Config Guide - Avaya CS 1000 VoIP

Engage Voice Recorder

Release 5.2

Issue 1.0

1

1 Avaya CS1000 VoIP and Engage Integration

This document describes the configurations and procedures needed to successfully integrate an Engage Voice Recording system with an Avaya Communications System 1000 (CS1000) VoIP system for voice and call event recording.

Engage Record provides automatic and on-demand call recording, live monitoring, screen capture and playback, or live desktop monitoring synchronized to audio playback.

The majority of integrated configurations performed using and Engage Voice Recorder and a CS1000 system are performed once and left alone. One-time configurations are made to both the Engage Record server and the CS1000 and can include:

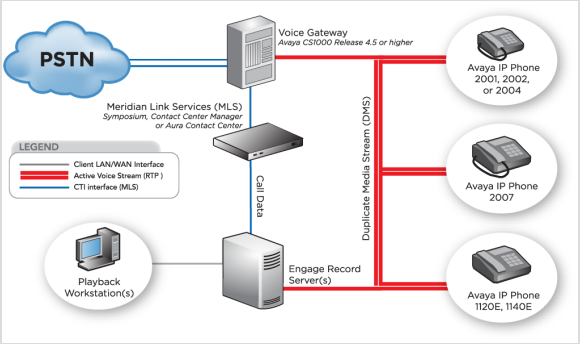
- Verifying system licenses.
- Setting the recording method (Duplicate Media Stream or Port Spanning), as required.
- Configure the CS1000 VoIP system and sets for recording.
- Configure Engage VoIP Option and ACD configurations.
- Set Engage Port Mapping and Port Numbers assigned.
- Testing and verification that all components are functioning correctly.

2 Network Architecture and Recording Methods

When recording phones within an Avaya CS 1000 (sometimes called a Meridian 1, a legacy machine) environment, Engage can interface to the Avaya CS 1000 VoIP with the following recording methods:

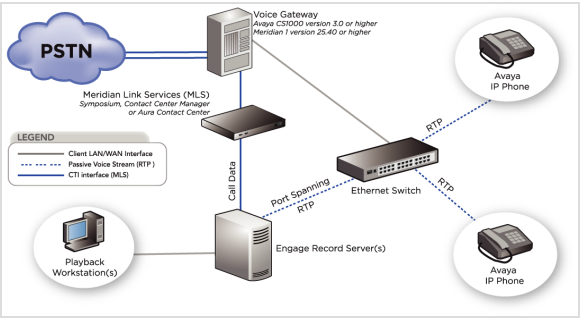
2.0.1 Duplicate Media Stream with MLS Method

The preferred method of recording VoIP phones on a CS 1000 is using Avaya's Duplicate Media Stream (DMS) with a Meridian Link Services (MLS) interface. This method provides the Engage Server with a copy of the system's voice stream. Call data and agent ID information are obtained through the MLS. Only Phase II VoIP phones (ex. IP Phone 2001, IP Phone 2002, IP Phone 2004, IP Phone 1110, etc...) are supported using this method; however, this method can also be configured to record station-to-station calls.



2.0.2 Port Spanning with MLS Method

If the deployment requires call recording of older VoIP phone models (VoIP phones that don't support the Duplicate Media Stream - DMS method), then port spanning (also known as mirroring) can be used. Voice packets are *spanned* to a single contact point on the network where the Engage Record Server connects. A second NIC in the Engage Record Server is connected to the Avaya Meridian Link Services (MLS) for collection of call event data.



2.0.3 Meridian Link Services

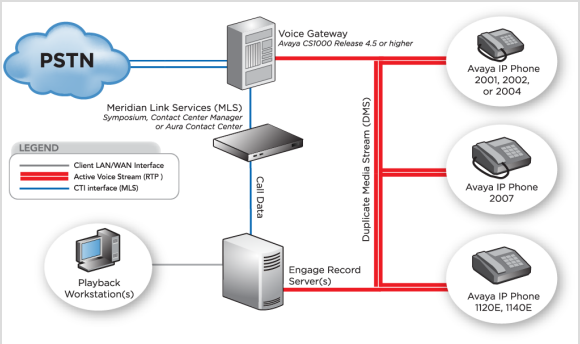
Meridian Link Services (MLS) is a proprietary protocol that enables third-party applications such as the Engage Voice Recorder, to extend the functionality of the application, particularly in call center environments.

MLS is exported as part of Avaya's Contact Centers and is used by the host application to access the functionality of the Contact Center Manager Server (CCMS) and Communication Server 1000 or Meridian 1 PBX switch.

Use of MLS requires a license.

2 Duplicate Media Stream with MLS

The preferred method of recording VoIP phones on a CS 1000 or Meridian 1 PBX is using Avaya's Duplicate Media Stream with a Meridian Link Services (MLS) interface. This method provides the Engage Server with a copy of the system's voice stream. Call data and agent ID information are obtained through the MLS. Only Phase II VoIP phones (ex. IP Phone 2001, IP Phone 2002, IP Phone 2004) are supported using this method; however, this method can also be configured to record station-to-station calls.



Duplicate Media Stream Requirements

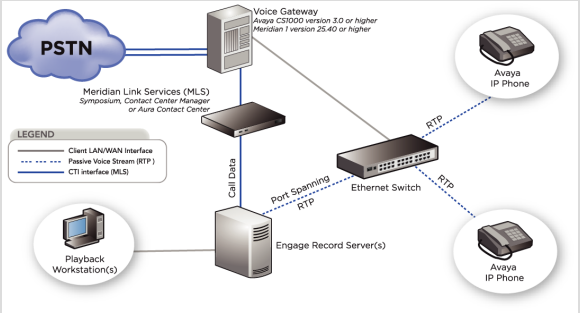
The Avaya system requirements for duplicate media stream are:

- Avaya CS 1000 VoIP PBX at Release 4.5 or higher.
- Phase II IP phones or later in these configurations:
  - IP Phone 2001, 2002, 2004 with hardware release D98 or later.
  - IP Phone 2007 with hardware release C26 or later.
  - IP Phone 1120E and 1140E with hardware release C1F or later.
- Meridian Link Services (MLS) interface, typically provided by one of the following :
  - Symposium and Symposium Express Call Centers at Release 5.0 or higher.
  - Contact Center and CC Express Manager Release 6.0 or higher.
  - Avaya Aura Contact Center 6.0 or higher.

- Use of the following Avaya licenses:
  - An AST license for each phone to be recorded. All phones to be recorded must have this license.
  - A multi-DN license (*LM_MLSM_DN_REGN*) for each DN on one phone when that phone has two DNs that are to be recorded. This feature requires a CS 1000 Server Release 6.0 or higher and Contact Center 7.0 or higher.
  - MLS License.

2 Port Spanning with MLS

Should the network consist of older VoIP telephone models (VoIP phones that don't support the Duplicate Media Stream - DMS method) can be recorded with port spanning (also known as mirroring). Voice packets are *spanned* to a single contact point on the network where the Engage Record Server connects. A second NIC in the Engage Record Server is connected to the Avaya Meridian Link Services (MLS) for call detail information.



Port Spanning Requirements

The following is a list of Avaya system requirements for port spanning:

- CS 1000 PBX at Release 3.0 or higher or a legacy Meridian 1 PBX Release 25.40 or higher.
- Any Avaya/Nortel VoIP phones.
- Meridian Link Services (MLS) interface typically provided by one of the following:
  - Symposium 5.0 or Symposium Express Release 4.2 or higher.
  - Contact Center and Contact Center Express Manager Release 6.0 or higher.
  - Avaya Aura Contact Center 6.0 or higher.
- One of the following Avaya licenses:
  - An AST license for each phone to be recorded. All phones to be recorded must have this license.
  - A multi-DN license (*LM_MLSM_DN_REGN*) for each DN on one phone when that phone has two DNs that are to be recorded. This feature requires a CS 1000 Server Release 6.0 or higher and Contact Center 7.0 or higher.

- Layer 2 Ethernet switch(es) with switch port analyzer (SPAN) capabilities.
- One (1) additional Avaya digital Incremental Software Management (ISM) license for the DN discovery port programming

2 CS1000 Considerations and Terms

Multiple Appearance DNs (MADN)

With the Multiple Appearance Directory Number (MADN) feature, a DN can be configured to appear on more than one phone. There can be up to 30 appearances of the same DN on various single-line or multiline phones.

