

## Remote Expansion Cabinet Applications

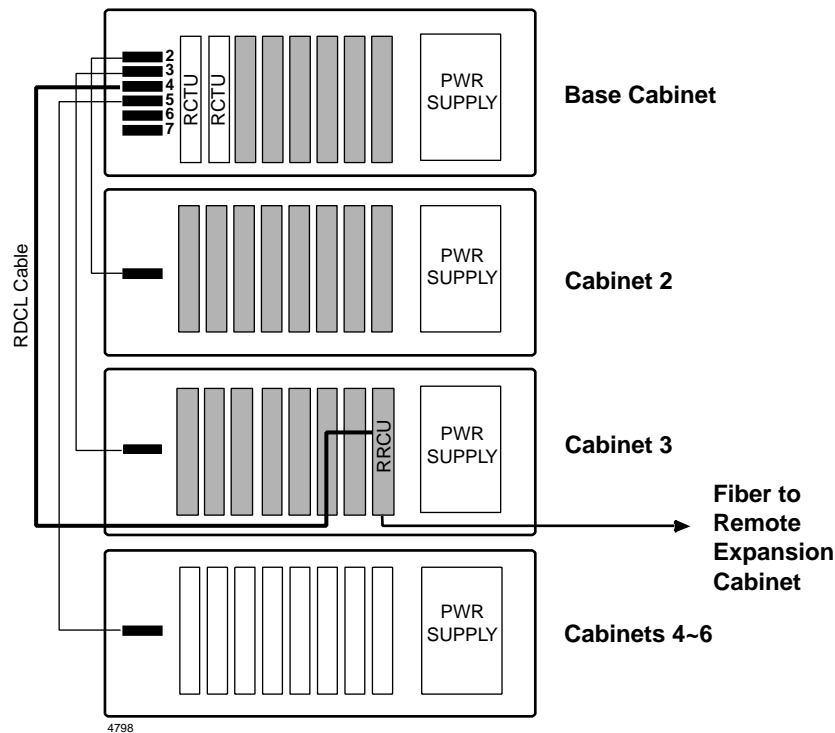
This bulletin introduces two new configurations of the Strata DK424 Remote Expansion Cabinet: the Card Cage and the Daisy Chain. They are designed to give you more flexibility and economy in satisfying your customers' requirements. One application uses a spare DK424 or DK280 Expansion Cabinet as a *Card Cage* to hold Remote Expansion Cabinet cards (RRCU). The second application uses one RRCU card at the base location to support two RRCU cards in separate remote locations in a *Daisy Chain* configuration.

Basic configuration guidelines have been published in the *Strata DK Installation and Maintenance Manual*. Use this bulletin to adjust your configuration. Both applications are hardware-only. There are no software or programming requirements for either. Card Cage and Daisy Chain configurations can be combined in a single installation.

### Card Cage Configuration

The original configuration rules call for all RRCU cards at the base location to be plugged into the Base Cabinet. These conservative rules are meant to reduce confusion, minimize problems in routing expansion cables, and assure successful installations.

The following describes how to put RRCU cards in a cabinet other than the Base Cabinet. An RRCU card derives only battery and ground from the backplane into which it is plugged. As a non-timeslot card, it neither uses nor interferes with the timeslot activity on the backplane. Therefore, it will work successfully in any slot in any cabinet except the CPU slots of the Base Cabinet. Available card slots must be within the reach of the RDCL cable, one end of which must be connected to the data cable connector in the Base Cabinet. The RDCL cable can reach from the base to the rightmost card slot in a cabinet as far as two cabinet positions away. [Figure 1](#) shows all the potential card slots for an RRCU shaded in gray.



