**3GPP TSG-CT WG4 Meeting #107-bis-eC4-220xyz**

**E-Meeting, 17th – 21st January 2022 (was C4-220215)**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.510** | **CR** | **0653** | **rev** | **1** | **Current version:** | **17.4.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Subscription Context in Notifications |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | SBIProtoc17 |  | ***Date:*** | 2022-01-10 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | When a subscribing entity of the NRF creates a subscription, it provides a callback URI, where the NRF will send notifications later.A same subscribing entity may create several subscriptions (with various subscription conditions), and the specification does not preclude, or recommend, the usage of a same callback URI for all subscriptions, or unique ones, so it is assumed that this is an implementation-dependent aspect.However, when a same callback is used for several subscriptions, the subscribing entity receiving the notification may not have all the required information to correctly process such notification.A specific example of the problem would be:- An NF Instance belongs to 2 distinct NF Sets (e.g., an SMF instance that supports several PLMN-IDs)- Another NF (e.g., AMF) creates 2 subscriptions in NRF (one for each NF Set ID), to be notified when SMF instances start/stop being part of each set, and uses the same callback URI for both subscriptions- The NRF sends a notification when one of the instances stops being part of one of the NF Sets- The subscribing entity gets the notification about such instance, and an indication saying that the instance stopped being part of a set; however, the receiver of the notification does not receive information about which NF Set ID the notification refers to, given that the "nfProfile" and "nfProfileChanges" attributes are not included in the notification.To solve the issue, it is proposed to add "context data" of the subscription, so the NRF sends it in the notification to the subscribing entity.This is, in general, a good practice in RESTful terms (not only to address this specific problem), since it decouples state between consumer and producer, and makes the notifications to be more self-contained from the subscription data kept by the subscribing entity. |
|  |  |
| ***Summary of change:*** | Add a new paramter in the NotificationData, containing the subscription ID, and the subscription conditions of the corresponding subscription originally created in the NRF. |
|  |  |
| ***Consequences if not approved:*** | The notification does not contain enough information, which makes the consumer (subscribing entity) to have to be developed following strict constraints (i.e., to always use distinct unique callback URIs), limiting the flexibility in implementation choices. |
|  |  |
| ***Clauses affected:*** | 6.1.6.1, 6.1.6.2.17, 6.1.6.2.x (new), A.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | This CR introduces backwards-compatible new features with impact on OpenAPI specification files:- TS29510\_Nnrf\_NFManagement.yaml |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First Change \* \* \* \*

#### 6.1.6.1 General

This clause specifies the application data model supported by the API.

Table 6.1.6.1-1 specifies the data types defined for the Nnrf\_NFManagement service-based interface protocol.