Multiple Appearance Directory Number Redirection Prime (MARP)

The Multiple Appearance Directory Number Redirection Prime (MARP) feature standardizes call redirection on Multiple Appearance DNs (MADNs) by using a service changeable Multiple Appearance DN Redirection Prime Terminal Number (MARP TN). Each defined Single or Multiple Appearance DN has only one associated MARP TN. When a call redirection feature is activated against a DN and needs Terminal Number (TN) specific information, the MARP TN is used to determine feature operation.

System Designations

When legacy Meridian 1 PBX systems (Nortel) are upgraded to run CS 1000 software and configured to include a *Signaling Server*, they become CS 1000 systems. Sometimes documentation, programming and conversations will use the names and models of the systems interchangeably. Use this chart when uncertain of a system's designation:

This Meridian 1 system...	***Maps to this kind of CS1000 system...***
Meridian 1 PBX 11C chassis (wall unit)	CS 1000E
Meridian 1 PBX 11C cabinet (wall unit)	CS 1000E
Meridian 1 PBX 61C (tower(s) of modules)	CS 1000M Single Group
Meridian 1 PBX 81C (tower(s) of modules)	CS 1000M Multi Group

Terminal Numbers

A phone targeted for recording will be connected to a Terminal Number or TN. TNs are the port connections on the CS 1000 that phone devices are connected to. On the TN will be the KEYS (push buttons on the set)

that will have Directory Numbers (DNs) and features (ex. Hold and Record on Demand) assigned and programmed.

The type of CS 1000 system being integrated with dictates the "size" of terminal number (TN) to be used within the Engage Voice Recorder configurations.

TNs are sometimes referred as L-S-C-U (loop-shelf-card-unit). A unit is a port on the card.

Small systems (Option 11C and CS 1000E) use a two element TN consisting of:

- Loop: numbered 0 - 60 (ex. 8)
- Unit: port numbered 0- 15 (ex. 13)
- In this example, the L-S-C-U is **TN 8-13** (loop 8 unit 13). Small systems assign loop numbers to card slots and ignore the shelf and controller components.

Large systems (Option 61C and 81C and CS 1000M) use a four element TN consisting of:

- Loop: numbered 0 - 159 (ex. 008)
- Shelf: shelf numbered 0 - 1 (ex. 0)
- Card: slot numbered 0 - 15 (ex. 6)
- Unit: port numbered 0 - 15 (ex. 13)
- In this example, the L-S-C-U is **TN 8-0-6-13** (loop 8 shelf 0 card 6 unit 13). Large systems will use all four elements because of their architecture and size.

2 Licensing

Licenses for CS 1000 systems are provided a software key code obtained from Avaya. The key code designates what types of licenses and how many of each license type is to be provisioned with the CS 1000.

Associate Set (AST) Licensing

One (1) standard AST (associate set) license is required to record VoIP, digital and analog phones with up to two (2) directory numbers (DNs) on one phone. *AST licenses are required for each phone recorded, no matter what recording method is used*. Check the numeric value of ASTs available in the LD 22 SLT printout.

Multiple DN Licensing

This feature is only available for IP call recording, hence Recording on Demand, as well.. Engage supports Avaya's multiple DN recording. Should there be a need to record two (2) DNs on one phone, this license would be required. This feature requires CS 1000 Server Release 6.0 or higher and Contact Center 7.0 or higher. Avaya requires a multi-DN (LM_MLSM_DN_REGN) license for each DN recorded on one phone. Contact Center 7.0 counts the number of DN's, including Multiple Appearance DN's and Position ID's (POSID's) that can be recorded.

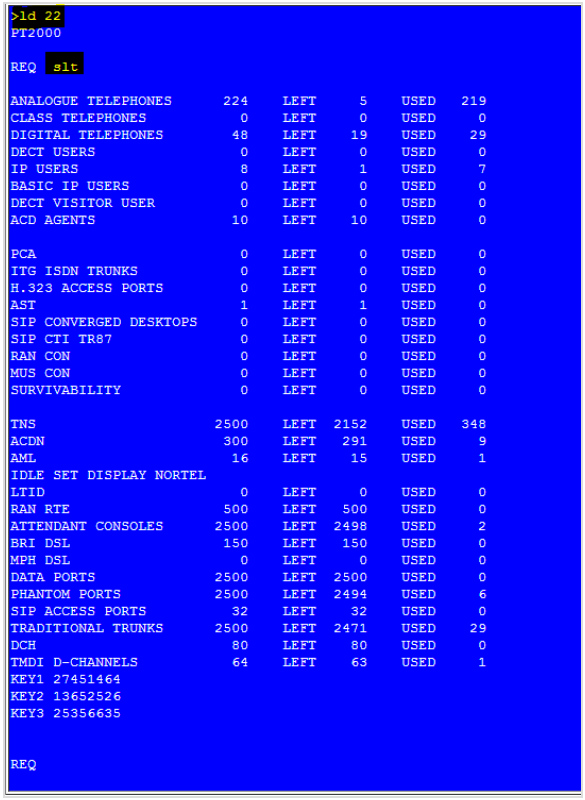
How To Print CS 1000 Software Limits (available licenses)

It will be important to know what the limits (also known as licenses) of the CS 1000 licenses are for the deployment. In the CS 1000, this information comes as a printout. To get a printout of system information:

1. Logon to the CS 1000.
2. From the prompt **>**, enter the following commands followed by a carriage returns ***(cr)***:

- **OVL111 IDLE** system says a user is logged on.
- ***LD 22 (cr)*** Load Overlay 22, the Print Routine for Configuration blocks.
- **REQ*PRT (cr)*** system is awaiting a request (**REQ**). The request is to print (***PRT***).
- **TYPE*SLT (cr)*** system is asking what **TYPE** of info to print. ***SLT*** will Print System Type, System Generic (software release and versions) and System Limits (licenses).

- The System Limits report will print and scroll down the screen.
- Exit the load by entering ***END(cr)*** or *******(cr)***.
- The SLT report printout will list:
  - First column: Names of the licensed objects.
  - Second column: Total number of licenses installed.
  - Third column: Number of licenses LEFT (available).
  - Fourth column: Number of licenses USED (not available).



```
>ld 22
PT2000

REQ  slt

ANALOGUE TELEPHONES      224    LEFT     5    USED   219
CLASS TELEPHONES           0    LEFT     0    USED     0
DIGITAL TELEPHONES        48    LEFT    19    USED    29
DECT USERS                 0    LEFT     0    USED     0
IP USERS                   8    LEFT     1    USED     7
BASIC IP USERS             0    LEFT     0    USED     0
DECT VISITOR USER          0    LEFT     0    USED     0
ACD AGENTS                10    LEFT    10    USED     0

PCA                        0    LEFT     0    USED     0
ITG ISDN TRUNKS            0    LEFT     0    USED     0
H.323 ACCESS PORTS         0    LEFT     0    USED     0
AST                        1    LEFT     1    USED     0
SIP CONVERGED DESKTOPS     0    LEFT     0    USED     0
SIP CTI TR87               0    LEFT     0    USED     0
RAN CON                    0    LEFT     0    USED     0
MUS CON                    0    LEFT     0    USED     0
SURVIVABILITY              0    LEFT     0    USED     0

TNS                     2500    LEFT  2152    USED   348
ACDN                     300    LEFT   291    USED     9
AML                       16    LEFT    15    USED     1
IDLE SET DISPLAY NORTEL
LTID                       0    LEFT     0    USED     0
RAN RTE                  500    LEFT   500    USED     0
ATTENDANT CONSOLES      2500    LEFT  2498    USED     2
BRI DSL                  150    LEFT   150    USED     0
MPH DSL                    0    LEFT     0    USED     0
DATA PORTS              2500    LEFT  2500    USED     0
PHANTOM PORTS           2500    LEFT  2494    USED     6
SIP ACCESS PORTS          32    LEFT    32    USED     0
TRADITIONAL TRUNKS      2500    LEFT  2471    USED    29
DCH                       80    LEFT    80    USED     0
TMDI D-CHANNELS           64    LEFT    63    USED     1
KEY1 27451464
KEY2 13652526
KEY3 25356635


REQ
```

3 Initial Configuration of Avaya CS1000 for Recording

To configure the CS1000 for recording, the installation team will need to be able to:

- Know how to log in, log out, load and exit from CS 1000 overlays
- Understand MLS and its configuration in the CS 1000 and associated call center systems
- Verify the global setting of IPIE is set to YES
- Configure MLS between Engage and the CS 1000
- Associate sets and verify RECA feature and AST
- Configure Media Security
- Configure recording on-demand keys

3 CS 1000 System Administration

A user must know how to login, access an overlay, exit the overlay and log out of the system.

