

## DaSeT - Data test KPI definition in compliance with Orange Group MSAD

SMS	
KPI name	KPI description
No.of all attempts	Number of all success and failed attempts
Delivery time /s/	Average of delivery time of all success attempts during day. SMS delivery time is divided into two parts. The first part is sending time and the second one is receiving time.
Delivery success rate	Number of all success attempts in percentage: $\frac{\text{Successful delivered}}{\text{All attempts}} \times 100\%$
No.of not delivered SMS	Number of all failed attempts

SMS to short number service	
KPI name	KPI description
No.of all attempts	Number of all success and failed attempts
Delivery time /s/	Average of delivery time of all success attempts during day. SMS delivery time is divided into two parts. The first part is sending time and the second one is receiving time.
Delivery success rate	Number of all success attempts in percentage: $\frac{\text{Successful delivered}}{\text{All attempts}} \times 100\%$
No.of not delivered SMS	Number of all failed attempts

USSD	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
Delivery time /s/	Average of delivery time of all success attempts during day. Delivery time is calculated as a time from sending of the USSD code up to time when instant message is received.
Delivery success rate /%/	Number of all success attempts in percentage: $\frac{\text{Successful delivered}}{\text{All attempts}} \times 100\%$

USSD with USSD and SMS reply	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
USSD Delivery time /s/	Average of delivery time of all success attempts during day. Delivery time is calculated as a time from sending of the USSD code up to time when instant message is received.
SMS notification delivery time /s/	Average of delivery time of all success attempts during day. Delivery time is calculated as a time from sending of the USSD code up to time when instant message is received.
Delivery success rate /%/	Number of all success attempts in percentage with USSD and SMS replies received: $\frac{\text{Successful delivered}}{\text{All attempts}} \times 100\%$

HTTP test with Internet Explorer and single thread	
KPI name	KPI description
No.of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
HTTP page download time /sec/	Average time taken to download tested HTTP page. It is global end-to-end HTTP page download time, between the click and the correct display of the page. Technically, this can be computed from the first "DNS request" if any, or from the first "TCP SYN", up to the last "TCP ACK" corresponding to the last HTTP packet received.
HTTP page download success rate /%/	$\frac{\text{All successful downloads}}{\text{All successful PDP context activations}} \times 100\%$

WEB test with Chrome, Firefox or Internet Explorer and multithread	
KPI name	KPI description
No.of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
HTTP web page download time /sec/	Average time taken to download tested HTTP page. It is global end-to-end HTTP page download time, between the click and the correct display of the page. Technically, this can be computed from the first "DNS request" if any, or from the first "TCP SYN", up to the last "TCP ACK" corresponding to the last HTTP packet received.
HTTP web page download success rate /%/	$\frac{\text{All successful downloads}}{\text{All successful PDP context activations}} \times 100\%$

HTTP File DL/UL throughput	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /s/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
HTTP file download/upload time /s/	Average time taken to download/upload tested file Download/Upload Success Rate
HTTP file download/upload success rate /%/	$\frac{\text{All successful downloads/uploads}}{\text{All successful PDP context activations}} \times 100\%$
PDP context activation errors	Number of all failed attempts to connect to SGSN
HTTP file download/upload errors	Number of all failed attempts to download/upload file
HTTP file download/upload throughput /kpbs/	It is an average throughput of all successful HTTP file download/upload throughputs from/to server. Throughput reached when downloading or uploading a big file over HTTP. Note that this throughput is not to be compared with the average throughput during a web page download or upload, which is much lower due to the many round-trips required to get all the small objects.

HTTP File DL/UL throughput FDTT (Fixed Data Transfer Time)	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /s/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
HTTP FDTT download/upload success rate /%/	Download/Upload Success Rate $\frac{\text{All successful downloads/uploads}}{\text{All successful PDP context activations}} \times 100\%$
PDP context activation errors	Number of all failed attempts to connect to SGSN
HTTP FDTT download/upload errors	Number of all failed attempts to download/upload file
HTTP FDTT download/upload throughput /kpbs/	It is an average throughput of all successful HTTP FDTT download/upload throughputs from/to server. Throughput reached when downloading or uploading a big file over HTTP during predefined time period ( $\Delta t_d$ ) instead of measurements with defined files like standard HTTP DL/UL test. After reaching the end of the predefined transfer period ( $\Delta t_d$ ), the amount of transferred data and the average throughput is calculated.

Capacity HTTP DL throughput	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /s/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Capacity download success rate /%/	Download/Upload Success Rate $\frac{\text{All successful downloads/uploads}}{\text{All successful PDP context activations}} \times 100\%$
PDP context activation errors	Number of all failed attempts to connect to SGSN
Capacity download errors	Number of all failed attempts to download/upload file
Capacity download throughput /kbps/	It is an average throughput of all successful Capacity download throughputs from server. Throughput reached when downloading multiple big files over HTTP during predefined time period (Atd). Capacity test establishes multiple and simultaneous peer connections for data transfer to optimize network throughput. The Capacity test focuses on network stressing for a specific time period you define.

