GSM-to-Serial bridge

Overview

The Necoso GSM-to-Serial (short: G2S) bridge is a ready-to-use protocol converter that is intended for extending the communications reach of an existing device with an ethernet interface (TCP/IP) over a wireless GSM network. For example for out-in-the-field installations, where no network is available. Or for situations where the end-user does not allow use of the local network infra-structure or independence of local infra-structure is wanted. (e.g. for security or availability reasons)

Original configuration

The configuration consists of an OEM device that has an serial interface (RS232/RS485) and PC that communicates with the OEM device over a serial link. (using either direct connection or dialup connection with telephony modems)

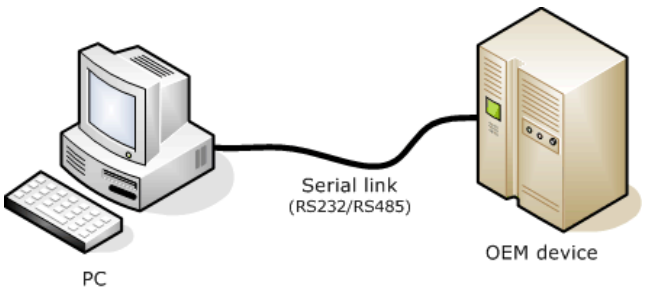

Figure 1: Original configuration (local, direct connection)

Necoso
Het Kasteel 315
7325 PE Apeldoorn
The Netherlands
Phone: +31-(0)55-3601410
Fax: +31-(0)84-7246122

Chamber of commerce: 08091918
VAT: NL809391697.B01
E-mail: info@necoso.com
Website: www.necoso.com
ABN-AMRO bank: 57.92.71.781

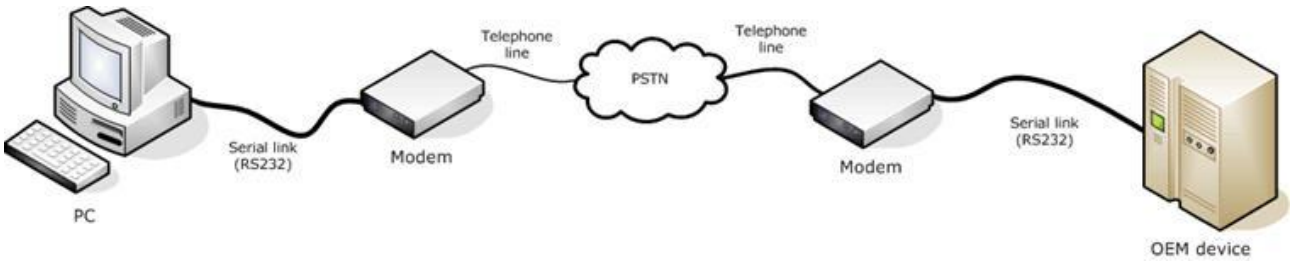

Figure 2: Original configuration (remote, modem connection)

