

ETSI TS 132 291 V15.8.0 (2021-01)



5G;
Telecommunication management;
Charging management;
5G system, charging service;
Stage 3
(3GPP TS 32.291 version 15.8.0 Release 15)



Reference

RTS/TSGS-0532291vf80

Keywords

5G

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Important notice

<https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9c014ba0e13-2021-01>
The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2021.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

[https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-](https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9c3d146facf/etsi-ts-132-291-v15-8-0-2021-01)

[d9c3d146facf/etsi-ts-132-291-v15-8-0-2021-01](https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9c3d146facf/etsi-ts-132-291-v15-8-0-2021-01)

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	6
1 Scope	7
2 References	7
3 Definitions, symbols and abbreviations	8
3.1 Definitions	8
3.2 Symbols.....	8
3.3 Abbreviations	8
4 Overview	9
4.1 Service architecture	9
4.2 Network functions	9
4.2.1 Charging Function (CHF).....	9
4.2.2 NF Service Consumers	9
5 Services offered by the CHF	10
5.1 Introduction	10
5.2 Nchf_ConvergedCharging service.....	10
5.2.1 Service description.....	10
5.2.2 Service operations.....	10
5.2.2.1 Introduction.....	10
5.2.2.2 Nchf_ConvergedCharging_Create Operation	11
5.2.2.3 Nchf_ConvergedCharging_Update Operation	12
5.2.2.4 Nchf_ConvergedCharging_Release Operation	12
5.2.2.5 Nchf_ConvergedCharging_Notify Operation	13
6 API definitions	14
6.1 Nchf_ConvergedCharging Service API	14
6.1.1 Introduction.....	14
6.1.2 Usage of HTTP	14
6.1.2.1 General	14
6.1.2.2 HTTP standard headers	14
6.1.2.2.1 General	14
6.1.2.2.2 Content type	14
6.1.2.3 HTTP custom headers	14
6.1.2.3.1 General	14
6.1.3 Resources.....	15
6.1.3.1 Overview.....	15
6.1.3.2 Resource: Charging Data	16
6.1.3.2.1 Description	16
6.1.3.2.2 Resource Definition.....	16
6.1.3.2.3 Resource Standard Methods	16
6.1.3.2.3.1 POST.....	16
6.1.3.2.4 Resource Custom Operations	17
6.1.3.3 Resource: Individual Charging Data	17
6.1.3.3.1 Description	17
6.1.3.3.2 Resource Definition.....	17
6.1.3.3.3 Resource Standard Methods	18
6.1.3.3.4 Resource Custom Operations	18
6.1.3.3.4.1 Overview.....	18
6.1.3.3.4.2 Operation: update.....	18
6.1.3.3.4.2.1 Description	18
6.1.3.3.4.2.2 Operation Definition	18

