



OCPP 2.1 Edition 1
Errata 2025-11

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Version History

Version	Date	Description
2025-11	2025-12-03	Includes errata for Part 1, 2 and 4 of OCPP 2.1 Edition 1.
2025-09	2025-09-22	Includes errata for Part 2 and 4 of OCPP 2.1 Edition 1.
2025-06	2025-07-08	Includes errata for Part 2 and 4 of OCPP 2.1 Edition 1.

Scope

This document contains errata on the OCPP 2.1 documentation. These errata have to be read as an addition to the release of OCPP 2.1 Edition 1.

The errata do not affect any schemas of OCPP messages. Certain errata do contain changes to requirements or even new requirements, but only in cases where a requirement contains an obvious error and would not or could not be implemented literally. New requirements are only added when they were already implicitly there. These changes have been discussed in or were proposed by the Technology Working Group of the Open Charge Alliance.

The appendices of the OCPP specification can be updated without requiring a new OCPP release. This mainly concerns the components and variables of the OCPP device model, which can be extended with new components or variables, as long as they are optional.

Terminology and Conventions

Bold: when needed to clarify differences, bold text might be used.

The errata entries are sorted by page number of the affected section of the specification document. When an errata entry affects multiple parts of the specification, then the various changes are grouped together with subsections referring to the pages affected by those changes.

This is version 2025-11 of the errata. The errata of this version are marked with "(2025-11)" in the section title.

In some cases the issue number by which it was reported, is added in square brackets at the end of the section title, e.g. "[349]". For retrieval of the issue in the issue tracking system prefix the number with "OCPP20M", like "[OCPP20M-349]".

0. Part 0

Currently no new errata for OCPP 2.1 Edition 1 part 0.

1. Part 1

1.1. Page 5 - (2025-11) - 3.1 Components

	Description
Old	Additionally, there can be more than one instance of a component (in the functional dimension), representing multi-occurrence physical or logical components (e.g. power converter modules, fan banks, resident firmware images, etc.). Each distinct <i>component</i> instance is uniquely identified by an (optional) <i>componentInstance</i> addressing key. When no <i>componentInstance</i> is provided, then the default or only instance of a <i>component</i> is referenced.
New	Additionally, there can be more than one instance of a component (in the functional dimension), representing multi-occurrence physical or logical components (e.g. power converter modules, fan banks, resident firmware images, etc.). Each distinct <i>component</i> instance is uniquely identified by an (optional) <i>componentInstance</i> addressing key. It is allowed for a <i>component</i> to exist without an instance and at the same time also exist with one or more instances. When no <i>componentInstance</i> is provided, then the <i>component</i> without an instance is referenced.

1.2. Page 6 - (2025-11) - 3.2 Variables

It has been made explicit in the text that a variable can exist without and with instances.

	Description
Old	To support complex components, there can be more than one instance of any given variable name associated with any component (e.g. power converter modules reporting temperature, current, or voltage at multiple points). Each distinct <i>variable</i> instance is uniquely identified by an (optional) <i>variableInstance</i> addressing key string value. When no <i>variableInstance</i> is provided, then the default or only instance of a <i>variable</i> is referenced.
New	To support complex components, there can be more than one instance of any given variable name associated with any component (e.g. power converter modules reporting temperature, current, or voltage at multiple points). Each distinct <i>variable</i> instance is uniquely identified by an (optional) <i>variableInstance</i> addressing key string value. It is allowed for a <i>variable</i> to exist without an instance and at same time also with one or more instances. When no <i>variableInstance</i> is provided, then the <i>variable</i> without an instance is referenced.

2. Part 2

2.1. Page 24/29 - (2025-11) - Slight deviation in A00 requirement phrasing which is aligned

There are multiple requirements that describe the validation of the `commonName` of the server certificate. These should have been equal to each other, but there is a slight deviation in phrasing, which should be aligned. The intention was that the `commonName` matches the FQDN of the server, this has been confirmed by the TWG.

Changed A00 requirements:

	ID	Precondition	Requirement definition
Old text	A00.FR.309		The Charging Station SHALL verify that the <code>commonName</code> includes the CSMS's FQDN.
New text	A00.FR.309		The Charging Station SHALL verify that the <code>commonName</code> matches the CSMS's FQDN.
Old text	A00.FR.510		For the CSMS certificate, the subject field SHALL contain the FQDN of the endpoint of the server in the CN (<code>commonName</code>) RDN.
New text	A00.FR.510		For the CSMS certificate, the subject field SHALL match the FQDN of the endpoint of the server in the CN (<code>commonName</code>) RDN.

2.2. Page 38 - (2025-11) - A02.FR.19 - Updated precondition

Precondition formulated differently with the corresponding variable name.

	ID	Precondition	Requirement definition	Note
Old	A02.FR.19	A02.FR.18 AND The maximum number of increments is reached	The Charging Station SHALL stop resending the <code>SignCertificateRequest</code> , until it is requested by the CSMS via a <code>TriggerMessageRequest</code> for <code>SignChargingStationCertificate</code> , <code>SignV2GCertificate</code> , <code>SignV2G20Certificate</code> or <code>SignCombinedCertificate</code> .	
New	A02.FR.19	A02.FR.18 AND + CertSigningRepeatTimes is reached	The Charging Station SHALL stop resending the <code>SignCertificateRequest</code> , until it is requested by the CSMS via a <code>TriggerMessageRequest</code> for <code>SignChargingStationCertificate</code> , <code>SignV2GCertificate</code> , <code>SignV2G20Certificate</code> or <code>SignCombinedCertificate</code> . (Same as A02.FR.19)	

2.3. Page 43 - (2025-11) - A03.FR.19 - Updated precondition

Precondition formulated differently with the corresponding variable name.

	ID	Precondition	Requirement definition	Note
Old	A03.FR.19	A03.FR.18 AND The maximum number of increments is reached	The Charging Station SHALL stop resending the <code>SignCertificateRequest</code> , until it is requested by the CSMS via a <code>TriggerMessageRequest</code> for <code>SignChargingStationCertificate</code> , <code>SignV2GCertificate</code> , <code>SignV2G20Certificate</code> or <code>SignCombinedCertificate</code> .	

	ID	Precondition	Requirement definition	Note
New	A03.FR.19	A03.FR.18 AND + CertSigningRepeatTimes is reached	The Charging Station SHALL stop resending the SignCertificateRequest , until it is requested by the CSMS via a TriggerMessageRequest for SignChargingStationCertificate, SignV2GCertificate, SignV2G20Certificate or SignCombinedCertificate. (Same as A02.FR.19)	

2.4. Page 65 - (2025-09) - B07.FR.15 has been deleted [1007]

B07.FR.15 was added since 2.1, but it is wrong. It speaks about ReadOnly variables, but this must be WriteOnly. It is also not needed, because in 2.0.1 Errata 2025-02 requirement B07.FR.03 was already updated to exclude WriteOnly variables.

Deleted requirement

ID	Precondition	Requirement definition	Note
B07.FR.15	When the Charging Station is sending the requested information via one or more NotifyReportRequest messages to the CSMS	The Charging Station SHALL omit the <i>value</i> of readonly variables	

2.5. Page 70 - (2025-11) - B09.FR.02/04/05 - Added optional reasonCode [1083]

A mention of adding an optional *reasonCode* when a SetNetworkProfileRequest is rejected, has been added. This is a minor modification with respect to the errata version (2025-09). The reasonCode to use is no longer part of the requirement, but a recommendation in the note.

Changed requirements

ID	Precondition	Requirement definition	Note
B09.FR.02	On receipt of the SetNetworkProfileRequest	The Charging Station SHALL validate the content. If the content is invalid, the Charging Station SHALL respond by sending a SetNetworkProfileResponse message, with status <i>Rejected</i> and an optional statusInfo.reasonCode .	Recommended <i>reasonCode</i> to use is "InvalidNetworkConf". The field <i>additionalInfo</i> is recommended to be used to convey which configuration parameter is invalid and why. Matches B09.FR.34 for NetworkConfiguration.
B09.FR.04	The variable AllowSecurityProfileDowngrade is not implemented or implemented and set to false AND the Charging Station receives a SetNetworkProfileRequest AND the NetworkConnectionProfile contains a lower securityProfile than the currently active security profile	The Charging Station SHALL respond by sending a SetNetworkProfileResponse message, with status <i>Rejected</i> and optional statusInfo.reasonCode .	Recommended <i>reasonCode</i> to use is "NoSecurityDowngrade". The field <i>additionalInfo</i> can be used to provide more details. Matches B09.FR.35 for NetworkConfiguration.
B09.FR.05	When the value of <i>configurationSlot</i> in SetNetworkProfileRequest does not match an entry in <i>valuesList</i> of NetworkConfigurationPriority	The Charging Station SHALL respond by sending a SetNetworkProfileResponse message with status <i>Rejected</i> with optional statusInfo.reasonCode .	Recommended <i>reasonCode</i> to use is "InvalidConfSlot". The field <i>additionalInfo</i> can be used to provide more details.

2.6. Page 71 - (2025-11) - B09.15/16/18 - New requirements

Requirements were added about dealing with NetworkConfiguration variables and Identity/BasicAuthPassword.

New requirements

ID	Precondition	Requirement definition	Note
B09.FR.15 (2.1)	If Charging Station does NOT support setting network configuration via configuration variables in NetworkConfiguration	Charging Station SHALL report these variables with <i>mutability</i> <code>ReadOnly</code> (or omit the variable <i>value</i> when the variable is <code>WriteOnly</code> , in case of <code>BasicAuthPassword</code>).	
B09.FR.16 (2.1)	If Identity and/or <code>BasicAuthPassword</code> are not set for a specific NetworkConnectionProfile or NetworkConfiguration and this profile/configuration is used for establishing a connection	The Charging Station SHALL use the values from the deprecated <code>SecurityCtrlr.Identity</code> and <code>SecurityCtrlr.BasisAuthPassword</code> for basic authentication.	Common requirement to both <code>SetNetworkProfileRequest</code> and <code>NetworkConfiguration</code> .
B09.FR.18 (2.1)	If an Identity and/or <code>BasicAuthPassword</code> are set for a specific NetworkConnectionProfile or NetworkConfiguration and this profile/configuration is used for establishing a connection	The Charging Station SHALL use the values of Identity and/or <code>BasicAuthPassword</code> of this NetworkConnectionProfile or NetworkConfiguration for basic authentication.	Common requirement to both <code>SetNetworkProfileRequest</code> and <code>NetworkConfiguration</code> .

2.7. Page 71 - (2025-09) - B09.FR.22/26/27/28 - Improved definitions

The original requirements have been rephrased so that they apply to network configurations from `SetNetworkProfileRequests` as well as instances of `NetworkConfiguration`.

Changed requirements

	ID	Precondition	Requirement definition	Note
Old	B09.FR.22 (2.1)	B09.FR.10 AND On receipt of a SetVariablesRequest containing any <code>NetworkConfiguration</code> component variable AND the component instance matches any of the members in the currently configured NetworkConfigurationPriority	The Charging Station SHALL respond by sending a SetVariablesResponse with the corresponding <i>setVariableResult</i> containing status <code>Rejected</code>	It is not allowed to update any <code>NetworkConfiguration</code> instance that can potentially be used during a reconnection attempt.
New	B09.FR.22 (2.1)	B09.FR.10 AND On receipt of a SetVariablesRequest containing any <code>NetworkConfiguration</code> component variable AND the component instance matches any of the members in the currently configured NetworkConfigurationPriority	The Charging Station SHALL respond by sending a SetVariablesResponse with the corresponding <i>setVariableResult</i> with <code>attributeStatus</code> <code>Rejected</code> and <code>attributeStatusInfo.reasonCode</code> = <code>"PriorityNetworkConf"</code>	It is not allowed to update any <code>NetworkConfiguration</code> instance that can potentially be used during a reconnection attempt.
Old	B09.FR.26 (2.1)	B09.FR.10 AND On receipt of a SetVariablesRequest containing the variable <code>SecurityCtrlr.Identity</code> AND the mutability of this variable is <code>read/write</code>	The Charging Station SHALL also set the variable of the same name in all <code>NetworkConfiguration</code> component instances to the same value (if valid), including component instances which are contained in the currently configured NetworkConfigurationPriority . This is for backwards compatibility only. CSMS SHOULD set the <code>NetworkConfiguration</code> component variable instead.	

	ID	Precondition	Requirement definition	Note
New	B09.FR.26 (2.1)	When a SetVariablesRequest changes the variable of SecurityCtrlr.Identity	The Charging Station SHALL clear the Identity from the active NetworkConnectionProfile and NetworkConfiguration (when it is writable)	The SecurityCtrlr.Identity is deprecated, and remains for backwards compatibility only. This assures that the Charging Station will use the value from the SecurityCtrlr.Identity if it is set by CSMS (See B09.FR.16).
Old	B09.FR.27 (2.1)	B09.FR.10 AND On receipt of a SetVariablesRequest containing the variable SecurityCtrlr.BasicAuthPassword	The Charging Station SHALL also set the variable of the same name in all NetworkConfiguration component instances to the same value (if valid), including component instances which are contained in the currently configured NetworkConfigurationPriority . This is for backwards compatibility only. CSMS SHOULD set the NetworkConfiguration component variable instead.	
New	B09.FR.27 (2.1)	When a SetVariablesRequest changes the variable SecurityCtrlr.BasicAuthPassword	The Charging Station SHALL clear the BasicAuthPassword from the active NetworkConnectionProfile and NetworkConfiguration (when it is writable)	The SecurityCtrlr.BasicAuthPassword is deprecated, and remains for backwards compatibility only. This assures that the Charging Station will use the value from the SecurityCtrlr.BasicAuthPassword if it is set by CSMS (See B09.FR.16).
Old	B09.FR.28 (2.1)	B09.FR.10 AND When Charging Station activates a new network configuration	Charging Station SHALL ensure that the values of SecurityCtrlr.Identity and SecurityCtrlr.BasicAuthPassword match the corresponding variables of NetworkConfiguration.Identity[<i>configurationSlot</i>] and NetworkConfiguration.BasicAuthPassword[<i>configurationSlot</i>] for the currently active <i>configurationSlot</i> .	
New	B09.FR.28 (2.1)	If the NetworkConnectionProfile or NetworkConfiguration used for the currently active connection includes values for the variables Identity and/or BasicAuthPassword	The Charging Station SHALL set the values of SecurityCtrlr.Identity and/or SecurityCtrlr.BasicAuthPassword accordingly. ATTENTION: This has been superseded by 2025-11 errata.	

2.8. Page 71 - (2025-11) - B09.FR.28 - Improved definition for SecurityCtrlr.BasicAuthPassword [1083]

When a network configuration is activated that contains a value for Identity, then this is the value that must also be returned when a GetVariablesRequest is done for SecurityCtrlr.Identity. The SecurityCtrlr.Identity and BasicAuthPassword field must not be **set** with the new value, because that would trigger requirements B09.FR.26/27 to clear the values in NetworkConfiguration.

The new definition requires a SetVariablesRequest of SecurityCtrlr.Identity to return the value from the NetworkConnectionProfile/NetworkConfiguration. There is no need to require this for SecurityCtrlr.BasicAuthPassword, because that value (being a password) will never be returned in a GetVariablesResponse.

Changed requirement

	ID	Precondition	Requirement definition	Note
Old	B09.FR.28 (2.1)	If the NetworkConnectionProfile or NetworkConfiguration used for the currently active connection includes values for the variables Identity and/or BasicAuthPassword	The Charging Station SHALL set the values of SecurityCtrlr.Identity and/or SecurityCtrlr.BasicAuthPassword accordingly.	
New	B09.FR.28 (2.1)	If the NetworkConnectionProfile or NetworkConfiguration used for the currently active connection includes a value for the variable Identity and/or BasicAuthPassword AND A GetVariablesRequest is received for SecurityCtrlr.Identity	The Charging Station SHALL return the value of Identity from the currently active connection.	

2.9. Page 71 - (2025-09) - B09.FR.31/32 - Improved definition

The original requirements has been rephrased so that it applies to a network configuration from either SetNetworkProfileRequests or from an instance of NetworkConfiguration.

Changed requirements

	ID	Precondition	Requirement definition	Note
Old	B09.FR.31	The variable AllowSecurityProfileDowngrade is implemented and set to true AND The currently active 'SecurityProfile' is 3 AND The Charging Station receives a SetNetworkProfileRequest AND the NetworkConnectionProfile contains a securityProfile with a value of 2.	The Charging Station SHALL respond with SetVariablesResponse (Accepted)	
New	B09.FR.31	The variable AllowSecurityProfileDowngrade is implemented and set to true AND the currently active 'SecurityProfile' is higher than 1 AND the Charging Station receives a SetNetworkProfileRequest with a NetworkConnectionProfile with securityProfile = 1	The Charging Station SHALL respond with SetNetworkProfileResponse with status Rejected and optional statusInfo.reasonCode = "NoSecurityDowngrade"	
Old	B09.FR.32	The variable AllowSecurityProfileDowngrade is implemented and set to true AND The currently active 'SecurityProfile' is higher than 1 AND The Charging Station receives a SetNetworkProfileRequest AND the NetworkConnectionProfile contains a securityProfile with a value of 1.	The Charging Station SHALL respond with SetVariablesResponse (Rejected)	

	ID	Precondition	Requirement definition	Note
New	B09.FR.32 (2.1)	The variable <code>AllowSecurityProfileDowngrade</code> is implemented and set to true AND the currently active 'SecurityProfile' is higher than 1 AND the Charging Station receives a <code>SetVariablesRequest</code> for <code>NetworkConfiguration.SecurityProfile</code> with <code>attributeValue = 1</code> .	The Charging Station SHALL respond with <code>SetVariablesResponse</code> with the corresponding <code>setVariableResult</code> with <code>attributeStatus Rejected</code> and <code>attributeStatusInfo.reasonCode = "NoSecurityDowngrade"</code>	

2.10. Page 71 - (2025-09) - B09.FR.33/34/35 - Added requirements to validate NetworkConfiguration

The same validations that are performed when activating a network connection profile from `SetNetworkProfileRequest` also need to be performed when activating an instance of `NetworkConfiguration`.

New requirements

ID	Precondition	Requirement definition	Note
B09.FR.33 (2.1)	B09.FR.10 AND On receipt of a <code>SetVariablesRequest</code> containing the variable <code>NetworkConfigurationPriority</code> AND the new value adds configuration slot(s) to the current value	The Charging Station SHALL validate the <code>NetworkConfiguration</code> component for instances equal to the added configuration slot(s), and if successful, the Charging Station SHALL respond by sending a <code>SetVariablesResponse</code> message, with status <i>Accepted</i>	
B09.FR.034 (2.1)	B09.FR.10 AND On receipt of a <code>SetVariablesRequest</code> containing the variable <code>NetworkConfigurationPriority</code> AND the new value adds configuration slot(s) to the current value	The Charging Station SHALL validate the <code>NetworkConfiguration</code> component for instances equal to the added configuration slot(s), and if not successful the Charging Station SHALL respond by sending a <code>SetVariablesResponse</code> message, with the corresponding <code>setVariableResult</code> with <code>attributeStatus Rejected</code> and <code>attributeStatusInfo.reasonCode = "InvalidNetworkConf"</code>	The field <code>additionalInfo</code> can be used to provide details about which <code>NetworkConfiguration</code> variable is invalid. Matches B09.FR.02 for <code>SetNetworkProfileRequest</code> .
B09.FR.35 (2.1)	The variable <code>AllowSecurityProfileDowngrade</code> is not implemented or set to false AND The Charging Station receives a <code>SetVariablesRequest</code> for <code>NetworkConfiguration.SecurityProfile</code> with an <code>attributeValue</code> that has a lower value than the currently active 'SecurityProfile'	The Charging Station SHALL respond with <code>SetVariablesResponse</code> with the corresponding <code>setVariableResult</code> with <code>attributeStatus Rejected</code> and <code>attributeStatusInfo.reasonCode = "NoSecurityDowngrade"</code>	Matches B09.FR.04 for <code>SetNetworkProfileRequest</code> .

