

OmniSMSF Configuration Reference

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All OmniSMSF configuration lives under the `:omnismsf` application key. A subset of keys can be overridden by environment variables, but that only takes effect in the **production runtime configuration** (`config/runtime.exs`).

Configuration Structure

```
config :omnismsf,
  # SBI listener identity (advertised to the NRF)
  sbi_scheme: "http",
  sbi_addr: "127.0.0.30",
  sbi_port: 7777,

  # Prometheus scrape endpoint
  prometheus_metrics_port: 9570,

  # NRF registration
  nrf_uri: "http://127.0.0.10:7777",
  heartbeat_interval: 10_000,

  # Served PLMN (override per deployment)
  mcc: "999",
  mnc: "70",

  # Interworking peers (fallbacks when NRF discovery is
  unavailable)
  udm_uri: "http://127.0.0.12:7777",
  amf_uri: "http://127.0.0.18:7777",
  omnimessage_base_url: "http://127.0.0.40:8080"
```

Core Parameters

Parameter	Type	Default	
sbi_scheme	string	"http"	SMSF_S
sbi_addr	string	"127.0.0.30"	SMSF_S
sbi_port	integer	7777	SMSF_S
prometheus_metrics_port	integer	9570	PROMET
nrf_uri	string	"http://127.0.0.10:7777"	SMSF_N
heartbeat_interval	integer (ms)	10_000	-
mcc	string	"999"	SMSF_M
mnc	string	"70"	SMSF_M
udm_uri	string	"http://127.0.0.12:7777"	SMSF_U
amf_uri	string	"http://127.0.0.18:7777"	SMSF_A
omnimessage_base_url	string	"http://127.0.0.40:8080"	SMSF_O

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Prometheus endpoint

OmniSMSF exposes a Prometheus scrape endpoint via

`TelemetryMetricsPrometheus` on `prometheus_metrics_port` (default **9570**):

```
GET http://<smsf-host>:9570/metrics
```

All labels are low-cardinality (`direction` / `result` / `nf_type`) so the series count stays bounded.

Metrics

Metric	Type	Labels	Description
omni_smsf_sms_delivery_count	counter	direction, result	SMS delivery count (uplink MO, downlink MT) and result.
omni_smsf_activation_count	counter	result	UE SMS-confirmation count (Nsmsf_SMSConf) by result.
omni_smsf_nrf_registration_status	gauge	nf_type	NRF registration status (registered, not registered).
beam_*	gauge	-	Standard Beam metrics (memory, power, counts, uptime).

Underlying telemetry events

Event	Measurements	Metadata	Emitted by
<code>[:omnismsf, :activation]</code>	<code>count</code>	<code>result</code>	OmniSMSF on each UE SMS-context activation
<code>[:omnismsf, :sms, :delivery]</code>	<code>count</code>	<code>direction,</code> <code>result</code>	OmniSMSF on each SMS delivery (uplink MO / downlink MT)
<code>[:omni5g, :nrf, :registration]</code>	<code>status</code>	<code>nf_type</code>	The shared NRF registration process

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Role

OmniSMSF is the 5G SMS Function. It carries SMS over NAS: the AMF relays the UE's control-plane SMS transport to OmniSMSF, which maintains a per-UE SMS context and relays each message to and from the operator's SMS centre through OmniMessage. On activation it registers itself with the UDM and reads the UE's SMS subscription; mobile-originated messages are decoded and submitted to OmniMessage, and mobile-terminated messages are delivered to the UE through the AMF.

Endpoints

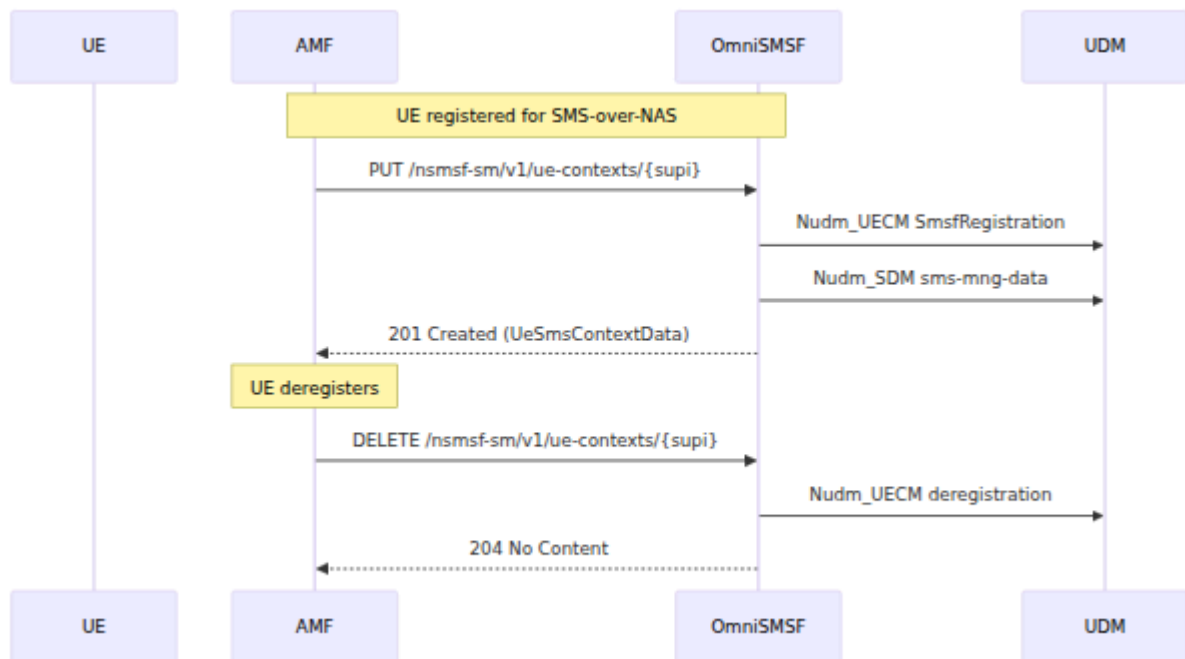
The SBI listener exposes the `Nsmsf_SMSService` service (TS 29.540):