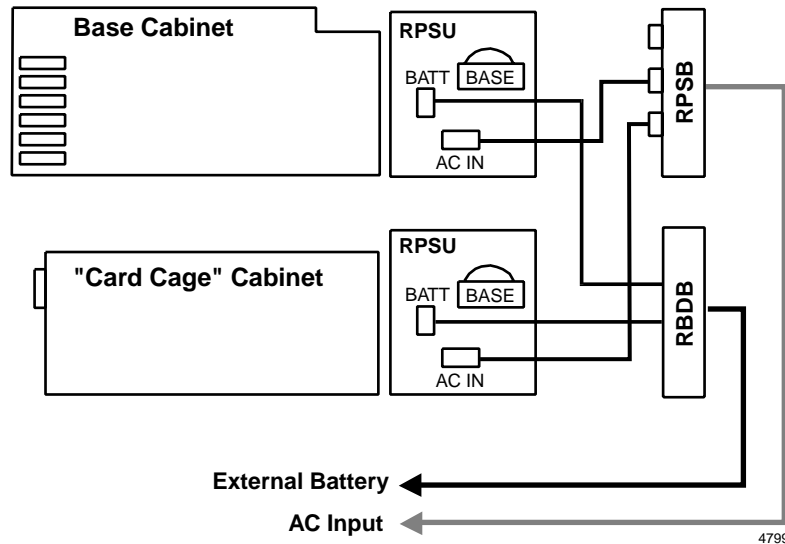
**Figure 1 RRCU Card Placement**

As a non-timeslot card with no software or administration effect, the RRCU may occupy slot 7 or slot 8 in the shaded shelves, as shown in [Figure 1](#). It may also occupy a slot left vacant for timeslot considerations such as the slot adjacent to a T-1 or PRI card. An RRCU configured according to these rules still consumes a card slot in an active Expansion Cabinet and reduces system capacity. The exceptions to this are the RCTUA, B and C/D systems in which slots 7 and 8 are spare.

It is possible to introduce an Expansion Cabinet exclusively to hold and power RRCU cards without reducing system capacity. This Expansion Cabinet and its power supply will function as a “Card Cage.”

The original rules impose a limitation of five pairs of RRCUs per system. The Card Cage configuration permits the installation of up to six pairs of RRCU cards per DK424. This means that all six Expansion Cabinets can be remotely located without sacrificing slots in the Base Cabinet.

There are two major differences when installing an Expansion Cabinet as a Card Cage. First, it will not be connected by ribbon cable to the Base Cabinet so the CPU will be unaware of its existence. Second, the power supply must be jumpered as if the Card Cage were a Base Cabinet. The Card Cage may be supported by a battery backup system in the same manner as a conventional Expansion Cabinet but its AC On/Off switch will operate independently of the rest of the cabinet stack. See [Figure 2](#).

