Technical requirements for in-house installation of wired analogue and digital interfaces

Now with broadband Internet within the scope of the Basic Service Provision 2008 (PSTN/ADSL)

Information

Peter Widmer, October 2007

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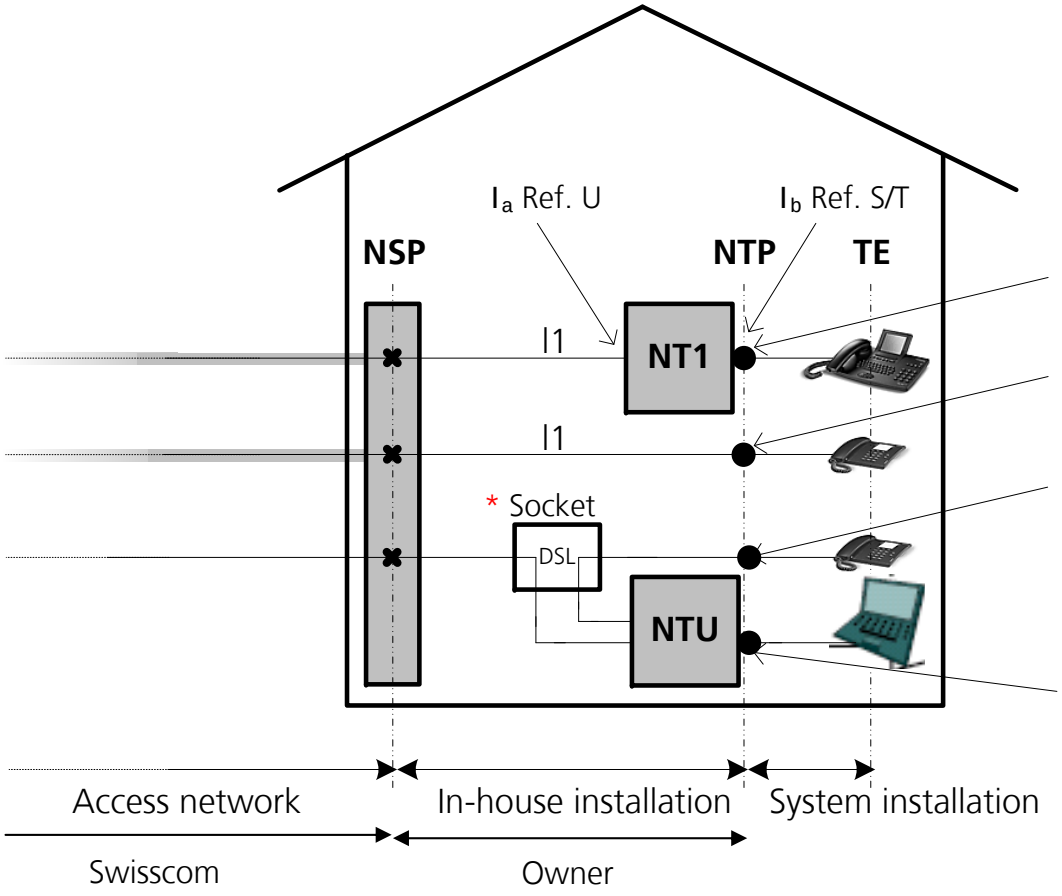
The Basic Service Provision requires Swisscom to provide broadband Internet to every household, with very few exceptions, by 2008.

To ensure that the required quality can also be provided, the in-house installation of the telephone line must satisfy the changed technical requirements. How can this be accomplished in existing residences and new buildings?

Agenda

- Telecommunications services interfaces in the GV08
- Why does the in-house installation need to be changed?
- Residences without structured cabling infrastructure
- Residences with structured cabling infrastructure
- Special cases with ISDN installations

Telecommunications services interfaces in the Basic Service Provision 2008 - 2017



Digital access MultiLINE[ISDN]

Analogue access EconomyLINE

Analogue access EconomyLINE

Broadband Internet access

NTP Network Termination Point (Netzabschlusspunkt)

NSP Network Separation Point (NTS Netz-Trennstelle)

NTU network Termination Unit (NAG Netzabschlussgerät)

Why does the in-house installation need to be changed?

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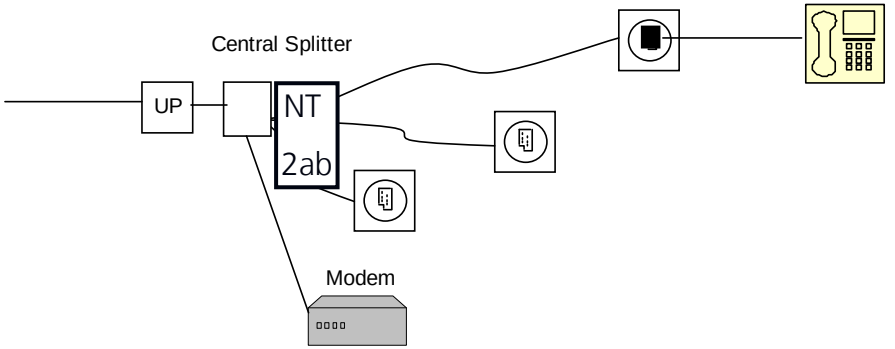
Measurement of the gross ISDN/ADSL data rate (with splitter)