The CS 1000 requires a PBX user ID and password account to login to make changes and check configurations. After logging into the system, the user accesses an overlay program, sometimes called a load, to perform work on the system. There are numerous overlays or loads for printing or viewing system and set settings and configurations as well as for making changes to configurations.

Overlays

Overlay programs are small programs that are loaded into the memory of the CS 1000 for use in configuring, printing, viewing and troubleshooting the system. There are numerous overlays and they are numbered. For example, Overlay 20 (also known as LD 20) is a Print Routine used to view the programming of a directory number or terminal number. The command for loading an overlay is ***LD xxx***. Only one overlay can be loaded and used at a time. When work with an overlay is completed, it must be exited using the **** command.

There are Avaya/Nortel GUIs that are available to use to make the same types of changes that will be needed. Check with the local IT staff to learn if any are available.

User Limitations

There can only be one overlay program run by one user, at a time, in the PBX. There can be other users logged onto the CS 1000 but only one user can be using a specific load at a time. If there is another user using or attempting to use the same overlay being requested, there will be warning - OVERLAY CONFLICT - presented. One user will not be able to work in that load. Also, the system itself is considered a user and if it is performing internal testing (ex. midnight routines) there could be overlay conflicts encountered.

All CS 1000 systems have a CLI-based administrator's console for input and output on the system. However, many systems may be connected to an Avaya Element Manager, which is GUI based and is accessed much the same way as an Avaya CM. Aslo, some users access the PBX using PuTTY type software.

You will need to get a CS 1000 system user ID and password to log in. Follow these steps, in general, when working on and making changes to the CS 1000.

Is Someone Already Logged in?

At the CS 1000 Administrator Console, check if someone is already logged onto the CS1000 system:

- Tap the ***Carriage Return*** or ***(cr)*** key on the keyboard to refresh the screen.
    - **OVL111 IDLE**: Indicates nobody is currently logged into the system.
    - **OVL000**: Indicates a user is already logged in to the system and NO overlay is loaded.

Logging onto the CS 1000

To logon to the CS 1000, enter the following using the syntax:

- Tap the ***(cr)***.
- **OVL111 IDLE** The system responds that is is idle, no one is logged in.
- ***LOGI username(cr)*** User enters login (LOGI) command and user ID (ex. ***LOGI admin***).
- **PASS?** The system responds with request for password.
- ***password(cr)*** User enter the user's password (ex. ***1q3e5t***).
- **OVL000** The system responds that this user is now logged onto the CS 1000 administration terminal.

For here on, the user can load and exit the numbered overlay programs to perform tasks on the CS 1000.

Loading and Exiting Overlays

An overlay is a numbered program (ex. LD 11: Allows data blocks for IP Phones to be created or modified) that performs specific activities on CS1000 programming and components. There are overlays for configuration and maintenance activities, viewing and printing of configurations and as well as making changes to terminal number blocks (TNBs) and DN blocks (DNBs). An example is Overlay 20 (LD 20) which is used to print Directory Number Blocks (DNBs). A DNB will tell the user what TN(s) a particular DN is associated with.

Loading an overlay (assuming user is logged in):

- Tap the ***(cr)***.
- **OVL000**: System responds that a user is logged onto the CS 1000 administration terminal.

- ***LD 20(cr)***: User requests the system to load Overlay 20 (LD 20 is loaded into memory).
- **REQ** ***PRT(cr)*** : System responds with **REQ** a request propmpt. User tells system to ***PRT*** (PRINT) information.
- **TYPE** ***DNB(cr)*** System asks what **TYPE** of information to be printed. User asks for a DN block (***DNB***).
- **DN** ***1234(cr)***: System asks what **DN**. User enters the DN number being checked (***1234***).
- ***(cr)*** to pass the Date prompt.
- ***(cr)*** to pass the PAge prompt.
- ***(cr)*** to pass the DES (Designation) prompt.
- **DN 1234 ...** system proceeds to print out the information regarding DN 1234, such as TNs (the sets) and push keys on those TNs (sets) that this number is assigned to. This type of printout is used for configuring and troubleshooting sets.

When all work within an overlay is completed, it must be exited. There can only be one overlay in use at a time in the system and leaving an overlay loaded prevents other activities from occurring. Always exit or END an overlay when done.

Exiting an overlay:

- Tap the ***(cr)*** to refresh the screen.
- **NACT** or **END** is displayed. The system indicates it is looking for the next action or NACT or is indicating the END of the data block.
- ****(cr)*** User enters ****(cr)*** to exit the overlay program. (an overlay can be stopped and exited anytime by entering ****(cr).
- **OVL000** system responds and indicates the user is logged on and NO Overlay is loaded.
- Entering ***LD xxx*** (xxx being another overlay number) now will load another overlay for use.

Logging OUT of the System

To log out of the system:

- Tap the *(cr)* to refresh the screen.
- **OVL000** indicates a user is logged in.
- *****(cr)* enter four * to EXIT everything.
- *LOGO(cr)* to logout of the system.
- **OVL111 IDLE** system displays OVL111 IDLE indicating no one is logged onto the system.

Overlays of Interest

There are numerous overlays needed to complete the integration of the Engage Voice Recorder and the CS 1000. Some examples are:

LD 10: Analog Telephone Administration used to program analog sets

LD 11: Digital Telephone Administration used to program IP and digital sets

LD 17: Configuration Record 1 for checking the global IPIE setting

LD 20: Print Routine for DNBs and TNBs used to examine individual set configurations at the DN and TN levels.

LD 21: Print Routine for AMLs used to carry MLS

LD 22: Print Routine for Configuration Record 2

LD 81: Print Routines for Features and Stations used to get lists of phones with specific features on a system

LD 32: Maintenance on peripheral equipment used to check on and enable ports (the units a phone is connected to)

LD 48: AML Link Diagnostics for MLS

3.1 Verify Global Setting (IPIE) on CS 1000

Global settings on a CS 1000 refer to configurations within the system that have an effect on everything.

The Engage Recording server needs one global attribute (**IPIE**) to be set to YES. **IPIE** set to YES = Allows Enhanced Unsolicited Status Message (USM) Information Elements (IE) needed for call events data transport. To check this global setting on the CS 1000:

Print out the CS 1000 Configuration Record 1 to view the IPIE setting.

The **IPIE** prompt enables or disables system-wide IP Call Recording. The functionality is disabled by default (NO). When IP Call Recording is enabled (YES), a modified Application Module Link (AML) message that identifies the IP endpoint is sent for each call.

1. Logon to the CS 1000.
2. From the prompt **>**, enter the following commands followed by a carriage returns (cr):

- OVL111 IDLE system says a user is logged on.
- ***LD 22 (cr)*** Load Overlay 22, the Print Routine for Configuration blocks.
- **REQ** ***PRT (cr)*** system is awaiting a request (**REQ**). The request is to print (**PRT**).
- **TYPE** ***CFN (cr)*** system is asking what **TYPE** of info to print. ***CFN*** for the Configuration Record 1 that contains IPIE.
- The Configuration Record will print and scroll down the screen.
- The Configuration Record is composed of many sections. Locate the section (also known as a gate opener) labeled **PARM** (Parameters) and verify that **IPIE** is set to ***YES*** (the default is NO).
- Exit the load by entering ***END(cr)*** or *******(cr)***.

If IPIE is set to NO, then change the setting to YES.

From the prompt **>** enter the following commands followed by a carriage return (cr):

- **OVL111 IDLE**
- ***LD 17 (cr)*** load overlay LD 17, the Configuration Block overlay.

- **REQ** ***CHG (cr)*** Request to make a change (***CHG***) to the system configuration block.
- **TYPE** ***PARM (cr)*** Use Gate Opener **PARM** to change a system parameter.
- ***CHG IPIE YES (cr)*** to change (***CHG***) the setting ***IPIE*** from NO to ***YES***.
- ***(cr)*** All the way through the remaining fields of the record to complete the change.
- **NACT** or **END** change is complete and system is waiting for next change.
- Enter ****(cr)*** or ***END (cr)*** To exit the overlay.

3 Meridian Link Services (MLS)

Configure MLS

Meridian Link Service (MLS) is used to provide CS 1000 CTI call event and data to the Engage Voice Recorder. It must be configured to connect to Engage. Each type of Avaya supported call center that works with the CS 1000 uses some form of CTI link and connection. This is a global configuration within the CS 1000 software.