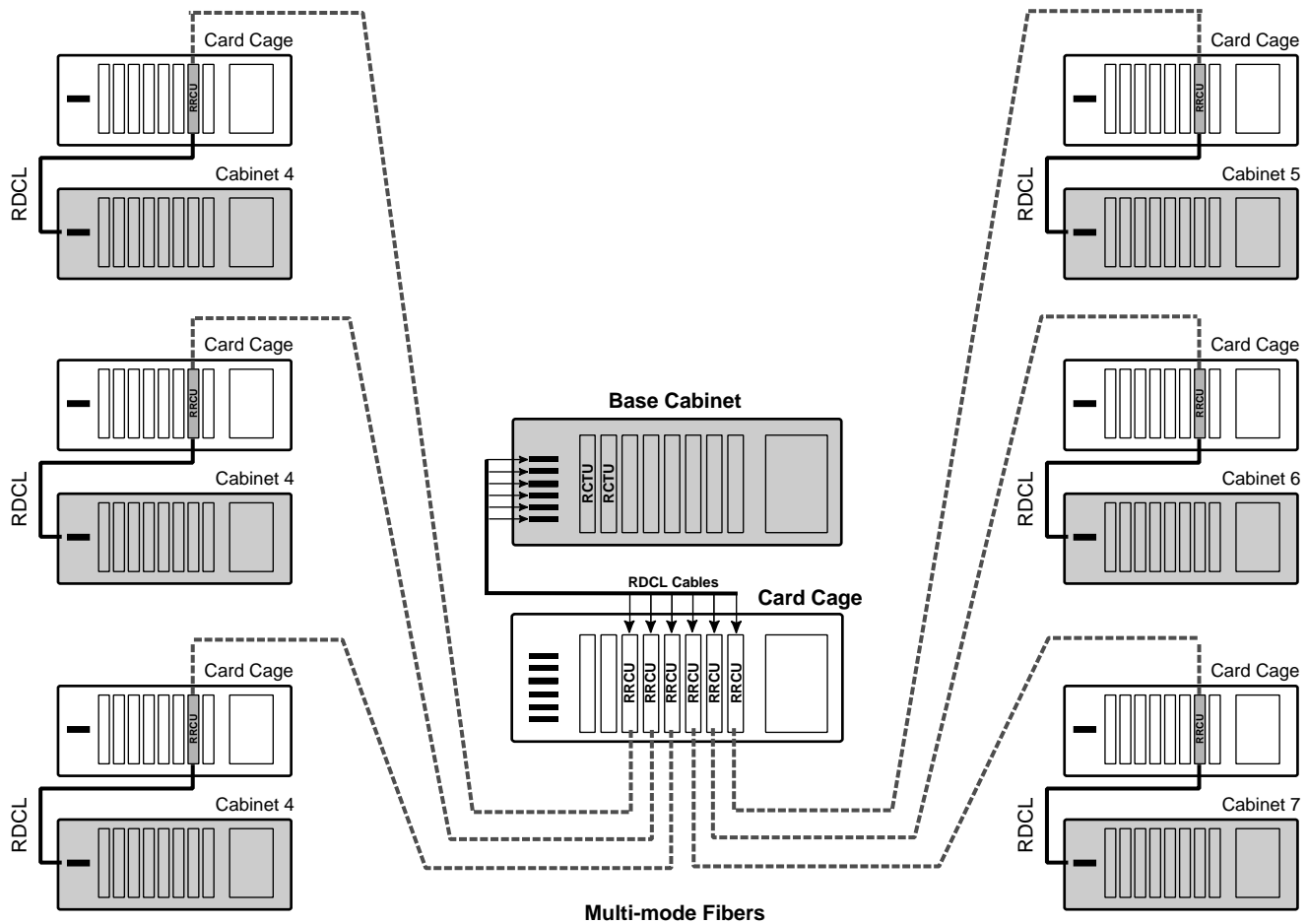


**Figure 2 Card Cage Power Connections**

The equipment should be well labeled for the maintenance personnel. What appears as a standard Expansion Cabinet is a cabinet that is actually isolated from the CPU. It is there exclusively to house and power RRCU cards.

Figure 3 shows the Card Cage principle taken to its extreme. The result is a complete, seven-cabinet DK424 made up of one base location and six remote locations with no loss of system capacity compared to a conventional installation. All the RRCU cards, local and remote, are housed in Card Cage configurations. All card slots in the Expansion Cabinets are available as they would be in a conventional configuration.

**Important!** *An Expansion Cabinet used as a Card Cage supports RRCU cards only. All line, trunk, I/O, processor and other cards must be in conventional Base Cabinets, Expansion Cabinets or Remote Expansion Cabinets. When powering down the system, make sure that the Card Cage cabinet is powered down as well. When powering up, restore the Base Cabinet or Expansion Cabinet before restoring the Card Cage.*



4800

Figure 3 Maximum Card Cage Configuration

## Daisy Chain Configuration

An RRCU card can be connected to as many as two highway data cables. That card, connected to its mate by a pair of multi-mode fiber optic strands, can support two Expansion Cabinets at one remote location. The Daisy Chain configuration allows support of one of the Expansion Cabinets in one location and the second in another location. This configuration can save a card slot at the Base Cabinet and, possibly, exploit existing fiber cable conditions.