2.11. Page 74 - (2025-11) - B10.FR.02 - Added optional reasonCode

For consistency with B09 the optional `reasonCode` has been added to B09.FR.02.

Changed requirement

	ID	Precondition	Requirement definition	Note
Old	B10.FR.02	On receipt of a <code>SetVariablesRequest</code> , containing Configuration Variable <code>NetworkConfigurationPriority</code> AND any of the <code>NetworkProfile</code> slots in the message does not contain a valid configuration	The Charging Station SHALL send <code>SetVariablesResponse</code> with status <i>Rejected</i> .	The optional element <code>statusInfo</code> can be used to provide more information.

	ID	Precondition	Requirement definition	Note
New	B10.FR.02	On receipt of a SetVariablesRequest , containing Configuration Variable NetworkConfigurationPriority AND any of the NetworkProfile slots in the message does not contain a valid configuration	The Charging Station SHALL send SetVariablesResponse with status <i>Rejected</i> and an optional statusInfo.reasonCode .	Recommended reasonCode to use is "InvalidNetworkConf". The field additionalInfo is recommended to be used to convey which configuration slot and which configuration parameter is invalid and why.

2.12. Page 74 - (2025-06) - B10.FR.03/04/10 - Migrate to new NetworkConnectionProfile

Changed requirements

	ID	Precondition	Requirement definition	Note
Old	B10.FR.03	B10.FR.04 AND When connecting fails	The Charging Station SHALL make the number of attempts as configured in NetworkProfileConnectionAttempts per entry of NetworkConfigurationPriority .	
New	B10.FR.03	After a reboot OR When connection to CSMS is lost	The Charging Station SHALL make the number of attempts as configured in NetworkProfileConnectionAttempts per entry of NetworkConfigurationPriority .	
Old	B10.FR.04	B10.FR.01 OR B09.FR.01 AND After a reboot	The Charging Station SHALL begin connecting to the first entry of NetworkConfigurationPriority	Same as A05.FR.05
New	B10.FR.04	(B10.FR.01 OR B09.FR.01) AND After a reboot	The Charging Station SHALL begin connecting to the first entry of NetworkConfigurationPriority	Same as A05.FR.05

The following requirement is added to make explicit that a BootNotification must be sent, or else Charging Station might connect to a new CSMS without it, in which case CSMS would respond with a CALLERROR(SecurityEvent).

New requirement

ID	Precondition	Requirement definition	Note
B10.FR.10 (new)	B10.FR.03 AND Charging Station successfully connected after having switched to a different NetworkConnectionProfile	Charging Station SHALL send a BootNotificationRequest to CSMS to reestablish its registration status, even if it has not rebooted since last being accepted by any CSMS.	Charging Station does not need to check whether the CSMS it connected to, is actually one that it has not connected to before.

2.13. Page 75 - (2025-06) - B11 - Clarify meaning of OnIdle for Reset

The "idle state" is defined in Terminology as: "In both use cases and sequence diagrams, Idle status is referred as the state in which a Charging Station is not performing any use case related tasks. Condition during which the equipment can promptly provide a primary function but is not doing so." This is a broader concept, than having an active transaction. A remark is added to the use case to explain that.

The sentence about persistent states and ResetResponse did not belong in Remarks section.

No.	Type	Description
1	Name	Reset - Without Ongoing Transaction
...	...	

No.	Type	Description
8	Remark(s)	<p>Persistent states: for example, EVSE set to <i>Unavailable</i> SHALL persist.</p> <p>+ [line through]#The Charging Station responds with <i>ResetResponse</i>.</p> <p><i>OnIdle</i> refers to the "idle state" of a charging station. This is when the Charging Station is not performing any use case related tasks that might interfere with a reset process. The most obvious case is being involved in an active transaction, but there are other conditions when the Charging Station is not idle, for example, when a firmware update process is ongoing, a log file is uploaded to CSMS, a reservation is pending or a cable is still locked in the Charging Station.</p>

2.14. Page 119 - (2025-11) - C15 - Offline Authorization of unknown Id - Scenario description

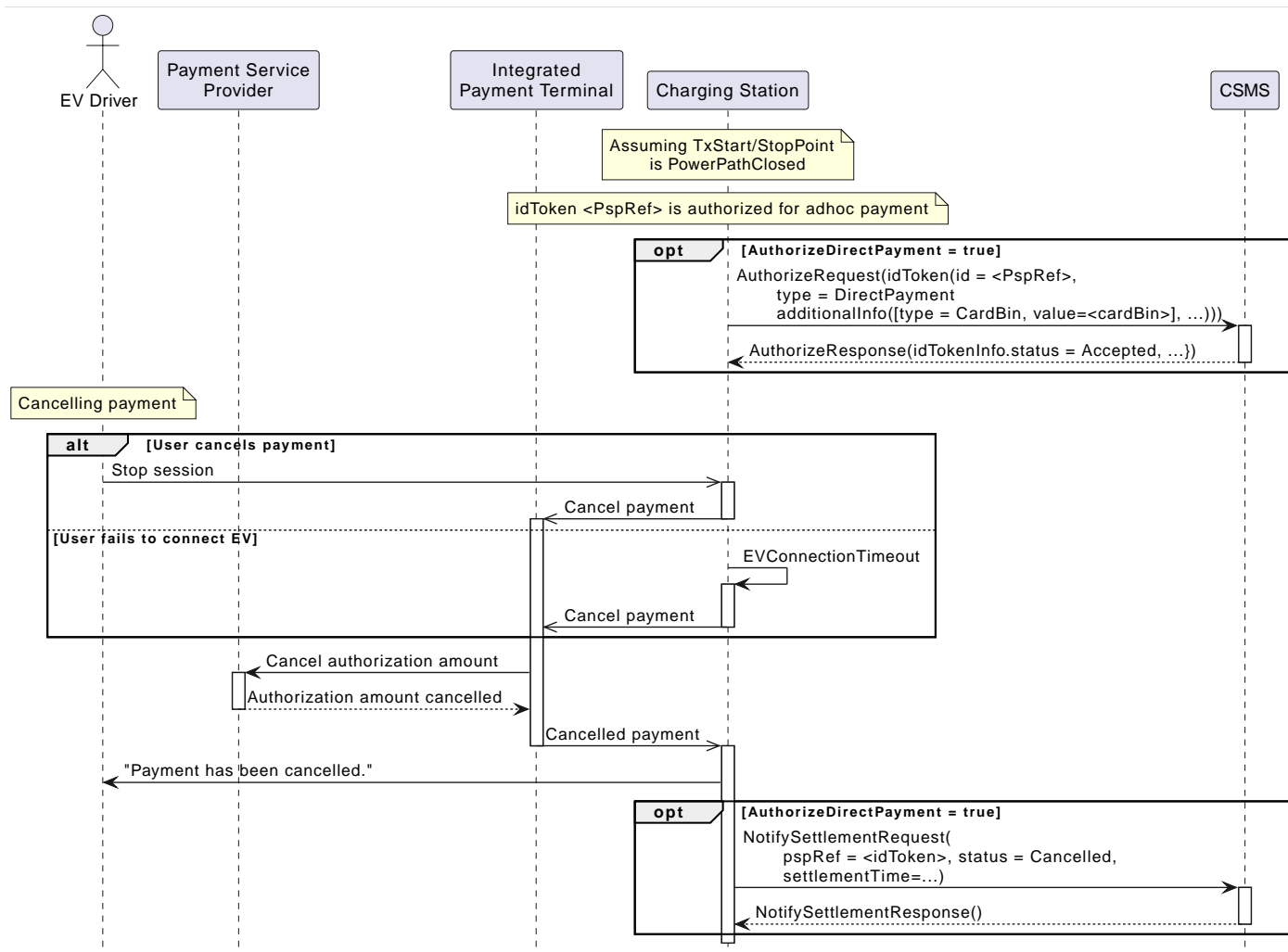
In the Scenario Description, points 2 and 3 have been reversed, placing the Local list above the cache in terms of precedence.

2.14.1. C15 - Offline Authorization of unknown Id

No.	Type	Description
1	Name	Offline Authorization of unknown Id
2	ID	C15
	Parent use case	C12 - Start Transaction - Cached Id
3	Objective(s)	To allow automatic authorization of any "unknown" identifiers that cannot be explicitly authorized by Authorization Cache entries.
4	Description	This use case describes the scenario of presented "unknown" identifiers, other than are present in an Authorization Cache or Local Cache entry using OfflineTxForUnknownIdEnabled .
	Actors	Charging Station, EV Driver
	Scenario description	<ol style="list-style-type: none"> 1. The EV Driver wants to start charging the EV and presents the IdToken. 2. The Charging Station checks the Local Authorization List, the IdToken is not present in the Local Authorization List. 3. The Charging Station checks the Authorization Cache, the IdToken is not present in the Authorization Cache. 4. The Charging Station accepts the unknown IdToken if OfflineTxForUnknownIdEnabled is set <i>True</i> 5. The Charging Station rejects the unknown IdToken if OfflineTxForUnknownIdEnabled is set <i>False</i>

2.15. Page 133 - (2025-11) - Diagram figure 40 - added opt boxes

The scenario in Figure 40 has additional behavior if *AuthorizeDirectPayment* is true. This has been made explicit in the figure.



2.16. Page 189 - (2025-06) - E06.FR.05 for DataSigned as TxStopPoint is invalid

DataSigned cannot be used as a TxStopPoint. This requirement is therefore invalid and confusing when present.

Deleted requirement

	ID	Precondition	Requirement definition
Delete	E06.FR.05	TxStopPoint contains: DataSigned AND Charging Station can no longer retrieve signed meter values.	The Charging Station SHALL stop the transaction and send a TransactionEventRequest (eventType = Ended) to the CSMS.

2.17. Page 135 - (2025-11) - C20.FR.01/03 - Updated preconditions [1003]

The prerequisite of the use case is that no cost has yet been incurred. This is now added to the precondition of C20.FR.01. C20.FR.03 is specific to central cost calculation where CSMS calculates the costs. A new C20.FR.06 has been added for the local cost calculation variant.

	ID	Precondition	Requirements	Note
Old	C20.FR.01	When EV Driver stops the session at Charging Station after a transaction has been started	Charging Station SHALL send a [transactioneventrequest] with eventType = Ended and triggerReason = StopAuthorized and any other relevant fields.	

	ID	Precondition	Requirements	Note
New	C20.FR.01	When EV Driver stops the session at Charging Station after a transaction has been started and no cost has been incurred	Charging Station SHALL send a [transactioneventrequest] with <i>eventType</i> = Ended and <i>triggerReason</i> = StopAuthorized and any other relevant fields.	
Old	C20.FR.03	C20.FR.01 OR C20.FR.02	CSMS SHALL respond with a [transactioneventresponse] with <i>totalCost</i> = 0	Prerequisite of this use case is that no costs have been incurred.
New	C20.FR.03	(C20.FR.01 OR C20.FR.02) AND central cost calculation is used	CSMS SHALL respond with a [transactioneventresponse] with <i>totalCost</i> = 0	Prerequisite of this use case is that no costs have been incurred.
Old	C20.FR.04	C20.FR.03	Charging Station SHALL instruct payment terminal to release the authorization amount and cancel the payment.	
New	C20.FR.04	C20.FR.01 OR C20.FR.02	Charging Station SHALL instruct payment terminal to release the authorization amount and cancel the payment.	

New requirement

ID	Precondition	Requirements	Note
C20.FR.06	(C20.FR.01 OR C20.FR.02) AND local cost calculation is used	Charging Station SHALL include in [transactioneventrequest] with <i>eventType</i> = Ended a <i>costDetails</i> with <i>totalCost</i> = 0 and <i>totalUsage</i> = 0	

2.18. Page 145 - (2025-11) - C24.FR.03 aligned with E16.FR.04 [1109]

Requirement C24.FR.03 was not explicit about using a *triggerReason* = LimitSet. It has been made equal to E16.FR.03, which describes how to deal with a transaction limit set by CSMS.

	ID	Precondition	Requirements	Note
Old	C24.FR.03	C24.FR.02	Charging Station SHALL include this limit in the field <i>transactionInfo.transactionLimit</i> (once) in the next TransactionEventRequest	
New	C24.FR.03	C24.FR.02	Charging Station SHALL send a TransactionEventRequest with <i>triggerReason</i> = LimitSet and include this limit once in the field <i>transactionInfo.transactionLimit</i> .	Same as E16.FR.03

2.19. Page 181 - (2025-11) - E04.FR.07/08 removed

Requirements E04.FR.07/08 are already covered by E12.FR.04/05, which adds some limitations. They are therefore removed from E04 to avoid inconsistencies.

Deleted requirements

ID	Precondition	Requirement definition	Note
E04.FR.07	E04.FR.06 AND Offline AND The Charging Station is running low on memory	The Charging Station MAY drop TransactionEventRequest(eventType = Updated) messages.	Same as J02.FR.12

ID	Precondition	Requirement definition	Note
E04.FR.08	E04.FR.07	When dropping TransactionEventRequest (eventType = Updated) messages, the Charging Station SHALL drop intermediate messages first (2nd message, 4th message, 6th message etc.), not start dropping messages from the start or stop adding messages to the queue.	Same as J02.FR.13

2.20. Page 192 - (2025-11) - E07.FR.01 - Added note referring to C09

The process of stopping with an idToken with the same groupId is explained in more detail in use case C09. A reference to this is added to the note.

Changed requirement

	ID	Precondition	Requirement definition	Note
Old	E07.FR.01	When an idToken is presented during a transaction that has been authorized AND (a) the presented idToken is the same as the idToken that started the authorization OR (b) when the presented idToken is in the Local Authorization List or Authorization Cache AND is valid AND has the same GroupIdToken as the IdToken that started the authorization.	The Charging Station SHALL end the authorization of the transaction, without first sending an AuthorizeRequest	The idToken that started the authorization can always be used to end the authorization. Ending authorization will end delivery of energy. Depending on the TxStopPoint ending of the authorization may also end the transaction. (See C01.FR.03)
New	E07.FR.01	When an idToken is presented during a transaction that has been authorized AND (a) the presented idToken is the same as the idToken that started the authorization OR (b) when the presented idToken is in the Local Authorization List or Authorization Cache AND is valid AND has the same GroupIdToken as the IdToken that started the authorization.	The Charging Station SHALL end the authorization of the transaction, without first sending an AuthorizeRequest	The idToken that started the authorization can always be used to end the authorization. Ending authorization will end delivery of energy. Depending on the TxStopPoint ending of the authorization may also end the transaction. Read use case C09 (C09.FR.05/07) for detailed description of stopping based on groupId.

2.21. Page 193 - (2025-09) - E07.FR.07 - Improved precondition

The precondition of E07.FR.07 was written as text, but it is more precise to refer another requirement.

	ID	Precondition	Requirement definition	Note
Old	E07.FR.07	As part of the normal transaction termination.	The Charging Station SHALL unlock the cable (if not permanently attached).	
New	E07.FR.07	E07.FR.02	The Charging Station SHALL unlock the cable (if not permanently attached).	

2.22. Page 202 - (2025-11) - E10.FR.01/02 improved precondition [806]

Requirements for E10 all have the prerequisite that configuration variable `StopTxOnEVSideDisconnect = false`, but this was not made explicit. The combination of `StopTxOnEVSideDisconnect = false` (transaction remains authorized) and `UnlockOnEVSideDisconnect = true` (charging station side is unlocked when EV side is unlocked) is not specified. This is made

explicit in remark of use case.

2.22.1. E10 - When cable disconnected on EV-side: Suspend Transaction

No.	Type	Description
1	Name	When cable disconnected on EV-side: Suspend Transaction
2	ID	E10
...
8	Remark(s)	... The combination of <code>StopTxOnEVSideDisconnect = false</code> (transaction remains authorized) together with <code>UnlockOnEVSideDisconnect = true</code> (charging station side is unlocked when EV side is unlocked) is not specified and behavior is undefined.

Updated requirements

Old	ID	Precondition	Requirement definition	Note
Old	E10.FR.01	Cable not permanently attached	The Connector SHALL remain locked at the Charging Station until the EV Driver presents the IdToken.	
New	E10.FR.01	If <code>StopTxOnEVSideDisconnect = false</code> AND Cable not permanently attached	The Connector SHALL remain locked at the Charging Station until the EV Driver presents the IdToken.	
Old	E10.FR.02	Cable permanently attached AND Cable not plugged in within timeout	The Charging Station SHALL deauthorize the transaction.	
New	E10.FR.02	If <code>StopTxOnEVSideDisconnect = false</code> AND Cable permanently attached AND Cable not plugged in within timeout	The Charging Station SHALL deauthorize the transaction.	

2.23. Page 211 - (2025-11) - Updated Header - Section 2.2

Header is explicitly for use case: E15 - End of charging process. Here, the reference to ISO 15118 is already made, mentioning it in the section header is not necessary.

2.2. Interrupting and Stopping ~~ISO 15118~~ Charging

2.24. Page 219 - (2025-06) - E17.FR.01 Clarification of transaction state to store

Minor improvement of definition to clarify that state information needed to resume a transaction must be persisted.

	ID	Precondition	Requirement definition	Note
Old	E17.FR.01	If <code>[configkey-tx-resumption-timeout] > 0</code>	Charging Station SHALL store transaction state in persistent memory	This is needed in order to resume transactions after a power loss.
New	E17.FR.01	If <code>[configkey-tx-resumption-timeout] > 0</code>	Charging Station SHALL store transaction state <code>that is needed to resume transactions</code> in persistent memory	This includes at least, but is not limited to, the <code>seqNo</code> , <code>idToken</code> , <code>evse</code> and <code>transactionInfo</code> data of all active transactions. This ensures transactions can be restored after a power loss.

2.25. Page 179 - (2025-11) - F01.FR.01/02 - No authorization for type = Central

According to C03.FR.01 no AuthorizeRequest shall be sent for idToken.type = Central. This was also the intention of F01.FR.01, because it states "... as if in response to a local action ...". That can never apply to a token type Central, but that is not immediately clear. The preconditions have therefore been made explicit for this. The same also applies to type = NoAuthorization.

	ID	Precondition	Requirement definition	Note
Old	F01.FR.01	If the value of <code>AuthorizeRemoteStart</code> = true AND Charging Station receives a <code>RequestStartTransactionRequest</code>	The Charging Station SHALL behave as if in response to a local action at the Charging Station to allow energy transfer after successful authorization of the IdToken given in <code>RequestStartTransactionRequest</code> message.	Charging Station will first respond to the request and then try to authorize the IdToken, using the Local Authorization List, Authorization Cache and/or an <code>AuthorizeRequest</code> . Energy transfer is only allowed after authorization was obtained.
New	F01.FR.01	Charging Station receives a <code>RequestStartTransactionRequest</code> AND (<code>AuthorizeRemoteStart</code> = true AND <code>idToken.type</code> is NOT Central or NoAuthorization)	The Charging Station SHALL behave as if in response to a local action at the Charging Station to allow energy transfer after successful authorization of the IdToken given in <code>RequestStartTransactionRequest</code> message.	Charging Station will first respond to the request and then try to authorize the IdToken, using the Local Authorization List, Authorization Cache and/or an <code>AuthorizeRequest</code> . Energy transfer is only allowed after authorization was obtained.
Old	F01.FR.02	If the value of <code>AuthorizeRemoteStart</code> = false AND Charging Station receives a <code>RequestStartTransactionRequest</code>	The Charging Station SHALL allow energy transfer for the IdToken given in <code>RequestStartTransactionRequest</code> message without checking authorization.	Charging Station will first respond to the request, and send a <code>TransactionEventRequest</code> with the idToken to the CSMS, and the CSMS will check the authorization status of the IdToken when processing this <code>TransactionEventRequest</code> .
New	F01.FR.02	Charging Station receives a <code>RequestStartTransactionRequest</code> AND (<code>AuthorizeRemoteStart</code> = false OR <code>idToken.type</code> is Central or NoAuthorization)	The Charging Station SHALL allow energy transfer for the IdToken given in <code>RequestStartTransactionRequest</code> message without checking authorization.	Charging Station will first respond to the request, and send a <code>TransactionEventRequest</code> with the idToken to the CSMS, and the CSMS will check the authorization status of the IdToken when processing this <code>TransactionEventRequest</code> .

