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**5G;
5G System;
Technical Realization of Service Based Architecture;
Stage 3
(3GPP TS 29.500 version 17.15.0 Release 17)**

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Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	8
1 Scope	10
2 References	10
3 Definitions and abbreviations.....	12
3.1 Definitions	12
3.2 Abbreviations	13
3.3 Special characters, operators and delimiters.....	13
3.3.1 General.....	13
3.3.2 ABNF operators.....	13
3.3.3 URI – reserved and special characters	13
3.3.4 SBI specific usage of delimiters	13
4 Service Based Architecture Overview.....	14
4.1 NF Services	14
4.2 Service Based Interfaces	14
4.3 NF Service Framework	14
4.3.1 General.....	14
4.3.2 NF Service Advertisement URI	14
5 Protocols Over Service Based Interfaces	15
5.1 Protocol Stack Overview.....	15
5.2 HTTP/2 Protocol	15
5.2.1 General.....	15
5.2.2 HTTP standard headers.....	15
5.2.2.1 General	15
5.2.2.2 Mandatory to support HTTP standard headers.....	16
5.2.3 HTTP custom headers.....	18
5.2.3.1 General	18
5.2.3.2 Mandatory to support custom headers.....	19
5.2.3.2.1 General	19
5.2.3.2.2 3gpp-Sbi-Message-Priority.....	24
5.2.3.2.3 3gpp-Sbi-Callback.....	24
5.2.3.2.4 3gpp-Sbi-Target-apiRoot.....	24
5.2.3.2.5 3gpp-Sbi-Routing-Binding	25
5.2.3.2.6 3gpp-Sbi-Binding	26
5.2.3.2.7 3gpp-Sbi-Discovery.....	29
5.2.3.2.8 3gpp-Sbi-Producer-Id	30
5.2.3.2.9 3gpp-Sbi-Oci	31
5.2.3.2.10 3gpp-Sbi-Lci.....	33
5.2.3.2.11 3gpp-Sbi-Client-Credentials	35
5.2.3.2.12 3gpp-Sbi-Nrf-Uri	36
5.2.3.2.13 3gpp-Sbi-Target-Nf-Id	37
5.2.3.2.14 3gpp-Sbi-Max-Forward-Hops	37
5.2.3.2.16 3gpp-Sbi-Access-Scope.....	38
5.2.3.2.17 3gpp-Sbi-Access-Token	38
5.2.3.2.18 Void.....	39
5.2.3.2.19 3gpp-Sbi-Target-Nf-Group-Id	39
5.2.3.2.20 3gpp-Sbi-Nrf-Uri-Callback	39
5.2.3.2.21 3gpp-Sbi-NF-Peer-Info.....	39
5.2.3.2.22 3gpp-Sbi-Source-NF-Client-Credentials	40
5.2.3.3 Optional to support custom headers	40
5.2.3.3.1 General	40

