

Strata® DK Application Bulletin

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Networking the Strata DK424 with the ADTRAN ATLAS 800™ and TSU120™

Toshiba is currently developing integration of a networking protocol to support the interconnection of Strata DK products in a private networking environment. The protocol is QSIG, an international standard for PBX internetworking, which provides a very sophisticated networking scheme for private networks while providing gateway access to public networks.

With the use of QSIG, Toshiba will be able to provide basic calling services for name and number delivery over the network, centralized voice mail, flexible numbering plans, network routing and call control, incoming/outgoing gateway functions, and other feature transparency.

However, prior to the introduction of QSIG in Strata DK, there will be times when a basic networking requirement will exist. In support of these opportunities, Toshiba has identified three applications where a limited amount of networking can be applied using an adjunct product available through ADTRAN. These three applications support:

- ♦ Centralized voice mail
- ♦ Coordinated numbering plan
- ♦ Off-net toll bypass over a private network

These applications represent those found in campus environments, such as school districts, where the Strata DK can take advantage of the ADTRAN ATLAS 800 and TSU120 systems to provide a basic level of networking.

Toshiba will not be a reseller of the ADTRAN product. However, we have installed and tested these applications internally at Toshiba and will be available to assist a dealer with inquiries concerning the installation of Toshiba Strata DK and Strategy voice mail systems with the ADTRAN ATLAS 800 and TSU120 products. Integration assistance with non-Toshiba hardware will not be supported.

ADTRAN requires certification for dealers wishing to resell the ATLAS 800. If you are not presently certified to resell the ATLAS 800, please call ADTRAN at 1-800-9ADTRAN for assistance with contacting a local ADTRAN territory manager.

ADTRAN Product

ATLAS, the ADTRAN Total Access System, is a modular, scalable platform that provides solutions for wide area communications needs of medium to large clients. ATLAS is an integrated access switch that provides extensive support of dedicated bandwidth and access management.

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The ATLAS 800, with the appropriate modules installed can function as a:

- ♦ Digital access and cross connect (DACS)
- ♦ T1 bandwidth manager
- ♦ ISDN access switch

The ATLAS can be configured to switch calls to specific ports or DSOs based on the number that is dialed. Switched connection mapping is supported for dialed calls placed over BRI, PRI, or channelized T1. Multiple T1 (N x T1, where N = 1~24) and Fractional T1 (FT1) are supported.

The ADTRAN TSU120 T1 service unit is an intelligent T1/FT1 DSU/CSU. It is designed to interface with CPE T1 and FT1 services. The TSU120 supports a single DSX-1 and V.35 port standard on the unit. The V.35 port is capable of handling N x 56/64 Kbps data rates, where N = 1~24.

Expansion modules are available for the TSU120 that can provide additional ports for specific application needs. These include N x 56/64Kbps Office Channel Unit Data Pool (OCU DP), dial back up, FXO/FXS, E&M, drop and insert, SNMP agent, and V.34 modem.

The three applications mentioned previously are discussed in this application note. For the purposes of these applications, T1 or FT1 are used. Due to the complexity and programming variations available on the ADTRAN ATLAS 800 product, specific programming for this product is left to the installing party. Please refer to the appropriate ADTRAN programming instructions for this information.

Application Overview: Centralized Voice Mail

This bulletin covers the requirements to support a centralized voice mail application using the Strata DK, Strategy® Voice Mail Processing System and ADTRAN TSU120 (see Figure 1).

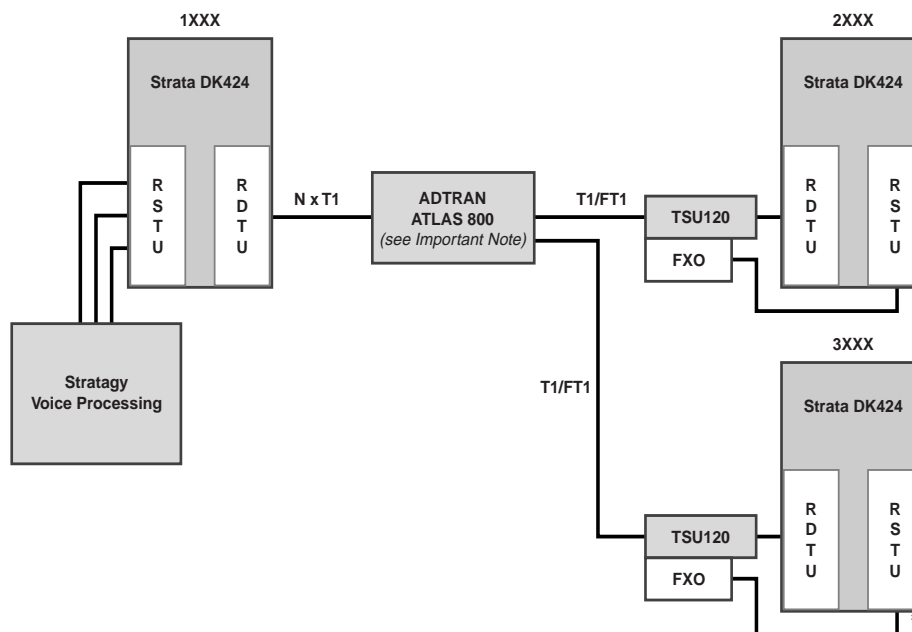


Figure 1 Centralized Voice Mail Example

Important! *The ATLAS 800 is not necessary as shown in this application unless Coordinated Dialing and/or off-net calling is also required. In a point to point configuration, a single TSU120 would be used without the ATLAS 800.*