Table 6.1.6.1-1: Nnrf\_NFManagement specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| NFProfile | 6.1.6.2.2 | Information of an NF Instance registered in the NRF. |
| NFService | 6.1.6.2.3 | Information of a given NF Service Instance; it is part of the NFProfile of an NF Instance. |
| DefaultNotificationSubscription | 6.1.6.2.4 | Data structure for specifying the notifications the NF service subscribes by default along with callback URI. |
| IpEndPoint | 6.1.6.2.5 | IP addressing information of a given NFService; it consists on, e.g. IP address, TCP port, transport protocol... |
| UdrInfo | 6.1.6.2.6 | Information of an UDR NF Instance. |
| UdmInfo | 6.1.6.2.7 | Information of an UDM NF Instance. |
| AusfInfo | 6.1.6.2.8 | Information of an AUSF NF Instance. |
| SupiRange | 6.1.6.2.9 | A range of SUPIs (subscriber identities), either based on a numeric range, or based on regular-expression matching. |
| IdentityRange | 6.1.6.2.10 | A range of subscriber identities, either based on a numeric range, or based on regular-expression matching. |
| AmfInfo | 6.1.6.2.11 | Information of an AMF NF Instance. |
| SmfInfo | 6.1.6.2.12 | Information of an SMF NF Instance. |
| UpfInfo | 6.1.6.2.13 | Information of an UPF NF Instance. |
| SnssaiUpfInfoItem | 6.1.6.2.14 | Set of parameters supported by UPF for a given S-NSSAI. |
| DnnUpfInfoItem | 6.1.6.2.15 | Set of parameters supported by UPF for a given DNN. |
| SubscriptionData | 6.1.6.2.16 | Information of a subscription to notifications to NRF events, included in subscription requests and responses. |
| NotificationData | 6.1.6.2.17 | Data sent in notifications from NRF to subscribed NF Instances. |
| NFServiceVersion | 6.1.6.2.19 | Contains the version details of an NF service. |
| PcfInfo | 6.1.6.2.20 | Information of a PCF NF Instance. |
| BsfInfo | 6.1.6.2.21 | Information of a BSF NF Instance. |
| Ipv4AddressRange | 6.1.6.2.22 | Range of IPv4 addresses. |
| Ipv6PrefixRange | 6.1.6.2.23 | Range of IPv6 prefixes. |
| InterfaceUpfInfoItem | 6.1.6.2.24 | Information of a given IP interface of an UPF. |
| UriList | 6.1.6.2.25 | Set of URIs following 3GPP hypermedia format (containing a "\_links" attribute). |
| N2InterfaceAmfInfo | 6.1.6.2.26 | AMF N2 interface information |
| TaiRange | 6.1.6.2.27 | Range of TAIs (Tracking Area Identities). |
| TacRange | 6.1.6.2.28 | Range of TACs (Tracking Area Codes). |
| SnssaiSmfInfoItem | 6.1.6.2.29 | Set of parameters supported by SMF for a given S-NSSAI. |
| DnnSmfInfoItem | 6.1.6.2.30 | Set of parameters supported by SMF for a given DNN. |
| NrfInfo | 6.1.6.2.31 | Information of an NRF NF Instance, used in hierarchical NRF deployments. |
| ChfInfo | 6.1.6.2.32 | Information of a CHF NF Instance. |
| PlmnRange | 6.1.6.2.34 | Range of PLMN IDs. |
| SubscrCond | 6.1.6.2.35 | Condition to determine the set of NFs to monitor under a certain subscription in NRF. |
| NfInstanceIdCond | 6.1.6.2.36 | Subscription to a given NF Instance Id. |
| NfTypeCond | 6.1.6.2.37 | Subscription to a set of NFs based on their NF Type. |
| ServiceNameCond | 6.1.6.2.38 | Subscription to a set of NFs based on their support for a given Service Name. |
| AmfCond | 6.1.6.2.39 | Subscription to a set of AMFs, based on AMF Set Id and/or AMF Region Id. |
| GuamiListCond | 6.1.6.2.40 | Subscription to a set of AMFs, based on their GUAMIs. |