5.2.3.3.2	3gpp-Sbi-Sender-Timestamp	43
5.2.3.3.3	3gpp-Sbi-Max-Rsp-Time	43
5.2.3.3.4	3gpp-Sbi-Correlation-Info	43
5.2.3.3.5	3gpp-Sbi-Alternate-Chf-Id	44
5.2.3.3.6	3gpp-Sbi-Notif-Accepted-Encoding	45
5.2.3.3.7	3gpp-Sbi-Consumer-Info	45
5.2.3.3.8	3gpp-Sbi-Response-Info	46
5.2.3.3.9	Void	47
5.2.3.3.10	3gpp-Sbi-Selection-Info	47
5.2.3.3.11	3gpp-Sbi-Interplmn-Purpose	48
5.2.3.3.12	3gpp-Sbi-Request-Info	49
5.2.4	HTTP error handling	50
5.2.5	HTTP/2 server push	50
5.2.6	HTTP/2 connection management	50
5.2.7	HTTP status codes	51
5.2.7.1	General	51
5.2.7.2	NF as HTTP Server	52
5.2.7.3	NF as HTTP Client	57
5.2.7.4	SCP/SEPP	58
5.2.8	HTTP/2 request retries	61
5.2.9	Handling of unsupported query parameters	62
5.2.10	URL Encoding of data	62
5.2.10.1	General	62
5.2.10.2	URL Encoding of URI components	63
5.2.10.3	URL Encoding of HTTP/2 request bodies	64
5.3	Transport Protocol	64
5.4	Serialization Protocol	64
5.5	Interface Definition Language	65
6	General Functionalities in Service Based Architecture	65
6.1	Routing Mechanisms	65
6.1.1	General	65
6.1.2	Identifying a target resource	65
6.1.3	Connecting inbound	65
6.1.4	Pseudo-header setting	65
6.1.4.1	General	65
6.1.4.2	Routing within a PLMN	66
6.1.4.3	Routing across PLMN	66
6.1.4.3.1	General	66
6.1.4.3.2	Use of telescopic FQDN between NFs and SEPP within a PLMN	67
6.1.4.3.3	Use of 3gpp-Sbi-Target-apiRoot between NFs and SEPP within a PLMN	67
6.1.4.3.4	Routing between SEPPs	68
6.1.5	Host header	68
6.1.6	Message forwarding	68
6.2	Server-Initiated Communication	68
6.2.1	General	68
6.2.2	Subscription on behalf of NF Service Consumer	69
6.3	Load Control	70
6.3.1	General	70
6.3.2	Load Control based on load signalled via the NRF	70
6.3.3	Load Control based on LCI Header	70
6.3.3.1	General	70
6.3.3.2	Conveyance of Load Control Information	71
6.3.3.3	Frequency of Conveyance	71
6.3.3.4	Load Control Information	71
6.3.3.4.1	General Description	71
6.3.3.4.2	Load Control Timestamp	72
6.3.3.4.3	Load Metric	72
6.3.3.4.4	Scope of LCI	72
6.3.3.4.5	S-NSSAI/DNN Relative Capacity	74
6.3.3.5	LC-H feature support	75
6.3.3.5.1	Indicating supports for the LC-H feature	75

6.3.3.5.2	Utilizing the LC-H feature support indication	75
6.4	Overload Control	75
6.4.1	General	75
6.4.2	Overload Control based on HTTP status codes	76
6.4.2.1	General	76
6.4.2.2	HTTP Status Code "503 Service Unavailable"	76
6.4.2.3	HTTP Status Code "429 Too Many Requests"	76
6.4.2.4	HTTP Status Code "307 Temporary Redirect"	77
6.4.3	Overload Control based on OCI Header	77
6.4.3.1	General	77
6.4.3.2	Conveyance of Overload Control Information	78
6.4.3.3	Frequency of Conveyance	78
6.4.3.4	Overload Control Information	78
6.4.3.4.1	General Description	78
6.4.3.4.2	Overload Control Timestamp	79
6.4.3.4.3	Overload Reduction Metric	79
6.4.3.4.4	Overload Control Period of Validity	80
6.4.3.4.5	Scope of OCI	80
6.4.3.5	Overload Control Enforcement	84
6.4.3.5.1	Message Throttling	84
6.4.3.5.2	Loss Algorithm	85
6.4.3.6	OLC-H feature support	85
6.4.3.6.1	Indicating supports for the OLC-H feature	85
6.5	Support of Stateless NFs	85
6.5.1	General	85
6.5.2	Stateless AMFs	85
6.5.2.1	General	85
6.5.2.2	AMF as service consumer	85
6.5.2.3	AMF as service producer	86
6.5.3	Stateless NFs (for any 5GC NF type)	87
6.5.3.1	General	87
6.5.3.2	Stateless NF as service consumer	87
6.5.3.3	Stateless NF as service producer	88
6.6	Extensibility Mechanisms	89
6.6.1	General	89
6.6.2	Feature negotiation	89
6.6.3	Vendor-specific extensions	91
6.6.4	Extensibility for Query parameters	91
6.7	Security Mechanisms	92
6.7.1	General	92
6.7.2	Transport layer security protection of messages	92
6.7.3	Authorization of NF service access	92
6.7.4	Application layer security across PLMN	93
6.7.4.1	General	93
6.7.4.2	N32 Procedures	94
6.7.5	Client credentials assertion and authentication	94
6.7.5.1	General	94
6.7.5.2	Authorization of NF Service Consumers for data access via DCCF	94
6.8	SBI Message Priority Mechanism	95
6.8.1	General	95
6.8.2	Message level priority	95
6.8.3	Stream priority	96
6.8.4	Recommendations when defining SBI Message Priorities	96
6.8.5	HTTP/2 client behaviour	97
6.8.6	HTTP/2 server behaviour	97
6.8.7	HTTP/2 proxy behaviour	97
6.8.8	DSCP marking of messages	98
6.9	Discovering the supported communication options	98
6.9.1	General	98
6.9.2	Discoverable communication options	98
6.9.2.1	Content-encodings supported in HTTP requests	98
6.9.2.2	Content-encodings supported in HTTP responses	99