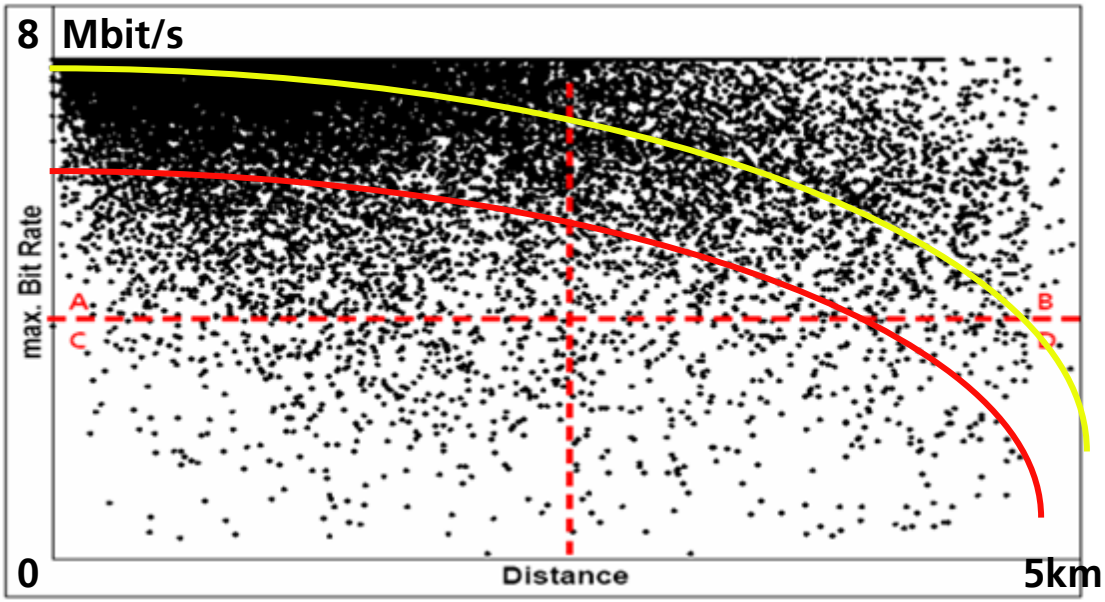
>90% of the ISDN/ADSL lines have the splitter correctly installed (=> clean ADSL signals on the modem)

Evaluation of the modem synchronization of >300,000 ADSL accesses (2005)

Positive result: only a few ISDN/ADSL lines do not reach the calculated service profile

- ADSL service profile calculated
- ADSL theoretical





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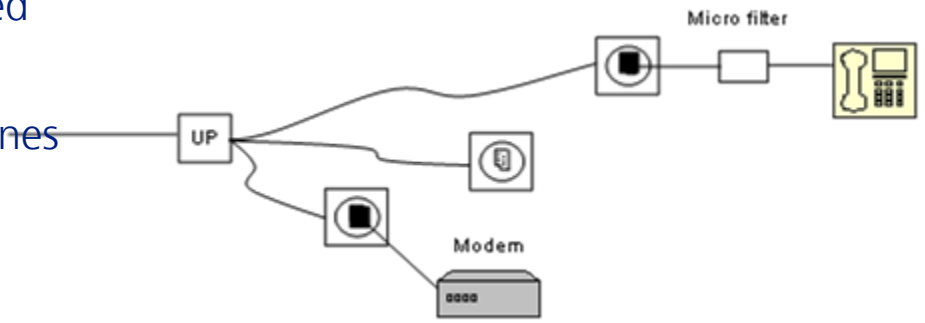
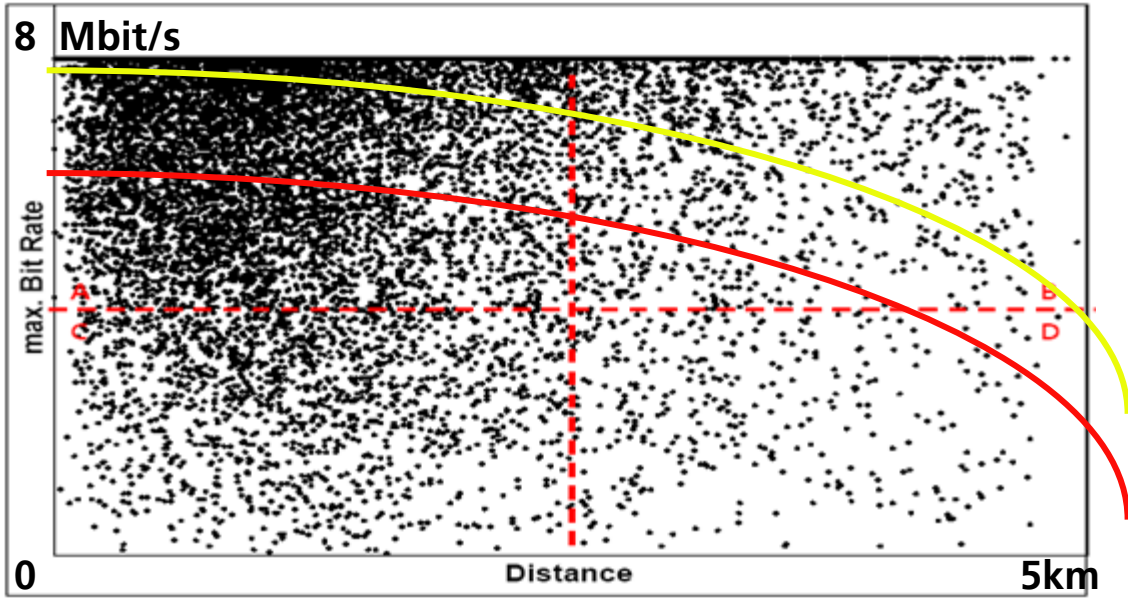
Measurement of the gross PSTN/ADSL data rate (without splitter)

The PSTN lines are equipped with microfilters

=> Reflections by branch lines (bridge taps) and bad contacts disrupt the ADSL signal



Many connections do not reach the calculated speed



ADSL service profile calculated

ADSL theoretical

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Findings

- A correctly assembled ISDN installation is generally ready for broadband Internet because the splitter upstream from the NT can be wired with specially prepared cables.
- For PSTN home installations, the cause of the problem lies in the reflections from branch lines (bridge taps) and bad contacts. This results in connection and stability problems for PSTN/ADSL lines

  → Some PSTN/ADSL access does not synchronize or is not stable (today these are cases for the "guaranteed purchases")
- The positive results arising from subsequently made adjustments to the home installation (for PSTN/ADSL access for business customers) have confirmed this finding.
- Deutsche Telekom always requires a splitter for DSL access

