M2M Control GPRS Gateway

The GPRS Gateway …

- is a **middleware** software solution for M2M applications
- **routes data** between GPRS modules (RTCU's) and host based applications
- permits **bidirectional connections** thru GPRS and IP networks
- **eliminates** the need of **fixed IP addresses** for GPRS modules

… constitutes a **back-bone** in the communication between GPRS units and back-end/client applications.

The Problem …

- for a bidirectional data communication to a GPRS unit the unit must have a fixed IP address
  - like in DSL networks a participant gets a dynamic IP address which changes from time to time
- in most cases there is a need for a VPN tunnel to the provider
  - because the provided IP addresses are not really global; the providers using IP addresses of there internal network
- fixed IP addresses are expensive

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The Solution …

- a **GPRS Gateway** service running on a host with a fixed IP address
  - this host is available from the any IP based network !
  - including GPRS networks
- GPRS units (RTCU) sending their IP network information to the GPRS Gateway
  - like a DynDNS service
  - implemented in the firmware
- the GPRS Gateway routes the data - from
  - GPRS unit to GPRS unit
  - GPRS unit to backend-applikation
  - backend-application to GPRS unit

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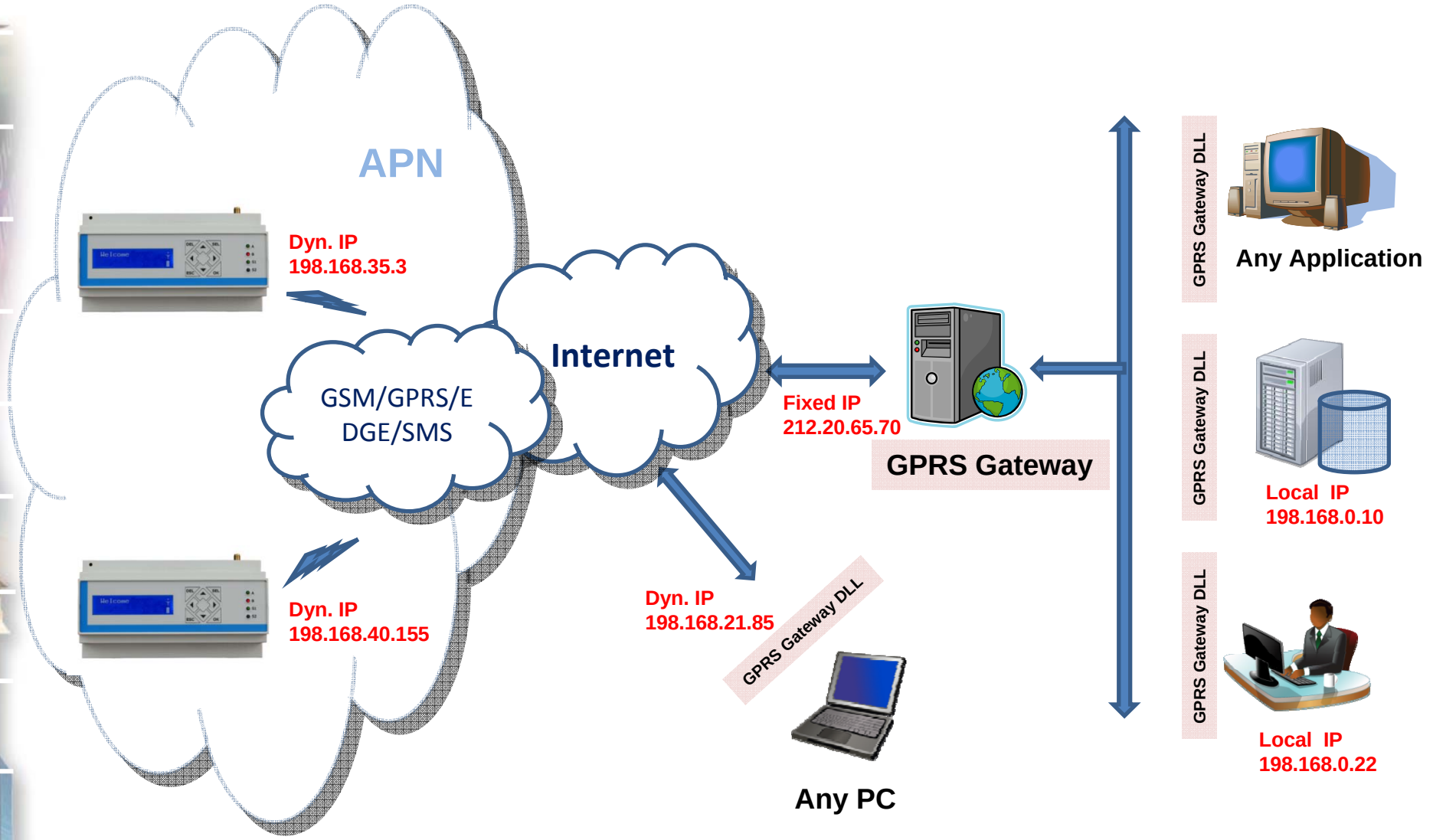

M2M Control GPRS Gateway

Features …

- runs as Windows Service
- supports thousands of units / clients (!)
- remote access via the included Windows GUI or via TELNET
- full password protection for remote access.
- monitoring and logging.
- data/traffic encryption for safer communication
- data/traffic compression - reduces cost of communication
- time service for centralized client time management (local/UTC)
- **Windows DLL for host applications**

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Benefits …

- independent and flexible infrastructure
- no extra cost for fixed IP addresses
- save communication (encryption)
- easy to use – easy to administrate
- a proven and very stable architecture
- it works around the world …..

- High valuable Add-On's
  - VSMS (Virtual SMS) communication concept
  - Upgrade & Deployment Server

The VSMS paradigm

- a “virtual SMS” (VSMS) is a SMS like text message (up to 160 byte) send through the GPRS Gateway to a receiver
- the receiver can be any other GPRS unit or any host based application who is registered at the GPRS Gateway
  - normally the receiver is a SCADA system or database
- sending a VSMS over GPRS is very cost efficient !
  - no charge for a SMS (typ. 0,17 €)
- the communication is safe (encryption)
- a VSMS is send like a normal SMS - all handling is done by the firmware and the GPRS Gateway

The VSMS paradigm (2)

- a VSMS is a good choice to send small amount of data like alarm messages, status information, logged data, position information …
- greater amount of data can be send in a binary format with a packet size of up to 430 bytes
- there is no need to establish and handle a native TCP/IP or UDP communication
- a communication and data exchange based on VSMS is very easy to program
  - it supports a rapid development of the application('s)
- information or commands can be send with the same mechanism
  - the same information can be send to a mobile or to a SCADA system and control commands vice versa

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The Upgrade & Deployment Server (UDS)

- is a **middleware solution** which automatically **upgrades the application and firmware software** in the remote GPRS units (RTCU's).
- insures that the units are **running the correct firmware and application** at any time.
- is able to **update large number's** (thousands) **of RTCU's** automatically.
- is an important component of a **support** and migration **strategy**

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UDS Features

- runs as Windows Service – without need to logon
- the UDS uses the GPRS Gateway (required) for data transfer
- supports thousands of units
- up to 100 simultaneous upgrade sessions.
- remote access via the included Windows GUI tool
- firmware and application can be upgraded during full operation of the RTCU unit's - minimizes downtime and the impact on the user.
- comprehensive logging and status features.

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UDS Benefits

- makes an upgrade of the firmware and application easy
- saves costs (!)
- is a proven and stable system
- allows a support and migration strategy
- supports rapid developments
- is a great tool for a customer service and support