2.26. Page 184 - (2025-11) - F02.FR.09/10 - No authorization for type = Central

According to C03.FR.01 no AuthorizeRequest shall be sent for idToken.type = Central. This was also the intention of F02.FR.09, because it states "... as if in response to a local action ...". That can never apply to a token type Central, but that is not immediately

clear. The preconditions have therefore been made explicit for this. The same also applies to type = NoAuthorization.

	ID	Precondition	Requirement definition	Note
Old	F02.FR.09	If the value of AuthorizeRemoteStart = true AND Charging Station receives a RequestStartTransactionRequest	The Charging Station SHALL behave as if in response to a local action at the Charging Station to start a transaction after successful authorization of the IdToken given in RequestStartTransactionRequest message.	Charging Station will first respond to the request and then try to authorize the IdToken, using the Local Authorization List, Authorization Cache and/or an AuthorizeRequest . A transaction is only started after authorization was obtained. Same as F01.FR.01
New	F02.FR.09	Charging Station receives a RequestStartTransactionRequest AND (AuthorizeRemoteStart = true AND idToken.type is NOT Central or NoAuthorization)	The Charging Station SHALL behave as if in response to a local action at the Charging Station to allow energy transfer after successful authorization of the IdToken given in RequestStartTransactionRequest message.	Charging Station will first respond to the request and then try to authorize the IdToken, using the Local Authorization List, Authorization Cache and/or an AuthorizeRequest . Energy transfer is only allowed after authorization was obtained. Same as F01.FR.01.
Old	F02.FR.10	If the value of AuthorizeRemoteStart = false AND Charging Station receives a RequestStartTransactionRequest	The Charging Station SHALL start a transaction for the IdToken given in RequestStartTransactionRequest message without checking authorization.	Note that after the transaction has been started, the Charging Station will send a TransactionEventRequest with the idToken to the CSMS, and the CSMS will check the authorization status of the IdToken when processing this TransactionEventRequest . Same as F01.FR.02
New	F02.FR.10	Charging Station receives a RequestStartTransactionRequest AND (AuthorizeRemoteStart = false OR idToken.type is Central or NoAuthorization)	The Charging Station SHALL allow energy transfer for the IdToken given in RequestStartTransactionRequest message without checking authorization.	Charging Station will first respond to the request, and send a TransactionEventRequest with the idToken to the CSMS, and the CSMS will check the authorization status of the IdToken when processing this TransactionEventRequest . Same as F01.FR.02.

2.27. Page 190 - (2025-11) - F05 - New requirement for connectors without lock [1013]

New requirement

ID	Precondition	Requirement definition
F05.FR.07	F05.FR.01 AND The connector has no lock or a manual lock (e.g. sType1)	The Charging Station SHOULD respond with RPC Framework CALLERROR: NotSupported.

2.28. Page 232 - (2025-11) - F03.FR.07 - Improved precondition and changed requirement definition

Part of the requirement definition has been moved to the precondition.

	ID	Precondition	Requirement definition	Note
Old	F03.FR.07	When the Charging Station receives a RequestStopTransactionRequest	And the TransactionId can be matched to an active transaction; the Charging Station SHALL respond with a RequestStopTransactionResponse with status set to <i>Accepted</i> .	
New	F03.FR.07	When the Charging Station receives a RequestStopTransactionRequest AND the TransactionId can be matched to an active transaction.	And the TransactionId can be matched to an active transaction; The Charging Station SHALL respond with a RequestStopTransactionResponse with status set to <i>Accepted</i> .	

2.29. Page 232 - (2025-11) - F03.FR.08 - Improved precondition and changed requirement definition

Part of the requirement definition has been moved to the precondition.

	ID	Precondition	Requirement definition	Note
Old	F03.FR.08	When the Charging Station receives a RequestStopTransactionRequest	And the TransactionId can be matched to an active transaction; the Charging Station SHALL respond with a RequestStopTransactionResponse with status set to <i>Rejected</i> .	
New	F03.FR.08	When the Charging Station receives a RequestStopTransactionRequest AND the TransactionId can be matched to an active transaction.	And the TransactionId can be matched to an active transaction; The Charging Station SHALL respond with a RequestStopTransactionResponse with status set to <i>Rejected</i> .	

2.30. Page 226 - (2025-11) - F01.FR.20/F02.FR.22 - EVSE can be reported on cable plug-in [786]

Updated requirement

	ID	Precondition	Requirement definition	Note
Old	F01.FR.20	If the RequestStartTransactionRequest does not contain an <i>evseId</i> AND the Charging Station is capable of selecting an EVSE	The Charging Station SHALL select an EVSE to be used as a value for <i>evseId</i> for the operation	See also F01.FR.07 if Charging Station does not support starting at an arbitrary EVSE.
New	F01.FR.20	If the RequestStartTransactionRequest does not contain an <i>evseId</i> AND the Charging Station is capable of selecting an EVSE or accepts a plug-in at an arbitrary EVSE	The Charging Station SHALL report in later TransactionEventRequests the selected EVSE or the EVSE where cable is plugged in.	See also F01.FR.07 if Charging Station does not support starting at an arbitrary EVSE.

Updated requirement

	ID	Precondition	Requirement definition	Note
Old	F02.FR.22	If the RequestStartTransactionRequest does not contain an <i>evseId</i> AND the Charging Station is capable of selecting an EVSE	The Charging Station SHALL select an EVSE to be used as a value for <i>evseId</i> for the operation	See also F02.FR.15 if Charging Station does not support starting at an arbitrary EVSE. Same as F01.FR.20
New	F02.FR.22	If the RequestStartTransactionRequest does not contain an <i>evseId</i> AND the Charging Station is capable of selecting an EVSE or accepts a plug-in at an arbitrary EVSE	The Charging Station SHALL report in later TransactionEventRequests the selected EVSE or the EVSE where cable is plugged in.	See also F02.FR.15 if Charging Station does not support starting at an arbitrary EVSE. Same as F01.FR.20

2.31. Page 240 - (2025-06) - F06 Requirement for CSMS to support customTrigger [896]

A requirement for CSMS to support customTriggers was missing.

New requirement

ID	Precondition	Requirement definition	Note
F06.FR.20 (2.1)	If Charging Station reports custom triggers in CustomizationCtrlr.CustomTriggers	CSMS SHALL support sending these custom triggers as a triggermessagerequest with <i>requestedMessage</i> = CustomTrigger and <i>customTrigger</i> set to the custom trigger.	

2.32. Page 260 - (2025-06) - H02 - Added missing requirements

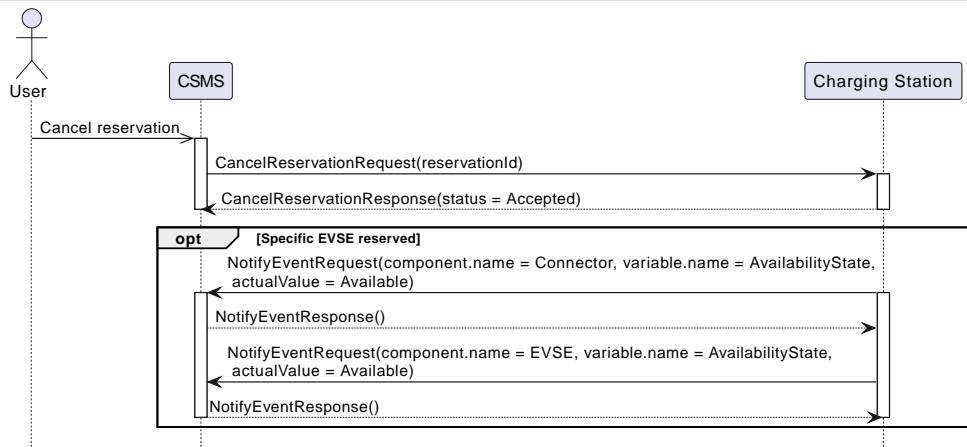
Added missing requirements explicitly specifying behaviour of Charging Station when a reservation is cancelled.

Removed details from scenario description:

No.	Type	Description
[...]		
	Scenario description	<ol style="list-style-type: none"> EV Driver asks the CSMS to cancel a reservation. To cancel a reservation, the CSMS sends CancelReservationRequest to the Charging Station. If the Charging Station has a reservation matching the reservationId in the request PDU, it returns the status <i>Accepted</i>. If a specific EVSE was reserved for this reservation, the Charging Station sends a NotifyEventRequest with variable "AvailabilityState" set to "Available" for all the Connectors of that EVSE. If needed, the Charging Station sends NotifyEventRequest with variable "AvailabilityState" set to "Available" for all the Connectors of EVSEs that became available. The CSMS responds with a NotifyEventResponse to the Charging Station. The reservation is canceled.
[...]		

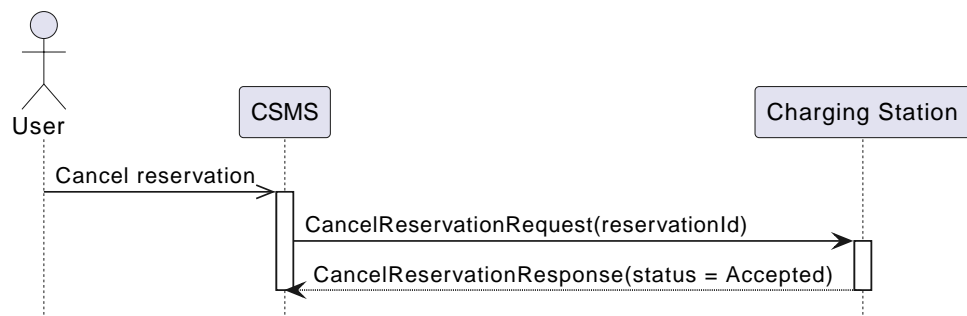
Removed details from sequence diagram

Old:



Sequence Diagram: Cancel Reservation

New:



Sequence Diagram: Cancel Reservation

New requirements

ID	Precondition	Requirement definition
H02.FR.03	H02.FR.02 AND If a specific EVSE was reserved for this reservation	The Charging Station SHALL allow charging again on this EVSE.
H02.FR.04	H02.FR.03	The Charging Station SHALL send a StatusNotificationRequest with status <i>Available</i> or a NotifyEventRequest with <i>AvailabilityState</i> set to <i>Available</i> to the CSMS for each connector, notifying the CSMS that all the connectors of this EVSE are available again for any EV Driver.
H02.FR.05	H02.FR.02 AND If no specific EVSE was reserved for this reservation	The Charging Station SHALL allow charging on all EVSE which were not reserved explicitly.
H02.FR.06	H01.FR.05 AND before cancelling the reservation the amount of EVSEs reserved was equal to the amount of reservations	The Charging Station SHALL send for all connectors of all EVSEs which were not reserved explicitly: - a NotifyEventRequest with <i>component</i> = "Connector", <i>variable</i> = "AvailabilityState", <i>trigger</i> = "Delta", <i>actualValue</i> = "Available", OR - a StatusNotificationRequest with <i>connectorStatus</i> = Available.

2.33. Page 240 - (2025-11) - Use case F07 moved to section F 2.1 [1072]

Use case F07 was added at the end of section F as the last use case. This is, however, in the section 2.3 Remote Trigger. Use case F07 belongs in section 2.1 Remote Transaction Control, and has therefore be moved to this section. Content of use case and requirements have not changed as a result of this.

2.34. Page 274 - (2025-11) - I01 - Scenario description update

Clarification that the *personalMessage* in the *idTokenInfo* field is used, as it may be confused with *AuthorizeRequest*; however, there is no *PersonalMessage* field in the *Authorize* response.

2.34.1. I01 - Show EV Driver-specific Tariff Information

No.	Type	Description
1	Name	Show EV Driver-specific Tariff Information
2	ID	I01
...
	Scenario description	<ol style="list-style-type: none">1. The EV Driver wants to charge an EV, he presents his IdTokenType.2. The Charging Station sends AuthorizeRequest to the CSMS to request authorization.3. Upon receipt of AuthorizeRequest, the CSMS responds with AuthorizeResponse. This response message indicates whether or not the IdTokenType is accepted by the CSMS, and reports the EV Driver-specific tariff in the IdTokenInfo.personalMessage field.
...

2.35. Page 274 - (2025-11) - I01 - Added prerequisite for central cost calculation

Use case I01, I02 and I03 apply to central cost calculation. They are not used in case of local cost calculation.

For I01, the driver-specific tariff information is part of the TariffType in the AuthorizeResponse when local cost calculation is used.

For I02 & I03, the running total and final total are calculated by the charging station itself in case of local cost calculation.

2.35.1. I01 - Show EV Driver-specific Tariff Information

No.	Type	Description
1	Name	Show EV Driver-specific Tariff Information
2	ID	I01
...
5	Prerequisite(s)	The Charging Station supports Tariff Information and uses central cost calculation by CSMS.
...

2.35.2. I02 - Show EV Driver Running Total Cost During Charging

No.	Type	Description
1	Name	Show EV Driver-specific Tariff Information
2	ID	I01
...
5	Prerequisite(s)	The Charging Station supports Tariff Information Ongoing transaction and uses central cost calculation by CSMS.
...

2.35.3. I03 - Show EV Driver Final Total Cost After Charging

No.	Type	Description
1	Name	Show EV Driver-specific Tariff Information
2	ID	I01
...
5	Prerequisite(s)	The Charging Station supports Tariff Information Ongoing transaction and uses central cost calculation by CSMS.
...

2.36. Page 275 - (2025-11) - I01 - Updated use case description

Clarification that the `personalMessage` in the `idTokenInfo` field is used, as it may be confused with `AuthorizeRequest`; however, there is no `PersonalMessage` field in the `Authorize` response.

ID.	Precondition	Requirements
I01.FR.01		The CSMS MAY send EV Driver-specific tariff information in the <code>IdTokenInfo.personalMessage</code> field of an <code>AuthorizeResponse</code> message.

2.37. Page 290 - (2025-09) - I08.FR.31 is a duplicate requirement number [1042]

By mistake the requirement number I08.FR.31 occurs twice in I08. This has been fixed by moving the first I08.FR.31 requirement to become I08.FR.37.

Requirement number changed

ID.	Precondition	Requirements	Notes
I08.FR.31 I08.FR.37	I08.FR.30 AND Charging Station does not have a Delta monitor installed on <code>TariffCostCtrlr.Problem</code>	Charging Station SHALL send a <code>[notifyeventrequest]</code> with <code>trigger = Alerting</code> , <code>eventNotificationType = HardWiredNotification</code> , <code>component = "TariffCostCtrlr"</code> , <code>variable = "Problem"</code> , <code>actualValue = "true"</code> and <code>techCode</code> optionally set to the applicable reason code from Appendix 5, to notify CSMS that it cannot support the <code>tariff</code> in the response.	<code>techCode</code> can be, for example, one of "TooManyElements", "OutOfMemory", "InternalError", "UnsupportedParam", etc.

2.38. Page 297 - (2025-09) - I12.FR.02 fails to mention that `chargingPeriods` are not sent for running cost updates [1048]

The element `chargingPeriods` in `CostDetailsType` is not sent for running cost updates, because that is not needed and adds a lot of data to the message. This is mentioned explicitly in `CostDetailsType`, but it is not formalized in the requirements.

Changed requirement

	ID.	Precondition	Requirements	Notes
Old	I12.FR.02	I12.FR.01 AND <code>TariffCostCtrlr.Enabled[RunningCost] = true</code>	Charging Station SHALL provide a <code>costDetails</code> field of type <code>[cmn_costdetailstype]</code> in <code>[transactioneventrequest]</code> with <code>eventType = Started</code> and every <code>TariffCostCtrlr.Interval[Cost]</code> seconds during the transaction for <code>eventType = Updated</code> .	Providing running cost updates needs to be enabled via <code>TariffCostCtrlr.Enabled[RunningCost]</code> . See <code>[configkey-running-cost-enabled]</code> and <code>[configkey-cost-interval]</code> .
New	I12.FR.02	I12.FR.01 AND <code>TariffCostCtrlr.Enabled[RunningCost] = true</code>	Charging Station SHALL provide a <code>costDetails</code> field of type <code>[cmn_costdetailstype]</code> without a <code>chargingPeriods</code> field in <code>[transactioneventrequest]</code> with <code>eventType = Started</code> and every <code>TariffCostCtrlr.Interval[Cost]</code> seconds during the transaction for <code>eventType = Updated</code> .	Providing running cost updates needs to be enabled via <code>TariffCostCtrlr.Enabled[RunningCost]</code> . See <code>[configkey-running-cost-enabled]</code> and <code>[configkey-cost-interval]</code> .

2.39. Page 354 - (2025-06) - Updated remark of K11

Added sentence to Remarks a new charging profile for an update of external limit can use the same charging profile id.

No.	Type	Description
...
8	Remarks	[...] If the external limit is represented by an Absolute or Relative ChargingStationExternalConstraints charging profile, then every update of the external limit requires (K11.FR.06) that the existing ChargingStationExternalConstraints charging profile is replaced by a new one. This one can use the same chargingProfile.id, however.

2.40. Page 327 - (2025-06) - Updated note of K01.FR.05

Note suggested that ChargingStationExternalConstraints cannot be replaced at all. Updated note to clarify that a ChargingStationExternalConstraints cannot be replaced by CSMS.

	ID	Precondition	Requirement definition	Note
Old	K01.FR.05	When a SetChargingProfileRequest with an already known ChargingProfile.id is received AND the existing ChargingProfile does NOT have chargingProfilePurpose = ChargingStationExternalConstraints	The Charging Station SHALL replace the existing ChargingProfile with the one specified.	ChargingStationExternalConstraints profile cannot be replaced.
New	K01.FR.05	When a SetChargingProfileRequest with an already known ChargingProfile.id is received AND the existing ChargingProfile does NOT have chargingProfilePurpose = ChargingStationExternalConstraints	The Charging Station SHALL replace the existing ChargingProfile with the one specified.	ChargingStationExternalConstraints profile cannot be replaced by CSMS.

2.41. Page 327 - (2025-06) - Add cross-references to K01.FR.06 and K01.FR.39

Requirement K01.FR.06 and K01.FR.39 are similar, but located far apart in the table. It is convenient to add a cross-reference between both.

	ID	Precondition	Requirement definition	Note
Old	K01.FR.06	When chargingProfilePurpose is NOT TxProfile	The CSMS SHALL NOT send a ChargingProfile with a stackLevel - chargingProfilePurpose - evseld combination that already exists in another ChargingProfile (with different id) on the Charging Station and has an overlapping validity period.	This is to ensure that no two charging profiles with same stack level and purpose can be valid at the same time.