| NetworkSliceCond | 6.1.6.2.41 | Subscription to a set of NFs, based on the slices (S-NSSAI and NSI) they support . |
| NfGroupCond | 6.1.6.2.42 | Subscription to a set of NFs based on their Group Id. |
| NotifCondition | 6.1.6.2.43 | Condition (list of attributes in the NF Profile) to determine whether a notification must be sent by NRF. |
| PlmnSnssai | 6.1.6.2.44 | List of network slices (S-NSSAIs) for a given PLMN ID. |
| NwdafInfo | 6.1.6.2.45 | Information of a NWDAF NF Instance. |
| LmfInfo | 6.1.6.2.46 | Information of an LMF NF Instance. |
| GmlcInfo | 6.1.6.2.47 | Information of a GMLC NF Instance. |
| NefInfo | 6.1.6.2.48 | Information of an NEF NF Instance. |
| PfdData | 6.1.6.2.49 | List of Application IDs and/or AF IDs managed by a given NEF Instance. |
| AfEventExposureData | 6.1.6.2.50 | AF Event Exposure data managed by a given NEF Instance. |
| WAgfInfo | 6.1.6.2.51 | Information of the W-AGF endpoints. |
| TngfInfo | 6.1.6.2.52 | Information of the TNGF endpoints. |
| PcscfInfo | 6.1.6.2.53 | Information of a P-CSCF NF Instance. |
| NfSetCond | 6.1.6.2.54 | Subscription to a set of NFs based on their Set Id. |
| NfServiceSetCond | 6.1.6.2.55 | Subscription to a set of NFs based on their Service Set Id. |
| NfInfo | 6.1.6.2.56 | Information of a generic NF Instance. |
| HssInfo | 6.1.6.2.57 | Information of an HSS NF Instance. |
| ImsiRange | 6.1.6.2.58 | A range of IMSIs (subscriber identities), either based on a numeric range, or based on regular-expression matching. |
| InternalGroupIdRange | 6.1.6.2.59 | A range of Group IDs (internal group identities), either based on a numeric range, or based on regular-expression matching. |
| UpfCond | 6.1.6.2.60 | Subscription to a set of NF Instances (UPFs), able to serve a certain service area (i.e. SMF serving area or TAI list). |
| TwifInfo | 6.1.6.2.61 | Addressing information (IP addresses, FQDN) of the TWIF. |
| VendorSpecificFeature | 6.1.6.2.62 | Information about a vendor-specific feature |
| UdsfInfo | 6.1.6.2.63 | Information related to UDSF |
| ScpInfo | 6.1.6.2.65 | Information of an SCP Instance |
| ScpDomainInfo | 6.1.6.2.66 | SCP domain information |
| ScpDomainCond | 6.1.6.2.67 | Subscription to an SCP domain  |
| OptionsResponse | 6.1.6.2.68 | Communication options of the NRF |
| NwdafCond | 6.1.6.2.69 | Subscription to a set of NF Instances (NWDAFs), identified by Analytics ID(s), S-NSSAI(s) or NWDAF Serving Area information, i.e. list of TAIs for which the NWDAF can provide analytics. |
| NefCond | 6.1.6.2.70 | Subscription to a set of NF Instances (NEFs), identified by Event ID(s) provided by AF, S-NSSAI(s), AF Instance ID, Application Identifier, External Identifier, External Group Identifier, or domain name. |
| SuciInfo | 6.1.6.2.71 | SUCI information containing Routing Indicator and Home Network Public Key ID. |
| SeppInfo | 6.1.6.2.72 | Information of a SEPP Instance |
| AanfInfo | 6.1.6.2.73 | Information of an AAnF NF Instance. |
| 5GDdnmfInfo | 6.1.6.2.74 | Information of a 5G DDNMF NF Instance. |
| MfafInfo | 6.1.6.2.75 | Information of the MFAF NF Instance. |
| NwdafCapability | 6.1.6.2.76 | Indicates the capability supported by the NWDAF. |
| DccfInfo | 6.1.6.2.80 | Information of a DCCF NF Instance. |
| NsacfInfo | 6.1.6.2.81 | Information of an NSACF NF Instance. |
| NsacfCapability | 6.1.6.2.82 | NSACF service capability. |
