

Application Note

SN1200 Media Gateway for TEDAS Phoneware Server

System Overview

This configuration note describes SmartNode gateways in a TEDAS Phoneware Server environment. The SmartNodes can be used as Trunk Gateways (termed *Gateway* in TEDAS Phoneware environment) or Terminal Gateways (termed *Terminal* in TEDAS Phoneware environment). Trunk Gateways are used to connect to public or private ISDN networks. Terminal Gateways are used to integrate ISDN and analog devices into a TEDAS Phoneware environment.

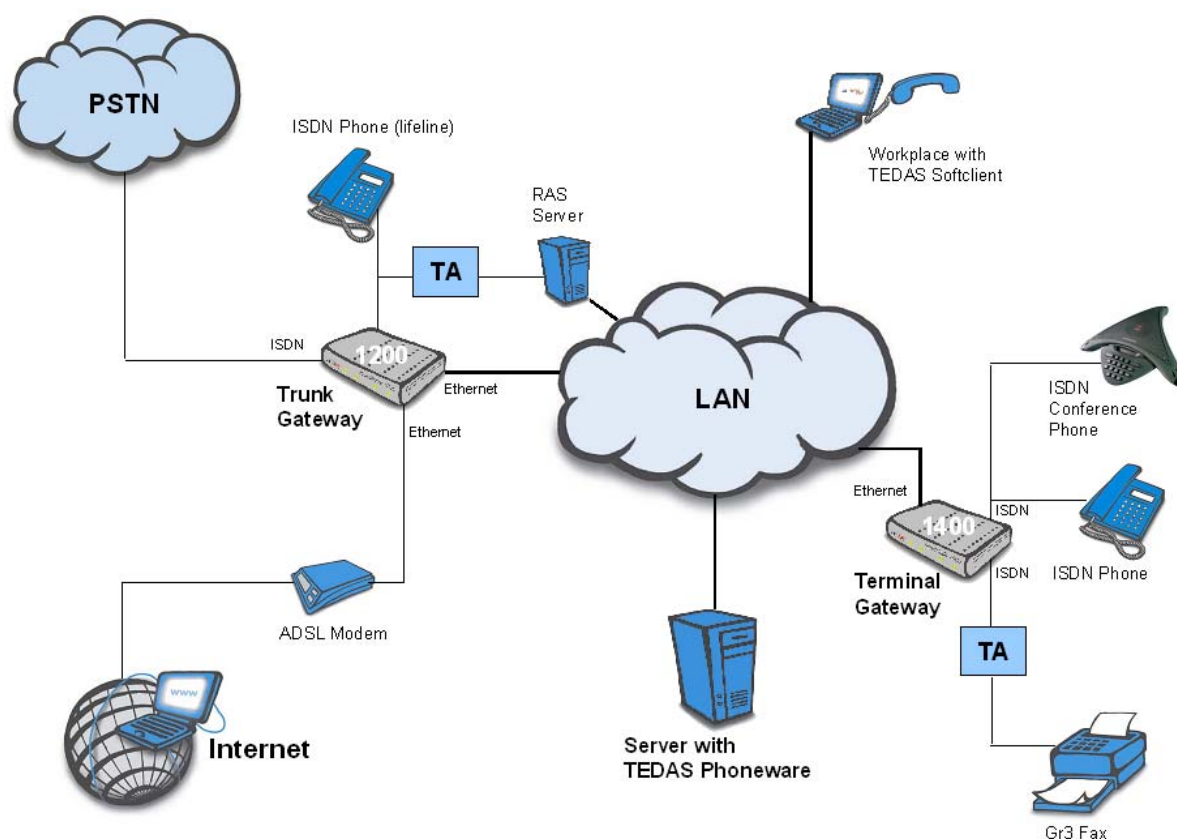


Figure 1: Schematic diagram of the example network

In this example the ISDN network access consists of a S₀/BRI line to the PSTN with MSN.

Please note: The current TEDAS Phoneware Server release (2.6) does not support calls from one subscriber/extension of a Terminal Gateway to another of the same Terminal Gateway. This can be configured within the SmartNode instead.