	ID	Precondition	Requirement definition	Note
New	K01.FR.06	When <i>chargingProfilePurpose</i> is NOT TxProfile	The CSMS SHALL NOT send a ChargingProfile with a <i>stackLevel</i> - <i>chargingProfilePurpose</i> - <i>evseId</i> combination that already exists in another ChargingProfile (with different <i>id</i>) on the Charging Station and has an overlapping validity period.	This is to ensure that no two charging profiles with same stack level and purpose can be valid at the same time. (See also K01.FR.39)
Old	K01.FR.39	When <i>chargingProfilePurpose</i> is TxProfile	The CSMS SHALL NOT send a ChargingProfile with a <i>stackLevel</i> - <i>transactionId</i> combination that already exists in another ChargingProfile (with different <i>id</i>) with purpose TxProfile.	This is to ensure that no two charging profiles with same stack level and purpose can be valid at the same time.
New	K01.FR.39	When <i>chargingProfilePurpose</i> is TxProfile	The CSMS SHALL NOT send a ChargingProfile with a <i>stackLevel</i> - <i>transactionId</i> combination that already exists in another ChargingProfile (with different <i>id</i>) with purpose TxProfile.	This is to ensure that no two charging profiles with same stack level and purpose can be valid at the same time. (See also K01.FR.06)

2.42. Page 331 - (2025-06) - K01.FR.50 requirement is a SHALL

Physics determines how to convert power to current. This cannot be a "should" requirement, but is a SHALL.

	ID	Precondition	Requirement definition	Note
Old	K01.FR.49	When a SetChargingProfileRequest without a value for <i>numberPhases</i> is received AND the EVSE is of type AC	The Charging Station SHALL assume <i>numberPhases</i> = 3 as a default value.	
New	K01.FR.49	When a SetChargingProfileRequest without a value for <i>numberPhases</i> is received AND the EVSE is of type AC	The Charging Station SHALL assume <i>numberPhases</i> = 3 as a default value.	Regions with a single phase network should always provide <i>numberPhases</i> = 1, otherwise 3 phases will be assumed.
Old	K01.FR.50	When a SetChargingProfileRequest with a <i>chargingRateUnit</i> = W is received AND The ChargingSchedule is used for AC charging	The Charging Station SHOULD calculate the phase current limit via: $\text{Current per phase} = \text{Power} / (\text{Line Voltage} * \text{Number of Phases})$.	The "Line Voltage" used in the calculation is not the measured voltage, but the set voltage for the area (for example, 230 or 110 V). The "Number of Phases" is the <i>numberPhases</i> from the <i>ChargingSchedulePeriod</i> . It is usually more convenient to use <i>chargingRateUnit</i> = A for AC charging.

	ID	Precondition	Requirement definition	Note
New	K01.FR.50	When a <code>SetChargingProfileRequest</code> with a <code>chargingRateUnit = W</code> is received AND The <code>charging profile</code> is used for AC charging	The Charging Station SHALL calculate the phase current limit via: $\text{Current per phase} = \text{limit} / (\text{Line Voltage} * \text{numberPhases})$, in which <code>limit</code> and <code>numberPhases</code> are the values from the <code>ChargingSchedulePeriod</code> .	The "Line Voltage" used in the calculation is not the measured voltage, but the set voltage for the area (for example, 230 or 110 V). . The <code>limit</code> and <code>numberPhases</code> are the values from the <code>ChargingSchedulePeriod</code> . When <code>numberPhases</code> is not specified, a value of 3 is assumed (see K01.FR.49). It is usually more convenient to use <code>chargingRateUnit = A</code> for AC charging, since in that case the limit does not change depending on number of phases in use.

2.43. Page 332 - (2025-09) - K01.FR.56 is too strict

K01.FR.56 attempts to limit the update rate of persistent profiles, but current requirement prohibits setting profiles on different EVSEs in quick succession.

Updated requirement

	ID	Precondition	Requirement definition	Note
Old	K01.FR.56 (2.1)	When Charging Station receives a <code>[setchargingprofilerequest]</code> for a <code>[cmn_chargingprofiletype]</code> with a <code>chargingProfilePurpose</code> that is to be stored persistently AND the previous <code>[setchargingprofilerequest]</code> for this <code>chargingProfilePurpose</code> was less than <code>ChargingProfileUpdateRateLimit</code> seconds ago	Charging Station MAY respond with <code>[setchargingprofileresponse]</code> with <code>status = Rejected</code> and <code>reasonCode = "RateLimitExceeded"</code>	See also K01.FR.55 and K01.FR.27. If <code>ChargingProfileUpdateRateLimit</code> does not exist, there is no rate limit.
New	K01.FR.56 (2.1)	When Charging Station receives frequent <code>[setchargingprofilerequest]</code> messages at a rate that threatens to wear out its persistent memory, for a <code>[cmn_chargingprofiletype]</code> with a <code>chargingProfilePurpose</code> that is to be stored persistently	Charging Station MAY respond with <code>[setchargingprofileresponse]</code> with <code>status = Rejected</code> and <code>reasonCode = "RateLimitExceeded"</code>	See K01.FR.55 and K01.FR.27 for which charging profiles are persistent.

New requirement

ID	Precondition	Requirement definition	Note
K01.FR.57 (2.1)	K01.FR.56	Charging Station SHOULD report the duration after which a next update will be accepted, in field <i>statusInfo.additionalInfo</i> as "<xx> seconds before retry"	<xx> is the number of seconds after which the next [setchargingprofilerequest] is allowed.
K01.FR.58 (2.1)	K01.FR.56	CSMS MAY retry the [setchargingprofilerequest] if still applicable	
K01.FR.59 (2.1)	K01.FR.57	CSMS IS RECOMMENDED to use at least the number of seconds in <i>statusInfo.additionalInfo</i> as a delay before retrying	This will avoid unnecessary rejections

2.43.1. Page 747 - ChargingProfileUpdateRateLimit

This variable has now been deprecated.

2.43.2. ChargingProfileUpdateRateLimit

Deprecated

Required	no		
Component	componentName	SmartChargingCtrlr	
Variable	variableName	UpdateRateLimit	
	variableAttributes	mutability	ReadOnly
	variableCharacteristics	dataType	integer
Description	<p>This configuration key limits how often a persistent charging profile can be updated. It is the minimum duration in seconds between updates of charging profiles of the same <i>chargingProfilePurpose</i>. A Charging Station may reject SetChargingProfileRequests that occur too frequently, as per K01.FR.56.</p> <p>Note: This configuration variable has been deprecated, because a simple variable with number of seconds between updates does not determine when a Charging Station may reject a message or not.</p>		

2.44. Page 332 - (2025-11) - K01 added implicit requirement about *recurrencyKind* [777]

The implicit requirement that it only makes sense to supply a *recurrencyKind* when the *chargingProfileKind* = *Recurring* has now been made explicit.

New requirement

ID	Precondition	Requirement definition	Note
K01.FR.60	Only when <i>chargingProfileKind</i> of a ChargingProfile is <i>Recurring</i>	A value for <i>recurrencyKind</i> SHALL be supplied in the ChargingProfile .	

2.45. Page 332 - (2025-06) - CSMS requirements for useLocalTime, PriorityCharging and others [954]

Requirements have been added for the implicit assumption that CSMS has to support these new features.

New requirements

ID	Precondition	Requirement definition	Note
PriorityCharging			
K01.FR.72 (2.1)		CSMS SHALL support sending a SetChargingProfileRequest with <i>chargingProfilePurpose</i> = <i>PriorityCharging</i> .	
K01.FR.73 (2.1)		CSMS SHALL NOT add a <i>duration</i> to a <i>chargingSchedule</i> in a <i>chargingProfile</i> with <i>chargingProfilePurpose</i> = <i>PriorityCharging</i> .	
Use Local Time / Randomized Delay			
K01.FR.96 (2.1)		CSMS SHALL support sending a SetChargingProfileRequest with a <i>chargingSchedule</i> that contains fields <i>useLocalTime</i> = true and/or <i>randomizedDelay</i> > 0	
Limit Beyond SoC / Offline validity			
K01.FR.104 (2.1)		CSMS SHALL support sending a SetChargingProfileRequest with a <i>maxOfflineDuration</i> > 0 and <i>invalidAfterOfflineDuration</i> = true or false.	
K01.FR.105 (2.1)		CSMS SHALL support sending a SetChargingProfileRequest with a <i>chargingSchedule</i> with a <i>limitAtSoC</i> element.	

2.46. Page 333 - [2025-09] - K01 New requirement for randomizedDelays larger than schedule period [1004]

Each *startPeriod* (except the first one) is increased with a random value at start of the transaction. Remember that a delay in the start of the next period, implies an increase in the length of the current period.

A requirement was missing to define how to deal with the situation where a *randomizedDelay* turns out to be longer than the duration of the *chargingSchedulePeriod* for which the start is randomized. It is important to remember that all randomized *startPeriods* are calculated before the charging profile is used (at submission or start of transaction). If a randomization of the *startPeriod* is longer than the schedule period (i.e. until the randomized start of the next period), then this period is skipped entirely.

This implies that a randomized delay can never become more than the duration between *startPeriod(i)* and *startPeriod(i+1)*_{randomized} because at that point the next period is started.

Example

Assume a schedule

{start: 0, limit: 0}, {start: 300, limit: 1}, {start: 600, limit: 2}, {start: 900, limit: 3}

Random delays create

{start: 0, limit: 0}, {start: 300+753=1053, limit: 1}, {start: 600+123=723, limit: 2}, {start: 900+87=987, limit: 3}
In this case the second period will be dropped, because it exceeds start of the third period (723).

The randomized schedule becomes

{start: 0, limit: 0}, {start: 723, limit: 2}, {start: 987, limit: 3}

New requirement

K01.FR.97 (2.1)	K01.FR.93 AND <i>startPeriod</i> + <random delay> of <i>chargingSchedulePeriod[i]</i> is greater/equal than <i>startPeriod</i> + <random delay> of <i>chargingSchedulePeriod[i+1]</i> or greater/equal than <i>chargingSchedule.duration</i>	<i>chargingSchedulePeriod[i]</i> is skipped from the randomized charging schedule.	<i>chargingSchedulePeriod[i]</i> is skipped because its randomized start would take place after the randomized start of <i>chargingSchedulePeriod[i+1]</i> or after end of charging schedule. This is basically means that <i>chargingSchedulePeriod[i-1]</i> continues until (randomized) start of <i>chargingSchedulePeriod[i+1]</i> or until charging schedule end if this is the last period.
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2.47. Page 336 - (2025-06) - K02 Updated remark of use case about merging profiles

The description of merging profiles in the remark was not complete. It has been updated to refer to the appropriate requirement.

No.	Type	Description
...
8	Remark(s)	<p>[...]</p> <p>The final schedule constraints that apply to a transaction are determined by merging the profiles with purposes <i>ChargingStationMaxProfile</i> with the profile <i>TxProfile</i> or <i>TxDefaultProfile</i> in case no profile of purpose <i>TxProfile</i> is provided. Zero or more of the following <i>ChargingProfile</i> purposes MAY have been previously received from the CSMS: <i>ChargingStationMaxProfile</i> or <i>TxDefaultProfile</i>. as described in requirement SC.01 in Chapter 4. Smart Charging Signals to a Charging Station from Multiple Actors .</p> <p>[...]</p>

2.48. Page 334 - (2025-09) - Requirement for supported operationMode

A missing requirement that only supported operationModes are accepted, has been added.

New requirement

ID	Precondition	Requirement definition	Note
K01.FR.115 (2.1)	When Charging Station receives a [setchargingprofilerequest] with a charging profile that contains a [cmn_chargingscheduleperiodtype] with a value for <i>operationMode</i> that is not <i>ChargingOnly</i> and not part of the <i>attributeValue</i> of [configkey-v2xsupportedoperationmodes]	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = <i>Rejected</i> and <i>statusInfo</i> with <i>reasonCode</i> = "InvalidOperationMode"	

2.49. Page 334 - (2025-11) - Requirement for supported operationModes for bidirectional

A missing requirement that certain operationModes are only valid for bidirectional charging, has been added.

New requirement

ID	Precondition	Requirement definition	Note
K01.FR.116 (2.1)	When Charging Station receives a [setchargingprofilerequest] with a charging profile that contains a [cmn_chargingscheduleperiodtype] with a value for <i>operationMode</i> that is CentralSetpoint, CentralFrequency, LocalFrequency, LocalLoadBalancing or Idle AND The related transaction is not supporting bidirectional charging (BPT)	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and <i>statusInfo</i> with <i>reasonCode</i> = "InvalidOperationMode"	See also K 3.4 Smart Charging Operation Modes.

2.50. Page 335 - (2025-06) - Requirements for checking operationMode and phases L2/L3

The following requirements have been made explicit from the table in paragraph 3.2 Charging Profile purpose.

New requirements

ID	Precondition	Requirement definition	Note
OperationMode			
K01.FR.111 (2.1)	When a charging profile has <i>chargingProfilePurpose</i> = PriorityCharging or ChargingStationMaxProfile	The charging profile SHALL only contain <i>chargingSchedulePeriods</i> with <i>operationMode</i> = ChargingOnly or without <i>operationMode</i> .	
K01.FR.112 (2.1)	When a charging profile has <i>chargingProfilePurpose</i> = ChargingStationExternalLimits	The charging profile SHALL only contain <i>chargingSchedulePeriods</i> with <i>operationMode</i> = ChargingOnly, ExternalLimits, ExternalSetpoint or without <i>operationMode</i> .	
K01.FR.113 (2.1)	When a charging profile has <i>chargingProfilePurpose</i> = LocalGeneration	The charging profile SHALL only contain <i>chargingSchedulePeriods</i> with <i>operationMode</i> = ChargingOnly, ExternalLimits or without <i>operationMode</i> .	
K01.FR.114 (2.1)	When Charging Station receives a [setchargingprofilerequest] with a charging profile that does not obey to K01.FR.111, K01.FR.112, K01.FR.113	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and <i>statusInfo</i> with <i>reasonCode</i> = "InvalidOperationMode"	

The following requirements have been added to make explicit when _L2 and _L3 fields can be used.

New requirements

ID	Precondition	Requirement definition	Note
ISO 15118-20 multi-phase support			
K01.FR.140 (2.1)	When determining the composite schedule from multiple charging profiles	Charging Station SHALL at each point in time use the lowest value of <i>numberPhases</i> for that point in time in all applicable <i>chargingSchedulePeriods</i> .	For example, if ChargingStationMaxProfile has <i>numberPhases</i> = 1 and TxProfile has <i>numberPhases</i> = 3, then the value 1 is used.

ID	Precondition	Requirement definition	Note
K01.FR.141 (2.1)	When Charging Station receives a [setchargingprofilerequest] that introduces a conflicting value of <i>phaseToUse</i> with the schedule periods of other applicable charging profiles	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and a <i>statusInfo</i> with <i>reasonCode</i> = "PhaseConflict".	For example, if ChargingStationMaxProfile has <i>phaseToUse</i> = 1 and TxProfile is submitted with <i>phaseToUse</i> = 3, then this will be rejected.
K01.FR.142 (2.1)	When <i>v2xChargingParameters</i> of [notifyevchargingneedsrequest] from Charging Station does not contain <i>maxChargePower_L2</i> and/or <i>maxChargePower_L3</i>	CSMS SHALL NOT provide values for <i>limit_L2</i> and/or <i>limit_L3</i> fields in a charging profile.	If EV does not report L2/L3 fields then do not provide separate limits for them.
K01.FR.143 (2.1)	When CSMS sends a [setchargingprofilerequest] for a <i>chargingProfilePurpose</i> that is not TxProfile	CSMS SHALL NOT provide values for <i>limit_L2</i> and <i>limit_L3</i> fields in <i>chargingSchedulePeriods</i> of the charging profile	Only a TxProfile is submitted after receiving a NotifyEVChargingNeedsRequest.
K01.FR.144 (2.1)	(K01.FR.142 OR K01.FR.143) AND Charging Station receives a [setchargingprofilerequest] with values for <i>limit_L2</i> and/or <i>limit_L3</i> fields in a charging profile	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and a <i>statusInfo</i> with <i>reasonCode</i> = "PhaseConflict".	
K01.FR.145 (2.1)	When CSMS sends a [setchargingprofilerequest] of <i>chargingProfilePurpose</i> = TxProfile	CSMS SHALL NOT provide values for <i>limit_L2</i> and/or <i>limit_L3</i> fields in a <i>chargingSchedulePeriod</i> without providing a value for <i>limit</i> .	E.g. <i>limit_L2/L3</i> can only exist if <i>limit</i> is also provided, because in that case <i>limit</i> represents phase L1.
K01.FR.146 (2.1)	K01.FR.145 AND Charging Station receives a [setchargingprofilerequest] with values for <i>limit_L2</i> and/or <i>limit_L3</i> fields in a charging profile, but no value for <i>limit</i>	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and a <i>statusInfo</i> with <i>reasonCode</i> = "PhaseConflict".	
K01.FR.147 (2.1)	In the event that an AC ISO 15118-20 session is ongoing and Charging Station falls back to using Mode 3 PWM communication AND charging profiles are active that specify <i>limit_L2</i> and/or <i>limit_L3</i>	Charging Station SHALL use the lowest value of <i>limit</i> , <i>limit_L2</i> and/or <i>limit_L3</i> as the <i>limit</i> to use for each phase.	The phrase " <i>limit_L2</i> and/or <i>limit_L3</i> " is used to cater for both 2-phase and 3-phase situations.

2.51. Page 335 - (2025-11) - K01.FR.122 is duplicate of K28.FR.04

Requirement K01.FR.122 actually belongs in K28 Dynamic Charging Profiles, where it is represented by K28.FR.04. This requirement is therefore removed from K01.

Deleted requirement

ID	Precondition	Requirement definition	Note
K01.FR.122 (2.1)	When Charging Station receives a [setchargingprofilerequest] with a <i>chargingProfileKind</i> Dynamic AND [configkey-supports-dynamic-profiles] is false or absent	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = Rejected and optionally with <i>reasonCode</i> = "UnsupportedKind".	

2.52. Page 335 - (2025-09) - K01.FR.126 corrected requirement definition

K01.FR.126 was not entirely correct, because *evseSleep* can only occur while in *operationMode* = *idle*.

Changed requirement

	ID	Precondition	Requirement definition	Note
Old	K01.FR.126 (2.1)	When Charging Station receives a [setchargingprofilerequest] with <i>evseSleep</i> = true AND [configkey-supports-evsesleep] is false or absent	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = <i>Rejected</i> and optionally with <i>reasonCode</i> = <i>"InvalidSchedule"</i> .	
New	K01.FR.126 (2.1)	When Charging Station receives a [setchargingprofilerequest] with a <i>chargingSchedulePeriod</i> that has <i>evseSleep</i> = true and <i>operationMode</i> != <i>'Idle'</i> AND [configkey-supports-evsesleep] is false or absent	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = <i>Rejected</i> and optionally with <i>reasonCode</i> = <i>"InvalidSchedule"</i> .	A request for EVSE to sleep can only occur during <i>operationMode</i> <i>idle</i> . See Q10 for <i>evseSleep</i> behavior.

2.53. Page 346 - (2025-11) - K06 - Updated use case description

Updated the description to clarify that it is also possible that the TxProfile expires.

No.	Type	Description
1	Name	Offline Behavior Smart Charging During Transaction
2	ID	K06
3	Objective(s)	To enable the Charging Station to continue to use the current ChargingProfile for the duration of the transaction while it is <i>Offline</i> .
4	Description	If a Charging Station goes <i>Offline</i> after having received a transaction-specific ChargingProfile with purpose TxProfile , then it continues to use this profile for the duration of the transaction or until the TxProfile reaches its expiration, depending on which occurs first.

2.54. Page 346 - (2025-11) - K06.FR.01 - Updated Requirement definition

Updated the requirement definition to clarify that it is also possible that the TxProfile expires.

ID	Precondition	Requirement definition
K06.FR.01	If the Charging Station goes <i>Offline</i> after having received a transaction-specific ChargingProfile with purpose TxProfile .	The Charging Station SHALL continue to use this profile for the duration of the transaction or until the TxProfile reaches its expiration, depending on which occurs first.