Use *LD 17 Configuration Block 1* to add a NEW ELAN and VAS link for the Engage system. The configuration will create an ELAN xx followed by a Value Added Service and ID (VAS ID) which the Engage will connect to via the ELAN.

To do this:

Get PBX and Network IP Addresses

There is an overlay that provides the IP addresses used by the CS 1000. To get the IP addresses of a switch:

1. Login to the CS1000 administrator's console.
2. Enter ***LD 117(cr)***
3. At the **REQ** prompt enter ***PRT HOST***
4. At the **REQ** prompt enter ***PRT ROUTE***
5. At the **REQ** prompt enter ***PRT MASK***
6. Enter ***End(cr)*** or *******(cr)*** to exit the overlay.

These printouts will provide a list of all the PBX's IP addresses.

Get ELAN IP Addresses

There is an overlay that provides the IP addresses used by the PBX's ELANs. To get the IP addresses of all the ELANs:

1. Login to the CS 1000 administrator's console.
2. Enter ***LD 48(cr)***

3. At the **REQ** prompt enter ***STAT ELAN***
4. Enter ***End(cr)*** or *******(cr)*** to exit the overlay.

This printout will provide all the the ELAN IP addresses within the PBX.

Create an ELAN for the MLS

1. Logon to or continue from the previous login to the CS 1000 administrator's console.
2. Enter ***LD 17(cr)*** to access LD 17
3. Enter the following variables, tapping the ***(cr)*** at the end of each entry:

Prompt	Response	Descriptions
REQ	CHG	Change the data in the configuration datablock and data-base
TYPE	ADAN	Use Action Device and Number Gate Opener
	ADAN NEW ELAN xx	Create a new ELAN data block where xx is from 16 to 31.
CTYP	ELAN	Card type is ELAN. An AML over Ethernet card
DES	aaaaaa	six character description of far end (ex. CCMS)

Enter a ***(cr)*** for all prompts not listed.

Create a Value Added Service (VAS) link for the MLS

1. Continue from the previous login to the CS 1000 administrator's console.
2. Tap the ***(cr)*** to refresh the screen. The system responds with CFN000 indicating user is still in LD 17.
3. Enter the following variables, tapping the ***(cr)*** at the end of each entry:

Prompt	Response	Descriptions
REQ	CHG	Change the data in the configuration datablock and database
TYPE	VAS	Use the Value Added Service Gate Opener
VAS	NEW	Create a new VAS data block.
VSID	xxx	Assign a VAS ID number xxx (0 - 127) to associate the link and VSID with so that the CTI messages can be sent.
ELAN	yy	Enter the ELAN number (16 - 31) created in the previous step to associate the VSID xxx with an Application Module Link (AML) in the same ELAN subnet. The link is used for the Meridian Link Service application.
SECU	YES	Security for this Meridian Link Service application. Default is NO.
INTL	1 - 12	Time interval (in 5 second increments) for checking Meridian Link for overload
MCNT	10 - 9999	Message count threshold for the number of Meridian Link messages for each time interval

Enter a *(cr)* for all prompts not listed. Enter *****(cr)* when done to exit the overlay.

3.2 List All TNs with the Features of RECA/D and ICRA/ICRD

If there is an issue with a phone not recording, use this procedure to get a printed list of all phones and their TNs having the CLS feature RECA and ICLA assigned. With the TN, technicians can access LD 11 in the CS1000 to see the TNB for the affected phone.

- The CLS feature RECA/D (Call Recording Allowed/Denied) is programmed on a per TNB basis.
- The CLS feature ICRA/D (IP Phone Call Recording Allowed/Denied for recording on demand) is programmed on a per TNB basis.

Overlay Program 81 (*LD 81*), a Station Print overlay, is useful for obtaining a list of extensions that have a specific feature assigned. For example, to generate a list of all TNs in a system that are assigned the feature RECA or ICRA:

- Logon to the CS 1000 administration console and enter:
- ***LD 81 (cr)***This will load the station print program.
- **REQ** ***LST (cr)*** Create a list of TNs and display them.
- **CUST** ***0 (cr)*** Select Customer ***0***. CS 1000 can support multiple customers, each with a number. 0 is the default customer.
- **DATE** ***(cr)*** Not needed.
- **PAGE** ***(cr)*** Not needed.
- **DES** ***(cr)*** (Not needed)
- **FEAT** ***aaaa (cr)***: Enter either ***RECA*** or ***ICRA*** as needed.
    - ***RECA***: Request all TNs with the CLS feature RECA programmed be collected and listed. Conversely, entering the code RECD at the FEAT prompt will create a list of TNs where the CLS code of RECD is present.
    - ***ICRA***: Request all TNs with the CLS feature ICRA programmed be collected and listed. Conversely, entering the code ***ICRD*** at the FEAT prompt will create a list of TNs where the CLS code of ICRD is present.
- NACT: The system is awaiting the next action.
- ***END(cr) or ****(cr)*** End the overlay program and return to OVL111 IDLE.

A listing of all terminal numbers with the feature RECA or ICRA as part of its CLS will be created. From this list the DN and TN can be referenced and used to examine the TNB (using LD 11) of the phone to see if the set has the other settings preventing recording.

3.3 Verify Associated IP Phone TNB Settings

Terminal Numbers (TNs)

A phone targeted for recording will be connected to a Terminal Number or TN. TNs are the port connections on the CS 1000 that phone devices are connected to. On the TN will be KEYS (push buttons on the set) that will have Directory Numbers (DNs) and features (ex. Hold and Record on Demand) programmed.

The type of CS 1000 system being integrated with dictates the "size" of terminal number (TN) to be used within the Engage Voice Recorder configurations.

TNs are referred to as L-S-C-U (loop-shelf-card-unit). A unit is a port on the analog or digital line card.

Small systems (Option 11C and CS 1000m) use a two element TN consisting of:

- **Loop**: numbered 0 - 60 (ex. 8)
- **Unit**: port numbered 0- 15 (ex. 13)
- In this example, the L-S-C-U is called **TN 8 13** (loop 8 unit 13). Small systems assign loop numbers to card slots eliminating the middle shelf-card parts of the TN.

Large systems (Option 61C and 81C and CS 1000e) use a four element TN:

- **Loop**: numbered 0 - 159 (ex. 008)
- **Shelf**: shelf numbered 0 - 1 (ex. 0)
- **Card**: slot numbered 0 - 15 (ex. 6)
- **Unit**: port numbered 0 - 15 (ex. 13)
- In this example, the L-S-C-U is called **TN 8 0 6 13** (loop 8 shelf 0 card 6 unit 13)

Terminal Number Blocks (TNBs)

A Terminal Number Block (TNB) is a software container of all DNs, keys and feature configurations for a specific TN within the CS 1000. This includes the type of phone (ex. IP2002), all directory numbers, key assignments, features and services assigned, calling restrictions and all Class Of Service (COS) assignments. Engage Voice Recording requires some settings be set on each TN that is to be recorded.

Verify TNB Settings

At some point prior to the Engage Voice Recorder implementation, the customer/reseller will have programmed all of the CS 1000 phones into the system to prepare them for recording. All IP phones that are to be recorded will need to have specific settings made on their terminal number block or TNB. These include:

- **CLS**: The CLS of the set will have numerous CLS features assigned. The class of service feature RECA (Record Calls Allowed) must be present. If the CLS code displayed is RECD, then the feature Record Calls is DENIED, meaning no recording from this TN.
- **AST**: Associate set keys (maximum of two) need to be configured. This entry in the TNB tells the system associate selected keys on the phone (there can be many starting with 0) for recording. They will then require AST licenses.

NOTE: If software package 411 is present, then the number of keys that can be associated, per set, can be four, which are needed if Record on Demand is deployed.

Configure Phone Recording Settings

During the PBX system installation, all of the phone sets will have been configured (had TNBs built). Every phone (whether it is a single- or multi-line set) that is to be recorded by the Engage Voice Recorder has to be configured with two items:

- **CLS**: The Class of Service (CLS) must have the feature RECA set and present.
- **AST Keys**: Associated set keys must be configured. AST keys tell Engage what keys on the set are to be recorded. Single line sets will only have one AST to configure. Multi-line sets will have from one to four, depending.

Check CLS for RECA and ICRA

If there is an issue with a phone not recording, it could be that the phone's TNB is not configured yet or it is configured improperly. Use this procedure to get a printed list of all phones and their TNs having the CLS feature RECA (Record Calls Allowed) and ICRA (IP Call Recording Allowed) assigned. With the TN of the affected phone, administrators can access LD 11 in the CS 1000 to see the TNB for that phone and check the RECA and ICRA setting.

