	
Quantity	Quantity	
Price		
Price	Price	
Currency	Currency	ISO 4217
RequestedDeliveryDate	Requested delivery date and time	
ConfirmedDeliveryDate	Confirmed delivery date	
OrderStatus	Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
RejectReason	Reason for rejection	See chapter 2.7
RejectDetails	Reject details	See chapter 2.7
Key	Key	
Value	Value	
Fee		
Id	Fee id	See chapter 2.8 for possible values
Price		
Price	Price	
Currency	Currency	ISO 4217
Description	Description	Localized
Cutting		
NumberOfCuts	Number of cuts	Per sheet
NumberOfDaughters	Number of daughters	Per sheet
OrderLineReferenceItemNumber	Order line reference item number	Max 6 characters

2.3.10.1 SimulateOrder v4.3

ⓘ   Available in namespace 4.3.

The *SimulateOrder Service Interaction* allows the client to simulate orders.

SimulateOrder Request

Element		Description	Comment
DeliveryAddressId		Papyrus delivery address id	If set to 0, a custom delivery address must be supplied in the CustomDeliveryAddress element. For other possible values, this cannot be obtained via S2S services and must be retrieved from other sources.
CustomDeliveryAddress			
	CompanyName1	Company name 1	
	CompanyName2	Company name 2	
	CompanyName3	Company name 3	
	Street	Street address	
	PostalCode	Postal code	
	City	City	
	Country	Country	ISO 3166
	ContactName	Contact name	
	ContactPhone	Contact phone number	
	ContactEmail	Contact email address	
LastUpdated		Timestamp	Not used at the moment
OrderId		Order id	Has no effect when simulating an order
OrderReferenceId		Order reference id	Max 35 characters

ProductionPlanning	Flag telling whether the order is a production planning order or not	A production planning order can be changed a later point in time. Production planning orders may only contain a single order line.
DeliveryNote	Delivery note	Max 360 characters
InvoiceNote	Invoice note	Max 132 characters
OrderReferenceName	Order reference name	Max 35 characters
OrderLine		
	ArticleNumber	Papyrus article number	
	Quantity	Quantity	
	RequestedDeliveryDate	Requested delivery date and time	- For production planning orders What delivery date and shipping tour the order will be delivered by is calculated using this date and time. The date and time part, converted to customers local time zone, will be used to fulfill the commitment 'Goods is supposed to be at the dock no later than the requested date and time'. - For normal S2S orders The date part is used after converting the date time to customers local time zone. Shipping condition will be selected as 'earliest possible on that date'. If no value is provided, the earliest possible delivery date will be selected. However, all order lines either have to specify a date or all order line delivery dates are empty. Depending on market, it may be possible to specify different delivery dates on each order line. Please contact your Papyrus representative for more information.
	OrderLineNote	Order line note	Max 35 characters
	PrintStart	Hint to indicate when printing will start for the order line	Not used at the moment
	PalletFlags		
		Customer	Customer	Max 40 characters
		MachineNumber	Machine number	Max 40 characters
		Object	Object	Max 40 characters
		Reference	Reference	Max 40 characters
	CuttingInstructions		
		Length	Daughter length	
		Width	Daughter width	
		DustFree	Flag telling whether dust free cutting should be enabled or not	
		InAngle	Flag telling whether in angle cutting should be enabled or not	

|				
		`Packag ing`	Packaging	Possible values • UNREAMED • REAMED_IN_PAPER • REAMED_IN_FOIL • BOXED
		`OrderLine Reference ItemNumber`	Order line reference item number	Max 6 characters

SimulateOrder Response

Element	Description	Comment
OrderId	Order id	Not used
OrderReferenceId	Order reference id	Max 35 characters
LastUpdated	When order was last updated	
Price		
Price	Total price for the whole order	
Currency	Currency	ISO 4217
ShippingTour	At what tour can the goods be expected	1 = Standard tour 2 = Second tour 3 = Third tour
OrderReferenceName	Order reference name	Max 35 characters
OrderLine		
ArticleNumber	Papyrus article number	
Quantity	Quantity	
Price		
Price	Price	
Currency	Currency	ISO 4217
RequestedDeliveryDate	Requested delivery date and time	
ConfirmedDeliveryDate	Confirmed delivery date	
OrderStatus	Order line status	Possible values • Received • Rejected • Confirmed • LockedForChanges • Delivered
RejectReason	Reason for rejection	See chapter 2.7
RejectDetails	Reject details	See chapter 2.7
Key	Key	
Value	Value	
Fee		
Id	Fee id	See chapter 2.8 for possible values
Price		
Price	Price	
Currency	Currency	ISO 4217
Description	Description	Localized
Cutting		
NumberOfCuts	Number of cuts	Per sheet
NumberOfDaughters	Number of daughters	Per sheet
OrderLineReferenceItemNumber	Order line reference item number	Max 6 characters

2.3.11 GetAlternativeArticles

ⓘ   Available in namespace 4.2.