2.55. Page 358 - (2025-11) - K13 - Updated description prerequisites

Updated prerequisites for this specification explicitly allow for an OCPP connection to an EMS.

No.	Type	Description
1	Name	Reset / Release External Charging Limit

No.	Type	Description
2	ID	K13
3	Objective(s)	To release a charging limit that was previously imposed.
4
5	Prerequisites	Previously, a charging limit was sent to the Charging Station under consideration. An external system that can set/clear a charging limit/schedule on the Charging Station. via another connection than OCPP.

2.56. Page 376 - (2025-09) - K15 Added rule for composite schedules in case of multiple charging schedules [1002]

In the theoretical situation that 2 TxProfiles are submitted with different stack levels and multiple charging schedules (which can only be the case for an ISO 15118 session) and, because of different durations of these schedules, parts of each of these schedules will be valid at one point or another, then how is the composite schedule calculated? It is not 3 * 3 composite schedules (all possible combinations), but only 3 composite schedules, because schedule #1 is always combined with schedule #1, #2 with #2 and #3 with #3. Other *chargingProfilePurposes*, like *ChargingStationMaxProfile* need also to be taken into account when calculating the composite schedule.

A new requirement is added to define this behavior.

2.56.1. K15 - ISO 15118-2

New requirement

ID	Precondition	Requirements	Note
K15.FR.22	When calculating CompositeSchedule(s) to create a SAScheduleList for ISO 15118-2 to send to EV AND multiple ChargingProfileTypes of <i>chargingProfilePurpose</i> = TxProfile with different <i>stackLevels</i> are valid AND some or all these ChargingProfileTypes have more than one <i>chargingSchedule</i>	Charging Station SHALL create up to three CompositeSchedules as defined in K08.FR.04, by combining the first <i>chargingSchedule</i> with the first <i>chargingSchedule</i> of other stack levels, the second with second (if existing), the third with the third (if existing), based on their order in the ChargingProfileTypes .	This is about a corner case when multiple TxProfiles with different stack levels and multiple charging schedules have been sent to the Charging Station. (See K18.FR.24)

2.56.2. K18 - ISO 15118-20 Scheduled Control Mode

New requirement

ID	Precondition	Requirements	Note
K18.FR.24	When calculating CompositeSchedule(s) to create ScheduleTupleTypes for ISO 15118-20 to send to EV AND multiple ChargingProfileTypes of <i>chargingProfilePurpose</i> = TxProfile with different <i>stackLevels</i> are valid AND some or all these ChargingProfileTypes have more than one <i>chargingSchedule</i>	Charging Station SHALL create up to three CompositeSchedules as defined in K08.FR.04, by combining the first <i>chargingSchedule</i> with the first <i>chargingSchedule</i> of other stack levels, the second with the second (if existing), the third with the third (if existing), based on their order in the ChargingProfileTypes .	This is about a corner case when multiple TxProfiles with different stack levels and multiple charging schedules have been sent to the Charging Station. (See K15.FR.22)

2.56.3. K19 - ISO 15118-20 Dynamic Control Mode

This issue does not affect the requirements in K19, because in Dynamic Control Mode only a single charging schedule is offered by CSMS.

2.57. Page 334 - (2025-11) - Additional requirement added for sending ChargingRateChanged

Additional MAY requirement added for sending ChargingRateChanged when the Charging rate changed by more than: LimitChangeSignificance for any reason other than an External control system.

New requirement

K01.FR.61	A transaction is ongoing AND Charging rate changed by more than: LimitChangeSignificance	The Charging Station MAY send a TransactionEventRequest message to the CSMS with triggerReason = ChargingRateChanged	In the case of an External control system influencing the charging rate, the Charging Station SHALL send a TransactionEventRequest message to the CSMS with triggerReason = ChargingRateChanged (see K11.FR.04 and K13.FR.03)
-----------	--	--	---

2.58. Page 350 - (2025-06) - GetCompositeSchedule and L2/L3 values

The following clarifies that a composite schedule only needs to report L2/L3 values when they exist in the applicable charging profiles.

New requirement

ID	Precondition	Requirement definition
K08.FR.09 (2.1)	K08.FR.02 AND a <i>chargingSchedulePeriod</i> in the applicable charging profiles contains <i>limit_L2</i> and/or <i>limit_L3</i> values	Charging Station SHALL report the composite value for <i>limit_L2</i> and/or <i>limit_L3</i> values in the resulting <i>chargingSchedulePeriod</i> of the [getcompositeschedulereponse] .

2.59. Page 356 - (2025-06) - Updated note of K11.FR.06 with MaxExternalConstraintsId

	ID	Precondition	Requirements	Note
Old	K11.FR.06	When an external charging limit/schedule is received	The Charging Station SHALL use purpose <i>ChargingStationExternalConstraints</i> when reporting about this limit (i.e. in a ReportChargingProfilesRequest).	It is RECOMMENDED to use negative values for the <i>id</i> of a <i>ChargingStationExternalConstraints</i> profile, to minimize the risk of a clash with an <i>id</i> that CSMS might use for a (future) charging profile. See use case K29 for the use of <i>Dynamic</i> charging profiles and external limits.

	ID	Precondition	Requirements	Note
New	K11.FR.06	When an external charging limit/schedule is received	The Charging Station SHALL use purpose ChargingStationExternalConstraints when reporting about this limit (i.e. in a ReportChargingProfilesRequest).	<p>When configuration variable <code>MaxExternalConstraintsId</code> exists, it is RECOMMENDED to use values for the <code>id</code> of a ChargingStationExternalConstraints profile below this value, to minimize the risk of a clash with an <code>id</code> that CSMS might use for a (future) charging profile.</p> <p>When configuration variable <code>MaxExternalConstraintsId</code> does not exist, it is RECOMMENDED to use negative values for the <code>id</code> of a ChargingStationExternalConstraints profile, to minimize the risk of a clash with an <code>id</code> that CSMS might use for a (future) charging profile.</p> <p>See use case K29 for the use of Dynamic charging profiles and external limits.</p>

2.60. Page 376 - (2025-09) - K16 use case description update

The use case description refers to SetChargingProfile in step 7, but that is too restricting. It is the composite schedule that is provided to EV.

No.	Type	Description
...
	Scenario description	<p>1 CSMS sends a SetChargingProfileRequest to the Charging Station.</p> <p>2 Charging Station responds with a SetChargingProfileResponse to the CSMS.</p> <p>3 When EV sends the next CurrentDemandReq (for DC) or ChargingStatusReq (for AC), the Charging Station will respond with <code>evseNotification</code> = ReNegotiation.</p> <p>4 EV sends a PowerDeliveryReq with <code>chargeProgress</code> = ReNegotiate to confirm this.</p> <p>5 Charging Station responds with a PowerDeliveryRes.</p> <p>6 EV sends a ChargeParameterDiscoveryReq.</p> <p>7 Charging Station responds with a ChargeParameterDiscoveryRes with an SAScheduleList that contains the composite schedule(s) for the EVSE ChargingSchedule data from the SetChargingProfileRequest.</p> <p>8 EV sends a PowerDeliveryReq with <code>chargeProgress</code> = Start (with an optional charging profile) to confirm this.</p> <p>9 Charging Station responds with PowerDeliveryRes and, if charging was suspended at start of the renegotiation, will resume power delivery.</p> <p>10 If EV provided a charging profile in the previous step, then Charging Station will send a NotifyEVChargingScheduleRequest to the CSMS.</p>
...

2.60.1. Page 377

	ID	Precondition	Requirements	NOTE
Old	K16.FR.02 (2.1)	K16.FR.01	Charging Station SHALL initiate schedule renegotiation with EV.	In ISO 15118-2 this is done by replying with EVSENotification=ReNegotiation to a CurrentDemandReq (for DC) or ChargingStatusReq (for AC) message. In ISO 15118-20 this is done by replying with EVSENotification=ScheduleRenegotiation in ChargeLoopRes.
New	K16.FR.02 (2.1)	When the composite schedule for the EVSE changes	Charging Station SHALL initiate schedule renegotiation with EV.	This can be caused by a Set/ClearChargingProfileRequest or a change in ChargingStationExternalConstraints/Local Generation charging profiles. In ISO 15118-2 renegotiation is started by replying with EVSENotification=ReNegotiation to a CurrentDemandReq (for DC) or ChargingStatusReq (for AC) message. In ISO 15118-20 this is done by replying with EVSENotification=ScheduleRenegotiation in ChargeLoopRes.
Old	K16.FR.03	K16.FR.02	Charging Station SHALL provide the ChargingSchedule data to the EV.	In ISO 15118 this is done in the ChargeParameterDiscoverRes message.
New	K16.FR.03	K16.FR.02	Charging Station SHALL provide the composite schedule(s) ChargingSchedule data to the EV.	In ISO 15118 this is done in the ChargeParameterDiscoverRes message.

2.61. Page 421 - (2025-11) - M. ISO 15118 Certificate Management introduction updated for readability and clarity

The introduction to M. ISO 15118 Certificate Management is updated for readability and clarity

The ISO/IEC JWG 15118 for the Vehicle to Grid Communication Interface (V2G CI) was founded in 2009 with means to the need of a complementary international standard to IEC 61851-1 [IEC61851-1] providing bidirectional digital communication based on Internet protocols. The major purpose of ISO 15118 is to establish a more advanced and autonomously working charge control mechanism between EVs and charging infrastructures. The standard is currently under development and will ultimately provide means for various authentication schemes (e.g. plug charge vs. external identification means, like RFID cards), automatic handling of charging services as well as (proprietary) value added services, charge scheduling and advance planning, etc.

The work on the ISO 15118 document series started in 2009 with the goal of defining a high-level communication interface that would work in conjunction with the IEC 61851 document series. The major purpose of ISO 15118 is to establish a more advanced and autonomously working charge control mechanism between EVs and charging infrastructures. The ISO 15118 standard has been widely adopted, with several parts already published and implemented, including e.g. ISO 15118-1 and ISO 15118-2. ISO 15118-20 was published in 2022, which introduces significant new capabilities. ISO 15118-20 enhances support for Plug and Charge (PnC), enabling seamless authentication and authorization, and introduces bidirectional power flow allowing electric vehicles (EVs) to both draw power from and return power to the grid. The standard also supports higher charging speeds through advanced power management, enables wireless charging (inductive charging) of EVs and specifies pantograph charging. Additionally, it introduces enhanced security features and improved certificate handling. These advancements aim to optimize the automated management of charging services, scheduling, and the integration of renewable energy, making the communication between EVs and charging infrastructure more efficient and flexible.

2.61.1. Page 426/427 - (2025-11) - ISO 15118 Certificate structure corrections

It was incorrectly stated that ISO 15118 messages require digital XML-based signatures, implying multiple signatures per message. This was a mistake and is corrected.

~~Furthermore, some ISO 15118 messages require digital XML-based signatures. Those signatures need to be validated by the receiving party by using the corresponding certificate chain and verifying the chain of signatures all the way up to the respective trust anchor (V2G root, MO root or OEM root).~~

Furthermore, some ISO 15118 messages require a digital XML-based signature. This signature needs to be validated by the receiving party by using the corresponding certificate chain, verifying the chain all the way up to the respective trust anchor (V2G root, MO root or OEM root).

Additionally, the CertificateInstallationReq was mistakenly not included in the list of messages that require signature validation and has been added.

- **CertificateInstallationReq**
Certificate chain needed to verify signature is provided with this message.

2.62. Page 475 - (2025-06) - 001 - Added missing requirements

Added missing requirements explicitly specifying behaviour of Charging Station it contains one or more displays.

New requirements

ID	Precondition	Requirement definition
<i>Multiple Display support</i>		
001.FR.20	When Charging Station has multiple displays AND Charging Station receives a [setdisplaymessagerequest] without a <i>display</i> element in its MessageInfoType	Charging Station SHOULD use the message for the main display(s)
001.FR.21	When receiving a GetBaseReportRequest AND Charging Station has one or more displays	Charging Station SHOULD include in the report a Display component for every display it contains.
001.FR.22	When Charging Station receives a [setdisplaymessagerequest] with Display element referencing an unknown Display in its MessageInfoType	Charging Station SHOULD respond with a [setdisplaymessageresponse] with <i>status</i> = <i>Rejected</i> .
001.FR.23	When Charging Station receives a [setdisplaymessagerequest] with Display element referencing a known Display in its MessageInfoType	Charging Station SHOULD use the message only for the specified display.

2.63. Page 475 - (2025-11) - Use case 01/02 - added requirement to display message in chosen language [754]

The implicit requirement that if multiple languages are supported, only the selected language must be shown, has now been added explicitly.

2.63.1. 001 - Set DisplayMessage

New requirement

ID	Precondition	Requirement definition
001.FR.24 (2.1)	If configuration variable DisplayMessageLanguage is present	The 001 requirements about displaying messages only apply to messages that have a MessageContentType in the <i>message</i> or <i>messageExtra</i> field with a <i>language</i> corresponding to the language selected by the user or the default language if none was selected.

2.63.2. 002 - Set DisplayMessage for Transaction

New requirement

ID	Precondition	Requirement definition
002.FR.19 (2.1)	If configuration variable DisplayMessageLanguage is present	The 002 requirements about displaying messages only apply to messages that have a MessageContentType in the <i>message</i> or <i>messageExtra</i> field with a <i>language</i> corresponding to the language selected by the user or the default language if none was selected.

2.64. Page 370 - (2025-06) - K27 Updated remark of use case

The remark of K27 has been improved to clarify the difference between using an Absolute or a Dynamic *chargingProfileKind* for a charging profile with a *LocalGeneration chargingProfilePurpose*, and to mention that *chargingProfile.id* for the updates does not change.

No.	Type	Description
...
8	Remarks	If the external system provides a limit via a protocol that is not OCPP, e.g. ModBus, then Charging Station can represent this as an Absolute charging profile, that is replaced when the limit changes, or as a Dynamic charging profile with a single charging schedule period with <i>operationMode</i> = <i>ExternalLimits</i> in which the <i>limit</i> is dynamically updated. It is up to the Charging Station implementation to decide whether to represent the external limits for <i>LocalGeneration</i> as an Absolute charging profile that is replaced by a new charging profile with the same <i>chargingProfile.id</i> upon each change of the external limit, or as a Dynamic charging profile with an <i>operationMode</i> = <i>ExternalLimits</i> in which the <i>limit</i> is changed upon each change of the external limit.

2.65. Page 389 - (2025-06) - K19.FR.04 Minor rephrasing

K19.FR.04 reads "If the CSMS is not **able** to provide ...". This suggests that it may be caused by an error condition, but it can be a conscious choice to not provide a charging profile. Changed "able" to "going" to make this clear.

	ID	Precondition	Requirements	Note
Old	K19.FR.04	K19.FR.02	If the CSMS is not able to provide a charging schedule, it SHALL indicate this by setting the <i>status</i> field in the <i>NotifyEVChargingNeedsResponse</i> to <i>NoChargingProfile</i> .	(Note, <i>status</i> value differs from K15.FR.04). Charging Station will use a <i>TxDefaultProfile</i> or provide a schedule with unlimited power.
New	K19.FR.04	K19.FR.02	If the CSMS is not going to provide a charging schedule, it SHALL indicate this by setting the <i>status</i> field in the <i>NotifyEVChargingNeedsResponse</i> to <i>NoChargingProfile</i> .	(Note, <i>status</i> value differs from K15.FR.04). Charging Station will use a <i>TxDefaultProfile</i> or provide a schedule with maximum power of EVSE.

2.66. Page 395 - (2025-06) - CSMS requirement to support UsePriorityCharging

A CSMS must support priority charging. This has been added as a requirement.

New requirement

ID.	Precondition	Requirements	Note
K21.FR.10		CSMS SHALL support sending a <i>[useprioritychargingrequest]</i>	A Charging Station reports support for this in <i>SmartChargingCtrlr.SupportedAdditionalPurposes</i> .

2.67. Page 396 - (2025-06) - 5.5 Dynamic Charging Profile [882]

The following paragraphs are added to clarify use of *duration* field.

Duration in dynamic charging profiles

The field *duration* of *ChargingScheduleType* limits the maximum duration of a charging schedule. A dynamic charging profile consists of a charging schedule with only a single period. If no *duration* is given in the charging schedule, this period is valid

indefinitely, and the limits only change when updated via an [UpdateDynamicScheduleRequest](#) or [PullDynamicScheduleUpdateResponse](#) message or by an external system.

If a value for *duration* is given, then the charging schedule will end if no update for the limits has been received for more than *duration* seconds since the last update. This mechanism can be used to ensure that a dynamic charging profile that depends on regular limit updates from CSMS or an external system, will cease to be used when no updates are received anymore, e.g. because connection to the CSMS or external system has been lost.

2.68. Page 397 - (2025-06) - K28 missing requirement about duration [882]

No.	Type	Description
1	Name	Dynamic charging profiles from CSMS
...		
	Scenario description #1	Updates sent by CSMS
		...
		5. If <i>chargingSchedule.duration</i> is set and the <i>setpoint/limit</i> is not updated by a [updatedynamicschedulerequest] after <i>duration</i> seconds, then the <i>chargingSchedule</i> ends and Charging Station will fall back to the next valid charging profile.
		a. If <i>chargingSchedule.duration</i> has not been set, then the <i>chargingSchedule</i> is valid indefinitely, until the charging profile is cleared or replaced by CSMS.
	Scenario description #2	Updates requested by Charging Station
		...
		6. If <i>chargingSchedule.duration</i> is set and the <i>setpoint/limit</i> is not updated by a [pulldynamicscheduleupdateresponse] after <i>duration</i> seconds, then the <i>chargingSchedule</i> ends and Charging Station will fall back to the next valid charging profile.
		a. If <i>chargingSchedule.duration</i> has not been set, then the <i>chargingSchedule</i> is valid indefinitely, until the charging profile is cleared or replaced by CSMS.
...		

The following requirements have been copied from Q05 to K28, because they are generic.

New requirements

ID.	Precondition	Requirements	Note
K28.FR.13	When a <i>ChargingProfileType</i> has <i>chargingProfileKind</i> = <i>Dynamic</i> AND <i>chargingSchedule.duration</i> is set AND current time > (<i>chargingSchedule.duration</i> + <i>dynUpdateTime</i>)	Charging Station SHALL consider the charging profile invalid and switch to using the next valid charging profile.	This is a fallback when CSMS is no longer responding within time set by <i>duration</i> .
K28.FR.14	K28.FR.13 AND Charging Station receives an update for <i>limit</i> or <i>setpoint</i> from CSMS via [updatedynamicschedulerequest] or [pulldynamicscheduleupdateresponse]	Charging Station SHALL consider the charging profile eligible again as a valid profile.	This means the charging profile is valid again when a new update is received, assuming there is no other charging profile of higher stack level.

Having K28.FR.07 as precondition in K28.FR.09 is not correct.

Updated requirement

	ID.	Precondition	Requirements	Note
Old	K28.FR.09	K28.FR.06 OR K28.FR.07 OR K28.FR.08	Charging Station SHALL set <i>dynUpdateTime</i> to current time.	
New	K28.FR.09	K28.FR.06 OR K28.FR.07 OR K28.FR.08	Charging Station SHALL set <i>dynUpdateTime</i> to current time.	

2.69. Page 399 - (2025-09) - K28.FR.10 Precondition not complete

Pulling a new schedule is, of course, only required when the *dynUpdateInterval* has elapsed.

