

Off street parking using the NPR protocol

Way of work

Introduction

In addition to the use of the messaging of the Link Server (Verwijsindex) the provider has the ability to use the NPR messages EnrollPSRight and RevokePSRight. The LinkServer will take care of the message routing and translations. The LinkServer also handles the registration of parkingrights in NPR.

The three methods supported in the LinkServer protocol are also supported in the NPR protocol:

- Method 1 Automatic mobile payment: check-in and check-out by Parking facility
- Method 2 Half automatic mobile payment: check-in in via Provider; check-out by Parking facility
- Method 3 Manual mobile payment: payment short before exit via Provider

Method 1 Automatic mobile payment

In the case the Provider has registered a link with the (encrypted) Vehicle identification in the LinkServer and the vehicle enters the Parking Facility, a PaymentStartRequest is sent by the Parking Facility. The LinkServer converts the message to the ActivateEnrollRequest and sends it to the Provider. The Provider reacts with an ActivateEnrollResponse. In the case of an positive reaction the LinkServer confirms this in the PaymentStartResponse to the Parking Facility and the registration of the parkingright in NPR¹ using an EnrollPSRightRequest.

During the stay the Provider has the possibility to completely or partially cancel the transaction by sending a RevokePSRightRequest with the requested endtime. The LinkServer sends the request as CancelAuthorisationRequest to the Parking Facility. The CancelAuthorisationResponse of the Parking Facility returns in case of a granted request the EndDateTime, Amount and VAT. If not granted a remark is sent. The Linkserver revokes the parkingright in NPR via a RevokePSRightRequest and sends the result as RevokePSRightResponse to the Provider.

When the vehicle exits the Parking facility, the Parking facility sends a PaymentEndRequest to the LinkServer. The Linkserver revokes the parkingright in NPR via a RevokePSRightRequest and sends the result as RevokedPSRightByThirdPartyRequest to the Provider. The response is a acknowledgment and has no further function.