The TSU120 provides clients with the ability to use one integrated voice mail system to service multiple Strata DK systems over T1 E&M circuits. The integration of the various Strata DK systems will include inband DTMF for message retrieval, call forwarding to the user's mailbox, and activation/deactivation of the station's message waiting lamps. When using the Strategy voice mail system, this application will send different message waiting codes and different transfer codes on a per mailbox basis.

Hardware Required

The TSU120 is installed at each remote location requiring access to the centralized voice mail system. The TSU120 requires an FXO+ Dual Voice card, which is connected to an RSTU port on the remote Strata DK. At the central site, where the voice mail system is installed, a CSU is required for access to the telco provided T1 or FT1. A CSU is not required at the remote location, as the TSU120 is the T1 or FT1 CSU. Additionally, each Strata DK system requires an RDTU card for the T1 termination on the Strata DK.

Programming the TSU120

To set up the TSU120 for operation in this application, the following parameters must be set:

```

Config -
    Network
        Format = ESF
        Code = B8ZS
        Timing = NI
        Bitstuffing = Enable
Config -
    DSO Map A
        Edit Temp
        Channels 01-22 Port 0.2 DSX-1
        Channels 23-24 FXO+
        Apply Temp >A
        Disrupt Data = YES
Config -
    Port Config
        0.2 DSX-1
        Format = ESF
        Code = B8ZS
        Robbed-bit signal = ON
  
```

Programming the Strata DK (TSU120 Location)

1. Program 03 – Slot XX=73.
2. Program *41-11 – LEDs 1 and 2=ON.
3. Program *41-21 – 01*24, CO KIND=4.
4. Program *42-1 – Primary=1.
5. Program single line ports as voice mail ports (Program 31) and connect to the FXO ports.
6. Program single line ports to a Distributed Hunt Group (DHG) (Program *40).
7. Apply 15-0 and 15-5 to the appropriate lines.

Programming the Strata DK (Voice Mail System Location)

1. Program 03 – Slot XX=73.
2. Program *41-11 – LEDs 1 and 2=ON.
3. Program *41-21 – 01*22 – CO KIND=4; 23*24 – CO KIND=1.

4. Program *42-1 – Primary=blank.
5. Program 81-89 – Set T1 circuits 23*24 ring to voice mail pilot/DHG.
6. Program T1 circuits 23*24 in a Program 16 group (801).
7. Program T1 circuits 01*22 in a Program 16 group (802).
8. Apply 15-0 and 15-5 to the appropriate lines.

Programming the Remote Site Strata DK Station Ports (TSU120 Location)

1. Program the station's call forward string to the DHG connected to the FXO card through the single line ports (RSTU card).
2. Program the station's #656 and #657 for voice mail inband codes.

Programming the Central Site Strata DK with Strategy Voice Mail

1. In the voice mail, set up each mailbox message waiting string (e.g., 801, #63XXX).
2. In the voice mail, set up each mailbox extension field with the transfer string (e.g., F, 802, XXX, F, F: Hangup).

Notes

- On all DK systems you may want to turn LEDs 4 and 11 ON in Program 10-2 for message waiting and DTMF.
- Programming values are examples and vary per system.
- See the *ADTRAN User Manual* and *Strata DK I&M Manual* for additional hardware requirements.

Application Overview: Coordinated Dialing Plan

For support of a coordinated dialing plan, the ADTRAN ATLAS 800 is used in conjunction with the Strata DK systems. The ATLAS 800 provides the capability of dialing 2-4 digit extension numbers to multiple Strata DK locations. The numbering plan is programmed within the specific Strata DK424 systems (see [Figure 2](#)).