By including BB Internet access in the Basic Service Provision, the customer expects a bandwidth >= 600/100 which can only be guaranteed if the proper home installation exists

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Mandatory technical requirements for in-house installations valid starting 1 January 2008

- The new specification was published on 5 October 2007:
  http://www.swisscom.com/technical_information
- The new specification for home installation will be standard in new and converted buildings.
- Swisscom will not require that the broadband Internet (DSL) socket be generally upgraded. Swisscom will only require compliance with the technical provisions if the ADSL line of a customer does not remain stable when reaching the defined basic service provision bandwidth of 600/100 and this customer demands that broadband Internet services be supplied by Swisscom in accordance with the Basic Service Provision.
- Pursuant to Art 17 of the Ordinance on Telecommunications Services, Swisscom does not have to assume the costs of making this change. Swisscom is not introducing any new technology, broadband Internet is a new service in the basic service provision.

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Residences

without structured cabling infrastructure

Upgrades and converted/new buildings

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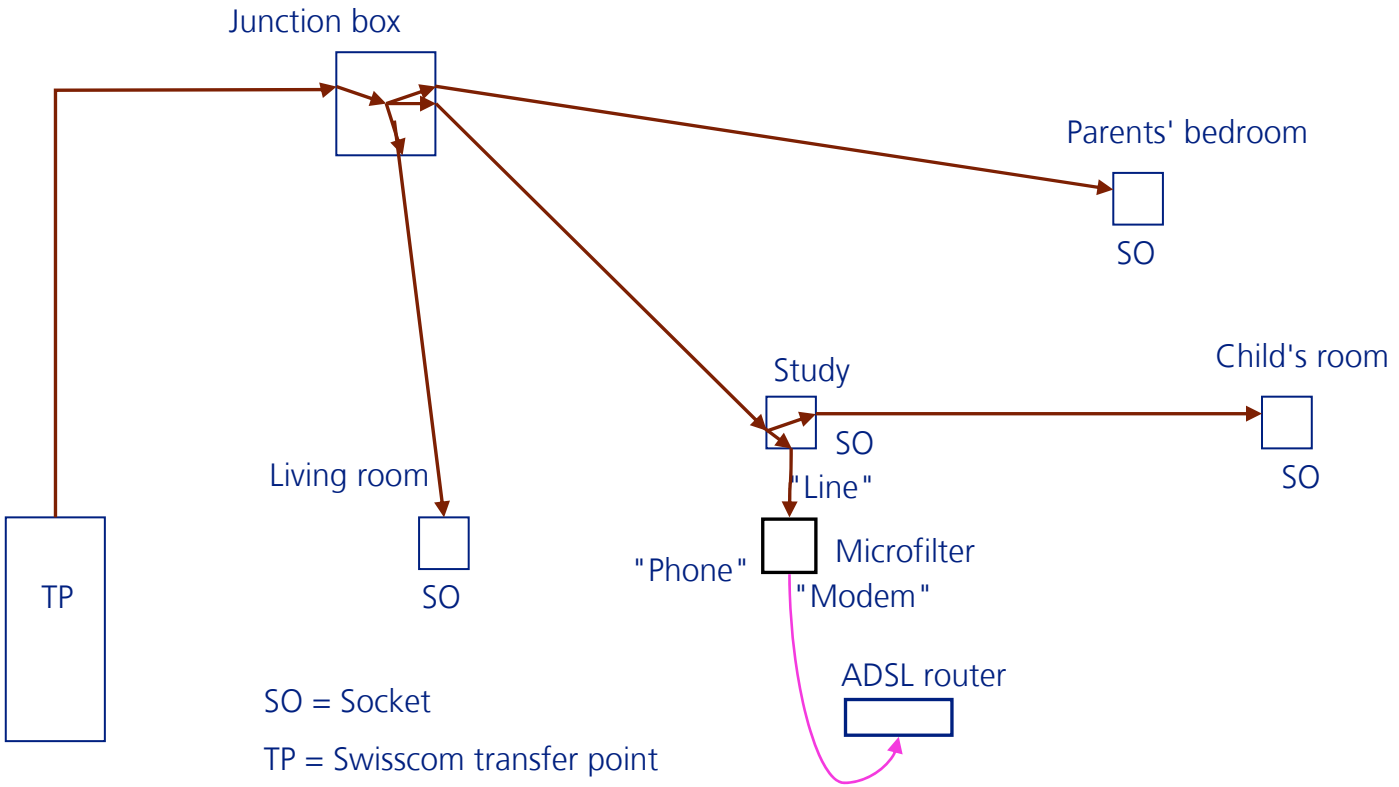
Previous home installation for PSTN lines with ADSL:



