



# GTP Inspect Inspector

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## GTP Inspect Inspector Overview

Type	Inspector (service)
Usage	Inspect
Instance Type	Multiton
Other Inspectors Required	stream_udp
Enabled	false

The General Service Packet Radio (GPRS) Tunneling Protocol (GTP) provides communication over a GTP core network.

The `gtp_inspect` inspector detects anomalies in GTP traffic and forwards command channel signaling messages to the rules engine for inspection.

## GTP Inspect Inspector Parameters

### GTP Inspect service and ports configuration

The `binder` inspector defines the GTP Inspect `service` and `ports` configuration. For more information, see the [Binder Inspector Overview](#).

### Example:

```
[
  {
    "when": {
      "service": "gtp_inspect",
      "role": any
    }
  }
]
```

```

    },
    "use": {
      "type": "gtp_inspect"
    }
  },
  {
    "when": {
      "proto": "tcp",
      "role": "server",
      "ports": "2123 2152 3386"
    },
    "use": {
      "type": "gtp_inspect"
    }
  }
]

```

**version**

Specifies a valid GTP version.

**Type:** integer

**Valid values:** 0, 1, 2

**Default value:** 2

**messages[]**

Specifies an array of information about valid GTP messages.

**Type:** array (object)

**Example:**

```

{
  messages: [
    {
      "type": 0,
      "name": ""
    }
  ]
}

```

**messages[].type**

Specifies a valid GTP message type. See [Table 2: GTP Message Types](#) table.

**Type:** integer

**Valid range:** 0 to 255

**Default value:** None

**messages[].name**

Specifies a valid GTP message name. See [Table 2: GTP Message Types](#) table.

**Type:** string

**Valid values:** A valid GTP message name

**Default value:** None

**infos[]**

Specifies an array of GTP information elements.

**Type:** array (object)

**Example:**

```
{
  infos: [
    {
      "type": 0,
      "name": "echo_request",
      "length": 0
    }
  ]
}
```

**infos[].type**

Specifies a valid GTP element type code. See [Table 3: GTP Information Elements](#) table.

**Type:** integer

**Valid range:** 0 to 255

**Default value:** 0

**infos[].name**

Specifies a valid GTP element name.

**Type:** string

**Valid values:** Valid GTP information element names. See [Table 3: GTP Information Elements](#) table.

**infos[].length**

Specifies the length of a valid GTP information element.

**Type:** integer

**Valid range:** 0 to 255

**Default value:** 0

## GTP Inspect Inspector Rules

Enable the `gtp_inspect` inspector rules to generate events and, in an inline deployment, drop offending packets.

**Table 1: GTP Inspector Rules**

GID:SID	Rule Message
143:1	message length is invalid
143:2	information element length is invalid

GID:SID	Rule Message
143:3	information elements are out of order
143:4	TEID is missing

## GTP Inspect Inspector Intrusion Rule Options

The `gtp_inspect` inspector intrusion rule options allow you to inspect the GTP command channel for the GTP version, message type, and information elements.

You cannot use GTP options in combination with `content` or `byte_jump`. You must use `gtp_version` in each rule that uses `gtp_info` or `gtp_type`.

### **gtp\_version**

Check the specified GTP version against the version of the GTP control messages.

**Type:** integer

**Syntax:** `gtp_version: <version>;`

**Valid values:** 0, 1, 2

**Examples:** `gtp_version: 1;`

### **gtp\_type**

Each GTP message is identified by a message type, which is comprised of both a numeric value and a string. Check the specified GTP types against the type of the GTP messages.

You can specify a defined decimal value for a message type, a defined string, or a comma-separated list of either or both in any combination, as seen in the following example:

**Type:** string

**Syntax:** `gtp_type: <message_type>;`

**Valid values:** Listed in the GTP Message Types table. See [Table 2: GTP Message Types](#) table.

**Examples:** `gtp_type: "10, 11, echo_request";`

The system uses an OR operation to match each value or string that you list. The order in which you list values and strings does not matter. Any single value or string in the list matches the keyword. The system generates an error if you attempt to save a rule that includes an unrecognized string or an out-of-range value.

