

Avaya Solution & Interoperability Test Lab

Application Notes for Spescom DataVoice Orion Recorder 9.6 and Recording Controller 3.4 Using Service Observation with Avaya Communication Manager 3.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Spescom DataVoice Orion Recorder 9.6 and Recording Controller 3.4 to successfully interoperate with Avaya Communication Manager 3.0

The Spescom DataVoice call recording solution is able to capture audio from Avaya Communication Manager using a variety of integration mechanisms. Only trunk side call recording was tested and verified. The Spescom DataVoice Recording Controller uses Avaya Adjunct Switch Application Interface (ASAI) to extract call event information and passive tapping of the E1 trunk to retrieve the audio. The test configuration consisted of an Avaya S8500 Media Server with an Avaya G650 Media Gateway running Avaya Communication Manager 3.0, and an Avaya Application Enablement Services (AES) Server.

Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer *Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the compliance-tested comprised of Avaya Communication Manager, Avaya Application Enablement Services (AES) server, DataVoice Orion Recorder and a DataVoice Recording Controller.

The DataVoice Recording Controller provides connectivity between the DataVoice Orion Recorder and Avaya Communication Manager. There are two parts of the DataVoice Recording Controller. The first part uses the Avaya Adjunct Switch Application Interface (ASAI) on the Avaya Application Enablement Services (AES) server to set up the monitored extensions on Avaya Communication Manager. The Avaya AES Server will then notify the Recording Controller whenever the monitored extensions have initiated or received a call and when the call has been terminated. The second part of the DataVoice Recording Controller server interfaces with the DataVoice Orion Recorder and provides common services such as diagnostic, licensing and Toolkit services.

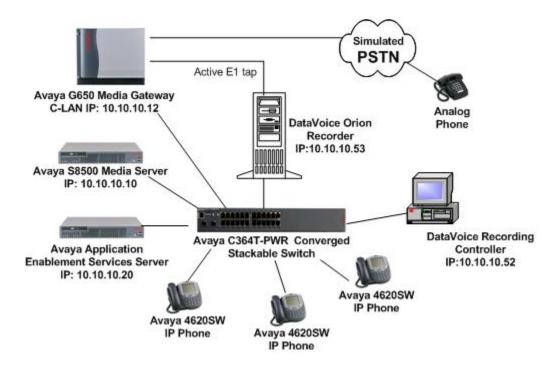


Figure 1: Avaya Communication Manager, Avaya Application Enablement Services, DataVoice Orion Recorder and DataVoice Recording Controller

2. Equipment and Software Validated

The tested configuration is detailed below.

Equipment	Software
Avaya Communication Manager	3.0 (340.3)
Avaya 4620 IP Telephones	1.9.1
Avaya C364T-PWR Converged Stackable Switch	4.3.12
Avaya Application Enablement Services Server	3.0 (r3-0-0-build-46-0)
DataVoice Orion Recorder	9.6
DataVoice Recording Controller	3.4.0.5

3. Configure Avaya Application Enablement Services Server

These Application Notes address provisioning of the DataVoice Recording solution as it relates to the integration with Avaya Application Enablement Services using Avaya Adjunct Switch Application Interface (ASAI).

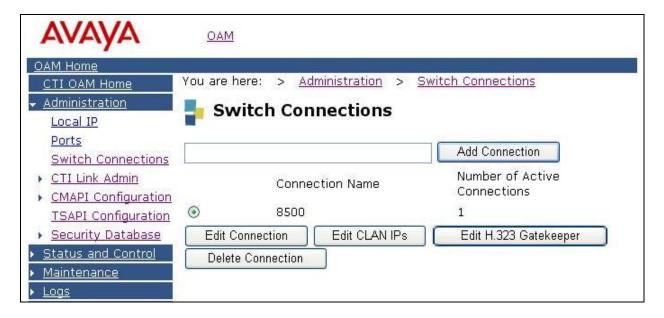
Log into the Avaya Application Enablement Services (AES) Server OAM pages. The Avaya AES server summary page indicates the number of available licenses; ensure that the relevant licenses are installed.