- The CLS feature RECA/D (Record Calls Allowed/Denied) is configured on a per TNB basis.

If the Record on Demand (ROD) feature is to be available on this deployment, check that the TNB configuration is set correctly.

- The CLS feature ICRA/D (IP Call Recording Allowed/Denied) is configured on a per TNB basis for ROD purposes.

Overlay Program 81 (***LD 81***) is a CS 1000 Feature and Station Print overlay useful for obtaining a list of extensions that have specific CLS feature assignments.

For example, to get a list of all extensions with TNBs in a system using the feature RECA:

1. Logon to the CS 1000 from the administration console.
2. **OVL111 IDLE** ***LD 81 (cr)*** Enter ***LD 81*** to get the overlay loaded.
3. **REQ** ***LST (cr)*** List the items collected on the screen.
4. **CUST** ***0 (cr)*** Select Customer ***0***. CS1000 can support multiple tenants or customers, each with a number. ***0*** is the default customer number for all installations supporting just one customer.
5. **DATE** ***(cr)*** Not needed so pass this field.
6. **PAGE** ***(cr)*** Not needed so pass this field.
7. **DES** ***(cr)*** Not needed so pass this field.
8. **FEAT** ***RECA (cr)*** Requesting that all terminal numbers with the CLS feature RECA programmed be collected and listed.

A listing of all terminal numbers with the feature RECA assigned as part of its CLS will be displayed. From this list, the DN and TN of an affected phone can be referenced and used to examine the TNB to see if the phone has other settings preventing recording.

Note: If the CLS RECA is missing or set to RECD, the phone will NOT be recorded.

Repeat the procedure with the feature ICRA to get a list of sets with Record On Demand assigned.

Note: If the CLS ICRA is missing or set to ICRD, the phone will not be able to do any Record on Demand features.

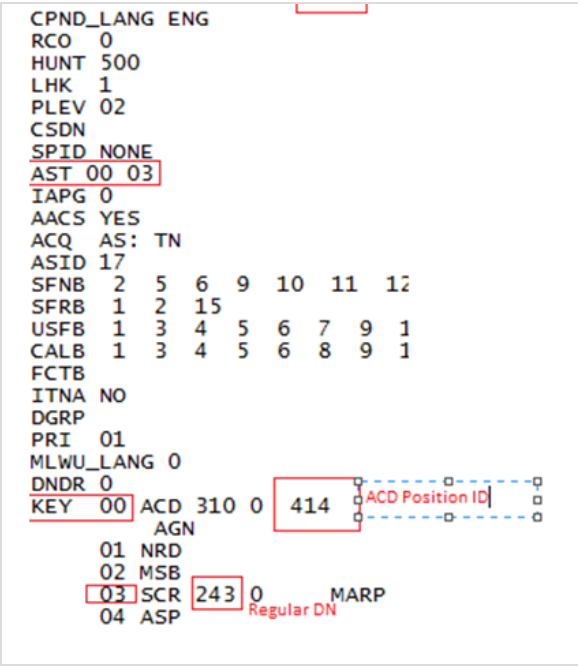
Check the AST (Associated) Keys

AST xx yy Associate Set Assignment for Meridian Link applications.

The AST settings (AST **xx yy**) will POINT to assigned DN keys on phone. There can be numerous DN keys on a phone. DN keys are usually numbered 00 - 15, as in Key 00 through Key 15.

In the suspected phone's TNB, scroll down and locate the **AST** entry. Note what keys the AST is pointing to. An example would be **AST 00 03** with:

- **xx or 00**: In this field is the key number (00) on the phone for the *first DN number that can be recorded*.
- **yy or 03**: In this field is the key number (03) on the phone for the *second DN number to be recorded*.



In the example, AST 00 03 is phone **key 00** and phone **key 03**. Scrolling further down the page, locate the **Key** section and find **Key 00** and **03**. These are the selections that are associated by AST (and licensed) to be recorded.

- **Key 00** is an ACD (automatic call distribution) line with DN 310 at ACD Position 414.
- **Key 03** is an SCR (single call ring) line with DN 243.

NOTE: If the **AST field entries** are POINTING to phone keys with no DN numbers assigned to them, this could be the cause for no recording.

Using the listing printed via LD 81 can help identify sets that may have improper feature and AST settings quickly.

AST KEYS with Record on Demand

Record on Demand requires two AST keys so that recording of calls, on demand, can be accomplished. If the Avaya CS 1000 has a software load with feature package 411, then the machine will have the capability to have four AST keys, enabling the Record on Demand feature.

In an example TN setup of a set's keys, the AST key assignments would look like this:

AST aa bb cc dd programmed, as an example, to: ***AST 00 01 02 03***

The meaning of the assignments would be:

AST key association	Set key assignment
AST **00** - The 00 is set's key **00**, which is now associated for recording, first	Key **00** ACD 310 position ID 410 assigned, can be recorded

AST key association	Set key assignment
AST 01 - set key 01 is associated for Record on Demand recording, anytime	Key 01 ROD feature assigned to this key (Record)
AST 02 - set key 02 is associated for Record on Demand recording, anytime	Key 02 SAVE feature assigned to this key (Save and Delete)
AST 03 - set key 03 is associated for recording, second	Key 03 SCR 243 Single Call Ring line assigned, can be recorded

Without AST to Set Key associations (which invokes the required AST licenses), then NO call recording occurs.

3 Verify Record on Demand (ROD) Configuration

Prior to the deployment of the Engage system, the customer/reseller may have already done the database input into the Avaya CS 1000 for all the phones that are to be recorded and those sets that have been assigned the Record on Demand feature.

The Record on Demand (ROD) feature allows users to record and save a telephone conversation. This is done by assigning the feature components of Record and Save/Delete on two push keys of the set.

The ROD feature has two functions:

- Record an active telephone conversation, on demand.
- Save (or delete) an active recording.

There are two keys used for Record On Demand.

- **Record** key: The ROD key, displayed as ***Record*** on the set, has two functions.
  - When first pressed during a call, the Engage Voice Recorder is notified of the key press event and starts the telephone conversation recording.
  - When pressed the second time during a call, the Engage Voice Recorder is notified of the key press event and stops recording the telephone conversation.
  - The user can start or stop the recording by pressing the ROD key anytime time during an active call.
- **SaveCall** key: The Save/Delete key, displayed as ***SaveCall*** on the set, notifies Engage to save or delete the current recording.

For **Record on Demand (ROD)** to operate correctly, it requires:

- **Contact Center Manager Server (CCMS) 7.0 or later:** These feature keys are *only functional* with Contact Center Manager Server (CCMS) 7.0 or later. They can be configured on the set's TNB, but will not function unless the PBX has a CCMS at Release 7.0 or later, connected to it.

- **CLS**: Class of Service Feature ***ICRA*** (IP Call Recording Allowed) must be present in the set's CLS section of its TNB.
- **AST keys**: AST keys 01 and 02 are to be associated with Key 1 and Key 2. Four ASTs are available if the CS 1000 has feature package 411 installed.
- **KEY 1**: Must be configured with feature name ROD.
- **Key 2**: Must be configured with feature name SAVE.

LD 81 can be used to list the IP Phones configured with feature ICRA and the ROD and SAVE keys.

LD 20 can be used to print the TNB of a set to check its CLS and Key 1 and 2 settings.

LD 11 can be used to change the configuration of a TN if the feature is not applied correctly.

