3Com ExecutiveAssistant Call Recording/Monitoring

Technical Guidelines for Version 5.0.85 and higher

The following 3Com NBX versions offer Call Recording using 3Com ExecutiveAssistant:

R4.1: Requires R4.1.66 and higher
R4.2/R4.3: Requires R4.3.7 and higher
R4.4: Requires R4.4.5 or higher
R5.0: Requires R5.0.6 or higher
R6.0: Supports all current versions, including SIP Mode

NBX Terminology note: The following phrases are synonymous: Media Port, Wave Port, Wave Phone, WAV Phone, Media Phone, Media Driver Port, Windows Audio Volume License, TAPI/WAV Port.

This document assumes working knowledge of the NBX phone system, NBX dial plan and ExecutiveAssistant. Incorrect modifications to the NBX dial plan can render the system inoperable.

In addition to describing details of configuring the recording functionality and dial plan routing changes necessary for these features, this document also provides a list of functionality details and limitations of the Recording/Monitoring/Barge-in/Whisper features.

ExecutiveAssistant Recording/Monitoring/Barge-in/Whisper: Overview

3Com ExecutiveAssistant performs it functions, such as Recording, Monitoring, Whisper, Barge-in, Find-me/Follow-me, etc., by having all calls route through the software. This is accomplished by setting up hunt groups populated with the Media Ports installed on the ExecutiveAssistant server.

3Com ExecutiveAssistant provides Call Recording by re-routing calls to ensure they reach the appropriate ExecutiveAssistant hunt groups. ExecutiveAssistant then identifies where the call was heading so that as it turns on the recording mechanism it immediately sends the call to the correct destination. In addition to changing NetSet and Dial Plan routes to send calls to the appropriate ExecutiveAssistant hunt groups, you use Dial Plan "Tables" (for outbound calls) and possibly "Pretranslators" (for extension-to-extension or inbound from NBX auto-attendant).

ExecutiveAssistant uses the hunt groups for various features and routing purposes. Using different hunt groups allows ExecutiveAssistant to know what type of call is being routed to it and therefore allows ExecutiveAssistant to know how to handle the call and/or route the call. Standard hunt groups used by ExecutiveAssistant are configured as Circular hunt groups with the first half of the media ports assigned to the ExecutiveAssistant server as members. For example: if the server has the media port range 200-219, then the hunt groups would have 200-209 as members. The last half of the media ports (210-219) are used dynamically and exclusively by ExecutiveAssistant to complete the recording mechanism. The logout if no answer option for the hunt groups should be unchecked by

default. In addition, the hunt group time outs must be reduced to 4 seconds per device and 6 seconds of total time out.

ExecutiveAssistant Recording/Monitoring Functionality and Limitations

ExecutiveAssistant uses 3Com's Media Port technology for recording/monitoring. Therefore, all recordings/monitors are point-to-point (no multi-cast) with no need to de-encrypt any packets (so conversations remain secure from unauthorized packet sniffers and other spyware intrusions). Specifically, there is no need to acquire the "3Com Call Record and Monitor License" because that is simply a license to de-scramble the audio going through the LAN – ExecutiveAssistant alternately works with the native NBX audio stream, allowing you to keep conversations secure over the LAN.

General Recording/Monitoring Functionality

- Any live call within a 3Com NBX-100, SS3 NBX, V3000 or V5000 can be recorded or monitored with ExecutiveAssistant's Recording Module (part # 3C10450A) for any extensions with at least Basic Client license (part # 3C10452A), if properly routed.
- Requires two 3Com Wave (Media) Port licenses per call being recorded, or even be eligible for on-demand recording, monitoring, whisper or barge-in – dynamically allocated. The 3Com Media Driver Port License is 3Com Part # 3C10319. The site license is 3Com Part # 3C10329.
- CPU requirements are roughly 40MHz of CPU for each Media Port on NBX R5.x or later (twice as much CPU required if NBX R4.x). This will vary depending on call traffic patterns. Please refer to the separate ExecutiveAssistant Hardware Requirements PDF.
- If more than 10 supervisors will operating the software's GUI at once, you must run this on Windows Server with enough Windows CALs to cover the number of simultaneous users.
- The supervisor has visibility on the PC screen of all active calls for which they have been granted permission to for recording and monitoring.
- Once that recording is complete, that supervisor can playback and review all recordings from the sort-able ExecutiveAssistant Call Log window, until that recording is purged or archived.
- The supervisor can export any selection of recordings into WAV audio format for local storage or e-mailing. Compressed WMA format is also available via a registry setting – contact BrightArrow for details.
- The system administrator sets up permissions for recording supervisors (Supervisor Clients) and recording seats (Basic Clients).
- The administrator also can designate the disk volume for storing recording, as well as set thresholds for e-mail notifications, auto-purges and auto-archiving.
- With proper network settings, the recording files are secure from those who have not been designated as having proper access.