	ID.	Precondition	Requirements	Note
Old	K28.FR.10	When <i>chargingProfileKind</i> = <i>Dynamic</i> and <i>dynUpdateInterval</i> > 0 in <i>chargingProfile</i>	Charging Station SHALL send a [pullDynamicsScheduleUpdateRequest] with <i>chargingProfileId</i> = <i>chargingProfile.id</i> to request an update of the <i>chargingSchedulePeriod</i> .	
New	K28.FR.10	When <i>chargingProfileKind</i> = <i>Dynamic</i> and <i>dynUpdateInterval</i> > 0 in <i>chargingProfile</i> AND <i>dynUpdateTime</i> + <i>dynUpdateInterval</i> >= <current time>	Charging Station SHALL send a [pullDynamicsScheduleUpdateRequest] with <i>chargingProfileId</i> = <i>chargingProfile.id</i> to request an update of the <i>chargingSchedulePeriod</i> .	

New requirement

ID.	Precondition	Requirements	Note
K28.FR.15	When a [cmn_chargingScheduleType] of a [cmn_chargingProfileType] with <i>chargingProfileKind</i> = <i>Dynamic</i> contains the field <i>duration</i> AND current time > (<i>chargingSchedule.duration</i> + <i>dynUpdateTime</i>)	Charging Station SHALL consider the charging profile invalid and switch to using the next valid charging profile.	Field <i>duration</i> defines how long the charging schedule remains valid after receipt of a [updateDynamicsScheduleRequest] or [pullDynamicsScheduleUpdateResponse] .

2.70. Page 400 - (2025-06) - K29 missing requirement about duration [882]

The scenarios have been updated to show how to deal with a limited *duration* of a dynamic charging profile.

No.	Type	Description
1	Name	Dynamic charging profiles from external system
...		
	Scenario description #1	Charging profile from external system with dynamic updates
		...
		<ol style="list-style-type: none"> 5. If <i>chargingSchedule.duration</i> is set and the <i>setpoint/limit</i> is not updated by External System after <i>duration</i> seconds, then the <i>chargingSchedule</i> ends and Charging Station will fall back to the next valid charging profile. <ol style="list-style-type: none"> a. If <i>chargingSchedule.duration</i> has not been set, then the <i>chargingSchedule</i> is valid indefinitely, until the charging profile is cleared or replaced by External System.

No.	Type	Description
	Scenario description #2	<p>Charging profile from CSMS with dynamic updates from external system</p> <p>...</p> <p>5. If <i>chargingSchedule.duration</i> is set and the <i>setpoint/limit</i> is not updated by External System after <i>duration</i> seconds, then the <i>chargingSchedule</i> ends and Charging Station will fall back to the next valid charging profile. #</p> <p>a. If <i>chargingSchedule.duration</i> has not been set, then the <i>chargingSchedule</i> is valid indefinitely, until the charging profile is cleared or replaced by CSMS.</p> <p>...</p>
8	Remarks	<p>...</p> <p>It is advised to have a charging profile with a lower stack level present to fall back to, in case the dynamic charging profile is invalidated, because no update is provided within <i>duration</i> seconds.</p>

The following requirements have been copied from Q05 to K29, because they are generic.

New requirements

ID.	Precondition	Requirements	Note
K29.FR.07	When a ChargingProfileType has <i>chargingProfileKind</i> = <i>Dynamic</i> AND <i>chargingSchedule.duration</i> is set AND current time > (<i>chargingSchedule.duration</i> + <i>dynUpdateTime</i>)	Charging Station SHALL consider the charging profile invalid and switch to using the next valid charging profile.	This is a fallback when CSMS or External System is no longer responding within time set by <i>duration</i> .
K29.FR.08	K29.FR.07 AND Charging Station receives an update for <i>limit</i> or <i>setpoint</i> from External System	Charging Station SHALL consider the charging profile eligible again as a valid profile.	This means the charging profile is valid again when a new update is received, assuming there is no other charging profile of higher stack level. (See also K29.FR.03)

2.71. Page 401 - (2025-06) - K29.FR.04: updated precondition to using dynamic profiles

K29.FR.04 only applies when Charging Station intends to use a dynamic charging profile. This is reflected by adding K29.FR.05 in precondition.

	ID.	Precondition	Requirements	Note
Old	K29.FR.04	NOT K29.FR.03 AND [configkey-external-constraints-profile-disallowed] is false or absent AND An external system provides a current or power limit (i.e. single value, not a schedule)	Charging Station SHALL represent this as a [cmn_chargingprofiletype] with a single <i>chargingSchedulePeriod</i> , and having a <i>chargingProfilePurpose</i> = <i>ChargingStationExternalConstraints</i> with a <i>chargingProfileKind</i> = <i>Dynamic</i> .	The alternative, using a <i>chargingProfileKind</i> = <i>Absolute</i> , is described in K11.FR.06.
New	K29.FR.04	NOT K29.FR.03 AND K29.FR.05 AND [configkey-external-constraints-profile-disallowed] is false or absent AND An external system provides a current or power limit (i.e. single value, not a schedule)	Charging Station SHALL represent this as a [cmn_chargingprofiletype] with a single <i>chargingSchedulePeriod</i> , and having a <i>chargingProfilePurpose</i> = <i>ChargingStationExternalConstraints</i> with a <i>chargingProfileKind</i> = <i>Dynamic</i> .	The alternative, using a <i>chargingProfileKind</i> = <i>Absolute</i> , is described in K11.FR.06.

2.72. Page 402 - (2025-06) - K29.FR.05: Setpoint missing in precondition

	ID.	Precondition	Requirements	Note
Old	K29.FR.05	When external system updates a limit AND Charging Station represents this as a Dynamic charging profile	Charging Station SHALL update the <i>limit</i> or <i>setpoint</i> in this charging profile.	
New	K29.FR.05	When external system updates a limit or setpoint AND Charging Station represents this as a Dynamic charging profile	Charging Station SHALL update the <i>limit</i> or <i>setpoint</i> in this charging profile.	

2.73. Page 447 - (2025-09) - N01.FR.12 - Improved definition

Updated requirement definition to clarify the AcceptedCanceled status.

	ID	Precondition	Requirement definition
Old	N01.FR.12	When a Charging Station is assembling or uploading the log file AND the Charging Station receives a new GetLogRequest	The Charging Station SHOULD cancel the ongoing log file upload AND respond with status AcceptedCanceled.
New	N01.FR.12	When a Charging Station is assembling or uploading the log file AND the Charging Station receives a new GetLogRequest	The Charging Station SHOULD cancel the ongoing log file upload AND respond with GetLogResponse with status AcceptedCanceled.

2.74. Page 449 - (2025-09) - N02: changed empty to absent.

A number of requirements previously stated "empty" when they should have indicated "absent." For example, the phrases referring to monitoringCriteria and componentVariables being "empty" are incorrect. These arrays cannot be empty; they must be absent instead. This correction has been applied to all occurrences throughout section N02.

2.75. Page 450 - (2025-06) - N02.FR.13/23 monitoringCriteria DeltaMonitoring is used for TargetDelta [895]

There is no monitoring criteria TargetDeltaMonitoring. That is just DeltaMonitoring.

Change requirement

	ID	Precondition	Requirement definition
Old	N02.FR.13	If <i>monitoringCriteria</i> contains DeltaMonitoring	All monitors with <i>type</i> = Delta are reported.
New	N02.FR.13	If <i>monitoringCriteria</i> contains DeltaMonitoring	All monitors with <i>type</i> = Delta, TargetDelta and TargetDeltaRelative are reported.

Deleted requirement

ID	Precondition	Requirement definition
N02.FR.23 (2.1)	If <i>monitoringCriteria</i> contains TargetDeltaMonitoring	All monitors with <i>type</i> = TargetDelta and <i>type</i> = TargetDeltaRelative are reported.

2.76. Page 720 - (2025-06) - New configuration variable to allow TLS wildcard certificates

New configuration key

AllowCSMSTLSWildcards

Required	no		
Component	componentName	SecurityCtrlr	
Variable	variableName	AllowCSMSTLSWildcards	
	variableAttributes	mutability	ReadWrite
	variableCharacteristics	dataType	boolean
Description	<p>This variable allows a Charging Station to support non-compliant OCPP behavior and connect to a CSMS that uses a wildcard TLS server certificate for the OCPP connection.</p> <p>If this variable is present it SHALL be ReadWrite. If this variable is not implemented or has value false, the OCPP-compliant behavior is that a Charging Station rejects a connection from a CSMS that presents a wildcard certificate. It is highly RECOMMENDED to not allow wildcard certificates.</p>		

2.77. Page 454 - (2025-11) - N04 Added requirement

This requirement allows the Charging Station to reject the value zero when the Charging Station receives a [SetVariableMonitoringRequest](#) with type [Delta](#).

New requirement

ID	Precondition	Requirements	Note
N04.FR.20	When the Charging Station receives a SetVariableMonitoringRequest with type Delta and the value is zero.	The Charging Station SHOULD set the attributeStatus field in the corresponding SetMonitoringResult to: Rejected .	N04.FR.14 describes rejecting the negative value. This requirement allows the Charging Station to also reject the value zero.

2.78. Page 461 - (2025-11) - Added remark to N09

The fact that *customerCertificate* can be supplied to *CustomerInformationRequest* does not imply that there is a need to stop plug-and-charge contract certificates on a charging station. This is clarified in the remark of the use case.

No.	Type	Description
1	Name	Get Customer Information
...
8	Remark(s)	The fact that <i>customerCertificate</i> can be supplied to [customerinformationrequest] does not imply that there is a requirement to store plug-and-charge contract certificates on a charging station.

2.79. Page 462 - (2025-11) - N09.FR.06 Improvement requirement definition

Minor improvement of requirement definition to clarify that [NotifyCustomerInformationRequest](#) data field is set to an empty string.

	ID	Precondition	Requirement definition	Note
Old	N09.FR.06	N09.FR.02 AND the Charging Station has no information stored about the customer referred to by the customer identifier.	The Charging Station SHALL send one NotifyCustomerInformationRequest message to the CSMS indicating that no data was found.	
New	N09.FR.06	N09.FR.02 AND the Charging Station has no information stored about the customer referred to by the customer identifier.	The Charging Station SHALL send one NotifyCustomerInformationRequest message to the CSMS with the data field set to an empty string.	

2.80. Page 739 - (2025-09) - Error in description of AlignedData interval variables [1043]

The Interval and TxEndedInterval variables of AlignedDataCtrlr mention an incorrect time and duration format (ISO8601) that is not supported by OCPP.

2.80.1. AlignedDataInterval

...	...
Description	<p>Size (in seconds) of the clock-aligned data interval, intended to be transmitted in the MeterValuesRequest or TransactionEventRequest message. This is the size (in seconds) of the set of evenly spaced aggregation intervals per day, starting at 00:00:00 (midnight). For example, a value of 900 (15 minutes) indicates that every day should be broken into 96 15-minute intervals.</p> <p>When clock-aligned data is being transmitted, the interval in question is identified by the start time and (optional) duration interval value, represented according to the ISO8601 standard.</p> <p>A value of "0" (numeric zero), by convention, is to be interpreted to mean that no clock-aligned data should be transmitted.</p>

2.80.2. AlignedDataTxEndedInterval

...	...
Description	<p>Size (in seconds) of the clock-aligned data interval, intended to be transmitted in the TransactionEventRequest (eventType = Ended) message. This is the size (in seconds) of the set of evenly spaced aggregation intervals per day, starting at 00:00:00 (midnight). For example, a value of 900 (15 minutes) indicates that every day should be broken into 96 15-minute intervals.</p> <p>When clock-aligned data is being collected, the interval in question is identified by the start time and (optional) duration interval value, represented according to the ISO8601 standard. All intervals are transmitted (if so enabled) at the end of the transaction in 1 TransactionEventRequest (eventType = Ended) message.</p> <p>This is not a recommended practice, since the size of the message can become very large.</p>

2.80.3. AlignedDataUpstreamInterval

New in OCPP 2.1

...	...
-----	-----

Description	<p>Size (in seconds) of the clock-aligned data interval, intended to be transmitted in the MeterValuesRequest message for location <code>Upstream</code> only. This is the size (in seconds) of the set of evenly spaced aggregation intervals per day, starting at 00:00:00 (midnight). For example, a value of 900 (15 minutes) indicates that every day should be broken into 96 15-minute intervals.</p> <p>When clock-aligned data is being transmitted, the interval in question is identified by the start time and (optional) duration interval value, represented according to the ISO8601 standard. All "per-period" data (e.g. energy readings) should be accumulated (for "flow" type measurands such as energy), or averaged (for other values) across the entire interval, and transmitted (if so enabled) at the end of each interval, bearing the interval start time timestamp. → A value of "0" (numeric zero), by convention, is to be interpreted to mean that no clock-aligned data should be transmitted.</p>
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2.81. Page 492 - (2025-09) - Text instances of `dischargingLimit` instead of `dischargeLimit`

There were many instance of the word *dischargingLimit* being used in text or requirements of section Q, instead of the correct word *dischargeLimit*. This has been fixed globally.

2.82. Page 499 - (2025-06) - Additional V2X generic requirements

The phase-related requirement from K01 also apply to discharging and setpoint parameters in block Q.

New requirements

ID	Precondition	Requirement definition	Note
V2X.06		Any requirements for <i>limit</i> , <i>dischargingLimit</i> , <i>setpoint</i> and <i>setpointReactive</i> also apply to their equivalents with postfix <code>_L2</code> and <code>_L3</code>	
V2X.07		The postfixed L2 and L3 variants of <i>limit</i> , <i>dischargingLimit</i> , <i>setpoint</i> and <i>setpointReactive</i> can only occur in combination with the associated field without the postfix.	See K01.FR.145
V2X.08	When <code>v2xChargingParameters</code> of [notifyevchargingneedsrequest] from Charging Station does not contain <code>maxDischargePower_L2</code> and/or <code>maxDischargePower_L3</code>	CSMS SHALL NOT provide values for <i>dischargeLimit_L2</i> , <i>dischargeLimit_L3</i> , <i>setpoint(Reactive)_L2</i> or <i>setpoint(Reactive)_L3</i> fields in a charging profile.	If EV does not report L2/L3 fields then do not provide separate limits for them. See K01.FR.142.
V2X.09	When CSMS sends a [setchargingprofilerequest] for a <i>chargingProfilePurpose</i> other than <code>TxProfile</code>	CSMS SHALL NOT provide values for <i>dischargeLimit_L2</i> , <i>dischargeLimit_L3</i> , <i>setpoint(Reactive)_L2</i> or <i>setpoint(Reactive)_L3</i> fields in <i>chargingSchedulePeriods</i> of the charging profile	Only a <code>TxProfile</code> is submitted after receiving a <code>NotifyEVChargingNeedsRequest</code> . See K01.FR.143.
V2X.10	(V2X.08 OR V2X.09) AND Charging Station receives a [setchargingprofilerequest] with values for <i>dischargeLimit_L2</i> , <i>dischargeLimit_L3</i> , <i>setpoint(Reactive)_L2</i> or <i>setpoint(Reactive)_L3</i> fields in a charging profile	Charging Station SHALL respond with [setchargingprofileresponse] with <i>status</i> = <code>Rejected</code> and a <i>statusInfo</i> with <i>reasonCode</i> = <code>"PhaseConflict"</code> .	See K01.FR.144.

2.83. Page 503 - (2025-06) - Q01.FR.05 Precondition needs to refer to ISO15118.ServiceRenegotiationSupport

	ID.	Precondition	Requirements	Note
Old	Q01.FR.05	Q01.FR.04	Charging Station SHOULD start a service renegotiation with EV for a different energy transfer service	This situation should not occur when an energy transfer is selected from the <i>allowedEnergyTransfer</i> list in the <i>AuthorizeResponse</i> .
New	Q01.FR.05	Q01.FR.04 AND ISO15118.ServiceRenegotiationSupport = true	Charging Station SHALL start a service renegotiation with EV for a different energy transfer service and send a new <i>NotifyEVChargingNeedsRequest</i>	This situation should not occur when an energy transfer is selected from the <i>allowedEnergyTransfer</i> list in the <i>AuthorizeResponse</i> .

2.84. Page 503 - (2025-11) - Q01.FR.04 Removed note

The note for Q01.FR.04 is not correct. Stopping or renegotiating is determined by other requirements.

ID.	Precondition	Requirements	Note
Q01.FR.04	If CSMS does not accept the <i>requestedEnergyTransfer</i>	CSMS SHALL respond with a <i>[notifyevchargingneedsresponse]</i> with <i>status</i> = Rejected.	Charging station will then stop the transaction.

2.85. Page 504 - (2025-09) - Q01.FR.02 Enhanced precondition to apply only for V2X

The need to send an EVCCID only applies for stations that are able to switch to V2X. This has been added to precondition.

	ID.	Precondition	Requirements	Note
Old	Q01.FR.02	When Charging Station starts an ISO 15118-20 transaction	Charging Station SHALL add EVCCID to <i>idToken</i> in <i>[transactioneventrequest]</i> (<i>eventType</i> =Started) in <i>idToken.additionalInfo.additionalIdToken</i> and with <i>idToken.additionalInfo.type</i> set to "EVCCID".	This transaction may become bidirectional. This is needed in case CSMS uses the EVCCID of vehicle to decide whether to allow V2X.
New	Q01.FR.02	When Charging Station's ISO15118Ctrlr.Enabled = true and V2XChargingCtrlr.Enabled = true AND When Charging Station starts an ISO 15118-20 transaction	Charging Station SHALL add EVCCID to <i>idToken</i> in <i>[transactioneventrequest]</i> (<i>eventType</i> =Started) in <i>idToken.additionalInfo.additionalIdToken</i> and with <i>idToken.additionalInfo.type</i> set to "EVCCID".	This transaction may become bidirectional. This is needed in case CSMS uses the EVCCID of vehicle to decide whether to allow V2X.

2.86. Page 504 - (2025-09) - Q01.FR.07 Clarified difference Accepted and Processing

The difference between status Accepted and Processing was not mentioned in requirement, because that is described in use cases K18 and K19. As such, the requirement Q01.FR.07 could have been omitted in Q01, but since it is so essential to the use case flow, it was added to the requirements table. This errata clarifies the difference between Accepted and Processing and refers to K18 and K19.

	ID.	Precondition	Requirements	Note
Old	Q01.FR.07	If CSMS accepts the <i>requestedEnergyTransfer</i>	CSMS SHALL respond with a [notifyevchargingneedsresponse] with <i>status</i> = Accepted or Processing.	Charging station can expect to receive a charging profile immediately or soon.
New	Q01.FR.07	If CSMS accepts the <i>requestedEnergyTransfer</i>	CSMS SHALL respond with a [notifyevchargingneedsresponse] with <i>status</i> = Accepted if able to provide a charging profile immediately or Processing if more time is needed to provide a charging profile .	See requirements K18/19.FR.03 and K18/19.FR.05. Charging station can expect to receive a charging profile immediately or soon.

2.87. Page 504 - (2025-09) - Q01.FR.08 Improved precondition

Q01.FR.08 had Q01.FR.01 as precondition, but they were contradicting each other about being able and not able to determine *allowedEnergyTransfer*. Relevant part of Q01.FR.01 precondition has been added to Q01.FR.08.

	ID.	Precondition	Requirements	Note
Old	Q01.FR.08	Q01.FR.01 AND CSMS is not able to determine a list of <i>allowedEnergyTransfer</i> before sending the [authorizeresponse]	CSMS SHALL omit <i>allowedEnergyTransfer</i> from [authorizeresponse] .	This can happen if it could not be determined within the short time span before the response has to be returned, e.g. because a third party has to be requested for permission.
New	Q01.FR.08	Q01.FR.01 AND Charging Station's ISO15118Ctrlr.Enabled = true and V2XChargingCtrlr.Enabled = true AND CSMS receives an [authorizerequest] AND CSMS is not able to determine a list of <i>allowedEnergyTransfer</i> before sending the [authorizeresponse]	CSMS SHALL omit <i>allowedEnergyTransfer</i> from [authorizeresponse] .	This can happen if it could not be determined within the short time span before the response has to be returned, e.g. because a third party has to be requested for permission.

