

EarShot IFB

Manual del Producto

COMPREX

MANUAL TÉCNICO DE EARSHOT IFB DE COMREX

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I. INTRODUCCIÓN COMREX

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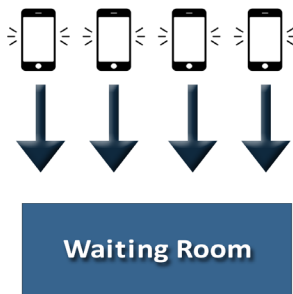
II. EarShot IFB

INTRODUCCIÓN

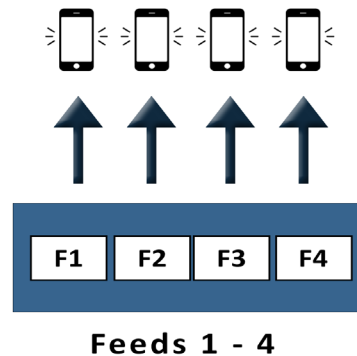
Comrex EarShot IFB es un sistema de hardware diseñado para contestar llamadas telefónicas y entregar audio en vivo a la persona que llama. EarShot IFB está diseñado para proveer sonido en vivo de programa basado en telefonía y audio IFB a transmisiones remotas, como reportes de noticias TV ENG (Electronic News-Gathering).

EarShot IFB tiene cuatro inputs (o feeds) de audio y las personas que llaman pueden elegir entre estos cuatro audios. La elección del audio es realizada por las personas que llaman utilizando la selección DTMF (Touch Tone) vía código PIN. EarShot IFB no ofrece controles desde el estudio de los audios - todos los controles son realizados por las personas que llaman.

1) Todas las llamadas entrantes son puestas en espera y se les pide que ingresen un PIN (código)



2) Los feeds correspondientes son enviados a las personas basado en el PIN (código) ingresado

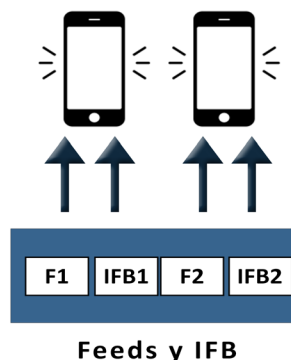


EarShot IFB puede proveer (IFB) (Interruptible Fold Back). Dos de las entradas de audio pueden ser configurados alternativamente como inputs IFB. Cuando se utiliza como IFB, la actividad de audio en este input "interrumpirá" el audio de un feed diferente hasta que el audio IFB termine.

1) Todas las llamadas entrantes son puestas en espera y se les pide que ingresen un PIN



2) Los feeds correspondientes y el IFB son enviados a las personas que llaman dependiendo del PIN ingresado



EarShot IFB no ofrece la funcionalidad de audio de salida al estudio. No se proveen salidas de audio para escuchar a las personas que llaman.

Por default, EarShot IFB es un dispositivo “uno a muchos” que envía solamente su propio audio feed a las personas que llaman. Las personas que llaman, vía DTMF, habilitan a su fuente de audio ser adherida al mix (para enviar a otras personas que llaman en ese feed). Esto crea la función de conferencia.

También por default, las llamadas entrantes son puestas en espera hasta que se ingresa un PIN para un feed específico. Como opción, el Feed 3 puede ser elegido para albergar las llamadas en espera antes de que cualquier PIN sea enviado por la persona que llama.

EarShot IFB conecta solamente con los circuitos telefónicos de Voice-over-IP (VoIP). Estas líneas telefónicas virtuales son proveídas a EarShot IFB por su conexión Ethernet. Líneas telefónicas VoIP pueden ser entregadas desde proveedores VoIP en la nube, PBXs VoIP (en muchos casos) y vía dispositivos gateways que unen antiguos circuitos telefónicos (ej.: T1/E1, POTS) a VoIP. Diferentes menús de configuración están disponibles para cada uno de ellos. EarShot IFB conecta a servidores VoIP utilizando protocolo SIP.

EarShot IFB puede conectar con la mayoría de las llamadas normales utilizando audio codificación telefónica estándar (G.711). En algunas circunstancias, EarShot IFB puede entregar audio a las personas que llaman vía VoIP con alta fidelidad, utilizando codificadores como G.722 y Opus.

EarShot IFB puede administrar treinta (30) llamadas desde fuentes telefónicas estándar, distribuidas a través de uno, dos, tres o cuatro audios feeds. Puede manejar hasta diez personas que llaman vía VoIP con alta fidelidad de manera simultánea. También puede manejar una mezcla de ambos, en capacidades variantes.

EarShot IFB es alojado en un gabinete de 19” 1U. El nivel de cada feed se muestra en los paneles LEDs. La unidad principal sirve como una página web que provee todos los controles y configuración. La configuración inicial requiere el uso del software Comrex **Device Manager**.

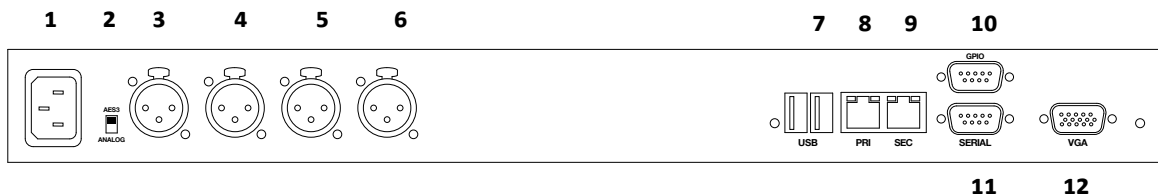
ACERCA DE MIX-MINUS

El soporte técnico de Comrex emplea mucho tiempo discutiendo acerca de mix-minus, como si no fuera un concepto obvio. En la integración telefónica en el estudio existe una regla de oro: las personas que conectan desde afuera del estudio nunca deben enviar su propio audio a sí mismos. Si esta regla no se cumple, el resultado será un eco desagradable en el oído de la persona. El operador tiene la responsabilidad de conectar un feed a cada feed en EarShot IFB que es una mezcla de todas las fuentes importantes de audio – micrófonos, spots, automatización, etc., menos la persona que llama. Por supuesto, esto solamente se cumple para los oyentes de EarShot IFB que están “al aire”. Los productores, operadores de cámara y otros pueden monitorear el feed del programa completo. Por esta razón, los feed seleccionables de EarShot IFB son tan útiles.

III. CONFIGURACIÓN DE EARSHOT IFB

ACCESORIOS HARDWARE Y CONEXIONES

La siguiente figura muestra el panel trasero de EarShot IFB:



- 1 Mains Power** - Aplica fuentes universales de tensión (110-240VAC) al conector IEC.
- 2 ANALOG/AES3 Input Switch** - Este switch determina si el conector XLR izquierdo se utiliza para audio análogo **FEED/IFB1** a las personas que llaman o es configurado como un input de audio digital AES3.
- 3 FEED/IFB 1 INPUT** - En modo analógico, este conector XLR debería enviar una señal 0dBu balanceada que es oída por las personas que llaman cuando seleccionan **FEED 1** o de manera alternativa (si este input es configurado como **IFB1**), cuando IFB 1 está activado. En modo digital AES3, ambos **FEED/IFB 1 INPUT** y **FEED/IFB 2 INPUT** son aplicados aquí (en el canal izquierdo y derecho, respectivamente).
- 4 FEED/IFB 2 INPUT** - Este conector XLR debería enviar una señal 0dBu balanceada que es oída por las personas que llaman cuando seleccionan **FEED 2** o de manera alternativa (si este input es configurado como **IFB 2**), en un diferente feed cuando **IFB 2** está activo. Este input es deshabilitado en modo AES3.
- 5 FEED 3 INPUT** - Este conector XLR debería enviar una señal 0dBu balanceada que es oída por las personas que llaman cuando seleccionan **FEED 3**.
- 6 FEED 4 INPUT** - Este conector XLR debería enviar una señal 0dBu balanceada que es oída por las personas que llaman cuando seleccionan **FEED 4**.
- 7 USB (x2)** - Conecte un teclado y un mouse a estos puertos para utilizar la **Interfaz de Configuración**.
- 8 Primary Ethernet Port** - Conecte su red a este puerto gigabit compatible con Ethernet.
- 9 Secondary Ethernet Port** - Si es de su elección, usted puede administrar servicios VoIP en dos redes Ethernet diferentes en Earshot. Un uso típico sería utilizar el puerto Ethernet principal para conectar con un proveedor VoIP de la nube y el puerto secundario para conectar a un PBX o un dispositivo gateway en una red LAN que no puede conectarse a Internet. **Nota: el puerto secundario Ethernet ofrece solamente direccionamiento estático.**
- 10 Contact Closure Connector** - Contiene 4 señales de entrada y salida de contactos secos, para varios controles remotos y funciones de tally como son descritos más adelante.
- 11 Serial Port** - Este es un conector RS-232 que presenta un puerto serial para futuro uso.
- 12 VGA** - Computer video port. Conecte un monitor aquí para la **Interfaz de Configuración IP de la Consola**.

