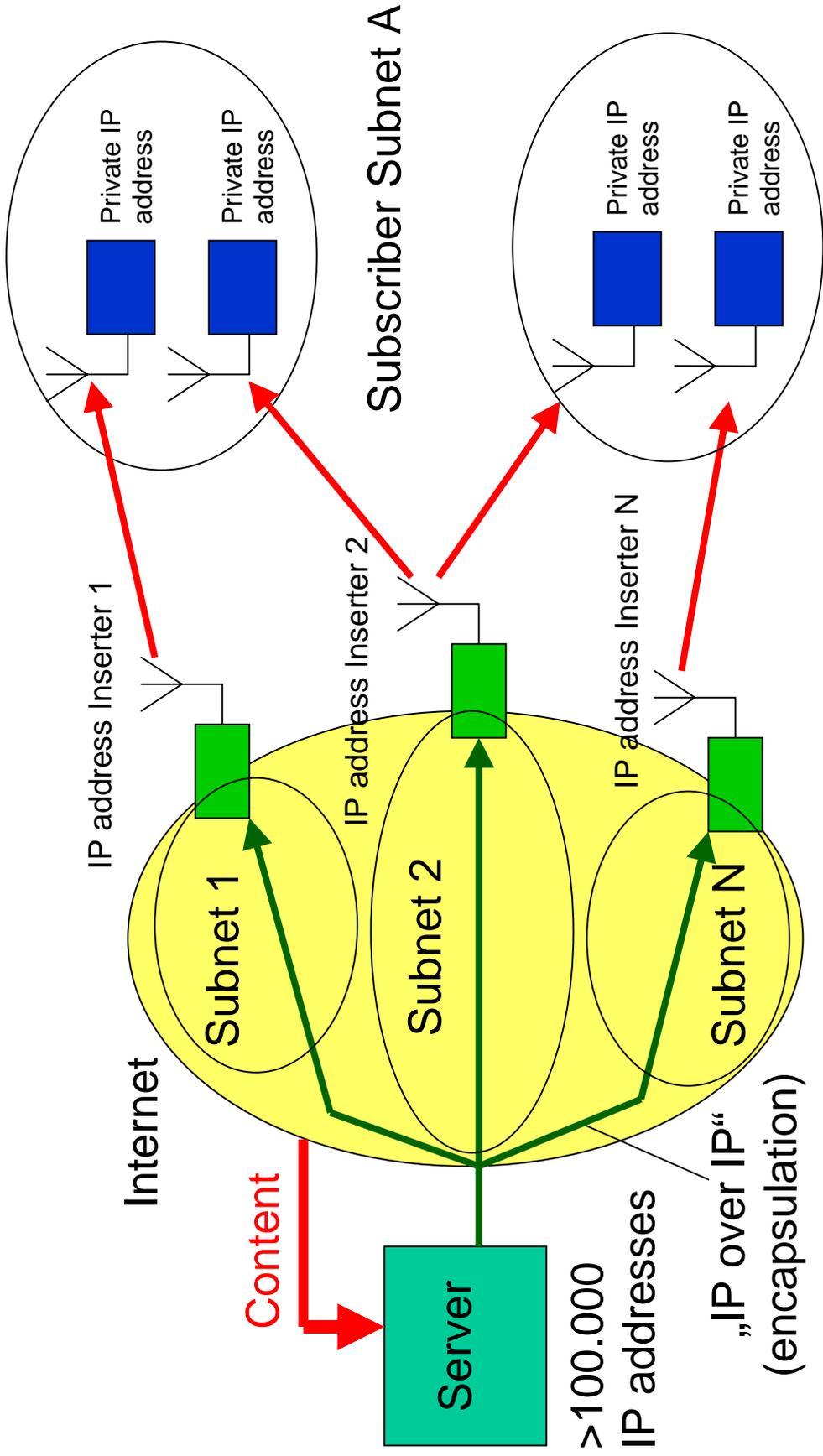




DTV IP Inserter DIP Application Note

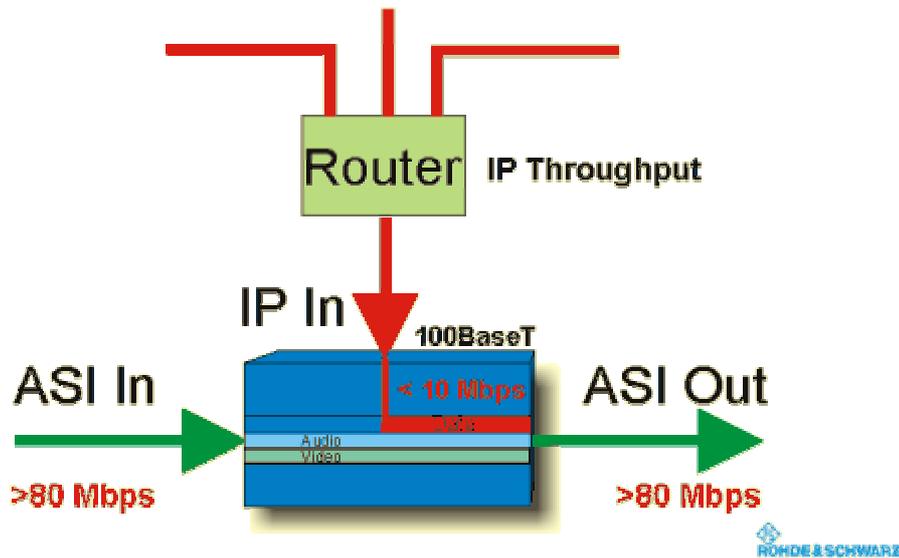
1. Network for IP Insertion
2. Insertion rate up to 10 Mbps
3. Insertion rate higher than 10 Mbps
4. Demonstration Scenario
5. Demonstration Scenario End to End

1. Network for IP Insertion with DIP



- Encapsulated private subscriber IP address
- Encapsulated multicast

2. DTV IP Inserter – Insertion rate up to 10 Mbps

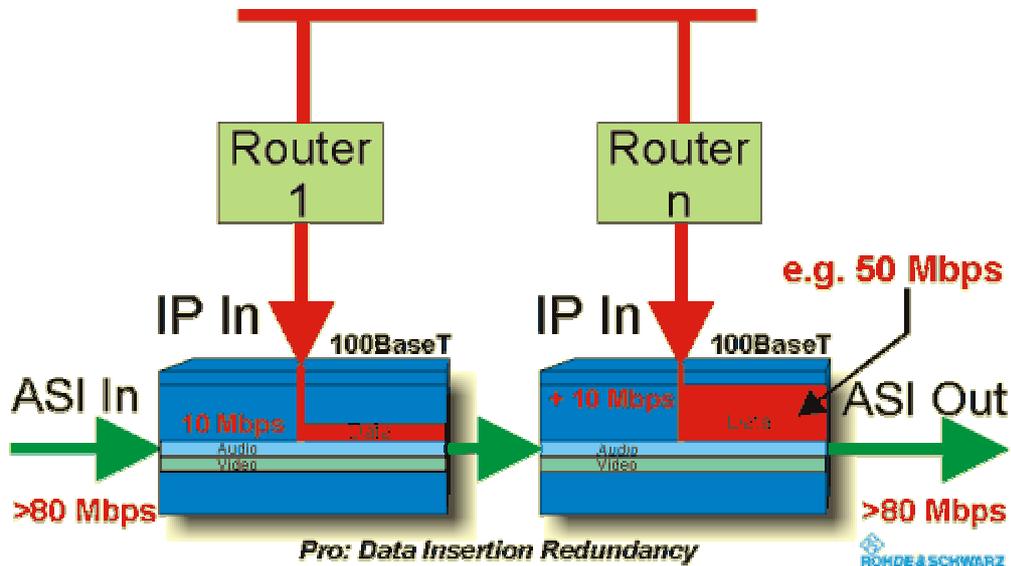


This figure illustrates the approach of the IP-Inserter. It shows also the maximum possible data rates of the interfaces.

Please bear in mind that we insert up to 10 Mbps Internet data (IP frames). But the input and output traffic rate of the MPEG-2 transport stream is much higher and does not depend on the rate of the inserted data.

The free resources in the input MPEG-2 transport stream, e.g. available Null Packets or a dedicated PID to contain data, determine the effective insertion ratio and data rate.