The *GetAlternativeArticles Service Interaction* allows the client to get alternative articles for a specified article.
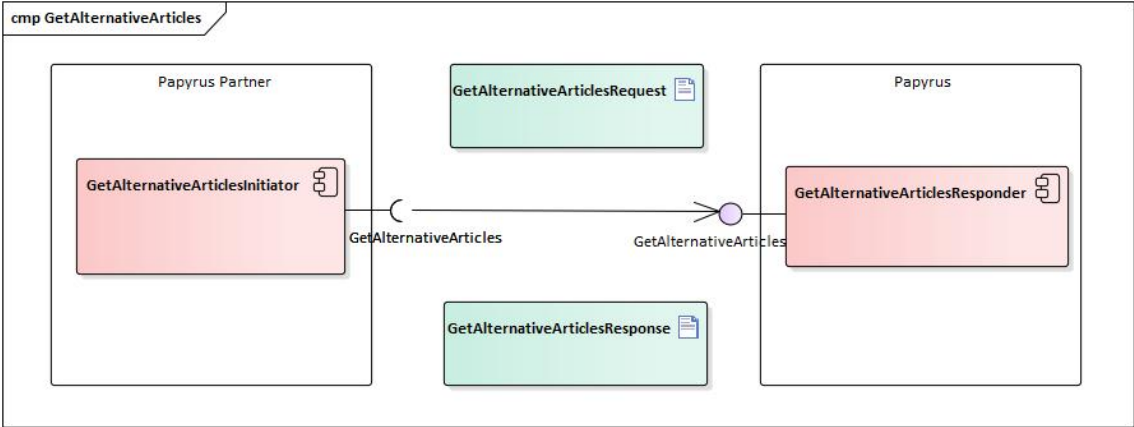
GetAlternativeArticlesOrder Request

Element		Description	Comment
ArticleNumber		Papyrus article number	

GetAlternativeArticlesOrder Response

Element	Description	Comment
ArticleNumber	A list of Papyrus article numbers	

2.4 Authentication

In order to access the Web Services, the caller has to provide valid credentials. The authentication scheme is HTTP Basic Authentication (IETF RFC 2617). If the credentials are not valid, the server replies with a `HTTP Unauthorized` (status code 401). In short, a header parameter `Authorization` containing `"Basic base64encode(username:password)"` must be supplied.

Example for user "Aladdin" with password "open sesame":

Header name	Value
Authorization	Basic QWxhZGRpbjpvcGVuIHNlc2FtZQ==

2.5 Logging

In order to provide sufficient information for troubleshooting and auditing, each sent message should have a unique identifier.

2.6 Exception Handling

Exception handling uses SOAP facilities to report faults back to the initiator. In case of an error, a SOAP fault is returned. A SOAP fault consists of a `faultcode` and a `faultstring` element.

Possible values for `faultcode` are `SOAP-ENV:Server` for problems encountered at server side and `SOAP-ENV:Client` for problems encountered with the request – for example invalid data.

The `faultstring` provides more information about the fault. A `faultstring` contains both an error code and an error description following the pattern:

```
105:Invalid article number
```

The error code can be used for further processing whereas the error description gives more details about the error. Please note that the error description may be localized if decided so by the local market.

<div align="center">Example</div>

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
        <SOAP-ENV:Header/>
        <SOAP-ENV:Body>
                <SOAP-ENV:Fault>
                        <faultcode>SOAP-ENV:Client</faultcode>
                        <faultstring xml:lang="en">
                                107:Invalid delivery address
                        </faultstring>
                </SOAP-ENV:Fault>
        </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

The S2S SOAP Web Services interface defines the following fault codes:

Fault Code	Fault String
100	Internal server error
101	Schema validation error
102	Input validation error
~~103~~	*Not used*
104	Unknown order id
105	Invalid article number
~~106~~	*Not used*
107	Invalid delivery address
108	Illegal order update
109	Time zone is required
110	Only one delivery date per order is supported
111	Production planning is not allowed
112	Internal arithmetic error
113	Article is inactive

2.7 Rejected Reasons

In some cases, the request might be rejected in such way that a SOAP fault is **not** produced. These kinds of errors are reported in the response using the order line status `Rejected` and `RejectedReason` field. When available, a list of `RejectDetails` containing key/values will be added as well. A key can occur multiple times, e.g. `ALTERNATIVE_ITEM`. Please note that the reason text may be localized if decided so by the local market.