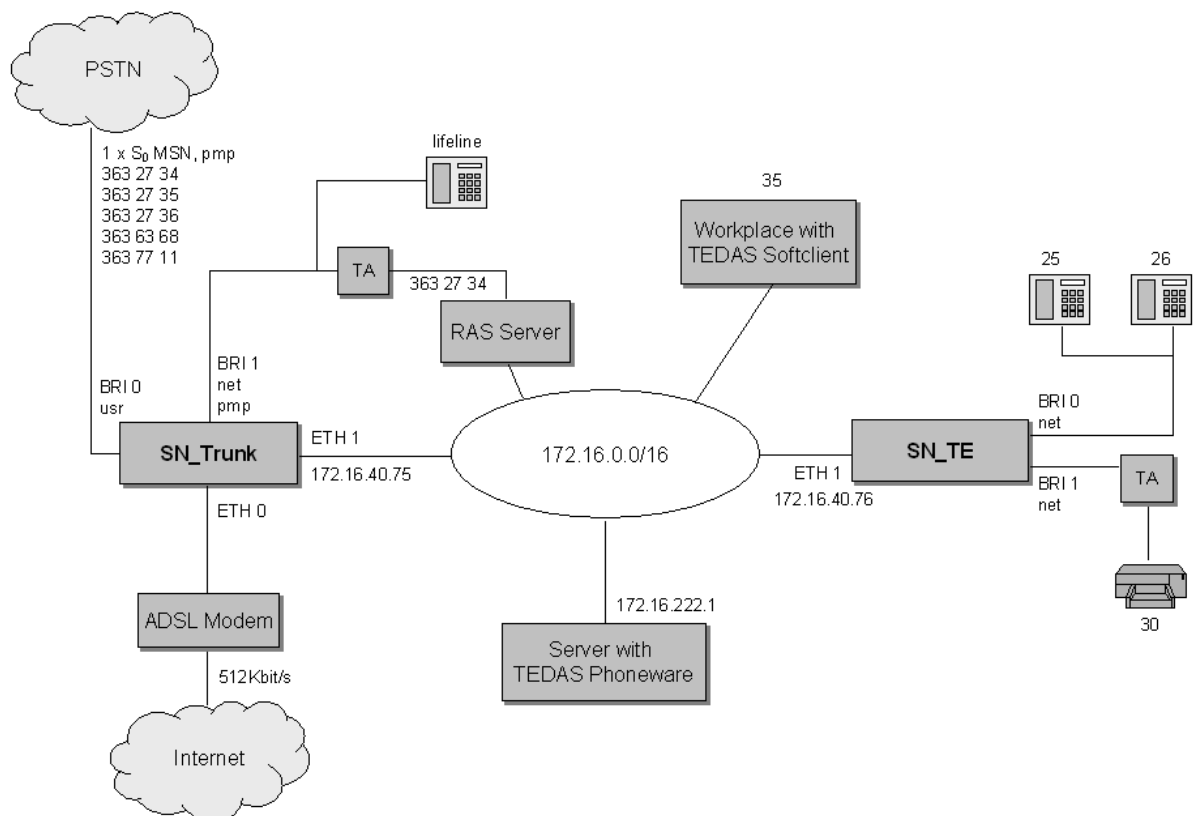


Figure 2: Detailed schematics of the complete network

Figure two presents the details of the example network i.e. IP addresses, sub networks, SmartNode interfaces connected to the network, dial plans and link bandwidth. These things may differ to your network and must be adapted. Within the next section you find a detailed description about the adaptation of the configuration.

How To Adapt To Your Network

This chapter contains the SmartNode configurations including inserted sections explaining the adaptation to your network. The configuration files are also available as ASCII files (.cfg) files to be downloaded from a TFTP server to the SmartNode. Please consult the Quick Start Guide for a description of this procedure. To facilitate the understanding of the configuration the main elements, which are introduced and explained in detail within the Software Configuration Guide, are explained in a nutshell:

Contexts: Represent a specific network technology namely IP (containing the routing functions) and CS (containing the circuit-switching functions).

Gateway: A gateway handles connections between different contexts. E.g. a H.323 gateway connects the IP context with circuit-switching context.

Interfaces: Logical constructs that provide higher layer protocol and service information. These interfaces are configured within a context and are independent of the physical ports.

Ports: Represent the physical connectors on the SmartNode hardware. The configuration of a port includes parameters for the physical and data link layer.

