

Mobile Network Connectivity Probe for HP OpenView Internet Services

Product Overview

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HP Software
Silver Business Partner



MobNetCon Probe for HP OVIS – Key Facts:

Product Name	Mobile Network Connectivity Probe for HP OVIS
Addressed Market / Customers	Telecommunications / Mobile Network Operators (GSM/UMTS)
Objective / Purpose	Provides Network Bearer Service Quality Monitoring from the customer perspective for HP OVIS
Customer Benefit	Allows customers to identify, track and solve Network Bearer QoS problems and SLA violations, fully integrated into HP OVIS
Supported Bearer Services & Protocols	GSM/CSD, GSM/HSCSD, GSM/GPRS, UMTS/UTRANS incl. HSDPA ICMP-PING, UDP-PING, TCP-Connect, HTTP-GET, WAP-GET
Product Highlights	Measures Network Attach Time, PDP/PPP Context Activation Time, Proper Modem Control & IP-Routing, IP-App-Protocol Timing
Supported Modems	Cinterion MC35i Terminal, Multitech Multimodem-EDGE Model MTCBA-E U, other Cinterion based modems
Supported HP OVIS Versions & Operating System	HP SiteScope, HP BAC, HP BPM Microsoft Windows 2000, XP, Server 2003, Linux
Sales Contact	sales@advenage.com