The SOAP Web Service interface defines the following `Rejected` codes:

Rejected Code	Rejected Reason	Reject Details - Key	Reject Details – Value [String containing]
200	Unknown error		
201	Invalid delivery date	ALTERNATIVE_DELIVERY_DATE	XMLDate
		ALTERNATIVE_ITEM	Article number
202	Invalid quantity	ALTERNATIVE_QUANTITY	Integer
203	Invalid article	ALTERNATIVE_ITEM	Article number
204	Not processed		
205	Article is not cuttable		
206	Cutting could not be calculated		

2.8 Fees

The table below lists the possible fees that can be returned from the *GetOrder* and *PlaceOrder Service Interactions.* Please note that the local market may decide to not show fees at all or only selected fees. Also, the fee text may be localized if decided so by the local market.

Fee id	Fee text
SMALL_ORDER_TRANSPORT_FEE	Small order transport fee
SMALL_ORDER_FEE	Small order fee
SERVICE_FEE	Service fee
FREIGHT1_FEE	Freight fee
FREIGHT2_FEE	Freight fee
RETURN_FEE	Return fee
CARRY_BEYOND_LOADING_FEE	Carry beyond loading bay fee
INTERNET_DISCOUNT_FEE	Internet discount
CUTTING1_FEE	Cutting fee
CUTTING2_FEE	Cutting fee
CUTTING_TOTAL	Total cutting fee
PACKAGING1_FEE	Packaging fee
PACKAGING2_FEE	Packaging fee
PACKAGING_TOTAL	Total packaging fee
EXPRESS_DELIVERY_FEE	Express delivery fee
ENVIRONMENTAL_FEE	Environmental fee
BROKEN_PACKAGE_FEE	Broken package fee
PICKUP_DISCOUNT_FEE	Pickup discount
TIME_WINDOW_FEE	Time window fee
DC_ENVIRONMENTAL_FEE	DC environmental fee
FIXED_SERVICE_FEE	Fixed service fee
TRANSPORT_FEE	Transport fee
MINIMUM_TRANSPORT_FEE	Minimum transport fee
TRANSPORT_TOTAL	Total transport fee

2.9 API Extensions

The SOAP API may be extended with new fields while retaining compatibility with clients using earlier versions of the API. The concepts behind this are described further in chapter 3.3.

The interface can only be extended with optional fields but if present, the values are validated. It is important that these fields are in the correct places in the XML document, i.e. where the `xs:any` element is found. Note that this not only applies to requests but also responses. In responses, it is up to the client to ignore or process them.

> ⓘ   In case the client is unable to handle the `xs:any` mechanism, contact your representative at Papyrus.

2.9.1 Version 4.1

In this version, two new fields were added:

- `OrderReferenceName`
    - This field works in the same way as `OrderReferenceId` but instead of an external order id, this field expects the external purchaser's name or email.
- `OrderLineReferenceItemNumber`
    - In some cases, the order submitted via S2S might not correspond 1:1 to the order in the customer's system which could cause inconsistencies between the two. This field can therefore be used to refer to an order line in the customer's system.