6.10	Support of Indirect Communication	99
6.10.1	General	99
6.10.2	Routing Mechanisms with SCP Known to the NF	99
6.10.2.1	General	99
6.10.2.2	HTTP/2 connection management	100
6.10.2.3	Connecting inbound	100
6.10.2.4	Pseudo-header setting	100
6.10.2.5	3gpp-Sbi-Target-apiRoot header setting	101
6.10.2.6	Cache key (ck) query parameter	102
6.10.2A	Routing Mechanism with SCP Unknown to the NF	102
6.10.2A.1	Connecting inbound	102
6.10.2A.2	HTTP/2 connection management	102
6.10.2A.3	Pseudo-header setting	103
6.10.3	NF Discovery and Selection for indirect communication with Delegated Discovery	103
6.10.3.1	General	103
6.10.3.2	Conveyance of NF Discovery Factors	103
6.10.3.3	Notifications corresponding to default notification subscriptions	104
6.10.3.4	Returning the Producer's NF Instance ID and NF Group ID to the NF Service Consumer	105
6.10.3.5	Returning an Alternate CHF instance ID to the NF Service Consumer	105
6.10.4	Authority and/or deployment-specific string in apiRoot of resource URI	106
6.10.5	NF / NF service instance selection for Indirect Communication without Delegated Discovery	107
6.10.5.1	General	107
6.10.5.2	Notifications corresponding to default notification subscriptions	108
6.10.6	Feature negotiation for Indirect Communication with Delegated Discovery	109
6.10.7	Notification and callback requests sent with Indirect Communication	109
6.10.8	Error Handling	109
6.10.8.1	General	109
6.10.8.2	Requirements for the originator of an HTTP error response	110
6.10.8.3	Requirements for an SCP or SEPP relaying an HTTP error response	111
6.10.9	HTTP redirection	111
6.10.9.1	General	111
6.10.10	Detection and handling of loop path when relaying message with indirect communication	112
6.10.10.1	General	112
6.10.10.2	Message Forwarding Depth Control	112
6.10.10.3	Loop Detection with Via header	112
6.10.11	Authorization of NF service access	113
6.10.11.1	General	113
6.10.11.2	Authorization for indirect communication with delegated discovery	113
6.10.11.2.1	General	113
6.10.11.2.2	Error handling when the SCP fails to obtain an access token	114
6.10.11.2.3	Error handling when SCP receives a "401 Unauthorized" response or a "403 Forbidden" response with a "WWW-Authenticate" header	114
6.10.11.3	Authorization for indirect communication without delegated discovery	115
6.11	Detection and handling of late arriving requests	115
6.11.1	General	115
6.11.2	Detection and handling of requests which have timed out at the HTTP client	115
6.11.2.1	General	115
6.11.2.2	Principles	115
6.12	Binding between an NF Service Consumer and an NF Service Resource	116
6.12.1	General	116
6.12.2	Binding created as part of a service response	118
6.12.3	Binding created as part of a service request	119
6.12.4	Binding for explicit or implicit subscription requests	119
6.12.5	Binding for service requests creating a callback resource	121
6.13	SBI messages correlation for network troubleshooting	121
6.13.1	General	121
6.13.2	SBI messages correlation using UE identifier	122
6.13.2.1	General	122
6.13.2.2	Principles	122
6.13.3	SBI messages correlation using NF Peer Information	122
6.13.3.1	General	122
6.13.3.2	Principles	123

6.14 Indicating the purpose of Inter-PLMN signaling.....123

6.14.1 General.....123

6.14.2 Inclusion of the intended purpose.....123

6.14.3 Evaluating the intended purpose.....123

Annex A (informative): Client-side Adaptive Throttling for Overload Control125

Annex B (normative): 3gpp-Sbi-Callback Types126

Annex C (informative): Internal NF Routing of HTTP Requests.....127

Annex D (informative): Change history128

History134

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[ETSI TS 129 500 V17.15.0 \(2025-03\)](#)

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might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

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1 Scope

The present document specifies the technical realization of the 5GC Service Based Architecture, protocols supported over the Service Based Interfaces, and the functionalities supported in the Service Based Architecture.

The service requirements for the 5G system are defined in 3GPP TS 22.261 [2]. The system architecture requirements are defined in 3GPP TS 23.501 [3] and the procedures and flows in 3GPP TS 23.502 [4].