MobNetCon-Probe Elements

ICMP Ping

Send predefined number of PING requests, using ICMP protocol

UDP Ping

Send predefined number of PING requests, using IP/UDP protocol

TCP Connect

Create predefined number of TCP connections to predefined host/port

HTTP Get

Predefined number of HTTP Get requests

FTP Get

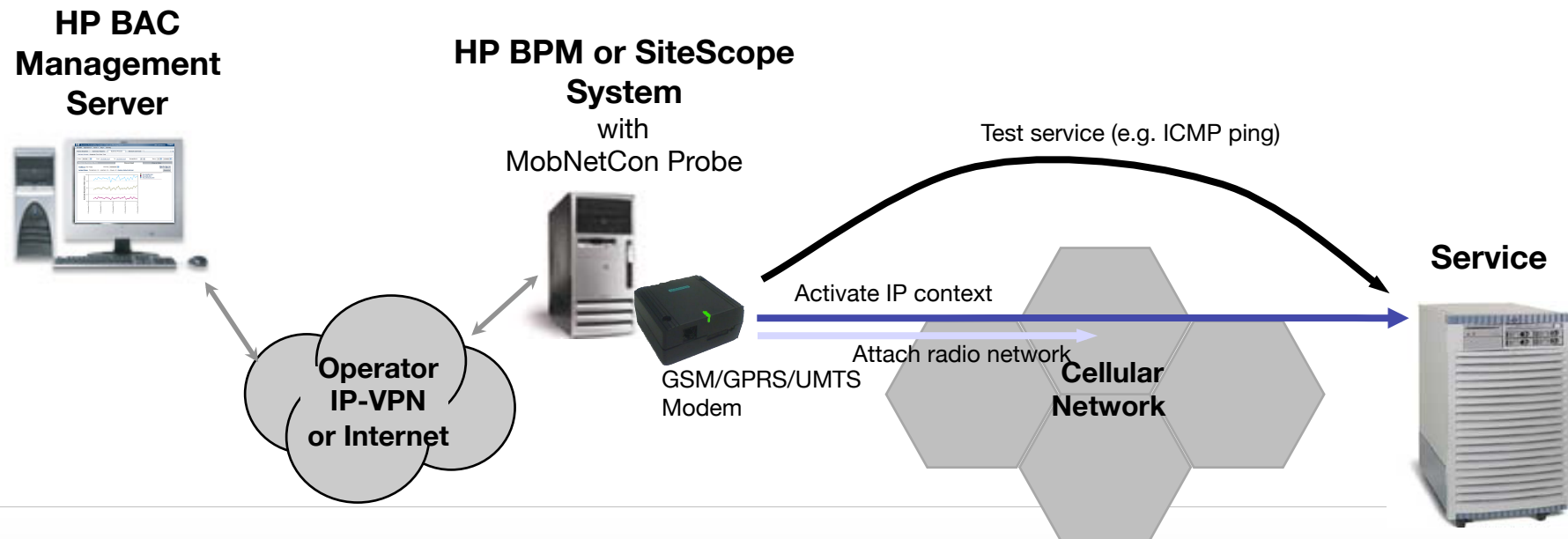
Predefined number of FTP Get operations

WAP Get

Predefined number of WAP Get operations, including WSP decoding & WBXML decoding

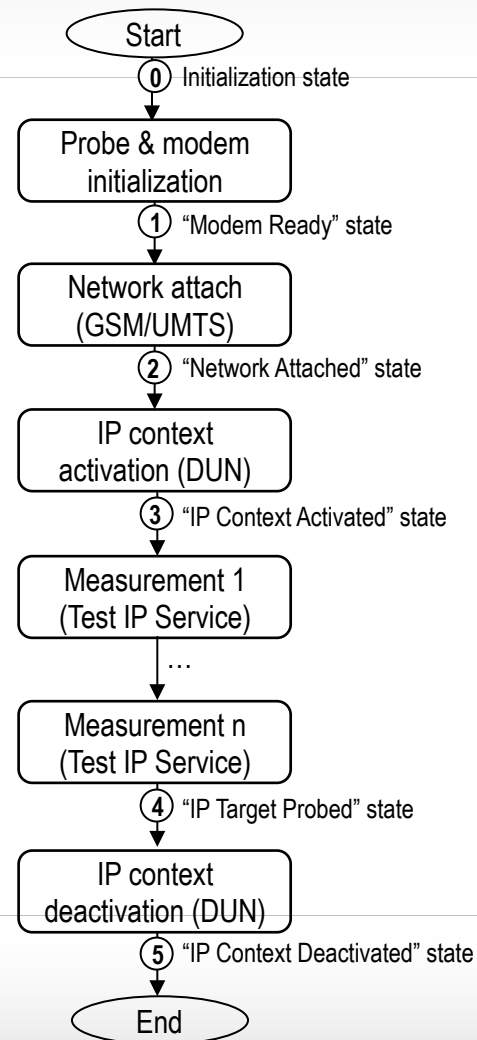
Use-Case: IP context setup and Service availability

- Probe establishes IP context and performs a TCP/IP operation to specified service.
- Supported operations include ICMP-PING, UDP-PING, TCP-CONNECT, HTTP-GET, WAP-GET
- In this use case: ICMP Ping



MNC Probe operation overview

MNC Probe Measuring



MobNetCon Probe Metrics (1/2)

- **availability**

- Category: Overview
- Description: Combined availability (Network, IP Context & Service)
- Type/Value: long [0 or 1]

- **response_time**

- Category: Overview
- Description: Total response time (Network attach + IP context activ. + Service response time + IP context deactiv.)
- Type/Value: double [seconds]

- **setup_time**

- Category: Overview
- Description: Combined setup time (Network Attach + IP Context activ.)
- Type/Value: double [seconds]

- **radio_network_availability**

- Category: Detail
- Description: Radio network availability, attach timeout → 0
- Type/Value: double [0 or 1]

- **radio_network_strength**

- Category: Detail
- Description: Modem specific signal strength
- Type/Value: double [signal value]

