

PRILINK

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Prilink PRI Software User Guide



Table of Contents

Overview.....	4
PRI Networks.....	4
Getting Started.....	5
Installation.....	5
Profile.....	6
LAN Setup.....	7
Software.....	8
Connection Setup.....	10
Connection Setup Window.....	10
Connecting to a Site.....	12
Site Setup.....	12
Update / Backup / Restore.....	13
Setting the Profile.....	13
Circuit ID & Normal/Reverse.....	14
Site Info.....	14
Defining Blocked Calls.....	14
Creating Traffic Groups.....	16
Internal/External Number Search Tips.....	18
Traffic Group Example.....	18
Configuring Alarms.....	18
CDR (Call-By-Call) Alarms.....	18
Traffic and D-channel Alarms.....	19
Automatic Alarm Email.....	21
Unit Time Change / Reboot / Shutdown.....	21
Live Monitoring.....	22
PRI.....	22
Summary.....	23
Chart.....	24
Traffic.....	25
1-Day.....	26
64-Day.....	27
Live Call.....	28
Filtering.....	29
Live Traffic.....	30
Live B-ch.....	30
Alarm.....	32
Analytics (Statistics).....	33
Using Prilink Traffic Analyzer.....	33
Group Traffic Analysis.....	34
Route (NSF) Traffic Analysis.....	38
Internal Number Traffic Analysis.....	40
T1 / B-channel Traffic Analysis.....	43

D-Channel Statistics Analysis.....	45
Accessing Call Detail Records.....	48
Traffic Reports.....	54
Raw Export Files.....	55
Summary Export Files.....	55
Automation.....	56
Appendix.....	57
A: Cause Code Description.....	57
B: Cause Location Description.....	58
C: Field Definitions of Statistics Export Files.....	59
Internal Number Record (Int.txt).....	59
Route Record (Rou.txt).....	60
Group Record (Grp.txt).....	60
CDR Record (CDR.txt).....	60
T1 Record (T1_.txt).....	61
D-Channel Record (Dch.txt).....	63
Alarm Record (Ala.txt).....	63

Overview

This guide documents Prilink PRI Software Tool version 8.0. With this system, network managers can use a single PC to analyze Telco network traffic over 4 years and perform real-time monitoring and call troubleshooting. The goal of this guide is to enable users to perform the following core functions:

- Analyze live PRI traffic and view calls in progress.
- Analyze daily and hourly PRI traffic data over 4 years.
- Automatically scan all DID and combine phone numbers together to form *Traffic Groups*.
- Troubleshoot blocked calls using diagnostic information included in CDR.
- Generate reports and export data for further processing with 3rd party tools.
- Configure traffic alerts for proactive monitoring.

To get further assistance or answers to any questions regarding the Prilink PRI Software Tool, please contact Prilink support at 1-866-261-0649 or support@prilink.com.

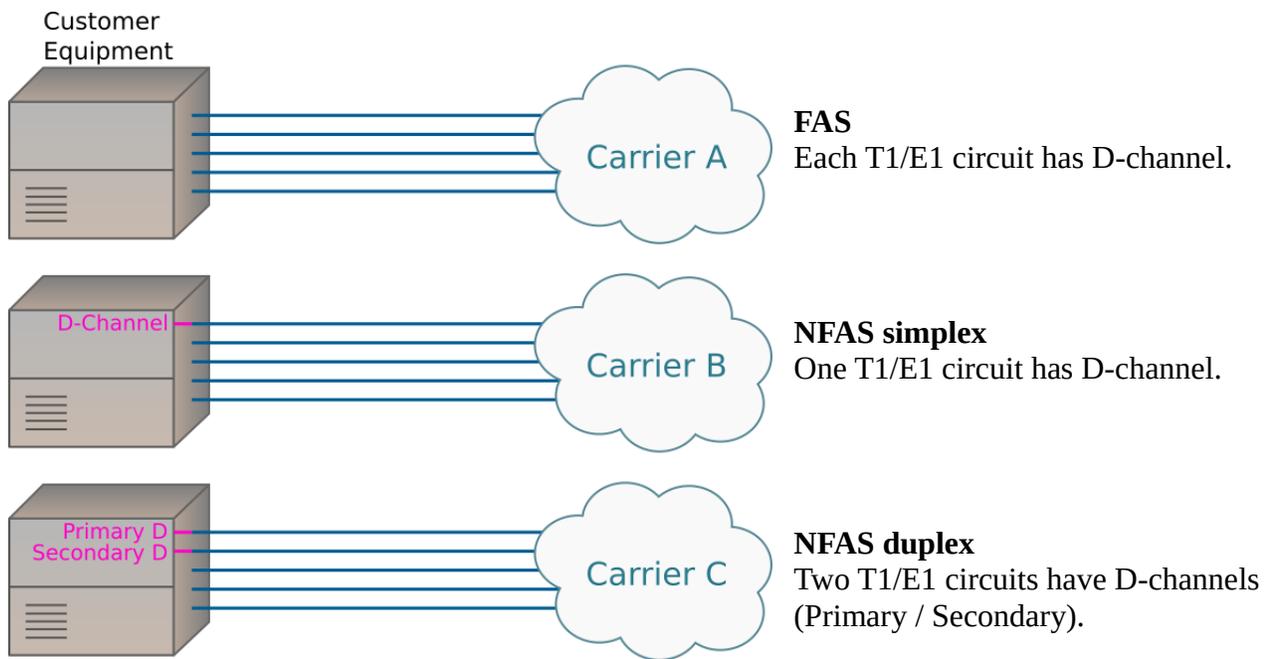
PRI Networks

In this manual the term **PRI** is used to refer to a group of T1/E1 circuits controlled by the same PRI Data Channel (D-channel). In general, a PRI may consist of a single T1/E1 controlled by a dedicated D-channel, or a group of up to 32 T1s/E1s controlled by a Primary and Secondary D-channel.

Signaling on a PRI network is handled in three basic ways:

1. **Facility-associated signaling (FAS):** Each T1/E1 is controlled by a dedicated D-Channel.
2. **Nonfacility-associated simplex signaling (NFAS simplex):** A group of T1s/E1s are controlled by a single D-channel.
3. **Nonfacility-associated duplex signaling (NFAS duplex):** Similar to NFAS simplex, except that a second T1/E1 in the group also has a D-Channel. This is a backup D-Channel, which remains in a standby state until the active D-Channel fails. The two D-Channels are termed *Primary* and *Secondary*.

Each base unit can connect to up to 8 independent T1/E1 lines using FAS, or 8 independent NFAS simplex groups, or 4 independent NFAS duplex groups. Combinations of FAS and NFAS groups are also possible. The figure below illustrates one such combination:

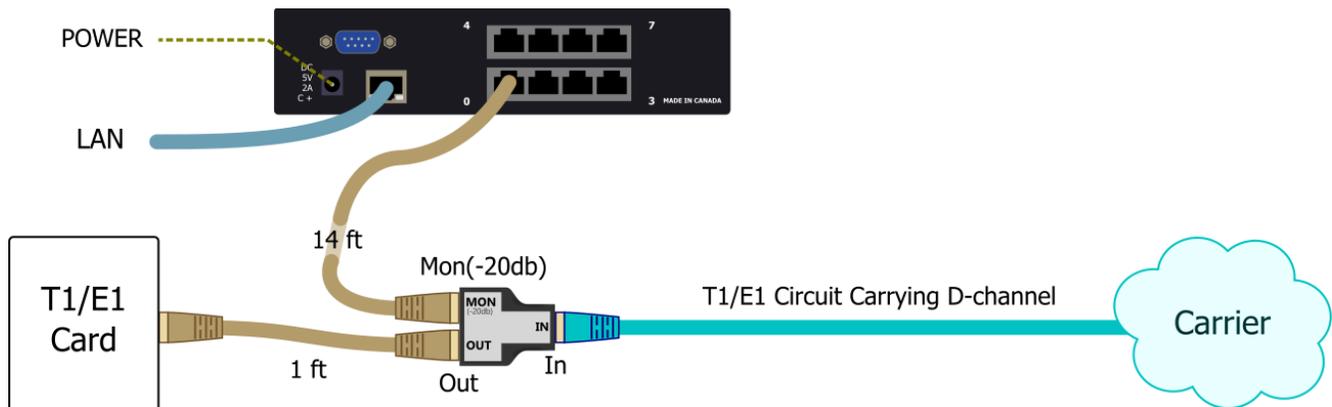


To monitor all traffic in a PRI network, a Prilink hardware unit need only interface with the T1/E1 circuits carrying D-channels.

Getting Started

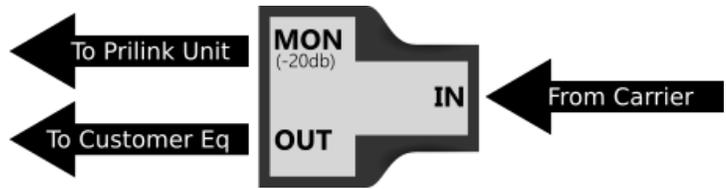
Installation

A Prilink hardware unit collects and analyzes traffic data by monitoring PRI D-Channels through its 8 monitor ports.



An RJ45 port provides access to the unit through Ethernet LAN (see [LAN Setup](#) later in this section), and an RS-232 serial port provides dial-up access through an optional external modem.

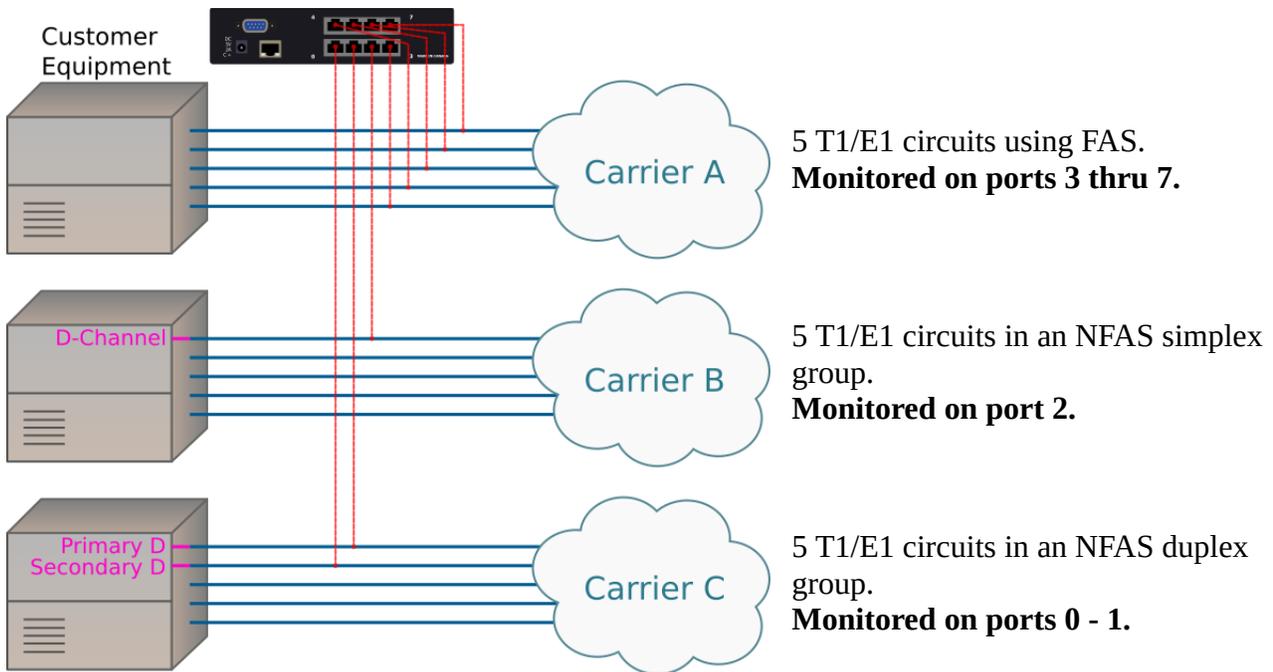
A **T1/E1 bridge adapter** is used to interface the Prilink unit with a D-channel. The T1/E1 circuit must be momentarily de-activated while the bridge is installed.



Alternatively, a **Bantam-RJ45 Adapter** may be used to interface the Prilink hardware unit to a D-channel via monitor jacks on vendor equipment.

Profile

The example below illustrates a Prilink hardware unit connected to multiple PRI networks:



In order to interpret data correctly, the Prilink unit must be aware of which ports are monitoring independent D-Channels, and which are monitoring Primary and Secondary D-Channels for the same NFAS group.

All combinations of PRI which can be connected to a single Prilink unit fall into one of five different *Profiles*. All five Profiles are listed in the table below. Connect the Prilink unit in accordance with one of the five Profiles listed below, and make a note of the Profile used (this will be needed when configuring the unit through the client software, see section [Setting the Profile](#)).

Profile	Port 0	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7
1.	Pri	Pri	Pri	Pri	Pri	Pri	Pri	Pri
2. (example above)	Pri / Sec		Pri	Pri	Pri	Pri	Pri	Pri
3.	Pri / Sec		Pri / Sec		Pri	Pri	Pri	Pri
4.	Pri / Sec		Pri / Sec		Pri / Sec		Pri	Pri
5.	Pri / Sec							

Pri

 = Independent D-Channel (FAS or NFAS simplex group) or empty

Pri / Sec

 = Primary/Secondary D-Channel pair (NFAS duplex)

LAN Setup

Connect the Prilink unit LAN port to your network and the DC power jack to an available outlet using the supplied power supply. For network access, the Prilink unit must be assigned a static IP address. To assign an IP address for the first time, perform the following steps:

1. Identify an available static IP address that is not in use by any other device on your network.
2. Note the MAC Address of the Prilink unit, printed on the label directly above the LAN port (it has the form XX-XX-XX-XX-XX-XX).
3. Select a Windows based host from which to assign an IP address to the Prilink unit. *Note: You will not be able to assign an IP address across routers or gateways, so this host must be connected to the same subnet as the Prilink unit.*

4. Open a command prompt. Enter the following to create an entry in the host's ARP table:

```
arp -s xxx.xxx.xxx.xxx XX-XX-XX-XX-XX-XX
                IP Address      MAC Address
```

5. Enter the following to open a Telnet connection on port 1:

```
telnet xxx.xxx.xxx.xxx 1
```

Connection will fail quickly, but the unit will temporarily assign itself the indicated IP address.

6. Enter the following to open a Telnet connection on port 9999:

```
telnet xxx.xxx.xxx.xxx 9999
```

Press enter within 5 seconds to go into Setup Mode.

7. Select Option 0 "Server". Enter the IP Address, Gateway and Netmask. *For Netmask, consult the table below to determine the number of bits for host part.*

Netmask	Host Bits	Netmask	Host Bits	Netmask	Host Bits	Netmask	Host Bits
128.0.0.0	31	255.128.0.0	23	255.255.128.0	15	255.255.255.128	7
192.0.0.0	30	255.192.0.0	22	255.255.192.0	14	255.255.255.192	6
224.0.0.0	29	255.224.0.0	21	255.255.224.0	13	255.255.255.224	5
240.0.0.0	28	255.240.0.0	20	255.255.240.0	12	255.255.255.240	4
248.0.0.0	27	255.248.0.0	19	255.255.248.0	11	255.255.255.248	3
252.0.0.0	26	255.252.0.0	18	255.255.252.0	10	255.255.255.252	2
254.0.0.0	25	255.254.0.0	17	255.255.254.0	9	255.255.255.254	1
255.0.0.0	24	255.255.0.0	16	255.255.255.0	8	255.255.255.255	0

8. Select Option 9 “Save Settings and Exit”.

Steps 6-8 can be used at any time to change the IP address of the unit, although repeating steps 1-8 will also work (and may be required if the original IP address has been forgotten).

Software

A Prilink base unit can be accessed by users running **PrilinkII application** software, which can be installed on any Windows based PC or server.

When installing PrilinkII application for the first time:

1. Log on to the Windows based PC with administrator privileges.
2. Execute the **prilinkii-8.0-setup.exe** installer that you downloaded when purchasing Prilink PRI Management System.

If an older version of PriLinkII software is installed:

1. Log on to the Windows based PC with administrator privileges.
2. Back up the following files (if they exist) from your `c:\prilinkii\` directory to a temporary directory:
 - `SiteConfig.fil`
 - `emSetup.fil`
 - `setup.fil`
3. Using control panel Add/Remove programs, remove all old version of PriLinkII software.
4. Execute the **prilinkii-8.0-setup.exe** installer that you downloaded when purchasing Prilink PRI Management System.

5. Copy the backed up files from step 2 into your `c:\prilinkii\` directory, overwriting existing versions.

If PrilinkII software has been installed properly, the application should be accessible through **Programs > Prilink > Prilink II**, or through the **Prilink II** desktop icon.