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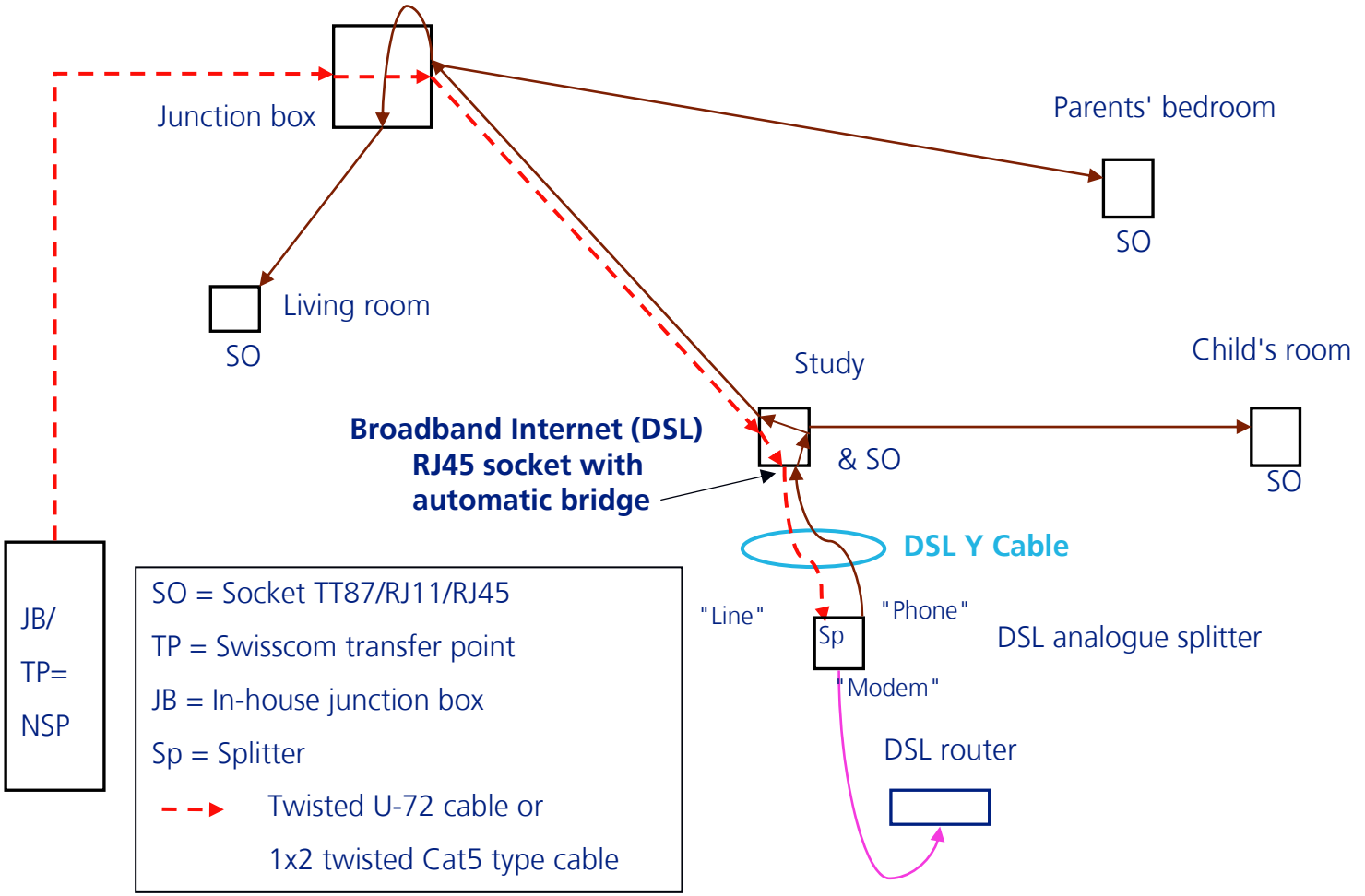
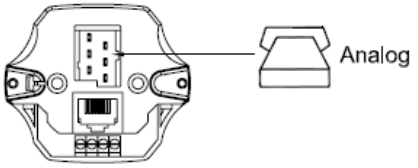
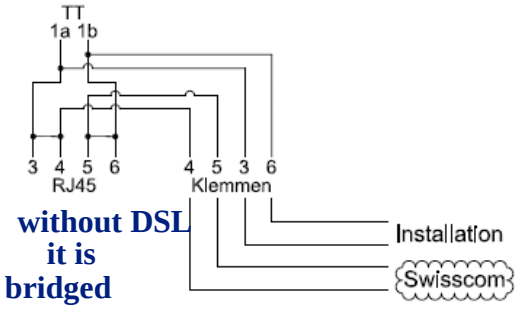
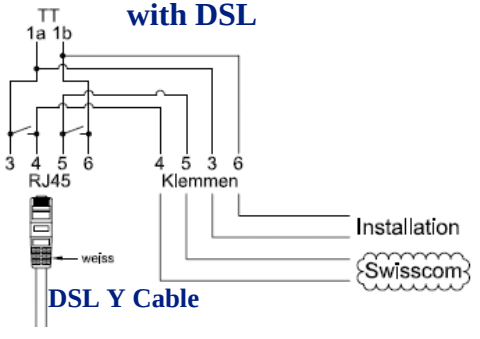
New home installation specification for PSTN lines with BB Internet (DSL):

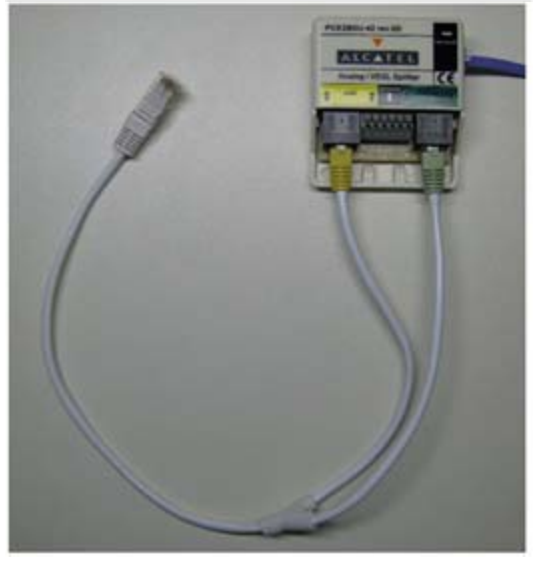


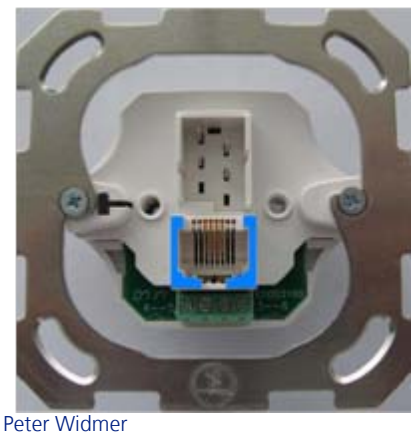
Market products broadband Internet (DSL) socket