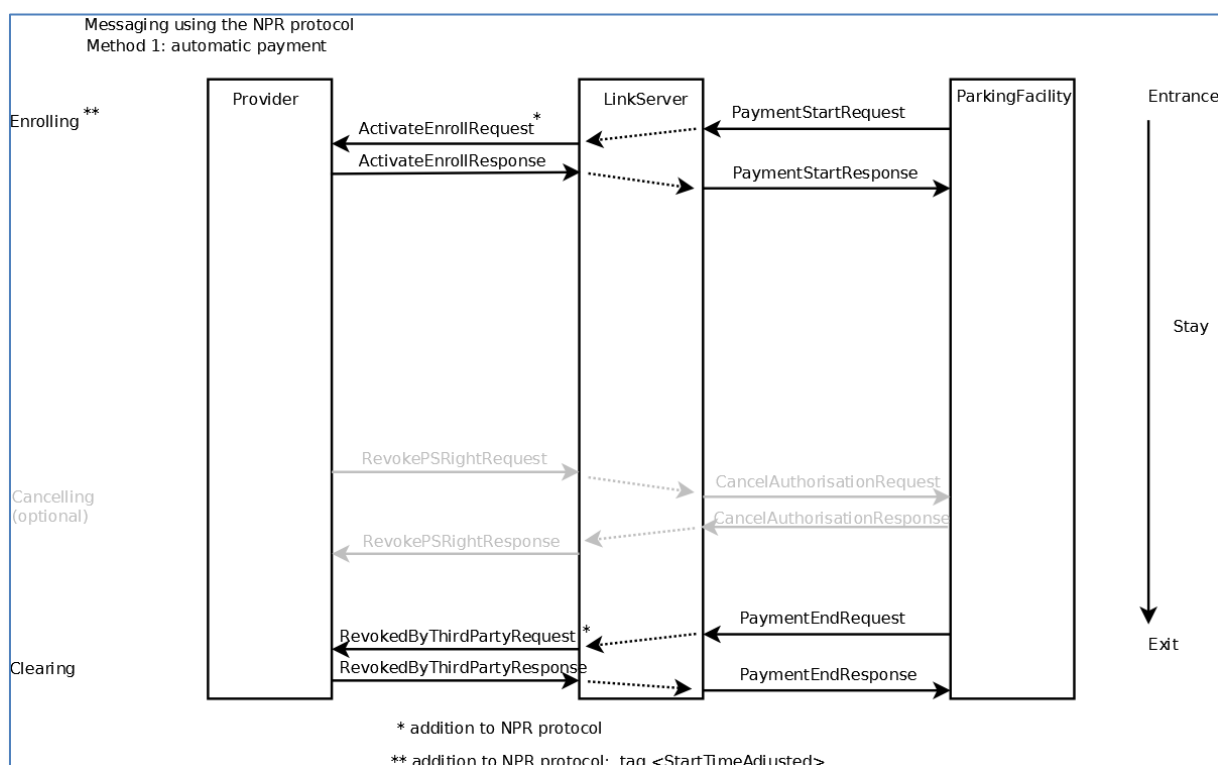


Figure 1 Method 1 messaging

¹ Messaging to NPR is not shown in the figures

Method 2 Semi automatic mobile payment

In order to perform a mobile payment for an off street parking facility, the driver starts his mobile payment via the preferred provider, using the vrn or ticketnumber² and the sellingpoint-id of the off street parking facility. This must be done during the stay of the vehicle at the parking facility. The provider sends the NPR EnrollPSRightRequest to the url of the LinkServer (Verwijsindex). The tag <EndTimePSRight> is left blank. The LinkServer sends the ActivateAuthorisationRequest³ to the parking facility. This results in a ActivateAuthorisationResponse for the vehicle sent by the parking facility to the LinkServer. The time of entrance of the vehicle is sent by the Parking facility as StartTimeAdjusted⁴. The LinkServer registers the parkingright in NPR on behalf of the provider. The LinkServer also forwards the NPR-EnrollPSRightResponse to the provider as confirmation.

When the vehicle leaves the parking facility, the parking facility sends the PaymentEnd to the LinkServer including the due amount. The Linkserver sends the RevokePSRightRequest to NPR and the RevokedPSRightByThirdPartyRequest⁵ to the provider.