Once installed, start the PrilinkII application.

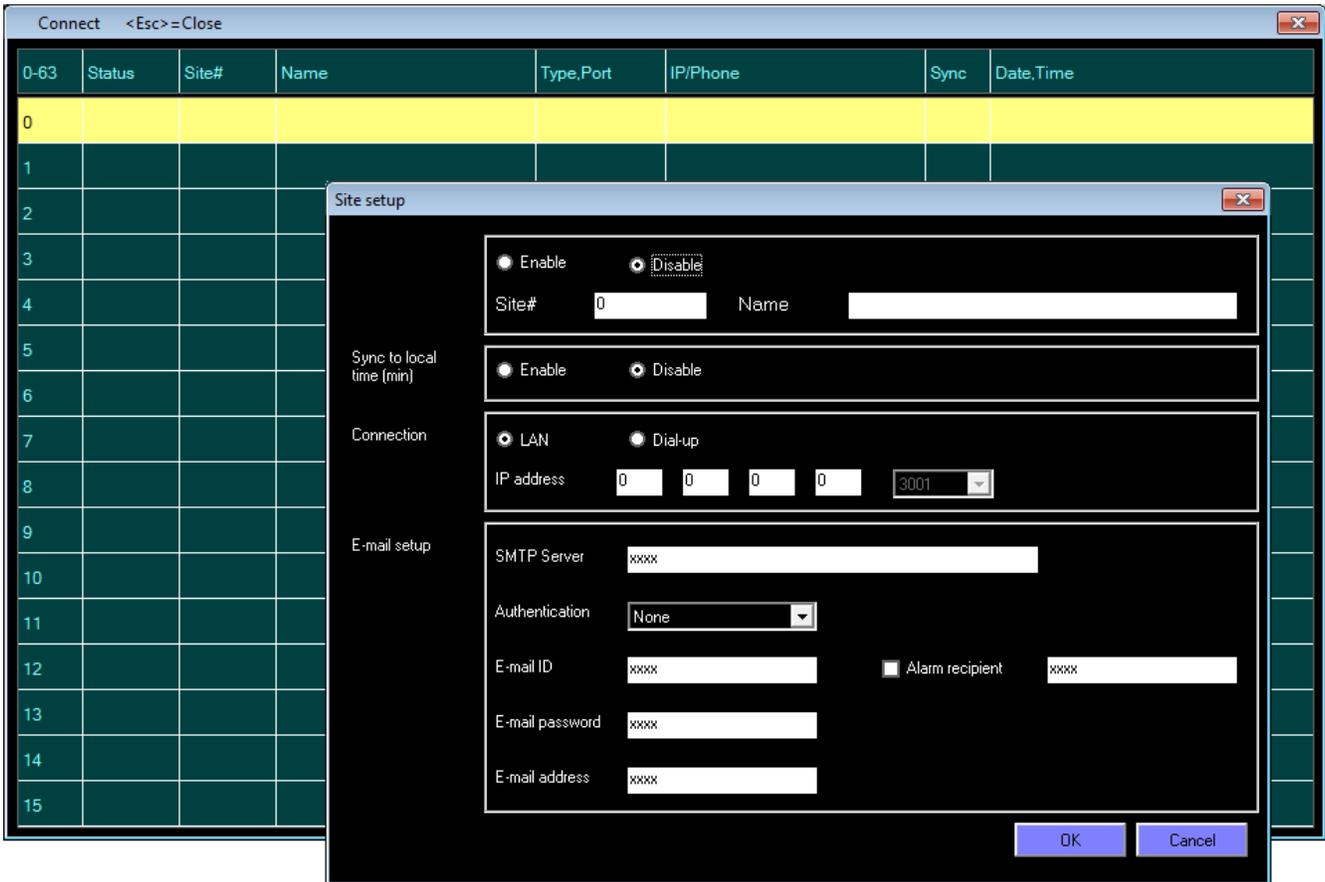
(Version and Software License Number)

The application can be navigated almost exclusively with the keyboard, using the **Esc** (back), **Enter**, **Arrow**, and **PageUp/PageDown** keys.

The *Main Application Menu Bar* is shown on the left, which is the access point to all of PrilinkII's rich set of features. The remainder of this guide will document each of these features in detail. The term **Site** is used throughout to describe a location where a Prilink hardware unit is installed.

Connection Setup

If you are connecting to a new site, your first step will be to create an entry for the site in the Connection window. To access the Connection window, select **Connect** on the Main Application Menu Bar. In the Connection window you can store and edit connection information for up to 64 different sites. Select the first empty row and select **Edit** to bring up the Connection Setup window:

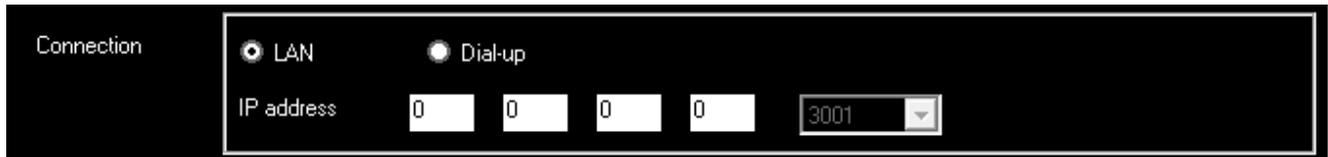


Connection Setup Window

The Connection Setup window contains several information fields and configuration options. Only **Site#**, **Name**, and **Connection** are required to establish connection. The remaining sections are used to enable and configure certain additional features. If you are creating a site for the first time, you may wish to leave the default values of **Sync to local time** and **Email setup** intact until you are ready to explore them further.



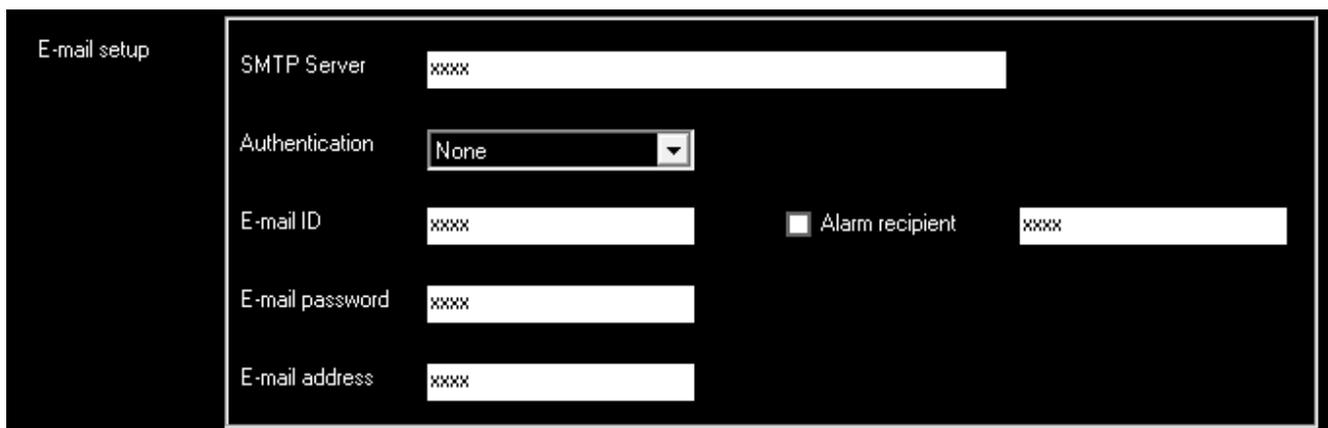
Choose **Enable** to instruct the PrilinkII application to automatically establish connection with this Site at program Start. **Site#** is a unique 3 or 4 digit number found on the front panel of the Prilink hardware unit. Connection will fail unless the correct site number has been specified. Finally, **Name** can be any meaningful name associated with the site.



If option *LAN* is selected, enter the static IP Address that was assigned to the Prilink hardware unit during installation. If option *Dial-up* is selected, enter the Phone number of the modem line that was connected to the Prilink hardware unit during installation. Also, select the COM port that your modem uses to dial out.



If the **Sync to local time (min)** option is enabled, then the internal clock in the Prilink hardware unit will synchronize itself to your PC clock while you are connected. This is to prevent any loss of accuracy in the internal clock over the lifespan of the unit. Only the minute value is used to perform the synchronization, so the time sync feature can be used with units in different time zones. Adjustments for Daylight Saving Time must be made manually (see [Unit Time Change](#)).



Email setup is used to allow the PrilinkII application to connect to a SMTP outgoing mail server for the purpose of sending out alerts to end users by email. **SMTP Server** can be identified by either

hostname or IP address. Unless **Authentication** is set to *None*, the PrilinkII application will use **E-mail ID** and **E-mail password** to authenticate itself when connecting to your SMTP server. **E-mail address** will be used as the sender address (note that some SMTP server require you to specify a valid sender address). Enter recipient email addresses in the **Alarm Recipient** field, with multiple addresses separated by commas.

Once Connection Setup is complete, choose **OK** to save settings.

Connecting to a Site

The PrilinkII application will automatically connect to all enabled sites on program start up.

The *Status* column will pass through the following stages as connection is established:



Date,Time
2016/04/18 12:11:55 0

Once connect status is reached, the hardware unit's internal clock will appear in the *Date,Time* column.

(If the Status column stalls at a setup stage and never reaches connect, verify that site settings have been entered correctly in the Site Setup window and contact Prilink support if problems persist.)

Site Setup

Once a connection to a Prilink hardware unit has been established, you can view and edit configuration settings on the unit by selecting **Setup** from the Main Application Menu Bar (*note that you must have an Admin software license to perform site setup*). Select **Site** from the menu at the right side of the Setup window to choose a unit to configure. Once a site is selected, the Setup window menu can be used to navigate through several options screens:

Cause Code	Group	Call Alarm	Traf_Dch Alarm	Email Alarm	Profile	Time Date	Reboot	Shut down
------------	-------	------------	----------------	-------------	---------	-----------	--------	-----------

A small blue dot ● indicates which options screen is currently being viewed. Each options screen is documented below in order of importance. If you are connecting to a new site for the first time, as a minimum you should take a few moments to set the correct profile. You can return to the other settings at a later time as you begin to familiarize yourself with the Prilink system.

Update / Backup / Restore

Every options screen has a menu that can be accessed by pressing the Enter key. All options screens share three common menu items that are described below:

- Update:** Once you are satisfied with changes made to an options screen, select **update** to apply changes to the Prilink unit. If you switch to a different options screen before choosing update, your changes will be discarded.
- Backup:** Save settings from the Prilink unit onto your PC. In combination with the **Restore** option, this can be used to revert unwanted changes in the future or to recover from a hardware unit failure.
- Restore:** Restore settings from your PC into a Prilink unit.

Setting the Profile

A Prilink hardware unit must be installed in accordance with one of the 5 “Profiles” listed in the chart appearing in section [Profile](#). The Profile indicates which monitoring ports are connected to independent D-channels, and which are connected to Primary and Secondary D-channels for an NFAS group. To set the profile, select **Profile** from the Setup window menu.

```
Profile:  Port 0  Port 1  Port 2  Port 3  Port 4  Port 5  Port 6  Port 7
         Pri_0  Pri_1  Pri_2  Pri_3  Pri_4  Pri_5  Pri_6  Pri_7
```

In the above example, all ports are set to monitor independent D-channels. Hit Enter to bring up the Profile menu and choose option **PRI Profile**.

Pri_0	Pri_1	Pri_2	Pri_3	Pri_4	Pri_5	Pri_6	Pri_7
Pri_0	Sec_0	Pri_1	Pri_2	Pri_3	Pri_4	Pri_5	Pri_6
Pri_0	Sec_0	Pri_1	Sec_1	Pri_2	Pri_3	Pri_4	Pri_5
Pri_0	Sec_0	Pri_1	Sec_1	Pri_2	Sec_2	Pri_3	Pri_4
Pri_0	Sec_0	Pri_1	Sec_1	Pri_2	Sec_2	Pri_3	Sec_3

Select from the 5 available profiles. For example, choosing the 2nd row above sets ports 0 – 1 to monitor a Primary and Secondary D-channel pair for an NFAS group, and sets the remaining ports to monitor independent D-channels.

Circuit ID & Normal/Reverse

A meaningful name (**Circuit ID**) should be assigned to identify the D-channel being monitored on each port. This will make several statistics displays easier to interpret.

Port	Circuit ID	Normal/Reverse
0	Carrier A Main	Normal
1	Insurance	Normal
2	Carrier B Main	Normal
3	dep 1 t1-1	Normal

Select a circuit from the table and choose **Circuit ID** from the profile menu.

Normal/Reverse setting for each circuit can also be set through the profile menu. The correct setting for each port depends on how the Prilink hardware unit was installed. A *Normal* connection is what is achieved when the IN port on the RJ45 T1/E1 Bridge Adapter is connected to your carrier, and the OUT port is connected to your premises equipment. If these connections are reversed for a particular port, then Prilink will misinterpret the direction of calls unless *Reverse* is selected for that port. An incorrect Normal/Reverse setting will result in inbound calls being reported as outbound calls, and vice versa. The easiest way to verify the Normal/Reverse setting for a particular port is to place a test outbound or inbound call, and then note the direction of the call as reported by Prilink in the [Live Call](#) window.

Site Info

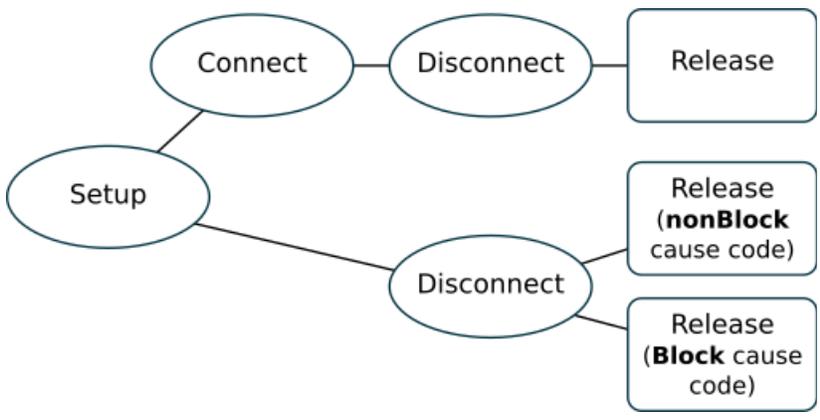
Site ID:	site:122 -4 ver:7.0
Info:	PRILINK SITE TEST 0

Site Info can be any meaningful name associated with the site. Hit Enter and select **Site Info** from the Profile menu.

Defining Blocked Calls

All call attempts are captured by Prilink regardless of completion, including blocked calls. The precise definition of a blocked call is to some degree configurable by the user. If a call goes unanswered, Prilink will extract the cause code from the disconnect or release message to determine the reason given for terminating the call. The call is categorized as blocked or not blocked depending on the value of the cause code.

The table below shows the three paths that a call may take, and the three categories into which all completed calls are categorized:

Call Path: Setup to Release	Conclusion	Abrev.
	Answered	Ans
	Not Answered (Non Block)	nAns(nBlk)
	Not Answered (Block)	nAns(Blk)

To manage block call definitions, select **Cause Code** from the Setup window menu.

0-127	Cause Code	NotAnswer
0		nonBlock
1	Unallocated number	nonBlock
2	No route to specified transit network	nonBlock
3	No route to destination	nonBlock
4	Vacant Area Code or Central Office Code	nonBlock
5		nonBlock
6	Channel unacceptable	nonBlock
7	Call awarded and being delivered in an established channel	nonBlock
8	Exemption	nonBlock

Cause code values range from 0 –127, although not all values in this range are used.

Classification:
Block or **nonBlock**

To toggle between **Block** and **nonBlock** for a particular cause code, simply select the row you wish to change and choose Block or nonBlock from the Cause Code menu. Note the following:

- Cause Codes 0-31 do not normally indicate blocking conditions, and by default are set to **nonBlock**.
- Cause codes 32-127 are more serious and by default are set to **Block**, and *cannot be changed by the user*.
- Each unanswered call is categorized as **nAns(nBlk)** or **nAns(Blk)** the moment it is captured by Prilink. If a subsequent change is made to the Cause code table, this will only affect the categorization of future calls and not historical ones.

Creating Traffic Groups

One of the most powerful features of the Prilink system is the ability to categorize network traffic into user-defined “traffic groups”, allowing you to monitor many diverse business applications and network facilities independently.

To create and edit traffic groups, select **Group** from the Setup window menu.