Note that different GTP versions sometimes use different values for the same message type. For example, the `sgsn_context_request` message type has a value of 50 in GTPv0 and GTPv1, but a value of 130 in GTPv2.

The `gtp_type` option matches different values depending on the version number in the packet. For instance the `sgsn_context_request` message matches the value 50 in a GTPv0 or GTPv1 packet and the value 130 in a GTPv2 packet. The option does not match a packet when the message type value in the packet is not a known value for the version specified in the packet.

If you specify an integer for the message type, the option matches if the message type matches the value in the GTP packet, regardless of the version specified in the packet.

`gtp_message_type` is a numeric value or keyword from the [Table 2: GTP Message Types](#) table.

**Table 2: GTP Message Types**

Type	Name for Version 0	Name for Version 1	Name for Version 2
1	echo_request	echo_request	echo_request
2	echo_response	echo_response	echo_response
3	version_not_supported	version_not_supported	version_not_supported
4	node_alive_request	node_alive_request	N/A
5	node_alive_response	node_alive_response	N/A
6	redirection_request	redirection_request	N/A
7	redirection_response	redirection_response	N/A
16	create_pdp_context_request	create_pdp_context_request	N/A
17	create_pdp_context_response	create_pdp_context_response	N/A
18	update_pdp_context_request	update_pdp_context_request	N/A
19	update_pdp_context_response	update_pdp_context_response	N/A
20	delete_pdp_context_request	delete_pdp_context_request	N/A
21	delete_pdp_context_response	delete_pdp_context_response	N/A
22	create_aa_pdp_context_request	init_pdp_context_activation_request	N/A
23	create_aa_pdp_context_response	init_pdp_context_activation_response	N/A
24	delete_aa_pdp_context_request	N/A	N/A
25	delete_aa_pdp_context_response	N/A	N/A
26	error_indication	error_indication	N/A
27	pdu_notification_request	pdu_notification_request	N/A
28	pdu_notification_response	pdu_notification_response	N/A
29	pdu_notification_reject_request	pdu_notification_reject_request	N/A
30	pdu_notification_reject_response	pdu_notification_reject_response	N/A
31	N/A	supported_ext_header_notification	N/A
32	send_routing_info_request	send_routing_info_request	create_session_request
33	send_routing_info_response	send_routing_info_response	create_session_response
34	failure_report_request	failure_report_request	modify_bearer_request

Type	Name for Version 0	Name for Version 1	Name for Version 2
35	failure_report_response	failure_report_response	modify_bearer_response
36	note_ms_present_request	note_ms_present_request	delete_session_request
37	note_ms_present_response	note_ms_present_response	delete_session_response
38	N/A	N/A	change_notification_request
39	N/A	N/A	change_notification_response
48	identification_request	identification_request	N/A
49	identification_response	identification_response	N/A
50	sgsn_context_request	sgsn_context_request	N/A
51	sgsn_context_response	sgsn_context_response	N/A
52	sgsn_context_ack	sgsn_context_ack	N/A
53	N/A	forward_relocation_request	N/A
54	N/A	forward_relocation_response	N/A
55	N/A	forward_relocation_complete	N/A
56	N/A	relocation_cancel_request	N/A
57	N/A	relocation_cancel_response	N/A
58	N/A	forward_srns_context	N/A
59	N/A	forward_relocation_complete_ack	N/A
60	N/A	forward_srns_context_ack	N/A
64	N/A	N/A	modify_bearer_command
65	N/A	N/A	modify_bearer_failure_indication
66	N/A	N/A	delete_bearer_command
67	N/A	N/A	delete_bearer_failure_indication
68	N/A	N/A	bearer_resource_command
69	N/A	N/A	bearer_resource_failure_indication
70	N/A	ran_info_relay	downlink_failure_indication
71	N/A	N/A	trace_session_activation
72	N/A	N/A	trace_session_deactivation
73	N/A	N/A	stop_paging_indication