4 Configure Engage Record for Recording

The Engage Voice Recorder must be configured to communicate with the Avaya CS 1000 system so that the recorder can collect and store voice and call event data. This involves:

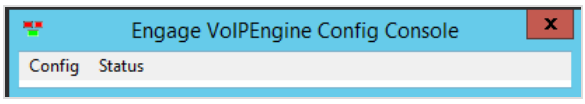
- Setting the Engage VoIP configuration for Avaya CS 1000.
- Selecting and configuring the recording method to be used for this deployment:
  - Dual Media Stream (DMS) recording
  - Port Spanning or mirroring recording
  - Connecting via MLS to Avaya's call center system, if needed
- Perform Port Mapping

4.1 Set the Engage VoIP Configuration for CS 1000

To configure the Engage VoIP Recording server software to integrate with an Avaya CS1000:

Select CTI Option and TN Definition for Avaya CS 1000:

1. Select ***Start » All Programs » TelStrat Engage » VoIP Engine Configuration*** and the **VoIP Engine Config Console** utility displays:

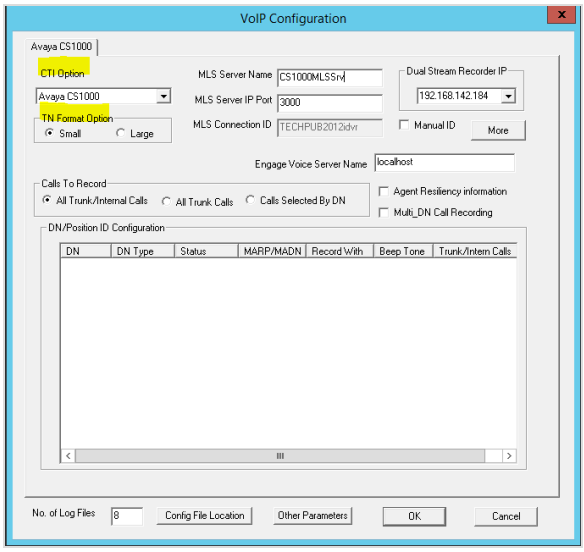


2. Select the ***Config*** menu option to open the **VoIP Configuration** dialog box.

3. In the **CTI Option** section, choose ***AvayaCS1000*** from the drop-down menu. The **AvayaCS1000** tab displays.

4. Under the **TN Format Options** section, click the ***Small*** or ***Large*** button according to the PBX type as follows:

- **Small** systems will include the Meridian 1 Option 11, CS 1000s and CS 1000e systems.
- **Large**systems will include the Meridian 1 Option 51, 61, and 81 and the CS 1000e and CS 1000m single-group or multi-group systems.
- This selection is important since PBX system size will dictate the use of the SHORT two-unit Terminal Number (TN, ex. 13 3) or LARGE four-unit Terminal Number (TN, ex. 4 0 13 3) elements.



Configure MLS and Calls to Record:

The Engage Voice Recorder must be able to connect to the CS 1000 voice system to receive the CTI call and event data associated with calls being recorded including agent call and event data if a call center is provisioned and programmed.

With the Avaya CS 1000 system, this data is transported using a Meridian Link Services (MLS) link.

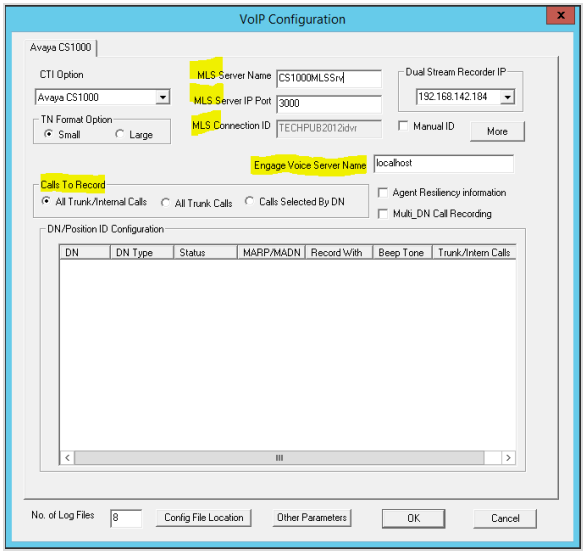
Meridian Link Services (MLS) is a communications facility that provides an interface between the Engage Voice Recorder and the CS 1000. To configure the MLS elements for the Engage Voice Recorder:

1. Enter the *server name* or *IP Address* of the *MLS CTI Server* in the **MLS Server Name** field (ex. ***CS1000MLSSrv***).

2. Enter the *IP Port* (default is ***3000***) used by the *MLS CTI Server* to communicate with the Engage Recorder server in the **MLS Server IP Port** field.

NOTE: The **MLS Connection ID** will be pre-configured by the system. It should only be overridden if instructed to by TelStrat customer support using the ***Manual ID*** checkbox to enable the field.

3. Enter the *Engage Voice Server Name* in the field (ex. ***localhost*** if this is the host server).
4. Select the appropriate *Calls To Record* button:
   - Select ***Trunk/Internal Calls*** to record both trunk calls and internal station to station calls.
   - Select ***Trunk Calls Only*** to only record incoming and outgoing trunk calls and to not record station to station calls. This may be required if you are using spanning and are spanning at a trunk interface and do not have access to station to station calls.
   - Select ***Calls Selected by DN*** if you would like some stations to be configured for Trunk/Internal Calls and some stations configured for Trunk Calls Only. If you select Calls Selected by DN, then the Calls To Record option is available in the port mapping per DN.



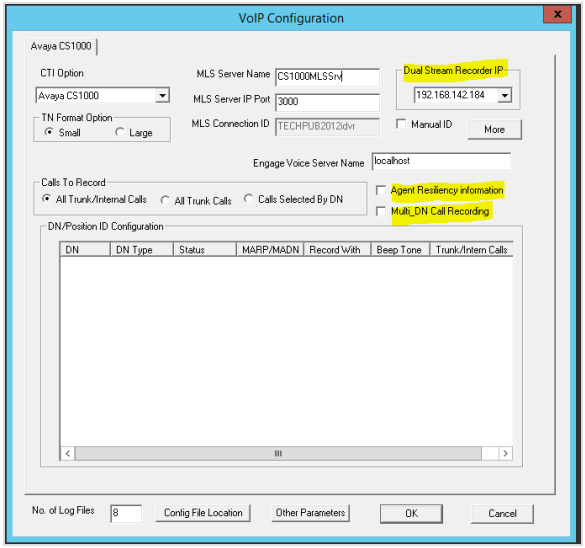
Select the Recording Method and Multi-DN Recording Option:

1. If any ports are being recorded with the *Dual Media Stream* capability, click on the drop-down menu to configure the **Dual Stream Recorder IP** field with the ***IP address*** of the Engage Record Server NIC card that is used to receive Dual Media Stream RTP packets.

2. Select the **Agent Resiliency information** check box if:
   a. Using the DMS recording method.
   b. The CS 1000 PBX software release is at Release 6.0 or above, AND,
   c. The Contact Center software release is at CCMS 7.0 or AACC 6 or above.

   Agent resiliency refers to having the appropriate networking and computer infrastructure to support business continuity during a network or system failure.

3. Select the **Multi-DN Call Recording** checkbox if:
   a. Recording more than TWO (2) DNs on any VoIP phone.
   b. Multiple Appearance DN (MADN) Call Recording of more than TWO (2) DNs on any VoIP telephone set.
   c. Any phone has more than TWO (2) DNs configured for recording, which will consume a LM_MLSM_DN_REGN license for each DN that is configured to be recorded.



NOTE: Multi-DN Recording is only available for Dual Media Stream (DMS) recording ports and is NOT available for Port Spanning.

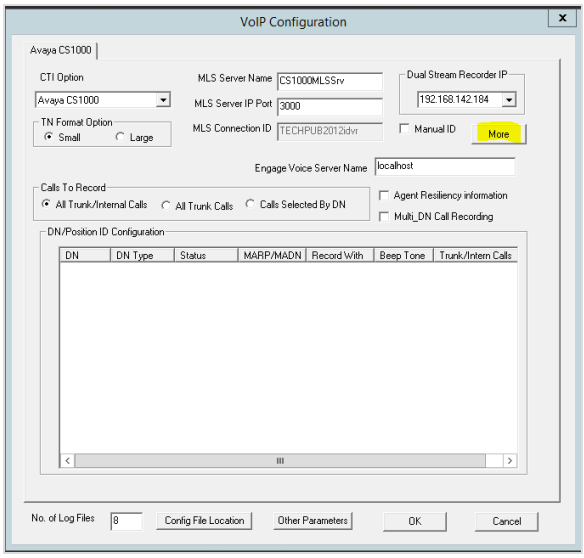
One licensing side effect of enabling the Multi-DN Call Recording feature is that any key that is a Multiple Appearance key (MADN) will consume a LM_MLSM_DN_REGN license. This is due to Avaya licensing and is not controlled by the Engage Voice recorder.

When Configuration is complete:

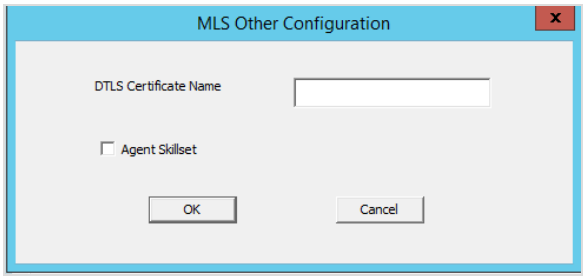
Click ***OK*** at the bottom of the page to confirm the VoIP settings.