0-25	Grp#	Name	Exclude	PRI	Dir	Fac	SID	Ext#	Int#	Last update
0	0	All call	N	NA	NA	NA	NA	NA	NA	NA
1	1	All incoming	N	NA	in	NA	NA	NA	NA	NA
2	2	All outgoing	N	NA	out	NA	NA	NA	NA	NA
3	3	Business Application	N	3	NA	NA	NA	NA	NA	NA
4	4	Insurance	N	NA	NA	NA	NA	NA	2029 (L)	NA
5	4	Insurance	N	NA	NA	NA	NA	NA	2048 (L)	NA
6	4	Insurance	N	NA	NA	NA	NA	NA	2043 (L)	NA
7	4	Insurance	N	NA	NA	NA	NA	NA	7040 (L)	NA
8	4	Insurance	N	NA	NA	NA	NA	NA	6829 (L)	NA

The first three groups come pre-configured (Group 0 applies no filter criteria and captures all traffic, while Groups 1 and 2 capture only incoming and outgoing traffic respectively). However, the user can redefine these groups, and add up to 64 additional groups.

To create a new group, select the first empty (“not defined”) row and choose **Edit**.

0-25	Grp#	Name	Exclude	PRI
0	4	Insurance	N	NA
1	4	Insurance	N	NA
2	4	Insurance	N	NA
3	4	Insurance	N	NA
4	4	Insurance	N	NA
5				
6				
7				
8				
9				
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11				
12				
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20				
21				
22				
23				
24				
25				

A group definition consists of a list of criteria that specify which calls should be included (or excluded) from the group.

Select the first empty row to define your first criterion, and then add as many additional criteria as necessary to refine the group definition.

Edit Group Configuration

Group Name:

Exclude

PRI:

Direction:

Facility: call w/o facility FAC: call with facility SID: (0-32767 or blank)

External#: call w/o ext# 18 digits, 0-9,@ last digits first digits call with ext#

Internal#: call w/o int# 18 digits, 0-9,@ last digits first digits call with int#

Group Name

Group Name can be any meaningful name to associate with the group.

Exclude

Check **Exclude** if you want the group to exclude calls matching the criteria you are about to specify. Otherwise, the group will include calls matching the criteria you are about to specify.

PRI

Check **PRI** if you wish to include (or exclude) calls handled by a specific PRI (value between 0 and 7).

Direction

Check **Direction** if you wish to include (or exclude) calls by direction (in or out).

Facility call w/o facility FAC
 call with facility SID (0-32767 or blank)

Check **Facility** if you wish to include (or exclude) calls using a specific NSF route (Facility number (FAC) and Service Identifier (SID)). To match a call without route information, check *call w/o facility*.

External# call w/o ext# 18 digits, 0-9,@ last digits
 call with ext# first digits

Check **External#** if you wish to include (or exclude) calls involving a specific External/Public phone number. To match a call with no external number available (e.g. an incoming call with CLID not included), check *call w/o ext#*. Otherwise, check *call with ext#* and enter the phone number in the box provided (see [Number Search tips](#) below).

Internal# call w/o int# 18 digits, 0-9,@ last digits
 call with int# first digits

Check **Internal#** if you wish to include (or exclude) calls involving a specific Internal/Private phone number. To match a call with no internal number available (e.g. an outgoing call with CLID not included), check *call w/o int#*. Otherwise, check *call with int#* and enter the phone number in the box provided (see [Number Search tips](#) below).

Internal/External Number Search Tips

When specifying an Internal/External number, either for a group definition, a CDR alarm, or a statistics filter, the following conventions apply.

- Number can be anywhere from 1 to 18 digits.
- Using partial numbers is possible and will work. The number will be interpreted as a prefix (if *first digits* is checked) or a suffix (if *last digits* is checked)
- The “@” wildcard character can be used to match any single digit. For example, “43@@” with *last digits* checked will match any number whose last 4 digits begin with “43”.

Traffic Group Example

Example: Direct incoming calls on PRI 0 made to the extension range 416-234-4440 to 4469, excluding 4456.

This group can be created using 4 criteria: the first three to include the entire range 4440-4469, and the last to exclude 4456.

	Grp#	Name	Exclude	PRI	Dir	Fac	SID	Ext#	Int#
0	20	DID Example	N	0	in	NA	NA	NA	444@ (L)
1	20	DID Example	N	0	in	NA	NA	NA	445@ (L)
2	20	DID Example	N	0	in	NA	NA	NA	446@ (L)
3	20	DID Example	Y	0	in	NA	NA	NA	4456 (L)
4									
5									

Configuring Alarms

Prilink can be configured to generate alarms that notify users of unexpected or undesired network behaviours. The PrilinkII application must be running and connected to a unit when an alarm condition occurs for any action to take place. A description of the alarm will appear in the [Live Alarm](#) window, and an email containing the description can optionally be sent to notify selected recipients.

CDR (Call-By-Call) Alarms

CDR alarms are triggered on a call-by-call basis. Each incoming and outgoing call is checked against up to 32 user defined alarm conditions. To manage CDR alarms, select **Call Alarm** from the Setup window menu. Each row of the Call Alarm table can be used to store a CDR alarm. To create or modify a CDR alarm, select a row, hit Enter and choose **Edit**.

Alarm Name: 911 Call

Start Hour: 0

End Hour: 23

External#: 911 (18 digits, 0-9,@) last digits first digits

Internal#: (18 digits, 0-9,@) last digits first digits

Call Type: Ans

Call Time: > 1 min

Enter a name for the alarm.

Select **Start Hour** and **End Hour** to limit the time of day when this alarm can be triggered.

Check **External#** and/or **Internal#** to limit the alarm to calls involving specific Public and/or Private phone numbers (see [Number Search tips](#)).

Check **Call Type** to limit the alarm to calls achieving a specific conclusion: *Ans*, *nAns(non-Blk)*, or *nAns(block)*. Selecting *Ringin*g has the same effect as not checking **Call Type**, in that the alarm is triggered as soon as the call is attempted, regardless of how it concludes.

Check **Call Time** to limit the alarm to calls exceeding a specific duration (1 min – 179 min).

Traffic and D-channel Alarms

Traffic alarms are triggered by changes in call volume and B-channel utilization for each traffic group. D-channel alarms are triggered by poor signal quality or by the loss of a Primary D-channel or T1/E1. To manage Traffic and D-channel alarms, select **Traf_Dch Alarm** from the Setup window menu.

Group B-channel threshold:

The group threshold table on the left side of the screen indicates which traffic groups have B-channel thresholds enabled.

3_Tollfree TG21

Enable Disable

Threshold: 34

OK Cancel

To set a B-channel threshold for a traffic group, select the group row in the table, hit Enter and choose **Edit**.

In the Group B-channel threshold dialog box, choose **Enable**, select a threshold from the drop down menu, and hit OK.

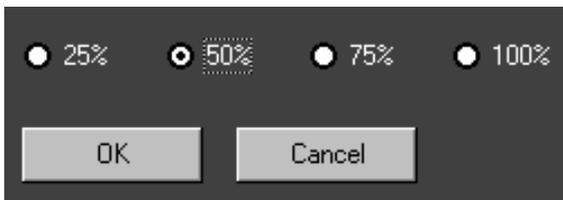
An alarm will be triggered immediately if the number of active B-channels in use by a traffic group is equal to or exceeds the threshold. Only one alarm per hour will be generated for each group.

Group blockage:

For each traffic group, an alarm will be triggered at the end of the hour if more than half of calls were blocked (see section [Defining Blocked Calls](#)). To prevent excessive false alarms during off-business hours, this alarm is suppressed if the total call volume during the hour was less than 100.

Group volume threshold:

For each traffic group, an alarm will be triggered at the end of the hour if the total call volume deviates significantly from the same hour on the same day of the previous week. More precisely, an alarm is generated if the percentage change in call volume is greater than the Group volume threshold.



The Group volume threshold is a setting that applies to all groups, and which can be adjusted by pressing Enter to bring up the menu and choosing **Group Vol Thres**.

To prevent excessive false alarms during off-business hours and holidays, this alarm is suppressed if the total call volume during the comparison hour was less than 100.

DCH message error:

For each D-channel, an alarm will be triggered at the end of the minute if the number of errors during the past 60 minutes exceeded 100. Errors indicate poor signal quality and that calls may be missed or improperly recorded.

DCH no message received over 24 hours:

For each D-channel, an alarm will be triggered at 1:00pm if no message has been received over the past 24 hours. This indicates either the loss of a D-channel or a problem with the interface between the D-channel and Prilink hardware unit.

DCH profile error:

An alarm will be triggered at 1:00pm if D-channel activity over the past 24 hours has been inconsistent with the Profile selected during user setup (see section [Setting the Profile](#)).

T/E1 idle:

For each T1/E1 circuit, an alarm will be triggered at the end of the hour if the T1/E1 is inactive, provided that the T1/E1 carried more than 100 calls during the same hour of the previous week. This is

intended to signal the potential loss of a T1/E1.

Automatic Alarm Email

Automatic Alarm Email ensures that users are notified of serious alarm conditions even when they are not monitoring the PrilinkII application. To utilize the email feature, you must have first entered details of your outgoing mail server, as well as the email addresses of alarm recipients, in the Connection setup window (see section [Connection Setup Window](#)).

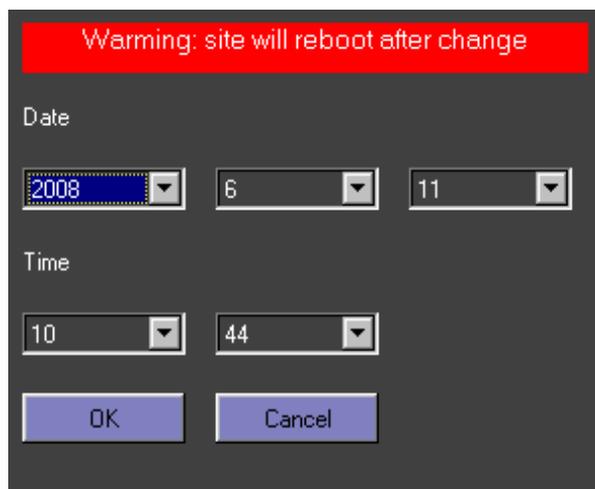
Not all alarms are serious enough to warrant an email notification, and the email alarm filter allows you to specify which alarms should trigger emails. To manage email alarm filter settings, select **Email Alarm** from the Setup window menu.

All Prilink alarms are listed in table format. Simply hit Enter or click on a row to toggle Email between *yes* and *no*.

0-110	Alarm ID	E-mail
0	CDR Alarm: 00	yes
1	CDR Alarm: 01	no
2	CDR Alarm: 02 not defined	no
3	CDR Alarm: 03 not defined	no
4	CDR Alarm: 04 not defined	no

Unit Time Change / Reboot / Shutdown

To adjust the internal clock on the Prilink hardware unit, select Time/Date from the Setup window menu.



Use the drop down menus to enter the new date and time, and hit **OK** to save the change. Note that your connection will drop as the unit reboots itself after the time change. Wait approx 30 seconds for the application to reconnect to the unit.

To reboot the Prilink hardware unit, select **Reboot** from the Setup window menu. Note that your

connection will drop as the unit reboots itself.

To prepare the Prilink hardware unit for shutdown, select **Shut down** from the Setup window menu. During normal operation, the status LED located at the front panel of the hardware unit will blink once per second. When the unit is ready for shutdown, the status LED will stop blinking. *Do not remove power from the hardware unit until the status LED has stopped blinking, as this may corrupt the data stored on the unit.*

Live Monitoring

Prilink includes several live monitoring features that can be accessed directly from the Main Application Menu Bar.

- **PRI** – provides a detailed summary of all PRIs monitored by Prilink for the past 64 days. The PRI window is continuously updated to give real-time statistics for the current day.
- **Traffic** – provides a detailed summary of all traffic groups for the past 64 days. The Traffic window is continuously updated to give real-time statistics for the current day.
- **Live Call** – provides live decoding of D-channel messages, allowing you to monitor the complete lifespan of a call in real-time.
- **Live Traffic** – combines all traffic groups for a site into a single real-time display. The display is continuously updated to reflect the last 60 minutes of group traffic.
- **Live Dch** – provides real-time diagnostic information for all D-channels monitored by Prilink, indicating signal quality and continuity.
- **Live Bch** – provides a graphical display of up to 64 T1/E1 circuits on all connected sites, indicating which B-channels are in use and the type of call each B-channel is carrying.
- **Alarm** – provides details on Prilink alarms as they are triggered in real-time (see section [Configuring Alarms](#)).

PRI

A PRI may consist of a single T1 controlled by a dedicated D-channel, or a group of up to 32 T1s controlled by a Primary and Secondary D-channel. The PRI window provides a detailed summary of all PRIs monitored by Prilink for the past 64 days, and is continuously updated to give real-time statistics for the current day. To access the PRI window, select **PRI** from the Main Application Menu Bar.

The current site on display is shown in the PRI window title bar. Select the **Site** button to switch

between connected sites.

The PRI window can be toggled between two modes; *Summary* and *Chart*.

Summary

Select **Summary** button from the PRI window menu to move to Summary mode. The date range covered in Summary mode can be a single day or the last 64 days. Press Enter to access the Summary menu and choose **64 day** or **1 day** to set date range. Choose **PRI** to change the current PRI on display.

The current PRI on display is shown at the top left of the screen.

PRI	(03)	
Date & Time	(00) Wed 2008/06/11	00:00:00 - 10:59:02
Pri-Dch	Port:6 Admin TG11 Pri	
Sec-Dch	Port:7 Admin TG11 Sec	

The date range on display appears below PRI.

Pri-Dch gives the physical port on the Prilink hardware unit that is monitoring the Primary D-channel. *Sec-Dch* does the same for the Secondary D-channel, if available.

	I-Frame	S-Frame	U-Frame	Error
Pri-Dch in	8331	8922	1	0
Pri-Dch out	6132	11163	1	0
Sec-Dch in	0	3949	7	0
Sec-Dch out	1	3948	3	0

Q.921 frame counts are reported for the Primary D-channel (and Secondary, if available) in both the Transmit (*out*) and Receive (*in*) directions.

A healthy D-channel should have S-frames incrementing in both directions and an Error count at 0 (or close to 0 and not incrementing). I-frames will increment only if the D-channel is active and handling calls (a backup D-channel will not have I-frames).

	Incoming		Outgoing	
	Ans call	Bch used	Ans call	Bch used
T1: 0	0	0	0	0
T1: 1	0	0	99	11
T1: 2	0	0	146	14
T1: 3	0	0	78	9
T1: 4	0	0	110	13
T1: 5	0	0	157	20
T1: 6	0	0	77	10

T1 utilization is reported for each active T1 in the current PRI, with incoming and outgoing statistics reported separately. *Ans call* gives the number of answered calls carried on the T1, and *Bch used* gives the number of B-channels used.

	Peak hr	Peak bch	Peak usage(s)	Live bch
In & Out	9	41	107750	40
Incoming	8	5	6987	4
Outgoing	9	40	101858	36

If only a single day is on display, peak hour statistics for the day are reported at the bottom of the PRI window.

This includes all traffic (*In & Out*), all *Incoming*, and all *Outgoing* traffic on the current PRI.

Peak hr – hour of the day (0-23) during which total T1 usage was highest.

Peak bch – highest number of B-channels simultaneously in use during the peak hour.

Peak usage – total T1 usage during the peak hour (measured in seconds).

Live bch – only relevant if the date on display is the present day, and is updated in real-time to give the number of B-channels currently in use.

Cause code	Incoming		Outgoing	
	Ans	Not ans	Ans	Not ans
C.C. 1	0	0	0	1
C.C. 16	38	1	762	72
C.C. 17	95	0	220	21
C.C. 18	0	0	0	1
C.C. 19	0	0	0	19
C.C. 28	0	0	5	14
C.C. 31	0	0	1	19
Total	133 (99.25%)	1 (0.75%)	988 (84.30%)	184 (15.70%)

All incoming and outgoing call attempts (both answered and not answered) are broken down by cause code. The cause code indicates the reason for call termination (see section [Defining Blocked Calls](#)).

Chart

Select **Chart** button from the PRI window menu to move to Chart mode, which displays PRI statistics for a 32 day period. Press Enter to access the Chart menu and switch between incoming traffic only (**IN**), outgoing traffic only (**OUT**), and total traffic (**IN_OUT**).

PRI: [03] port:6 port:7 Allstream LD Admin TG11 Pri							
Date 0-63	MMDD	Ans	nAns cc 0-31	nAns cc 32-127	Peak Hr	Bch Usage(s)	Erlang B
0	06 11 Wed	142	1	0	10	006 7801	0.02
1	06 10 Tue	557	6	0	10	006 10322	0.05
2	06 09 Mon	402	3	0	15	006 11661	0.09
3	06 08 Sun	181	1	0	10	006 7445	0.01

The current PRI on display is shown at the top left of the screen. Press Enter to access the Chart menu and select **PRI** to change PRI on display.