Ensure that all the services are running under the **Maintenance** \rightarrow **Service Controller** option. At a minimum, the **DLG** and **Transport Layer** services should be running.



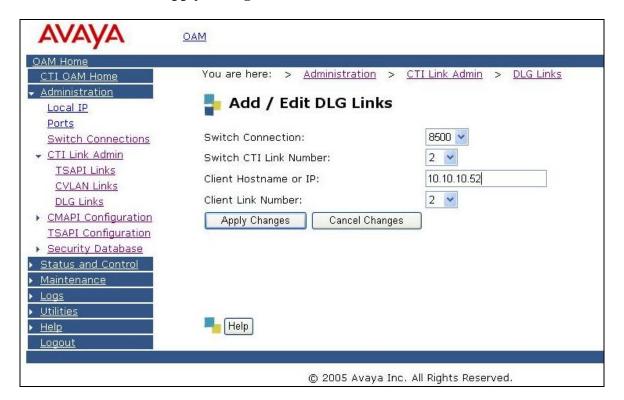
Add a switch connection name by clicking on **Switch Connections** under **Administration**. A password of at least 12 alphanumeric characters needs to be entered; this is the exact password that will be used when configuring Avaya Communication Manager.



Click on **Edit CLAN IPs** in the **Switch Connections** page. Enter the IP address of a C-LAN and then click on **Add Name or IP**.



Click on Administration → CTI Link Admin → DLG Links. Click on Add Link and enter the, Switch Connection, Switch CTI Link Number (must match CTI link number configured on the Avaya Communication Manager in Section 4.1), Client Hostname or IP and the Client Link Number. Click on Apply Changes.





4. Configure Avaya Communication Manager

This section describes the steps for configuring the Avaya CTI link and the passive E1 trunk on Avaya Communication Manager. Different features of Avaya Communication Manager need to be configured for the recording modes to be tested. Please refer to the *Administration Guide for Avaya Communication Manager* for further details. The specific options are detailed below.

4.1. Configure the CTI Link

Regardless of the mode of audio recording, an **Avaya Computer Telephony Integration (CTI)** link is required to provide call details for each recording. DataVoice supports a variety of CTI link options including native ASAI. Only the native **ASAI link** is appropriate to these Application Notes.

```
display system-parameters customer-options
                                                                     3 of
                                                                           11
                                                             Page
                                OPTIONAL FEATURES
    Abbreviated Dialing Enhanced List? n
                                                   Audible Message Waiting? n
        Access Security Gateway (ASG)? n
                                                       Authorization Codes? n
        Analog Trunk Incoming Call ID? n Backup Cluster Automatic Takeover? n
A/D Grp/Sys List Dialing Start at 01? n
                                                                CAS Branch? n
Answer Supervision by Call Classifier? n
                                                                  CAS Main? n
                                                         Change COR by FAC? n
                                  ARS? y
                 ARS/AAR Partitioning? y
                                          Computer Telephony Adjunct Links? y
                                           Cvg Of Calls Redirected Off-net? n
          ARS/AAR Dialing without FAC? y
          ASAI Link Core Capabilities? y
                                                               DCS (Basic)? n
          ASAI Link Plus Capabilities? y
                                                         DCS Call Coverage? n
      Async. Transfer Mode (ATM) PNC? n
                                                        DCS with Rerouting? n
 Async. Transfer Mode (ATM) Trunking? n
              ATM WAN Spare Processor? n
                                            Digital Loss Plan Modification? n
                                 ATMS? n
                                                                   DS1 MSP? n
                  Attendant Vectoring? n
                                                     DS1 Echo Cancellation? n
```

A CTI Link must be configured to provide the logical connection between Avaya Communication Manager and the DataVoice Recording Controller. The type must be set to "ASAI-IP" to allow for a DLG link to a non-Avaya supplied adjunct. The extension number must be valid in the dialplan of Avaya Communication Manager.

```
display cti-link 2

CTI LINK

CTI Link: 2

Extension: 13100

Type: ASAI-IP

COR: 1

Name: DLG link 2
```