Example configurations for remote access with G2S bridge

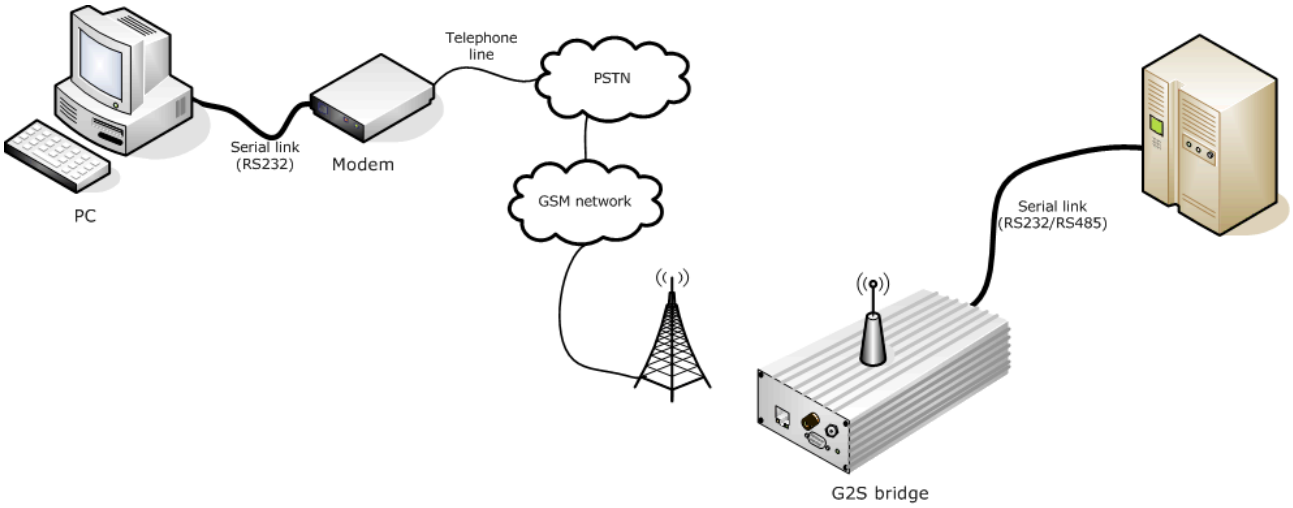

Figure 3: Dial-in access with analog modem (CSD)

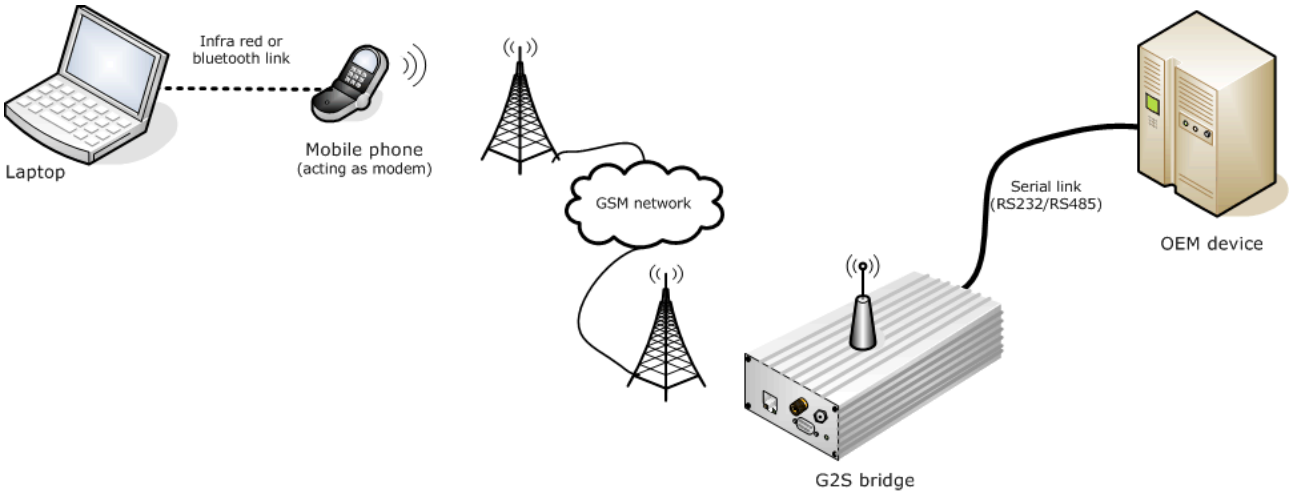

Figure 4: Mobile dial-in access with laptop and GSM phone. (CSD)