- It is imperative that the customer understands and follows the laws for their state or local government regarding usage and notification of recording features. Because many states are two-party states, packet sniffing recording cannot be legal for outbound recorded calls in those states. ExecutiveAssistant allows system-wide period beep-tone, and/or with Advanced Clients can play a special greeting prompt for incoming calls indicating to callers that a recording may occur.
- The integrator configures the NBX to cover some inbound/outbound call routing coverage so that calls are handled automatically if ExecutiveAssistant is not running. Some call paths, however, such as outbound calls (not a problem for the latest NBX R6.00), as well as DID, extension-to-extension or NBX auto-attendant calls, it is recommended that the Sentry.exe application (no additional charge) run on a separate machine (is a service, and can run on a shared machine that is always running). This application ensures that calls still route correctly if the ExecutiveAssistant system is turned off or disabled for any reason.

Automatic (Always) Recording

- Calls to any user, whether or not they are using an NBX telephone can be automatically recorded.
- The Supervisor user can designate which types of calls are to be recorded, including incoming internal, incoming external, outgoing external.
- Outside party has no audio (or visual indication) of a recording occurring, unless the optional periodic beep tone is enabled.
- Calls to DID's can be automatically recorded with ExecutiveAssistant, once again without the caller having any indication a recording is occurring.
- Calls that are automatically forwarded to outside lines using the find-me-follow-me logic of ExecutiveAssistant can also be automatically recorded or monitored.
- Uses ExecutiveAssistant's conference bridge (no additional charge); does not use up any of the 3Com NBX conference resources.
- *[Limitation only if using NCP older than R5.0.6 or MediaDrivers older than R5.0.4]:* If employee uses a display NBX telephone, they will see the Caller ID of the Media Port instead of the caller party (correct Caller ID will display on the PC screen, however). In addition, no DNIS (DID) information displays on the NBX telephone display. Caller ID and DID information are available on the PC screen using ExecutiveAssistant's screen pop (Basic, Advanced or Supervisor clients).
- *[For NCP R5.0.6 and later and matching Media Driver]:* Caller ID (and Called Number for outbound calls) displays on the LCD display of the telephone. Both the Caller ID number and name display on the first line of the LCD display. If using analog lines, an incoming call needs to be delayed 4 seconds before reaching ExecutiveAssistant (a 1-second delay may also be necessary for digital lines). Contact BrightArrow for details to set up a Route Point to accomplish this.
- For incoming calls through ExecutiveAssistant (or even DID calls if configured correctly), employee has no audio indication of recording occurring.
- For incoming calls processed outside of ExecutiveAssistant (transferred from another extension or going through NBX auto-attendant), the calls can be recorded as long as the devices are using proper pretranslators. In this scenario, if the employee does not answer the phone and it is sent to voice mail, the voice mail references the Media Port number instead of the Caller ID of the caller (and when listening to voice mails from a phone, does not identify as "from an outside caller").

- For outbound calls on digital lines that are recorded, potentially recorded, monitored, or potentially monitored, dynamic CLI (Calling Line ID information) special configuration mechanisms and options are now available. Please contact BrightArrow for details on settings.
- Some Forced Account Code and Call Park limitations may also occur – please contact BrightArrow for details.
- Caller ID information for those incoming calls that are recorded or on-demand for recording are from the telephone Call Logs button. For those users, recent call information and call logs information is available through the ExecutiveAssistant user interface.
- With NCP R6.0 and later, 3Com has an updated CDR program that restores relevant changes that ExecutiveAssistant's Media Port usage makes in the call reports. *[Limitation for NCP R5.0 and earlier]:* if using automatic recording with older NBX software, Caller ID information for those incoming calls are not available in the 3Com CDR reports. For those users, recent call information and call log information is available through the ExecutiveAssistant user interface. ExecutiveAssistant provides correct information in its comma-delimited reports formatted similarly to the NBX's CDR data.
- *[For analog line installations only]*: If customer uses analog line appearance button mappings, the customer needs to identify Line Cards or Line Trunks in the ExecutiveAssistant System Configuration.
- *[For analog line installations only]*: If customer uses "Key Mode" to allow users to answer specific analog lines via line appearance mappings, it is recommended they instead be moved over to use circular hunt groups.
- *[For analog line installations only]*: If customer picks up calls directly from analog line appearances on their handsets (key mode operation), those calls cannot be recorded or monitored. In those cases, full and seamless recording can either be accomplished by using the built-in (no additional charge) ACD functionality of ExecutiveAssistant or NBX R5, or by changing over to a Calling Group model for incoming calls.