The **Node-Names** form must be modified to include the Avaya C-LAN and the Avaya Application Enablement Services (AES) Server, as shown below:

display node-names	ip		Page 1 of 1			
		IP NODE NAMES				
Name	IP .	ddress Name	IP Address			
AEServer	10 .1	.10 .20				
CDR_Server	10 .1	.30 .20				
G350	10 .1	.30 .10				
VAL	10 .1	.10 .14				
clan	10 .1	.10 .12				
default	0.0	.0 .0				
medpro	10 .1	.10 .13				
procr	10 .1	.10 .10				
(8 of 8 administered node-names were displayed)						
Use 'list node-names' command to see all the administered node-names						
Use 'change node-na	ames ip	xxx' to change a node-name 'x	xx' or add a node-name			

The **IP-Services** form needs to be configured to define a link to the Avaya Application Enablement Services server as shown below.

display ip-	-services						Page	1 of	4
			IP	SERVIC	ES				
Service	Enabled	Local		Local		Remote	Rer	note	
Type		Node		Port		Node	Por	rt	
SAT	У	clan		5023	any		0		
AESVCS	Y	clan		8765					
CDR1		clan		0	CDR	_Server	900	0.0	

On the AE Services Administration page of the **ip-services** form, enter the **hostname** of the AES server and the **password** (which must match the password configured on the AES in Section 3), set **Enabled** to "y".

display ip-se	Page 4 of	4			
AE Services Administration					
Server ID	AE Services	Password	Enabled	Status	
	Server				
1:	AEServer	aeserver123456	Y	in use	
2:					
3:					

4.2. Configure Active Station-Side E1 Trunk

Station-Side monitoring is provided using Service observation over an E1 trunk configured as an ISDN-PRI tie trunk. The configuration below of the DS1 Circuit Pack is as specified by DataVoice.

```
display ds1 01A08
                               DS1 CIRCUIT PACK
           Location: 01A08
                                                     Name: DV_ServiceObserve
           Bit Rate: 2.048
                                              Line Coding: hdb3
     Signaling Mode: isdn-pri
            Connect: pbx
                                                Interface: network
                                         Country Protocol: etsi
  TN-C7 Long Timers? n
Interworking Message: PROGress
                                         Protocol Version: b
Interface Companding: alaw
                                                      CRC? y
          Idle Code: 01010100
                             DCP/Analog Bearer Capability: 3.1kHz
                                          T303 Timer(sec): 4
     Slip Detection? y
                                       Near-end CSU Type: other
```

A **Signaling Group** and an associated **Trunk Group** needs to be configured for the above DS1 Circuit Pack, as shown below in the following screens.

```
display signaling-group 79

SIGNALING GROUP

Group Number: 79

Group Type: isdn-pri

Associated Signaling? y

Max number of NCA TSC: 0

Primary D-Channel: 01A0816

Max number of CA TSC: 0

Trunk Group for NCA TSC:

Trunk Group for Channel Selection: 79

Supplementary Service Protocol: a
```

display trunk-group 79 Page 1 of 19

TRUNK GROUP

Group Number: 79 Group Type: isdn CDR Reports: y
Group Name: Service observe COR: 1 TN: 1 TAC: 709
Direction: two-way Outgoing Display? n Carrier Medium: PRI/BRI

Dial Access? y Busy Threshold: 255 Night Service:

Queue Length: 0

Service Type: tie Auth Code? n TestCall ITC: rest

Far End Test Line No:

TestCall BCC: 4
TRUNK PARAMETERS

Codeset to Send Display: 6 Codeset to Send National IEs: 6

Max Message Size to Send: 260 Charge Advice: none

Supplementary Service Protocol: c Digit Handling (in/out): enbloc/enbloc

Trunk Hunt: cyclical QSIG Value-Added? n
Digital Loss Group: 13

Incoming Calling Number - Delete: Insert: Format:

