



The NexTalk Company

4505 S. Wasatch Blvd, Suite 120 • Salt Lake City, UT 84124
801.274.6001 • 801.274.6002 fax • 801.274.6004 tty
www.nextalk.com • mail@nextalk.com
www.nextalk.net

“CDR (Call Data Reporting) Overview in NTS” **Author: Tom McLaughlin**

Rev 1.0: October 18, 2007

Call data reporting (CDR) is important in any telephone or communications system. Organizations of all types find reports based on CDR data useful in understanding customer or client call patterns, call center and agent tracking, telecom costs, employee call patterns, and so on.

NTS-6 has robust and expandable CDR capabilities. This document is an overview of CDR in NTS.

Section A: Theory of Operation and Technical Details:

NTS is a client/server product. The server-side components of NTS are modular “services”.

All NTS calls use the server-side module called the NTS “Call Service” (CS). For this reason, NXI’s designers made the Call Service the central element in collecting CDR data.

NTS calls in the CS can contain any number of participants. Each call participant connects to the CS on a “call leg”. Call participants generally join a CS call through an NTS gateway of some type. The diagram below shows 7 call participants. All but one of the participants uses a gateway to join the call.

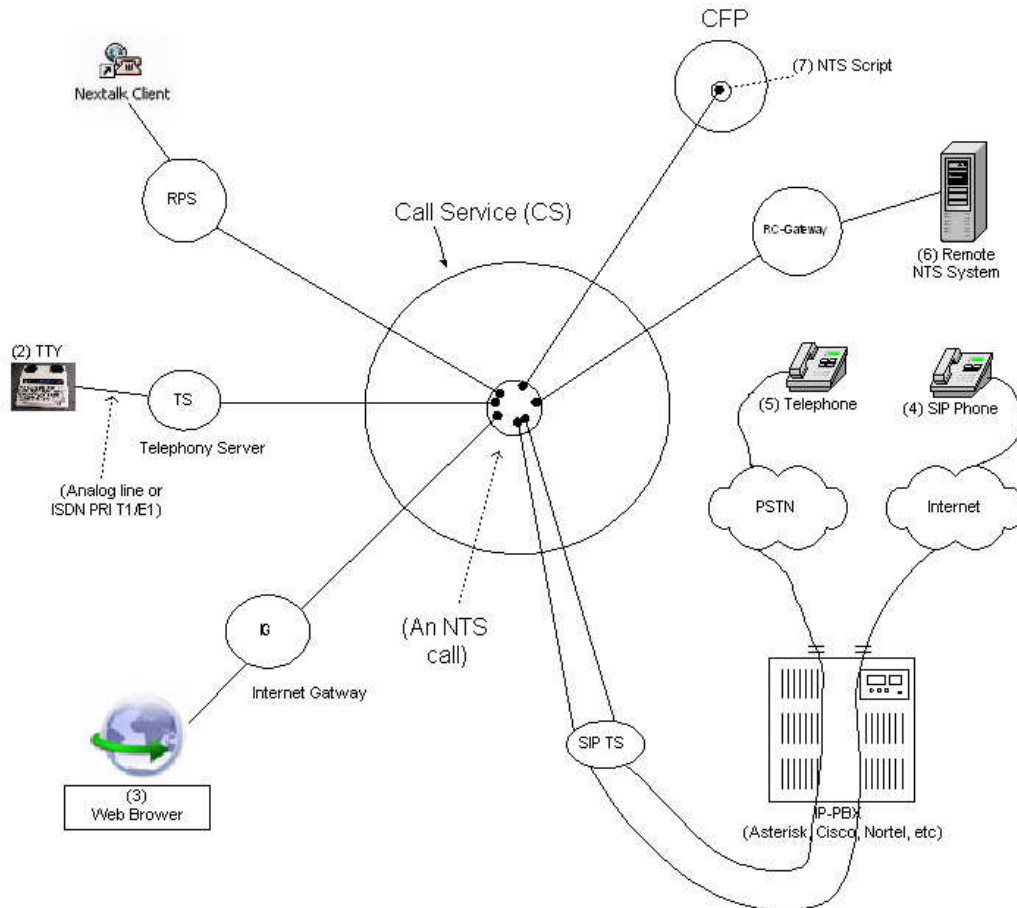
1. NTS client (via RPS)
2. TTY (via TS)
3. web browser (via IG)
4. SIP telephone on an IP-PBX (via a SIP-TS)
5. Voice telephone on an IP-PBX (via a SIP-TS)
6. remote NTS client (via a RC-GW)
7. NTS script (in the CFP)



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Diagram 1 is shown below:



One Call Service Call with 7 Participants

Diagram 1

There is one call participant above that does not enter the CS call via a gateway. This exception is an NTS script. NTS scripts run on the NTS Call Flow Processor (CFP).

You will note that each CS call participant joins a call via a single TCP/IP connection. Any call participant in a CS call may send a valid CDR event down its call leg into the Call Service. The CS will accumulate these CDR events. Generally the CS writes out all accumulated CDR events when the call terminates.



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Some NTS gateways, and the NTS client, generate CDR events, but most CDR events in NTS are generated by scripts and sent “into” an active CS call to be collected and written out.

