

# PRODUCT BRIEF

ANA-003

December, 1996

## SpectraComm 521: Line-By-Line Alternatives

## Overview

The SpectraComm 5000 System was developed to support T1 access as a means to reduce line costs by bundling up to twenty-four 64 Kbps circuits into a less expensive T1 circuit. With that portion of development completed, the next undertaking was a SpectraComm product response to the significant market segment with a continued need for line-by-line alternatives to T1 access. GDC responded to this need by developing the SpectraComm 521 (SC 521).

The SC 521 provides a direct interface to standard and generic digital service networks for line rates of 2.4 to 64 Kbps in point-to-point and multipoint applications. In addition, the SC 521 supports asynchronous data formats up to 19.2 Kbps and synchronous data formats up to 64 Kbps.

Development of the SC 521 resolves concerns related to assigning an IP address to each SNMP DSU at the central site: one SpectraComm Manager (SCM), using one IP address, supports up to 31 SC 521 units. When used with NMS 510 and 520 DSUs in digital networks the SC 521 provides end-to-end SNMP management for the DSUs it supports.

### Line-By-Line Alternative

Operationally, the SC 521 provides a line-by line-alternative and/or supplement to T1 access in the SpectraComm Shelf. The SC 521 fully supports remote NMS 510 and NMS 520 DSUs under SNMP management.

If T1 access is required, the combination of the SCM card, 5001 Line Termination Unit (LTU) and 5520 Data Set Emulator (DSE) cards will manage the remote DSUs. However, when line cost savings cannot justify T1 access or where one to several additional units are required beyond a T1's 24 channels, the SC 521 is the obvious choice.

Figure 1 illustrates the combined use of T1 access and the line-by-line capabilities of the SC 521. In this arrangement, T1 access is supported by four circuits with remote NMS 510/520 DSUs in point-to-point and multipoint applications. The SC 521s in this illustration support two multipoint circuits to remote NMS 510/520 DSUs. As shown, it is now possible to have both T1 access and line-by-line configurations in the same SpectraComm Shelf.

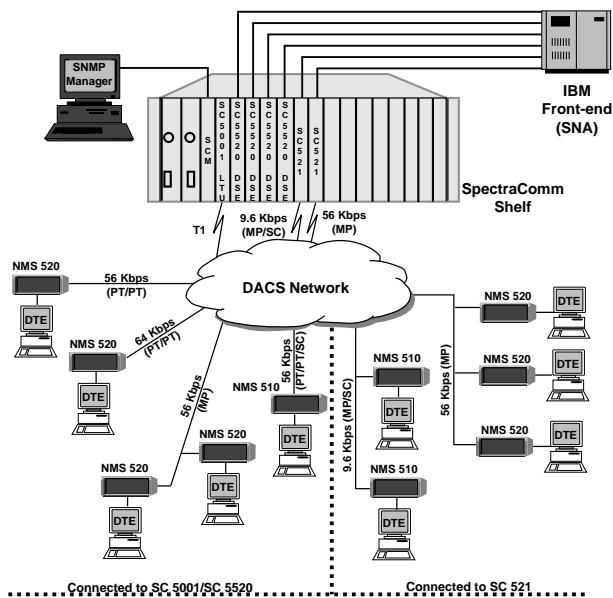


Figure 1 — Combined T1 Access/Line-by-line

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## Interoperable with Remote Data Sets

The SC 521 is compatible with GDC's NMS 510 and NMS 520 DSUs and emulates virtually all of their features. This includes operation over standard and generic digital service and secondary channel digital service, in-band diagnostics, line measurements, local and remote optioning, EIA interface monitoring, and diagnostic testing from a central location. Existing customers can readily adapt to these advanced features with little or no additional training.