Bit Rate: 1200 Synchronization: async Duplex: full

Disconnect Supervision - In? y Out? n

Answer Supervision Timeout: 0

display trunk-group 79 Page 2 of 19

TRUNK FEATURES

ACA Assignment? n Measured: none Wideband Support? n
Internal Alert? n Maintenance Tests? y
Data Restriction? n NCA-TSC Trunk Member:

Send Name: y Send Calling Number: y

Used for DCS? n

Suppress # Outpulsing? n Format: public

Outgoing Channel ID Encoding: preferred UUI IE Treatment: service-provider

Replace Restricted Numbers? n
Replace Unavailable Numbers? n
Send Connected Number: n
Hold/Unhold Notifications? n
Modify Tandem Calling Number? n

Send UUI IE? y Send UCID? n

Send Codeset 6/7 LAI IE? y Ds1 Echo Cancellation? n

SBS? n Network (Japan) Needs Connect Before Disconnect? n

display trunk-group 79	Page 3 of 19
	TRUNK GROUP
	Administered Members (min/max): 1/30
GROUP MEMBER ASSIGNMENTS	Total Administered Members: 30
Port Code Sfx Name	Night Sig Grp
1: 01A0801 TN2464	79
2: 01A0802 TN2464	79
3: 01A0803 TN2464	79
4: 01A0804 TN2464	79
5: 01A0805 TN2464	79
6: 01A0806 TN2464	79
7: 01A0807 TN2464	79
8: 01A0808 TN2464	79
9: 01A0809 TN2464	79
10: 01A0810 TN2464	79
11: 01A0811 TN2464	79
12: 01A0812 TN2464	79
13: 01A0813 TN2464	79
14: 01A0814 TN2464	79
15: 01A0815 TN2464	79

4.3. Configure Service Observation

Avaya Communication Manager must be configured to allow monitoring devices to Service Observe and to allow devices to be monitored to be Service Observable. These permissions are configured by **Class of Restriction (COR).** COR 1 was assigned to both types of devices. The configuration for COR 1 is shown in the following screen.

```
change cor 1
                                                                   4
                                                            1 of
                                                     Page
                              CLASS OF RESTRICTION
               COR Number: 1
          COR Description: Main COR
                      FRL: 0
                                                            APLT? y
  Can Be Service Observed? y
                                       Calling Party Restriction: none
Can Be A Service Observer? y
                                        Called Party Restriction: none
Partitioned Group Number: 1
                                 Forced Entry of Account Codes? n
        Priority Queuing? n
                                            Direct Agent Calling? n
    Restriction Override: none
                                      Facility Access Trunk Test? n
    Restricted Call List? n
                                             Can Change Coverage? n
            Access to MCT? y
                                        Fully Restricted Service? n
Group II Category For MFC: 7
        Send ANI for MFE? n
            MF ANI Prefix:
                                        Automatic Charge Display? n
Hear System Music on Hold? y
                               PASTE (Display PBX Data on Phone)? n
                        Can Be Picked Up By Directed Call Pickup? n
                                    Can Use Directed Call Pickup? n
                                    Group Controlled Restriction: inactive
```

In addition, a **Feature Access Code** to perform Service Observation must be configured. The Service Observation access code must also be entered in the configuration of the DataVoice Recording Controller (see Section 5.2). The appropriate page of the Feature Access Code configuration is shown below.

```
change feature-access-codes

FEATURE ACCESS CODE (FAC)

Service Observing Listen Only Access Code: *73

Service Observing Listen/Talk Access Code: *74

Remote Logout of Agent Access Code:

Enter 1-4 digit number; * and # may be used as first digit
```