CONEXIONES DE AUDIO

Todos los inputs XLR analógicos tienen niveles nominales de 0dBu (fondo de escala +20dBu). Los inputs AES3 soportan 32, 44.1 y 48 KHz frecuencia de muestreo. Los inputs AES3 son solamente proveídos para puertos 1 y 2 **FEED/IFB**.

Pinouts de inputs analógicos:

Pin 1	Ground
Pin 2	Audio balanceado +
Pin 3	Audio balanceado -

Pinouts de inputs AES3:

Pin 1	Ground
Pin 2	Data +
Pin 3	Data -

CONTACTOS SECOS

Las señales de contactos secos están disponibles vía el conector macho 9-pin D en la parte trasera del EarShot IFB. Los inputs son desencadenados por puentear los respectivos inputs al Pin 5. Las salidas consisten de un circuito colector abierto que, cuando está inactivo, ofrece un camino de alta impedancia al Pin 5 y, cuando está activo, ofrecerá un camino de baja impedancia al Pin 5. Estos outputs son capaces de soportar hasta 200mA a voltaje de hasta 12V. No intercambie el suministro de corriente alterna cuando esté utilizando estos contactos.

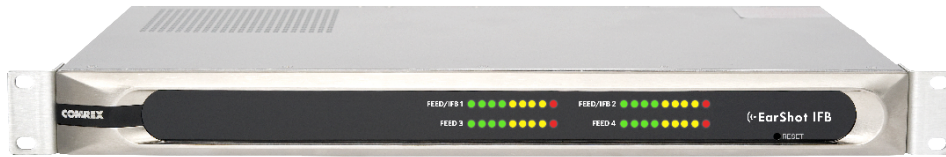
En el firmware actual, solamente los cuatro outputs CC son utilizados. Estos outputs son desencadenados cuando una llamada es asignada a un feed enumerado. EJ.: si una llamada entrante selecciona la opción de Feed 2, CC #2 se cerrará por la duración del feed.

Pinouts Contactos Secos:

Pin 1	Input #1	Pin 4	Input #4	Pin 7	Output #2
Pin 2	Input #2	Pin 5	Ground	Pin 8	Output #3
Pin 3	Input #3	Pin 6	Output #1	Pin 9	Output #4

HACIENDO CONEXIONES

Como mínimo, EarShot IFB necesitará una conexión de audio y una conexión a la red. Los niveles de todos los audios analógicos I/O es 0dBu (0.775V) nominal. Este nivel proveerá 20dB de margen antes del punto de clipping. El audio de entrada es reflejado en el panel frontal LEDs con medición de picos como es indicado en la figura más abajo. El clipping está indicado por el LED de color rojo en estos medidores.



EarShot IFB necesita una conexión de red para ser útil. En EarShot IFB, las conexiones de red se realizan vía conexión Ethernet estándar 1000Base-T en un conector RJ-45.

En la mayoría de los casos, EarShot IFB luce como una computadora ordinaria para esta red. De hecho, EarShot IFB contiene una computadora embebida con un sistema operativo Linux y un paquete completo de protocolos de red.

EarShot IFB es perfectamente capaz de trabajar con la mayoría de las redes LAN pero puede haber situaciones donde la red LAN está completamente protegida por un firewall, sujeto a condiciones de tráfico sobrecargado o tiene protocolos de seguridad muy complicados. Un mejor desempeño es posible si EarShot IFB tiene su propia conexión a Internet.

Ya que puede haber un ancho de banda, firewall, y preocupaciones de seguridad con la instalación de EarShot en una red LAN administrada, es recomendable que su administrador IT consulte estos escenarios. De acuerdo con los detalles a continuación, se presume que su administrador IT posee conocimiento práctico y de configuración de redes.

En EarShot IFB, el puerto Ethernet administra las conexiones con sus líneas telefónicas y la configuración de la interfaz de **Toolbox**. La dirección IP puede ser DHCP o estática pero si usted accede con regularidad a la interfaz de **Toolbox** de su sistema, usted necesitará asignar una dirección IP estática al puerto Ethernet primario para que los navegadores encuentren la unidad principal.

EarShot IFB tiene un solo indicador de **“Estado”** en el panel frontal. Refleja diferentes colores en función del estado del sistema:

- **Roja:** No hay red se detecta o la red es incompatible
- **Azul:** La red está conectado y la unidad está en proceso de arranque del subsistema
- **Magenta:** La red está conectada y la unidad está totalmente iniciada, pero no se ha registrado ningún proveedor SIP
- **Verde:** La red está conectada, la unidad arranca, el proveedor SIP está registrado y la unidad está lista para recibir llamadas
- **Blanco:** Llamada activa en curso en la unidad

IV. CONFIGURANDO INFORMACIÓN IP DE EARSHOT

INTRODUCCIÓN

EarShot contiene dos puertos Ethernet (primario y secundario), el cual provee la siguiente funcionalidad al sistema:

- Cuentas que proveen el servicio de Voice-over-IP
- Conexión a PBXs
- Conexión a dispositivos gateway (puentes a POTS, ISDN, E1/T1, etc.)
- Conexión al software Comrex **Device Manager**
- Conexión al **Toolbox** Web en las páginas de configuración

CONFIGURANDO INFORMACIÓN IP DE EARSHOT

EarShot IFB es entregado desde fábrica en modo DHCP. Si es posible, automáticamente encontrará una dirección en su red. La forma más fácil de encontrar una dirección es utilizar el software Comrex **Device Manager** (disponible en nuestro sitio para plataforma Windows y Mac). Usted puede utilizar **Device Manager** para hacer upgrade de firmware en su EarShot IFB.

EarShot técnicamente no requiere una dirección IP estática; si la dirección DHCP cambia usted deberá encontrar una nueva dirección para configurar EarShot IFB vía la interfaz de Toolbox.

Cada puerto Ethernet puede ser configurado con una dirección IP estática. Esto es más común ya que le permite “encontrar” la unidad principal en su red y llamar a la interfaz EarShot IFB Web GUI a la dirección fija.

Hay tres formas de configurar una dirección IP estática para los dos puertos Ethernet: **Console IP Setup Interface** (ej.: conectar un teclado, un ratón/mouse y un monitor directamente a EarShot IFB), **Device Manager's** “modo rescate” o a través de **Toolbox**.

INTERFAZ DE CONFIGURACIÓN IP DE LA CONSOLA

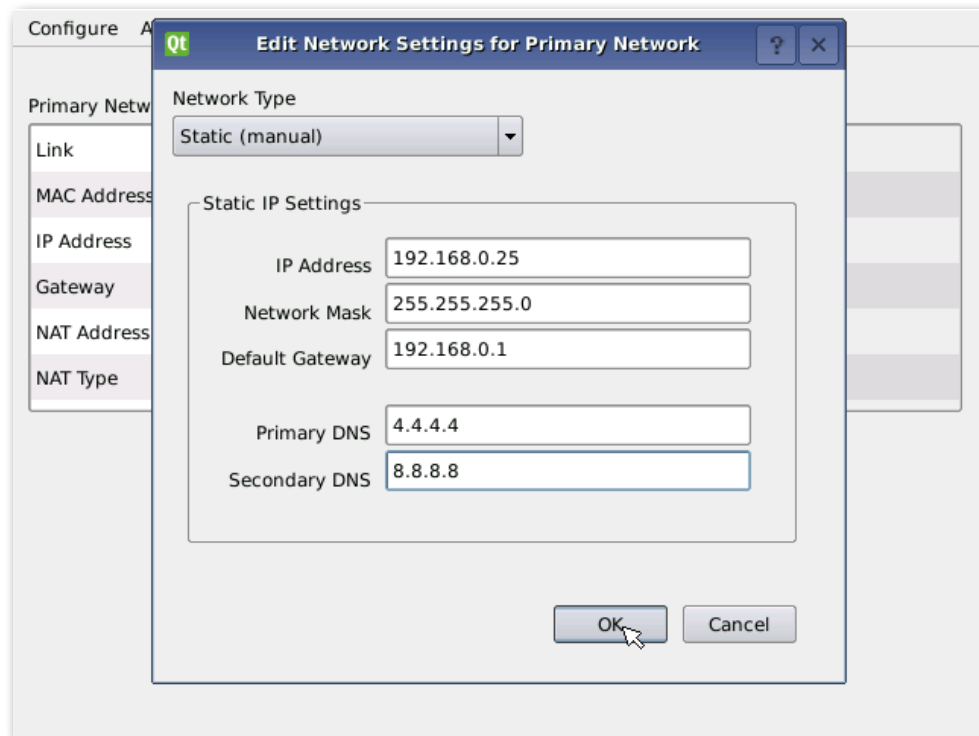
La interfaz de la consola se muestra a continuación..