Ans – total number of answered calls

nAns cc 0-31 – total number of unanswered calls with cause code between 0 and 31

nAns cc 32-127 – total number of unanswered calls with cause code between 32 and 127

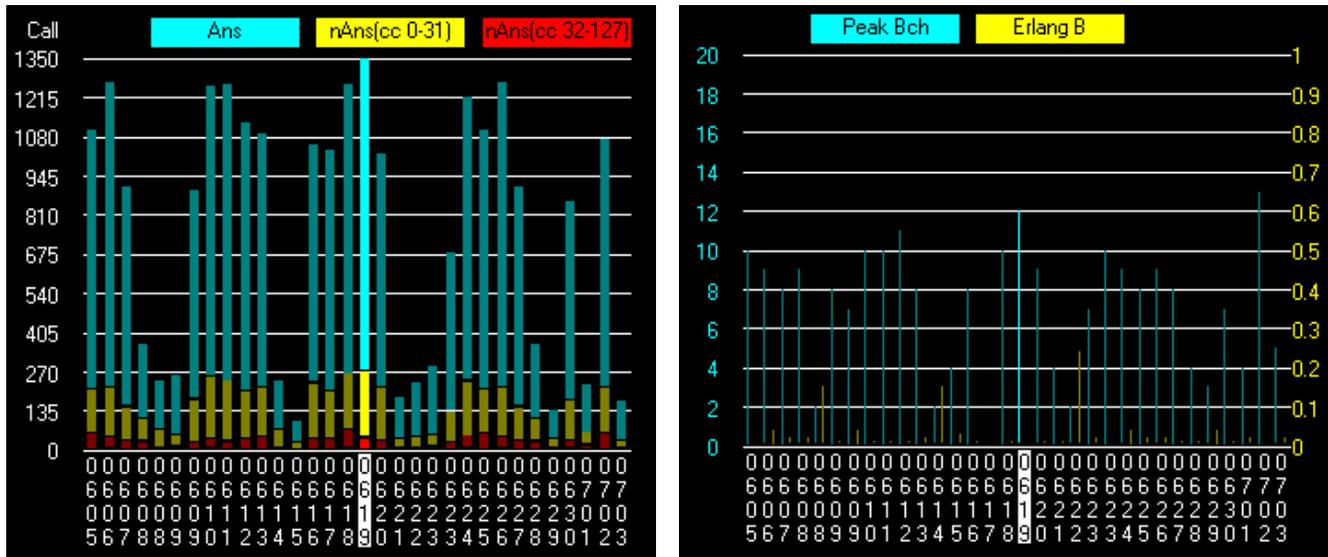
Peak hr – hour of the day (0-23) during which total T1 usage was highest

Peak bch – highest number of B-channels simultaneously in use during the peak hour

Peak usage – total T1 usage during the peak hour (measured in seconds)

Erlang B – Grade of Service (GoS) during the peak hour using the Erlang B formula.

The above traffic data also appears in graph form at the right side of the screen for quick visual inspection:



Ans, *nAns(cc 0-31)*, and *nAns(cc 32-127)* columns are stacked to illustrate total call volume per day. The 32 days appearing on the x-axis of each graph are labeled using MMDD in vertical format. Use the arrow keys to move forwards and backwards through the 64-day record.

There are two types of scales that can be used for the y-axis:

Auto – Each time the PRI on display is changed, the y-scale adjusts itself to the maximum value of the current PRI.

Max – The same y-scale is used for all PRI, based upon the maximum value over all PRI. This is useful when comparing the graphs of two different PRIs.

Press Enter to access the Chart menu and switch between **Auto** / **Max Y-axis**.

Traffic

Up to 64 user-defined traffic groups can be created to monitor specific types of network traffic (see section [Creating Traffic Groups](#)). The Traffic window provides a detailed summary of all traffic groups for the past 64 days, and is continuously updated to give real-time statistics for the current day. To access the Traffic window, select **Traffic** from the Main Application Menu Bar.

The current site on display is shown in the Traffic window title bar. Select the **Site** button to switch between connected sites.

The Traffic window can be toggled between two modes; *1-day* and *64-day*. *1-day* mode provides hourly statistics for a single day, while *64-day* mode provides daily statistics for a 64-day period.

In both 1-day and 64-day mode, the current Group on display is shown at the top left of the screen.

Group	(00) All call
Date	(00) Tue 2016/04/19
Time	00:00:00 - 12:10:21 Live call 93

Group	(00) All call					
Date 0-63	MMDD	Ans	nAns (non-Blk)	nAns (block)	Peak Hr Bch Usage(s)	Erlang B
0	04 19 Tue	6063	595	352	11 122 374170	0.01

Both 1-day and 64-day mode share common menu items (press Enter to access menu):

Group – Change the current group on display

Auto Y-axis – Each time the Group on display is changed, the chart y-scale adjusts itself to the maximum value of the current Group.

Max Y-axis – The same chart y-scale is used for all Groups, based upon the maximum value over all Groups. This is useful when comparing charts of two different traffic groups.

1-Day

Select **1-Day** button from the Traffic window menu to move to 1-Day mode.

Group	(00) All call				
Date & Time	(01) Tue	2008/06/10	00:00:00 - 23:59:59	Live call 6	
Hour	Ans	nAns (non-Blk)	nAns (block)	Peak Bch	Hour usage(s)
0	68	2	0	9	13785
1	22	2	0	6	5304
2	10	0	0	3	1502
3	19	0	0	4	2853
4	8	1	0	4	1494
5	19	1	0	4	1824
6	46	1	1	4	6020
7	226	18	3	22	45535
8	492	30	15	56	124764

The date on display shown along side the time period for which data is available. Use the + (plus) and – (minus) keys to move forward / backward one day.

For the present day, *Live call* gives the number of calls in progress.

Ans – total answered calls

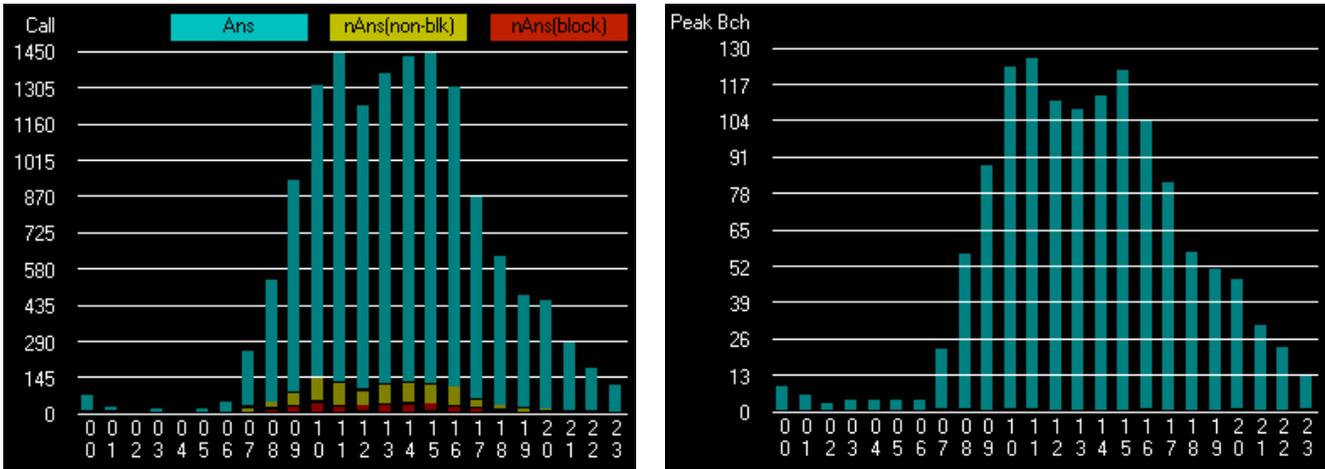
nAns(non-Blk) – total not answered (non block) calls (see section [Defining Blocked Calls](#))

nAns(block) – total not answered (block) calls

Peak bch – highest number of B-channels simultaneously in use

Hour usage(s) – total T1 usage for this group (measured in seconds).

The above traffic data also appears in chart form at the right side of the screen for quick visual inspection:



Ans, *nAns(non-blk)*, and *nAns(block)* columns are stacked to illustrate total call volume per hour. The 24 hours appearing on the x-axis of each graph are labeled from 00-23 in vertical format. Use the arrow keys to move forward and backward through the 24-hour record.

64-Day

Select **64-Day** button from the Traffic window menu to move to 64-Day mode.

Group:(00) All call								
Date	MMDD	Ans	nAns (non-Blk)	nAns (block)	Peak Hr	Bch	Usage(s)	Erlang B
1	06 10 Tue	13339	789	311	11	126	378203	0.01
2	06 09 Mon	9563	530	163	14	127	349922	0.00
3	06 08 Sun	4036	229	62	10	121	326099	0.00

Each row represents a day identified by the *MMDD* column.

Ans – total number of answered calls

nAns(non-Blk) – total not answered (non block) calls (see section [Defining Blocked Calls](#))

nAns(block) – total not answered (block) calls

Peak hr – hour of the day (0-23) during which total T1 usage for this group was highest

Peak bch – highest number of B-channels simultaneously in use by this group during the peak hr

Peak usage - total T1 usage for this group during the peak hour (measured in seconds)

Erlang B – Grade of Service (GoS) during the peak hour using the Erlang B formula.

The above traffic data also appears in graph form at the right side of the screen for quick visual inspection:

involve both incoming and outgoing D-channel messages).

0-256	Dir	Type	SetUp	Connect	Release	External#	Internal#	Name	PRI	T/E1	BCH
0	in	Ans	11:24:16	11:24:17		418924■■■■	41■■■■		1	9	12
1	in	Ans	11:24:18	11:24:18		905816■■■■	40■■■■		1	9	13
2	in	Ans	11:24:18	11:24:18		780473■■■■	49■■■■		1	9	14
3	out	ringing	11:24:20			1519568■■■■	905816■■■■		3	4	8
4	out	ringing	11:24:21			1905665■■■■	905474■■■■	■■■■, Dana	3	4	9

Live CDRs are displayed in the lower half of the Live Call screen. The Live Call window can fill quite rapidly in high call volume scenarios; the **Stop** and **Restart** functions are provided to freeze the Live Call window and then resume when needed (press Enter to access Live Call menu and choose Stop / Restart)

- Dir – direction of the call
- Type – ringing, answered, not answered (non-blk), or not answered (block)
- Setup – time that call establishment began (first setup message received)
- Connect – time that connection was established
- Release – time that call was released.

Other important information fields can be revealed by using the scroll bar at the bottom of the window. In particular, cause code and cause location (see section [Defining Blocked Calls](#)).

Filtering

In most testing and troubleshooting scenarios, you will want to trap a CDR for a specific call without being hampered by the large number of calls filling the Live Call window. Press Enter to access the Live Call menu and choose **Filter**.



The Filter dialog can be used to filter out all calls except those matching specific criteria:

Check the *External#* checkbox if you wish to include only calls from or to a specific External/Public phone number.

Check the *Internal#* checkbox if you wish to include only calls from or to a specific Internal phone number/extension. (see section [Internal/External Number Search Tips](#)).

Live Traffic

The Live Traffic window combines all traffic groups for a site into a single real time display. The display is continuously updated to reflect the last 60 minutes of group traffic. By contrast, the Traffic window (see section [Traffic](#)) will display one group at a time, providing both real-time data and 64 days of historical data.

To access the Live Traffic window, select **Live Traffic** from the Main Application Menu Bar. The current site on display is shown in the Live Traffic window title bar. Select the **Site** button to switch between connected sites.

Local Time of the current site indicates the end of the 60min interval shown

0-63	Group	Last 60min Traffic Local Time: 15:08:27	Answer	Not Answer (non-block)	Not Answer (block)	Live B-ch (Threshold)	Erlang B (hour: 14)
0	All call		1435	57	54	90 (na)	0.01
1	All incoming		1000	9	34	70 (na)	0.01
2	All outgoing		435	48	20	20 (8) ■	0.01
3	Kingston		9	1	0	0 (na)	0.03
4	Insurance		185	0	0	22 (na)	0.02
5	Executive-DID		22	1	0	0 (na)	0.08

B-ch Threshold Alarm

Answer – total answered calls

nAns(non-Blk) – total not answered (non block) calls (see section [Defining Blocked Calls](#))

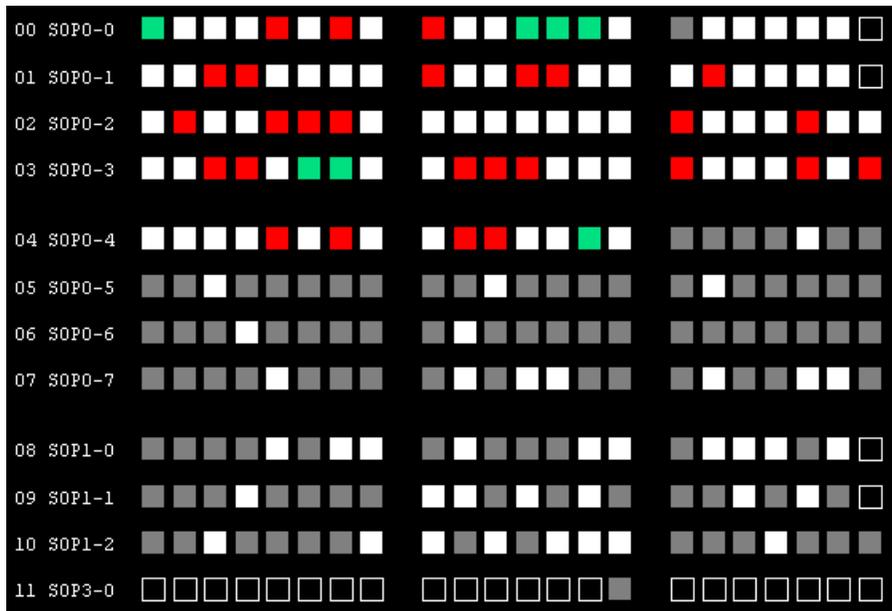
nAns(block) – total not answered (block) calls

Live bch – number of B-channels currently in use by the group. The number appearing in brackets is the B-channel threshold for the group (the B-channel threshold for each group can be configured by the user, see section [Traffic and D-channel Alarms](#)). If Live bch ever exceeds the threshold set for the group, a red square will appear to flag the group.

Erlang B – Grade of Service (GoS) during the peak hour using the Erlang B formula.

Live B-ch

The Live Bch window is a real-time display of up to 64 T1/E1 circuits belonging to up to 8 connected sites. Each T1/E1 is represented graphically as a row of 24/32 squares corresponding to individual channels. A color scheme is applied to each square to indicate B-channels that are currently carrying calls, B-channels that are idle, and B-channels that have never been in use during the day (the Live Bch window resets everyday at 12:00AM). Users can easily add to the color scheme to further indicate which B-channels are carrying calls belonging to specific traffic groups (for more on traffic groups see section [Creating Traffic Groups](#)).



To the left of each T1/E1 row is a label of the form

SxPy-z

E.g. **SOP0-1**

x indicates the site that the row belongs to (site names appear at the bottom of the Live Bch window).

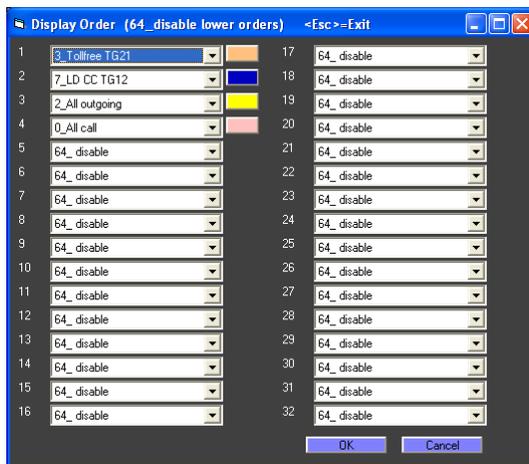
Py indicates the PRI that the row belongs to.

z identifies the T1/E1 amongst others in the same PRI.

Idle B-channels appear colored in gray, unused B-channels in black, and active B-channels in white. This simple color scheme can be augmented by assigning additional colors to active B-channel that are carrying calls from a specific traffic group.

The color legend at the right of the screen indicates which colors are assigned to which traffic groups. The first number appearing to the right of each group name is the number of active calls in the group. The second number appearing in brackets is the B-channel threshold for the group (if a threshold has been set by the user, see section [Traffic and D-channel Alarms](#)). The number of active B-channels will be highlighted in red if it equals or exceeds the threshold set for the group.