| DccfCond | 6.1.6.2.83 | Subscription to a set of NF Instances (DCCFs), identified by NF types, NF Set Id(s) or DCCF Serving Area information, i.e. list of TAIs served by the DCCF. |
| MlAnalyticsInfo | 6.1.6.2.84 | ML Analytics Filter information supported by the Nnwdaf\_MLModelProvision service |
| MbSmfInfo | 6.1.6.2.85 | Information of a MB-SMF NF Instance |
| TmgiRange | 6.1.6.2.86 | Range of TMGIs |
| MbsSession | 6.1.6.2.87 | MBS Session served by an MB-SMF |
| SnssaiMbSmfInfoItem | 6.1.6.2.88 | Parameters supported by an MB-SMF for a given S-NSSAI |
| DnnMbSmfInfoItem | 6.1.6.2.89 | Parameters supported by an MB-SMF for a given DNN |
| MbsAreaSession | 6.1.6.2.90 | MBS Session in a specific MBS Service Area |
| TsctsfInfo | 6.1.6.2.91 | Information of a TSCTSF NF Instance. |
| SnssaiTsctsfInfoItem | 6.1.6.2.92 | Set of parameters supported by TSCTSF for a given S-NSSAI. |
| DnnTsctsfInfoItem | 6.1.6.2.93 | Set of parameters supported by TSCTSF for a given DNN. |
| MbUpfInfo | 6.1.6.2.94 | Information of a MB-UPF NF Instance. |
| AfSliceDnn | 6.1.6.2.95 | AF specific Slices and DNNs. |
| TrustAfInfo | 6.1.6.2.96 | Information of a trusted AF Instance |
| SnssaiInfoItem | 6.1.6.2.97 | Set of parameters supported by NF for a given S-NSSAI. |
| DnnInfoItem | 6.1.6.2.98 | Set of parameters supported by NF for a given DNN. |
| CollocatedNfInstance | 6.1.6.2.99 | Information related to collocated NF type(s) and corresponding NF Instance(s) when the NF is collocated with NFs supporting other NF types. |
| ServiceNameListCond | 6.1.6.2.100 | Subscription to a set of NF Instances that offer a service name in the Service Name list. |
| NfGroupListCond | 6.1.6.2.101 | Subscription to a set of NF Instances, identified by a NF Group Identity in the NF Group Identity list. |
| PlmnOauth2 | 6.1.6.2.102 | Per PLMN Oauth2.0 indication. |
| SubscriptionContext | 6.1.6.2.x | Context data related to a created subscription, to be included in notifications sent by NRF. |
| Fqdn | 6.1.6.3.2 | Fully Qualified Domain Name. |
| NefId | 6.1.6.3.2 | Identity of the NEF. |
| VendorId | 6.1.6.3.2 | Vendor ID of the NF Service instance (Private Enterprise Number assigned by IANA) |
| WildcardDnai | 6.1.6.3.2 | Wildcard DNAI |
| NFType | 6.1.6.3.3 | NF types known to NRF. |
| NotificationType | 6.1.6.3.4 | Types of notifications used in Default Notification URIs in the NF Profile of an NF Instance. |
| TransportProtocol | 6.1.6.3.5 | Types of transport protocol used in a given IP endpoint of an NF Service Instance. |
| NotificationEventType | 6.1.6.3.6 | Types of events sent in notifications from NRF to subscribed NF Instances. |
| NFStatus | 6.1.6.3.7 | Status of a given NF Instance stored in NRF. |
| DataSetId | 6.1.6.3.8 | Types of data sets stored in UDR. |
| UPInterfaceType | 6.1.6.3.9 | Types of User-Plane interfaces of the UPF. |
| ServiceName | 6.1.6.3.11 | Service names known to NRF. |
| NFServiceStatus | 6.1.6.3.12 | Status of a given NF Service Instance of an NF Instance stored in NRF. |
| AnNodeType | 6.1.6.3.13 | Access Network Node Type (gNB, ng-eNB...). |
| ConditionEventType | 6.1.6.3.14 | Indicates whether a notification is due to the NF Instance to start or stop being part of a condition for a subscription to a set of NFs |
| IpReachability | 6.1.6.3.15 | Indicates the type(s) of IP addresses reachable via an SCP. |
| CollocatedNfType | 6.1.6.3.17 | Possible NF types supported by a collocated NF. |