If necessary and allowed in an environment, the **Service Observing Warning Tone** may be disabled from the feature-related system parameters form.

```
11 of 16
change system-parameters features
                                                       Page
                       FEATURE-RELATED SYSTEM PARAMETERS
CALL CENTER SYSTEM PARAMETERS
 EAS
         Direct Agent Announcement Extension:
                                                                 Delay:
 VECTORING
                   Converse First Data Delay: 0
                                                   Second Data Delay: 2
              Converse Signaling Tone (msec): 100
                                                          Pause (msec): 70
   Reverse Star/Pound Digit For Collect Step? n
 SERVICE OBSERVING
             Service Observing: Warning Tone? n
                                                    or Conference Tone? n
    Service Observing Allowed with Exclusion? n
```

5. Configure the DataVoice Recording Solution

The following section describes the provisioning of the DataVoice Recording Controller and DataVoice Orion Recorder to interoperate with Avaya Communication Manager.

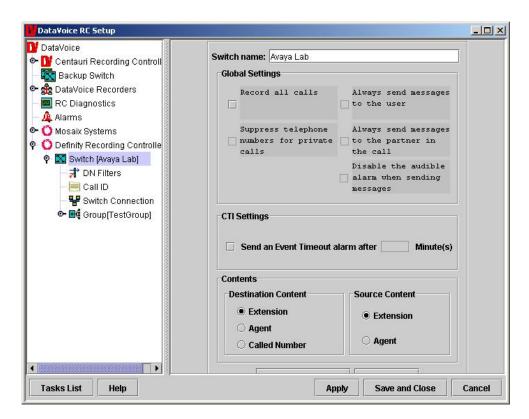
5.1. Configure the DataVoice Orion Recorder

The DataVoice Orion Recorder is normally supplied configured for the required application and only a limited amount of additional configuration, such as specifying an IP Address for the internal network interface card of the DataVoice Orion Recorder Server. Its related Recording Controller will pass the rest of the configuration details to the DataVoice Orion Recorder after a connection has been successfully established.

5.2. Configure the DataVoice Recording Controller

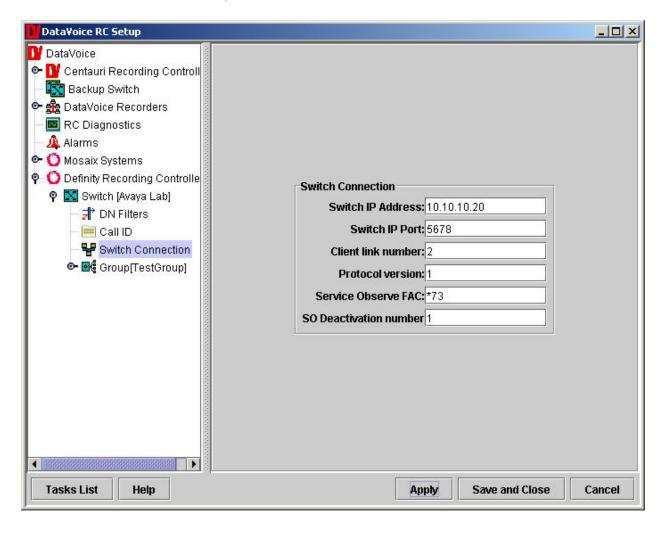
The DataVoice Recording Controller is supplied installed with a copy of the Recording Controller software, which executes automatically on startup. There are several aspects of configuration, including configuration of the DataVoice Orion Recorder and definition of devices to be recorded, passive E1.

The first setup screen allows some of the global settings for a connected switch to be configured. Click on **Definity Recording Controller** \rightarrow **Switch**. In the section labeled **Switch name** enter the name of the switch for example "Avaya Lab". Under the section labeled **Contents** select the recorded information to be based on **Extension**.