- **radio_network_attach_time**

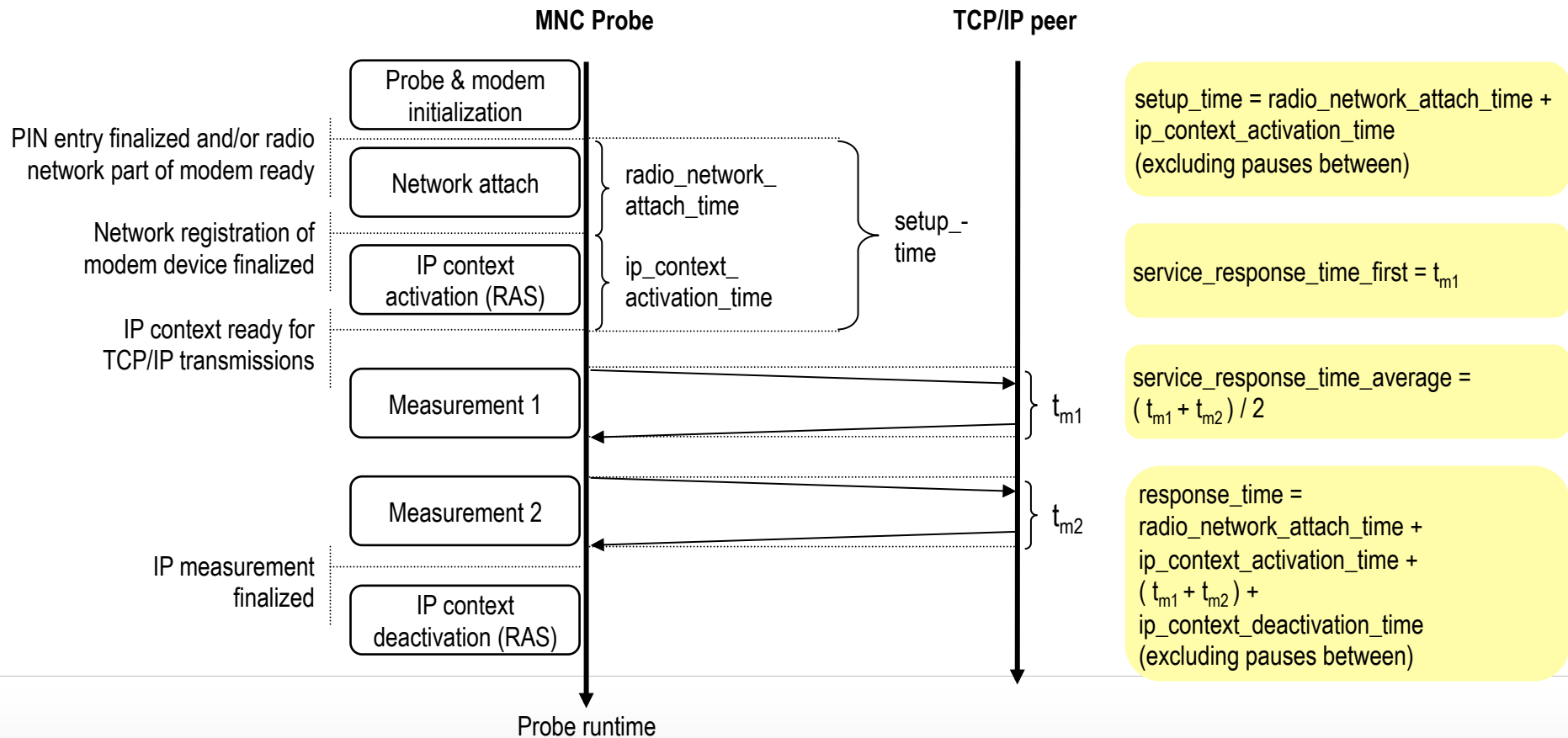
- Category: Detail
- Description: Time elapsed for network attach
- Type/Value: double [seconds]

MobNetCon Probe Metrics (2/2)

- **ip_context_availability**
 - Category: Detail
 - Description: Reports IP context setup success, timeout | failure → 0
 - Type/Value: double [0 or 1]
- **ip_context_activation_time**
 - Category: Detail
 - Description: Time elapsed for PPP/IP context activation
 - Type/Value: double [seconds]
- **service_availability**
 - Category: Detail
 - Description: Reports TCP/IP target service availability, timeout | failure → 0
 - Type/Value: double [0 or 1]
- **service_response_time_first**
 - Category: Detail
 - Description: Time elapsed for first TCP/IP target service response, e.g. PING
 - Type/Value: double [seconds]
- **service_response_time_average**
 - Category: Detail
 - Description: Average response time of TCP/IP target for all samples, e.g. PING
 - Type/Value: double [seconds]
- **transfer_throughput**
 - Category: Detail
 - Description: Service throughput, e.g. FTP performance (KB/s)
 - Type/Value: double [KB/s]

Timing diagram MNC-Probe (non proxy probes)

Applicable for MNC-Probes ICMP-PING, UDP-PING, TCP-CONNECT, FTP-GET



Why are the ADVENAGE Probes so well suited for Mobile Network Operators?