EarShot IFB tiene dos puertos Ethernet, etiquetados como **Primario** y **Secundario**.

De forma predeterminada, el puerto Ethernet primario está configurado en DHCP y el puerto Ethernet secundario está deshabilitado. El puerto secundario se puede habilitar a través de la interfaz de la consola seleccionando **Configurar-> Red secundaria**, seleccionando la casilla con la etiqueta “**Deshabilitado**” y cambiando la selección a “**Estática**”. (Tenga en cuenta que: La red secundaria no es compatible con DHCP). La red secundaria debe estar habilitada en la interfaz de la consola. Los cambios realizados en la interfaz de la caja de herramientas basada en web a la red secundaria **no tendrán ningún efecto** si no se habilitan por primera vez en la consola.

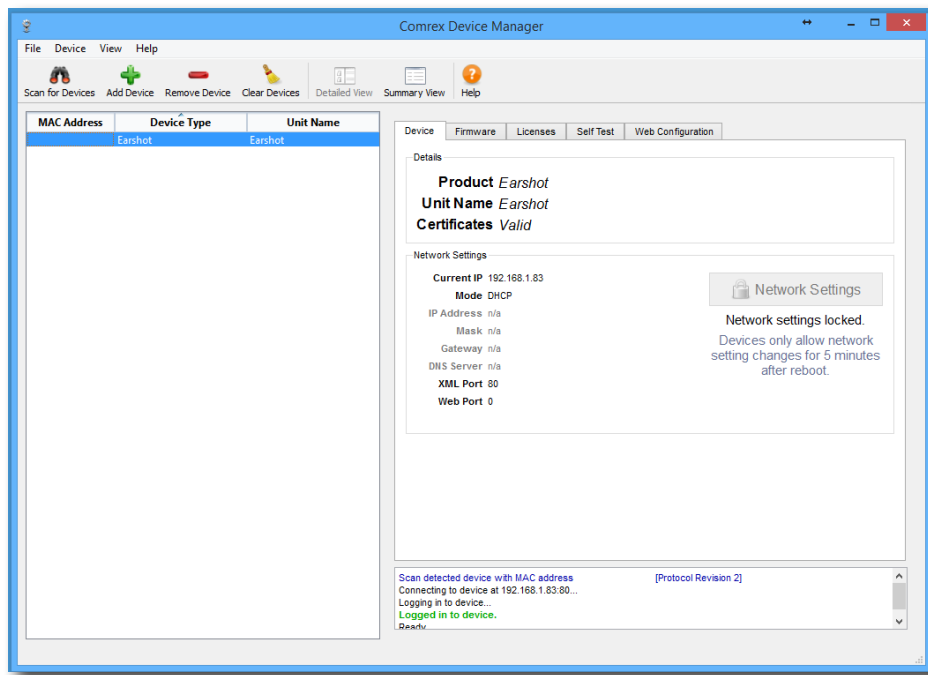
Usted elegirá una de las posibles configuraciones para cada puerto Ethernet. En el caso de una dirección estática, usted necesitará saber la siguiente información:

- la dirección estática IP que le gustaría asignar al puerto Ethernet de EarShot IFB
- la máscara de red utilizada en la red
- la dirección de gateway utilizada en la red
- la/s dirección/es DNS utilizada por su red

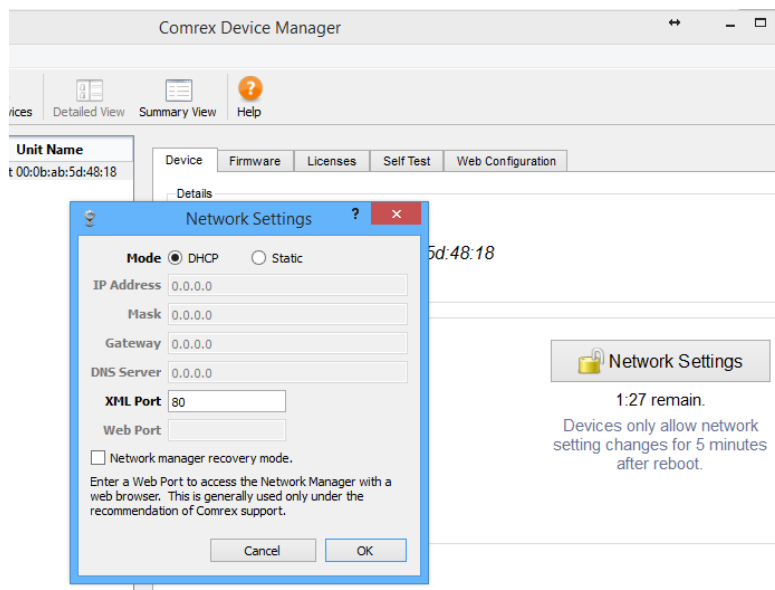


DEVICE MANAGER

Instale **Device Manager** en una computadora en la misma red LAN física que EarShot IFB. Una vez administrado y en funcionamiento, seleccione el botón “**Scan for Devices**” (buscar dispositivos) en la esquina superior izquierda para buscar en su red productos de Comrex. Los resultados deberían verse de la siguiente manera:



Hay dos maneras de configurar la información IP estática utilizando **Device Manager**. El modo **rescue** (rescate) le permite cambiar los parámetros durante los primeros cinco minutos de funcionamiento y se inicia utilizando el botón **Network Settings** (configuraciones de red) en el panel derecho. Este modo es útil si usted olvidó la contraseña de la unidad.

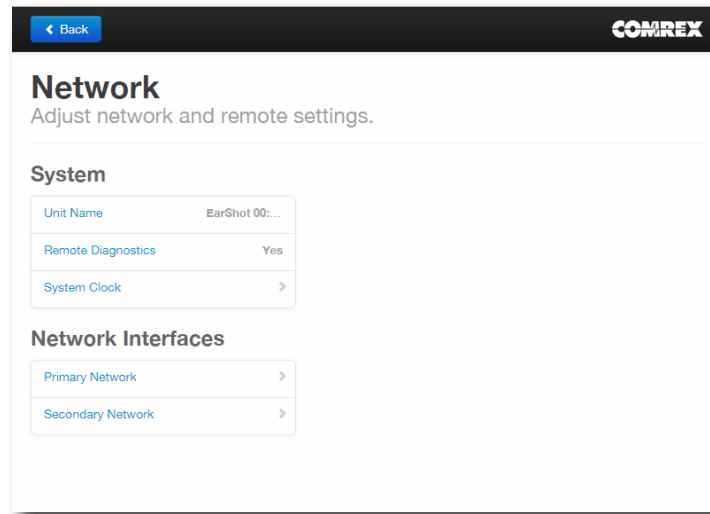


TOOLBOX

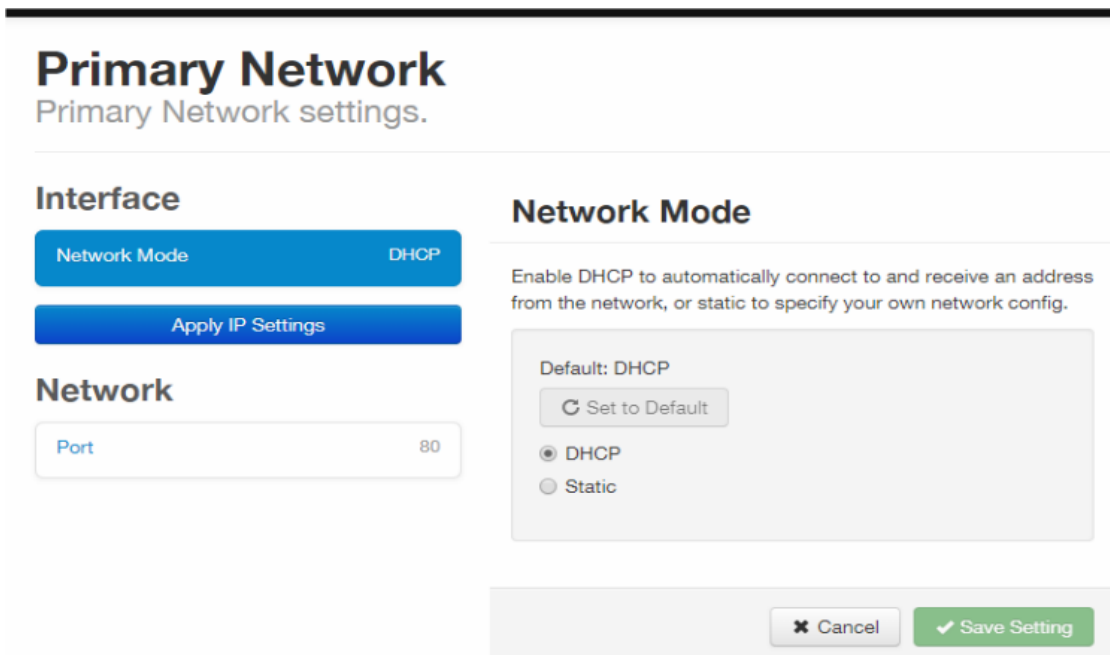
La forma normal de cambiar cualquier configuración en EarShot IFB es seleccionar la pestaña **Web Configuration** (configuración web) en el panel derecho. Esto abre la interface toolbox del equipo/unidad. **Toolbox** es una interfaz web que le permite configurar todos los parámetros relevantes del producto. Una vez que sabe la dirección IP del equipo/unidad, también se puede acceder a Toolbox por Internet en **http://[ip-address]/cfg**.