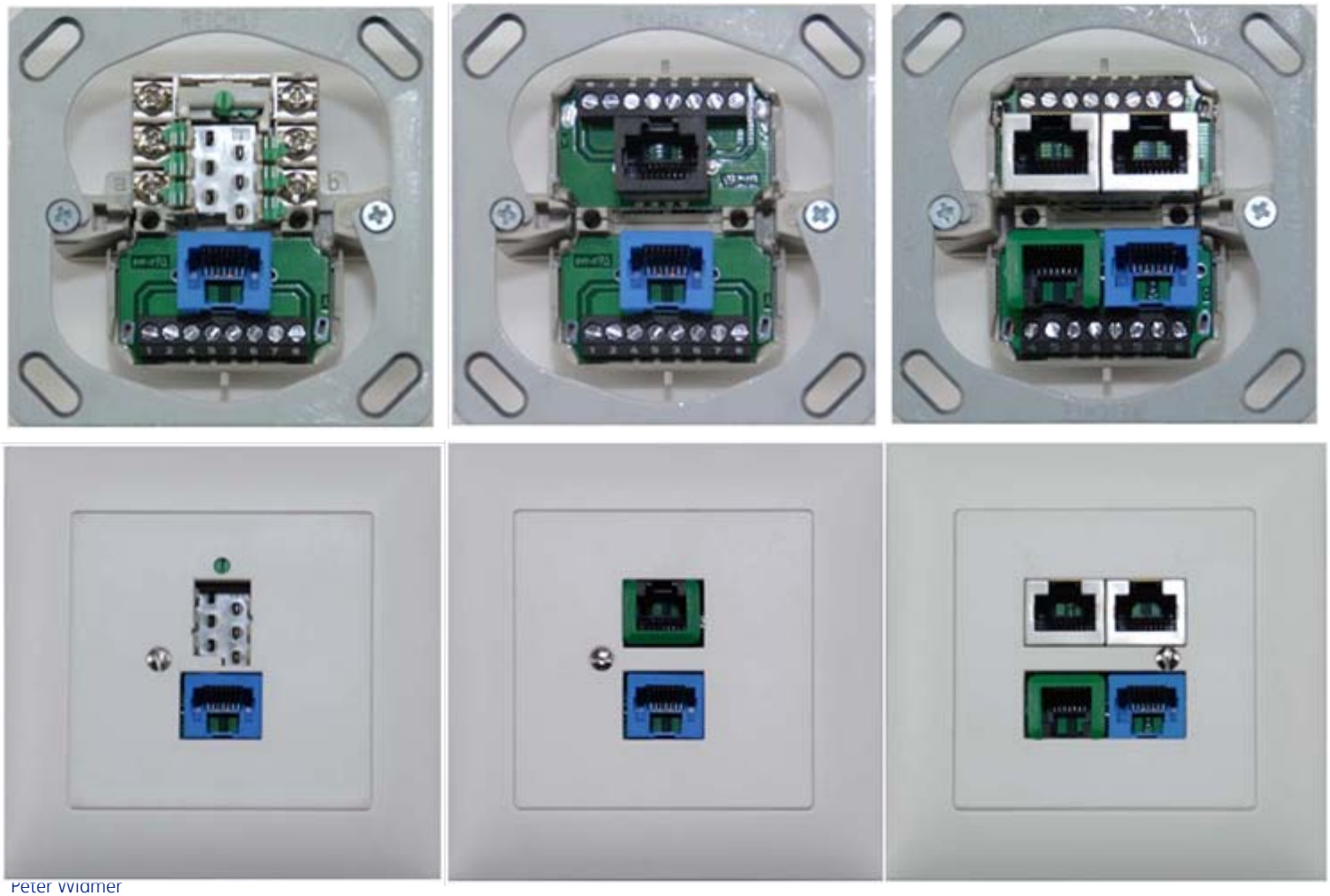








Market products broadband Internet (DSL) socket



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Residences

with structured cabling infrastructure

Upgrades and converted/new buildings

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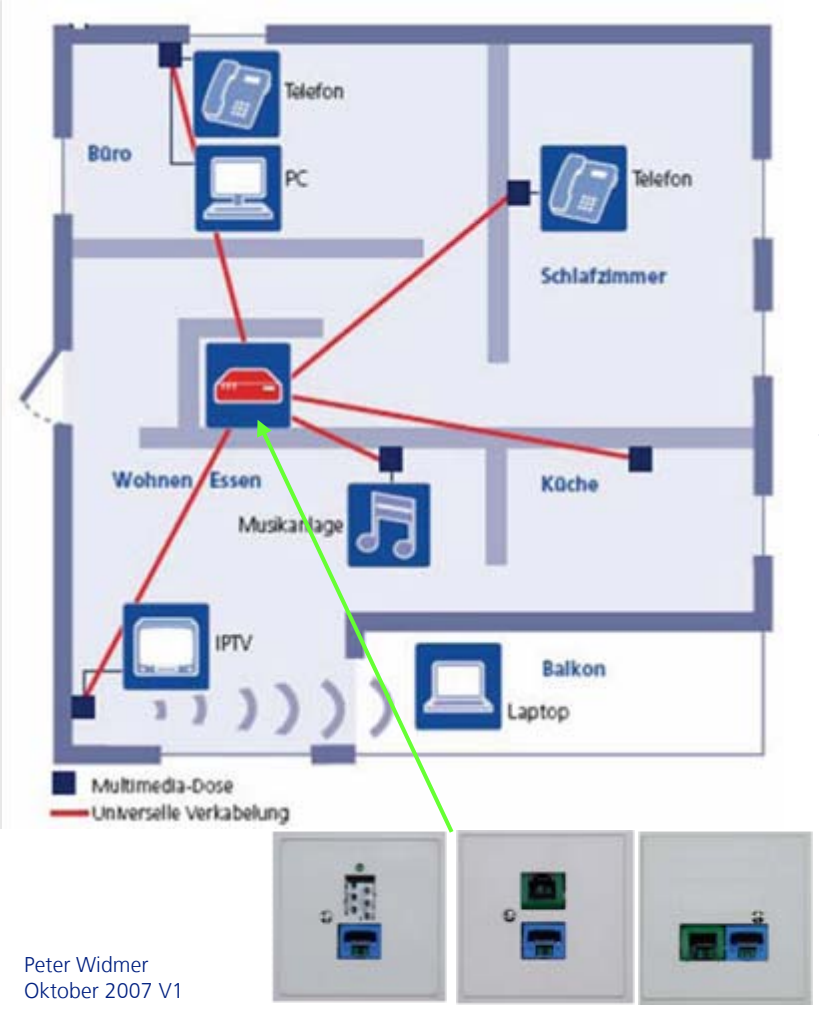
structured cabling infrastructure