Type	Name for Version 0	Name for Version 1	Name for Version 2
95	N/A	N/A	create_bearer_request
96	N/A	mbms_notification_request	create_bearer_response
97	N/A	mbms_notification_response	update_bearer_request
98	N/A	mbms_notification_reject_request	update_bearer_response
99	N/A	mbms_notification_reject_response	delete_bearer_request
100	N/A	create_mbms_context_request	delete_bearer_response
101	N/A	create_mbms_context_response	delete_pdn_request
102	N/A	update_mbms_context_request	delete_pdn_response
103	N/A	update_mbms_context_response	N/A
104	N/A	delete_mbms_context_request	N/A
105	N/A	delete_mbms_context_response	N/A
112	N/A	mbms_register_request	N/A
113	N/A	mbms_register_response	N/A
114	N/A	mbms_deregister_request	N/A
115	N/A	mbms_deregister_response	N/A
116	N/A	mbms_session_start_request	N/A
117	N/A	mbms_session_start_response	N/A
118	N/A	mbms_session_stop_request	N/A
119	N/A	mbms_session_stop_response	N/A
120	N/A	mbms_session_update_request	N/A
121	N/A	mbms_session_update_response	N/A
128	N/A	ms_info_change_request	identification_request
129	N/A	ms_info_change_response	identification_response
130	N/A	N/A	sgsn_context_request
131	N/A	N/A	sgsn_context_response
132	N/A	N/A	sgsn_context_ack
133	N/A	N/A	forward_relocation_request
134	N/A	N/A	forward_relocation_response

Type	Name for Version 0	Name for Version 1	Name for Version 2
135	N/A	N/A	forward_relocation_complete
136	N/A	N/A	forward_relocation_complete_ack
137	N/A	N/A	forward_access
138	N/A	N/A	forward_access_ack
139	N/A	N/A	relocation_cancel_request
140	N/A	N/A	relocation_cancel_response
141	N/A	N/A	configuration_transfer_tunnel
149	N/A	N/A	detach
150	N/A	N/A	detach_ack
151	N/A	N/A	cs_paging
152	N/A	N/A	ran_info_relay
153	N/A	N/A	alert_mme
154	N/A	N/A	alert_mme_ack
155	N/A	N/A	ue_activity
156	N/A	N/A	ue_activity_ack
160	N/A	N/A	create_forward_tunnel_request
161	N/A	N/A	create_forward_tunnel_response
162	N/A	N/A	suspend
163	N/A	N/A	suspend_ack
164	N/A	N/A	resume
165	N/A	N/A	resume_ack
166	N/A	N/A	create_indirect_forward_tunnel_request
167	N/A	N/A	create_indirect_forward_tunnel_response
168	N/A	N/A	delete_indirect_forward_tunnel_request
169	N/A	N/A	delete_indirect_forward_tunnel_response
170	N/A	N/A	release_access_bearer_request
171	N/A	N/A	release_access_bearer_response
176	N/A	N/A	downlink_data



Type	Name for Version 0	Name for Version 1	Name for Version 2
177	N/A	N/A	downlink_data_ack
179	N/A	N/A	pgw_restart
180	N/A	N/A	pgw_restart_ack
200	N/A	N/A	update_pdn_request
201	N/A	N/A	update_pdn_response
211	N/A	N/A	modify_access_bearer_request
212	N/A	N/A	modify_access_bearer_response
231	N/A	N/A	mbms_session_start_request
232	N/A	N/A	mbms_session_start_response
233	N/A	N/A	mbms_session_update_request
234	N/A	N/A	mbms_session_update_response
235	N/A	N/A	mbms_session_stop_request
236	N/A	N/A	mbms_session_stop_response
240	data_record_transfer_request	data_record_transfer_request	N/A
241	data_record_transfer_response	data_record_transfer_response	N/A
254	N/A	end_marker	N/A
255	pdu	pdu	N/A

### gtp\_info

A GTP message can include multiple information elements, each of which is identified by both a defined numeric value and a defined string. You can use the `gtp_info` option to start inspection at the beginning of a specified information element, and restrict inspection to that information element.

You can specify either the defined decimal value or the defined string for an information element. You can specify a single value or string, and you can use multiple `gtp_info` options in a rule to inspect multiple information elements.

When a message includes multiple information elements of the same type, all are inspected for a match. When information elements occur in an invalid order, only the last instance is inspected.