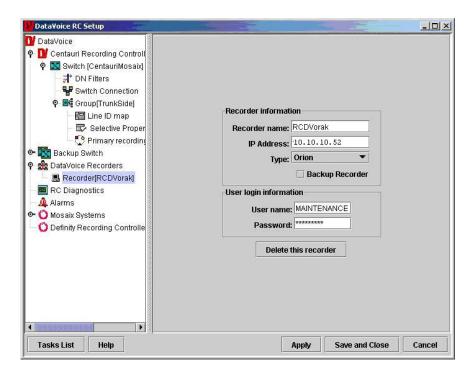


Click on **Definity Recording Controller** → **Switch Connection**. Enter the IP address of the AES server in the **Switch IP Address** field. In the **Switch IP Port** field enter "5678". The **Client link number** is set to "2" and the **Protocol Version** field should be set to "1" (the details entered should match the configuration in Section 3 and 4).

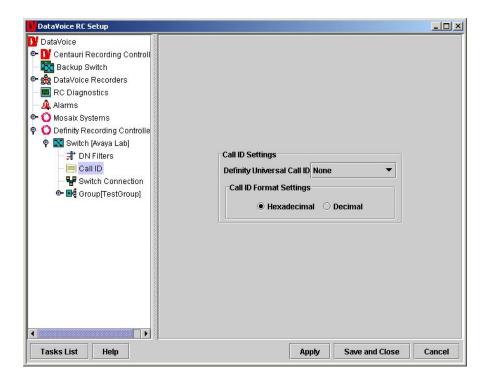
The **Feature Access Code for Service Observe** is also defined on this page (this should match the **Service Observing Listen Only Access Code** configured in section 4.3). The **SO Deactivation number** is actually a made up number that can be dialed to stop service observation without this feature, service observation would continue after the call ended.



Click on **DataVoice Recorders** \rightarrow **Recorder**. In the section labeled **Recorder Information** enter the **Recorder name** and **IP address** of the DataVoice Recorder.

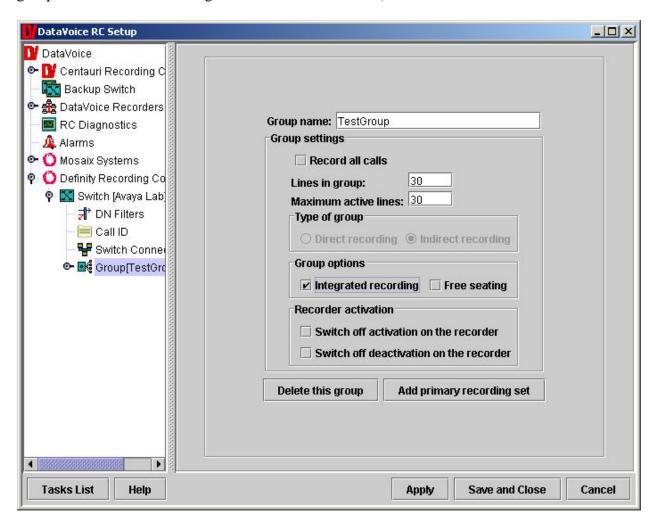


The format of the Universal Call ID (UCID) "Hexadecimal" allows the full UCID to be attached to a voice recording, whereas "Decimal" provides for an abbreviated form of the standard Avaya UCID format to be attached.



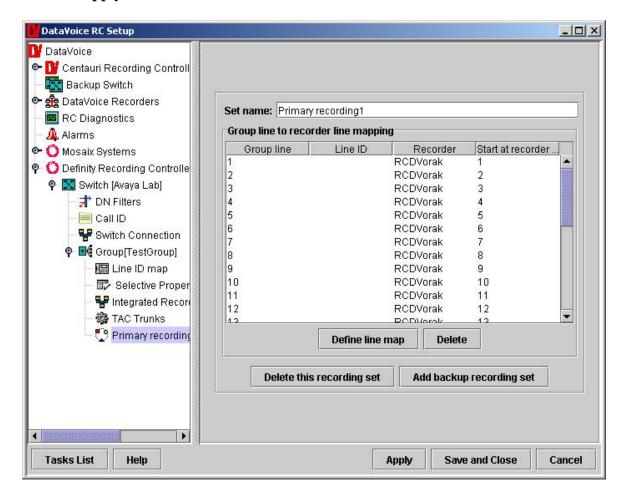
5.2.1. Configure the Active Trunk Recording Channels

Click on **Definity Recording Controller** \rightarrow **Group**. Enter a **Group name**. A group must be created for any calls to be that are recorded. For active trunks, the Group option must be set to "Integrated Recording" by checking the box. This will disable the Type of group section and allow service observation. The number of lines in the **Lines in group field** is set to 30 (since this group is associated with a single E1 trunk of 30 channels).