Method	Path	Description
PUT	/nsmsf-sm/v1/ue-contexts/{supi}	Activate: create a UE SMS context. Returns 201 Created with a UeSmsContextData body and a Location header.
DELETE	/nsmsf-sm/v1/ue-contexts/{supi}	Deactivate: remove the UE SMS context. Returns 204 No Content.
POST	/nsmsf-sm/v1/ue-contexts/{supi}/sendsms	UplinkSMS: submit a mobile-originated SMS for an active context. Returns 200 with an SmsDeliveryStatus; 404 if no context exists.

{supi} is a SUPI in TS 23.003 form (imsi-<digits>).

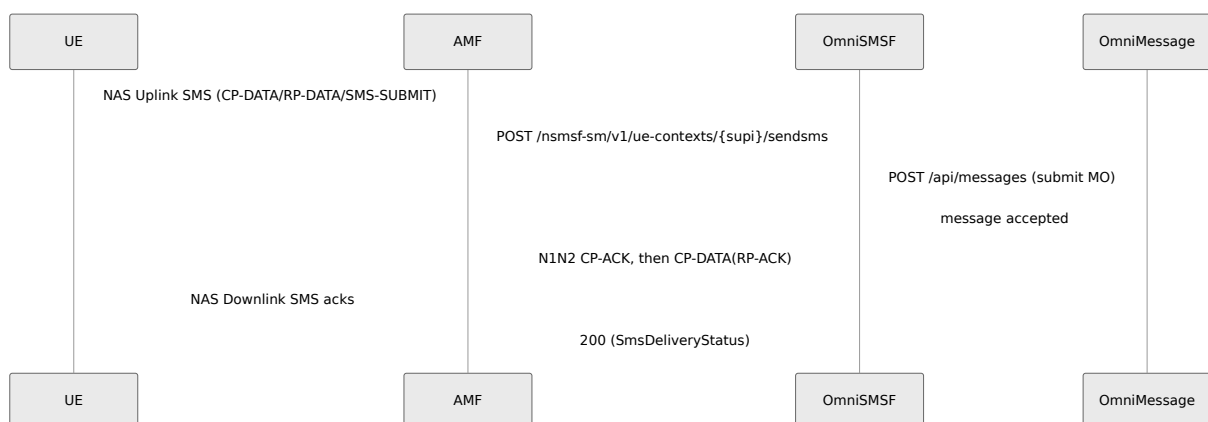
Activation and UDM interworking

When a UE registers for SMS-over-NAS, the AMF **Activates** a per-UE SMS context on OmniSMSF. On activation OmniSMSF registers itself with the UDM as the serving SMSF for that UE over 3GPP access (Nudm_UECM, PUT .../registrations/smsf-3gpp-access) and reads the UE's SMS-management subscription (Nudm_SDM, sms-mng-data). The subscription lookup is **fail-open**: if the UDM returns no explicit SMS data or is briefly unreachable, the UE is treated as subscribed so a transient UDM issue never blocks SMS. On **Deactivate**, OmniSMSF deregisters from the UDM.