Necoso
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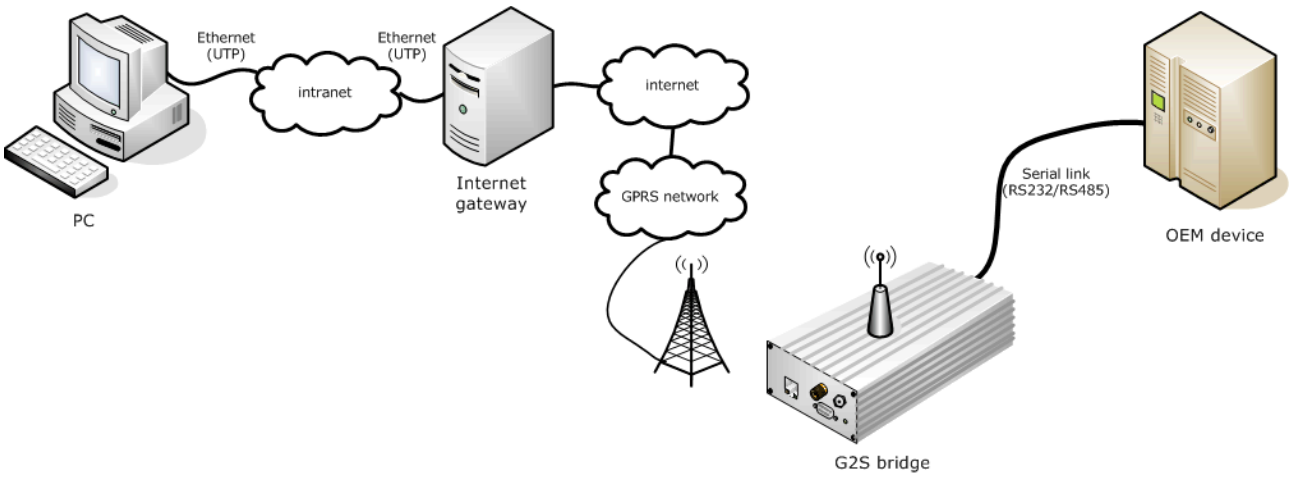

Figure 5: Direct access via public internet. (requires GPRS)

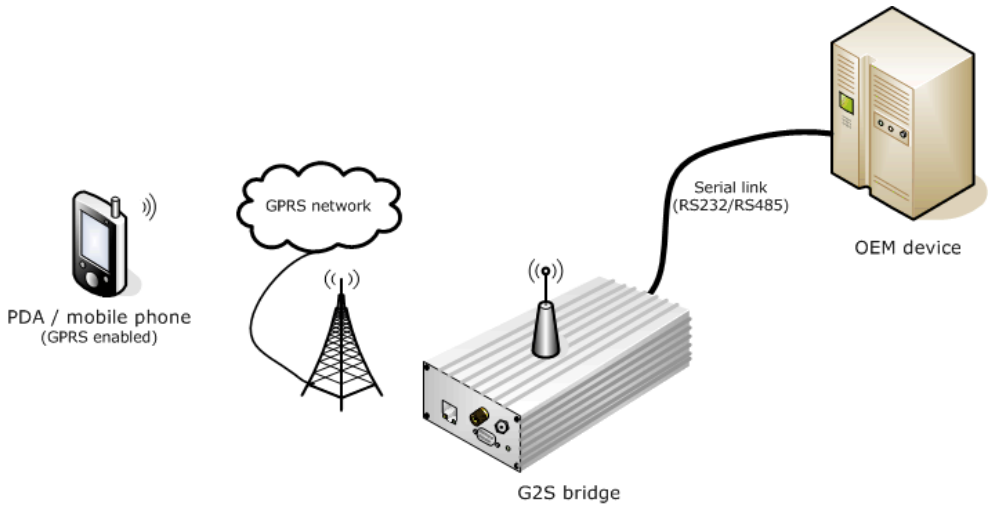

Figure 6: Direct mobile access with PDA or mobile phone. (requires GPRS)

With the G2S bridge the data is 'bridged' transparently between the PC/Laptop/PDA and the OEM device. The GSM network is used as a transport channel to get the data to/from the OEM device. The G2S bridge supports both CSD ('GSM data') and GPRS as a carrier for TCP/IP based communications over a GSM network.