Silent On-Demand Recording

- Same functionality and limitations as Automatic Recording, except that calls are not saved unless the user initiates the recording via "**" or supervisor clicks the Record button during the call.
- The number of Media Driver ports required include those used for ALL calls that might need to record (times two), not just the ones that are recording. For a call to be eligible for On Demand, it must be passed through ExecutiveAssistant with its two Media Drivers ports in use.
- When a user starts "Record," the entire call is saved (not just from the time of invocation).
- In order for a caller to be available for silent recording, monitor or barge-in, that call must be in the On Demand state – therefore, the call must be set up at call start with two Media Ports.
- If the employee is at least a Basic Client, they can press "**" (star-star) on their telephone keypad to record the current conversation. If it is an NBX telephone (or PcXset), the caller will not hear that recording has been enabled.
- Even if the call has been directed to an outside number (like a cell phone using find-me-follow-me), "**" is still available to initiate a record. If it is pressed while the call is being announced in

find-me-follow-me, the caller will not hear the touch-tones. If it is pressed during a call from the outside number, the caller will hear the touch-tones.

- Additional options for controlling what is recorded on-demand: If you press "*0" (star-zero), prior information in the call is erased and the recording starts then. If you press "*7" (star-seven), recording is Paused. If you press "*8" (star-eight), it is un-paused. These features are also available to Supervisor clients in the GUI of the software.

Silent Monitoring, Barge-in and Whisper

- The number of Media Driver ports required is two (2) for each simultaneous call that is eligible to be monitored/whispered/barged-into, plus one for each simultaneous Supervisor who is using these features. If Automation or On-demand Recording is being used, those would be the same two Media Drivers used for these features. This includes calls that are sent to department path (such as an ACD or hunt group) before it even reaches the final extension.
- Only calls that are set to Always Record or On Demand are available for Silent Monitor, Barge-in or Whisper by authorized manager (via a Supervisor client license).
- Participants in a call have no audio or visual indication of being monitored.
- When monitoring (or barging/whispering) a call, the Supervisor uses another Media Driver Port.
- Supervisor can barge into (join) the call simply by clicking the "Barge-in" radio button.
- Supervisor can speak to the user (user cannot respond) by clicking on the "Whisper" radio button.
- NBX conferences can be bridged using Barge-in to create larger conference calls that exceed the current NBX limitation of 4-parties per conference call.
- These features are available from remote locations – given the correct remote IP connection, a recorded or monitored user and/or supervisor can be at a remote site.

ExecutiveAssistant Installation and Configuration Recommendations

The below steps use as an example a user with phone extension 100, and Media Ports in the 200 range. As you review this, adjust your actions as appropriate for your configuration.

1. The 3Com Media Ports and ExecutiveAssistant need to be fully installed, with all the users added or imported. Please refer to the other documents about installing/testing the Media Ports and ExecutiveAssistant.

2. You must configure at least one hunt group for inbound recorded calls, and a separate one for outbound recorded calls. In many cases, you may use the ExecutiveAssistant Auto-attendant Hunt Group for incoming calls (which is how we will suggest for this example). You must, however, have a separate Outbound Record Hunt Group specifically for outbound calls.

3. Each Hunt Group of Media Ports that ExecutiveAssistant uses must be configured as follows:

    a. Type: Huntgroup – Circular
    b. Members: The first half of the Media Ports only. This should be the numerical lowest one-half of the Media Ports installed on the ExecutiveAssistant Server
    c. "Logout of no answer" needs to be Unchecked
    d. Total Timeout = 6
    e. Per Device Timeout = 4
    f. Coverage should be the destination if ExecutiveAssistant is turned off, ideally pointing to the Sentry App Route Point (see information on the Sentry App for installation information). The Sentry App makes sure calls will continue routing correctly if ExecutiveAssistant is not running.

    Note: Any mis-configuration of the above settings will cause the system to immediately or eventually fail.

4. The 3Com TAPI Service Provider (TSP) can be accessed through the Windows' Control Panel→Phone and Modem Options→Advanced tab. The TSP on the ExecutiveAssistant server needs to be configured as follows:

    a. All the Media Ports listed first, in numeric order, with no passwords
    b. All of the user extensions listed next, with no passwords
    c. No other entries in the TSP

5. In ExecutiveAssistant, make sure that at least one user is designated as a Supervisor Client in Settings→User Configuration (for example, let's assume extension 100 is a Supervisor user). Log in as that user by clicking on Settings→Change User. If you change the license level of the logged-in user to a Supervisor Client from a Basic or Advanced license level, you will need to re-login as that same user to have the Record Calls button display on the main interface.

6. Set the Recording permissions for extension 100. Go to Record Calls→Administrator Settings and select the user with extension 100 as Supervisor Client. Move extension 100 from the right column to the left column and then click OK. Highlight extension 100 and

check the Incoming Calls External Always box, Incoming Calls Internal Always box, and the Outgoing Calls External Always box.

7. Configure the dialing rules in ExecutiveAssistant by going to Settings→System Configuration→Phone Control (server) tab. Enter 9 for the Normal outbound call sequence. Click the OK button to exit.