3. DTV IP Inserter – Insertion rate higher than 10 Mbps

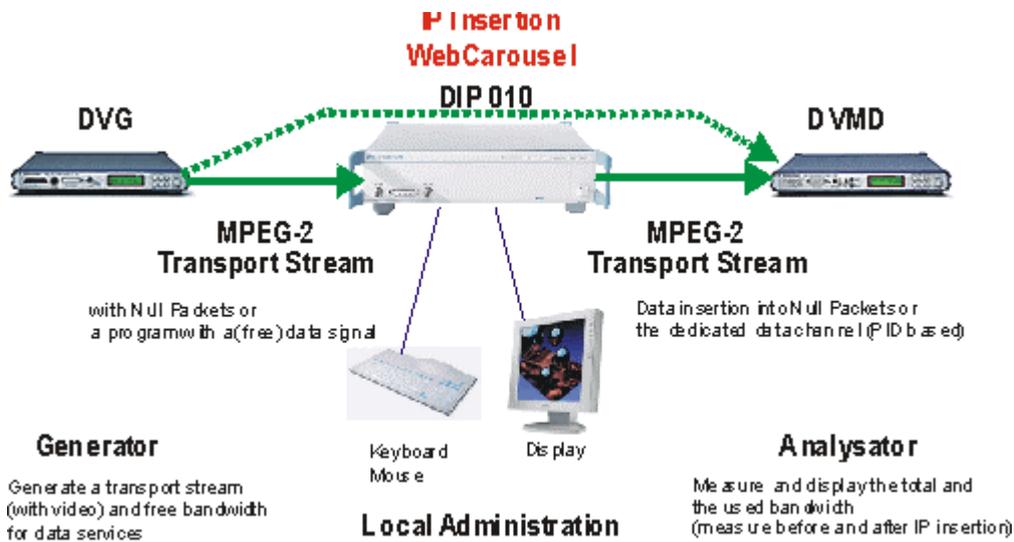


In case you need a higher bandwidth for a data service and a data rate higher than 10 Mbps has to be inserted you can use more than one IP-Inserter.

Pipelined inserters also guarantee that you can use standard IP routers. You do not need specific, high performance IP routers which guarantee the throughput on their IP interface to the inserter. So you can share the resources and you will have a simple kind of redundancy.

The use in a chain works fine because the IP-Inserter forwards the MPEG-2 transport streams. The on-the-fly insertion and modification of the MPEG-signalling has a very low latency. The signal will travel through all the devices in a very fast way and without any influences on the contained video and audio programs.

4. DTV IP Inserter Demonstration Scenario

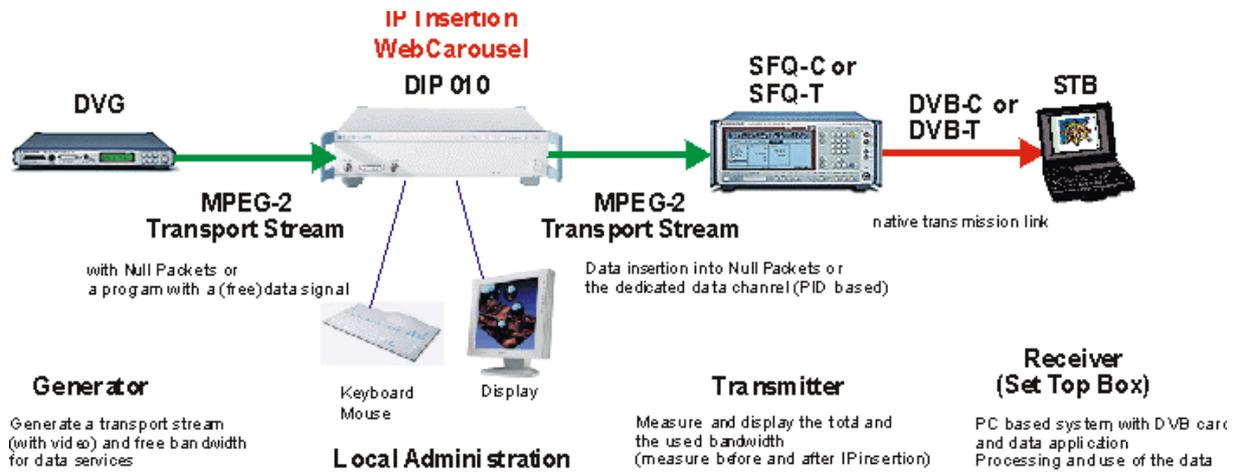


When you want demonstrate the function of an IP-Inserter by a native running scenario you need at least the given devices.

The approach is to have an MPEG-2 transport stream with Null Packets (and a video/audio program). This signal passes the IP-Inserter where a data service is added. With an analyser you can check the modification of the MPEG-2 transport stream. You will realize that there are fewer Null Packets and an additional data service is available (corrected signalling).

We need additionally a VGA display and a keyboard to configure the IP-Inserter.

5. DTV IP Inserter Demonstration Scenario End to End



If you want demonstrate a complete end-to-end scenario where you are using the transmitted data you will need also a suitable receiver. Such a receiver is in most of the cases a Settop Box, a PC with an inserted DVB receiver card.

The receiver card and the Settop Box come from the third-party vendor and they are commercially available devices.

The receiver card has to support data applications. There has to be an interface driver (Miniport, NDIS) which is used by software applications like a web browser in order to get IP frames from the receiver card.

Another condition is that you have to send the MPEG-2 transport streams in a way appropriate to the approach of the receiver card. If it is a DVB-T card you have to transmit the signal on air, in case of DVB-C there has to be a coax cable connection and modulation. DVB-S (satellite) scenarios seem to be too complicated due to the needed satellite uplink and antennas. Therefore we did not illustrate it here.