6.1.3.3.4.3	Operation: release	19
6.1.3.3.4.3.1	Description	19
6.1.3.3.4.3.2	Operation Definition	19
6.1.4	Custom Operations without associated resources	20
6.1.5	Notifications	20
6.1.5.1	General	20
6.1.5.2	Event Notification	20
6.1.5.2.1	Description	20
6.1.5.2.2	Target URI	20
6.1.5.2.3	Standard Methods	20
6.1.5.2.3.1	POST	20
6.1.6	Data Model	21
6.1.6.1	General	21
6.1.6.2	Structured data types	24
6.1.6.2.1	Common Data Type	24
6.1.6.2.1.1	Type ChargingDataRequest	24
6.1.6.2.1.2	Type ChargingDataResponse	25
6.1.6.2.1.3	Type ChargingNotifyRequest	25
6.1.6.2.1.4	Type NFIdentification	26
6.1.6.2.1.5	Type MultipleUnitUsage	27
6.1.6.2.1.6	Type InvocationResult	27
6.1.6.2.1.7	Type Trigger	28
6.1.6.2.1.8	Type MultipleUnitInformation	29
6.1.6.2.1.9	Type RequestedUnit	29
6.1.6.2.1.10	Type UsedUnitContainer	30
6.1.6.2.1.11	Type GrantedUnit	31
6.1.6.2.1.12	Type FinalUnitIndication	31
6.1.6.2.1.13	Type RedirectServer	31
6.1.6.2.1.14	Type ReauthorizationDetails	32
6.1.6.2.1.16	Type ChargingNotifyResponse	32
6.1.6.2.2	5G Data Connectivity Specified Data Type	32
6.1.6.2.2.1	Type ChargingDataRequest	32
6.1.6.2.2.2	Type ChargingDataResponse	32
6.1.6.2.2.3	Type MultipleUnitUsage	33
6.1.6.2.2.4	Type MultipleUnitInformation	33
6.1.6.2.2.5	Type UsedUnitContainer	33
6.1.6.2.2.6	Type PDUSessionChargingInformation	34
6.1.6.2.2.7	Type UserInformation	35
6.1.6.2.2.8	Type PDUSessionInformation	36
6.1.6.2.2.9	Type PDUContainerInformation	37
6.1.6.2.2.10	Type NetworkSlicingInfo	37
6.1.6.2.2.11	Type PDUAddress	38
6.1.6.2.2.12	Type ServingNetworkFunctionID	38
6.1.6.2.2.13	Type RoamingQBCInformation	38
6.1.6.2.2.14	Type MultipleQFIcontainer	39
6.1.6.2.2.15	Type RoamingChargingProfile	39
6.1.6.2.2.16	Type QFIContainerInformation	40
6.1.6.2.2.17	Type RANSecondaryRATUsageReport	40
6.1.6.2.2.18	Type QosFlowsUsageReport	41
6.1.6.2.3	SMS Specified Data Type	41
6.1.6.2.3.1	Type ChargingDataRequest	41
6.1.6.2.3.2	Type SMSChargingInformation	42
6.1.6.2.3.3	Type OriginatorInfo	44
6.1.6.2.3.4	Type RecipientInfo	45
6.1.6.2.3.5	Type SMAddressInfo	45
6.1.6.2.3.6	Type RecipientAddress	45
6.1.6.2.3.7	Type MessageClass	46
6.1.6.2.3.8	Type SMAddressDomain	46
6.1.6.2.3.9	Type SMInterface	46
6.1.6.3	Simple data types and enumerations	46
6.1.6.3.1	Introduction	46
6.1.6.3.2	Simple data types	46

6.1.6.3.3	Enumeration: NotificationType	47
6.1.6.3.4	Enumeration: NodeFunctionality	47
6.1.6.3.5	Enumeration: ChargingCharacteristicsSelectionMode	47
6.1.6.3.6	Enumeration: TriggerType	48
6.1.6.3.7	Enumeration: FinalUnitAction	50
6.1.6.3.8	Enumeration: RedirectAddressType	50
6.1.6.3.9	Enumeration: TriggerCategory	51
6.1.6.3.10	Enumeration: QuotaManagementIndicator	51
6.1.6.3.11	Enumeration: FailureHandling	51
6.1.6.3.12	Enumeration: SessionFailover	52
6.1.6.3.13	Enumeration: 3GPPPSDataOffStatus	52
6.1.6.3.14	Enumeration: ResultCode	53
6.1.6.3.15	Enumeration: PartialRecordMethod	54
6.1.6.3.16	Enumeration: RoamerInOut	54
6.1.6.3.17	Void	54
6.1.6.3.18	Enumeration: SMMessageType	54
6.1.6.3.19	Enumeration: SMPriority	54
6.1.6.3.20	Enumeration: DeliveryReportRequested	54
6.1.6.3.21	Enumeration: InterfaceType	55
6.1.6.3.22	Enumeration: ClassIdentifier	55
6.1.6.3.23	Enumeration: SMAddressType	55
6.1.6.3.24	Enumeration: SMAddresseeType	55
6.1.6.3.25	Enumeration: SMSServiceType	56
6.1.6.3.26	Enumeration: ReplyPathRequested	56
6.1.6.3.27	Enumeration: DnnSelectionMode	56
6.1.6.3.28	Enumeration: EventType	56
6.1.6.4	Data types describing alternative data types or combinations of data types	57
6.1.6.5	Binary data	57
6.1.7	Error handling	57
6.1.7.1	General	57
6.1.7.2	Protocol Errors	57
6.1.7.3	Application errors	57
6.1.8	Feature negotiation	58
7	Bindings of CDR field, Information Element and Resource Attribute	59
7.0	General	59
7.1	Bindings of common CDR field, Information Element and Resource Attribute	60
7.2	Bindings for 5G data connectivity	63
7.3	Bindings for SMS charging	67
8	Security	69
Annex A (normative):	OpenAPI specification	70
A.1	General	70
A.2	Nchf_ConvergedCharging API	70
Annex B (informative):	Change history	85
History		89