The SC 521 interoperates with remote SNMP 540 units. These units have on-board SNMP agents and are managed directly from the SNMP manager via the SCM. Also, the SC 521 supports data transport to non-managed remote data sets such as the DT 500A. In this situation, the SC 521 provides SNMP management for the central site units only, although V.54 loopback testing is supported. This feature allows any remote unit supporting V.54 to be looped in response to a central site SNMP command. Support of non-managed remote DSUs gives network managers a transition path to a fully SNMP managed network.

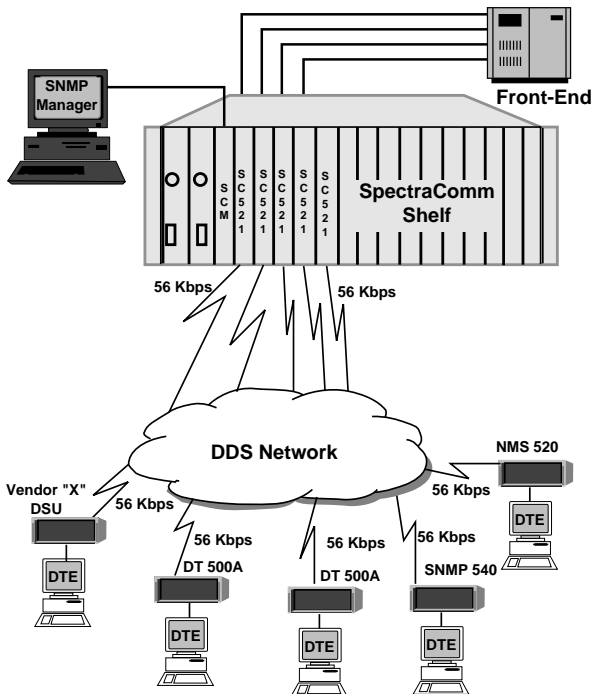


Figure 2 — Transition to SNMP Management

Figure 2 shows the SC 521 supporting non-managed DSUs, including one from another vendor. The transition to SNMP management end-to-end has begun with the replacement of a DT 500A by an NMS 520 and SNMP 540.

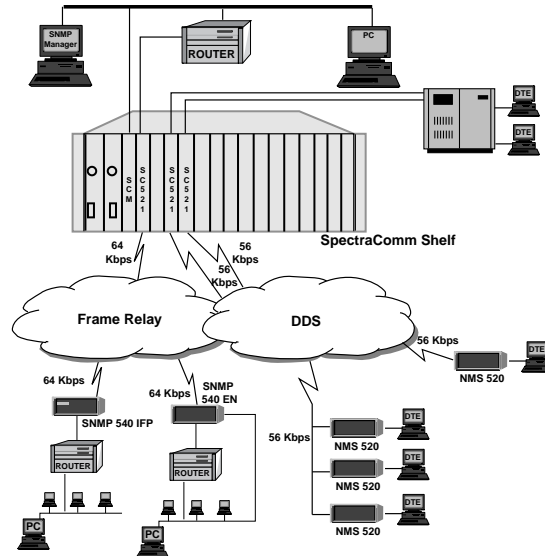


Figure 3 — SC 521 in DDS and Frame Relay Environment

## Frame Relay

The SC 521 supports Frame Relay as well as standard and generic digital services (Figure 3). In this arrangement, the SC 521 works with remote SNMP 540 units to provide end-to-end SNMP management in a Frame Relay environment and with NMS 520 units in a digital network.

Figure 4 demonstrates the flexibility of the SpectraComm System. T1 access products transport TCP/IP and SNA traffic in this router-based network. In the same shelf, SC 521s support SNA traffic to remote NMS 510 and NMS 520 DSUs. One SNMP Manager provides end-to-end SNMP management.