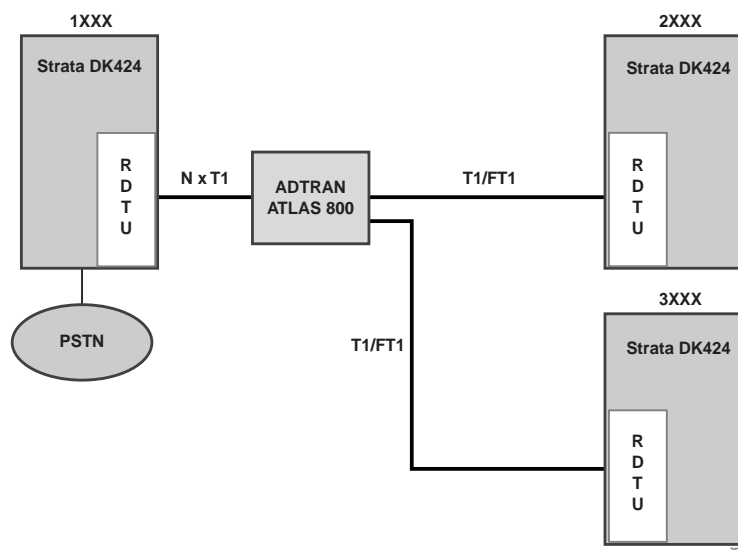


Figure 2 Coordinated Dialing Plan

Hardware Required

The Strata DK424 must be equipped with a RDTU T1 card at each location. The interface between the Strata DK and the ADTRAN ATLAS 800 will be T1. The *ATLAS 800 User Manual* provides details on the appropriate modules and programming required for this application.

Programming the Strata DK424

All locations assume the ATLAS 800 is providing the clock source.

1. Program 03 – Slot XX=73.
2. Program *41-1X – LEDs 1 and 2=ON.
3. Program *41-2X – 01*24, CO KIND=4.
4. Program *42-1 – Primary=1.
5. Program 16 – Place T1 circuits into a separate CO line group.
6. Program 39 – Port XXX=key XX=3XX (3XX represents the appropriate pooled key from CO line group in Program 16 from Step #5).

Programming the ATLAS 800

- Please refer to the *ATLAS 800 User Manual* for detailed programming procedures.

Operation (Calling Other Sites)

1. Station will access pooled line key or dial the appropriate CO line group number.
2. Station will dial appropriate network station number.

Application Overview: Off-net Calling (Toll Bypass)

The ATLAS 800 can provide the capability of dialing an external telephone number and routing it out over the appropriate remote Strata DK site. This can be accomplished with Pooled Line buttons or with Least Cost Routing (LCR) (see Figure 3).

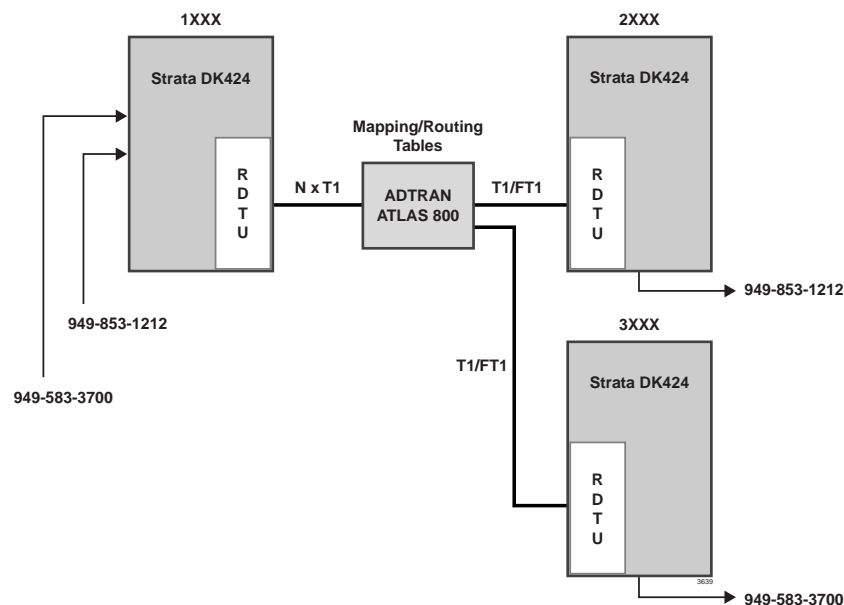


Figure 3 Off-net Calling Example

Hardware Required

The Strata DK424 must be equipped with a RDTU T1 card at each location. The ADTRAN ATLAS 800 interface to the Strata DK will be T1. The *ATLAS 800 User Manual* provides detailed information on the appropriate programming required for this application.

Programming the Strata DK424

All locations assume the ATLAS 800 is providing the clock source.

1. Program 03 – Slot XX=73.
2. Program *41-1X – LEDs 1 and 2=ON.
3. Program *41-2X – 01*24,CO KIND=4.
4. Program *42-1 – Primary=1.
5. Program 16 – Place T1 circuits into a separate CO line group.
6. Program 39 – Port XXX=key XX=3XX (3XX represents the appropriate Pooled Line button from CO line group in Program 16 from Step #5).
7. Program 50-56 – Program LCR based on T1 circuits entered in Program 16.

Programming the ATLAS 800

- Please refer to the *ATLAS 800 User Manual* for detailed programming procedures.

Operation (Calling other sites)

1. Station accesses pooled line key or access LCR.
2. Station dials an external number and the system routes over the appropriate T1 per the Strata DK424 to the ATLAS 800.
3. The ATLAS 800 routes over the appropriate off-net T1.