SO 03 EGD BILL	23 ()
SO 04 EGD SMELL	0 ()
SO 17 DEEHS Rent	7 ()
SO 18 DEEHS SALE	27 (20)
SO 19 DEEHS SALE	14 ()



To edit the color legend, hit the **Group Color** button and select a site. Choose a color for selected groups using the drop down menus. Note that the order in which groups appear is important: If a call falls into more than one group, the color will be determined by the group that appears higher in the display order.

Selecting Group 64 from a drop down menu will disable all group colors lower in the display order.

Hit the **Trunk 16/64** button to toggle between 16 T1/E1 and 64 T1/E1 display.

If connected to multiple sites, use the **Site Order** button to choose which site is displayed first in the Live Bch window. This is useful if the total number of T1/E1 circuits across all sites exceeds 64.

Alarm

Selecting **Alarm** from the Main Application Menu Bar will bring up the Alarm window showing the most recent alarms that were captured by the Prilink unit.

The columns appearing in the Alarm window are as follows:

Date, Time – Date and time when Alarm was generated

Live – Yes indicates alarm still active, No indicates alarm is closed.

Alarm – A description of the alarm including site number, alarm type, and alarm details.

	Date,Time	Live	Alarm
0	2005/07/16 09:29:02	No	110_simulation,CDR ,3,PRI-0 T1-5 Bch-23,ext#: 9056412540,int#: 9056854841,
1	2005/07/16 12:00:23	Yes	110_simulation,Grp_Bch ,Group:1,Threshold: 1
2	2005/07/16 12:01:57	Yes	110_simulation,Grp_Bch ,Group:2,Threshold: 1
3	2005/07/16 12:02:06	Yes	110_simulation,CDR ,3,PRI-0 T1-5 Bch-20,ext#: 18882548828,int#: 9056853558,
4	2005/07/16 12:02:11	Yes	110_simulation,CDR ,3,PRI-0 T1-5 Bch-19,ext#: 9056507143,int#: 9056413037,
5	2005/07/16 12:02:18	No	110_simulation,CDR ,3,PRI-0 T1-0 Bch-0,ext#: 4164911497,int#: 4771,
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Site# and Name	Alarm Type	PRI, T1 and B-ch handling call	External number	Internal number
110_simulation,CDR	, 3,PRI-0 T1-0 Bch-0,	ext# 4164911497,	int# 4771,	

Analytics (Statistics)

To access the full 4 years of historical data available for a site, select **Statistics** from the Main Application Menu Bar. Select the **Site** button from the right side of the Statistics window to switch between connected sites. There are 7 types of historical data available for statistical analysis and reporting, corresponding to 7 buttons along the right side of the Statistics window:

Internal Number (*Int*), Route, Group, CDR, T1 (*T1_B_ch*), D-Channel (*D_ch*), and Alarm.

rec	filter	Site	Date	Hr	Pri	Dir	Int.#	Ans	NAns(nBlk)	NAns(Blk)	BehMax	BehMin	TdTime(s)
1													
2													
3													
4													
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													

Traffic analysis can be conducted by using the built in Prilink Traffic Analyzer and data can also be exported to CSV files for further processing using 3rd party tools. The next section describes these methods for each traffic type.

Using Prilink Traffic Analyzer

With the built in Prilink Traffic Analyzer, traffic analysis can be broken down into the following common steps:

1. **Filter Setup:**
 - Choose a date range to analyze, up to 100 days in length.
 - Set the Traffic Filter, to limit the data to specific traffic Groups, Routes, Internal Numbers, D-channels, etc..
2. **Run Traffic Analyzer:** The Analyzer will calculate, summarize, and display various call statistics. You can export the Analyzer Summary data to a CSV file for further analysis.

Group Traffic Analysis

If your business provides a number of different applications, such as Sales and Support Call Centres, and you have created an application specific Group for each of these, you can perform traffic analysis on these application with the Traffic Analyzer.

Traffic Analyzer data allows you to quickly identify:

- Metrics such as the highest call volume applications
- Channel capacity issues experienced by these applications during the peak busy hour trunk traffic
- Any applications with an unusually high percentage of unanswered calls

In the Statistics window, perform the following steps to analyze Group traffic:

1. Select **Group** from the right side of the Statistics Window.
2. Press Enter to access the Group Statistics menu and choose **Reset Filter** to erase any prior filters and prior Group records.
3. Choose **Add Filter** from the Group Statistics menu and select a start and end date for analysis. (Note: **ok** beside a date indicates data is available on your PC hard drive. The application will retrieve data from the Prilink unit if it is not already available on your PC.)
4. Next you will be prompted to select a traffic group to analyze, or you may choose **All Groups**.

Once group is selected, wait for data to be retrieved (this will be much faster if all data in your date range is available on your PC hard drive and doesn't require download from the Prilink unit). To incorporate data from more than one specific group in the same analysis period, simply choose **Add Filter** again from the Group Statistics menu.

Records

Each record represents one hour of traffic for a particular group:

	Site	Date	Hr	Group	Ans	NAns(nBlk)	NAns(Blk)	BehMax	BehMin	TtlTime(s)
0	122	2016/04/17	0	0_All call	60	2	0	9	0	10495
1	122	2016/04/17	0	1_All incoming	40	0	0	7	0	7258
2	122	2016/04/17	0	2_All outgoing	20	2	0	3	0	3237
3	122	2016/04/17	0	7_ERS	7	0	0	3	0	1319
4	122	2016/04/17	0	13_Type A Links	10	1	0	2	0	2716
5	122	2016/04/17	0	14_Inwats	6	0	0	2	0	1248
6	122	2016/04/17	0	15_FX	29	0	0	6	0	5515
7	122	2016/04/17	0	16_Local Comparison	34	1	0	5	0	5409

Fields are summarized below:

- Site** Site number of the Prilink unit.
- Date** Date in year/month/day format.
- Hr** Hour in 24 hr format (e.g. '2' indicates 2:00AM – 3:00AM).
- Group** Traffic group number and name.
- Ans** The total number of answered calls for this group during the hour.
- nAns(nBlk)** The total number of not answered (non-block) calls for this group during the hour.
- nAns(Blk)** The total number of not answered (block) calls for this group during the hour.
- BchMax** The maximum simultaneous B-channels in use by this group during the hour.
- BchMin** The minimum simultaneous B-channels in use by this group during the hour.
- TtdTime(s)** The total amount of B-channel usage in seconds for this group during the hour.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to c:\prilinkii\Grp.txt.

Summary

Press Enter and choose **Summary** to summarize data for each group over the full date range selected:

Group Date: 2016/ 4/17 - 2016/ 4/17(1D) Hr: 0-23 Filter: 1 ID: 17 (Max 100000) Record: 319 (Max 500000) Analyzed: 319						
Merge= NA Volume= NA NAns%= NA ID=17						
ID		Ans	NAns(nBlk)	NAns(Blk)	MaxBCh	1st time
0	Site= 12 Unit= 2 Group=0_All call	15632	799	476	109	2016/04/17 09
1	Site= 12 Unit= 2 Group=1_All incoming	10899	224	65	89	2016/04/17 09
2	Site= 12 Unit= 2 Group=2_All outgoing	4733	575	411	36	2016/04/17 15
3	Site= 12 Unit= 2 Group=3_Kingston	72	22	2	3	2016/04/17 13
4	Site= 12 Unit= 2 Group=4_Insurance	1723	4	0	31	2016/04/17 11
5	Site= 12 Unit= 2 Group=5_Executive-DID	223	7	0	4	2016/04/17 09
6	Site= 12 Unit= 2 Group=6_Executive-Fax	658	25	79	8	2016/04/17 21
7	Site= 12 Unit= 2 Group=7_ERS	833	28	0	12	2016/04/17 16
8	Site= 12 Unit= 2 Group=8_Sales-CorpJoin	60	1	0	3	2016/04/17 12
9	Site= 12 Unit= 2 Group=9_Sales-TeleMktg	35	1	0	3	2016/04/17 10
10	Site= 12 Unit= 2 Group=10_Marketing-Promos	39	2	0	3	2016/04/17 19
11	Site= 12 Unit= 2 Group=11_MemberServices	3327	6	0	42	2016/04/17 09
12	Site= 12 Unit= 2 Group=12_Ins-Ovfl	1	0	0	1	2016/04/17 18
13	Site= 12 Unit= 2 Group=13_Type A Links	1390	132	71	7	2016/04/17 09
14	Site= 12 Unit= 2 Group=14_Inwats	3492	44	0	40	2016/04/17 09

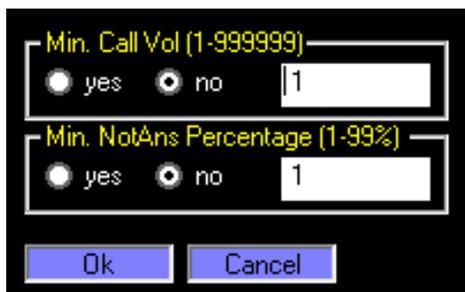
The fields displayed are summarized below:

ID	Identifies the Prilink unit, group number and name
Ans	The total number of answered calls for this group during the full date range.
nAns(nBlk)	The total number of not answered (non-block) calls for this group during the full date range.
nAns(Blk)	The total number of not answered (block) calls for this group during the full date range.
MaxBch	The maximum simultaneous B-channels in use by this group during the full date range.
1st Time	The date and hour during which MaxBCh was first reached.
#day	The total number of days in which MaxBCh was reached.
#hour	The total number of hours in which MaxBCh was reached.
Mode	The daily maximum B-channel value that was reached most frequently during the full date range.
#day	The total number of days in which Mode was reached.
#hour	The total number of hours in which Mode was reached.
MinBch	The minimum simultaneous B-channels in use by this group during the full date range.
TtlTime(s)	The total amount of B-channel usage in seconds for this group during the full date range.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\GrpSum.txt`.

Analyzer

Press Enter and choose **Analyzer** to view a visual representation of group traffic over the date range selected. This will bring up the Traffic Criteria dialog, which provides an opportunity to limit displayed groups:

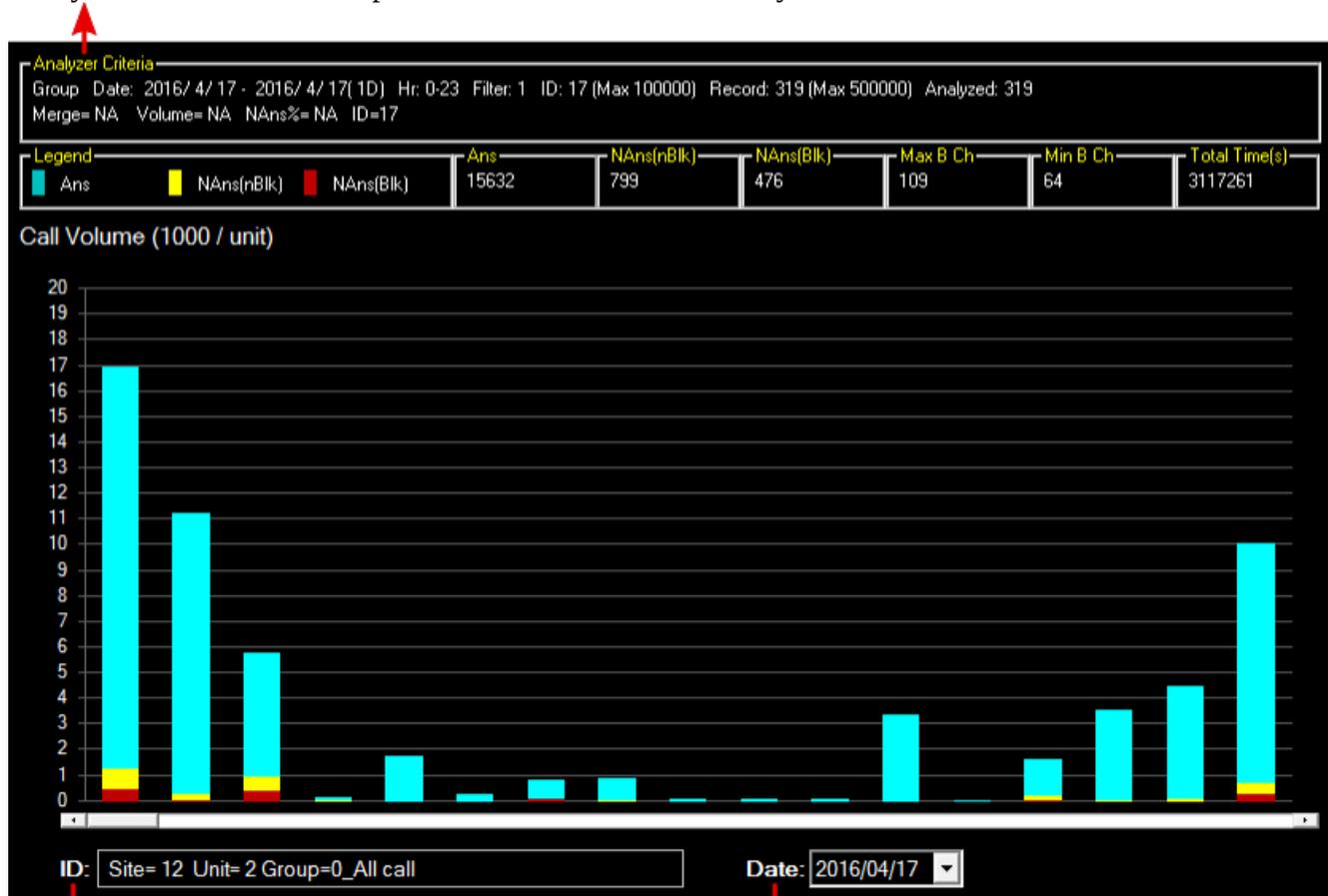


Min. Call Vol: Select *yes* to limit displayed results to groups reaching a minimum number of totals calls, entered in the corresponding text box (1-999999). Select *no* otherwise.

Min. NotAns %: Select *yes* to limit displayed results to groups with a minimum percentage of calls not answered, entered in the corresponding text box (1-99%). Select *no* otherwise.

Hit **Ok** to view Analyzer results:

Analyzer Criteria shows the parameters used to run this analysis.



Current Group (ID) Selected

Current Date selected

The majority of the Analyzer Window is taken up by the *Chart Display Area*. The chart can be used to display all groups (all IDs) for a specific day, or all dates for a specific group. In either case, the horizontal scroll bar along the x-axis can be used to highlight each individual bar, and the numeric values for the highlighted bar are displayed beside the chart legend.

The Analyzer menu can be accessed by pressing Enter:

- + Y-axis scale /** Increase / decrease the vertical scale of the Chart Display Area. You can also
- Y-axis scale** use the plus (+) and minus (–) keys to adjust scale.
- Change X-axis** Choose **ID** to display all groups for a specific day.
Choose **Date** to display all days for a specific group.
- Change Chart Type** Choose **Call Volume** to chart answered, abandoned and blocked calls.
Choose **Max / Min Bch** to chart maximum and minimum simultaneous calls.
- Toggle Stack** Stack or separate the colored bars in the Chart Display Area.

Summary	View summary (described in the previous section Summary)
Export	Save current chart data to file (under c:\prilinkII\GrpGraphData.txt)

Route (NSF) Traffic Analysis

Some public networks use Network-Specific Facilities (NSF) for traffic control. Prilink automatically measures NSF call traffic data and statistics for each combination of Facility Number (FAC) and Service Identifier (SID).

Similar to traffic Groups, Prilink allows you to quickly identify any issues or metrics associated with a particular Route (FAC/SID combination). In this section we will perform a similar analysis on Routes as we did for traffic Groups (see section [Group Traffic Analysis](#)). Since traffic analysis involves common steps, for brevity only the differences will be highlighted.

In the Statistics window, perform the following steps to analyze Route traffic:

1. Select **Route** from the right side of the Statistics Window.
2. Press Enter to access the Route Statistics menu and choose **Reset Filter** to erase any prior filters and prior Route records.
3. Choose **Add Filter** from the Route Statistics menu and select a start and end date for analysis.
4. Next you will be prompted to filter by route:

PRI: Select yes to limit analysis to calls on a specific PRI circuit. Select no to include all PRI circuits. *IMPORTANT: The PRI# in the drop-down box refers to the number designation of the PRI Profile, not the Monitor Port that the Primary D-Channel is physically connected to. Refer to section [Setting the Profile](#).*

Dir: Select yes to limit analysis to calls in a specific direction (*in* for incoming calls, *out* for outgoing calls). Select no to include both directions.

Fac: Select yes to limit analysis to calls on a specific Facility number (0-31). Select no to include all Facility numbers.

SID: Select yes to limit analysis to calls on a specific SID (0-32767). Select no to include all SIDs.

Hit **Ok** and wait for data to be retrieved. To incorporate data from more than one specific route in the same analysis period, simply choose **Add Filter** again from the Route Statistics menu.