- Explicitly designed to support the mobile environment including modem setup / management (e.g. PIN protection of SIM cards, APN definition, primary and secondary connection), measurement of network attach time and IP context activation time, documentation of cell-ID, signal strength, inventory data like IMEI, IMSI, ICC-ID
- Several Modem recovery methods fully integrated, including cold reset for supported USB modems
- Support for GPRS, UMTS and CSD, depending on modem capabilities (CDMA support in preparation)
- MobNetCon probe provides different reporting policies (user view and analytical model)
- Designed to support parallel probing on multiple modems connected to a single Management Center or Probe System. For example, the implemented IP routing policy explicitly supports this scenario.
- Distinction between round trip or transaction time for first and further TCP/IP service transactions
- Stepwise throughput calculation

Measuring Signal Quality - Signal Strength - RSSI

- ADVENAGE probes are using the AT modem command AT+CSQ to determine signal strength measured by the modem
- AT+CSQ command is standardized by 3GPP (“3GPP TS 27.007, AT command set for User Equipment (UE)”)
- command returns received signal strength indication <rssi> as value ranging between 0 and 31. Values meaning:
 - 0 -113 dBm or less
 - 1 -111 dBm
 - 2...30 -109... -53 dBm
 - 31 -51 dBm or greater
 - 99 not known or not detectable
- For modems where AT+CSQ is not available, other methods are used to determine RSSI , e.g. API interface with SierraWireless AirCard 555. Received signal strength values are recalculated to TS 27.007 conformant values.
- Typical RSSI values necessary:
 - >5 for sending / receiving SMS
 - >10 for voice calls
 - >15 for data transmission

Reporting policies available with MNC Probe

- **User View:**

If one of the components necessary to measure a service becomes unavailable, the measurement will report “overall service not available”, e.g. if network attach fails, no further steps are carried out and MNC Probe reports “overall service not available”

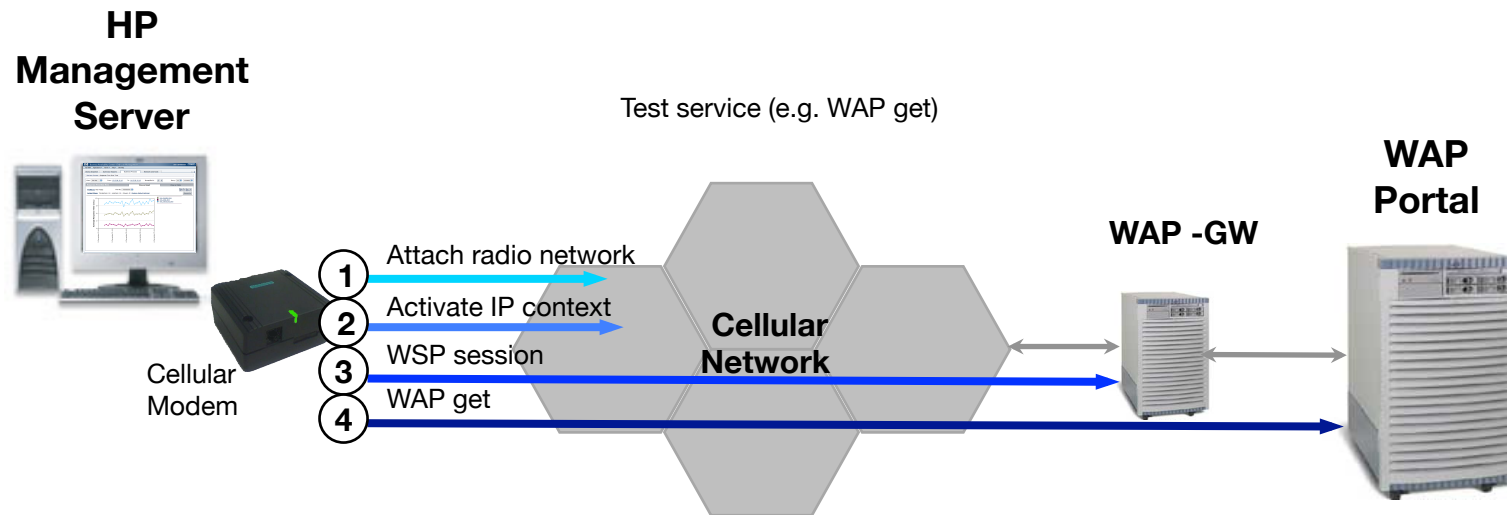
- **Analytical View:**

Only if the network is not available, the probe will report “overall service not available”. This is true only if the network attach (as first step in the whole process) was not successful.

In case that network attach was successful, but IP context activation failed, MNC Probe will report “overall service is available”, “radio network is available”, “IP context not available”, and “(TCP/IP) service not available”.