Editor's Note: A general solution of NRF handling towards absent attributes (not registered by the NF or not supported by NF with early version) is FFS.

Table 6.1.6.1-2 specifies data types re-used by the Nnrf\_NFManagement service-based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nnrf\_NFManagement service-based interface.

Table 6.1.6.1-2: Nnrf\_NFManagement re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| N1MessageClass | 3GPP TS 29.518 [6] | The N1 message type |
| N2InformationClass | 3GPP TS 29.518 [6] | The N2 information type |
| IPv4Addr | 3GPP TS 29.571 [7] |  |
| IPv6Addr | 3GPP TS 29.571 [7] |  |
| IPv6Prefix | 3GPP TS 29.571 [7] |  |
| Uri | 3GPP TS 29.571 [7] |  |
| Dnn | 3GPP TS 29.571 [7] |  |
| SupportedFeatures | 3GPP TS 29.571 [7] |  |
| Snssai | 3GPP TS 29.571 [7] |  |
| PlmnId | 3GPP TS 29.571 [7] |  |
| Guami | 3GPP TS 29.571 [7] |  |
| Tai | 3GPP TS 29.571 [7] |  |
| NfInstanceId | 3GPP TS 29.571 [7] |  |
| LinksValueSchema | 3GPP TS 29.571 [7] | 3GPP Hypermedia link |
| UriScheme | 3GPP TS 29.571 [7] |  |
| AmfName | 3GPP TS 29.571 [7] |  |
| DateTime | 3GPP TS 29.571 [7] |  |
| Dnai | 3GPP TS 29.571 [7] |  |
| ChangeItem | 3GPP TS 29.571 [7] |  |
| DiameterIdentity | 3GPP TS 29.571 [7] |  |
| AccessType | 3GPP TS 29.571 [7] |  |
| NfGroupId | 3GPP TS 29.571 [7] | Network Function Group Id |
| AmfRegionId | 3GPP TS 29.571 [7] |  |
| AmfSetId | 3GPP TS 29.571 [7] |  |
| PduSessionType | 3GPP TS 29.571 [7] |  |
| AtsssCapability | 3GPP TS 29.571 [7] | Capability to support procedures related to Access Traffic Steering, Switching, Splitting. |
| Nid | 3GPP TS 29.571 [7] |  |
| PlmnIdNid | 3GPP TS 29.571 [7] |  |
| NfSetId | 3GPP TS 29.571 [7] | NF Set ID (see clause 28.12 of 3GPP TS 23.003 [12]) |
| NfServiceSetId | 3GPP TS 29.571 [7] | NF Service Set ID (see clause 28.13 of 3GPP TS 23.003 [12]) |
| GroupId | 3GPP TS 29.571 [7] | Internal Group Identifier |
| RatType | 3GPP TS 29.571 [7] | RAT Type |
| DurationSec | 3GPP TS 29.571 [7] |  |
| RedirectResponse | 3GPP TS 29.571 [7] | Response body of the redirect response message. |
| ExtSnssai | 3GPP TS 29.571 [7] |  |
| AreaSessionId | 3GPP TS 29.571 [7] | Area Session Identifier used for an MBS session with location dependent content |
| MbsSessionId | 3GPP TS 29.571 [7] | MBS Session Identifier |
| MbsServiceArea | 3GPP TS 29.571 [7] | MBS Service Area |
| IpAddr | 3GPP TS 29.571 [7] | IP Address |
| EventId | 3GPP TS 29.520 [32] | Defined in Nnwdaf\_AnalyticsInfo API. |
| NwdafEvent | 3GPP TS 29.520 [32] | Defined in Nnwdaf\_EventsSubscription API. |
| ExternalClientType | 3GPP TS 29.572 [33] |  |
| LMFIdentification | 3GPP TS 29.572 [33] | LMF Identification |
| AfEvent | 3GPP TS 29.517 [35] | Defined in Naf\_EventExposure API |
| SupportedGADShapes | 3GPP TS 29.572 [33] | Supported GAD Shapes |

\* \* \* Next Change \* \* \* \*

##### 6.1.6.2.17 Type: NotificationData

Table 6.1.6.2.17-1: Definition of type NotificationData

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| event | NotificationEventType | M | 1 | Notification type. It shall take the values "NF\_REGISTERED", "NF\_DEREGISTERED" or "NF\_PROFILE\_CHANGED". |
| nfInstanceUri | Uri | M | 1 | Uri of the NF Instance (see clause 6.1.3.3.2) associated to the notification event. |
| nfProfile | NFProfile | C | 0..1 | New NF Profile or Updated NF Profile; it shall be present when the notification type is "NF\_REGISTERED" and it may be present when the notification type is "NF\_PROFILE\_CHANGED".(NOTE 3) |
| profileChanges | array(ChangeItem) | C | 1..N | List of changes on the profile of the NF Instance associated to the notification event; it may be present when the notification type is "NF\_PROFILE\_CHANGED" (see NOTE 1, NOTE 2). |
| conditionEvent | ConditionEventType | C | 0..1 | Type of event indicating wether a change of NF Profile results in that the NF Instance starts or stops being part of a given set of NF Instances, as indicated in the subscription condition (see attribute "subscrCond" in clause 6.1.6.2.16).It can take the value "NF\_ADDED" (if the NF Instance starts being part of a given set) or "NF\_REMOVED" (if the NF Instance stops being part of a given set).(NOTE 3) |
| subscriptionContext | SubscriptionContext | C | 0..1 | It shall contain data related to the subscription to which this notification belongs to, such as the subscription ID and the subscription conditions.An NRF complying with this release of the specification shall include this attribute, to facilitate to the subscribing entity the identification of the subscription data, or context, that triggered this notification. |
| NOTE 1: If "event" attribute takes the value "NF\_PROFILE\_CHANGED", then either "nfProfile" or "profileChanges" attributes shall be present, but not both.NOTE 2: The NRF shall notify about NF Profile changes affecting attributes of type "array" only as a complete replacement of the whole array (i.e. it shall not notify about changes of individual array elements).NOTE 3: When a change in an NF Profile results in an NF to start being part of a given set, the NRF shall indicate such condition by including the "conditionEvent" attribute with value "NF\_ADDED", and it shall include in the notification the "nfProfile" attribute with the full NF Profile of the NF Instance; the "profileChanges" attribute shall not be included.When a change in an NFProfile results in an NF to stop being part of a given set, the NRF shall indicate such condition by including the "conditionEvent" attribute with value "NF\_REMOVED", and both attributes "nfProfile" and "profileChanges" shall be absent. |