Toolbox requiere que inicie sesión con un nombre de usuario y contraseña. El usuario por default es "admin" y la contraseña por default es "comrex". **Le recomendamos que usted cambie la contraseña establecida por default**, especialmente si su EarShot IFB está expuesto directamente a Internet.

Una vez iniciada la sesión, elija la opción network (red) y usted vera las siguientes opciones:



Seleccione la red que usted quiere configurar (primaria o secundaria) y seleccione la entrada en **Network Mode** (modo de red) – DHCP por default.



[← Back](#)

Primary Network

Primary Network settings.

Interface

Network Mode	Static
Static IP Address	dhcp
Gateway	0.0.0.0
DNS	0.0.0.0
Network Mask	0.0.0.0

[Apply IP Settings](#)

Network

Port	80
------	----

Cambie el modo a **Estático** e ingrese la dirección IP, máscara de red, gateway y la información DNS de su red. Seleccione **“Apply IP Settings”** (aplicar configuraciones IP) luego de que toda la información es correcta.

Please note: Si usted necesita acceso a **Toolbox** después de esto, usted necesitará buscar nuevamente y también iniciar sesión (o abrir un browser para buscar una red IP).

Usted también puede ajustar aquí el portal web y los servicios xml. Seleccione Puerto debajo de Network e ingrese el número de puerto que usted quiere utilizar. Asegúrese de guardar la configuración una vez cambiada.

V. OPERACIÓN DE EARSHOT IFB

EarShot IFB solamente procesa llamadas entrantes. Por default, las personas que llaman son ubicadas en una “sala de espera” y un mensaje es enviado instruyendo a la persona que llama a ingresar un PIN. El PIN es prefijado por el administrador y como verificación la persona que llama es adherido a uno de los posibles feeds basados en el PIN. Por default, las personas que llaman solamente escuchan el feed y no se escuchan entre ellos.

EarShot IFB tiene una función IFB opcional. En este modo, uno de los dos audios de entrada es usado como entrada IFB y son designados a una de las otras entradas de audio. Cuando el audio es activado en la entrada IFB, el nivel del audio es automáticamente reducido por un monto fijo y el audio IFB es enviado por el **FEED** en un nivel normal. Esto fue diseñado para permitir que el audio del programa normal o el audio mix-minus sea enviado a la persona que llama, aun permitiéndole al productor o director interrumpir el feed momentáneamente para dar direcciones.

Como opción, las personas que llaman pueden adherir su propio audio al audio feed para hacer una conferencia. Esto se realiza con un código especial DTMF enviado por la persona que llama. Esto es útil en un escenario donde el productor o director no se encuentra en el estudio, pero desea agregar su propio audio al feed vía teléfono.

VI. CONEXIONES TELEFÓNICAS

INTRODUCCIÓN A SIP

SIP (Session Initialization Protocol) es el estándar utilizado por EarShot IFB para hablar con líneas telefónicas virtuales. Estas líneas deben ser creadas de manera externa antes de que sean “aplicadas” a EarShot IFB. La “aplicación” de las líneas SIP implica la configuración de la unidad principal con cierta información sobre las líneas y la locación del servidor que las entrega. Entonces, la unidad central puede ser autorizada a registrar con el servidor SIP y automáticamente administrar toda la interfase con la línea virtual.

La línea SIP puede ser entregada desde varias fuentes:

- 1 Un proveedor de telefonía comercial que entrega líneas SIP sobre una red IP pública o privada.
- 2 Un PBX que entregue extensiones telefónicas vía SIP (en este caso la unidad principal de EarShot es administrada como una extensión PBX).
- 3 Un dispositivo gateway (hardware) diseñado para modificar servicios análogos de telefonía a SIP. Estos dispositivos conectan con los mundos externos vía cables POTS/PSTN analógicos, circuitos T1/E1 o ISDN. Ellos conectan con EarShot IFB vía IP sobre Ethernet.

La configuración y las conexiones son idénticas para las opciones 1 y 2 y similares para la opción 3.

La primera etapa en configurar una línea telefónica SIP es establecer una cuenta con algún tipo de proveedor SIP o PBX. Este proceso no puede ser descripto aquí, pero el resultado de este proceso será que usted tendrá acceso a ciertas credenciales para esa cuenta. Comúnmente estas consisten en:

- **Dominio del Servidor** – la dirección IP o URL del servidor al cual usted se está registrando.
- **Nombre de Usuario** – el nombre que EarShot utilizará cuando se conecte al servicio.
- **Contraseña** – la contraseña asociada con su cuenta por razones de seguridad.

Además, diferentes proveedores SIP requieren un **Nombre de Usuario Autorizado** (Nombre de Usuario Aut), el cual es casi siempre por default igual al nombre de usuario pero a veces se requiere que sea diferente.

SIP es un protocolo complejo y se basa en los documentos estándar de Internet llamados RFC. Estos documentos están sujetos a interpretación y algunos PBX, gateways o proveedores telefónicos pueden tener algunos requerimientos pocos claros de configuración SIP para funcionar mejor con EarShot IFB. Sin embargo, la mayoría debería trabajar solamente con las credenciales mencionadas anteriormente.

Una vez que EarShot es configurado para trabajar con PBX o un proveedor de telefonía por Internet, este automáticamente se registrará con el servidor correcto y mantendrá una conexión con el servidor de manera indefinida. De esta manera, el proveedor o PBX puede notificar a EarShot IFB de llamadas entrantes a su número telefónico.

Con gateways (hardware), el proceso es revertido. EarShot IFB emulará a un servidor SIP al dispositivo gateway. Las credenciales serán ingresadas en el dispositivo gateway. EarShot IFB solamente necesitará saber la dirección del dispositivo gateway.

CONFIGURACIÓN DE UN PROVEEDOR SIP O PBX

La información del proveedor SIP es ingresada utilizando **Toolbox**, una utilidad de configuración web.

En la mayoría de los acuerdos, un proveedor SIP le puede entregar diferentes canales telefónicos sobre una sola cuenta.

Cuando se suscribe a un proveedor SIP asegúrese de saber cuántos canales simultáneos le son proveídos con esa cuenta. Esos canales actuarán como las líneas rotativas tradicionales; entonces en caso de que un canal se encuentre ocupado, las llamadas serán redirigidas al canal dos, etc. Solo se requiere que ingrese sus credenciales una vez por cada cuenta, incluso si tiene múltiples canales.

Además de las credenciales, usted necesitará un número Direct Inward Dial (DID) asociado con su cuenta. Este es el número de teléfono que los usuarios marcarán para comunicarse con usted. EarShot IFB no necesita reconocer este número – la interpretación para el canal SIP sucede detrás de escena en el proveedor SIP (aunque casi siempre el nombre de la cuenta DID y SIP es el mismo).

The screenshot displays the 'SIP Provider' configuration page in the COMREX interface. At the top, there is a 'Back' button and the COMREX logo. The main heading is 'SIP Provider' with a 'Delete' button. Below the heading is a description: 'SIP provider allowing Earshot to manage one or more VoIP calls simultaneously.' A light blue bar indicates the status is 'Initializing'.

The configuration is divided into three main sections:

- General Settings:** Includes a 'Name' field with the value 'SIP Provider' and a dropdown menu currently showing 'SIP Provider' and 'Generic SIP ...'.
- Account Information:** Includes fields for 'Account username' and 'Account password' (masked with asterisks).
- SIP Settings:** Includes a 'Server/Realm' field and a 'Show Advanced' button.

On the right side, there is a 'SIP Provider' section with the instruction: 'For easier configuration, choose your SIP provider. Use 'generic' if it is not in the list.' It shows a 'Default: Generic SIP Provider' with a 'Set to Default' button. A dropdown menu is open, listing the following providers: Generic SIP Provider (selected), Broadvoice, Callcentric, Crexendo, iptel.org, localphone.com, OnSIP, and sip2sip.info. A 'Save Setting' button is visible at the bottom right of this section.