8. Enter the Outbound Record hunt group value into the ***Record Outbound*** field of ExecutiveAssistant by going to Settings→System Configuration→Phone Line Configuration tab. You will see this box in the lower right quadrant of the dialog box. The hunt group you put here is the Outbound Record Hunt Group that was created back in steps #2 and #3 above. This hunt group must be used only for outbound recording, not for inbound recording.

9. If ExecutiveAssistant will only be used for Call Recording and Monitoring, then it is recommended to disable the Text-to-speech and Speech Recognition engines to increase performance and reduce CPU usage. Under Settings→System Configuration→Recording Settings (Server) tab, check the checkboxes to disable the Text-to-speech and Speech Recognition engines. Restart ExecutiveAssistant for the changes to take effect. With the engines disabled, features such as the Auto Attendant, Find Me Follow Me, Speech Dialing, Call Notification will not be functional. Also make sure that the person or department marked as the Operator in Settings→User Configuration is a legitimate destination within the NBX because that is where the software will send callers if they don't match on any numbers in the users' DID fields.

10. For recording-only installations, it is also recommended that you disable use of Windows Dialing Rules. You do that by going into Settings→System Configuration→Phone Line Configuration and un-checking Windows Dialing Rules (in the middle-right of the screen). If you want to use the Windows Dialing rules, please verify that you have configured the Windows dialing properties via the Windows Control Panel→Phones and Modems→Dialing Rules tab. If not previously configured, configure your location and enter 9 for accessing outside lines for local and long distance. If it has been previously configured, edit the location listed and verify it will use a 9 for accessing outside lines for local and long distance.

11. Test the configuration as follows:

    a. If you have disabled the Speech Engines as described in step #9 above, then test the recording mechanism by making sure the designated Operator (in Settings→User Configuration, highlight extension, click "Set as Operator") is an extension that is set up to record, and then dial directly into the ExecutiveAssistant Auto-attendant Hunt Group to have a call reach that extension. Answer that phone.
    b. If you have not disabled Speech Engines (described in Step #9), then test the recording mechanism by calling into the ExecutiveAssistant Auto-attendant Hunt Group, pressing the extension of the user you set to record in Step #6 above, and answer the phone.
    c. After connecting a call as described in (a) or (b) above, say something that you would like recorded, and see if that call shows in top window when pressing the Record Calls button – the call should appear there with the words [Always Record] to its right. If it doesn't, then review the steps above. If it does, then end the call and listen to the recording by clicking on My Call Log, highlight the call, and press Play.

Dial Plan Configuration for Outbound, Inbound and Ext-to-Ext Recording

The dial plan can be setup in various ways to achieve the desired results. The examples listed below are the most common methods, but should not be considered as the only way to configure. By using Dial Plan Tables (outbound) and Special ExecutiveAssistant Hunt Groups (inbound general-use, DID, or departments), and/or Pretranslators (inbound from NBX auto-attendant and extension-to-extension), there are no noticeable interrupts during telephone calls. Incoming calls coming into defined extensions can be intercepted by ExecutiveAssistant via a pretranslator and will trigger the recording mechanism before the caller reaches the final extension, bypassing the ExecutiveAssistant auto-attendant.

Before making any Dial Plan changes, please do the following:

12. Save a backup of your current dial plan by exporting to your local computer. You can do this by going to NetSet→Operations→Export. Make a copy of the backup dial plan and edit the copy with the information below.

Outbound Call Recording Dial Plan Changes

Outbound calls instead use a Table (not a Pretranslator) to route the outgoing call out while passing it through ExecutiveAssistant.

The basic concept is to include user extensions as "Devices Using" an alternate Dial Plan Table that routes to an alternate extension list. The alternate extension list uses the ExecutiveAssistant Outbound Recording hunt group as the primary device. Populating the alternate extension list with trunk lines as secondary devices allows for a convenient and easy method of enabling and disabling recording.

Note: These instructions assume that the last extension list used is *0008, and thus the new one will be *0009. The same is true regarding dial plan tables – the assumption is that you have three (3) tables in use, and the new one is table 4. If either assumption is not the case, then adjust Steps 13, 14 and 15 (immediately below) to be one higher than the last extension list and/or table used.

13. Add an extension list in the NBX system. Go to NetSet→Dial Plan→Extension Lists and add *0009. Modify this extension list and move the ExecutiveAssistant call recording hunt group into the left column. This is the "Extensions in List" column. The priority number for the hunt group should be a smaller number than any other devices in this list so that the hunt group is the primary device used. If a hunt group has not been created, then create one now based on the instructions from the first page of this document and name it Outbound Record. This hunt group is not to be used for any other purpose or feature within ExecutiveAssistant.
    a. If you are using NBX R6.0 or higher, then you should put your T1/PRI trunks or line card ports after (as lower priority) than the Outbound Record hunt group. This enables coverage for outbound calls if the ExecutiveAssistant server is not running and the

Media Ports are offline. If you are using NBX R5.0 or older, you accomplish coverage for outbound calls by implementing the Sentry App (see #3 above).