- The broadband Internet (DSL) socket should be installed within the central communications cabinet in residences with structured cabling infrastructure.
- An analogue access that is wired as shown on slide 11 should always be installed in the same communications cabinet, at least for test purposes.
- For this analogue access, a socket TT87 or RJ45 (with RJ11 adapter) should be installed.

Options of the broadband Internet (DSL) socket in the communications cabinet

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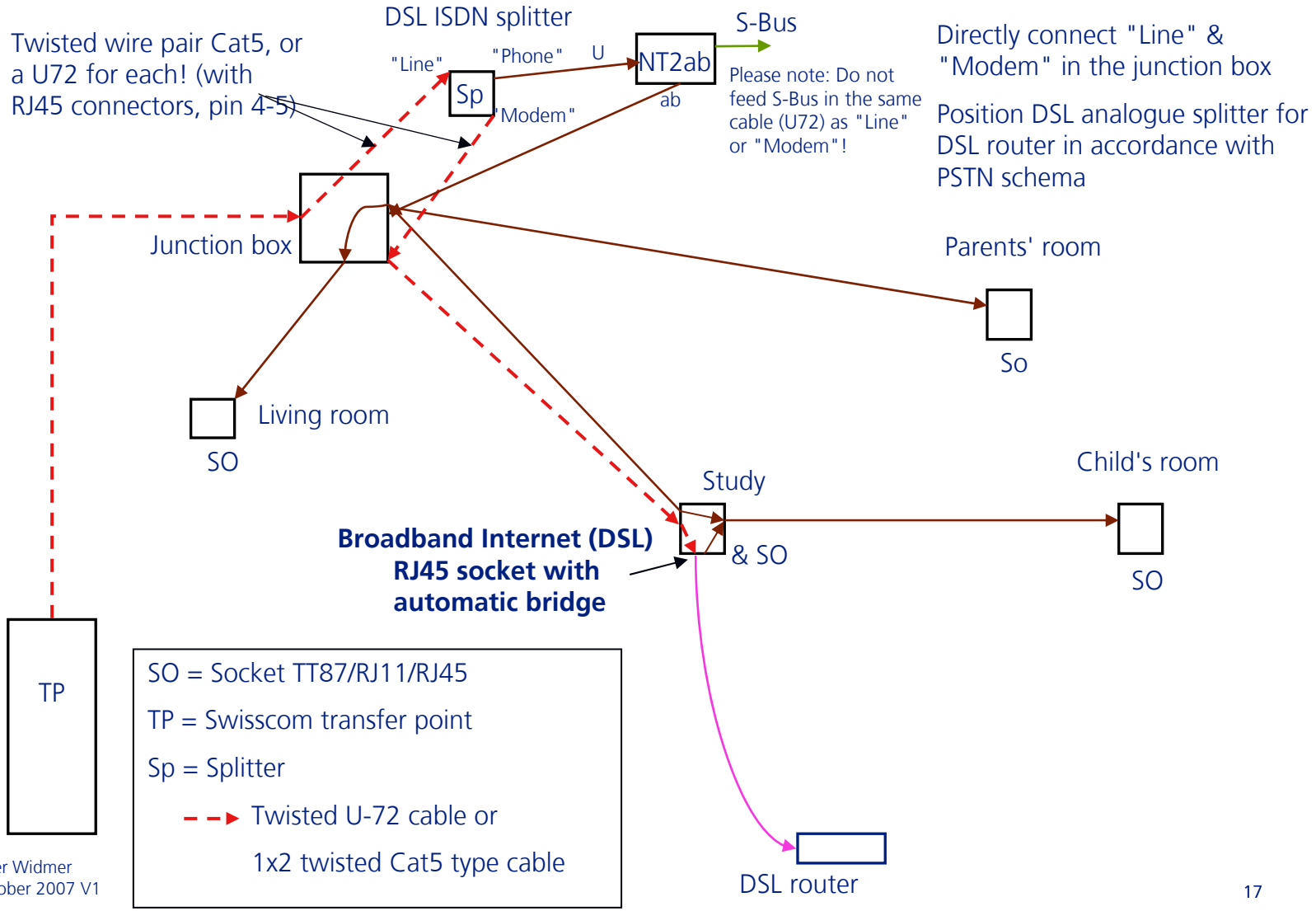
Special cases with ISDN installations