2.88. Page 503 - (2025-06) - Q01.FR.09 Wrong precondition

	ID.	Precondition	Requirements	Note
Old	Q01.FR.09	Q01.FR.20	Charging Station SHALL send a [notifyevchargingneedsrequest] with <i>evseld</i> set to the EVSE used for this transaction and <i>requestedEnergyTransfer</i> set to its default energy transfer (charging only AC/DC) and <i>availableEnergyTransfer</i> set to the supported energy transfers.	Depending on type of EVSE this will be AC_single_phase, AC_two_phase, AC_three_phase or DC, DC_ACDP
New	Q01.FR.09	Q01.FR.08	Charging Station SHALL send a [notifyevchargingneedsrequest] with <i>evseld</i> set to the EVSE used for this transaction and <i>requestedEnergyTransfer</i> set to its default energy transfer (charging only AC/DC) and <i>availableEnergyTransfer</i> set to the supported energy transfers.	Depending on type of EVSE this will be AC_single_phase, AC_two_phase, AC_three_phase or DC, DC_ACDP

2.89. Page 504 - (2025-06) - Q02 Use case text not in line with Q02.FR.03

No.	Type	Description
1	Name	Starting in operationMode ChargingOnly before enabling V2X
...		
	Scenario description	<p>1. The Charging Station sends a [authorizerequest] with EVCCID of EV in <i>additionalInfo</i> of <i>idToken</i>.</p> <p>a. The CSMS cannot (yet) allow V2X and returns an [authorizeresponse] with <i>idTokenInfo.status</i> = Accepted and omits the field <i>allowedEnergyTransfer</i>.</p> <p>...</p>
...		

2.90. Page 509 - (2025-11) - (discharge)limit can exist with setpoint [1009]

A *limit* or *dischargeLimit* can be used to limit the range of a *setpoint* and to limit a potential overshoot when reaching for a *setpoint*.

Changed requirement

	ID.	Precondition	Requirements	Note
Old	Q03.FR.02	Q03.FR.01	CSMS SHALL NOT include fields <i>limit</i> and <i>dischargeLimit</i> in the [cmn_chargingscheduleperiodtype] .	This also includes the L2 and L3 variants of those fields.
New	Q03.FR.02	Q03.FR.01	CSMS SHALL provide a value for <i>setpoint</i>	This optionally includes the L2 and L3 variants of <i>setpoint</i>

New requirement

ID.	Precondition	Requirements	Note
Q03.FR.03	Q03.FR.02	CSMS MAY include <i>limit</i> and/or <i>dischargeLimit</i> in the [cmn_chargingscheduleperiodtype] to limit the range of <i>setpoint</i> and the allowed overshoot when approaching the <i>setpoint</i> .	(See section Q 2.1 and Q 2.2)

2.91. Page 513 - (2025-06) - Q05 add requirement about duration [822]

Requirement from K28 has been added that charging profile becomes valid again after an update of limit is received.

New requirement

ID	Precondition	Requirements	Note
Q05.FR.08	Q05.FR.07 AND Charging Station receives an update for <i>limit</i> , <i>dischargingLimit</i> or <i>setpoint</i> from External System	Charging Station SHALL consider the charging profile eligible again as a valid profile.	This means the charging profile is valid again when a new update is received, assuming there is no other charging profile of higher stack level.

2.92. Page 514 - (2025-06) - Prerequisite in use case Q06 updated

The use case Q06 contains a prerequisite about TxProfile or TxDefaultProfile which does not belong here.

No.	Type	Description
-----	------	-------------

1	Name	External V2X control with a charging profile from an External System
...		
5	Prerequisites	<p>For discharging, at least one of the active charging sessions must have an active TxProfile or TxDefaultProfile for V2X operations.</p> <p>Configuration variable [configkey-external-control-signals-enabled] = true.</p> <p>Configuration variable [configkey-external-constraints-profile-disallowed] = false or absent.</p>
...		

2.93. Page 516 - (2025-06) - Q06.FR.11/12 can be combined [883]

Requirements Q06.FR.11 and Q06.FR.12 are overlapping and can be combined.

	ID	Precondition	Requirements	Note
Old	Q06.FR.11	Q06.FR.02 OR Q06.FR.04	Charging Station SHALL send a [notifycharginglimitrequest] with <i>chargingLimitSource</i> = EMS, <i>isDynamic</i> = true and with the received schedule in <i>chargingSchedule</i> to CSMS.	This <i>chargingSchedule</i> will only have a single period.
New	Q06.FR.11	(Q06.FR.02 OR Q06.FR.04) AND The value of <i>limit</i> , <i>dischargingLimit</i> , <i>setpoint</i> , <i>setpointReactive</i> changes more than SmartChargingCtrlr.LimitChangeSignificance	Charging Station SHALL send a [notifycharginglimitrequest] with <i>chargingLimitSource</i> = EMS, <i>isDynamic</i> = true and with the received schedule in <i>chargingSchedule</i> to CSMS.	This <i>chargingSchedule</i> will only have a single period. Also applies to L2 and L3 values.

Deleted requirement

ID	Precondition	Requirements	Note
Q06.FR.12	Q06.FR.07 AND The value of <i>limit</i> , <i>dischargingLimit</i> , <i>setpoint</i> , <i>setpointReactive</i> changes more than SmartChargingCtrlr.LimitChangeSignificance	Charging Station SHALL send a [notifycharginglimitrequest] with <i>chargingLimitSource</i> = EMS, <i>isDynamic</i> = true and a schedule with the new values in <i>chargingSchedule</i> to CSMS.	Also applies to L2 and L3 values.

2.94. Page 517 - (2025-06) - Q06 add requirement about duration [822]

Requirement from K29 has been added that charging profile becomes valid again after an update of limit is received.

New requirement

ID	Precondition	Requirements	Note
Dynamic duration			
Q06.FR.40	When a ChargingProfileType has <i>chargingProfileKind</i> = Dynamic AND <i>chargingSchedule.duration</i> is set AND current time > (<i>chargingSchedule.duration</i> + <i>dynUpdateTime</i>)	Charging Station SHALL consider the charging profile invalid and switch to using the next valid charging profile.	This is a fallback when External System is no longer responding within time set by <i>duration</i> . (Same as K29.FR.07)
Q06.FR.41	Q06.FR.40 AND Charging Station receives an update for <i>limit</i> , <i>dischargingLimit</i> or <i>setpoint</i> from External System	Charging Station SHALL consider the charging profile eligible again as a valid profile.	This means the charging profile is valid again when a new update is received, assuming there is no other charging profile of higher stack level.

2.95. Page 519 - (2025-09) - Q07 Added requirements

Q07 is a special case of CentralSetpoint, but some requirements were added for completeness.

New requirements

ID.	Precondition	Requirements	Note
OperationMode CentralFrequency			
Q07.FR.01	When Charging Station supports centrally controlled frequency support	Charging Station SHALL report the operation mode <code>CentralFrequency</code> in <code>[configkey-v2xsupportedoperationmodes]</code>	
Q07.FR.02	When CSMS is providing centrally controlled frequency support via setpoints	CSMS SHALL send a <code>[setchargingprofilerequest]</code> message with <code>chargingProfileKind = Dynamic</code> and a single <code>chargingSchedulePeriod</code> that has <code>operationMode = CentralFrequency</code> .	
Q07.FR.03	Q07.FR.02	CSMS SHALL NOT include fields <code>limit</code> and <code>dischargeLimit</code> in the <code>[cmn_chargingscheduleperiodtype]</code> .	This also includes the L2 and L3 variants of those fields.
Q07.FR.04	Q07.FR.02	CSMS IS RECOMMENDED to set a <code>duration</code> of the <code>chargingSchedule</code> to prevent that the schedule remains active indefinitely when CSMS is unable to send any <code>[updatedynamicschedulerequest]</code> for whatever reason.	

2.96. Page 522 - (2025-09) - Q08.FR.02/12 Requirement updates for aFRR

Changed requirement

	ID.	Precondition	Requirements	Note
Old	Q08.FR.02	Q08.FR.01	The <code>[cmn_chargingscheduleperiodtype]</code> SHALL have a <code>v2xFreqWattCurve</code> with at least two <code>[cmn_v2xfreqwattpointtype]</code> elements, and a value for <code>v2xBaseline</code> .	
New	Q08.FR.02	Q08.FR.01	The <code>[cmn_chargingscheduleperiodtype]</code> SHALL have a <code>v2xFreqWattCurve</code> with at least two <code>[cmn_v2xfreqwattpointtype]</code> elements, and a value for <code>v2xBaseline</code> , and optionally a <code>v2xSignalWattCurve</code> with at least two <code>[cmn_v2xsignalwattpointtype]</code> elements.	

New requirements

ID.	Precondition	Requirements	Note
Q08.FR.12	When CSMS receives an aFRR signal from an external actor	CSMS SHALL send a <code>[afrrsignalrequest]</code> with <code>timestamp</code> set to current time and <code>signal</code> set to value received from external actor.	External actor is, for example, a TSO.
Configuration			
Q08.FR.20	When Charging Station supports local frequency support	Charging Station SHALL report the operation mode <code>LocalFrequency</code> in <code>[configkey-v2xsupportedoperationmodes]</code>	

2.97. Page 539 - (2025-11) - R01-03 added a prerequisite to use case

A prerequisite to the use case was added, that the DER controls in use must be reported in `AC/DCDERCtrlr.ModesSupported`.

2.97.1. R01 - Starting a V2X session with DER control in EVSE

No.	Type	Description
1	Name	Starting a V2X session with DER control in EVSE
2	ID	R01
...
5	Prerequisites	<ul style="list-style-type: none"> In advance utility has sent DER control settings to the CSMS of CSO. In this example these are a VoltWatt curve and a limitation of discharging power to 50% of the rated power of the inverter. The DER controls to configure are supported by the Charging Station and reported in DCDERCtrlr.ModesSupported (for DC) or ACDERCtrlr.ModesSupported (for AC). CSMS has conveyed these settings as SetDERControlRequest messages to the Charging Station: <ol style="list-style-type: none"> SetDERControlRequest(isDefault = true, controlType = VoltWatt, curve = {...}) SetDERControlRequest(isDefault = true, controlType = LimitDischargePower, limitMaxDischarge = { pctMaxDischargePower = 50.0}) <p>See use cases [r04_configure_der].</p>
...

2.97.2. R02 - Starting a V2X session with DER control in EV

No.	Type	Description
1	Name	Starting a V2X session with DER control in EV
2	ID	R02
...
5	Prerequisites	<ul style="list-style-type: none"> In advance utility has sent DER control settings to the CSMS of CSO. In this example these are a VoltWatt curve and a limitation of discharging power to 50% of the rated power of the inverter. The DER control settings are not reported by Charging Station in ACDERCtrlr.ModesSupported , meaning they will have to be sent to EV. CSMS has conveyed these settings as SetDERControlRequest messages to the Charging Station: <ol style="list-style-type: none"> SetDERControlRequest(isDefault = true, controlType = HVMustTrip, curve = {...}) SetDERControlRequest(isDefault = true, controlType = LimitDischargePower, limitMaxDischarge = { pctMaxDischargePower = 50.0}) <p>See use cases [r04_configure_der].</p>
...

2.97.3. R03 - Starting a V2X session with hybrid DER control in both EV and EVSE

No.	Type	Description
1	Name	Starting a V2X session with hybrid DER control in both EV and EVSE
2	ID	R03
...
5	Prerequisites	<ul style="list-style-type: none"> In advance utility has sent DER control settings to the CSMS of CSO. In this example these are a high frequency trip curve (HVMustTrip) and a limitation of discharging power (LimitMaxDischarge) to 50% of the rated power of the inverter. Charging Station reports "LimitMaxDischarge" in ACDERCtrlr.ModesSupported . CSMS has conveyed the settings as SetDERControlRequest messages to Charging Station.
...

2.98. Page 550 - (2025-09) - R04 extra requirements to SetDERControlRequest [997]

A default control cannot have a *startTime* or *duration*. Requirements have been added to make this explicit. The mapping of *controlType* to control fields has been made explicit.

New requirements

ID.	Precondition	Requirements	Note
R04.FR.12		CSMS SHALL not send a [setdercontrolrequest] that has <i>isdefault</i> = true for a control that has a <i>startTime</i> and/or <i>duration</i> field	All controls except <i>enterService</i> and <i>gradient</i> have optional <i>startTime</i> , <i>duration</i> .
R04.FR.13	Charging Station receives a [setdercontrolrequest] with <i>isDefault</i> = true AND a control that has a <i>startTime</i> and/or <i>duration</i> field	Charging Station SHALL respond with [setdercontrolresponse] with <i>status</i> = Rejected	Default controls cannot have a <i>startTime</i> or <i>duration</i> .
R04.FR.14		CSMS SHALL not send [setdercontrolrequest] that has <i>isdefault</i> = false for <i>controlType</i> = <i>EnterService</i> or <i>Gradients</i>	These only exist as default controls.
R04.FR.15	Charging Station receives a [setdercontrolrequest] with <i>isDefault</i> = false AND <i>controlType</i> = <i>EnterService</i> or <i>Gradients</i>	Charging Station SHALL respond with [setdercontrolresponse] with <i>status</i> = Rejected	
R04.FR.16		CSMS SHALL only provide in [setdercontrolrequest] the control field that is related to <i>controlType</i> , according to the following mapping: <i>fixedPFAbsorb</i> for <i>FixedPFAbsorb</i> , <i>fixedPFInject</i> for <i>FixedPFInject</i> , <i>fixedVar</i> for <i>FixedVar</i> , <i>limitMaxDischarge</i> for <i>LimitMaxDischarge</i> , <i>freqDroop</i> for <i>FreqDroop</i> , <i>enterService</i> for <i>EnterService</i> , <i>gradient</i> for <i>Gradients</i> , <i>curve</i> for all other <i>controlTypes</i>	
R04.FR.17	Charging Station receives a [setdercontrolrequest] with multiple controls or with a control that does not match <i>controlType</i>	Charging Station SHALL respond with [setdercontrolresponse] with <i>status</i> = Rejected	See R04.FR.16 for mapping of control fields to <i>controlType</i> .

2.99. Page 550 - (2025-11) - Report AC/DCDERCtrl.ModesSupported [1070]

A charging station must report the supported DER controls in *AC/DCDERCtrlr.ModesSupported* and a CSMS should check which controls it can send to a charging station.

ID.	Precondition	Requirements	Note
R04.FR.18		A DC Charging Station SHALL report the DER controls that it supports in DCDERCtrlr.ModesSupported	For AC Charging Stations see R03.FR.03.

R04.FR.19		CSMS SHOULD NOT send a [setdercontrolrequest] to a DC Charging Station for a <i>controlType</i> that is not reported in DCDERCtrlr.ModesSupported .	
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2.100. Page 551 - (2025-09) - R04 extra requirements to GetDERControlRequest [998]

Requirement added for the case where only *isDefault* is provided as a parameter.

New requirement

ID.	Precondition	Requirements	Note
R04.FR.37	NOT R04.FR.30 AND Charging Station receives a [getdercontrolrequest] with a value for <i>isDefault</i> and no <i>controlType</i> and no <i>controlId</i>	Charging Station SHALL return a <i>status</i> = Accepted and send one or more [reportdercontrolrequest] messages for all controls that match the value of <i>isDefault</i> .	This is used to request all default or all scheduled controls at once.

2.101. Page 551 - (2025-09) - R04 updated requirements to ClearDERControlRequest [999]

Requirements R04.FR.41 and R04.FR.42 have been simplified. The way that requirement R04.FR.45 was phrased, it always returns Accepted — even when no matching controls exist. Requirement R04.FR.46 has been added for clearing based on *controlId*.

Changed requirements

	ID.	Precondition	Requirements	Note
Old	R04.FR.41	Charging Station receives a [clearercontrolrequest] with no <i>controlId</i> and with a <i>controlType</i> that it supports, but that has not been set at the Charging Station for the specified value of <i>isDefault</i>	Charging Station returns a [clearercontrolresponse] with <i>status</i> = NotFound.	
New	R04.FR.41	Charging Station receives a [clearercontrolrequest] with no <i>controlId</i> and with a <i>controlType</i> that it supports, but that has not been set at the Charging Station for the specified value of <i>isDefault</i>	Charging Station returns a [clearercontrolresponse] with <i>status</i> = NotFound.	
Old	R04.FR.42	Charging Station receives a [clearercontrolrequest] with no <i>controlType</i> and with a <i>controlId</i> that has not been set for the given value of <i>isDefault</i>	Charging Station SHALL respond with [clearercontrolresponse] with <i>status</i> = NotFound.	

New	R04.FR.42	Charging Station receives a [clearercontrolrequest] with no <i>controlType</i> and with a <i>controlId</i> that has not been set for the given value of <i>isDefault</i>	Charging Station SHALL respond with [clearercontrolresponse] with <i>status</i> = <i>NotFound</i> .	
Old	R04.FR.45	Charging Station receives a [clearercontrolrequest] with no <i>controlId</i> and with a <i>controlType</i> that it supports and that is in use	Charging Station SHALL clear all controls that match the value of <i>isDefault</i> and <i>controlType</i> in the request, and return a [clearercontrolresponse] with <i>status</i> = <i>Accepted</i> .	Return default or scheduled messages for <i>controlType</i> based on value of <i>isDefault</i> .
New	R04.FR.45	Charging Station receives a [clearercontrolrequest] with no <i>controlId</i> and with a <i>controlType</i> that it supports and that is in use that has been set for the given value of <i>isDefault</i>	Charging Station SHALL clear all controls that match the value of <i>isDefault</i> and <i>controlType</i> in the request, and return a [clearercontrolresponse] with <i>status</i> = <i>Accepted</i> .	Clear default or scheduled messages for <i>controlType</i> based on value of <i>isDefault</i> .

New requirement

R04.FR.46	Charging Station receives a [clearercontrolrequest] with a <i>controlId</i> that has been set for the given value of <i>isDefault</i>	Charging Station SHALL clear the control that matches the value of <i>controlId</i> in the request, and return a [clearercontrolresponse] with <i>status</i> = <i>Accepted</i> .	
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2.102. Page 552 - (2025-11) - Added requirements to clarify value of *yUnit* in curves

The following requirements were added to clarify what the value of *yUnit* must be in a curve.

New requirements

ID.	Precondition	Requirements	Note
yUnits for DER control curves			
R04.FR.50	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = <i>FreqWatt</i>	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = <i>PctMaxW</i> or <i>PctWAvail</i>	
R04.FR.51	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = <i>HFMustTrip</i> or <i>HFMayTrip</i> or <i>HVMustTrip</i> or <i>HVMomCess</i> or <i>HVMayTrip</i> or <i>LFMustTrip</i> or <i>LVMustTrip</i> or <i>LVMomCess</i> or <i>LVMayTrip</i>	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = <i>Not_applicable</i>	
R04.FR.52	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = <i>VoltVar</i>	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = <i>PctMaxVar</i> or <i>PctVarAvail</i>	

R04.FR.53	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = VoltWatt	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = PctMaxW or PctWAvail	
R04.FR.54	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = WattPF	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = Not_applicable	
R04.FR.55	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = WattVar	The [setdercontrolrequest] SHALL contain a curve with <i>yUnit</i> = PctMaxVar or PctVarAvail	
R04.FR.56	When CSMS sends a [setdercontrolrequest] with <i>controlType</i> = LimitMaxDischarge	The [setdercontrolrequest] SHALL contain a <i>limitMaxDischarge</i> element with an optional <i>powerMonitoringMustTrip</i> with a curve with <i>yUnit</i> = Not_applicable	

2.103. Page 560 - (2025-11) - S03 - BatterySwapResponse cannot return Accepted [1079]

Use case S03 mentions that after a BatterySwapRequest CSMS responds with a BatterySwapResponse with *status* = Accepted. This is not possible, however, because BatterySwapResponse does not return a *status* field.