How are CDR events defined ?

NTS endpoints like gateways and scripts cannot send any arbitrary string to the Call Service as a “CDR event”. All NTS CDR events are found in the central “CDR Event Table” in the NTS database. Each defined CDR event has a unique code, and each CDR event has defined parameters. There can be any number of parameters associated with a given CDR event.

So, a new CDR event becomes valid if it is added to the CDR Event Table. There is a utility for viewing and editing the CDR Event Table.

Once a new CDR event is added to the CDR Event Table, then this event may be sent to the Call Service during a call. This new event can be used to create new, or expanded, reports. NTS scripts may be edited to start using a newly defined CDR event.

Section B: CDR Report Creation

NTS CDR reports may be created and run in these ways:

1. Using Crystal Reports.
2. Using a web-based approach with Perl scripts or similar.
3. Using any application that can create SQL queries to the NTS CDR database.

Notes on CDR reports #1: Crystal Reports:

NXi has created the sample Crystal Reports shown below:

1. Inbound Telephony Calls
 - Call detail for inbound telephony calls.
2. Inbound Telephony Calls to Number
 - Shows call information for inbound calls to specific telephone numbers.
3. Network Call Report
 - Lists all network call activity for a span of time.
4. Relay Call by User
 - Detail call information of every relay call made.
5. Relay Call Summary
 - Total relay minutes by user.
6. Message Report
 - Shows system instant message activity.



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Under the licensing terms of Crystal Reports, an NTS customer may obtain and run “canned” Crystal Reports written by NXi without fees to Crystal Reports. However, if the NTS customer wishes to edit or create new Crystal Reports, then the customer will need to obtain a licensed copy of Crystal Reports.

Notes on CDR reports #2: A web-based approach using Perl scripts.

The web-based method #2 is particularly useful for “hosted systems”. NXi offers NTS as a hosted service. Hosted organizations can view and print CDR reports on their subdomain from any browser. Contact NXi for details.

Notes on CDR reports #3: Use any application that can create SQL queries to the NTS CDR database.

The NTS customer can use any application desired to query and obtain information from the NTS CDR database.

Section C: Examples and Screen Captures

Two example screen captures from Crystal Reports are shown below.

In Screen Capture #1 below, the report “Inbound Telephony Calls” was created for a specified time period. Note that the same caller (as identified by the ANI or Caller-ID) has dialed into NTS four times using different dialed (DNIS) numbers. The NTS destination of the call, along with the call duration, and the DNIS and ANI, are shown in the report.

Incoming Telephony Calls			
10/22/2007		10/22/2007 12:00:00PM	10/27/2007 12:00:00AM
<u>Call Start DTS</u>	<u>Call Data</u>	<u>Caller</u>	<u>Duration (s)</u>
10/22/2007 1:44:35PM	ANI DNIS Resource Group Route To User	8888088955 2341443 all ports user3@head_demo	526
10/22/2007 1:44:17PM	ANI DNIS Resource Group Route To User	8888088955 2341366 all ports user2@head_demo	603
10/22/2007 1:44:39PM	ANI DNIS Resource Group Route To User	8888088955 2341381 all ports operator@head_demo	475
10/22/2007 1:44:12PM	ANI DNIS Resource Group Route To User	8888088955 2341440 all ports user1@head_demo	686



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In Screen Capture #2 below, the report "Network Call Report" was run.

Network Call Summary			
10/22/200		10/1/2007 12:00:00AM	10/27/2007 12:00:00AM
StartDts	Caller	Destination	Duration (s)
10/16/2007 11:26:58AM	cs_test_casey@head_demo	cs_test_alan@head_demo	0
10/16/2007 11:27:01AM	nxcns_test_user_1@head_der	nxcns_test_user_2@head_der	3
10/16/2007 11:27:05AM	nxcns_test_user_1@head_der	nxcns_test_user_2@head_der	0
10/16/2007 4:05:26PM	user1@head_demo	user2@head_demo	35
10/16/2007 4:06:08PM	user2@head_demo	user1@head_demo	21
10/16/2007 4:06:34PM	user1@head_demo	user2@head_demo	771
10/17/2007 9:13:26AM	user3@head_demo	user2@head_demo	782
10/17/2007 9:13:26AM	user3@head_demo	user1@head_demo	782
10/17/2007 2:07:50PM	user1@head_demo	user2@head_demo	81
10/18/2007 9:38:00AM	user1@head_demo	user2@head_demo	773
10/18/2007 9:51:18AM	user1@head_demo	user2@head_demo	8
10/19/2007 11:28:41AM	user3@head_demo	user1@head_demo	413
10/19/2007 11:29:04AM	user2@head_demo	user3@head_demo	680
10/19/2007 11:29:26AM	user1@head_demo	user2@head_demo	339
10/19/2007 11:29:26AM	user1@head_demo	user3@head_demo	339

Section D: Summary :

Call Data Reporting in NTS was designed to be comprehensive and customizable. The NTS customer has a variety of pre-configured reports to run and use. The NTS customer can also extend CDR in NTS in flexible ways.

*** END DOCUMENT ***