En **Toolbox**, diríjase a **Line Configuration** (línea de configuración) -> **VoIP Providers** (Proveedores VoIP) -> **Add Provider** (Agregar Proveedor) -> **SIP Provider** (proveedor SIP). La configuración básica para un proveedor SIP se muestra en la figura anterior. Primero, usted debería darle a su proveedor un nombre único en el campo "name" (nombre). Esto es utilizado para referencia.

Debajo de la entrada del proveedor SIP, hemos provisto una lista de los proveedores más utilizados. Utilizando uno de estos perfiles ayuda a configurar algunos de los ajustes que hemos encontrado necesarios para que estos proveedores operen/trabajen/funcionen correctamente. Si su proveedor no está en la lista (o si usted está configurando una extensión SIP desde un PBX) deje este parámetro para “**Generic SIP Provider**” (proveedor general SIP).

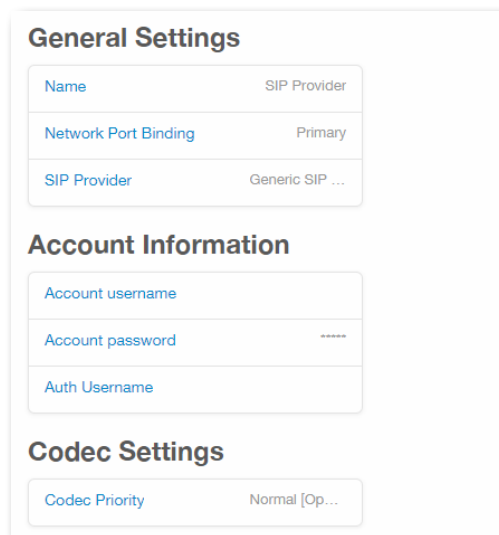
Los próximos tres campos son donde usted deberá ingresar sus credenciales de su cuenta: nombre de usuario de la cuenta, contraseña de la cuenta y Server/Realm. Estos le deberían haber sido proveídos por el proveedor SIP. El nombre de usuario de la cuenta usualmente es el nombre al comienzo de cualquier URI SIP asignada. (Más de eso a continuación). EJ: nombredeusuario@sip_provider. Asegúrese de ingresar solamente la parte del nombre de usuario.

El Server/Realm es la dirección de un servidor de registro mantenido por el proveedor. No se necesitan prefijos web, solamente la dirección. EJ: sip.comrex.com o iptel.org. Si usted está programando una extensión PBX aquí, esta serpa la dirección IP (o URL) del PBX.

En la mayoría de las circunstancias esto es necesario. Fijar los parámetros, seleccionar **Back** (atrás) y luego seleccionar **Restart** (reiniciar) debería iniciar el proceso en el cual EarShot IFB se registra con el proveedor o PBX. Sin embargo, la registración SIP puede ser confusa en algunos sistemas y si el registro falla, usted debería revisar detenidamente la configuración SIP requerida y utilizar la **Configuración Advanced SIP**. Configuración avanzada está disponible en el botón Show Advanced (mostrar configuración avanzada).

CONFIGURACIÓN AVANZADA SIP

Al seleccionar “**Show Advanced**” (mostrar configuración avanzada) en el menú de configuración, la lista se expande para incluir las opciones menos utilizadas:



The screenshot displays a configuration interface with three main sections:

- General Settings:** Contains three rows of settings: 'Name' set to 'SIP Provider', 'Network Port Binding' set to 'Primary', and 'SIP Provider' set to 'Generic SIP ...'.
- Account Information:** Contains three input fields: 'Account username', 'Account password' (masked with asterisks), and 'Auth Username'.
- Codec Settings:** Contains one row: 'Codec Priority' set to 'Normal [Op...]'.

- INFORMACIÓN DE LA CUENTA -

Auth Username: Por default, este campo es completado con el mismo que el usuario.

Ocasionalmente, los proveedores SIP requieren que este campo sea diferente que el nombre de usuario y lo mostrará en su instrucción de configuración.

SIP Settings

Provider Binding Port	5085
Server/Realm	
Proxy Address	
Registration Proxy Address	
From Username	
From Domain	
Expire time	3600 seconds
Retry time	60 seconds
Register	Yes
Register Transport	UDP
INVITE SDP Compatibility	On
INVITE Contact Compatibility	Off
Forced Ringback	none

- CONFIGURACIÓN SIP -

Provider Binding Port: Este Puerto es asignado por EarShot IFB basado en el número de proveedores que usted asignó. A menos que sea requerido, usted debería dejar la configuración default.

Proxy Address: La mayoría de los proveedores utilizan la misma dirección de servidor para el registro de llamadas entrantes e intermediar el tráfico SIP. Si su proveedor muestra una dirección diferente para proxy, ingrésela aquí.

Registration Proxy Address: Algunos proveedores requieren que mensajes de registración sean enviados a un servidor distinto. Si su proveedor ha requerido específicamente esto, ingrese la dirección aquí.

From Username, From Domain: No aplicable en EarShot IFB

Expire Time, Retry Time: Estos valores determinan cuanto tendrá que esperar (sin ninguna comunicación) antes de que el proveedor SIP considere que la conexión de registro se ha perdido y una vez perdida, cuan seguido intentarán restablecerla. Los valores default son usualmente los mejores, a no ser que su proveedor requiera un cambio.

Register: Si usted quisiera salvar las entradas SIP del proveedor para uso ocasional, usted puede deshabilitarlas ("No"). No se intentará ninguna registración hasta que esta configuración sea cambiada de "No" a "Yes".

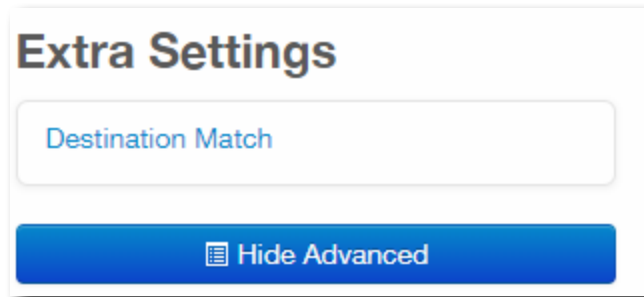
Register Transport: Deje **UDP** en esta configuración en todas las circunstancias, excepto en circunstancias muy poco comunes.

INVITE SDP Compatibility: Activación opcional de compatibilidad para SIP INVITE sin SDP. Esta configuración es requerida por **Cisco CUCM** y **3Com NBX**.

INVITE Contact Compatibility: Opcionalmente forzar la extensión para que sea enviada en el campo de contacto SIP INVITE. Esta configuración es requerida por **3Com NBX**.

Force Ringback: Opcionalmente genera un tono para las llamadas que no entraron.

- CONFIGURACIÓN EXTRA -



Destination Match: Normalmente este campo se deja en blanco. Si una expresión es ingresada, el sistema intentará coincidir el texto en este campo con las llamadas entrantes en el campo “**Destination**”. Las llamadas que no coincidan serán rechazadas. Esto se requiere cuando se trabaja con algunos PBX. Este campo también puede ser configurado como “expresión regular” para un dial plan, el cual es un tema más complejo y puede ser resuelto por el servicio de asistencia al consumidor de Comrex.

Como ejemplo, al ingresar el siguiente valor en el campo: `^(1\d{3}555210\d)$` coincidirá con la secuencia “**1xxx555210x**” donde “**x**” es cualquier dígito.

CONFIGURACIÓN DE PBX

En caso de que usted desee configurar líneas entrantes como extensiones de un PBX upstream, las instrucciones son muy similares. Su PBX entregará los canales a EarShot IFB en la misma manera en que un proveedor SIP lo hace y usted necesitará configurar el PBX y tomar las credenciales correspondientes al programa en los campos del proveedor SIP en EarShot IFB. La programación IP PBX suele ser muy compleja y es administrada por el proveedor de PBX. Hágale saber al proveedor que usted desea configurar una extensión entrante solamente con un “x” número de canales simultáneos y sin características adicionales como conferencia, transferencia, etc. (desde que EarShot IFB no soporta estas funciones).

GATEWAYS

Gateways le permiten utilizar EarShot IFB con las líneas telefónicas analógicas tradicionales como también T1, BRI y PRI ISDN; y otras líneas telefónicas antiguas. Gateways convertirán estos canales telefónicos en líneas telefónicas de estilo SIP. Usted necesitará encontrar los gateways que entreguen canales estilo FXO en su lado – los puertos en el gateway están diseñados para apuntar hacia el servicio telefónico (y no conectar con los teléfonos y PBX, como un puerto FXS lo hace). Configurar los dispositivos gateway puede ser complejo. Comrex mantiene algunas instrucciones básicas en cómo configurar los gateways que preferimos en nuestro sitio web www.comrex.com. Los gateways entregan sus líneas virtuales SIP de manera diferente a los proveedores SIP. Con gateways, EarShot IFB se convierte en el “proveedor” y los gateways se registran. Esto significa que las credenciales que utilizo en EarShot IFB serán generadas por usted y estas tendrán que ser iguales en el gateway. Para utilizar un gateway, el gateway y el EarShot IFB deben tener direcciones IP estáticas así pueden encontrarse entre ellos.