The use case is adapted accordingly and a remark is added how a *status* field can be added as *customData*, if it is essential to be able to reject a swap.

No.	Type	Description
1	Name	Battery Swap In/Out
2	ID	S03
...	...	
	Scenario description	<ol style="list-style-type: none"> 1. ... 2. ... 3. ... 4. If CSMS accepts this battery, then 4. CSMS responds with [batteryswapresponse] with status = Accepted. <li style="padding-left: 20px;">a. ... 5. If CSMS does not accept this set of batteries for whatever reason, then this cannot be specified as a rejection status in the response, unless the <i>customData</i> solution (as described in Remarks) has been implemented. <li style="padding-left: 20px;">a. CSMS responds with [batteryswapresponse] with status = Rejected and statusInfo.reasonCode = "BatteryDamaged". (When desired, more specific information can be given in additionalInfo).
		<ol style="list-style-type: none"> 6. ... 7. ... <li style="padding-left: 20px;">a. ... 8. ... 9. Charging Station sends a [batteryswaprequest] with <i>eventType</i> = BatteryOut and the <i>requestId</i> from the BatteryIn event and a <i>batteryData</i> field with <i>evse</i> set to number of the slot where each battery is taken from, and the parameters <i>serialNumber</i>, <i>SoC</i>, <i>SoH</i>. <li style="padding-left: 20px;">a. CSMS responds with [batteryswapresponse] with status = Accepted. <li style="padding-left: 20px;">b. ... 10. ...
...	...	

No.	Type	Description
7	Error handling	<p>If CSMS does not accept the inserted battery, this can only be communicated with a <i>customData</i> extension in <i>[batteryswapresponse]</i> with <i>vendorId</i> = "org.openchargealliance.batteryswapresponse".</p> <p><i>customData</i> extension</p> <pre> "customData": { "vendorId": "org.openchargealliance.batteryswapresponse", "status": "Rejected", <== Accepted Rejected "statusInfo": { <== optional element "reasonCode": "BatteryUnknown", "additionalInfo": "Not a battery of this CPO" } } </pre> <p>A charging station that supports this customization, will report this via the variable <i>CustomImplementationEnabled</i>["org.openchargealliance.batteryswapresponse"] = true.</p> <p>Predefined reason codes contain: BatterySoHLow, BatterySoC, BatteryDamaged, BatteryUnknown, BatteryType, NoBatteryAvailable. See Appendix 5 Reason Codes.</p>
8	...	

2.104. Page 561 - (2025-11) - Added requirement for BatteryCtrlr.SwapOrder [1073]

A config variable BatteryCtrlr.SwapOrder has been introduced to tell CSMS about the order the swap station uses when swapping batteries. The default is "In-Out" for first inserting the empty (old) batteries and then extracting the charged (new) batteries. If the reverse order is used, then this must be explicitly reported as SwapOrder = "Out-In".

2.104.1. S03 - Battery Swap In/Out

No.	Type	Description
1	Name	Battery Swap In/Out
2	ID	S03
3	Objective(s)	To show how the action of returning the empty battery and accepting a charge battery is recorded.
...
8	Remark(s)	<p>...</p> <p>Battery swap stations usually operate as "old battery in first, new battery out second", as described in this use case. The described mechanism also works, however, when the order is reversed. If that is the case, this must be reported as BatterySwapCtrlr.SwapOrder = "Out-In".</p> <p>...</p>

2.104.2. S03 - Battery Swap In/Out - Requirements

New requirement

ID	Precondition	Requirement definition	Note
S03.FR.07	If Charging Station uses the reverse swap order, i.e. first take new batteries out and then insert old batteries in	Charging Station SHALL report BatterySwapCtrlr.SwapOrder with value "Out-In"	The default swap order (In-Out) need not be reported, but may be reported by BatterySwapCtrlr.SwapOrder with value "In-Out".

2.105. Page 563 - (2025-11) - S04.FR.01 changed start charging to start transaction

Requirement S04.FR.01 mentions "start charging the battery", but this suggests immediate energy transfer, which is not correct.. The actual start of energy transfer may be delayed, e.g. until after the [BatterySwapResponse](#) has been sent, or when cheap energy is available. This is up to the implementation.

The fact that energy transfer may not be immediate is now also reflected in the *chargingState* in S04.FR.02/03.

	ID	Precondition	Requirement definition	Note
Old	S04.FR.01	When a battery is inserted into a slot	Charging Station SHALL start charging the battery.	
New	S04.FR.01	When a battery is inserted into a slot	Charging Station SHALL initiate the process of charging the battery	The actual energy transfer to the battery can be delayed, e.g. until after the BatterySwapResponse has been sent, or when cheap energy is available. This is up to the implementation.
Old	S04.FR.02	S04.FR.01 AND [configkey-battery-swap-idthoken] is set	Charging Station SHALL send a [transactioneventrequest] with <i>eventType</i> = Started and <i>triggerReason</i> = CablePluggedIn and <i>chargingState</i> = Charging and <i>idToken.idToken</i> = [configkey-battery-swap-idthoken] and <i>idToken.type</i> = Central.	
New	S04.FR.02	S04.FR.01 AND [configkey-battery-swap-idthoken] is set	Charging Station SHALL send a [transactioneventrequest] with <i>eventType</i> = Started and <i>triggerReason</i> = CablePluggedIn and <i>chargingState</i> = EVConnected and <i>idToken.idToken</i> = [configkey-battery-swap-idthoken] and <i>idToken.type</i> = Central.	
Old	S04.FR.03	S04.FR.01 AND [configkey-battery-swap-idthoken] is not set	Charging Station SHALL send a [transactioneventrequest] with <i>eventType</i> = Started and <i>triggerReason</i> = CablePluggedIn and <i>chargingState</i> = Charging and <i>idToken.idToken</i> = "" and <i>idToken.type</i> = NoAuthorization.	
New	S04.FR.03	S04.FR.01 AND [configkey-battery-swap-idthoken] is not set	Charging Station SHALL send a [transactioneventrequest] with <i>eventType</i> = Started and <i>triggerReason</i> = CablePluggedIn and <i>chargingState</i> = EVConnected and <i>idToken.idToken</i> = "" and <i>idToken.type</i> = NoAuthorization.	

2.106. Page 564 - (2025-11) - Added requirement to report battery SoC

A requirement has been added that a swap station is able to report the state of charge of a battery cartridge via its device model.

New requirement

ID	Precondition	Requirement definition	Note
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S04.FR.12	When a battery is present in a slot	Charging Station SHALL be able to report the battery state of charge via component/variable [configkey-battery-cartridge-soc]	E.g. via <code>GetVariablesRequest</code> or as a custom or predefined/hardwired monitor.
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2.107. Page 615 - (2025-11) - issuerKeyHash in CertificateHashDataType [826]

The field type of *issuerKeyHash* was incorrectly presented as "string[0..128]", but it must be a (case-insensitive) "identifierString[0..128]", like the other hashes.
This change does not affect the JSON schemas, because both are represented as strings in JSON.

2.107.1. CertificateHashDataType

Class

	Field Name	Field Type	Card.	Description
Old	issuerKeyHash	string[0..128]	1..1	Required. The hash of the DER encoded public key: the value (excluding tag and length) of the subject public key field in the issuer's certificate.
New	issuerKeyHash	identifierString[0..128]	1..1	Required. The hash of the DER encoded public key: the value (excluding tag and length) of the subject public key field in the issuer's certificate.

2.108. Page 620 - (2025-06) - ChargingSchedulePeriodType.limit description update

The sentence about allowing negative values has been removed, because that is not in line with requirements.
The meaning of this field in case *chargingRateUnit* = A, was missing.

Field Name	Field Type	Card.	Description
...			
limit	decimal	0..1	Optional. Optional only when not required by the <i>operationMode</i> , as in <i>CentralSetpoint</i> , <i>ExternalSetpoint</i> , <i>ExternalLimits</i> , <i>LocalFrequency</i> , <i>LocalLoadBalancing</i> . Charging rate limit during the schedule period, in the applicable <i>chargingRateUnit</i> . This SHOULD be a non-negative value; a negative value is only supported for backwards compatibility with older systems that use a negative value to specify a discharging limit. The value is zero or positive. When using <i>chargingRateUnit</i> = W, this field represents the sum of the power of all phases, unless values are provided for L2 and L3, in which case this field represents phase L1. When using <i>chargingRateUnit</i> = A, this field represents the current on each phase, unless values are provided for L2 and L3, in which case the field represents phase L1.
...			

2.109. Page 647 - (2025-11) - Updated description of PriceType [1082]

According to I12.FR.12/13 *excTax* must be present and *incTax* only when *taxRates* are given. The descriptions have been updated accordingly.

2.109.1. PriceType

Price with and without tax. At least **exclTax** must be present. **inclTax** must be present when **taxRates** are associated.

PriceType is used by: [Common:TariffType](#) , [Common:TotalCostType](#)

Field Name	Field Type	Card.	Description
exclTax	decimal	0..1	Optional. Price/cost excluding tax. Can be absent if inclTax is present.
inclTax	decimal	0..1	Optional. Price/cost including tax. Must be present when taxRates are present.
taxRates	TaxRateType	0..5	Optional. Tax percentages that were used to calculate inclTax from exclTax (for displaying/printing on invoices).

2.110. Page 659 - (2025-11) - Updated description of TotalCostType [1068]

The mention of *conditions.isReservation* has been removed, because it does not exist.

2.110.1. TotalCostType

Field Name	Field Type	Card.	Description
...
fixed	PriceType	0..1	Optional. Total sum of all flat fees in the specified currency, except for TariffFixedPriceTypes with conditions.isReservation = true (counted in reservation).
...

2.111. Page 703 - (2025-06) - Controller component PaymentCtrlr added to list

The PaymentCtrlr has been added to the list of controller components.

Controller Component	Description
...	...
PaymentCtrlr (2.1)	Responsible for configuration relating to a payment terminal.

2.112. Page 717 - (2025-11) - Updated description of SecurityCtrlr.BasicAuthPassword [1087]

The text in description was not consistent with requirements in B09 and has been removed.

Deprecated in OCPP 2.1

(2.1) This variable is deprecated, but remains for backwards compatibility. Please refer to use case [\[b09_settinganewnetworkconnectionprofile\]](#) instead to update/set the BasicAuthPassword.

Required	no		
Component	componentName	SecurityCtrlr	
Variable	variableName	BasicAuthPassword	
	variableAttributes	mutability	WriteOnly
	variableCharacteristics	dataType	string
		maxLimit	At least 40, at most 64.

Description	<p>The basic authentication password is used for HTTP Basic Authentication. The password SHALL be a randomly chosen passwordString with a sufficiently high entropy, consisting of minimum 16 and a maximum as defined by the <i>maxLimit</i> of BasicAuthPassword, which must be at least 40 characters and at most 64. The password SHALL be sent as a UTF-8 encoded string (NOT encoded into octet string or base64). This configuration variable is write-only, so that it cannot be accidentally stored in plaintext by the CSMS when it reads out all configuration variables.</p> <p>This configuration variable is required unless only "security profile 3 – TLS with client side certificates" is implemented.</p> <p>(2.1) This variable has remained for backwards compatibility. As of OCPP 2.1 the variable BasicAuthPassword of component [configkey-network-configuration] must be used. If SecurityCtrlr.BasicAuthPassword is set directly, Charging Station SHALL also set the variable of the same name in all [configkey-network-configuration] component instances to the same value (if valid), including component instances which are contained in the currently configured NetworkConfigurationPriority.</p>
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2.113. Page 718 - (2025-11) - Updated description of SecurityCtrlr.Identity [1087]f

The text in description was not consistent with requirements in B09 and has been removed.

Deprecated in OCPP 2.1

(2.1) This variable is deprecated, but remains for backwards compatibility. Please refer to use case [\[b09_settinganewnetworkconnectionprofile\]](#) instead to update/set the Identity.

Required	no		
Component	componentName	SecurityCtrlr	
Variable	variableName	Identity	
	variableAttributes	mutability	ReadOnly or ReadWrite
	variableCharacteristics	dataType	string
		maxLimit	48 (Charging Station Identity)
Description	<p>The Charging Station identity. Identity is an identifierString, however because this value is also used as the basic authentication username, the colon character ':' SHALL NOT be used.</p> <p>Maximum length was chosen to ensure compatibility with EVSE ID from [ISO15118-2].</p> <p>(2.1) This variable has remained for backwards compatibility. As of OCPP 2.1 the variable Identity of component [configkey-network-configuration] must be used. If SecurityCtrlr.Identity is set directly, Charging Station SHALL also set the variable of the same name in all [configkey-network-configuration] component instances to the same value (if valid), including component instances which are contained in the currently configured NetworkConfigurationPriority.</p>		

2.114. Page 726 - (2025-11) - AuthCacheCtrlr.Entries variable [942]

A variable to represent the number of idTokens in authorization cache has been added.

2.114.1. AuthCacheEntries

Required	no	
Component	componentName	AuthCacheCtrlr

Variable	variableName	Entries	
	variableAttributes	mutability	ReadOnly
	variableCharacteristics	dataType	integer
		maxLimit	<optional>
Description	Amount of IdTokens currently in the Authorization Cache. Optionally, a value for <i>maxLimit</i> may be supplied to provide maximum capacity of the cache.		

2.115. Page 750 - (2025-09) - TariffCostCtrlr.Enabled can be ReadOnly [934]

There are good reasons to allow TariffCostCtrlr.Enabled to be a ReadOnly variable. TariffCostCtrlr.Enabled[Cost] (*CostEnabled*) can be set to ReadOnly false when Local Cost Calculation is not supported, and only cost calculation from the CSMS is supported. In this case TariffCostCtrlr.Available[Cost] will also be false.

TariffCostCtrlr.Enabled[Tariff] (*TariffEnabled*) can be set to ReadOnly true when the Charging Station only supports OCPP standardized tariff structures and no proprietary tariff structures. In this case TariffCostCtrlr.Available[Tariff] will be true.

Required	no		
Component	componentName	TariffCostCtrlr	
Variable	variableName	Enabled	
	variableInstance	Tariff	
	variableAttributes	mutability	ReadWrite /ReadOnly
	variableCharacteristics	dataType	boolean
Description	...		

Required	no		
Component	componentName	TariffCostCtrlr	
Variable	variableName	Enabled	
	variableInstance	Cost	
	variableAttributes	mutability	ReadWrite /ReadOnly
	variableCharacteristics	dataType	boolean
Description	...		

2.116. Page 770 - (2025-11) - New variable MonitoringCtrlr.ActiveMonitors

A new (optional) configuration variable has been added to allow a charging station to report the number of active monitors.

2.116.1. ActiveMonitors

Required	no	
Component	componentName	MonitoringCtrlr

Variable	variableName	ActiveMonitors	
	variableAttributes	mutability	ReadOnly
	variableCharacteristics	dataType	integer
		maxLimit	<max supported number>
		minLimit	<hardwired monitors>
Description	Shows the number of active monitors. <i>maxLimit</i> provides the maximum number of monitors supported. <i>minLimit</i> is the minimum number of active monitors: the hardwired monitors (that cannot be cleared).		

2.117. Page 770 - (2025-11) - ConnectedEV - added note about variable attributes

It was not clear from the naming of the variables the "minSet" and "maxSet" extensions were referring to the value of the variable attribute type. The following note was added to clarify this:

Added note:

NOTE

In below table the notation "<variable>(type)" refers to the *attributeType* <type> of the variable. For example, "ACCurrent(MinSet)" refers to value of the *attributeType* MinSet of the variable ACCurrent. "DCCurrent(Target)" refers to the value of the *attributeType* Target of the variable DCCurrent.

2.118. Page 784 - (2025-11) - BatterySwapCtrlr.TargetSoc description update

The availability state of a battery slot is not determined by the battery state of charge.

Required	yes, when supporting battery swapping		
Component	componentName	BatterySwapCtrlr	
Variable	variableName	TargetSoc	
	variableAttributes	mutability	ReadWrite
	variableCharacteristics	dataType	integer
Description	The state of charge that a battery must have in order to be eligible for swapping. Batteries below TargetSoc are reported as "Occupied", at or above TargetSoc they are reported as Available. TargetSoc must be smaller or equal to MaxSoc. A battery will continue to be charged until MaxSoc.		

2.119. Appendix Page 16 - (2025-11) - ConnectedEV - added note about variable attributes

It was not clear from the naming of the variables the "minSet" and "maxSet" extensions were referring to the value of the variable attribute type. The following note was added to clarify this:

Added note:

NOTE

In below table the notation "<variable>(type)" refers to the *attributeType* <type> of the variable. For example, "ACCurrent(MinSet)" refers to value of the *attributeType* MinSet of the variable ACCurrent. "DCCurrent(Target)" refers to the value of the *attributeType* Target of the variable DCCurrent.

2.120. Appendix Page 51 - (2025-09) - Added connector type BatterySlot

The generic connector type BatterySlot for battery swap stations has been added to ConnectorEnumStringType.

New connector type

Value	Description
bBatterySlot	Slot of a battery swap station to accept battery cartridges (type unspecified)

New rows to Example representation of a battery swap station in device model:

Connector	1	1		ConnectorType		Actual	bBatterySlot	string		false
Connector	2	1		ConnectorType		Actual	bBatterySlot	string		false

3. Part 3

Currently no new errata for OCPP 2.1 part 3.

4. Part 4

4.1. Page 4 - (2025-11) - Updates to RFC References

RFC 2617 has been obsoleted, and the updated RFC 7617 includes necessary improvements and clarifications regarding the HTTP Authentication framework, ensuring compliance with current standards.

Obsolete reference

Reference	Description
[RFC2617]	"HTTP Authentication: Basic and Digest Access Authentication". http://tools.ietf.org/html/rfc2617

New reference

Reference	Description
[RFC7617]	"The 'Basic' HTTP Authentication Scheme". https://tools.ietf.org/html/rfc7617

4.2. Page 16 - (2025-06) - 5.4 Reconnecting - reset backoff wait timer

The RetryBackOffWaitMinimum timer is to be used the first time it tries to connect. A sentence has been added to below paragraph to make it explicit that it needs to be reset after successful connection.

The first reconnection attempts SHALL be after a back-off time of: `RetryBackOffWaitMinimum` seconds, plus a random value with a maximum of `RetryBackOffRandomRange` seconds. After every failed reconnection attempt the Charging Station SHALL double the previous back-off time, with a maximum of `RetryBackOffRepeatTimes`, adding a new random value with a maximum of `RetryBackOffRandomRange` seconds to every reconnection attempt. After `RetryBackOffRepeatTimes` reconnection attempts, the Charging Station SHALL keep reconnecting with the last back-off time, not increasing it any further. **After a successful connection the backoff wait timer SHALL be reset to `RetryBackOffWaitMinimum` seconds.**

4.3. Page 21 - (2025-06) - 6.3 Connection loss - Allow Local Controller to keep connection open

The sentence in this section was too strict about requiring a Local Controller to always close the connection with its charging stations when the connection with CSMS is lost. The sentence has been updated in order to allow for Local Controller implementations that are able to manage the local charging stations locally (for a limited time) when the connection with CSMS is down.

Old text	Whenever one or more WebSocket connections between CSMS and the Local Controller are lost, the Local Controller SHALL close all corresponding WebSockets to the Charging Stations that are connected to it.
New text	Whenever one or more WebSocket connections between CSMS and the Local Controller are lost, the Local Controller SHALL close all corresponding WebSockets to the Charging Stations that are connected to it, unless the Local Controller is capable of responding to Charging Station requests, and forwards transaction-related requests to the CSMS once the connection is restored.