ISDN connected to junction box, with DSL



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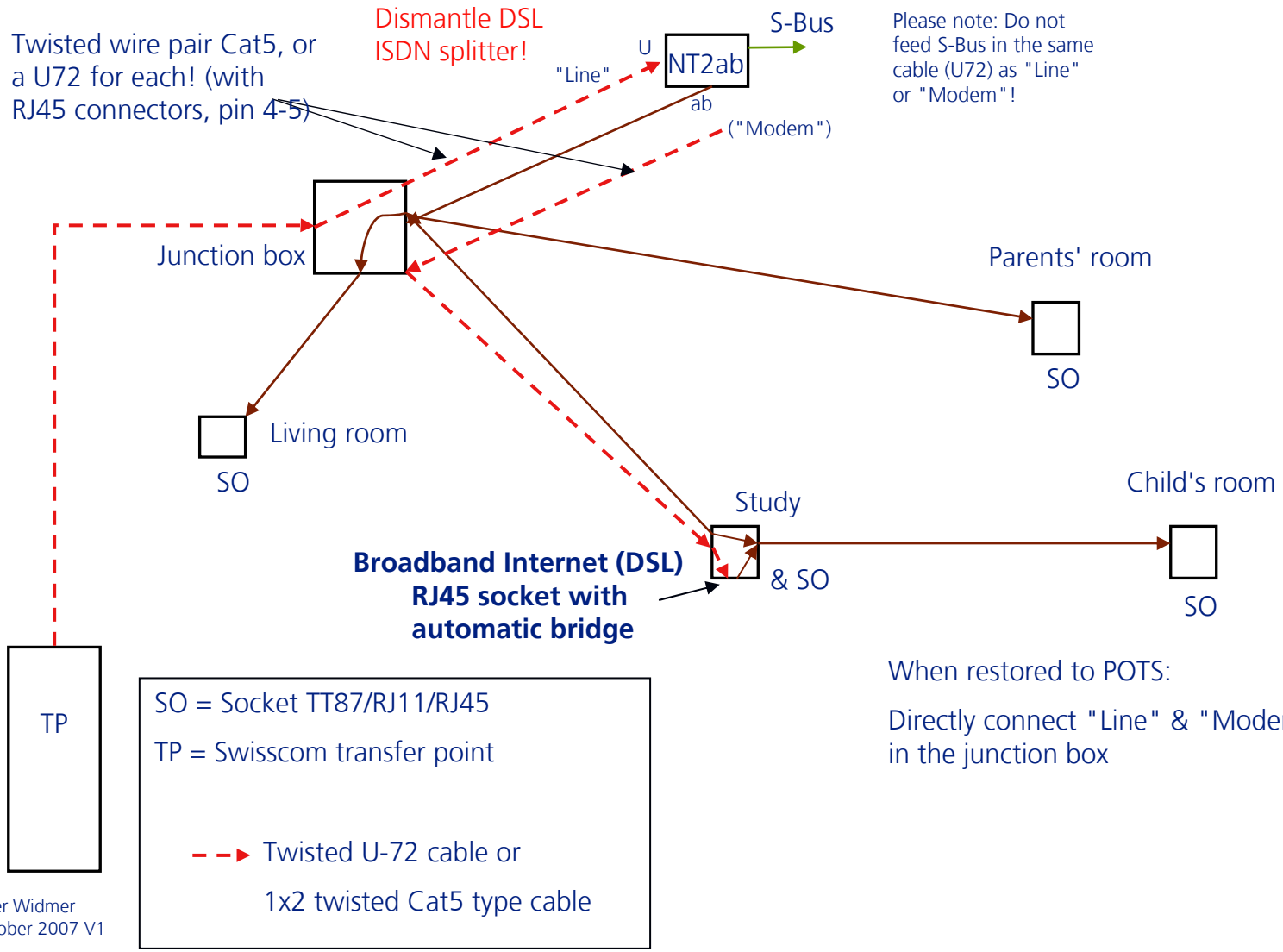
ISDN connected to junction box, after dismantling DSL



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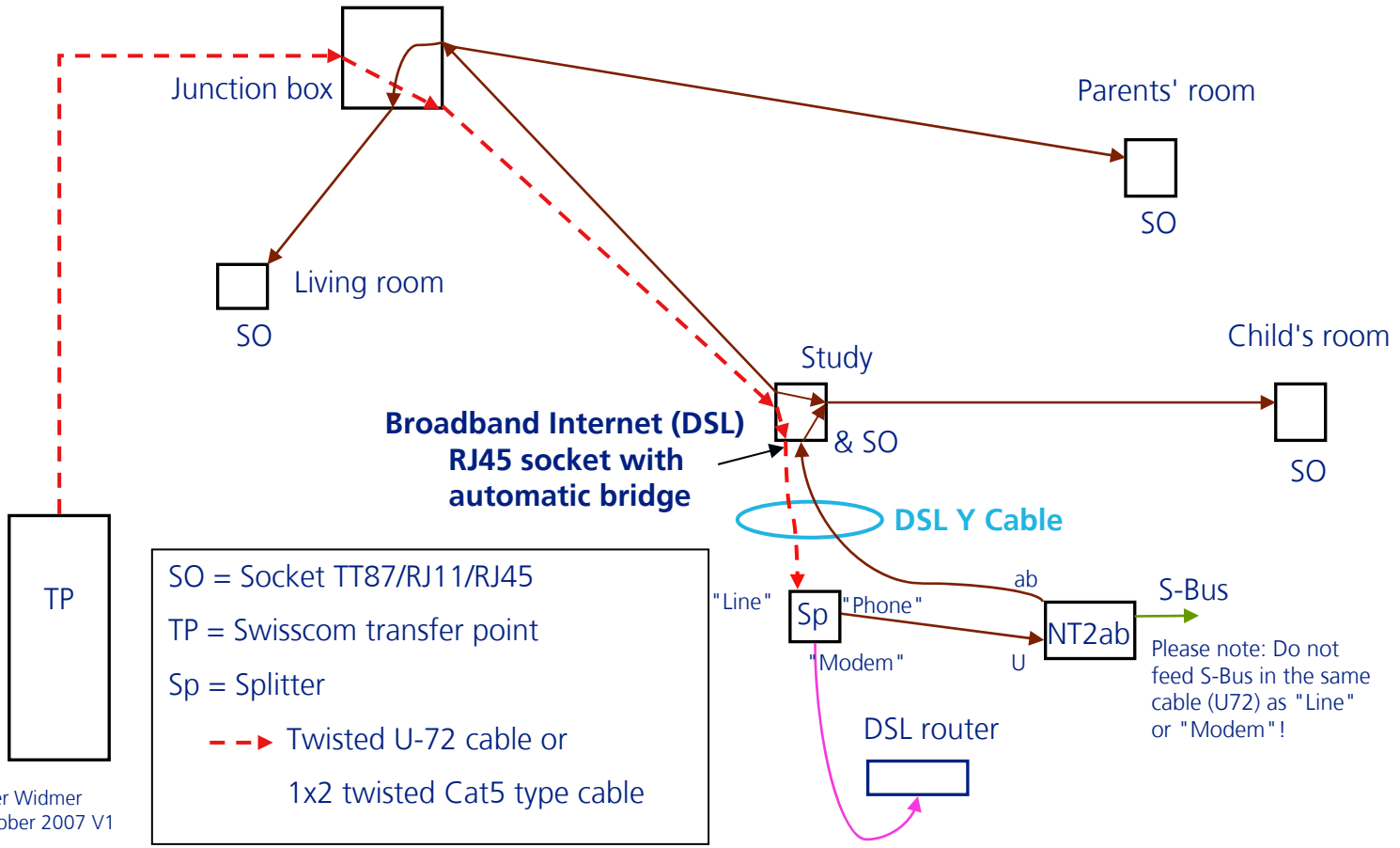
ISDN connected to broadband Internet (DSL) socket, with DSL