Records

Each record represents one hour of either inbound or outbound traffic for a particular route. The fields displayed are summarized below:

Site	Site number of the Prilink unit.
Date	Date in year/month/day format.
Hr	Hour in 24 hr format (e.g. '2' indicates 2:00AM – 3:00AM).
PRI	PRI profile number (0 – 7).
Dir	Direction (inbound or outbound).
FAC	Facility number.
SID	Service identifier.
Ans	The total number of answered calls for this route during the hour.
nAns(nBlk)	The total number of not answered (non-block) calls for this route during the hour.
nAns(Blk)	The total number of not answered (block) calls for this route during the hour.
BchMax	The maximum simultaneous B-channels in use by this route during the hour.
BchMin	The minimum simultaneous B-channels in use by this route during the hour.
TtlTime(s)	The total amount of B-channel usage in seconds for this route during the hour.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\Rou.txt`.

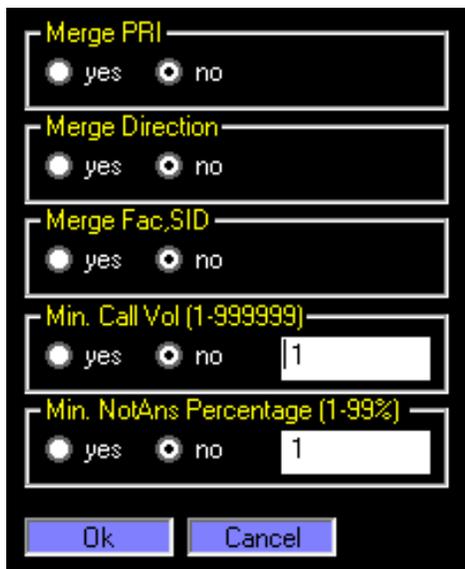
Summary

Press Enter and choose **Summary** to summarize data for each route over the full date range selected. The fields displayed are identical to those provided for traffic Groups (see section [Group Summary](#)), except that ID identifies a unique combination of PRI, FAC, SID and direction.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\RouSum.txt`.

Analyzer

Press Enter and choose **Analyzer** to view a visual representation of route traffic over the date range selected. This will bring up the Traffic Criteria dialog, which provides an opportunity to both merge and limit displayed routes:



Merge PRI: Select *yes* to merge data that differ only by PRI circuit.

Merge Direction: Select *yes* to merge data that differ only by call direction.

Merge Fac,SID: Select *yes* to merge data from the other Facilities, and Service Identifiers.

Min. Call Vol: Select *yes* to limit displayed results to routes reaching a minimum number of totals calls, entered in the corresponding text box (1-999999). Select *no* otherwise.

Min. NotAns %: Select *yes* to limit displayed results to routes with a minimum percentage of calls not answered, entered in the corresponding text box (1-99%). Select *no* otherwise.

Hit **Ok** to view Analyzer results. The Analyzer Window displayed is identical to the one provided for traffic Groups (see section [Group Analyzer](#)), except each vertical bar in the Chart Display Area corresponds to a specific Route instead of a Group.

Press Enter and choose **Export** to save current chart data to file (under `c:\prilinkII\RouGraphData.txt`).

Internal Number Traffic Analysis

Internal numbers are the extension numbers inside your PBX. Prilink measures call traffic data and statistics for every internal number within your PBX. Incoming and outgoing calls involving these internal numbers are measured separately and recorded independently.

Similar to traffic Groups, Prilink allows you to quickly identify any issues or metrics associated with a particular Internal number. In this section we will perform a similar analysis on Internal numbers as we did for traffic Groups (see section [Group Traffic Analysis](#)). Since traffic analysis involves common steps, for brevity only the differences will be highlighted.

In the Statistics window, perform the following steps to analyze Internal number traffic:

1. Select **Int** from the right side of the Statistics Window.
2. Press Enter to access the Internal# Statistics menu and choose **Reset Filter** to erase any prior filters and prior Internal number records.
3. Choose **Add Filter** from the Internal# Statistics menu and select a start and end date for analysis.

4. Next you will be prompted to filter by internal number:

PRI: Select *yes* to limit analysis to calls on a specific PRI circuit. Select *no* to include all PRI circuits. **IMPORTANT:** The *PRI#* in the drop-down box refers to the number designation of the PRI Profile, not the Monitor Port that the Primary D-Channel is physically connected to. Refer to section [Setting the Profile](#).

Dir: Select *yes* to limit analysis to calls in a specific direction (*in* for incoming calls, *out* for outgoing calls). Select *no* to include both directions.

Internal#: Select *yes* to limit analysis to a specific internal number or range of numbers (refer to section [Number Search Tips](#) for a range of numbers). Select *no* to include all internal numbers.

Hit **Ok** and wait for data to be retrieved. To incorporate data from more than one specific internal number in the same analysis period, simply choose **Add Filter** again from the Internal # Statistics menu.

Records

Each record represents one hour of either inbound or outbound traffic for a particular internal number. The fields displayed are summarized below:

Site	Site number of the Prilink unit.
Date	Date in year/month/day format.
Hr	Hour in 24 hr format (e.g. '2' indicates 2:00AM – 3:00AM).
PRI	PRI profile number (0 – 7).
Dir	Direction (inbound or outbound).
Int.#	Internal number.
Ans	The total number of answered calls for this int# during the hour.
nAns(nBlk)	The total number of not answered (non-block) calls for this int# during the hour.
nAns(Blk)	The total number of not answered (block) calls for this int# during the hour.
BchMax	The maximum simultaneous B-channels in use by this int# during the hour.
BchMin	The minimum simultaneous B-channels in use by this int# during the hour.
TtlTime(s)	The total amount of B-channel usage in seconds for this int# during the hour.

If you wish to save this data to file, press **Enter** and choose **Export** to save data in CSV format to `c:\prilinkii\Int.txt`.

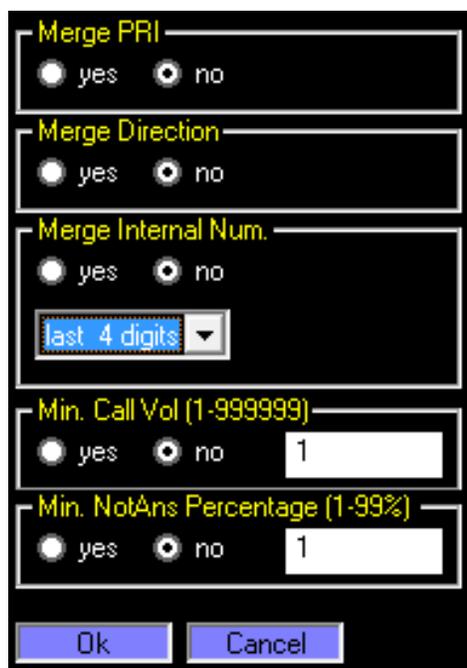
Summary

Press Enter and choose **Summary** to summarize data for each internal number over the full date range selected. The fields displayed are identical to those provided for traffic Groups (see section [Group Summary](#)), except that ID identifies a unique combination of PRI, internal number and direction.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\IntSum.txt`.

Analyzer

Press Enter and choose **Analyzer** to view a visual representation of internal number traffic over the date range selected. This will bring up the Traffic Criteria dialog, which provides an opportunity to both merge and limit displayed internal numbers:



Merge PRI: Select *yes* to merge data that differ only by PRI circuit.

Merge Direction: Select *yes* to merge data that differ only by call direction.

Merge Internal Num.: Select *yes* to merge data involving common extensions. Merging internal numbers to lowest common denominator will ensure that your reports are as concise and brief as possible.

Example: DID number 555-1212 would appear as 1212 on an incoming call. The same extension on an outgoing local call may be shown as 555-1212 or NPA-555-1212. Selecting Merge Internal Num.=*yes*, and drop-down box=*last 4 digits* will aggregate all calls above into one number.

Min. Call Vol: Select *yes* to limit displayed results to internal numbers reaching a minimum number of totals calls, entered in the corresponding text box (1-999999). Select *no* otherwise.

Min. NotAns %: Select *yes* to limit displayed results to internal numbers with a minimum percentage of calls not answered, entered in the corresponding text box (1-99%). Select *no* otherwise.

Hit **Ok** to view Analyzer results. The Analyzer Window displayed is identical to the one provided for traffic Groups (see section [Group Analyzer](#)), except each vertical bar in the Chart Display Area corresponds to a specific Internal number instead of a Group.

Press Enter and choose **Export** to save current chart data to file (under

c:\prilinkII\IntGraphData.txt).

T1 / B-channel Traffic Analysis

The T1 Traffic Analyzer provides call volume statistics (Ans, NAns(nBlk), NAns(Blk)) on each of your T1/E1 circuits, as well as on individual B-Channels in any period within the last 4 years.

In the Statistics window, perform the following steps to analyze T1 traffic:

1. Select **T1_B_ch** from the right side of the Statistics Window.
2. Press Enter to access the T1 Statistics menu and choose **Reset Filter** to erase any prior filters and prior Internal number records.
3. Choose **Add Filter** from the T1 Statistics menu and select a start and end date for analysis.
4. Next you will be prompted to filter by T1:

PRI: Select yes to limit analysis to calls on a specific PRI circuit. Select *no* to include all PRI circuits.

T1: Select yes to limit analysis to calls on a specific T1. Select *no* to include all T1 circuits.

Hit **Ok** and wait for data to be retrieved. To incorporate data from more than one specific T1 in the same analysis period, simply choose **Add Filter** again from the T1 Statistics menu.

Records

Each record represents one hour of traffic for a particular T1:

	Site	Date	Hr	PRI	T1	1 Ans nAns Block	2 Ans nAns Block	3 Ans nAns Block
0	122	2016/04/17	0	0	0	16,0,0	10,0,0	5,0,0
1	122	2016/04/17	0	0	6	1,0,0	1,0,0	1,0,0
2	122	2016/04/17	0	0	5	0,0,0	0,0,0	0,0,0
3	122	2016/04/17	1	0	0	14,0,0	6,1,0	1,1,0
4	122	2016/04/17	1	0	5	1,0,0	1,0,0	1,0,0
5	122	2016/04/17	1	1	2	0,0,0	0,0,0	0,0,0
6	122	2016/04/17	1	1	1	0,0,0	0,0,0	0,0,0

The fields displayed are summarized below:

- Site** Site number of the Prilink unit.
- Date** Date in year/month/day format.

- Hr** Hour in 24 hr format (e.g. '2' indicates 2:00AM – 3:00AM).
- PRI** PRI profile number (0 – 7).
- T1** T1 number (0 – 31). Note that T1 will equal PRI if FAS signaling is used (each T1 has D-channel).
- X ans nAns Block** The total number of call attempts on B-channel X, broken down into answered calls, not answered (non-block) calls, and blocked calls.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\T1_.txt`.

Analyzer

Press Enter and choose **Analyzer** to display a color coded view of the different call volumes handled by each individual B-Channel of your selected T1 circuits.



Each T1 is represented as a row of 24 or 32 squares corresponding to individual B-channels. To see the statistics for a specific B-Channel, click on the coloured square that represents that particular B-Channel. The selected B-Channel will be marked with an x and its statistics will appear in the *T1, BCh*

information boxes. The components of the T1 Analyzer Window are summarized below:

Date Range	Date range selected from Date Filter.
Record	The total number of traffic records retrieved.
ID	Total number of T1/E1 circuits identified.
Analyzed	The total number of traffic records analyzed from the retrieved data.
Data Type	This drop box allows you to change the view between Answered (<i>Ans</i>), Not Answered Non-blocked (<i>Nans(nBlk)</i>), Not Answered Blocked (<i>NAns(Blk)</i>), or All calls.
Date	This drop box allows you to choose from among the dates included in Date Range.
Range	This drop box allows you to increase or decrease the call volume ranges reflected by each of the colors shown below. As you change the range, note that the numbers for each color will also change.
T1	Call volumes for the selected T1/E1 circuit (containing B-channel marked with x).
B Ch	Call volumes for the selected B-Channel (marked with x).

D-Channel Statistics Analysis

The D-Channel Analyzer provides a summary of all I-Frame, S-Frame, U-Frame, and CRC Error counts for each D-Channel in any period within the last 4 years.

In the Statistics window, perform the following steps to analyze D-channel traffic:

1. Select **D_ch** from the right side of the Statistics Window.
2. Press Enter to access the D-Channel Statistics menu and choose **Reset Filter** to erase any prior filters and prior D-Channel records.
3. Choose **Add Filter** from the D-Channel Statistics menu and select a start and end date for analysis.
4. Next you will be prompted to select a port on the Prilink unit to analyze, or you may choose **All ports**.

Wait for data to be retrieved. To incorporate data from more than one specific D-Channel in the same analysis period, simply choose **Add Filter** again from the D-Channel Statistics menu.

Records

Each record represents one hour of Q.921 framing statistics for a particular D-channel:

	Site	Date	Hr	Port	Dir	Iframe	Sframe	UFrame	CRCerror
0	122	2016/04/17	0	0	in	248	594	0	0
1	122	2016/04/17	0	0	out	316	390	0	0
2	122	2016/04/17	0	1	in	0	356	0	0
3	122	2016/04/17	0	1	out	0	357	0	0
4	122	2016/04/17	0	3	in	0	359	0	0
5	122	2016/04/17	0	3	out	0	360	0	0
6	122	2016/04/17	1	0	in	143	488	0	0

The fields displayed are summarized below:

- Site** Site number of the Prilink unit.
- Date** Date in year/month/day format.
- Hr** Hour in 24 hr format (e.g. '2' indicates 2:00AM – 3:00AM).
- Port** The physical port on the Prilink unit where D-channel is monitored.
- Dir** Direction of messages (inbound and outbound).
- Iframe** The total number of I-frames detected for this D-channel during the hour.
- SFrame** The total number of S-frames detected for this D-channel during the hour.
- UFrame** The total number of U-frames detected for this D-channel during the hour.
- CRCerror** The total number of CRC errors detected for this D-channel during the hour.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to c:\prilinkii\DCh.txt.

Summary

Press Enter and choose **Summary** to summarize data for each D-Ch over the full date range selected:

Port Date: 2016/ 4/ 17 - 2016/ 4/ 17(1D) Hr: 0-23 Filter: 1 ID: 6 (Max 100000) Record: 144 (Max 500000) Analyzed: 144

NA

	ID	I-Frame	S-Frame	U-Frame	CRC-error	
0	Site= 12 Unit= 2 Port= 0 Dir=in	56919	72386	0	0	NA
1	Site= 12 Unit= 2 Port= 0 Dir=out	69551	27075	0	0	NA
2	Site= 12 Unit= 2 Port= 1 Dir=in	10129	20207	0	0	NA
3	Site= 12 Unit= 2 Port= 1 Dir=out	14296	10688	0	0	NA
4	Site= 12 Unit= 2 Port= 3 Dir=in	377	8922	0	0	NA
5	Site= 12 Unit= 2 Port= 3 Dir=out	385	8703	0	0	NA
6						

The fields displayed are summarized below:

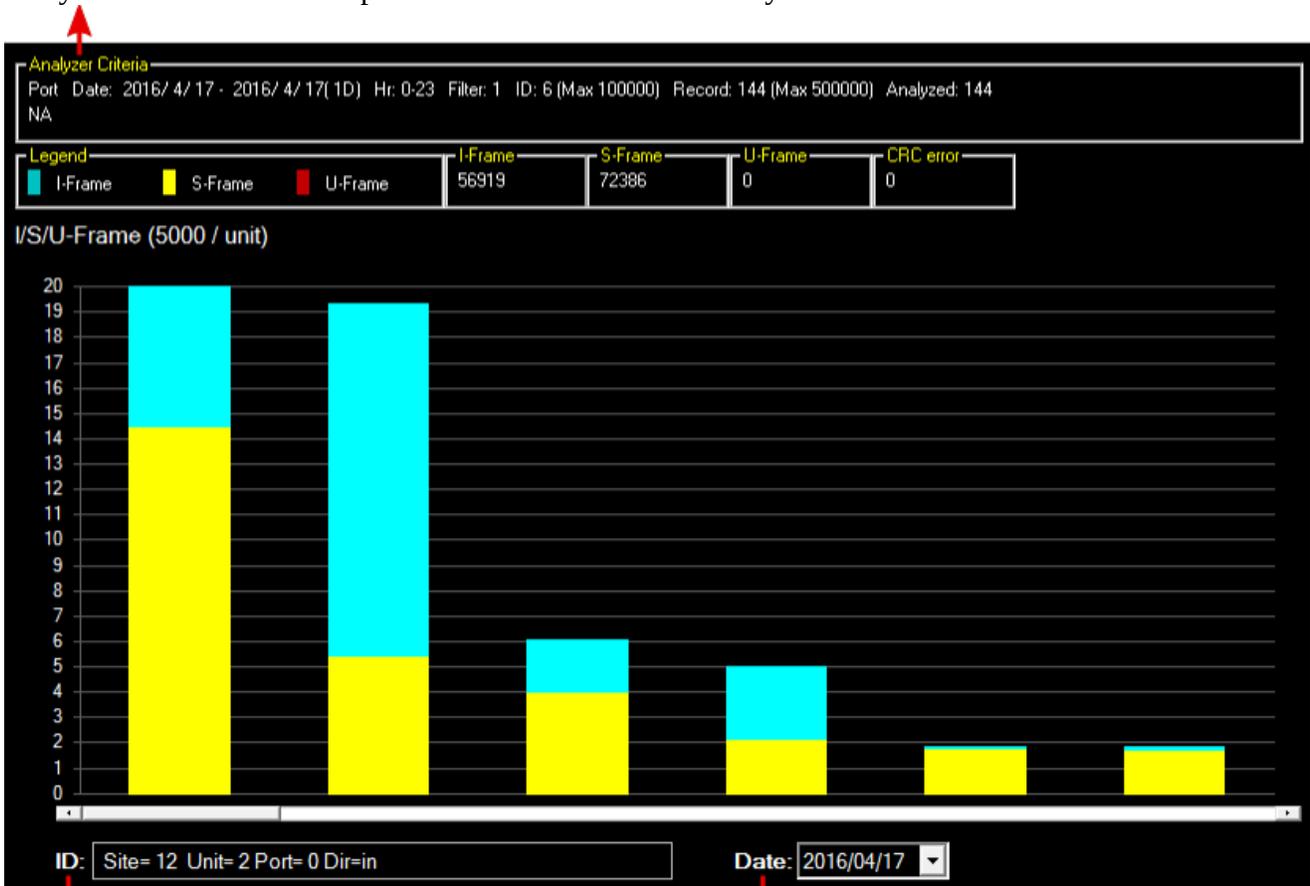
- ID** Identifies the Prilink unit, physical port that D-ch is monitored on, and direction.
- I-Frame** Total number of I-frames detected for this D-channel during the full date range.
- S-Frame** Total number of S-frames detected for this D-channel during the full date range.
- U-Frame** Total number of U-frames detected for this D-channel during the full date range.
- CRC-error** Total number of CRC errors detected for this D-channel during the full date range.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\DChSum.txt`.