Within the Group node created. Click on **Primary recording**. DataVoice is able to support multiple groups but needs to relate each group member to a global recorder line number. The global recorder line number is used with recorder allocation and diagnostics. In the **Set name field** enter a name for the primary recording and configure the **Group line to recorder line mapping** section. The group line does not have to be defined. The Group can be left blank but are mapped to recording lines representing the 30 channels of the Active Trunk as illustrated below.

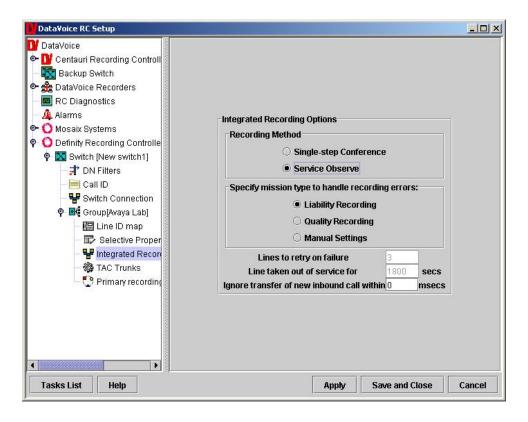
Click on Apply.



5.2.2. Service Observe specific settings

Click on **Definity Recording Controller** \rightarrow **Group** \rightarrow **Integrated Recording Options**. For Service Observation, the **Recording Method** must be set to Service Observe.

Click on **Save** and **Close**.



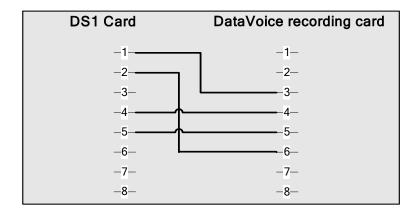
5.3. Active E1 Trunk Cable Pin layout

The cable between the DataVoice Orion Recorder and the DS1 card in the Avaya G650 gateway is a non standard cable.

On the DS1 side, pins 1&2 are the RX pair and pins 4&5 are the TX pair.

On the DataVoice Orion Recorder side, pins 3&6 are the TX pair and 4&5 are the RX pair.

Therefore, the pins must be connected with 1&2 on the DS1 side to 3&6 on the DataVoice side also pins 4&5 on the DS1 side must be connected to pins 4&5 on the DataVoice Recorder side.



6. Interoperability Compliance Testing

A generic Voice recording test plan was used and customized to include the features of the DataVoice recording solution.

The interoperability compliance test included feature functionality, failover and performance testing. The testing examined the DataVoice Recording Controller interoperability with Avaya Communication Manager 3.0. The majority of the testing focused on the ability of the DataVoice Recording application to record trunk calls and replay the voice recordings correctly. The source and destination of each call recording was verified. The Solution tested was only trunk side recording, meaning no internal calls were recorded.

6.1. General Test Approach

The general approach was to place inbound and outbound calls over the E1 trunk monitored and recorded by the DataVoice Recording application, and verify the recordings. For feature functionality testing, basic telephony operations such as answer, hold/retrieve, transfer, and conference were exercised on inbound and outbound trunks calls. For performance testing, a call generator placed inbound calls over the E1 trunk over an extended period of time.

6.2. Test Results

All feature and performance tests passed. The DataVoice recording solution successfully recorded, displayed and replayed the recordings.