La figura anterior muestra la configuración para gateways: **Line Configuration** (línea de configuración) -> **VoIP Providers** (proveedores VoIP) -> **Add Providers** (agregar proveedores) -> **SIP Gateway Device (xxx)**. Muchas de las configuraciones son propuestas automáticamente por EarShot IFB pero pueden ser cambiadas a cualquier valor que usted desee.

- CONFIGURACIONES GENERALES -

Name: Asigne un nombre a su gateway.

- INFORMACIÓN DE LA CUENTA -

Username and Password: Valores generados de manera local que el gateway utilizará para registrar a EarShot IFB.

- CONFIGURACIÓN SIP -

Address: La dirección IP del gateway.

Gateway Binding Port: propuesto automáticamente con un Puerto no utilizado. Debe ser igualado en la **Gateway Settings** (configuración del gateway).

TRONCAL SIP

En relación a EarShot IFB, preferimos a SIP Troncales como cuentas de proveedores que no requieran registración con un servidor del proveedor. Estos tipos de servicios también son conocidos como el uso de “**Autorización de IP**” porque el pedido de autorización es realizado al enviar las llamadas a una específica dirección IP fija al sitio del cliente. De la misma manera, las llamadas salientes son autorizadas si provienen de la dirección IP estática del cliente.

De esta manera, los troncales SIP son más sencillos para el proveedor porque no existe un nombre de usuario o una contraseña asociada con la cuenta y no hay un proceso de logueo. Los troncales pueden ser más complejos para EarShot IFB porque EarShot IFB debe tener una forma de filtrar las llamadas entrantes como si fueran de su proveedor y no alguna llamada cualquiera en su red. Si usted configura un **Troncal SIP** detrás de un router o firewall, tendrá que aplicar reglas especiales a su red. Su proveedor de troncales casi siempre tiene guías para este proceso.

Usted también puede encontrarse con ciertos PBX que deben entregar sus extensiones en esta manera. Para que EarShot reciba estas extensiones, debe crearse un **Troncal SIP** en vez de una cuenta de proveedor.

Los **Troncales SIP** también difieren de los proveedores SIP normales en varias maneras. En vez de hacer que EarShot IFB “tire” el canal SIP de un proveedor, un proveedor **Troncal SIP** “empujará” el canal a una dirección IP específica para el usuario. Esto significa que para soportar un **Troncal SIP** usted necesitará una dirección IP estática pública y otros dispositivos no pueden utilizar los puertos SIP en esa dirección.

A diferencia de los proveedores SIP normales, solamente un **Troncal SIP** es soportado en cada unidad principal de EarShot IFB.

La opción de agregar un nuevo **Troncal SIP** se encuentra en **Line Configuration** (línea de configuración) -> **VoIP providers** (proveedores VoIP) -> **Add Provider** (agregar proveedor) -> **SIP Trunk** (troncal SIP)

Una vez que el Trun fue creado, no habrá opción de crear otro.

Aunque el menú de configuración del **Troncal SIP** parece igual que el de un proveedor normal, solamente algunas de ellas son significativas. Usted debería poner el nombre de su proveedor troncal en el campo “nombre”, elija sus opciones de codec (vea la configuración de un proveedor normal) y fije el correcto valor del puerto SIP (usualmente 5060). El campo para el nombre de usuario y la contraseña pueden ser ignorados.

Usted también necesitara llenar el campo de server/realm en el menú de configuraciones del troncal. Esto será la dirección IP (EJ: 74.94.151.151) del proveedor troncal. A diferencia de los proveedores registrados, este campo no debe ser llenado con un nombre de dominio (EJ: myprovider.com) pero necesita la dirección IP actual del servidor del proveedor. Esto es requerido para emparejar, como se explica a continuación.

Finalmente, un **Troncal SIP** necesita determinar las llamadas que son de su proveedor, para procesarlas a la correcta línea telefónica entrante. Esto se realiza mediante un proceso llamado “emparejamiento”. La forma más simple de emparejamiento es la default, donde la dirección fuente de las llamadas entrantes será emparejada con el valor en el campo de server/real. Si es correcta, la llamada entrante será dirigida a una línea correspondiente.

En algunas circunstancias, la configuración no es correcta y necesita ser ajustada. Usted puede acceder a la configuración de emparejamiento al seleccionar **Show Advanced** (mostrar configuración avanzada) y mirar debajo de la sección **Extra Settings** (Configuración extra). Las dos opciones de interés para los troncales son:

- 1 Trunk Incoming Match Parameter:** Selecciona qué campo dentro de los parámetros de llamada entrante (enviar a “call setup time by the provider”) es utilizada para el emparejamiento. Esta puede ser la **Network Address** (dirección de red) (default) o **Destination Number** field.
- 2 Trunk Incoming Match:** Este es el campo donde usted ingresará el texto que será emparejado por el sistema con la llamada entrante.

Si se elige la opción de **Network Address** (dirección de red), está bien dejar el **campo de emparejamiento de troncal** entrante en blanco – esta es la configuración por default y el sistema utilizará la entrada del campo de **Server/Realm** para el emparejamiento.

Alternativamente, usted puede ingresar una diferente dirección IP para que sea emparejada en caso donde la fuente IP de la llamada sea diferente que la entrada del **Server/Realm**.

Alternativamente, si se elige la opción de **Destination Number**, el campo de emparejamiento de troncal entrante debe ser llenado. El sistema verá el campo de **Destination Number** de llamadas entrantes y aceptará solamente las llamadas que emparejen perfectamente con el texto. Este campo puede ser fijado como una “expresión regular” para un dial plan, el cual es un tema complejo y puede ser resuelto por el servicio de asistencia al consumidor de Comrex.

Como ejemplo, al ingresar el siguiente valor en el campo:

```
^(1\d{3}555210\d)$
```

Esto coincidirá con la secuencia “**1xx555210x**” donde “**x**” es cualquier dígito.

Note que el campo **Destination Match** no es utilizado para troncales SIP. Esto es utilizado solamente para los proveedores registrados. Ingresar información en este campo para los troncales SIP puede resultar en fallos en las llamadas.

Una vez creado, el estatus de sus troncales SIP siempre será mostrado como “registrado”. En el caso de los troncales SIP, este estatus no tiene sentido ya que no se han recibido datos reales del proveedor hasta que se establece una llamada.

VII. COMPORTAMIENTO DEL SISTEMA

En la página principal de Toolbox, al seleccionar System Behavior (Comportamiento del sistema) le permite fijar como su EarShot IFB reaccione a las llamadas entrantes. Las opciones están divididas en **Audio**, **IFB**, Otros y configuración de código de las líneas.

System Behavior

Behavior of the EarShot system.

Audio

PIN-Free mode	No
Caller Alert Tone	No

IFB

IFB Feed Count	No IFB's
IFB Ducking	Off

Other

Caller Feed Add PIN	7
Caller Feed Remove PIN	8
Contact Closures	>
Test Modes	>
Siptrace: Not yet run	

Line PINs

PIN 1	1234
PIN 2	2
PIN 3	3
PIN 4	4

CONFIGURACIÓN DE AUDIO

PIN-Free Mode - IEn funcionamiento normal, las llamadas entrantes son derivadas en la “sala de espera” del sistema y se les solicita un numero PIN para seleccionar su feed. Este modo deriva a todas las personas que llaman en el Feed 4. Es posible cambiar a otros feeds utilizando el control DTMF.

Caller Alert Tone - Determina si la persona que llama recibe una corta alerta cuando entra en la “sala de espera”.

CONFIGURACIÓN IFB

IFB Feed Count - Esta función le permite utilizar los canales IFB. EarShot IFB tiene un total de cuatro inputs, los cuales por default todos son "Feeds" que pueden ser seleccionados por las personas que llaman. Al utilizar IFB, el usuario sacrificará uno o dos de las entradas y utilizará solamente las dos o tres entradas que quedan.

Solamente el input del feed #1 y #2 puede ser cambiado a IFBs. Esto significa que el input #3 y #4 son siempre destinados a ser feeds normales.

System Behavior Restart System

Behavior of the EarShot system.