Example

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:urn1="urn:papyrus:s2s:
order:placement:PlaceOrderResponder:4" xmlns:urn2="urn:papyrus:s2s:order:placement:4_1">
    <soapenv:Body>
        <urn1:PlaceOrder>
            <urn1:DeliveryAddressId>123456</urn1:DeliveryAddressId>
            <urn1:LastUpdated>2018-10-01T13:37:00Z</urn1:LastUpdated>
            <urn1:OrderLine>
                <urn1:ArticleNumber>123456789</urn1:ArticleNumber>
                <urn1:Quantity>1</urn1:Quantity>
                <urn1:RequestedDeliveryDate>2019-01-01T00:00:00+01:00</urn1:RequestedDeliveryDate>
                <urn2:OrderLineReferenceItemNumber>3</urn2:OrderLineReferenceItemNumber>
            </urn1:OrderLine>
            <urn2:OrderReferenceName>Leroy Jenkins</urn2:OrderReferenceName>
        </urn1:PlaceOrder>
    </soapenv:Body>
</soapenv:Envelope>
```

3. Technical Details

3.1 Terminology

Message

A *Message* is a set of information that has been structured and packaged by a sender in order to transfer the structured information to a recipient. Using the SOAP 1.1 standard (see [1]), the technical realization of a message is called *Envelope*. An *Envelope* contains a message *Header* and the message content, called *Body*.

Service Interaction

A *Service Interaction* is cooperation between two parties in which messages are being exchanged. The *Service Interaction* describes the *Service Contracts* that dictate the message exchange between the parties. Technically, a *Service Interaction* is described using a WSDL file which depends on one or more XML schemas.

Initiator

An *Initiator* is a *Service Component* that sends messages to a *Responder*. An *Initiator* may also be referred to as a *Service Consumer*.

Responder

A *Responder* is a *Service Component* that receives messages from an *Initiator*. A *Responder* may also be referred to as a *Service Provider*.

Service Contract

A *Service Contract* defines a standardized interface between *Service Components*. The contract in itself is independent of the transport mechanism and the enveloping. A *Service Contract* defines the role of a *Responder* or an *Initiator* in a *Service Interaction*.

Service Schema

A *Service Schema* is an XML Schema that defines one element for input and output messages for each operation in a *Service Contract*.

3.2 Interoperability

In order to secure interoperability between different Web Services implementations on different platforms (most notably between Java and .NET), the Web Services should comply with the WS-I Interoperability Profile (see [3]). In cases where known vendor-specific conventions and lack of adherence to the WSI Basic Profile exist, these should be considered to guarantee interoperability (i.e. current versions of Microsoft Windows Communication Foundation and current versions of Java JAX-WS).

3.3 Versioning Strategy

The chosen strategy for versioning is based on work by W3C which describes and evaluates a number of potential strategies for versioning (see [4] and more specifically chapter 7.3). The solution is adapted to work with modern development tools for .NET (WCF) and Java (JAX-WS and JAXB), where source code (C# or Java) is generated from a service contract formulated as WSDL and XML Schemas.

Version Numbers

Version Numbers for *Service Contracts* are specified on the form *<Major>.<Minor>*.

For new, compatible versions of a *Service Contract*, the *Major* version remains unchanged whereas the *Minor* version is increased one step, e.g. from 3.0 to 3.1.

For new, non-compatible versions, the *Major* version is increased and the *Minor* version is reset to 0, e.g. from 3.1 to 4.0.

Backwards and Forwards Compatibility

Backwards compatibility means that an *Initiator* can send a message to a *Responder* where the message uses an older version of the *Service Contract* than the *Responder* is based on. This requires that the *Responder* can read the messages even though they are missing some of the information that was introduced in the more recent version.

Forwards compatibility means an *Initiator* can send a message to a *Responder*, where the message uses a newer version of the *Service Contract* than the *Responder* is based on. This requires that the *Responder* can read the message even though it contains information that was introduced in the more recent version (of which the *Responder* is unaware).

In practice, the only type of change that allows for both backwards and forwards compatibility is addition of new non-mandatory elements.

Technical Realization of Forwards/Backwards Compatibility

The contract first code generation approach means that C#/Java source code will be generated a from specific version of a *Service Contract* and its corresponding XML schemas. Over time, different *Initiators* and *Responders* will have source code that was generated from different *Minor* versions of the *Service Contract*. Achieving forwards/backwards compatibility means guaranteeing that a message always can be validated against the XML Schema for which the *Initiator* or *Responder* was built for.

This implies the following restrictions on *Service Schemas*:

- Version declaration
  - The target namespace must contain the *Major* version.
- Namespaces must be used for elements in instance documents
  - Hence the schema attribute `elementFormDefault` must be set to `"qualified"` in all schemas.
- Place holders for forwards compatibility
  - An `xsd:any` element must be used for future non-mandatory elements
    - `<xsd:any processContents="lax" minOccurs="0" maxOccurs="unbounded" namespace="##other"/>`.
- Elements that are introduced in a new `Minor` version must be placed in a separate XML schema with a target namespace that differs from the *Major* version

  - This is necessary since the `any` element forces the element to be in another namespace, in order to comply with Unique Particle Attribution constraint, see [5].
- New *Minor* versions of an XML schema should only be extended with non-mandatory elements, i.e. elements with `minOccurs="0"`.