



Overview of SS7

Every phone call that is made utilizes the SS7 signaling network. This is the network that checks to see if the destination phone is busy before the actual call is placed, saving valuable bandwidth in an overcrowded PSTN. Essentially, the SS7 network is a packet data network that provides out-of-band signaling for call control and advanced intelligent network services, such as 800 lookup, Caller ID, local number portability, etc. GDC provides a NEBS Level III compliant provisioning solution for the transport of signaling channels that eliminates the need for channel banks.

The SS7 network is comprised of Signaling Points and Signaling Links.

The Signaling Links exchange messages between network elements, usually over 56 or 64 kbps bidirectional channels. This signaling occurs out-of-band on dedicated channels. Out-of-band signaling enables faster call setup times, more efficient use of voice circuits, as well as allowing for advanced features such as Caller ID.

Ultimate Redundancy

Because the SS7 network is critical to call processing, redundancy is critical. For example, both SCPs and STPs are usually deployed in pairs — in different buildings — to ensure that the network will continue to function if one fails.

All of the links are also deployed in pairs. If one link fails, signaling traffic is rerouted over the redundant link. Again, the redundant equipment is located in a different physical

Signaling Point Types:

- Service Switching Point (SSP): Controller, usually integrated in digital phone switches that originate or terminate signaling messages
- Signal Transfer Point (STP): Packet switches or routers that route traffic between SSPs and SCPs in the SS7 network
- Service Control Point (SCP): Typically databases, such as the Line Line Information Database, which contains customer specific information used to determine how a call should be handled

Signaling Link Types:

- Access Links (A Links):** Provide the connection for access to SSPs and SCPs
- Bridge Links (B Links):** Provide connection between pairs of STPs
- Cross Links (C Links):** Provide interconnection between an STP and its twin
- Diagonal Links (D Links):** Provide connection to pairs of STPs in another network
- Extended Links (E Links):** Connects an SSP or STP to an alternate STP

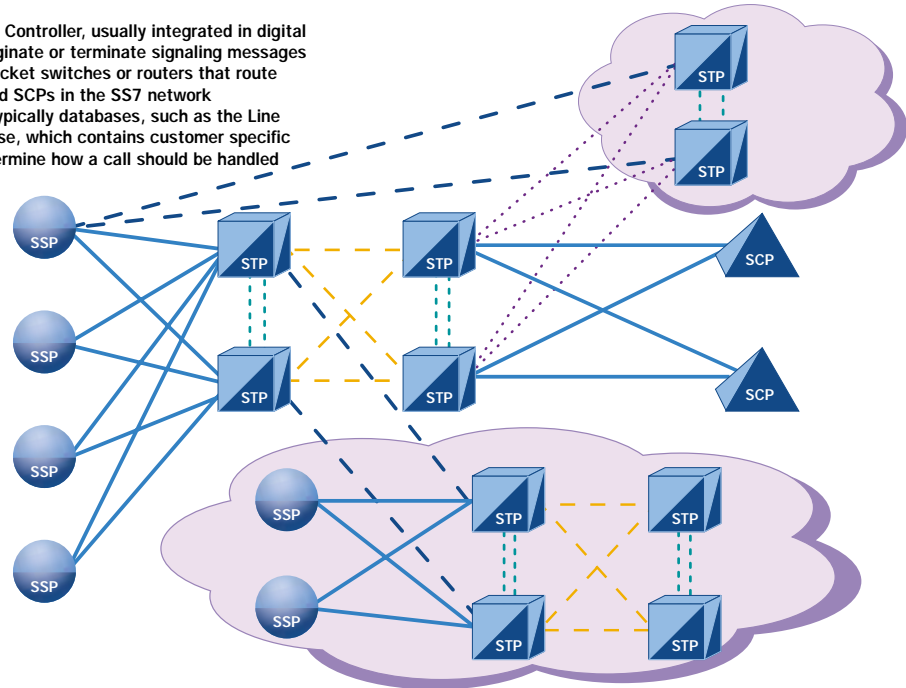


Figure 1 — Basic SS7 Network Architecture

SS7 Interswitch Signaling Transport

location. Often, these links are established through separate physical connections dedicated solely to transporting the signaling traffic. Therefore, the signaling traffic system and management paths remain in place even when the primary voice trunks are out of order.