Audio

PIN-Free mode	No
Caller Alert Tone	No

IFB

IFB Feed Count	No IFB's
IFB Ducking	Off

Other

Caller Feed Add PIN	7
Caller Feed Remove PIN	8

IFB Feed Count

Determines how many feeds will be used for IFB. Up to two feeds may be used as IFB. Feed four is used as the first IFB, and feed three is used as the second.

Default: No IFB's

Set to Default

No IFB's
No IFB's
IFB #1 enabled
IFB's #1 and #2 enabled

Cancel Save Setting

Se provee una selección para habilitar IFB. Las opciones son:

- 1 No IFB** - (default)
- 2 IFB #1 habilitado** – solamente se activan los feeds 2 – 4.
- 3 IFB #1 y #2 habilitado** - solamente se activan los feeds 3 y 4.

Si uno o ambos inputs IFB son habilitados, una nueva opción aparecerá para permitirle seleccionar a cuál feed el IFB se dedicará. Si solamente el IFB #1 es habilitado, puede ser asignado al Feed #2, #3 o #4 (pero solamente uno de estos). Si IFB #1 y #2 son habilitados, cada uno puede ser asignado al feed #3 o #4 (pero no ambos).

IFB Ducking - IFB trabaja como un detector de audio. Cuando el audio es presentado en el input IFB, el nivel del feed correspondiente es reducido (por la cantidad en la opción de **IFB Ducking**) y el audio IFB es enviado en un nivel normal. No hay opciones para controlar manualmente la función IFB.

OTRAS OPCIONES

Caller Feed Add PIN - Secuencia DTMF que se añadirá al audio del micrófono de la persona que llama al feed cuando marca.

Caller Feed Remove PIN - Secuencia DTMF que removerá el audio del micrófono de la persona que llama al feed cuando marca.

Contact Closures - Por default, los outputs de los contactos secos se activan cuando cualquier llamada es activada en un feed particular (EJ: una llamada activa en el Feed #1 desencadena por el contacto seco #1). El contacto seco de cada feed puede ser cambiado en el menú de contactos secos.

Test Modes - Estas opciones son utilizadas para diagnósticos o con fines de realizar demos solamente y no interferirá con la función normas cuando sea habilitado.

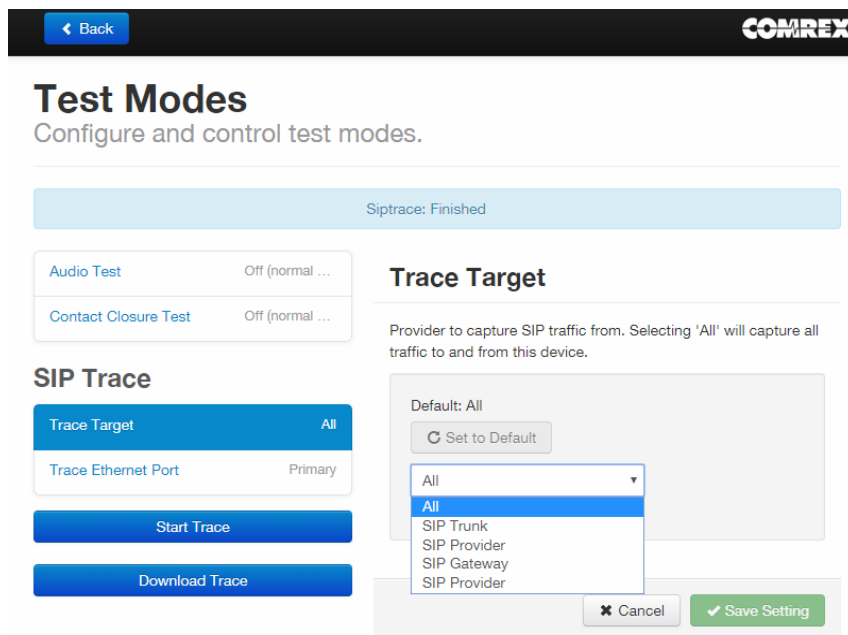
Audio Test - Estas opciones permiten la habilitación de rutas de audio específicas. Estos se utilizan en pruebas de producción unitaria y también pueden ser utilizadas para solucionar problemas generales de conexión. También se ofrecen modos que generan un tono desde los puertos de salida de la persona que llama.

Contact Closure Test - Igualmente, habilitar esta opción pone a la característica de los contactos secos en modo "loopback", las entradas se conectan directamente con las salidas (EJ: input 1-> output 1 etc).

SIP Trace - SIP Trace es una herramienta de diagnóstico que le permite al usuario extraer packet captures para ayudar con la solución de problemas de proveedores SIP.

Para realizar un **SIP Trace**, seleccione **Trace Target**. Seleccione todo para capturar todo el tráfico hacia y desde EarShot IFB o seleccione uno de sus proveedores SIP desde el menú desplegable para realizar una captura de paquetes para un proveedor específico.

Al seleccionar todo le permitirá información no filtrada incluyendo información de broadcast en su red. Puede haber mucha información en este archivo que no es necesaria. Seleccionar los proveedores individuales le dará un conjunto más preciso de información.



Presione Guardar Configuración una vez seleccionado

Luego presione **Start Trace**.

Cuando usted quiera terminar el registro, simplemente seleccione **Stop Trace**.

Una vez seleccionado, un nuevo botón con el nombre **Download Trace** estará disponible. Presiónelo para descargar el archivo del registro (extensión .pcap).

Esto iniciará una descarga http a su navegador.

Para revisar este archivo, recomendamos utilizar *Wireshark*.

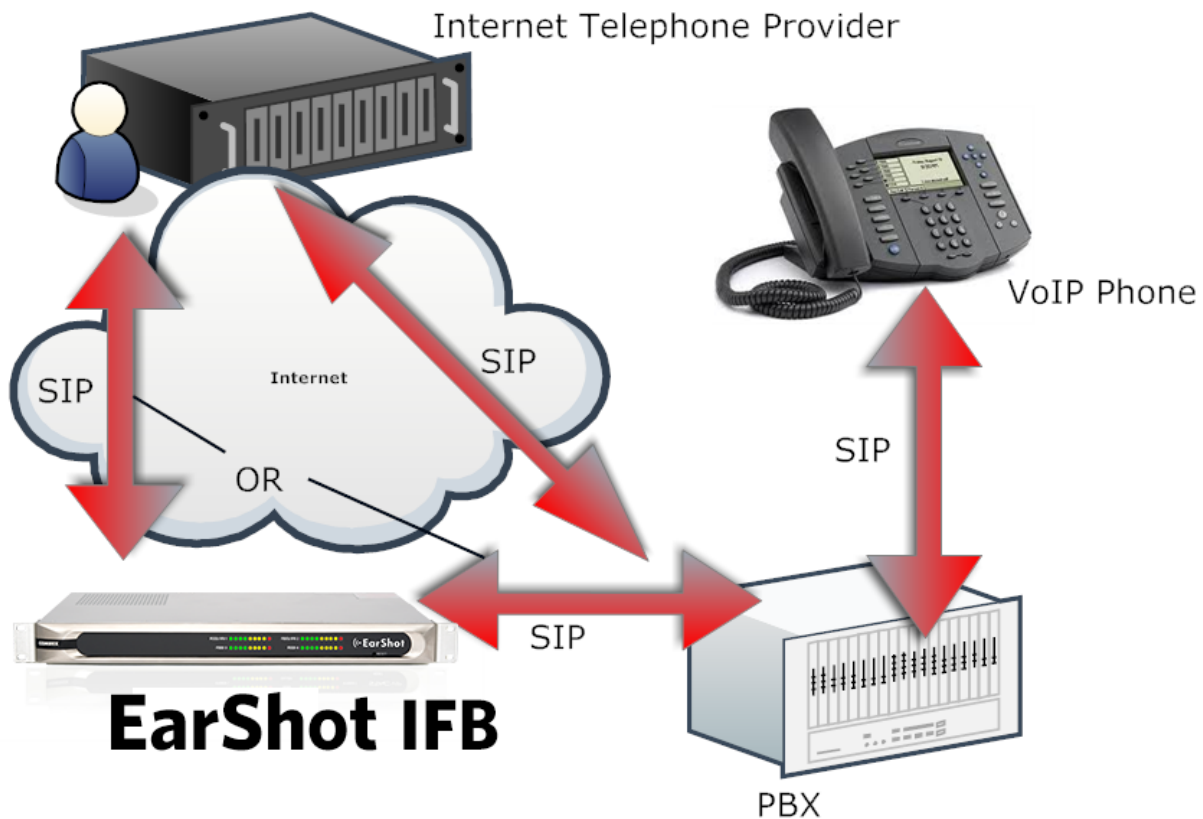
PINs

Las personas que llaman seleccionarán sus feeds al input **DTMF** (Touch Tones).