The design principles and documentation guidelines for 5GC SBI APIs are specified in 3GPP TS 29.501 [5].

2 References

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

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

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 22.261: "Service requirements for the 5G system; Stage 1".
- [3] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [4] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [6] IETF RFC 793: "Transmission Control Protocol".
- [7] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".
- [8] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".
- [9] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.
- [10] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
- [11] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".
- [12] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".
- [13] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".
- [14] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".
- [15] 3GPP TS 23.003: "Numbering, addressing and identification".
- [16] IETF RFC 5681: "TCP Congestion Control".
- [17] 3GPP TS 33.501: "Security Architecture and Procedures for 5G System".
- [18] IANA: "SMI Network Management Private Enterprise Codes", <http://www.iana.org/assignments/enterprise-numbers>.
- [19] IETF RFC 7944: "Diameter Routing Message Priority".
- [20] IETF RFC 7234: "Hypertext Transfer Protocol (HTTP/1.1): Caching".

- [21] IETF RFC 7235: "Hypertext Transfer Protocol (HTTP/1.1): Authentication".
- [22] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".
- [23] IETF RFC 6750: "The OAuth 2.0 Authorization Framework: Bearer Token Usage".
- [24] IETF RFC 7232: "Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests".
- [25] IETF RFC 7516: "JSON Web Encryption (JWE)".
- [26] IETF RFC 7515: "JSON Web Signature (JWS)".
- [27] 3GPP TS 29.573: "5G System: Public Land Mobile Network (PLMN) Interconnection; Stage 3".
- [28] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".
- [29] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".
- [30] Void.
- [31] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".
- [32] 3GPP TS 29.531: "5G System; Network Slice Selection Services; Stage 3".
- [33] IETF RFC 7694: "Hypertext Transfer Protocol (HTTP) Client-Initiated Content-Encoding".
- [34] IETF RFC 1952: "GZIP file format specification version 4.3".
- [35] 3GPP TS 29.525: "5G System; UE Policy Control Service; Stage 3".
- [36] IETF RFC 3040: "Internet Web Replication and Caching Taxonomy".
- [37] IETF RFC 5322: "Internet Message Format".
- [38] 3GPP TS 23.527: "5G System; Restoration Procedures".
- [39] 3GPP TS 29.303: "Domain Name System Procedures; Stage 3".
- [40] 3GPP TS 29.515: "5G System; GMLC Services; Stage 3".
- [41] IETF RFC 7519: "JSON Web Token (JWT)".
- [42] 3GPP TS 32.291: "5G System; charging service; Stage 3".
- [43] IETF RFC 5234: "Augmented BNF for Syntax Specifications: ABNF".
- [44] 3GPP TS 29.526: "5G System; Network Slice-Specific Authentication and Authorization (NSSAA) Services; Stage 3".
- [45] 3GPP TS 29.562: "5G System; Home Subscriber Server (HSS) Services for interworking with the IP Multimedia Subsystem (IMS); Stage 3".
- [46] 3GPP TS 29.555: "5G System; 5G Direct Discovery Name Management Services; Stage 3".
- [47] IETF RFC 4122: "A Universally Unique Identifier (UUID) URN Namespace".
- [48] IETF RFC 1866: "Hypertext Markup Language - 2.0".
- [49] IETF RFC 1738: "Uniform Resource Locators (URL)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1], 3GPP TS 23.501 [3] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

Binding indication (consumer): Binding can be used by the NF Service Consumer to indicate suitable NF Service Consumer instance(s) for notification target instance selection, reselection and routing of subsequent notification requests associated with a specific notification subscription. Binding indication needs to be stored by the NF Service Producer. Binding indication may also be used later if the NF Service Consumer starts acting as NF Service Producer, so that service requests can be sent to this NF Service Producer. See clauses 3.1 and 6.3.1.0 in 3GPP TS 23.501 [3]. See also Routing binding indication.

Binding indication (producer): Binding can be used to indicate suitable target NF Service Producer instance(s) for an NF service instance selection, reselection and routing of subsequent requests associated with a specific NF Service Producer resource (context) and NF service. Binding allows the NF Service Producer to indicate to the NF Service Consumer if a particular context should be bound to an NF service instance, NF instance, NF service set or NF set. Binding indication needs to be stored by the NF Service Consumer. See clauses 3.1 and 6.3.1.0 in 3GPP TS 23.501 [3]. See also Routing binding indication.

