

Provisioning

WAN Lines for Remote Access Concentrators

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About This Guide

This guide provides instructions for provisioning WAN lines for Bay Networks® Remote Annexes and Remote Access Concentrators (RACs).




If you want to	Go to
See a summary of the line provisioning required.	Overview
Find out how to plan line provisioning requirements.	Planning
See the different switch types supported by Remote Access Concentrators.	Switch Types and Switch Parameters
Negotiate the switch type parameters from the Telco.	Recording Switch Parameters

Before You Begin

Before using this guide, you must know the Remote Annex or Remote Access Concentrator (RAC) being installed. Typically, this guide is used in preparing the customer's site after the RAC is ordered.

Conventions

This manual uses the following printing conventions:

Convention:	Represents:
<code>special type</code>	In examples, <code>special type</code> indicates system output.
special type	Bold special type indicates user input.
<code>(Return)</code>	In command examples, this notation indicates that pressing <code>(Return)</code> enters the default value.
bold	Bold indicates commands, pathnames, or filenames that must be entered as displayed.
<i>italics</i>	In the context of commands and command syntax, lowercase italics indicate variables for which the user supplies a value.
[]	In command dialog, square brackets indicate default values. Pressing <code>(Return)</code> selects this value. Square brackets appearing in command syntax indicate optional arguments.
{ }	In command syntax, braces indicate that one, and only one, of the enclosed value must be entered.
	In command syntax, this character separates the different options available for a parameter.
	Notes provide important information.
	Warnings inform you about conditions that can have adverse effects on processing.
	Cautions notify you about dangerous conditions.

Acronyms

ANI	Additional Number Information
CAS	Channel Associated Signaling
DNIS	Dialed Number Information Service
FDL	Facilities Data Link
ISDN	Integrated Services Digital Network
PRI	Primary Rate ISDN
RAC	Remote Access Concentrator
WAN	Wide Area Network

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United States and Canada	800-2LANWAN; then enter Express Routing Code (ERC) 290, when prompted, to purchase or renew a service contract 508-916-8880 (direct)	508-916-3514
Europe	33-4-92-96-69-66	33-4-92-96-69-96
Asia/Pacific	61-2-9927-8888	61-2-9927-8899
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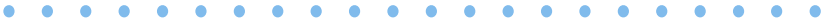
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Santa Clara, CA	800-2LANWAN	408-495-1188
Valbonne, France	33-4-92-96-69-68	33-4-92-96-69-98
Sydney, Australia	61-2-9927-8800	61-2-9927-8811
Tokyo, Japan	81-3-5402-0180	81-3-5402-0173



About This Guide

Provisioning WAN Lines for Remote Access Concentrators

This guide describes how to provision WAN lines for Remote Annexes and Remote Access Concentrators (RACs). It is written for experienced users who plan and order T1/E1 Channel Associated Signaling (CAS) and T1/E1 PRI ISDN lines.

Overview

The type of line provisioning you require depends on the product that you are installing. [Table 1](#) shows the supported products and the line types.

Table 1. Products and Line Types

Model	Line Types	Number of Lines
5391 Module	T1 CAS	1
6100 Chassis	T1 CAS	1
5393 Module	T1/E1 PRI ISDN	1
6300 Chassis	T1/E1 PRI ISDN	1
5399 Module	T1/E1 CAS & T1/E1 PRI ISDN	2
8000 Chassis	T1/E1 CAS & T1/E1 PRI ISDN	2

Planning

Start planning your line provisioning requirements and order the lines so you have telco service when the equipment is installed. To plan line provisioning:

1. **Contact the telco and ask what type of switch they will provide for your line.**
2. **Ask what type of service is available to you.**
Typically the telco will have Channelized and ISDN lines.
3. **Decide which service you want to use (CAS or ISDN). The service you select depends on the product you are installing, the services available in your area, and the type of callers you will support.**
4. **Decide the number of lines (see [Table 1](#)).**
The Model 5399 and Model 8000 can use two lines and can use two different services (one on each WAN port).
5. **Order the line(s).**

Switch Types and Switch Parameters

When negotiating service from the telco you must use switch types and switch parameters supported by Bay Networks.

Switch Types

The switch types that you may use are based on the country or telco service area. [Table 2](#) and [Table 3](#) list the supported protocols and switch types.

Table 2. Valid PRI switch_type Values

Protocol	switch_type	Used In
T1/PRI	AT9	North America; AT&T 5ESS#9 switch
	AT4	North America; AT&T 4ESS support
	DMS	North America; Nortel DMS100 switch
	NI2	North America; A switch supporting National ISDN2
E1/PRI	ETS	Europe; ETSI
	ETS-NCRC4	Europe; ETSI without CRC
	AU1	Australia

Table 3. Valid CAS switch_type Values

Protocol	switch_type	Used In
Channelized T1	UST1	North America
	HKT1	Hong Kong
Channelized T1 - R1	TWT1R1	Taiwan
Channelized E1 - P7	SWE1P7	Used in Sweden
Channelized E1 - R2	ANE1R2	St.Martin
	ARE1R2	Argentina
	BBE1R2	CCITT BlueBookR2 (used in most of Europe); also used in Croatia, Chile, and South Africa
	BRE1R2	Brazil
	CNE1R2	China
	KRE1R2	Korea
	IDE1R2	Indonesia
	ILE1R2	Israel
	NZE1R2	New Zealand
	PHE1R2	The Philippines
	MYE1R2	Malaysia
	MXE1R2	Mexico
	THE1R2	Thailand
	TRE1R2	Turkey



For the most up-to-date information on switch types, consult the Release Notes shipped with the product.