14. Edit the copy of the dial plan created in step #12. Create a duplicate of table 1 and call it table 4 Recording. Each "TableEntry Create" should have an "Id" of 4. For all entries beginning with 9 (except for 911 and 9911), change the route to 9.

15. Add route 9 to the dial plan:

```
/                              Route Description
/                              -----  -----------
DestinationRoute Create            9  Recording

/                              Route Entry DestinationExtension
/                              ----- -----  -------------------
DestinationRouteEntry Create     9     1    *0009
```

16. In NetSet, set extension 100 to use the new "Recording" table by going to NetSet→Dial Plan→Tables. Highlight the "Recording" table and click the Devices Using button. Highlight extension 100 and move it from the right column to the left column and click Close.

17. Test the Outgoing External trigger by dialing a 9 + External number from extension 100. You can access the recording through the Call Log for extension 100 in ExecutiveAssistant.

18. To configure more extensions for outbound recording, repeat the steps 6, 16, and 17 above for each extension. Each extension must correlate to a user within ExecutiveAssistant under Settings→User Configuration and be licensed with at least as a Basic Client. So that users can continue to place calls when ExecutiveAssistant is not running, it is highly recommended that you configure the Sentry.exe application.

Inbound **Call Recording: Easy-to-implement Approaches**

A. If all incoming calls reach ExecutiveAssistant's auto-attendant, then you do need not implement any of the details in the remainder of this document. In this case, as long as the user is licensed and set to record, their incoming call will be recorded.

B. If most incoming calls are to be recorded, the easiest approach is to ensure that ExecutiveAssistant is the first point of entry on the way into the NBX. For example, if you have all incoming calls reach an operator hunt group, with an auto-attendant for after hours (or upon no answer), then you can simply have a single company-wide entry point for ExecutiveAssistant that turns on the recording mechanism system-wide for usage by users who are appropriate licensed and designated. To take this approach, do the following:

19. Create a special hunt group, as described in Step #3, for this purpose. Use all of the hunt group settings described in Step #3, except fill in the coverage extension with a valid destination extension (the destination extension will only be utilized if ExecutiveAssistant is not running)..

20. Create a department within ExecutiveAssistant by clicking on Settings→User Configuration→Add, and adding a new department (like "Company-Wide"). Make sure that this department has at least a Basic Client license, and that its extension is the same extension of where you want to send it. For example, if you want incoming calls to go to an operator hunt group 453, then set that department's extension as 453. If you want calls to go to NBX auto-attendant 500, set the extension as 500. Fill in the DID field of that Department (Settings→User Configuration and Edit that Department), with the Hunt Group extension created in Step #19.
21. While logged in as a Supervisor, make sure this department is designated as On Demand for recording. See Step #6 for more information on how to do this.
22. In the NBX, change the routing of incoming calls to reach the Hunt Group created in Step #19 instead of the current destination.
23. This is the easiest-to-implement approach, and one that does not require any special Sentry.exe coverage for incoming calls. The downside is that all incoming calls are feeding through the recording mechanism, and as such, they are each consuming two Media Ports. If you take this approach, make sure that your number of Media Ports matches 2x the total trunk count (possibly plus a few for supervisor monitor Media Ports).

If you take this approach, then you can likely bypass many of the detailed steps below. The key to understanding which mix of approaches is necessary is to ensure that all calls (that are to have the option to record) are passing through ExecutiveAssistant. For example, if you take this approach but DID calls are still being sent directly to the extension without passing through ExecutiveAssistant, the next section is still required. On the other hand, if you make sure all calls pass through ExecutiveAssistant before reaching any NBX auto-attendant, you will not have to create Pretranslators for redirecting calls leaving the NBX auto-attendant.

DID Inbound Call Recording

To record incoming DID calls, make sure incoming calls are routed to ExecutiveAssistant such that ExecutiveAssistant knows to turn on recording and route the call the rest of the way to the destination extension. This is done in one of two ways:

24. For smaller installations (or installations with a small number of DIDs):
    A. You create Hunt Groups as described in Step #2 -- one per user. Each is a hunt group that is specifically designated for incoming calls to that user. The coverage for that hunt group should be the destination user's extension (the coverage will only be used if ExecutiveAssistant is not running.
    B. For each user in ExecutiveAssistant, you put the user-specific hunt group (created in Step 24A) in ExecutiveAssistant's DID field for that user. Go into Settings→User Configuration, edit the user, and put in their personal Hunt Group into the DID field.
    C. In the dial plan (route or pretranslate, depending on how you route DIDs), change the destination for each user from their extension to their associated personal hunt group.