FTP DL/UL throughput	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /s/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Connection time to FTP server /s/	Average time taken to establish connection to the FTP server
Connection to FTP server success rate /%/	$\frac{\text{All successful connections to the FTP server}}{\text{All successful PDP context activations}} \times 100\%$
FTP File download time /sec/	Average time taken to download tested file from the FTP server.
FTP File download success rate /%/	$\frac{\text{All successful downloads}}{\text{All successful connections to the FTP server}} \times 100\%$
FTP File upload time /sec/	Average time taken to upload tested file to the FTP server.
FTP File upload success rate /%/	Upload Success Rate $\frac{\text{All successful uploads}}{\text{All successful connections to the FTP server}} \times 100\%$
FTP file download/upload throughput /kbps/	It is an average throughput of all successful FTP file download/upload throughputs from/to server. Throughput reached when downloading/uploading a big file over FTP. Although FTP transfer does not represent a large part of customer usage, it allows simple transfer tests. In an "ideal" network, HTTP & FTP file transfer speed should be equivalent.

MMS	
KPI name	KPI description
No. of all attempts	Number of all successful and failed attempts
PDP context activation time Send /sec/	Average time taken to establish connection to SGSN for MMS Sending. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate Send /%/	MMS sending Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Sending Time /sec/	Average time taken to send an MMS to the MMSC without connection time. MMS Sending time is calculated as a time from beginning of MMS sending (after connection to the APN is established) from mobile station #1 to the MMS Center while mobile station #1 receives of the acknowledge message from the MMS center.
Sending Success rate /%/	MMS sending success rate $\frac{\text{All successful sent}}{\text{All sent MMS}} \times 100\%$
Push SMS Time /sec/	Average time taken to send a notification (Push SMS) to the recipient. Push SMS is SMS notification sent from the MMSC to the mobile station #2 containing the URL of the MMS content. Push SMS time is time period from receiving of the acknowledge message from MMSC to mobile station #1 to receiving of the Push SMS to mobile station #2.
Push SMS Success rate /%/	Push SMS (Notification) success rate $\frac{\text{All successful delivered notifications}}{\text{All successful sent MMS}} \times 100\%$
PDP context activation time Receive /sec/	Average time taken to establish connection to SGSN for MMS Receiving. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate Receive /%/	MMS receiving Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Receiving Time /sec/	Average time taken to receive an MMS from the MMSC without connection time.
Receiving Success rate /%/	MMS receiving success rate $\frac{\text{All successful received}}{\text{All successful sent MMS - pushSMS errors - connect.receiving errors}} \times 100\%$
PDP context errors Sending	Number of the connection errors during MMS sending
Sending errors	Number of MMS sending errors
Push SMS errors	Number of notification errors
PDP context errors Receiving	Number of the connection errors during MMS receiving
Receiving errors	Number of MMS receiving errors

WAP	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
WAP page download time /sec/	Average time taken to download tested WAP page. WAP page download time is calculated as a time from sending of the first GET command up to time when last object is downloaded.
WAP page download success rate /%/	Download Success Rate $\frac{\text{All successful downloads}}{\text{All successful PDP context activations}} \times 100\%$

PING - Round Trip Time	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Ping RTT /sec/	Average of the individual request/reply response times.
Packet loss /%/	$\frac{\text{All unsuccessful responses}}{\text{All successful PDP context activations}} \times 100\%$

Email through SMTP and POP3	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Email Sending Time /sec/	Average time taken to send email to the SMTP server. Sending time is calculated as a time from command 'Send' to an acknowledge message received from the SMTP server. It is the time taken to send an email to the SMTP server.
Email Sending Success rate /%/	Sending Success Rate $\frac{\text{All successful email sending}}{\text{All successful PDP context activations}} \times 100\%$
Email Receiving Time /sec/	Average time taken to receive email from the POP3 server. Receiving time is calculated as a time from 'Send/Receive' command to a 'New message' event. It is the time taken to receive an email from POP3 or IMAP server.
Email Receiving Success rate /%/	Receiving Success Rate $\frac{\text{All successful email receiving}}{\text{All successful sending}} \times 100\%$

YouTube video	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	$\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Initial buffering (or Video Access) time /s/	Average time from an event when Play button is pressed until the video starts to play.
Initial buffering failure ratio /%/	$\frac{\text{All unsuccessful attempts}}{\text{All attempts}} \times 100\%$
Video download time /s/	Average time from the first video data byte was received until the last video data byte is received.
Video download data rate /kbps/	$\frac{\text{Amount of DL bits}}{\text{Video download time}}$
Buffering count	It is a number of buffering during video download. Or how many times was video buffered while it was completely played. Minimum value is 1.
Percentage of HTTP video rebuffering /%/	It is percentage of HTTP videos that have been showed with at least one rebuffering event.
Total Buffering Time /s/	Average time when the server begins to send data packets to the player which stores received data in its buffer till the buffer is completely filled.
Total Time /s/	Total time is a time from the first request to the server till video playback is finished.
Video Visualization time /s/	Video Visualization time = Total time – Initial Buffering time
Video preparation duration /s/	It is service access time or the time between PLAY button was pressed and the 1st buffering status.
Pre-Playout Buffering time /s/	It is Reproduction start delay or the time between the 1st buffering status and the time when video is playout
Sum of all interruptions duration /s/	Duration of all other bufferings except the initial buffering