The Daisy Chain configuration requires one RRCU in the Base Cabinet connected to two highway data cables and then connected by fiber optics to an RRCU in a Remote Expansion Cabinet. The highway data signal connects to M1 at the master location emerges on connector S1 at the slave and supports the Remote Expansion Cabinet for that location. A second RRCU card is installed at that remote location. See Figure 4.

A new part, the RDCC Remote Daisy Chain Cable is introduced to support this configuration. At the intermediate site, an RDCC cable connects S2 of the first RRCU card to M1 of the second. The second RRCU card is connected to its mate at a remote location via multi-mode fiber as specified in the *Strata DK Installation & Maintenance Manual*. The second RRCU card at the intermediate location does not require an RDCL cable.

### Fiber Specifications

The total fiber distance between points A and D must be within the specifications for a conventional configuration given in the *Installation and Maintenance Manual*, typically 3 Kilometers (1.8 miles). Neither connection (A to B nor C to D) may exceed 2 Kilometers (1.2 miles). See [Figure 4](#).

The specified dB loss budget of 9 dB applies to each fiber connection. In other words, there may be 9 dB of loss between points A and B and another 9 dB of loss between points C and D.

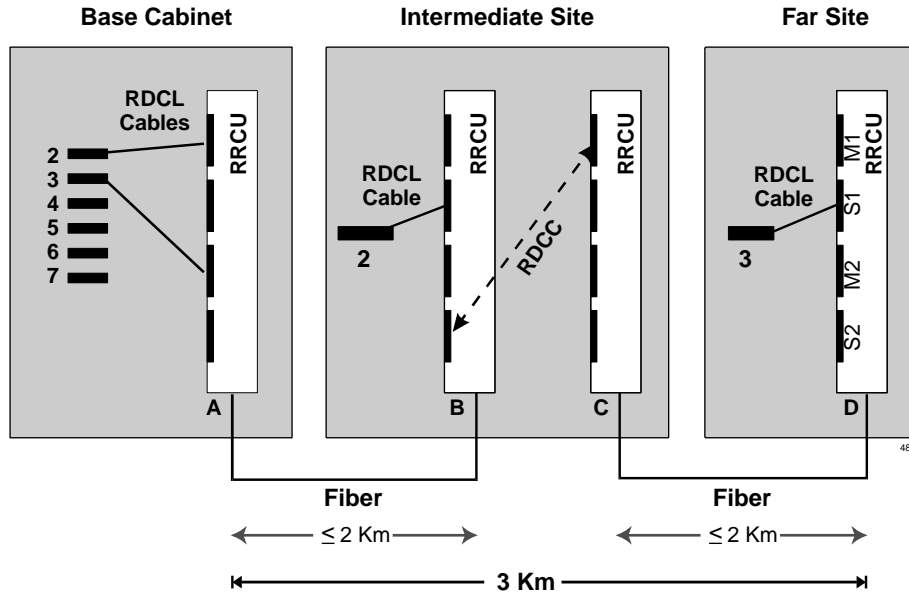


Figure 4 Daisy Chain Connections

The jumper options on the cards must be installed according to [Table 1](#) which refers to Figure 4 above.

Table 1 RRCU Jumper Options

RRCU	A	B	C	D
Mode	Master	Slave	Master	Slave

### Hardware Required

Additions and changes to the Price List are shown in [Table 2](#).

Table 2 Price List Descriptions

<b>RRCU</b>	Remote Cabinet Interface Unit	One required in the master location and one in the slave location for each remote site. Supports up to two Expansion Cabinets at the remote location.
<b>RCTC</b>	Remote Cabinet Top Cover	As desired for remote Expansion Cabinets.
<b>RDCL</b>	Remote Cabinet Data Cables (2) and Data Cable Door	One RDCL set is required for each RRCU (master and slave) except for the daisy chain configuration where only one RDCL is required at the intermediate site.
<b>RDCC</b>	Daisy Chain Cable	One required at the intermediate site of a daisy chain configuration to extend the data cable function from one RRCU to the other.