25. For a larger number of users (where it is impractical to have a personal hunt group per user):
    D. For each user in ExecutiveAssistant you put the Raw DNIS digits into their DID field. Keep in mind that this is the actual DNIS digits coming in from the telco, not the results after the dial plan does a Strip Lead. For example, if the Raw DNIS is 4259526490, but the extension is 490, make sure 4259526490 is in the user's DID field.
    E. In the dial plan (route or pretranslator, depending on how you route DIDs), change the destination for each user from their extension to the ExecutiveAssistant Auto-attendant hunt group. Remember that when configured correctly, ExecutiveAssistant will identify the raw DNIS, and thus bypass the auto-attendant and route directly to the user.
    F. For call coverage when ExecutiveAssistant is not running, it is highly recommended that you configure the Sentry.exe application.

Hunt Group / ACD Group Inbound Call Recording

For smooth integration of Hunt Groups and ACD groups, it is recommended that for each Hunt Group and ACD group as described in Step #2, you then create a mirror ExecutiveAssistant Hunt Group of Media Ports and a Department in ExecutiveAssistant so that the recording mechanism can take place automatically for calls reaching the hunt group or ACD group.

26. You create ExecutiveAssistant Hunt Groups as described in Step #2 -- one per destination Hunt Group or ACD group. Each is a hunt group is a mirror Hunt Group for that department because it is specifically designated for incoming calls to that department. The coverage for that hunt group should be the destination department's Hunt Group or ACD Group value (which will only be used if ExecutiveAssistant is not running).
27. For each such department, create a Department in ExecutiveAssistant (via Settings → User Configuration, click on Department, give a name, and press Add). Make sure to designate that Department as (at least) a Basic Client, and fill in the associated ExecutiveAssistant hunt group value from (A) above into the DID field. Fill in the Extension field with the department's actual Hunt Group or ACD Group value.
28. While logged in as a Supervisor client, elevate your permissions to be able to set the Record Settings for that department and set it to On Demand for Recording. See Step #6 for related information on performing this step.
29. Once Steps #26-28 are completed and recording has been tested by dialing the department's ExecutiveAssistant hunt group directly, replace this in every place in NetSet and the dial plan where you directly reference the destination ACD Group or Hunt Group. The recording will be associated with the user who answered the call for the Hunt Group or ACD Group.

Pretranslation for:

* **Inbound Call Recording via the NBX Auto-attendant**
* **Inbound Call Recording via Employee Transfer**
* **Extension-to-Extension Recording**

If you do not want to have all incoming calls passed through the recording mechanism, but instead want to record those calls when they come out of the NBX Auto-attendant, via an employee transfer, or extension-to-extension calls, you will need to use a Pretranslator. As long as inbound calls are directed to ExecutiveAssistant using the above-described paths (EA auto-attendant, DID, department hunt groups, etc.), there is no need to use pretranslators for inbound recording. In those cases, we suggest you bypass this section entirely. If calls are being routed without explicitly being passed through ExecutiveAssistant, however, you will need to add a pretranslator in certain cases to ensure that the call is routed through ExecutiveAssistant. Primary examples where this is necessary include: (1) To record/monitor extension-to-extension calls, or (2) Record/monitor from the NBX auto-attendant. For these cases, follow the following steps:

30. Configure pretranslators in the NBX system for inbound calls that do not reach ExecutiveAssistant through any of the above means. The pretranslator will route to the ExecutiveAssistant Auto Attendant hunt group any time a user's extension is dialed. This example assumes the user's extension is 100 and the ExecutiveAssistant Auto Attendant hunt group is 450:

    ```
    Pretranslator Create 3 ExecutiveAssistant Inbound Record
    /                          PreTransId  Entry  Digits
    /                          ----------  -------  -------
    PretranslatorEntry Create          3        1  100


    PreTranslatorOperation Create      3        1        1  replace      450
    ```

31. Update your dial plan. **Note:** While importing your dial plan, the NBX will not be able to answer incoming telephone calls and users will not be able to dial outbound calls.

32. Each user in ExecutiveAssistant must have their correct extension entered in Settings→User Configuration→User/Department Setup for the extension field and the DID field. Also set the licensing for the each user to determine if the user is an Advanced, Supervisor or Basic client. Using the example above, set the user with extension 100 as a Supervisor Client. Make sure that 100 is listed in the Extension field and the DID field.

    Special Note: If you are configuring DID Incoming Call Recording as described in step 24 and 25, and you also need to implement the pretranslator work as described in this section, you may encounter a conflicted use of the DID field in ExecutiveAssistant (if the Raw DNIS does not exactly match the user's extension). In this situation, you will need to instead elevate the users to Advanced or Supervisor Clients so that you can use the special Routing feature that each Advanced or Supervisor user has in their Settings→Preferences→Incoming Calls tab (at the bottom of that tab). In this case, make sure to put the Raw DNIS into that tab, and use the User's DID field for their actual extension.