Analyzer

Press Enter and choose **Analyzer** to view a visual representation of I-Frames, S-Frames, U-Frames, and CRC-Errors counts for the selected D-Channels:

Analyzer Criteria shows the parameters used to run this analysis.



Current D-channel (ID) Selected

Current Date selected

The majority of the Analyzer Window is taken up by the *Chart Display Area*. The chart can be used to display all D-channels (all IDs) for a specific day, or all dates for a specific D-channel. In either case, the horizontal scroll bar along the x-axis can be used to highlight each individual bar, and the numeric values for the highlighted bar are displayed beside the chart legend.

The Analyzer menu can be accessed by pressing Enter:

- + Y-axis scale /** Increase / decrease the vertical scale of the Chart Display Area. You can also
- Y-axis scale** use the plus (+) and minus (–) keys to adjust scale.
- Change X-axis** Choose **ID** to display all D-channels for a specific day.
Choose **Date** to display all days for a specific D-channel.
- Change Chart Type** Choose **I/S/U-Frame** to chart Q.921 frame counts.
Choose **CRC Error** to chart CRC error counts.
- Toggle Stack** Stack or separate the colored bars in the Chart Display Area.
- Summary** View summary (described in the previous section [Summary](#))
- Export** Save current chart data to file (under `c:\prilinkII\DchGraphData.txt`)

Accessing Call Detail Records

The Prilink Traffic Analyzer (discussed in the previous section [Using Prilink Traffic Analyzer](#)) can highlight any unusual traffic patterns such as blockage, or high unanswered call percentage and pinpoint the Internal Numbers, Routes, or Traffic Groups associated with this pattern. The Prilink *CDR Filter* will drill-down to show the individual Call Detail Records (CDR), revealing the true events behind each and every call and the reason for termination.

With the Prilink CDR Filter you will be able to obtain a clearer picture of the nature of the problem and explain why calls are unanswered or blocked by viewing detailed information about every individual call up to the last 4 years. CDRs include:

- The complete Q.931 message sequence, including all call setup and terminate messages.
- Internal, and External numbers associated with the call.
- PRI circuit and B-Channel handling the call.
- Call setup time, answer time, and talk time.
- Call direction, and NSF Route.
- Reason for call termination, i.e. Cause Code.
- Etc.

In the Statistics window, perform the following steps to access CDR:

1. Select **CDR** from the right side of the Statistics Window.
2. Press Enter to access the CDR Statistics menu and choose **Reset Filter** to erase any prior filters and prior CDR.
3. Choose **Add Filter** from the CDR Statistics menu and select a start and end date for analysis.
4. Next you will be prompted to filter by a flexible set of criteria. If you select *no* for a criterion, that criterion will be ignored in the filtering process.

Call Type: Select *yes* to limit analysis based on call conclusion (see section [Defining Blocked Calls](#)).

Time (shorter than): Select *yes* to limit analysis to calls with a time duration less than or equal to a specific duration.

Time (longer than): Select *yes* to limit analysis to calls with a time duration greater than or equal to a specific duration.

Call Status: Select *yes* to limit analysis to calls that are *live* (in progress) or *completed*.

Dir: Select *yes* to limit analysis to calls in a specific direction (*incoming* or *outgoing*)

PRI: Select *yes* to limit analysis to calls on a specific PRI.

T1/E1: Select *yes* to limit analysis to calls using a specific T1/E1 line.

Bch#: Select *yes* to limit analysis to calls using a specific B-channel number.

Fac: Select *yes* to limit analysis to calls on a specific Facility number (0-31).

SID: Select *yes* to limit analysis to calls on a specific SID (0-32767)

Group: Select *yes* to limit analysis to calls falling in a user-defined traffic group. *Note: The CDR Filter will use current group definitions to filter calls, even if you have selected a time period that predates a change made to a group definition.*

Cause Code: Select *yes* to limit analysis to calls terminated with a specific ISDN Cause Code.

External/Internal#: Select *yes* to limit analysis to calls to or from a specific external or internal phone number. Select *LastDigit=yes* if you wish to indicate that the phone number's last digits sequence must match the numbers entered in the text box. Also see section [Number Search Tips](#).

Hit **Ok** and wait for data to be retrieved. To incorporate CDR using more than one set of criteria in the same analysis period, simply choose **Add Filter** again from the CDR Statistics menu.

Records

Each record represents a call:

	Site	Date	Dir	Type	SetUp	External#	Internal#	Name
140	122	2016/04/17	in	Ans	04:21:43	■■■■ 76342	3412	
141	122	2016/04/17	in	Ans	04:25:03	■■■■ 23813	3101	■■■■FAX ■■■■D■■■■
142	122	2016/04/17	in	Ans	04:25:05	■■■■ 20153	3046	
143	122	2016/04/17	in	NAns(Blk)	04:25:46	■■■■ 78600	3046	
144	122	2016/04/17	out	Ans	04:33:31	■■■■ 338888	■■■■ 13000	
145	122	2016/04/17	in	Ans	04:34:51	■■■■ 14001	3134	
146	122	2016/04/17	in	Ans	04:36:49	■■■■ 93779	6001	
147	122	2016/04/17	in	Ans	04:53:38	■■■■ 21093	6000	■■■■
148	122	2016/04/17	out	Ans	04:55:39	■■■■ 93779	■■■■ 13000	
149	122	2016/04/17	in	Ans	04:56:41	■■■■ 77708	■■■■ 10	■■■■KHAM ■■■■O■■■■

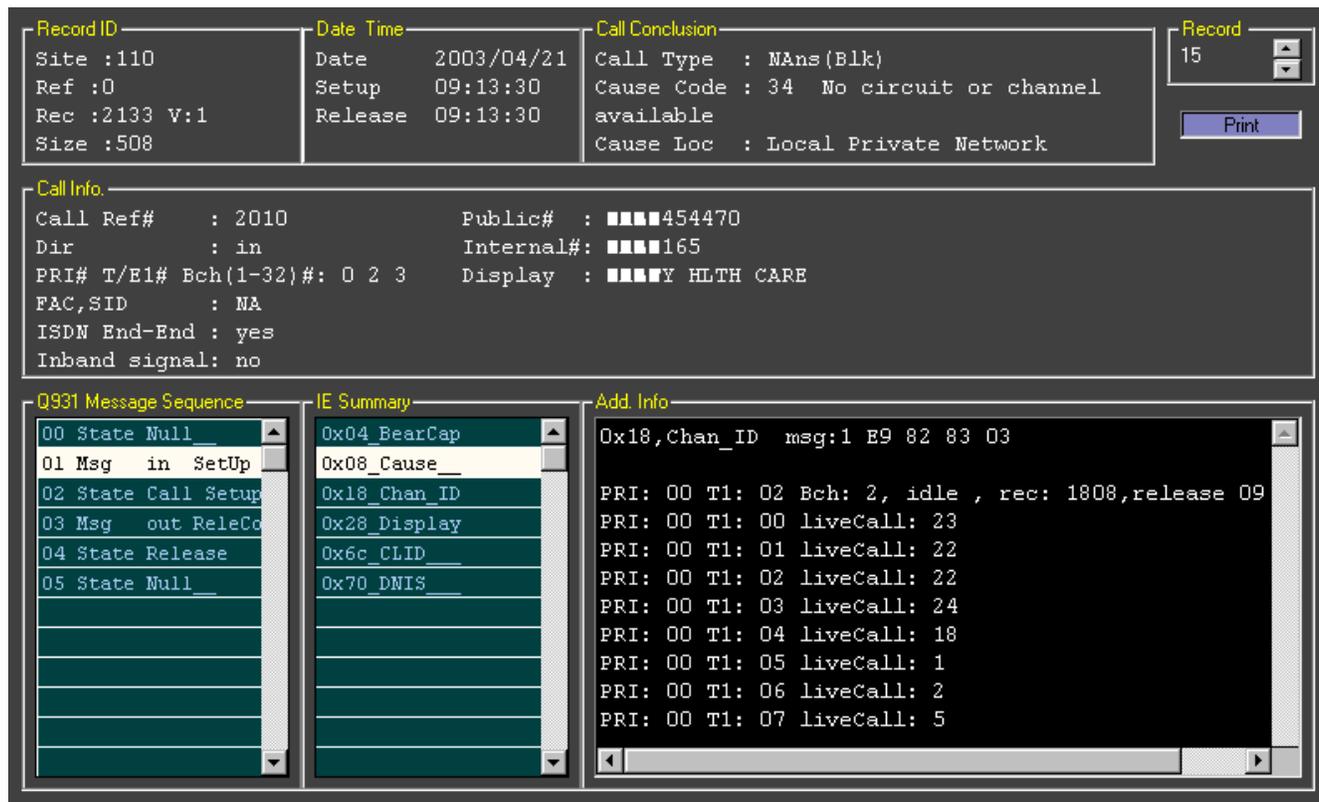
The fields displayed are summarized below:

- Site** Site number of the Prilink unit.
- Date** Date in year/month/day format.
- Dir** Direction (*inbound* or *outbound*).
- Type** Call conclusion (one of ringing, live, Ans, NAns(nBlk), Nans(Blk))
It is important to note that each unanswered call is categorized by Prilink as blocked or non-blocked the moment it is recorded. This means that when changes are made to the Cause Code Table (see section [Defining Blocked Calls](#)), this will only be reflected in new calls, those recorded by Prilink after the changes were made.
- SetUp** The time that call setup was initiated.
- External#** External phone number associated with the call.
- Internal#** Internal phone number associated with the call.
- Name** Name display of the calling party, if available.

If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\CDR.txt`.

The above fields are a small subset of the information captured for each call. To access the full CDR

for a call, press Enter or click on a call to bring up the CDR Statistics menu and choose **Rec Detail**.



Additional fields included in the CDR Detail window are summarized below:

Record ID	<i>Site</i>	The Site where this data record originated.
	<i>Rec#/Ver#</i>	Index number of the current record.
Date Time	<i>Date</i>	The date the call was made.
	<i>Setup</i>	The time that call setup was initiated.
	<i>Connect</i>	The time the call was connected.
	<i>Release</i>	The time the call was disconnected.
Call Conclusion	<i>Call Type</i>	Ans, NAns(blk), or NAns(nBlk).
	<i>Cause Code</i>	Reason for call termination.
	<i>Cause Loc</i>	Location of call termination. For a complete list of Cause Code and Cause Location description, refer to the Appendix A: Cause Code Description and Appendix B: Cause Location Description .
Call Info	<i>Dir</i>	Call Direction (in = incoming, out = outgoing)
	<i>PRI/T1/Bch</i>	PRI, T1 and B-Channel handling the call.

FAC,SID Facility and Service Identifier of the Route handling the call.
ISDN End-End If yes, then all networks between the local user and remote user are ISDN.
Public# External phone number associated with the call.
Internal# Internal phone number associated with the call
Display Name displayed of the calling party, if available.

Record Index number of the current record. You can also navigate among individual records using the up and down arrow.

Q931 Message Sequence Q.931 D-Channel messaging sequence associated with the current call. Details the messaging string passed between your PBX and the Telco Central Office, or the distant PBX if the T1 is point-to-point for the current call.

Add Info Additional information specific to the call which is not applicable to all calls. For unanswered calls, this includes the number of live calls on each T1/E1 when call setup was initiated.

Summary

Press Enter and choose **Summary** to summarize all calls over the full date range selected:

CDR: Date: 2016/4/17 - 2016/4/17(1D) Hr: 0-23 Filter: 1 ID: 1 (Max 100000) Record: 16911 (Max 500000) Analyzed: 10410

	Ans	NAns(nBlk)	NAns(Blk)	reserved	resetCh	resetTO	resetRef	ringing
Total Call	9188	754	468	0	0	0	0	6501
Live Call	0	0	0	0	0	0	0	6501
Invalid Call	0	0	0	0	0	0	0	6501
AvgWait(s)	8	NA	NA	NA	NA	NA	NA	NA
AvgTime(s) completed calls	86	15	2	NA	NA	NA	NA	NA
TtlTime(s) completed calls	796872	12006	1006	NA	NA	NA	NA	NA
Incoming	5863	213	65	0	0	0	0	5050
In Call with External#	4432	162	44	0	0	0	0	3696
In Call with Fac & SID	3644	153	0	0	0	0	0	4187
In CCode16 Normal call clea	5863	213	0	0	0	0	0	0
In CCode17 User busy	0	0	65	0	0	0	0	0
In Pri: 0 T1: 0	3014	119	6	0	0	0	0	2161

The following are row descriptions of the CDR Summary window:

Total Call	Total count of completed calls.
Live Call	Number of current calls in progress.
AvgWait(s)	Average wait time in seconds before call is answered.
AvgTime(s) completed calls	Average time in seconds for completed calls.
TtlTime completed calls	Total time in seconds for completed calls.
Incoming	Total number of incoming calls.
In Call with External#	Total number of incoming calls with CLID available.
In Call with Fac & SID	Total number of incoming calls using Facility/Service ID.
In Ccode[code number]	Breakdown of incoming calls based on Cause Code. Refer to Appendix A for Cause Code descriptions.
In PRI:[channel] T1:[channel]	Breakdown of incoming calls based on PRI and T1 number.
Outgoing	Total number of outgoing calls.
Ou Call with External#	Total number of outgoing calls with CLID available.
Ou Call with Fac & SID	Total number of outgoing calls using Facility/Service ID.
Ou Ccode[code number]	Breakdown of outgoing calls based on Cause Code. Refer to Appendix A for Cause Code descriptions.
Ou PRI:[channel] T1:[channel]	Breakdown of outgoing calls based on PRI and T1 number.
Group [number]	Total number of calls for each user defined traffic group. <i>IMPORTANT: The Group statistics appearing in the CDR Summary are based on group definitions as they were configured in the time period selected. However, when using the CDR Filter and filtering by group, current group definitions are used to filter calls.</i>
Msg_type	Breakdown of Q931 messages based on message type.
IE_type	Breakdown of Q931 information elements based on element type.

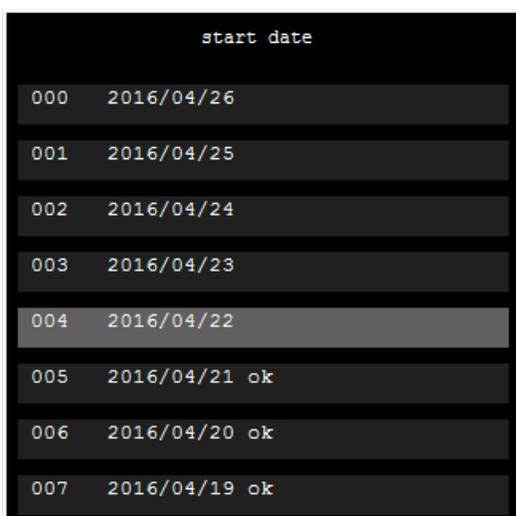
If you wish to save this data to file, press Enter and choose **Export** to save data in CSV format to `c:\prilinkii\CDRSum.txt`.