Depending on the version, a GTP message can use different values for the same information element. For example, the `cause` information element has a value of 1 in GTPv0 and GTPv1, but a value of 2 in GTPv2.

The `gtp_info` option matches different values depending on the version number in the packet. In the example above, the keyword matches the information element value 1 in a GTPv0 or GTPv1 packet and the value 2 in a GTPv2 packet. The option does not match a packet when the information element value in the packet is not a known value for the version specified in the packet.

If you specify an integer for the information element, the option matches if the message type matches the value in the GTP packet, regardless of the version specified in the packet.

**Type:** string

**Syntax:** `gtp_info: <identifier>;`

**Valid values:** Listed in the [Table 3: GTP Information Elements](#) table.

**Examples:** `gtp_info: "qos";`

**Table 3: GTP Information Elements**

Type	Name for Version 0	Name for Version 1	Name for Version 2
1	cause	cause	imsi
2	imsi	imsi	cause
3	rai	rai	recovery
4	tlli	tlli	N/A
5	p_tmsi	p_tmsi	N/A
6	qos	N/A	N/A
8	recording_required	recording_required	N/A
9	authentication	authentication	N/A
10	N/A	N/A	N/A
11	map_cause	map_cause	N/A
12	p_tmsi_sig	p_tmsi_sig	N/A
13	ms_validated	ms_validated	N/A
14	recovery	recovery	N/A
15	selection_mode	selection_mode	N/A
16	flow_label_data_1	teid_1	N/A
17	flow_label_signalling	teid_control	N/A
18	flow_label_data_2	teid_2	N/A
19	ms_unreachable	teardown_ind	N/A
20	N/A	nsapi	N/A
21	N/A	ranap	N/A
22	N/A	rab_context	N/A
23	N/A	radio_priority_sms	N/A

Type	Name for Version 0	Name for Version 1	Name for Version 2
24	N/A	radio_priority	N/A
25	N/A	packet_flow_id	N/A
26	N/A	charging_char	N/A
27	N/A	trace_ref	N/A
28	N/A	trace_type	N/A
29	N/A	ms_unreachable	N/A
71	N/A	N/A	apn
72	N/A	N/A	ambr
73	N/A	N/A	ebi
74	N/A	N/A	ip_addr
75	N/A	N/A	mei
76	N/A	N/A	msisdn
77	N/A	N/A	indication
78	N/A	N/A	pco
79	N/A	N/A	paa
80	N/A	N/A	bearer_qos
80	N/A	N/A	flow_qos
82	N/A	N/A	rat_type
83	N/A	N/A	serving_network
84	N/A	N/A	bearer_tft
85	N/A	N/A	tad
86	N/A	N/A	uli
87	N/A	N/A	f_teid
88	N/A	N/A	tmsi
89	N/A	N/A	cn_id
90	N/A	N/A	s103pdf
91	N/A	N/A	sludf
92	N/A	N/A	delay_value

Type	Name for Version 0	Name for Version 1	Name for Version 2
93	N/A	N/A	bearer_context
94	N/A	N/A	charging_id
95	N/A	N/A	charging_char
96	N/A	N/A	trace_info
97	N/A	N/A	bearer_flag
99	N/A	N/A	pdn_type
100	N/A	N/A	pti
101	N/A	N/A	drx_parameter
103	N/A	N/A	gsm_key_tri
104	N/A	N/A	umts_key_cipher_quin
105	N/A	N/A	gsm_key_cipher_quin
106	N/A	N/A	umts_key_quin
107	N/A	N/A	eps_quad
108	N/A	N/A	umts_key_quad_quin
109	N/A	N/A	pdn_connection
110	N/A	N/A	pdn_number
111	N/A	N/A	p_tmsi
112	N/A	N/A	p_tmsi_sig
113	N/A	N/A	hop_counter
114	N/A	N/A	ue_time_zone
115	N/A	N/A	trace_ref
116	N/A	N/A	complete_request_msg
117	N/A	N/A	guti
118	N/A	N/A	f_container
119	N/A	N/A	f_cause
120	N/A	N/A	plmn_id
121	N/A	N/A	target_id
123	N/A	N/A	packet_flow_id