33. In NetSet, set the devices that will be using the pretranslator. Assuming that you want to pretranslate extension 100 when dialed from an NBX auto attendant, put the voice mail port extensions in the pretranslator by going to NetSet→Dial Plan→Pretranslators. Before moving the voice mail ports into the pretranslator, verify that they are not already assigned to another pretranslator because devices can only be assigned to use one pretranslator at a time. Assuming that the voice mail ports are not currently using a pretranslator, highlight the name of the pretranslator you created in Step #30 and click Devices Using button. Highlight your voice mail port extensions in the right hand column and move the extensions to the left hand column and click Close. This will ensure that calls from the NBX auto-attendant will route through ExecutiveAssistant. If you want extension-to-extension calls to be recorded, you will also need to add the individual extensions to this pretranslator.

34. Test the Incoming Internal trigger by dialing extension 100 from an NBX auto attendant. You can access the recording through the Call Log for extension 100 in ExecutiveAssistant.

35. So that users can continue to receive calls when ExecutiveAssistant is not running, it is highly recommended that you configure the Sentry.exe application. If you are using NBX R6.0, make sure to be running at least R6.0.41 for the Sentry.exe application to be fully functional.

Integration with the 3Com eXchange Call Center or Easyrun Epic Center

The topology for 3Com ExecutiveAssistant integration with 3Com's eXchange Call Center (and Easyrun Epic Center) is for incoming calls to be routed to ExecutiveAssistant first, with ExecutiveAssistant terminating the call on one Media Port and immediately dialing eXchange with a second Media Port (those two Media Ports provide full-duplex audio pass-through). Other details:

- Each live call (whether it is in the eXchange queue or connected to a live person) will need to be allocated a pair of Media Ports if at any point during the conversation that call might possibly need to be recorded or monitored. In addition, a 3rd Media Port will be necessary for the Supervisor to use when they are actively monitoring calls.
- If it is possible that the number of live calls might exceed the Media Ports available, you should designate one or two (depending on call volume) of the Media Ports for overflow pass through – those Media Ports cannot be used for On Demand usage or Supervisor Monitor usage, but ensure that overflow calls are directed to the correct eXchange destination.
- An easy way to calculate the number of Media Ports needed is to multiply the expected maximum number of incoming trunks used (agents + queue) by 2, add the number of supervisors who might be monitoring at the same time, and add one or two overflow Media Ports for pass-through in case the expected maximum is exceeded. The only known way to reduce the consumption of Media Ports is to designate some hunt groups as not available for record/monitor, and thus reduce the expected number of maximum incoming calls to be On Demand. This can only be done at the granularity of eXchange hunt groups, not at the agent level.
- Since calls are not transferred to eXchange (a new call is being placed from the second Media Port), DNIS and ANI are not sent via TAPI to eXchange. Therefore, ExecutiveAssistant provides ANI to eXchange (or Epic) directly by running an ExecutiveAssistant client on the eXchange/Epic server. For this integration, use eXchange/Epic version 4.33.03 or later.

- To implement, follow either Steps #19-23 above (simplified approach), or Step #26-29 above (creating one mirror hunt group per EPIC or eXchange Route Point).
- The ExecutiveAssistant client software is installed from the ClientSetup folder located on the ExecutiveAssistant server once the ExecutiveAssistant server software has been installed. **Do not** try to install the client portion of ExecutiveAssistant using the same setup files used to install ExecutiveAssistant on the server.
- ExecutiveAssistant's server should be operating on a PC separate from the eXchange server. It is the client of ExecutiveAssistant that operates on the eXchange server.
- It is required that the NetSet's TAPI Settings tab (in System Configuration) reflects the sum of all the TAPI clients PLUS the number of Media Ports on the NBX.
- To prevent the possibility of ExecutiveAssistant taking Media Ports designated for eXchange during installation, or incorrectly identifying Citel-connected Nortel phones as Media Ports, it is recommended that a registry value be set in the ExecutiveAssistant registry, named "Total Media Ports" (type DWORD) that identifies the number of Media Ports allocated to ExecutiveAssistant.
- Due to the number of Media Ports needed, typically call centers purchase the 3Com Media Driver Site license (3C10329) instead of individual Media Driver ports (3C10319).

Troubleshooting Audio Issues

When you have your system and network correctly configured for call recording, and if the switches on the LAN are working well, the audio is as clear and crisp as if no recording was occurring. If you have the system set up for call recording, but encounter the uncommon scenario of audio problems (noise, echoes, latency, interruptions, etc.) with recording on and not with recording off, the reason is typically that the audio packets are getting delayed, scrambled or lost somewhere in the network.

As an overview, when you are using 3Com call recording, each audio packet is routed through the a pair of Media Ports on ExecutiveAssistant server on the way to its destination (telephone or NBX trunk). With a well-structured network, this routing is safe and unobtrusive, because the application simply grabs a packet from one Media Port and within a fraction of a millisecond passes that same packet out the other Media Port.