EXAMPLE: Notification payload sent from NRF when an NF Instance has changed its profile by updating the value of the "recoveryTime" attribute of its NF Profile, and updated any attribute of any of its NF Service Instances:

{

 "event": "NF\_PROFILE\_CHANGED",

 "nfInstanceUri": ".../nf-instances/4947a69a-f61b-4bc1-b9da-47c9c5d14b64",

 "profileChanges": [

 {

 "op": "REPLACE",

 "path": "/recoveryTime",

 "newValue": "2018-12-30T23:20:50Z"

 },

 {

 "op": "REPLACE",

 "path": "/nfServices",

 "newValue": [ ...new array content... ]

 }

 ]

}

\* \* \* Next Change \* \* \* \*

##### 6.1.6.2.x Type: SubscriptionContext

Table 6.1.6.2.x-1: Definition of type SubscriptionContext

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| subscriptionId | string | M | 1 | Subscription ID of the corresponding subscription resource that originated the notification. |
| subscrCond | SubscrCond | O | 1 | If present, this attribute shall contain the conditions identifying the set of NF Instances whose status was requested to be monitored in the corresponding subscription that originated this notification. |

\* \* \* Next Change \* \* \* \*

## A.2 Nnrf\_NFManagement API

*(... text not shown for clarity ...)*

 NotificationData:

 description: Data sent in notifications from NRF to subscribed NF Instances

 type: object

 required:

 - event

 - nfInstanceUri

 allOf:

 #

 # Condition: If 'event' takes value 'NF\_PROFILE\_CHANGED',

 # then either 'nfProfile' or 'profileChanges' (but not both) must be present

 #

 - anyOf:

 - not:

 properties:

 event:

 type: string

 enum:

 - NF\_PROFILE\_CHANGED

 - oneOf:

 - required: [ nfProfile ]

 - required: [ profileChanges ]

 #

 # Condition: If 'event' takes value 'NF\_REGISTERED',

 # then 'nfProfile' must be present

 #

 - anyOf:

 - not:

 properties:

 event:

 type: string

 enum:

 - NF\_REGISTERED

 - required: [ nfProfile ]

 properties:

 event:

 $ref: '#/components/schemas/NotificationEventType'

 nfInstanceUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 nfProfile:

 allOf:

 - $ref: '#/components/schemas/NFProfile'

 - not:

 required: [ interPlmnFqdn ]

 - not:

 required: [ allowedPlmns ]

 - not:

 required: [ allowedSnpns ]

 - not:

 required: [ allowedNfTypes ]

 - not:

 required: [ allowedNfDomains ]

 - not:

 required: [ allowedNssais ]

 - properties:

 nfServices:

 type: array

 items:

 allOf:

 - $ref: '#/components/schemas/NFService'

 - not:

 required: [ interPlmnFqdn ]

 - not:

 required: [ allowedPlmns ]

 - not:

 required: [ allowedSnpns ]

 - not:

 required: [ allowedNfTypes ]

 - not:

 required: [ allowedNfDomains ]

 - not:

 required: [ allowedNssais ]

 profileChanges:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/ChangeItem'

 minItems: 1

 conditionEvent:

 $ref: '#/components/schemas/ConditionEventType'

 subscriptionContext:

 $ref: '#/components/schemas/SubscriptionContext'

*(... text not shown for clarity ...)*

 PlmnOauth2:

 description: Oauth2.0 required indication for a given PLMN ID

 type: object

 properties:

 oauth2RequiredPlmnIdList:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

 minItems: 1

 oauth2NotRequiredPlmnIdList:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

 minItems: 1

 SubscriptionContext:

 description:\_Context data related to a created subscription, to be included in notifications sent by NRF.

 type: object

 required:

 - subscriptionId

 properties:

 subscriptionId:

 type: string

 subscrCond:

 $ref: '#/components/schemas/SubscrCond'

\* \* \* End of Changes \* \* \* \*