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ETSI TS 132 291 V15.8.0 \(2021-01\)](https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01)

<https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01>

1 Scope

The present document specifies the protocol that is used for service based interface. The API definitions and data type definitions are aligned with the common charging architecture specified in TS 32.240 [1]. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240 [1].
- The 5G data connectivity is specified in TS 32.255[30].
- The service, operations and procedures of 5G charging for service based interface is specified in TS 32.290 [58].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 32.240: "Telecommunication management; Charging management; Charging architecture and principles".
ETSI TS 132 291 V15.8.0 (2021-01)
- [2] - [28] Void.
<https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01>
- [29] 3GPP TS 32.274: "Telecommunication management; Charging management; Short Message Service (SMS) charging".
- [30] 3GPP TS 32.255: "Telecommunication management; Charging management; 5G Data connectivity domain charging; stage 2".
- [31] - [49] Void.
- [50] - [57] Void.
- [58] 3GPP TS 32.290: "Telecommunication management; Charging management; 5G system; Services, operations and procedures of charging using Service Based Interface (SBI).
- [59] - [99] Void.
- [100] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [101] - [199] Void
- [200] - [203] Void
- [204] - [298] Void
- [299] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [300] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [301] 3GPP TS 29.594: "5G System; Spending Limit Control Service; Stage 3".
- [302] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[303] - [370]	Void
[371]	3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".
[372] - [389]	Void
[390]	3GPP TS 33.501: "Security architecture and procedures for 5G System".
[391] - [399]	Void
[400]	Void.
[401]	IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".
[402]	IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
[403] - [499]	Void.
[500]	OpenAPI: "OpenAPI 3.0.0 Specification", https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md .
[501] - [599]	Void.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [100].

3.2 Symbols

For the purposes of the present document, the following symbols apply:

Nchf Service based interface exhibited by CHF.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

AF	Application Function
AMF	Access and Mobility Management Function
CHF	Charging Function
CTF	Charging Trigger Function
GPSI	Generic Public Subscription Identifier
GUAMI	Globally Unique AMF Identifier
NF	Network Function
PEI	Permanent Equipment Identifier
QBC	QoS flow Based Charging
QFI	QoS Flow Identifier
SMSF	Short Message Service Function
SMF	Session Management Function
SSC	Session and Service Continuity
SUPI	Subscription Permanent Identifier

4 Overview

4.1 Service architecture

The Converged Charging Service is provided by the CHF to the consumer and shown in the SBI representation model in figure 4. 1.1. The 5G Data connectivity domain charging is depicted in 3GPP TS 32.255 [30].

The ConvergedCharging Service (Nchf_ ConvergedCharging) is part of the Nchf service-based interface exhibited by the Charging Function (CHF) , with SMF and SMSF as the NF Service Consumer.