ExecutiveAssistant does nothing with the audio packets except to pass them through from one Media Port to the other, and the only thing that the application can affect in an audio sense is the volume of the audio. As it is passing those packets through, ExecutiveAssistant also grabs a copy of the audio for streaming to a disk file for monitor, whisper, barge-in, conference purposes. Therefore, to identify the source of an audio problem, you need to follow the path of the audio and find out which component is losing or delaying packets.

The first step in trouble-shooting an audio problem is to identify which subsystem is not working correctly. Here are the most likely reasons and associated solutions:

- *Issue: Audio doesn't get any higher priority than data packets on a VLAN, thus causing various audio problems.*

  Solution: If the network is set up as a VLAN, then you need to explicitly change the data switch settings on the port where the ExecutiveAssistant server is attached so that all packets coming

from that device are Tagged as Voice. This is necessary because even though NBX telephones and the NBX itself automatically Tags packets as Voice, the audio drivers that send out packets over the NIC on the ExecutiveAssistant cannot Tag the packets themselves.

- *Issue: Audio seems to sometimes be delayed or has other audio symptoms on a non-VLAN system, or after the change for the VLAN was made to Tag the packets correctly.*

  Solution: The audio packets need to be entirely unencumbered and uninterrupted throughout its path. Here are some items that might delay or drop packets that should be checked:

  (1) Make sure no real-time anti-virus, anti-spyware, or other real-time software is running on the same machine as the drivers. You can run night-time scans, but do not allow it to run any scans while calls are being recorded or processed.

  (2) Ensure that the PC has Hyperthreading disabled. Virtually all Intel processors, including dual-core/quad-core, have hyperthreading enabled by default. It needs to be disabled via a BIOS setting.

  (3) Make sure that the Windows (Software) Firewall is disabled.

  (4) Plug the ExecutiveAssistant server directly into the same switch as the NBX.

  (5) Make sure the CPU is not overloaded – ensure that you have not installed too many Media Ports for the CPU speed, and that no other programs are running that consume CPU. To make sure, you should run Task Manager and review CPU usage when you are hearing these audio anomalies.

- *Issue: Audio seems "over-driven" in that it sounds bad when speaking loudly but sounds ok when speaking softly.*

Solution: If this occurs, it is typically due to the Digital or Analog trunks having audio higher than normal at the telephone company. When going straight to an NBX telephone, the telephone automatically adjusts its volume downward. Unfortunately, when going through WAV ports, the effect of high audio is doubled, which can cause this anomaly. The solution is to make a registry adjustment on the ExecutiveAssistant server so that ExecutiveAssistant explicitly re-calibrates the volume as it passes the packet through from one Media Port to the other. Here is how you do that:

(1) From Windows, run Regedit

(2) Navigate to HKEY_LOCAL_MACHINE->Software->BrightArrow Technologies->ExecutiveAssistant (with ExecutiveAssistant 6.00 or higher, instead look for HKEY_LOCAL_MACHINE->Software->3Com->ExecutiveAssistant)

(3) Right click in the white space in the right panel, and select "New" from the menu that appears

(4) Click on DWORD value

(5) Give it the name "Passthru Volume"

(6) Give it a value lower than the default 0xC00. For example, you can try 0x800.

(7) Make sure you exit and restart ExecutiveAssistant once you have adjusted this value

- *Issue: I corrected all the above issues, and there are still audio problems.*

Solution: You need to check and/or eliminate each component in the path of the audio. The packet starts at the telephone handset or headset, through the Ethernet cable to the switch it is plugged into, from that switch to the switch where the ExecutiveAssistant server and NBX are attached,

through the Ethernet cable to the NIC on the ExecutiveAssistant server, into the drivers on the ExecutiveAssistant server, the software then passes the packet in a tiny fraction of a millisecond back to the drivers, which then goes out the NIC and Ethernet cable to the switch, and finally over to the NBX. For audio coming in, the exact opposite path occurs. Therefore each component listed above needs to be verified. Techniques to do this include:

(1) If the telephone is plugged into a different switch, then as a test, plug it into the same switch as the NBX and ExecutiveAssistant. If the audio issues are corrected this way, then the connection between the switches is the problem.

(2) Try different switch ports and Ethernet cables for the various connections, to make sure they don't affect it.

(3) Try a different phone, or without a headset to make sure it is not that component.

(4) Sometimes, albeit rarely, even NIC's and NIC drivers can be the culprit. Even if you can get to NetSet from the PC, that does not alone mean that the NIC is not faulty because failures in NIC's can have symptoms of delayed or lost packets.

(5) Verify packet prioritization. If you have eliminated the hardware, and you have validated the PC is running unencumbered, then focus needs to be on packet prioritization. Even if you don't encounter these anomalies when calls are not being recorded, the packets are now going through a different path, and you need to make sure that nothing on the LAN is slowing or blocking the packets.

In summary, audio problems are due to the environment, not the application. If you have a clean network and a clean PC, then you should not encounter any audio problems. The key to identifying any such problems promptly is to narrow down where the audio is being corrupted, and focus on correcting that component.