Streaming	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
Buffering time /sec/	It is a time when the server begins to send data packets to the player which stores received data in its buffer till the buffer is completely filled.
Playout delay /sec/	It is summary of connection time to the streaming server and buffering time
Connection to the server success rate /%/	Connection Success Rate to the streaming server $\frac{\text{All successful connections to the server}}{\text{All successful PDP context activations}} \times 100\%$
Buffering count	It is a number of buffering during video download. Or how many times was video buffered while it was completely played. Minimum value is 1.
Total streaming time /sec/	It is a time from the first request to the server till video playback is finished.
Total success rate /%/	Total Streaming Success Rate $\frac{\text{All successful streaming tests}}{\text{All successful PDP context activations}} \times 100\%$
Reception quality /%/	$\frac{\text{All received packets}}{\text{Total packets}} \times 100\%$

DNS	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
DNS response time /sec/	Time between "DNS query" and "DNS Response". The DNS query is the first step performed in the HTTP page request flow. It translates a domain name server or a URL to an IP address. This translation is done by a DNS server which contains a mapping table to all domain names on the web. Long DNS response times increase the web page download time. Note that a single web page may trigger several DNS queries if the content is split on several servers.
DNS response success rate /%/	DNS Response Success Rate $\frac{\text{All successful DNS responses}}{\text{All successful PDP context activations}} \times 100\%$

DHCP	
KPI name	KPI description
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
DHCP response time /sec/	DHCP response time is a time from sending a request to the network to an event 'IP acknowledged' from the DHCP server.
DHCP response success rate /%/	DHCP Response Success Rate $\frac{\text{All successful DHCP responses}}{\text{All successful PDP context activations}} \times 100\%$

<b>HTTP RTT (HTTP First Response)</b>	
<b>KPI name</b>	<b>KPI description</b>
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
HTTP connection time to the web server (port 80) /sec/	HTTP connection time to the web server (port 80) is defined as a time between SYN and ACK packets (see also AnyTCP test). A TCP connection is always initiated with the 3-way handshake, which establishes and negotiates the actual connection over which data will be sent. The whole session is begun with a SYN packet, then a SYN/ACK packet and finally an ACK packet to acknowledge the whole session establishment. At this point the connection is established and able to start sending data.
HTTP connection to the web server success rate /%/	Success rate of connections to the web server. $\frac{\text{All successful connections to the web server}}{\text{All successful PDP context activations}} \times 100\%$
HTTP RTT (Web-server response Time) /sec/	HTTP RTT (Web-server response Time) is server response time at HTTP layer, typically between the HTTP request (e.g. "HTTP GET") and the HTTP response (e.g. "HTTP 200 OK").
HTTP RTT success rate /%/	$\frac{\text{All successful HTTP RTT responses}}{\text{All successful PDP context activations}} \times 100\%$

<b>AnyTCP</b>	
<b>KPI name</b>	<b>KPI description</b>
No. of all attempts	Number of all success and failed attempts
PDP context activation time /sec/	Average time taken to establish connection to SGSN. PDP context activation time is a time while modem is establishing connection to an APN provided by the mobile operator. When a mobile is GPRS attached to the network, this delay corresponds to the time needed to get an IP connectivity. This corresponds to the PDP context activation procedure, taken between the first radio message ("Channel Request" in 2G or "RRC Connection Request" in 3G) and the "PDP Context Activation Accept".
PDP context activation success rate /%/	Connection Success Rate $\frac{\text{All successful PDP context activations}}{\text{All PDP context activations}} \times 100\%$
TCP Connection time /sec/	TCP Connection time is defined as a time between SYN and ACK packets. A TCP connection is always initiated with the 3-way handshake, which establishes and negotiates the actual connection over which data will be sent. The whole session is begun with a SYN packet, then a SYN/ACK packet and finally an ACK packet to acknowledge the whole session establishment. At this point the connection is established and able to start sending data.
AnyTCP connection success rate /%/	AnyTCP Success Rate $\frac{\text{All successful TCP connections}}{\text{All successful PDP context activations}} \times 100\%$

<b>Idle/RAN details</b>	
<b>KPI name</b>	<b>KPI description</b>
No. of all attempts	Number of all success and failed attempts
RX Level /dB/	Average value of Rx level as the power in dBm of the received mobile signal.
Cell ID	Unique number used to identify each base transceiver station (BTS) or sector of a BTS