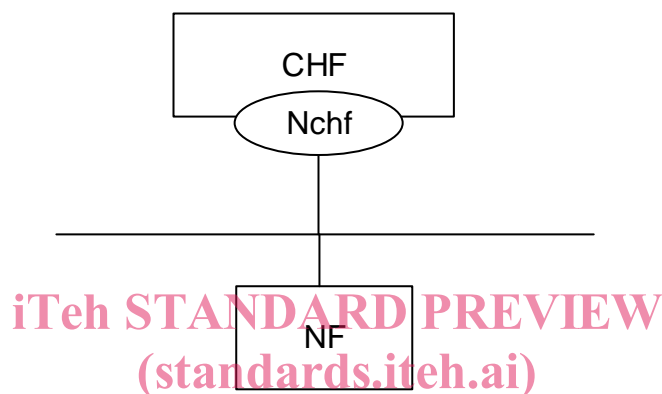


Figure 4. 1.1: Reference Architecture for the Nchf_ ConvergedCharging Service; SBI representation

<https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01>

4.2 Network functions

4.2.1 Charging Function (CHF)

The CHF is responsible for converged online charging and offline charging functionalities. The CHF provides the following:

- Quota;
- Re-authorisation triggers;
- Notification when Charging Domain determines rating conditions is affected or when CHF determines to terminate the charging service;
- Receiving service usage reports from NF Service Consumer; and
- CDRs generation.

4.2.2 NF Service Consumers

The NF Service Consumers shall support:

- Requesting and receiving the quota(s);
- Sending service usage reports; and
- Handling quota re-authorisation or abort notifications.

5 Services offered by the CHF

5.1 Introduction

The following services are provided by the CHF.

Table 5.1-1: NF Services provided by CHF

Service Name	Description	Consumer
Nchf_ConvergedCharging service	This service provides a converged charging for session and event based NF services, with and without quota management, as well as charging information record generation	SMF, SMSF
Nchf_SpendingLimitControl	This service enables the PCF to retrieve policy counter status information per UE from the CHF by subscribing to spending limit reporting (i.e. notifications of policy counter status changes).	PCF

The "Nchf_SpendingLimitControl" service is defined in 29.594 [301].

5.2 Nchf_ConvergedCharging service

5.2.1 Service description

This service provides charging in converged charging scenario by the CHF to the NF service consumer as defined in subclause 6.2 in 3GPP TS 32.290[58].

It includes the following functionalities: [ETSI TS 132 291 V15.8.0 \(2021-01\)](https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01)

- Create resource at service establishment or no existing ChargingData resource, and may allocate quotas based on the request from NF consumer;
- During the service consumption lifecycle, update resource upon receiving the quota usage or service usage report under a number of circumstances and allocate subsequent quotas based on the request from NF consumer;
- Release upon service termination, Unit Count Inactivity Timer expiry or error response; and
- Notify NF Service Consumer of the re-authorisation triggers when CHF determines rating conditions is affected, or the abort triggers when CHF determines to terminate the charging service.
- Charging information record generation

5.2.2 Service operations

5.2.2.1 Introduction

The service operations defined for Nchf_ConvergedCharging are shown in table 5.2.2.1-1.

Table 5.2.2.1-1: Nchf_ConvergedCharging Operations

Service Operation Name	Description	Initiated by	Corresponding Converged charging messages in 3GPP TS 32.290[58]
Nchf_ConvergedCharging_Create	First Interrogation of unit reservation; And/or initial report of service usage.	NF consumer	Charging Data Request/Response [Initial]
	One Time request for the service.		Charging Data Request/Response [Event]
Nchf_ConvergedCharging_Update	Intermediate Interrogation for subsequent units reservation when: <ul style="list-style-type: none"> - the granted service unit for one rating group are spent - expiry of granted service units validity time - service events occur, which might affect the rating of the current service And/or Intermediate report of service usage.	NF consumer	Charging Data Request/Response [Update]
Nchf_ConvergedCharging_Release	Final Interrogation without any unit reservation And/or last report of service usage.	NF consumer	Charging Data Request/Response [Termination]
Nchf_ConvergedCharging_Notify	Request that the user be re-authorized or the charging session context be terminated.	CHF	Charging Notify Request/Response

5.2.2.2 Nchf_ConvergedCharging_Create Operation

The Nchf_ConvergedCharging_Create service operation provides means for NF (CTF) to request quotas for service delivery or initial report of service usage.