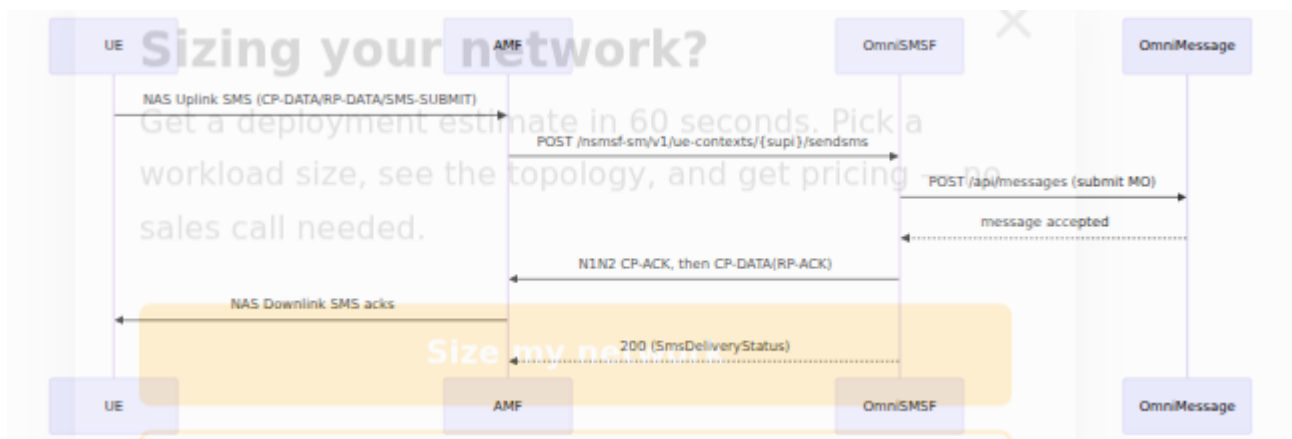
Mobile-originated flow (UE to network)

When the user sends a text, the AMF forwards the uplink SMS to OmniSMSF on the **UplinkSMS** operation. OmniSMSF decodes the CP-DATA/RP-DATA/SMS-SUBMIT (TS 24.011) with the `sms_ex` codec, submits the message to OmniMessage (`POST /api/messages`), and returns the CP-ACK and RP-ACK downlink acknowledgements to the UE through the AMF (`Namf_Communication_N1N2MessageTransfer`, `n1MessageClass=SMS`).



Mobile-terminated flow (network to UE)

OmniSMSF polls OmniMessage for pending messages addressed to it (`GET /api/messages?smsc=omnismsf`). For each pending message it builds an SMS-DELIVER wrapped in RP-DATA/CP-DATA and delivers it to the UE via the AMF (`Namf_Communication_N1N2MessageTransfer`, `n1MessageClass=SMS`; the AMF carries it as a DL NAS Transport with payload container type SMS). OmniSMSF tracks the RP reference so that when the UE acknowledges (its CP-ACK/RP-ACK arrives on the uplink path), the matching message is marked delivered in OmniMessage (`PATCH /api/messages/{id}`).



UE SMS context

The context created by **Activate** is held in memory only and is non-persistent by design: OmniMessage owns the durable message and subscriber state, so OmniSMSF keeps no durable state of its own. On restart the AMF re-activates each UE that is registered for SMS-over-NAS.

Enabling in a deployment

1. Start OmniSMSF; confirm it registers with the NRF as `SMSF`.
2. Confirm the AMF discovers the SMSF via the NRF (or is pointed at it statically) for UEs that register for SMS-over-NAS.

3. Confirm OmniSMSF can discover the AMF and UDM via the NRF (or reach the configured fallback URIs) and that OmniMessage is reachable at `omnimessage_base_url`.

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Common issues

404 CONTEXT_NOT_FOUND on an uplink SMS

`POST /nsmsf-sm/v1/ue-contexts/{supi}/sendsms` requires an active UE SMS context. The AMF must first **Activate** the UE (`PUT /nsmsf-sm/v1/ue-contexts/{supi}`). Confirm the activation succeeded and that the SUPI matches exactly. Note that contexts are held in memory only: after an OmniSMSF restart the AMF must re-activate before it can submit an uplink SMS.

The AMF cannot find OmniSMSF

Confirm OmniSMSF registered with the NRF as NFType `SMSF` (watch the `omni_smsf_nrf_registration_status` gauge and the startup logs), that `nrf_uri` is correct, and that the AMF is configured to discover or reach the SMSF.

404 NOT_FOUND

The request path did not match any `Nsmsf_SMSService` route. Check the method and path against the [endpoint table](#).

SMS not delivered

Symptoms: A message is accepted by OmniSMSF but never reaches the UE or the SMS centre.

Possible causes:

- OmniMessage is unreachable, so a mobile-originated submit or a mobile-terminated poll fails.
- The AMF cannot be located (NRF discovery returns no AMF and no fallback `amf_uri` is reachable), so mobile-terminated delivery and the mobile-originated acks cannot be pushed to the UE.
- The UDM cannot be located, so SMSF registration does not complete (subscription lookup itself is fail-open and will not block SMS).
- The UE has no active SMS context (see the `404 CONTEXT_NOT_FOUND` case above).
- The UE is barred for SMS in the UDM subscription data.

Resolution:

1. Confirm OmniMessage is reachable at `omnimessage_base_url` and that OmniSMSF has registered as a frontend (`omnismsf`).
2. Confirm OmniSMSF discovers the AMF and UDM via the NRF, or that the configured fallback `amf_uri` and `udm_uri` are correct and reachable.
3. Confirm the AMF has an active SMS context for the SUPI (re-Activate if OmniSMSF has restarted).
4. Review the UE's SMS-management subscription in the UDM if delivery is selectively blocked.