Binding entity: Either of the following identifiers: NF Service Instance, NF Service Set, NF Instance or an NF Set. The relation between these are explained below.

Binding entity ID: An identification of a binding entity, i.e. NF Service Instance ID, NF Service Set ID, NF Instance ID or an NF set ID.

Binding level: A parameter (bl) in "3gpp-Sbi-Routing-Binding" and "3gpp-Sbi-Binding" HTTP custom headers, which indicates the binding entity towards which a preferred binding exists (i.e. either to NF Service Instance, NF Service Set, NF Instance or an NF Set). Other binding entities in these headers, which do not correspond to the binding level indicate alternative binding entities that can be reselected and that share the same resource contexts (see Table 6.3.1.0-1 in 3GPP TS 23.501 [3]).

Callback URI: URI to be used by an NF Service Producer to send notification or callback requests.

Endpoint address: An address in the format of an IP address, transport and port information, or FQDN, which is used to determine the host/authority part of the target URI. This Target URI is used to access an NF service (i.e. to invoke service operations) of an NF service producer or for notifications to an NF service consumer. See clauses 3.1 and 6.3.1.0 of 3GPP TS 23.501 [3].

NF Instance: An identifiable instance of the NF. An NF Instance may provide services offered by one or more NF Service instances.

NF Service Instance: An identifiable instance of the NF service.

NF Service Set: A group of interchangeable NF service instances of the same service type within an NF instance. The NF service instances in the same NF Service Set have access to the same context data.

NF Set: A group of interchangeable NF instances of the same type, supporting the same services and the same Network Slice(s). The NF instances in the same NF Set may be geographically distributed but have access to the same context data.

Notification endpoint: Notification endpoint is a destination URI of the network entity where the notification is sent. See clause 6.3.1.0 in 3GPP TS 23.501 [3].

Routing binding indication: Information included in a request or notification and that can be used by the SCP for discovery and associated selection to of a suitable target. See clauses 3.1, 6.3.1.0 and 7.1.2 in 3GPP TS 23.501 [3]. Routing binding indication has similar syntax as a binding indication, but it has different purpose. Routing binding indication provides the receiver (i.e. SCP) with information enabling to route an HTTP request to an HTTP server that can serve the request. Routing binding indication is not stored by the receiver.

3.2 Abbreviations

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

GZIP	GNU ZIP
LC-H	Load Control based on LCI Header
LCI	Load Control Information
MCX	Mission Critical Service
MPS	Multimedia Priority Service
OCI	Overload Control Information
OLC-H	Overload Control based on OCI Header
SCP	Service Communication Proxy
SEPP	Security and Edge Protection Proxy
SMP	SBI Message Priority

3.3 Special characters, operators and delimiters

3.3.1 General

A number of characters have special meaning and are used as delimiters in this document and also in other stage 3 SBI specifications. Below clauses specify the usage of a selected set of the special characters. Full set of these special characters are specified in the respective IETF specifications.

3.3.2 ABNF operators

/	Operator. The forward slash character separates alternatives. See clause 3.2 in IETF RFC 5234 [43].
#	Operator. The number sign character allows for compact definition of comma-separated lists, similar to the "*" operator. See clause 1.2 in IETF RFC 7230 [12].
=	Special character. The equal sign character separates an ABNF rule name from the rule elements. See clause 2.2 in IETF RFC 5234 [43].
[]	Operator. The square bracket characters enclose an optional element sequence. See clause 3.8 in IETF RFC 5234 [43].
< >	Special characters. The angle bracket characters typically enclose an ABNF rule element (they are optional). See clause 2.1 in IETF RFC 5234 [43].
*	Operator. The star character precedes an element and indicates the elements repetition. See clause 3.6 in IETF RFC 5234 [43].
;	Operator. Semicolon character indicates the start of a comment that continues to the end of line. See clause 3.9 in IETF RFC 5234 [43].

NOTE: The same characters, like "/", "#", etc. lead to different processing in ABNF and URI grammars. For instance, in URI syntax, ";" character separates parameter and its value, while in ABNF ";" starts a comment. Besides, unlike URI syntax, neither "?", nor ":" operators are specified for ABNF.

3.3.3 URI – reserved and special characters

Special characters that are used as delimiters in URI syntax have somewhat different purpose from the same characters when used by ABNF syntax. See clause 3.3.3 in 3GPP TS 29.501 [5].

3.3.4 SBI specific usage of delimiters

See clause 3.3.4 in 3GPP TS 29.501 [5].