Switch Parameters

The switch parameters that must be used are determined by the telco and the service that you select. [Table 4](#) lists the switch parameters supported by Bay Networks.

Table 4. Switch Parameters

Parameter	Description
fdl_type	The Facilities Data Link format supported by the telco. Valid values are ANSI and ATT .
num_b_channels	(PRI interfaces only) The maximum number of calls that the RAC handles via B channels. Valid values are 0–23 for T1/PRI, 0–30 for E1/PRI. The default is 0 .
buildout	A string defining the CSU transceiver line provided by the telephone company. Valid values are: 0db (default) 7.5db 15db 22.5db
line_code	(CAS interfaces only) Valid values are: b8zs (default) ami (Channelized T1 or E1) hdb3 (Channelized E1 only)
analog_encoding	The encoding type used for modem calls. Valid values are: a_law (used in Europe) mu_law (used in the U.S.) auto (default, uses a_law or mu_law based on switch_type parameter)

(continued on next page)

Table 4. Switch Parameters (continued)

Parameter	Description
framing	<p>(CAS interfaces only)</p> <p>The superframe format for which the WAN interface is provisioned.</p> <p>Valid values for Channelized T1 are:</p> <p>esf (extended superframe; default) d4 (superframe)</p> <p>Valid values for Channelized E1 are:</p> <p>ddf mff_crc4 mff_crc4_g706</p>
dnis	<p>(CAS interfaces only)</p> <p>Dialed Number Identification Service, which allows the called number on a given CAS line to be visible to the RAC. This permits you, for example, to map the dialed number to a particular service. To do this, enter the number in the called_no field of an SPB.</p> <p>The number of DNIS digits that the phone company is providing for the CAS interface. The default is 0.</p>
ani	<p>(R2 CAS interfaces only)</p> <p>Automatic Number Identification, which allows the calling number to be visible to the 5399 RAC. This permits, for example, verification of a user's security based on his or her home phone number. To do this, enter the number in the calling_no field of an SPB that handles security.</p> <p>Specify y if the phone company is providing ANI, n if it is not.</p>

(continued on next page)

Table 4. Switch Parameters (continued)

Parameter	Description
busy_signal_bits	<p>(CAS interfaces only)</p> <p>A string indicating the type of busy signal to transmit when a DS0 is busied out. Valid values are 00, 01, 10, and 11. The default is 11. These apply to the <i>a</i> and <i>b</i> bits of a CAS frame – 10 turns on the <i>a</i> bit, 01 turns on the <i>b</i> bit, 11 turns on both bits, 00 turns off both bits.</p>
local_phone_number	<p>(CAS interfaces only)</p> <p>The telephone number of the RAC. Usually, this number is assigned by the switch. However, for some CAS protocols, such as R2, the number must be specified via the local_phone_number parameter.</p>
auto_busyout_enable	<p>(CAS interfaces only)</p> <p>Determines whether or not the RAC busies-out remaining DS0 channels when the last available modem has been used (e.g., because modems have failed or you have fewer than the maximum number of modems installed). Valid values are y (busies-out DS0s) or n (does not busy out DS0s). The default is n.</p> <p>If you leave this parameter disabled, you lose calls when there are fewer modems than DS0s. However, if you enable this parameter, a busy signal is delivered to the user and a syslog is generated to notify you of the event.</p> <p>Once you busy out DS0s, they remain busied-out until the RAC is rebooted, or until you issue the CLI superuser wan unbusyout command.</p>

(continued on next page)

Table 4. Switch Parameters (continued)

Parameter	Description
sigproto	<p>(CAS channels with switch type UST1)</p> <p>The inbound and outbound signaling protocols supported by each DS0 channel. Valid values are:</p> <p>loop_in (loop start inbound) loop_out (loop start outbound) loop_bi (loop start bidirectional)</p> <p>wink_in (wink start inbound) wink_out (wink start outbound) wink_bi (wink start bidirectional)</p> <p>gnd_in (ground start inbound) gnd_out (ground start outbound) gnd_bi (ground start bidirectional)</p> <p>imm_in (immediate start inbound) imm_out (immediate start outbound)</p> <p>none (no signalling protocols; this busies-out the specified DS0s until you set sigproto again.)</p> <p>When you display the sigproto values, you see only the single value you specified. For example, wink_in displays as <i>wink_in</i>, not <i>wink_in, none</i>.</p> <p>The default is none.</p>
ringback	<p>(CAS channels with switch type UST1)</p> <p>Specifies whether or not an audible ring is sent to the Central Office of the phone company for incoming calls. Valid values are y and n. The default is y.</p>

Recording Switch Parameters

Record the switch parameters that you negotiate with the telco so you can properly configure the RAC during the setup procedure.

T1/E1 PRI ISDN

Record the T1/E1 PRI ISDN provisioning features next to the values in [Table 5](#).

Table 5. T1/E1 PRI ISDN Provisioning Features

Provisioning Feature	Setting
Switch Type	
FDL Type	
Buildout	

T1/E1 CAS

Record the T1/E1 CAS provisioning features next to the values in [Table 6](#).

Table 6. T1/E1 CAS Provisioning Features

Provisioning Feature	Setting
Switch Type	
FDL Type	
Line Code	
Buildout	
Framing	
DNIS	
Busy Signal Bits	
Ringback	
Signaling	
Direction	