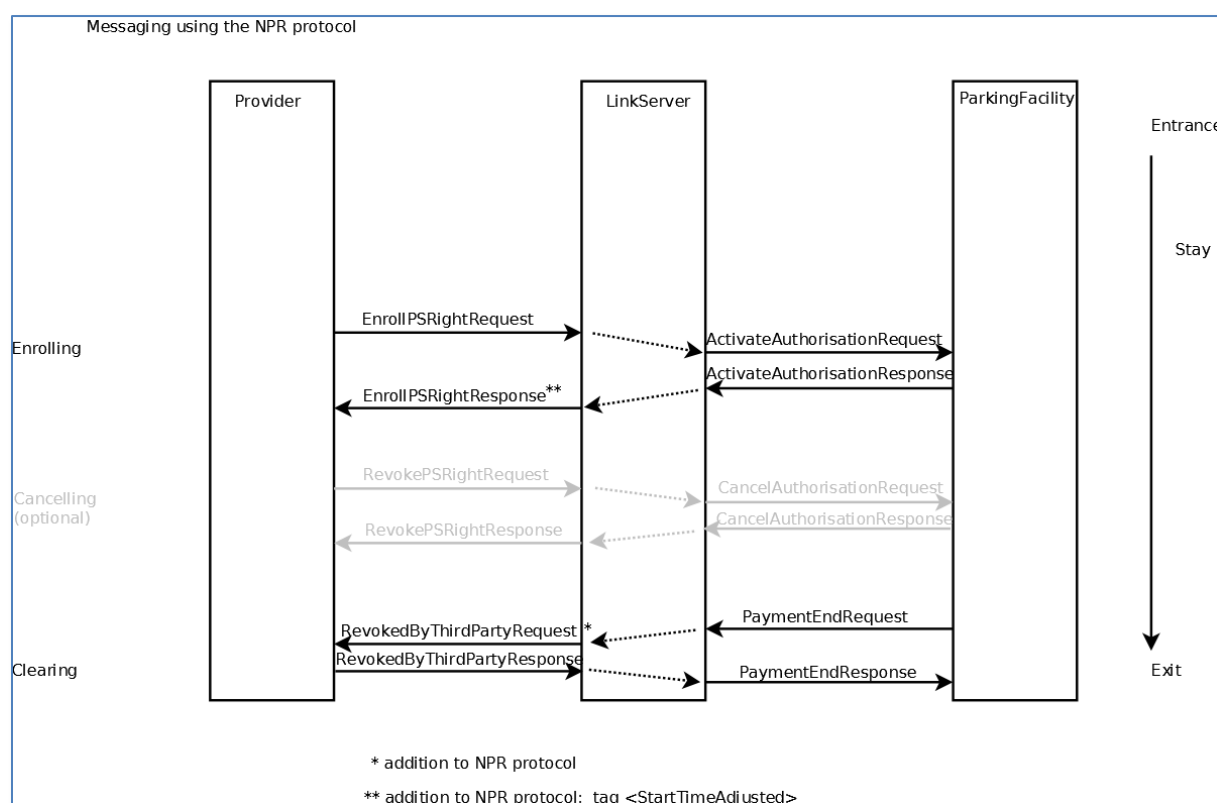


Figure 2 Method 2 messaging

² The additional tag VehicleIDType in the EnrollPSRight has to be used

³ To be developed for LinkServer and PMS

⁴ Additional tag

⁵ Addition to NPR protocol

Method 3 Manual mobile payment

In the case the driver wants to pay for the off street parking just before leaving the Parking facility, the Provider asks for the amount due. The procedure is the same as for method 2 but the Provider has to send the EnrollPSRightRequest within 15' before the vehicle plans to leave the Parking facility. In the EnrollPSRightRequest the EndTimePSRight is optional filled with the actual datetime. The LinkServer forwards the request as ActivateAuthorisationRequest to the ParkingFacility. The Parking Facility answers with the ActivateAuthorisationResponse, including the StartTimeAdjusted, the EndTimeAdjusted and in the case of a receiver EndDataTime the Amount and VAT. The LinkServer sends the EnrollPSRightRequest to NPR and sends after receiving the EnrollPSRightResponse the EnrollPSRightResponse to the Provider. The Provider sends subsequently the RevokePSRightRequest. The LinkServer forwards the request as CancelAuthorisationRequest to the ParkingFacility. The Parking Facility answers with the CancelAuthorisationResponse, including the StartTimeAdjusted, the EndTimeAdjusted and the Amount and VAT. The LinkServer sends the RevokePSRightRequest to NPR and sends after receiving the RevokePSRightResponse the RevokePSRightResponse to the Provider.

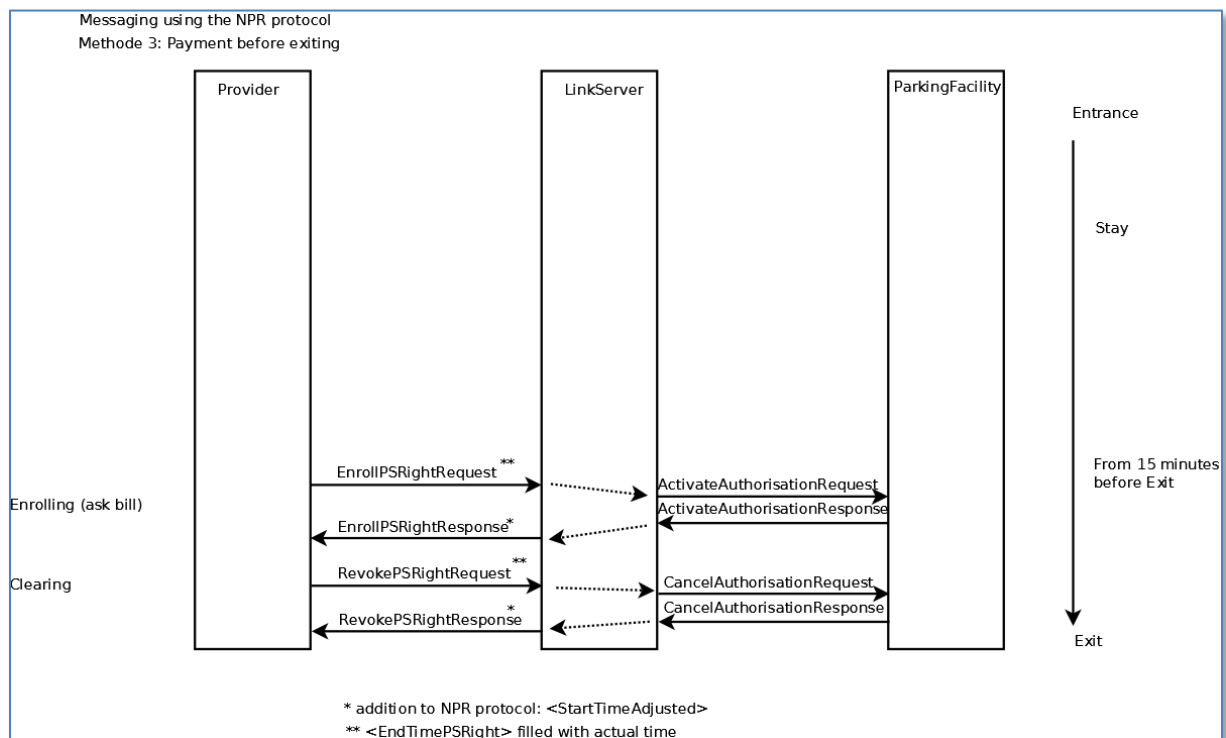


Figure 3 Method 3 messaging

Further explanation

Routing

Providers have to route messages with a sellingpoint of an off street facility to another url than on street. This is a normal situation since providers are already used to send right request to different parkingright databases, based on sellingpoint-ids. We can reserve a series of sellingpoint-ids for off street facilities. The routing of the NPR messages via the LinkServer is a requirement in order to trigger the process of retrieving the correct starttime and handling the messages of entry and departure of the vehicle.

Requirements for the Provider System

The way of work implies that the Provider System supports the messages EnrollPSRight, RevokePSRight

In the case of Method 1 the Provider System also has to support the add-ons to the NPR protocol: ActivateEnroll and RevokedPSRightByThirdParty. The ActivateEnroll is an inbound message sent by the LinkServer when the vehicle departs the parking facility. The RevokedPSRightByThirdParty is an inbound message sent by the LinkServer when the vehicle departs the parking facility.

In case the Provider system wants to receive invitations for mobile payments (method 1), the Provider system has to support the outbound message LinkRegistrationRequest in order to register (encrypted) vehicle-ids.

Requirements for the Parking Mananagement System

The way of work implies that the PMS supports the outbound messages PaymentStart and PaymentEnd and the inbound messages ActivateAuthorisation and CancelAuthorisation.