The following procedures using the Nchf_ConvergedCharging_Create service operation are supported:

- No existing charging data resource.

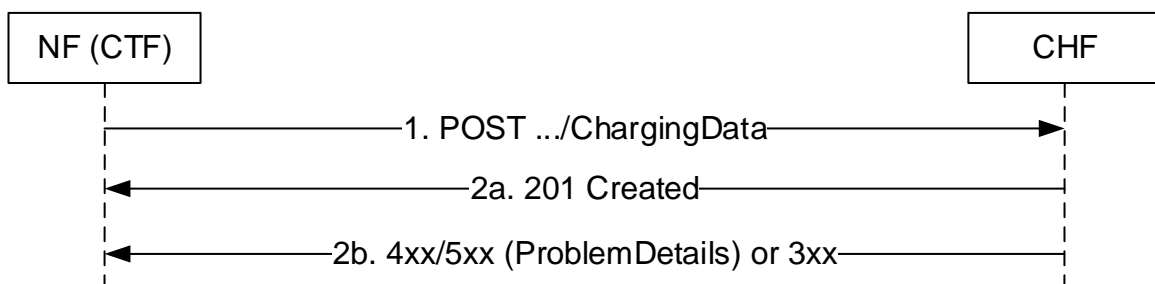


Figure 5.2.2.2-1: Nchf_ConvergedCharging_Create Service Operation

1. NF (CTF) sends a Nchf_ConvergedCharging_Create request to the CHF to create resource for charging. Requested quota and notification URI for Nchf_ConvergedCharging_Notify service operation are included in the request body.
- 2a. At successful operation, "201 Created" response is returned. In the "201 Created" response, the CHF includes a Location header field and the allocated quota in the body. The Location header field shall contain the URI of the created resource. The NF (CTF) shall use the URI received in the Location header in subsequent requests to the CHF for the same PDU session.
- 2b. On failure or redirection, one of the HTTP status code listed in Table 6.1.3.2.3.1-3 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.7.3-1.

5.2.2.3 Nchf_ConvergedCharging_Update Operation

The Nchf_ConvergedCharging_Update service operation provides means for NF (CTF) to update the charging data.

The following procedures using the Nchf_ConvergedCharging_Update service operation are supported:

- the granted service units for one rating group are spent
- expiry of granted service units' validity time
- charging events occur, which might affect the rating of the current service
- receiving re-authorization notification from CHF