GDC's Solution

Over the years, providers have sought a more efficient, highly reliable solution to provide interswitch transport. GDC's solutions provide NEBS Level III compliant, ultra reliable, high density, managed interaccess provisioning vehicles.

Initially, carriers deployed a channel bank to split the incoming T1 link.

Now, LECs and carriers provision the bandwidth via T1 circuits, using one 56/64 kbps timeslot for the signaling channel. Some smaller CLECs and other independents use 56/64 kbps DDS circuits for cost-saving reasons (Figure 2).

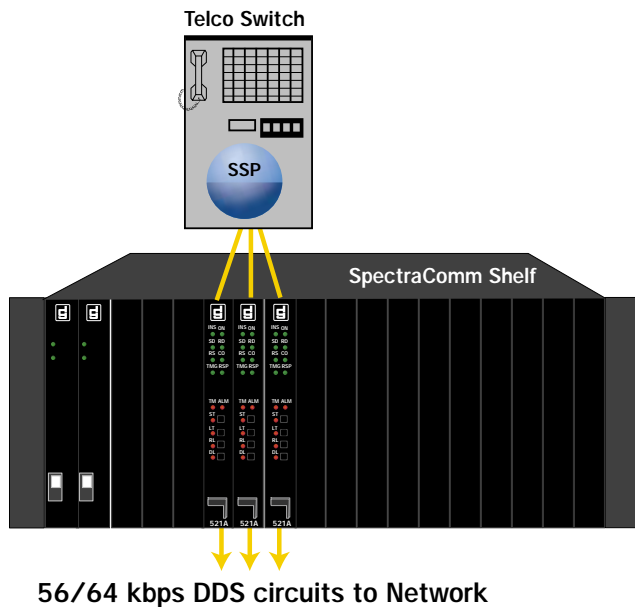


Figure 2 — Line-by-Line 56/64K Circuit

GDC's SpectraComm 5000 Series provides integrated T1/FT1 CSU/DSUs that eliminate the need for a channel bank. The SC 5001 serves as a channel bank for collocated SC 5520 DSU cards, which handle one DS0 each (Figure 3, Option A). The SC 5001/5520 architecture permits multiple SS7 links to share a common T1 facility. Alternatively, when optimum network redundancy and resiliency is required, the SC 553 may be used (Figure 3, Option B).

NEBS Compliance The SpectraComm shelf and all of its modules are NEBS Level III certified, thus assuring that GDC products can be deployed in all carrier central office environments.

Network Managed SpectraComm 5000 products are SNMP managed via the SpectraComm Manager Card (SCM), enabling network operators to proactively monitor the network for possible trouble spots and avoid downtime.

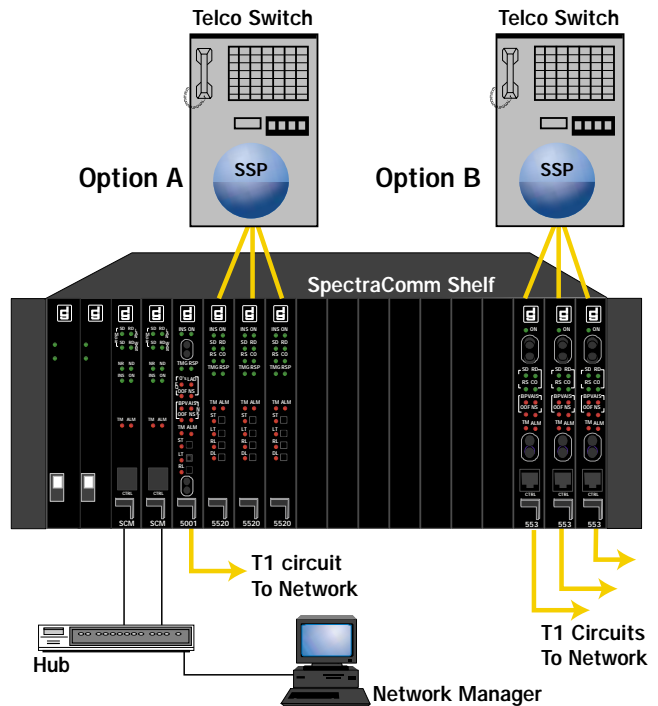


Figure 3 — GDC's Integrated and Line-by-Line T1 Solutions

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