4.2 The More Button - Certificate and Skillsets

The **More** button is found on the CS1000 VoIP configuration window. Click on the ***More*** button.



The **MLS Other Configuration** window appears.



The elements of this configuration are:

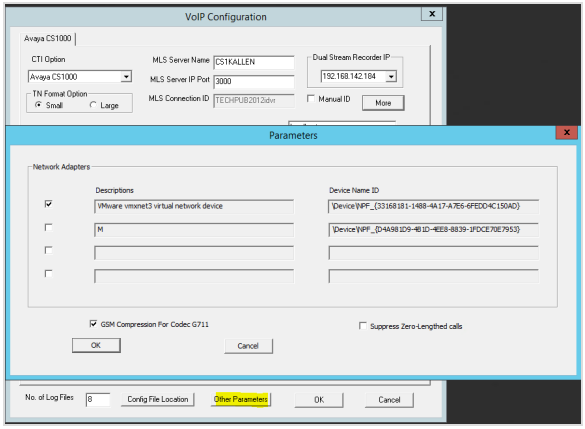
- **DTLS Certificate Name**: The name of the *DTLS certificate* to be used for providing media security between the CS 1000 and the Engage Voice Recorder.

  - **Agent Skillset** checkbox: When checked, Engage will collect the agent skillset information for recorded calls. *Supported only with Avaya Contact Center Manager (CCM) 7.0 and higher*.

Call Center skillsets are used to answer and distribute calls to agents as the agents become available. Skillsets hold calls for different call center departments, such as sales and technical support.

4.3 The Other Parameters Button

If the **Port Spanning** recording method is being used, click on the **Other Parameters** button. The **Parameters** window lists Engage system network adapters. There are two options available.



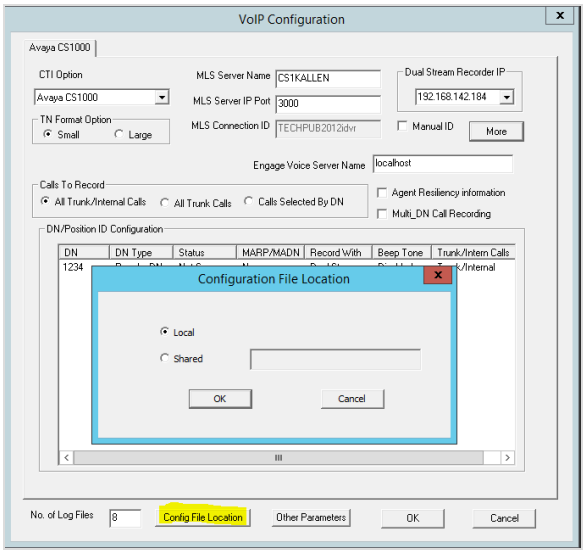
The elements of the **Other Parameters** Button window include:

- ***Network Adapters*** window: Contains server NIC information. Select the network adapter for port spanning by checking the box to the left of the desired network adapter.
  - ***Descriptions***: Contains specific descriptions for each available NIC listed.
  - ***Device Name ID***: Contains specific identification information for each NIC listed.

- ***GSM Compression For Codec G711*** checkbox: When checked, G.711 calls are compressed using GSM compression by default. This reduces the storage consumption by a factor of 10 (from 128kbps to 12.8kbps).
- ***Suppress Zero-Lengthed Calls***: Checking this checkbox prevents having 0K (zero K) duration calls in the backup recorder playback log when it is only receiving TAPI events and not bearer traffic.

4.4 The Config File Location Button

The **Config File Location** button provides a choice on where to store the server's VoIP configuration, either locally or off the system.



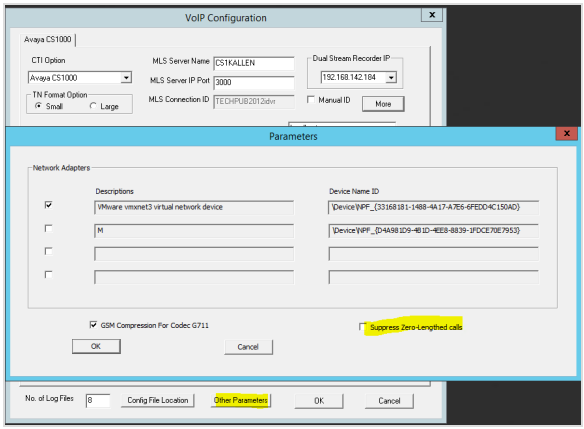
The **Configuration File Location** button elements are:

- ***Local*** button: When selected, a copy of the VoIP configuration file is stored on the local host.
- ***Shared***button and window: When selected, a copy of the VoIP configuration file is stored at a selected location.

4.5 Suppress Zero-Lengthed Calls

If there are more than one Engage recorders in the deployment, then a setting can be made to limit disk space being consumed for calls of zero seconds in length.

Assuming, in the customer configuration there are two Engage servers, Host1 and Host2, the Host2 recorder is designated as a redundant/backup recorder only, and it is not receiving the bearer traffic, but, it is receiving TAPI call events.



To set this:

1. In the Avaya CS1000 **VoIP Configuration** window, click the **Other Parameters** button.
    - Check the ***Suppress Zero-Lengthed calls*** checkbox.

2. Click ***OK*** then ***OK*** again to commit.

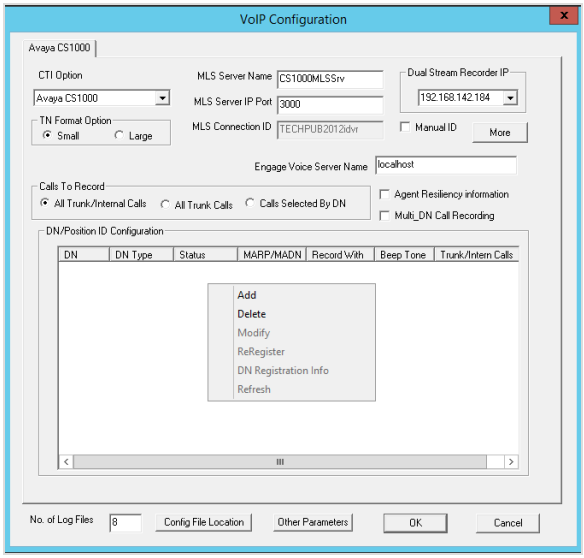
This prevents having 0K (zero K) duration calls in the backup recorder playback log when it is only receiving TAPI events and not bearer traffic.

5 Engage Port Mapping

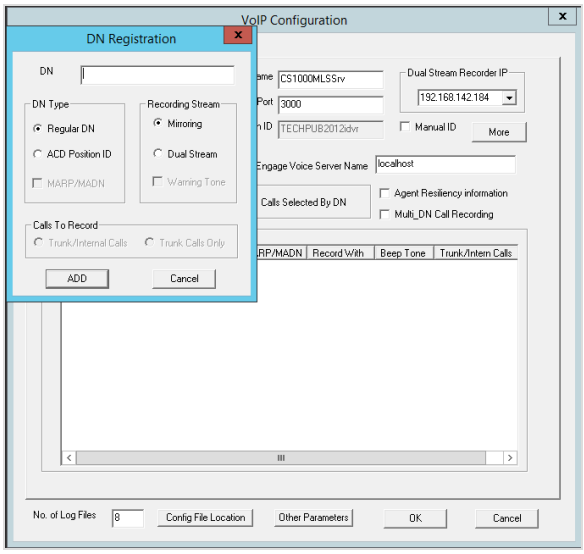
Port Mapping is the process of taking device data on the CS 1000 and mapping it onto the Engage server's recording channels. All devices on the CS 1000 that are to be recorded must be contained in the Port Mapping configuration.

Adding DNs to be Recorded

1. Right-click in the **DN/Position ID Configuration** window to get the pop-up menu.



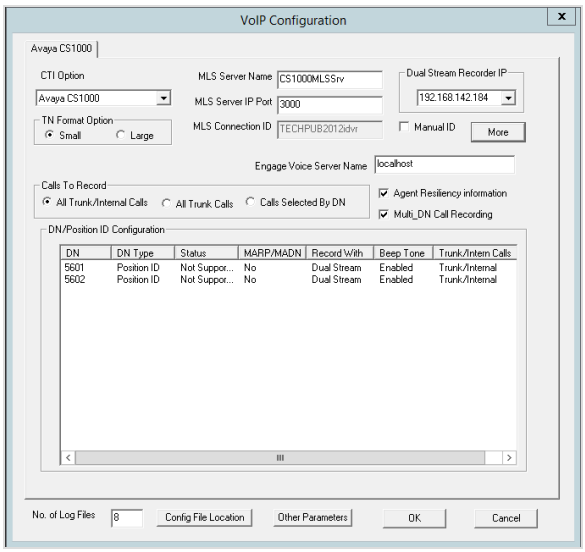
2. Click ***Add*** to get the **DN Registration** window.