There can be at most one service observer on an active call, and a station can be service observed by at most one service observer. This means that when two or more service observed stations (parties) are on the same call, only one of the parties is service observed and therefore recorded. DataVoice Reordering application will produce call recording records for each monitored party, but only the recording record for the service observed party will contain audio.

7. Verification Steps

7.1. Avaya

The following steps can ensure that the communication between Avaya Communication Manager and the Avaya Application Enablement Services server is working.

Click on **Status and Control** → **Switch Conn Summary** in the AES OAM pages. This summary gives the status of the connection between Avaya Communication Manager and the Avaya Application Enablement Services server. Verify that the **Conn State** indicates **Talking**.



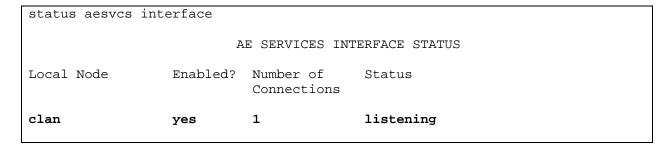
Click on **Status and Control** → **Services Summary** in the AES OAM pages. This summary gives the status of each service.





Equivalent steps can be taken to check the status of the link on Avaya Communication Manager as follows.

Verify that the Avaya Application Enablement Services server is communicating with the C-LAN on Avaya Communication Manager by using the **status aesvcs interface** command.

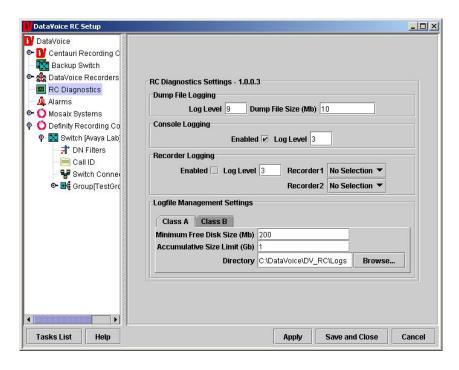


Verify that the **Service State** of the CVLAN link is established.

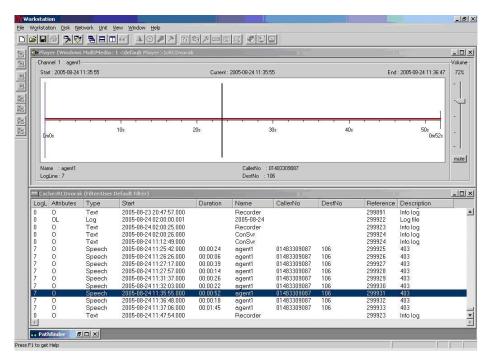
statu	status aesvcs cti-link							
	AE SERVICES CTI LINK STATUS							
CTI	Version	Mnt	AE Services	Service	Msgs	Msgs		
Link		Busy	Server	State	Sent	Rcvd		
1	4	no	AEServer	established	15	15		
2	4	no	AEServer	established	15	15		
3	4	no	AEServer	established	15	15		

7.2. DataVoice

The DataVoice Recording Controller has a variety of diagnostic settings that can be configured; the following screen illustrates all of these values.



The recordings in the DataVoice Orion Recorder database can be viewed and played back using the DataVoice Orion Workstation. Below is a typical playback session of a voice recording.



8. Support

If technical support is required for the Spescom DataVoice recording solution, contact DataVoice Technical Support.

Email: support@datavoice.spescom.com

Phone: +27 11 266-1801

9. Conclusion

These Application Notes describe the configuration steps required for the DataVoice Orion Recording Solution to successfully interoperate with Avaya Communication Manager 3.0 and Avaya Application Enablement Services server. The configuration described in these Application Notes has been successfully compliance tested.

10. Additional References

This section references the Avaya and Spescom DataVoice product documentation that are relevant to these Application Notes.

Avaya product documentation can be found at http://support.avaya.com.

Administrator Guide for Avaya Communication Manager, 03-300509, Issue 1, June 2005

10.1. Documentation

Documentation is available on request from Spescom DataVoice at http://www.datavoice.spescom.com/

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