Type	Name for Version 0	Name for Version 1	Name for Version 2
124	N/A	N/A	rab_context
125	N/A	N/A	src_rnc_pdcph
126	N/A	N/A	udp_src_port
127	charge_id	charge_id	apn_restriction
128	end_user_address	end_user_address	selection_mode
129	mm_context	mm_context	src_id
130	pdp_context	pdp_context	N/A
131	apn	apn	change_report_action
132	protocol_config	protocol_config	fq_csid
133	gsn	gsn	channel
134	msisdn	msisdn	emlpp_pri
135	N/A	qos	node_type
136	N/A	authentication_qu	fqdn
137	N/A	tft	ti
138	N/A	target_id	mbms_session_duration
139	N/A	utran_trans	mbms_service_area
140	N/A	rab_setup	mbms_session_id
141	N/A	ext_header	mbms_flow_id
142	N/A	trigger_id	mbms_ip_multicast
143	N/A	omc_id	mbms_distribution_ack
144	N/A	ran_trans	rfsp_index
145	N/A	pdp_context_pri	uci
146	N/A	addi_rab_setup	csg_info
147	N/A	sgsn_number	csg_id
148	N/A	common_flag	cmi
149	N/A	apn_restriction	service_indicator
150	N/A	radio_priority_lcs	detach_type
151	N/A	rat_type	ldn

Type	Name for Version 0	Name for Version 1	Name for Version 2
152	N/A	user_loc_info	node_feature
153	N/A	ms_time_zone	mbms_time_to_transfer
154	N/A	imei_sv	throttling
155	N/A	camel	arp
156	N/A	mbms_ue_context	epc_timer
157	N/A	tmp_mobile_group_id	signalling_priority_indication
158	N/A	rim_routing_addr	tmgi
159	N/A	mbms_config	mm_srvcc
160	N/A	mbms_service_area	flags_srvcc
161	N/A	src_rnc_pdcip	nmbp
162	N/A	addi_trace_info	N/A
163	N/A	hop_counter	N/A
164	N/A	plmn_id	N/A
165	N/A	mbms_session_id	N/A
166	N/A	mbms_2g3g_indicator	N/A
167	N/A	enhanced_nsapi	N/A
168	N/A	mbms_session_duration	N/A
169	N/A	addi_mbms_trace_info	N/A
170	N/A	mbms_session_repetition_num	N/A
171	N/A	mbms_time_to_data	N/A
173	N/A	bss	N/A
174	N/A	cell_id	N/A
175	N/A	pdu_num	N/A
177	N/A	mbms_bearer_capab	N/A
178	N/A	rim_routing_disc	N/A
179	N/A	list_pfc	N/A
180	N/A	ps_xid	N/A
181	N/A	ms_info_change_report	N/A

Type	Name for Version 0	Name for Version 1	Name for Version 2
182	N/A	direct_tunnel_flags	N/A
183	N/A	correlation_id	N/A
184	N/A	bearer_control_mode	N/A
185	N/A	mbms_flow_id	N/A
186	N/A	mbms_ip_multicast	N/A
187	N/A	mbms_distribution_ack	N/A
188	N/A	reliable_inter_rat_handover	N/A
189	N/A	rfsp_index	N/A
190	N/A	fqdn	N/A
191	N/A	evolved_allocation1	N/A
192	N/A	evolved_allocation2	N/A
193	N/A	extended_flags	N/A
194	N/A	uci	N/A
195	N/A	csg_info	N/A
196	N/A	csg_id	N/A
197	N/A	cmi	N/A
198	N/A	apn_ambr	N/A
199	N/A	ue_network	N/A
200	N/A	ue_ambr	N/A
201	N/A	apn_ambr_nsapi	N/A
202	N/A	ggsn_backoff_timer	N/A
203	N/A	signalling_priority_indication	N/A
204	N/A	signalling_priority_indication_reapi	N/A
205	N/A	high_bitrate	N/A
206	N/A	max_mbr	N/A
251	charging_gateway_addr	charging_gateway_addr	N/A
255	private_extension	private_extension	private_extension