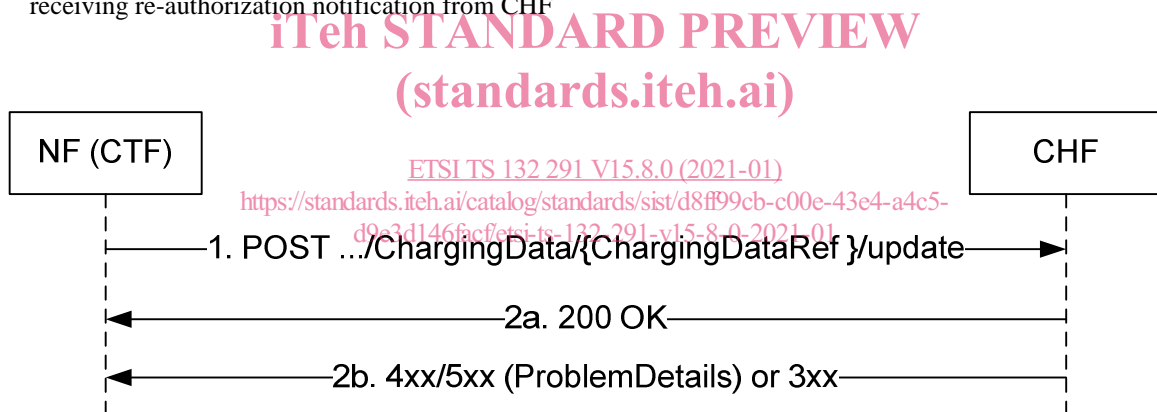


Figure 5.2.2.3-1: Nchf_ConvergedCharging_Update Service Operation

1. NF (CTF) sends a Nchf_ConvergedCharging_Update request to the CHF. The {ChargingDataRef } in the URI identifies the "Charging Data" to be updated. The requested service unit and previous used service unit is included in the request body.
- 2a. At successful operation, "200 OK" response is returned. The CHF includes the granted service unit in the "200 OK" response.
- 2b. On failure or redirection, one of the HTTP status code listed in Table 6.1.3.3.4.2.2-2 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.7.3-1.

5.2.2.4 Nchf_ConvergedCharging_Release Operation

The Nchf_ConvergedCharging_Release service operation provides means for NF (CTF) to terminate charging Session.

The following procedures using the Nchf_ConvergedCharging_Release service operation are supported:

- Expiry of unit count inactivity timer.in NF Consumer

- Abort notification is received from CHF.- Service termination in NF Consumer

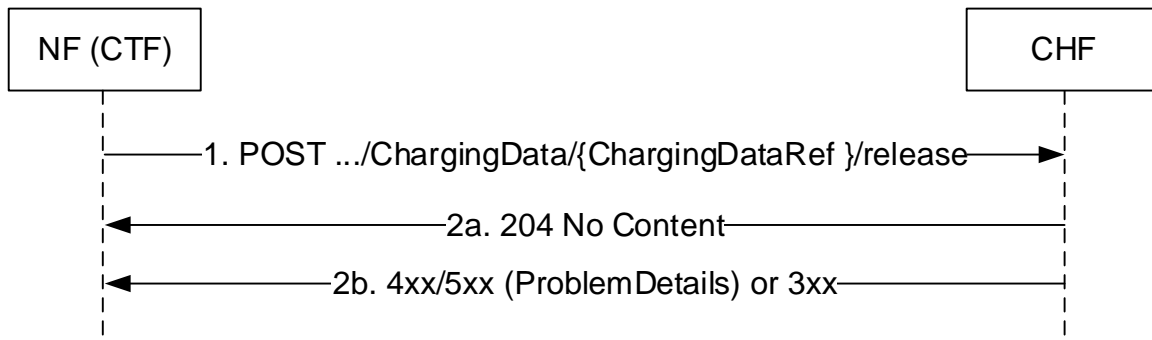


Figure 5.2.2.4-1: Nchf_ConvergedCharging_Release Service Operation

1. NF(CTF) sends a Nchf_ConvergedCharging_Release request to the CHF. The {ChargingDataRef } in the URI identifies the "Charging Data" to be updated and then released. The final used service unit is included in the request body.
- 2a. At successful operation, "204 No Content" response is returned.
- 2b. On failure or redirection, one of the HTTP status code listed in Table 6.1.3.3.4.3.2-2 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.7.3-1.

iTech STANDARD PREVIEW
(standards.iTech.ai)

5.2.2.5 Nchf_ConvergedCharging_Notify Operation

The Nchf_ConvergedCharging_Notify service operation provides means for CHF to notify the NF(CTF) to update or terminate charging of the PDU Session.

[ETSI TS 132 291 V15.8.0 \(2021-01\)](https://standards.iTech.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146fac1/etsi-ts-132-291-v15-8-0-2021-01)

<https://standards.iTech.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146fac1/etsi-ts-132-291-v15-8-0-2021-01>

The following procedures using the Nchf_ConvergedCharging_Notify service operation are supported:

- CHF determines re-authorization.
- CHF determines abort of charging.