SmartNode Trunk Gateway Configuration

```
#-----#
#
# SN1200
# SmartWare R2.10 BUILD21213
# 2003-08-28T11:15:19
# Generated configuration file
#
#-----#
```

```
cli version 2.00
snmp community public ro
system hostname SN_Trunk
```

system

```
synchronize-to-isdn-time
```

```
profile service-policy bandwidth_limiter
```

Link Bandwidth:

Within this configuration example a link bandwidth towards the Internet of 512Kbps is assumed. This is configured with the command `rate-limit`. E.g. `rate-limit 2048` for a bandwidth of 2048 Kbps.

```
rate-limit 512
```

```
profile service-policy voice_prio
mode wfq
```

```
source class local-voice
priority
```

```
source class local-default
priority
```

```
source class default
```

```
profile napt global
no icmp default
```

```
context ip router
```

```
interface lan
```

LAN Address:

The IP address and subnet mask of the Trunk Gateway SmartNode is 172.16.40.75 255.255.0.0. This can be changed with the command `ipaddress`.

```
ipaddress 172.16.40.75 255.255.0.0
mtu 1500
icmp router-discovery
use profile service-policy voice_prio out
```

```
interface adsl
ipaddress unnumbered
mtu 1454
point-to-point
icmp router-discovery
```

```
use profile service-policy bandwidth_limiter out
use profile napt global
tcp adjust-mss rx mtu
tcp adjust-mss tx mtu

context ip router
route 0.0.0.0 0.0.0.0 adsl 0
multicast-send default-interface adsl

subscriber ppp example_subscriber
dial out
authentication chap
```

Credentials For Your Internet Access:

In this example the SmartNode trunk gateway is also used as access router to the ISP. The access technology is ADSL. Set your credentials (user and password) to be provided during the authentication procedure here:

```
identification outbound myself password mypassword
bind interface adsl router

context cs switch
no number-prefix national
no number-prefix international
```

Remote Access Server Number:

In this example the SmartNode is also connected to a RAS. This allows remote users to access local resources. The number of the RAS is 363 27 34. You can change this number here:

```
called-party switch 3632734 dest-interface term
called-party switch default dest-interface h323_if
use tone-set-profile default

interface pstn term
routing dest-interface trunk
bind port 0 1

interface pstn trunk
routing dest-table switch
fallback dest-interface term
bind port 0 0

interface h323 h323_if
routing dest-interface trunk
bind gateway h323

context cs switch
no shutdown

gateway isoip isoip
shutdown
use voip-profile default

gateway h323 h323
```

Alias To Register At Gatekeeper:

The SmartNode must register at the gatekeeper with the same alias used within TEDAS Phoneware to identify the Trunk Gateway SmartNode. Replace this alias if you want to use a different one.

```
alias h323-id SN_Trunk
```

Codecs:

To change the codec from G.711 (best voice quality but uncompressed) to G.729 (best ratio between voice quality and used bandwidth), replace the command `codec g711alaw64k 20 20` with `codec g729 30 30` (packet length 30ms).

```
codec g711alaw64k 20 20
no faststart
early-h245
terminal-type gateway
ras
```

Gatekeeper Address:

The SmartNode registers with the gatekeeper configured with the command `gatekeeper-discovery manual <ipaddress> <port>`. Replace this IP address with the address of your gatekeeper.

```
gatekeeper-discovery manual 172.16.222.1 1719
bind interface lan router
no shutdown
use voip-profile default

port ethernet 0 0
medium 10 half
encapsulation pppoe
no shutdown

pppoe

session my_provider
bind subscriber example_subscriber
no shutdown

port ethernet 0 1
medium 10 half
encapsulation ip
bind interface lan router
no shutdown

port pstn 0 0
down
l2proto pmp
l3proto dss1
max-channels 2
smart-disconnect from-isdn-calls
smart-disconnect to-isdn-calls
uni-side usr
up

port pstn 0 1
down
```

```
l2proto pmp
l3proto dss1
max-channels 2
smart-disconnect from-isdn-calls
smart-disconnect to-isdn-calls
uni-side net
up
```

SmartNode Terminal Gateway Configuration

```
#-----#
#
# IPN1400
# SmartWare R2.10 BUILD21213
# 2003-08-28T09:31:17
# Generated configuration file
#
#-----#
```

```
cli version 2.00
snmp community public ro
system hostname SN_TE
```

```
system
local-inband-tones
```

```
context ip router
```

```
interface lan
```

LAN Address:

The IP address and subnet mask of the Terminal Gateway SmartNode is 172.16.40.76 255.255.0.0. This can be changed with the command `ipaddress`.

```
ipaddress 172.16.40.76 255.255.0.0
mtu 1500
icmp router-discovery
```

```
context ip router
multicast-send default-interface lan
```

```
context cs switch
no number-prefix national
no number-prefix international
```

Add/Remove Terminals or Change Extension Numbering:

To add or remove terminals or to change extension numbers of terminals connected to the Terminal Gateway SmartNode the table `to_term` must be modified. E.g. an additional terminal with the number 34 is connected to BRI 1 -> new entry: `called-party to_term 34 dest-interface term1`

```
called-party to_term 25 dest-interface term0
called-party to_term 26 dest-interface term0
called-party to_term 30 dest-interface term1
use tone-set-profile default
```

```
interface pstn term0
routing dest-interface h323_if
bind port 0 0
```

```
interface pstn term1
  routing dest-interface h323_if
  bind port 0 1
```

```
interface h323 h323_if
  routing dest-table to_term
  digit-collection timeout 3
  bind gateway h323
```

```
context cs switch
  no shutdown
```

```
gateway isoip isoip
  shutdown
  use voip-profile default
```

```
gateway h323 h323
```

Alias To Register At Gatekeeper:

The SmartNode must register at the gatekeeper with the same alias used within TEDAS Phoneware to identify the Terminal Gateway SmartNode. Replace this alias if you want to use a different one.

```
alias h323-id SN_TE
```

Codecs:

To change the codec from G.711 (best voice quality but uncompressed) to G.729 (best ratio between voice quality and used bandwidth), replace the command `codec g711alaw64k 20 20` with `codec g729 30 30` (packet length 30ms).

```
codec g711alaw64k 20 20
no faststart
early-h245
terminal-type terminal
ras
```

Gatekeeper Address:

The SmartNode registers with the gatekeeper configured with the command `gatekeeper-discovery manual <ipaddress> <port>`. Replace this address with the address of your gatekeeper.

```
gatekeeper-discovery manual 172.16.222.1 1719
bind interface lan router
no shutdown
use voip-profile default
```

```
port ethernet 0 0
  medium 10 half
  shutdown
```

```
port ethernet 0 1
  medium 10 half
  encapsulation ip
  bind interface lan router
  no shutdown
```

```
port pstn 0 0
  down
  l2proto pmp
  l3proto dss1
  max-channels 2
  smart-disconnect from-isdn-calls
  smart-disconnect to-isdn-calls
  uni-side net
  up

port pstn 0 1
  down
  l2proto pmp
  l3proto dss1
  max-channels 2
  smart-disconnect from-isdn-calls
  smart-disconnect to-isdn-calls
  uni-side net
  up
```

Special Features

Integrated Data Router

The SmartNode comes with a full-fledged data router with real-time capabilities including sophisticated QoS features. Within this configuration example it is shown how the Trunk Gateway SmartNode must be configured to connect to a 512Kb/s ADSL access with PPPoE.

Calls between Subscribers/Extensions of the same Terminal Gateway

The current TEDAS Phoneware Server release (2.6) does not support calls from one subscriber/extension of a Terminal Gateway to another of the same Terminal Gateway. This can be configured within the SmartNode instead. Called party routing tables must be configured between the interfaces `term0` (bound to BRI port 0), `term1` (bound to BRI port 1) and `h323_if`, which direct such calls to the corresponding ISDN port. The following configuration fragment can be inserted into the configuration file of the Terminal Gateway SmartNode.

```
called-party internal 25 dest-interface term0
called-party internal 26 dest-interface term0
called-party internal 30 dest-interface term1
called-party internal default dest-interface h323_if

interface pstn term0
  routing dest-table internal
  bind port 0 0

interface pstn term1
  routing dest-table internal
  bind port 0 1
```


Fallback

In case the LAN subscribers are not available (breakdown of the LAN, TEDAS Phoneware failure etc.) all calls coming from the trunk (port BRI 0) are directly routed to port BRI 1, which is connected to the ISDN lifeline phone and the RAS server. A fallback option is configured within `interface pstn trunk` of the Trunk Gateway SmartNode for such a case.

In case of a breakdown of the SmartNode (e.g. power blackout) all calls coming from the trunk (port BRI 0) are directly routed to port BRI 1, which is connected to the ISDN lifeline phone and the RAS server. A bypass relay connects port BRI 0 and BRI 1 in such a case.