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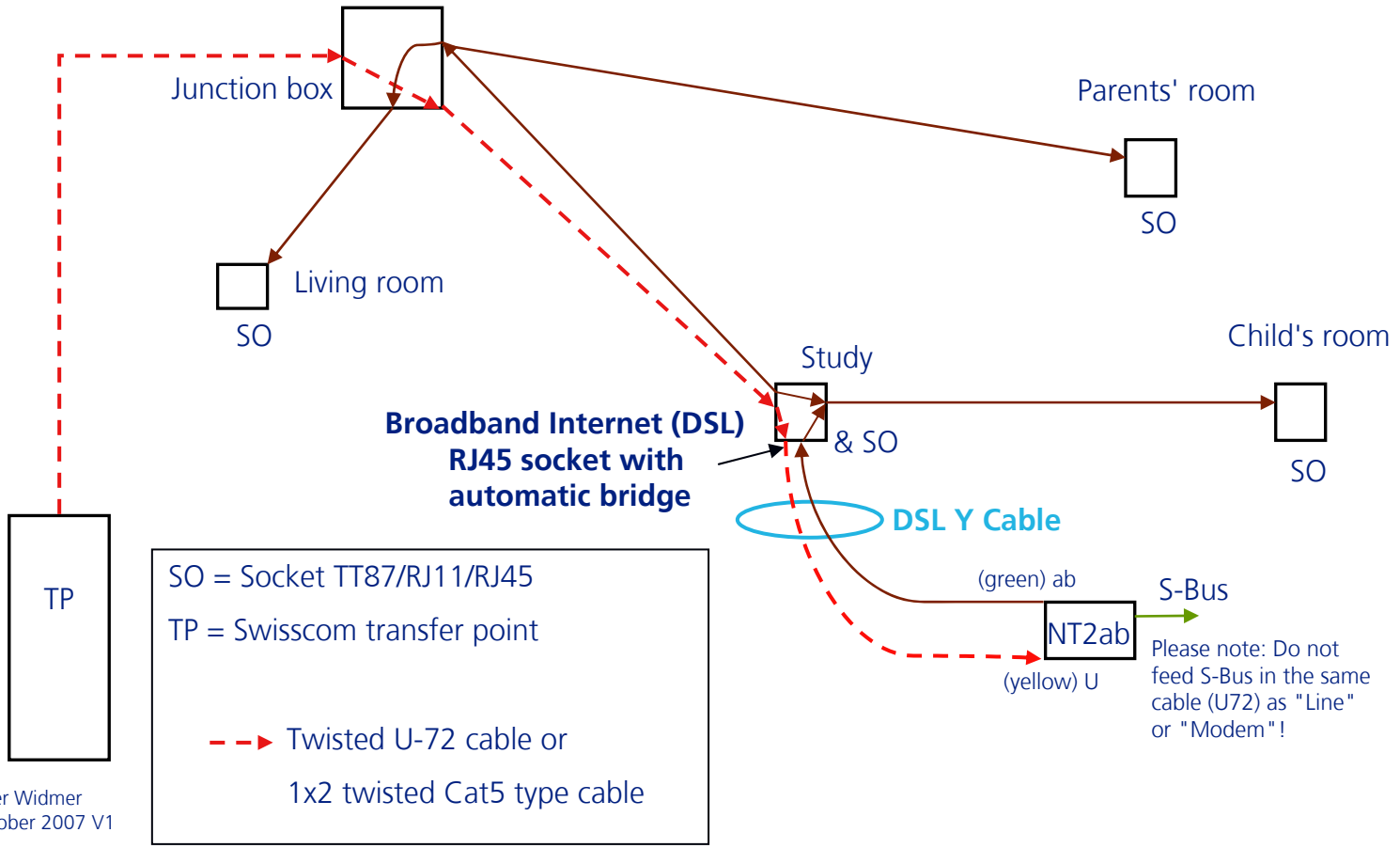
ISDN connected to broadband Internet (DSL) socket, without DSL



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Backup

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Cable

Depending on the existing cable/installation wire:

- From TP to ADSL splitter, U72 or a twisted wire pair of the same or better quality (Type Cat5) must be used.

TP <-> junction box:

- Untwisted cable, such as I51, must be replaced starting at TP. Pull out I51 while simultaneously pulling through U72.

Junction box <-> socket for BB Internet:

- If there is no free, twisted wire pair available, the installation must be supplemented with another U72, twisted Cat5 or at least a wire pair of the same quality. (pull out a wire pair while at the same time pulling through a e.g. U72 cable 1x4)

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Connections

- The condition of the existing clamp connections in TP, junction boxes, sockets, etc. has to be checked. (screws/clamps firmly tightened, no corrosion)

- New connections have to be fitted with alligator clips or screw clamps to ensure reliable contact.