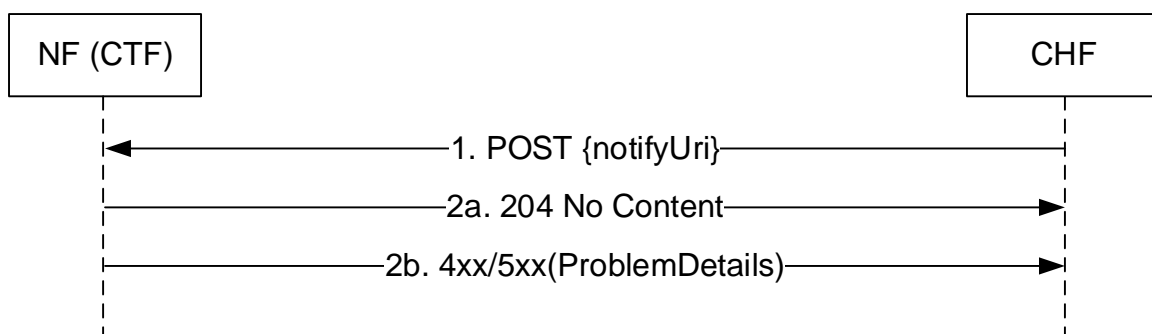


Figure 5.2.2.5-1: Nchf_ConvergedCharging_Notify Service Operation

1. The CHF sends a Nchf_ConvergedCharging_Notify request to the NF (CTF). The {notifyUri} identifies the notification URI which is sent in the Nchf_ConvergedCharging_Create request. The notification type is included in the request body.
- 2a. At successful operation, "204 No Content" response is returned.
- 2b. On failure, one of the HTTP status code listed in Table 6.1.5.2.3.1-2 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.7.3-1.

After successful operation, when the NF Service Consumer receives a Charging Notify Request while not waiting for any Charging Data Response from the CHF, CTF can send a new Charging Data Request.

6 API definitions

6.1 Nchf_ConvergedCharging Service API

6.1.1 Introduction

The APIs defined in this subclause implement the service operation defined in subclause 5.2.2.

The Nchf_ConvergedCharging service shall use the Nchf_ConvergedCharging API.

The request URI used in each HTTP request from the NF service consumer towards the CHF shall have the structure defined in subclause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

{apiRoot}/{apiName}/{apiVersion}/{apiSpecificResourceUriPart}

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].
- The {apiName} shall be "nchf-convergedcharging".
- The {apiVersion} shall be "v2".
- The {apiSpecificResourceUriPart} shall be set as described in subclause 6.1.3.

6.1.2 Usage of HTTP

6.1.2.1 General

<https://standards.iteh.ai/catalog/standards/sist/d8ff99cb-c00e-43e4-a4c5-d9e3d146facf/etsi-ts-132-291-v15-8-0-2021-01>

HTTP/2 as described in IETF RFC 7540 [401] shall be used as specified in subclause 5.2 of 3GPP TS 29.500 [299].

6.1.2.2 HTTP standard headers

6.1.2.2.1 General

See subclause 5.2.2 of 3GPP TS 29.500 [299] for the usage of HTTP standard headers.

HTTP/2, shall be transported as specified in subclause 5.3 of 3GPP TS 29.500 [299].

6.1.2.2.2 Content type

JSON, IETF RFC 8259 [402], shall be used as content type of the HTTP bodies specified in the present specification, as specified in subclause 5.4 of 3GPP TS 29.500 [299].

6.1.2.3 HTTP custom headers

6.1.2.3.1 General

HTTP custom header fields shall be supported as specified in subclause 5.2.3.2 of 3GPP TS 29.500 [299].

In this Release of the specification, no specific custom headers are defined.