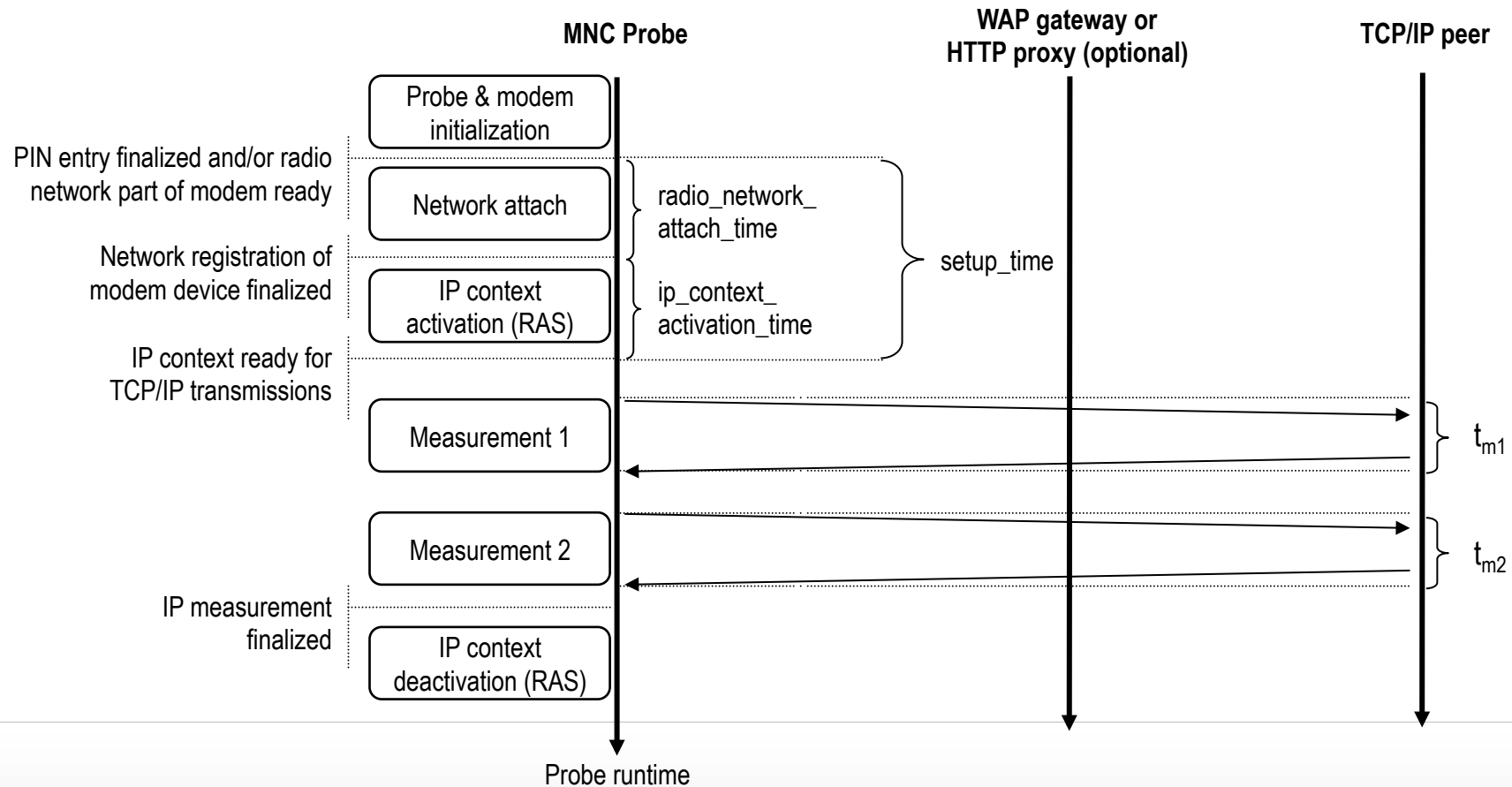
Use-Case: MNC Probe WAP Get

- Probe establishes IP context and performs a TCP/IP operation to specified service
- Retrieves a predefined WAP page n times
- Supports WAP 1.x and WAP 2.0
- Supports connection oriented WSP and connectionless WSP and WBXML decoding



Timing diagram MNC-Probe (other probes)

Applicable for MNC-Probes HTTP-GET, WAP-GET



Questions?

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Thank you for your attention!