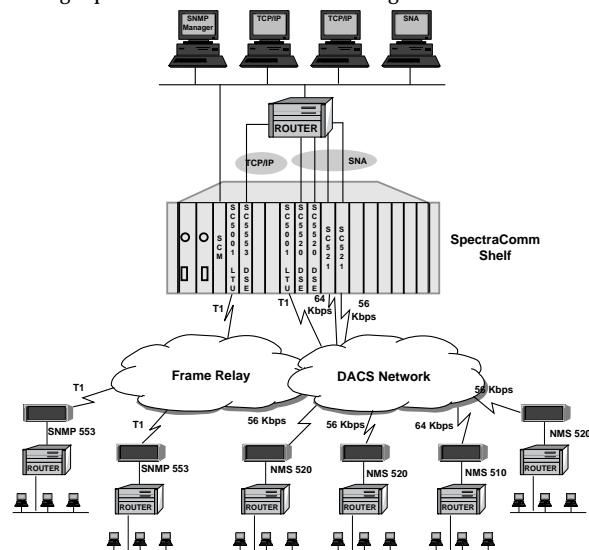


Figure 4 — Flexible Support of SpectraComm System

The SC 521 has the ability to report to an SNMP manager alarms — or Traps — it detects during operation. Individual alarms can be masked or activated to report their assigned condition by the TEAM 521 application software. For certain alarm parameters, a threshold level can be set to report only when that level has been exceeded. The following identifies all the alarm conditions supported by the SC 521:

- ✓ DTR OFF = data terminal ready found to be off
- ✓ DSR OFF = data set ready found to be off
- ✓ CORRUPT EEPROM = indicates a configuration corruption
- ✓ TEST MODE ON = indicates test initiated from the front panel
- ✓ STC TEST IN PROGRESS = indicates Telco initiated test in progress
- ✓ LOSS OF EXT TIMING = indicates no DTE clock
- ✓ LOSS OF SEND DATA = indicates no transmit data transitions
- ✓ LOSS OF DDS S/C FRAMING = indicates loss of framing in secondary channel mode
- ✓ STREAMING DTE = indicates streaming terminal
- ✓ BPV = Bipolar violation threshold exceeded
- ✓ JITTER = phase jitter threshold exceeded
- ✓ RECEIVE LEVEL = receive level threshold exceeded
- ✓ SIGNAL QUALITY = signal quality level threshold exceeded



Figure 6 — TEAM 521 Reporting Traps

### Additional Features of the SC 521

- ✓ Operates on standard and generic digital service with and without secondary channel
- ✓ Operates on 64 Kbps clear channel facilities
- ✓ Supports synchronous line rates of 2.4, 4.8, 9.6, 19.2, 56 and 64 Kbps
- ✓ Supports asynchronous rates of 2.4, 4.8, 9.6 and 19.2 Kbps
- ✓ Measures and reports circuit quality parameters, including:
  - ☆ receive level
  - ☆ transmit level
  - ☆ phase jitter
  - ☆ bipolar violations
  - ☆ signal quality
  - ☆ round-trip delay
- ✓ Compatible with remote NMS 510 and NMS 520 DSUs
- ✓ Line compatible with other DSUs complying with Bell Publication 62310
- ✓ Supports in-band non-interfering diagnostic communications with remote NMS 520s
- ✓ Operates in point-to-point, multipoint and limited distance applications
- ✓ Programmable RTS/CTS delays selections
- ✓ Supports standard GDC, Telco, V.54 diagnostic loopback tests
- ✓ Optional Data Rate Adapter (DRA)
- ✓ Optional EIA-530 interface

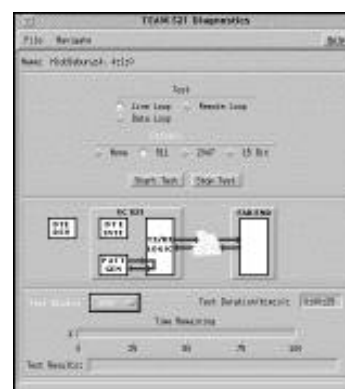


Figure 7 — TEAM 521 Running Diagnostic Test

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