Using a dedicated control channel (via telnet and/or SMS) a user can perform remote control, diagnostics and retrieval of usage statistics. Software update of the G2S bridge itself can also be done over the GSM link.

The G2S bridge offers increased access security by implementing two user-configurable white lists for filtering of unauthorized users and/or IP packets (IP source filtering). Additionally, the G2S bridge supports the unique Necoso 'smart-on' concept for even more security.

Quick comparison CSD and GPRS

	CSD	GPRS
Connection type	*Circuit switched*	*Packet switched*
Billing	*You pay for duration of the connection.*	*You pay for the amount of data that is transferred.*
Max speed (baud)	*9600*	*115200 (theoretical), 38400 in real-life*
Connection set up time	*~ 30 seconds*	*< 1 second ('always on')*
Direct access to device via public internet	*No*	*Yes, if GSM provider binds public IP address to SIM card.*

In general GPRS is usually more cost-effective than CSD if the device is to be accessed frequently (> few times per day) and/or if the amount of data to be transferred is big (> few KB per visit). Contact your GSM provider for more details.

Specifications

Hardware

- G2S bridge:
  - Housing: *Anodized aluminium*
  - Dimensions: *168 x 110 x 54 mm (l x w x h)*
  - Supply voltage: *12V DC*
  - Power consumption: *< 1000 mA*
  - Temperature range: *0 - 70° Celsius*
  - Internal processing core: *ID1021 module*
  - Internal GSM modem: *Siemens MC35iT*
  - External interfaces:
    - *1 x Ethernet, 10 Mbit, UTP (RJ45)*
    - *1 x RS232 (V.24, male DB9, DTE, 3-wire interface: Rx,Tx, Ground) Interface is jumper- configurable for RS485.*
    - *8 LEDs for indicating data traffic and SMS transmission/reception*
    - *Power interface connector*
    - *1 power LED (green)*
    - *GSM antenna connector (FME)*
- Dual-band GSM antenna, with 2.5 m thin coax cable.
- 230V AC/DC power adapter for converting mains to 12V DC.

Optional (additional costs involved)

- Quad-band MC75 GSM modem in stead of dual-band MC35iT. For use of G2S bridge outside Europe.
- Quad-band GSM antenna, with 2.5 m thin coax cable.

Software

- ***Necoso G2S Application Suite***, consists of:
  - **GSM application**: for communications over a GSM network. Supports GSM data, GPRS and SMS. Comes with a number of helper applications for web based configuration and diagnostics.
  - **PPP application**: Implements PPP stack needed by GSM application.
  - **Log application**: for logging (GSM network) events.
  - **DDNS application**: enables use of fixed domain names (e.g. www.mydevice.dyndns.org) for GPRS connections.
  - **G2S application**: bridges device data between the serial and GSM interfaces of the G2S bridge. Optional Hayes modem emulation at serial interface.

  All software is pre-installed on flash disk of the G2S bridge.

Documentation

- CD-ROM with installation guide, data sheets and application notes.

Support

- One year of free software updates when they become available.

Not included

- SIM card - You must purchase a SIM card with the appropriate GSM services from a GSM provider yourself. Note that if remote device access is wanted via the public internet, then a SIM card is required that supports the GPRS service and is assigned a public IP address whenever it attaches to the GPRS network. Not all GSM providers offer this service for their SIM cards. In the Netherlands currently only KPN, Orange and T-Mobile assign public IP addresses to their SIM cards.

- Serial cable - the type of serial cable (RS232/RS485) and the length of the cable that is required for connection to the G2S bridge depends on your specific network situation.

- DynDNS account - Registration with DynDNS and acquisition of free dynamic DNS account can be done at www.dyndns.org. Only required if GPRS is to be used in combination with direct device access from the internet.

CONTACT INFORMATION

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