3. In the **DN Registration** window, enter the following:
    - **DN**: Enter the DN of the phone to be recorded.
    - **Recording Stream**: Select the type of recording:
        - **Mirroring**: Click on the *Mirroring* option button in the Recording Stream area if you want the DN to use port-mirroring (spanning) VoIP recording.
        - **Dual Stream**: Click on the *Dual Stream* option button if you want the DN to use Duplicate Media Stream (DMS) VoIP recording.
    - **DN Type**: Configure the DN type:
        - **Regular DN**: Select the *Regular DN* option button in the DN Type area if you are configuring a standard directory number (Single Call Ringing (SCR), Single Call NoRing (SCN), etc...).
        - **ACD Position ID**: Select the *ACD Position ID* option button if you are configuring the ACD in-calls key.
        - **MARP/MADN**: If Dual Stream was selected, then *MARP/MADN* MUST be selected if the DN is part of a Multiple Appearance Directory Number (MADN).

- If **Dual Stream** was selected, you have the option to select *Warning Tone*. Select the **Warning Tone** check box if you want the Engage system to authorize the PBX to insert a warning tone every 15 seconds to indicate that the call may be recorded.
- **Calls to Record**: Selection of ***Calls to Record*** on the **DN Registration** window is prompted by the *Calls to Record* selection on the VoIP Configuration page. If the *Calls to Record* selection on the **VoIP Configuration** page was:
  - **All Trunks/Internal Calls**: Then no *Calls to Record* selection is available in the **DN Registration** window.
  - **All Trunk Calls**: Then no *Calls to Record* selection is available in the **DN Registration** window.
  - **Calls Selected by DN**: Then the *Calls to Record* option is ready in the **DN Registration** window. Choices are:
    - **Trunk/Internal Calls**: Only trunk and internal calls using a selected DN are recorded.
    - **Trunk Calls Only**: Only trunk calls using a selected DN are recorded.

4. After completing the DN Registration configuration for a DN, click on the ***Add*** button to complete the configuration and add it to the port mapping list of the Engage system. The DN just added will display in the **DN/Position ID Configuration** window.



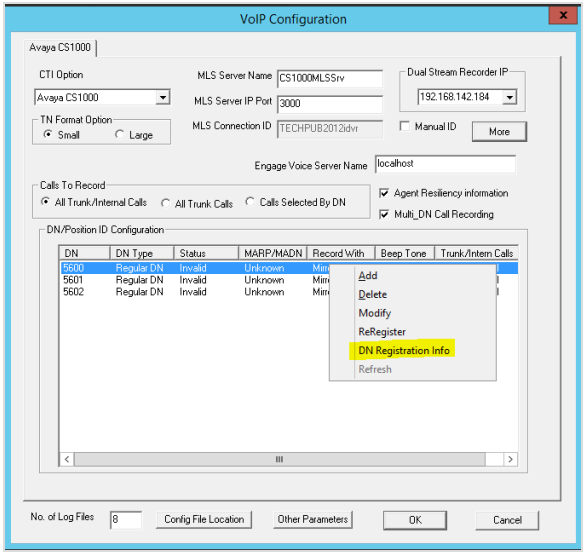
5. The **DN Registration** window is still available for the next phone/DN configuration. Continue to ***Add*** phones/DNs until the requirements of the implementation are met.

6. Click on ***Cancel***to get out of the **DN Registration** window.

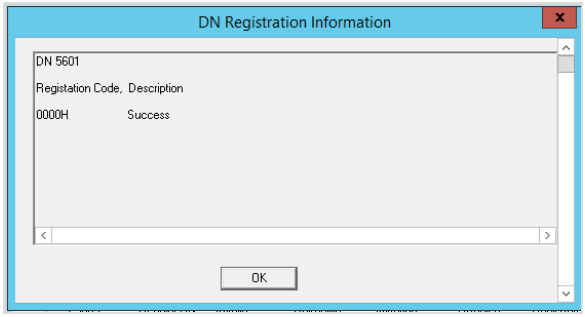
Checking DN Registration

To verify that Engage Record is communicating with the MLS server for a specific DN:

1. Right-click on the **DN** to view its registration information to get the pop-up menu.



2. Click on ***DN Registration Info*** to get the **DN Registration Information** window.



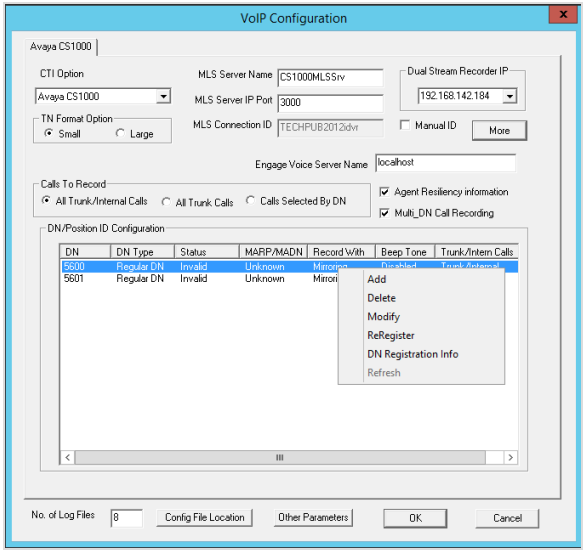
3. Review the data content in the pop-up window.

4. Click ***Close*** when done.

Deleting a DN from Recording

To delete a DN from recording by Engage:

1. Right-click on the DN to be deleted to get the pop-up menu.



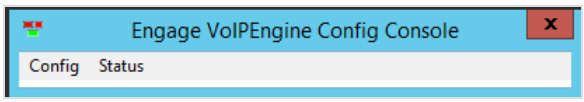
2. Click on the ***Delete*** command.

3. The **DN** is deleted from the list and the pop-up menu disappears.

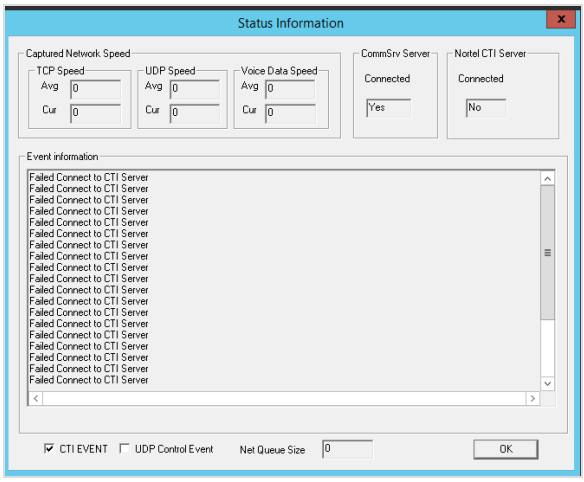
6 Review Engage Status And Connections

To review the status of the Engage Voice Recorder and its connection to the CS 1000 system:

1. Logon to the Engage Voice Recorder server.
2. From the ***Start*** menu, launch the **Engage VoIPEngine Console** utility.



3. On the menu bar, click on the ***Status*** command and the **Status Information** window displays:



4. Review the following field descriptions:

Field	***Description***
Captured Network Speed Window	The following fields display the average and network speeds captured by the IP Telephone MLS Configuration application.
TCP Speed	This field displays the average

	and current speed of the Transmission Control Protocol (TCP).
UDP Speed	This field displays the average and current speed of the User Datagram Protocol (UDP).
Voice Data Speed	This field displays the average and current speed of the voice data.
CommSrv Server Connected Window	This field displays whether or not the Engage server is connected. Valid values are Yes and No.
Nortel CTI Server Connected Window	This field displays whether or not the Nortel CTI server is connected. Valid values are Yes and No.
Event Information Window	This window displays the events taking place. An example is *Failed Connect to CTI Server*.
CTI Event checkbox	Select the **CTI Event** checkbox to display CTI event information in the *Event Information* window.
UDP Control Event checkbox	Select the **UDP Control Event** check box to display the UDP

	control event information in the *Event Information* window.
Net Queue Size Window	This field displays the network queue size.

5. Click ***OK*** when done.