Traffic Reports

Traffic data accessed through the **Statistics** window can be viewed using the built-in traffic analyzer, or exported to CSV files for further analysis using 3rd party software such as Microsoft Excel. The **Report** feature provides a convenient mechanism to export data for multiple statistical categories without having to manually run each filter. Simply enter a date range, and data for each statistics filter will automatically be downloaded and exported to CSV files. At the conclusion of this process, the Report feature can optionally execute the batch file `reAuto.bat`, which provides an entry point for users to integrate the Prilink application with other reporting tools.

To export data, perform the following steps.

1. In the PrilinkII application menu bar, select on **Report**.
2. Select the site that you wish to export from.
3. Select the Start and End date to define the date range that you wish to export:



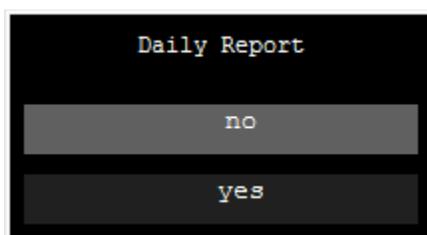
If **ok** appears beside a date, then traffic data for this date will be loaded from your hard drive during export process.

Dates without **ok** beside them are not available on your hard drive and will be downloaded from the Prilink unit.

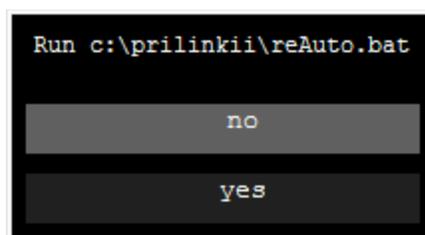
4. Once date range is selected, select *yes* or *no* for the 3 report actions described below:



See [Raw Export Files](#)



See [Summary Export Files](#)



See [Automation](#)

Raw Export Files

Selecting **yes** for the **Export Data** action results in the creation of 5 text files in your `c:\prilinkii` directory:

CDR.txt	CDR Record	Rou.txt	Route Record
Grp.txt	Group Record	Dch.txt	D-Channel Record
Int.txt	Internal# Record		

Each text file contains a clearly defined header and data section and is in Comma Separated Value (CSV) format. See [Appendix C](#) for field definitions for each export file.

A portion of a sample CDR text file viewed in a spreadsheet:

	A	B	C	D	E	F	G	H	I	J	K	
1	site#	year	month	day	in/out	0-ans/1-nAns(non-blk)/2-nAns(blk)	good/bad record	live/closed	setupTime	connectTime(s) from setup	duration(s) Setup->Release	exter
2	122	2016	4	17	i		0G	C	00:00:00	0	614	416:
3	122	2016	4	17	i		0G	C	00:00:00	0	114	
4	122	2016	4	17	o		0G	C	00:00:00	0	34	905:
5	122	2016	4	17	i		0G	C	00:00:00	0	143	416:
6	122	2016	4	17	i		0G	C	00:00:13	0	581	905:
7	122	2016	4	17	i		0G	C	00:00:23	41	288	
8	122	2016	4	17	i		0G	C	00:01:05	38	288	416:
9	122	2016	4	17	o		0G	C	00:01:09	30	64	1905:
10	122	2016	4	17	i		0G	C	00:01:29	15	201	905:

Summary Export Files

Selecting **yes** for the **Daily Report** action results in the creation of a 9 text files in your `c:\prilinkii` directory:

CDRSum.txt	CDR Summary	RouSum.txt	Route Summary
CDR1.txt	CDR Record, blocked calls only	DchSum.txt	D-Channel Summary
GrpSum.txt	Group Summary	siteexport.txt	Site configuration
IntSum.txt	Internal# Summary	report.txt	Summary Report
grpexport.txt	Group definitions		

See [Appendix C](#) for field definitions for each summary file. The file `report.txt` appends all summary files, as well as the CDR Record for blocked calls, into one text file in the order shown:

```
report.txt = CDRSum.txt + CDR1.txt + GrpSum.txt + IntSum.txt + RouSum.txt
            + DchSum.txt + grpexport.txt + siteexport.txt
```


Appendix

A: Cause Code Description

Cause Code	Description
1	Unallocated number
2	No route to specified transit network
3	No route to destination
4	Vacant Area Code or Central Office Code
6	Channel unacceptable
7	Call awarded and being delivered in an established channel
8	Prefix 0 dialed but not allowed / Preemption
9	Prefix 1 dialed but not allowed
10	Prefix 1 not dialed but required
11	More digits received than allowed, call is proceeding
16	Normal call clearing
17	User busy
18	No user responding
19	No answer from user
21	Call rejected
22	Number Changed
26	Non-selected user clearing
27	Designation out of order
28	Invalid number format
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit or channel available
38	Network out of order
39	Permanent virtual connection out of service
40	Permanent virtual connection operational
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested channel or channel not available
46	Precedence call blocked
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
51	Call type incompatible with service request

53	Service Operation violated
54	Incoming call barred
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer capability not implemented
66	Channel type not implemented
69	Requested facility not implemented
70	Only restricted digital information bearer capability available
79	Service or option not implemented, unspecified
81	Invalid call reference value
82	Identified channel does not exist
88	Incompatible destination
91	Invalid transit network selection
95	Invalid message, unspecified
96	Mandatory information element missing
97	Message type non-existent or not implemented
98	Message not compatible with call state or message type non-existent or not implemented
99	Information element non-existent or not implemented
100	Invalid information element contents
101	Protocol error threshold exceeded / Message not compatible with call state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

B: Cause Location Description

Cause Location	Description
0	User
1	Local Private Network
2	Local Public Network
3	Transit Network
4	Remote Public Network
5	Remote Private Network
7	International Network
15	Network Beyond InterNetwork

C: Field Definitions of Statistics Export Files

File Name and Location

Download type	Directory	fileName
Manual, internal #	C:\prilinkii	Int.txt
Manual, route	C:\prilinkii	Rou.txt
Manual, group	C:\prilinkii	Grp.txt
Manual, cdr	C:\prilinkii	Cdr.txt
Manual, D channel	C:\prilinkii	Dch.txt
Manual, T1	C:\prilinkii	T1_.txt
Manual, Alarm	C:\prilinkii	Ala.txt
Auto, internal #	C:\prilinkii\autodl	sssintyyyymmddv.txt
Auto, route	C:\prilinkii\autodl	sssrouyyyymmddv.txt
Auto, group	C:\prilinkii\autodl	sssgrpyyyyymmddv.txt
Auto, cdr	C:\prilinkii\autodl	ssscdryyyyymmddv.txt
Auto, D channel	C:\prilinkii\autodl	sssdchyyyymmddv.txt
Auto, T1	C:\prilinkii\autodl	ssst1_yyyyymmddv.txt
Auto, Alarm	C:\prilinkii\autodl	sssalayyyyymmddv.txt

sss = site number
 yyyy = year
 mm = month
 dd = day
 v = version number

Internal Number Record (Int.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	month	1-12
4	day	1-31
5	hour	0-23
6	D channel	0-4
7	Call direction	i-incoming, o-outgoing
8	Internal number	Digits
9	answer	Long
10	Not answer (non-block)	Long
11	Not answer (blocked)	Long
12	Maximum B channel	Long
13	Minimum B channel	Long
14	Usage (second)	Long

Route Record (Rou.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	month	1-12
4	day	1-31
5	hour	0-23
6	D channel	0-4
7	Call direction	i-incoming, o-outgoing
8	Fac	Long
9	Sid	Long
10	answer	Long
11	Not answer (non-block)	Long
12	Not answer (blocked)	Long
13	Maximum B channel	Long
14	Minimum B channel	Long
15	Usage (second)	Long

Group Record (Grp.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	month	1-12
4	day	1-31
5	hour	0-23
6	Group	0-63
7	Change	N = group definition changed Blank = no change
8	answer	Long
9	Not answer (non-block)	Long
10	Not answer (blocked)	Long
11	Maximum B channel	Long
12	Minimum B channel	Long
13	Usage (second)	Long

CDR Record (CDR.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	month	1-12
4	day	1-31

5	Call direction	i-incoming, o-outgoing
6	Call type	0-answer, 1-not answer (non-block), 2- not answer (block)
7	Call integrity	G-good, B-bad
8	Call status	L-live, C-closed
9	Setup time	Hh:mm:ss
10	Connect time	Seconds from setup time
11	Call duration	Seconds
12	Calling party #	Ascii characters
13	Called party #	Ascii characters
14	Name display	Ascii characters
15	Cause value	0-127
16	Cause location	
17	Dch#	0-3
18	T1#	0-31
19	Bch#	0-31 (Q.931 1-32)
20	Facility (FAC)	0-31
21	Service identifier (SID)	0-32767

T1 Record (T1_.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Hour	0-23
6	D channel	0-3
7	T1	0-31
8	Bch 0 answer	Long
9	Bch 0 not answer (non-block)	Long
10	Bch 0 not answer (blocked)	Long
11	Bch 1 answer	Long
12	Bch 1 not answer (non-block)	Long
13	Bch 1 not answer (blocked)	Long
14	Bch 2 answer	Long
15	Bch 2 not answer (non-block)	Long
16	Bch 2 not answer (blocked)	Long
17	Bch 3 answer	Long
18	Bch 3 not answer (non-block)	Long
19	Bch 3 not answer (blocked)	Long
20	Bch 4 answer	Long
21	Bch 4 not answer (non-block)	Long

22	Bch 4 not answer (blocked)	Long
23	Bch 5 answer	Long
24	Bch 5 not answer (non-block)	Long
25	Bch 5 not answer (blocked)	Long
26	Bch 6 answer	Long
27	Bch 6 not answer (non-block)	Long
28	Bch 6 not answer (blocked)	Long
29	Bch 7 answer	Long
30	Bch 7 not answer (non-block)	Long
31	Bch 7 not answer (blocked)	Long
32	Bch 8 answer	Long
33	Bch 8 not answer (non-block)	Long
34	Bch 8 not answer (blocked)	Long
35	Bch 9 answer	Long
36	Bch 9 not answer (non-block)	Long
37	Bch 9 not answer (blocked)	Long
38	Bch 10 answer	Long
39	Bch 10 not answer (non-block)	Long
40	Bch 10 not answer (blocked)	Long
41	Bch 11 answer	Long
42	Bch 11 not answer (non-block)	Long
43	Bch 11 not answer (blocked)	Long
44	Bch 12 answer	Long
45	Bch 12 not answer (non-block)	Long
46	Bch 12 not answer (blocked)	Long
47	Bch 13 answer	Long
48	Bch 13 not answer (non-block)	Long
49	Bch 13 not answer (blocked)	Long
50	Bch 14 answer	Long
51	Bch 14 not answer (non-block)	Long
52	Bch 14 not answer (blocked)	Long
53	Bch 15 answer	Long
54	Bch 15 not answer (non-block)	Long
55	Bch 15 not answer (blocked)	Long
56	Bch 16 answer	Long
57	Bch 16 not answer (non-block)	Long
58	Bch 16 not answer (blocked)	Long
59	Bch 17 answer	Long
60	Bch 17 not answer (non-block)	Long
61	Bch 17 not answer (blocked)	Long
62	Bch 18 answer	Long
63	Bch 18 not answer (non-block)	Long
64	Bch 18 not answer (blocked)	Long
65	Bch 19 answer	Long

66	Bch 19 not answer (non-block)	Long
67	Bch 19 not answer (blocked)	Long
68	Bch 20 answer	Long
69	Bch 20 not answer (non-block)	Long
70	Bch 20 not answer (blocked)	Long
71	Bch 21 answer	Long
72	Bch 21 not answer (non-block)	Long
73	Bch 21 not answer (blocked)	Long
74	Bch 22 answer	Long
75	Bch 22 not answer (non-block)	Long
76	Bch 22 not answer (blocked)	Long
77	Bch 23 answer	Long
78	Bch 23 not answer (non-block)	Long
79	Bch 23 not answer (blocked)	Long

D-Channel Record (Dch.txt)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Hour	0-23
6	D channel	0-3
7	D channel direction	i-incoming, o-outgoing
8	I Frame	Long
9	Sframe	Long
10	Uframe	Long
11	CRC error	Long

Alarm Record (Ala.txt)

Note: This file will be shared by all four alarm types which are Group, T1, D-Channel and CDR. The fifth field of each record is used to identify the alarm type.

Group Alarm (Alarm Type = G)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Alarm Type (Group)	G
6	Status	L = live C = closed

7	Start Time	HH:MM:SS
8	Duration (s)	Long (blank if live)
9	Group number	0-63
10	Threshold %	0-100%
11	Today answer	Long
12	Today Not answer (non-block)	Long
13	Today Not answer (blocked)	Long
14	Today Maximum B channel	Long
15	Today Minimum B channel	Long
16	Today Usage (second)	Long
17	Last wk answer	Long
18	Last wk Not answer (non-block)	Long
19	Last wk Not answer (blocked)	Long
20	Last wk Maximum B channel	Long
21	Last wk Minimum B channel	Long
22	Last week Usage (second)	Long

T1 Alarm (Alarm Type = T)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Alarm Type (T1)	T
6	Status	L = live C = closed
7	Start Time	HH:MM:SS
8	Duration (s)	Long (blank if live)
9	Dch	0-3
10	T1	0-31
11	Today answer	Long
12	Yesterday answer	Long
13	Spare	Long
14	Spare	Long
15	Spare	Long
16	Spare	Long
17	Spare	Long
18	Spare	Long
19	Spare	Long
20	Spare	Long
21	Spare	Long
22	Spare	Long

D-Channel Alarm (Alarm Type = D)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Alarm Type (D channel)	D
6	Status	L = live C = closed
7	Start Time	HH:MM:SS
8	Duration (s)	Long (blank if live)
9	Dch	0-3
10	Direction	i=in o=out
11	Today iframe	Long
12	Today sframe	Long
13	Today uframe	Long
14	Today CRC	Long
15	Yesterday iframe	Long
16	Yesterday sframe	Long
17	Yesterday uframe	long
18	Yesterday CRC	long
19	Spare	Long
20	Spare	Long
21	Spare	Long
22	Spare	Long

CDR Alarm (Alarm Type = C)

Field	Description	Value
1	Site number	0-32767
2	Year	Xxxx
3	Month	1-12
4	Day	1-31
5	Alarm Type (CDR)	C
6	Status	L = live C = closed
7	Start Time	HH:MM:SS
8	Duration (s)	Long (blank if live)
9	Dch	0-3
10	T1	0-31
11	Bch	0-23
12	External number	Digits
13	Internal number	Digits
14	Direction	in or out

15	Call Type	ringing Ans NAns(nBlk) NAns(Blk)
16	Cause Code	0-127 + Ascii chars (blank if call type is ringing or answered)
17	Cause Location	Ascii characters (blank if call type is ringing or answered)
18	Name Display	Ascii characters
19	Spare	Long
20	Spare	Long
21	Spare	Long
22	Spare	Long
23	CDR alarm type 0	N or Y
24	CDR alarm type 1	N or Y
25	CDR alarm type 2	N or Y
26	CDR alarm type 3	N or Y
27	CDR alarm type 4	N or Y
28	CDR alarm type 5	N or Y
29	CDR alarm type 6	N or Y
30	CDR alarm type 7	N or Y
31	CDR alarm type 8	N or Y
32	CDR alarm type 9	N or Y
33	CDR alarm type 10	N or Y
34	CDR alarm type 11	N or Y
35	CDR alarm type 12	N or Y
36	CDR alarm type 13	N or Y
37	CDR alarm type 14	N or Y
38	CDR alarm type 15	N or Y
39	CDR alarm type 16	N or Y
40	CDR alarm type 17	N or Y
41	CDR alarm type 18	N or Y
42	CDR alarm type 19	N or Y
43	CDR alarm type 20	N or Y
44	CDR alarm type 21	N or Y
45	CDR alarm type 22	N or Y
46	CDR alarm type 23	N or Y
47	CDR alarm type 24	N or Y
48	CDR alarm type 25	N or Y
49	CDR alarm type 26	N or Y
50	CDR alarm type 27	N or Y
51	CDR alarm type 28	N or Y

52	CDR alarm type 29	N or Y
53	CDR alarm type 30	N or Y
54	CDR alarm type 31	N or Y