Aquí se puede programar los PINs utilizados para seleccionar cada feed. Tenga en cuenta que los PIN deben ir seguidos del signo de "pound" (#) para que se activen. Los PIN pueden tener hasta cuatro dígitos de longitud. Los PIN por default son los los PIN predeterminados son los dígitos únicos 1, 2, etc. para cada feed.

VIII. MÁS ACERCA DE SIP

Antes de que comencemos a hablar de routers y problemas SIP, es importante que entienda los básicos de como SIP funciona.

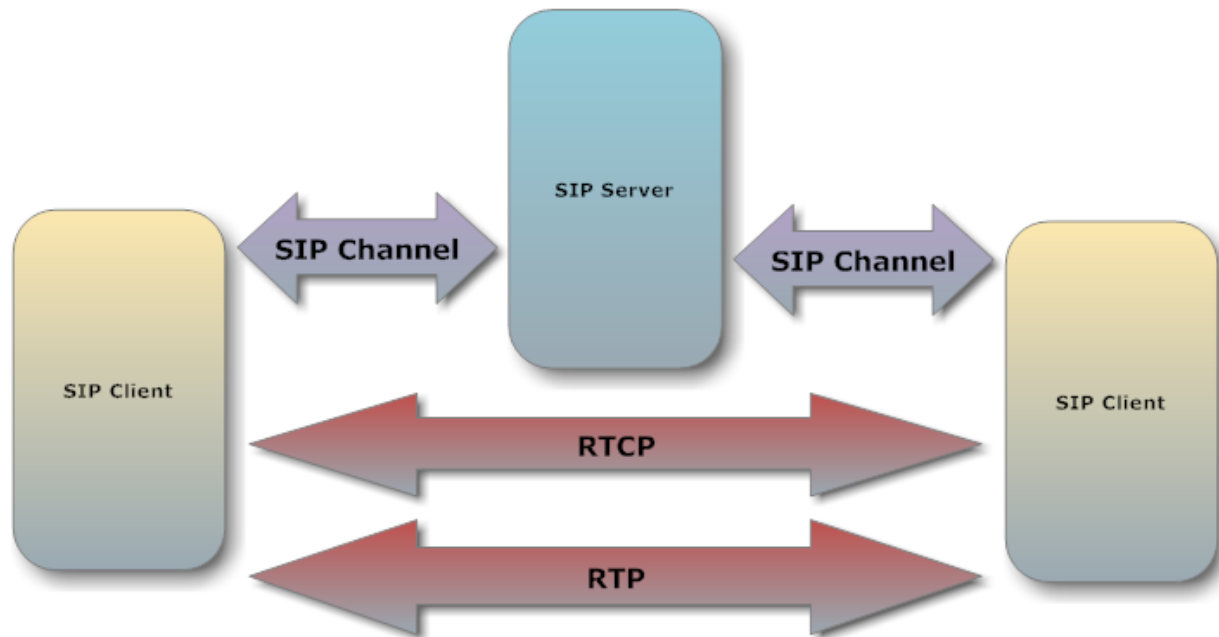


La gran cosa acerca de SIP es que el mismo protocolo es utilizado entre dispositivos a lo largo de la cadena. En nuestro ejemplo que mostramos en la figura anterior, un SIP PBX utiliza el protocolo para registrar y ubicar y recibir las llamadas con un proveedor de servicio SIP en Internet. En este escenario, el proveedor actúa como un huésped SIP y el PBX actúa como un cliente.

Más abajo en la cadena, el PBX tiene una relación similar pero inversa con sus extensiones – el PBX en este link es el huésped y las extensiones son los clientes.

Pero en ambos links, el protocolo es el mismo – el cliente se registra con el huésped SIP, el huésped notifica al cliente de las llamadas entrantes y se encarga de router las llamadas salientes. La manera en que los clientes y los huéspedes que son configurados es idéntica.

Si en este escenario, usted reemplaza la extensión telefónica con un sistema EarShot IFB, usted puede ver como las líneas ahora pueden ser compartidas entre un PBX y el sistema de telefonía de su estudio. EarShot IFB actúa como una extensión SIP a la PBX. Esto requiere un poco de programación PBX para mantenerlo pero ofrece lo último en flexibilidad y utilidad. Por supuesto, desde que el protocolo es el mismo, EarShot IFB puede registrar con el proveedor SIP directamente realizando un bypass del PBX.



Técnicamente, como se muestra más arriba, un cliente SIP abre un canal para su huésped cuando se registra. Este canal se mantiene abierto de manera indefinida y utiliza la capa de transporte TCP para la confiabilidad.

Este canal es utilizado por el cliente SIP para requerir una llamada saliente como también por el huésped SIP para notificar al cliente de llamadas entrantes. El canal es iniciado desde el cliente y mantendrá abierta con la data para que no tenga ningún problema cuando funciona a través de los routers que incorporen Network Address Translation (NAT).

Este canal de canalización no transporta ninguna voice data, el canal de voice data es creado de forma separada distintivamente en “puertos”, utilizando un protocolo llamado RTP.

PROBLEMAS DE NAT DEL ROUTER CON SIP

Los problemas con el cliente SIP (como EarShot IFB) detrás del router NAT son dobles:

- 1 Cuando los clientes SIP (como EarShot IFB) están detrás de los routers NAT, ellos no saben su dirección IP pública. El cliente solamente conoce la dirección LAN privada (EJ: 192.168.x.x) pero no la IP publica utilizada por el NAT router en Internet. Durante el proceso de negociación, el cliente provee información acerca de como otros dispositivos pueden alcanzarla directamente. Pero esta información es errónea ya que la dirección LAN no les sirve a dispositivos que se encuentran fuera de la LAN .
- 2 **Los routers NAT no saben que hacer con RTP streams no solicitado.** Los canales RTP y RTCP que son creados como resultado de la negociación acerca de la registración del canal para las llamadas entrantes es dirigida a la dirección publica IP del router y apunta a puertos temporales que son elegidos durante esa negociación.

El problema #1 se resuelve cuando se utiliza un proveedor SIP respetable ya que podrán substituir su dirección IP publica por la privada durante el proceso de negociación.

Note que aunque este problema sea resuelto, el segundo problema aún permanece – el stream creado para la dirección rebotará el router porque el router no tiene idea de a dónde mandarlos.

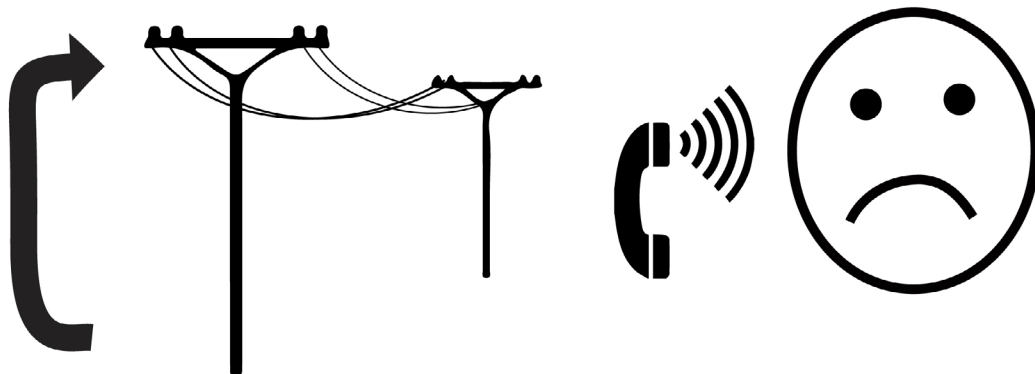
El problema #2 es más complejo pero aquí hay algunas soluciones:

- 1 La forma más simple de evadir los problemas NAT es no utilizar NAT. Si su router soporta a una función DMZ, esto tendrá el efecto de dejar expuesto a su cliente (EarShot IFB) a todo el tráfico entrante de Internet. De otra manera, EarShot IFB puede ser localizado directamente en una conexión abierta de Internet con una IP pública fija programada en ella.
- 2 Muchos routers modernos y firewalls tienen una característica llamada SIP ALG que puede ser activada o desactivada por default. Si SIP ALG es diseñada correctamente (y no todas las implementaciones lo son), su router será lo suficiente inteligente para “oler” el comando del canal SIP, predecir donde los streams de RTP entrantes son esperados y dirigirlos a los puertos correspondientes en su dispositivo SIP. La regla mágica del uso de SIP ALG es evadir el uso de otras soluciones simultáneamente – SIP ALG asume que es el único que tiene la tarea de NAT transversal y funcionará mal si se emplean otras soluciones.
- 3 Utilice un proveedor SIP que haya implementado su propia solución completa NAT. Varios proveedores tienen sistemas que han sido optimizados para resolver el problema de NAT para los streams RTP. Pueden detectar la diferencia entre dirección pública y privada y proxy toda la información entre los clientes si es necesario, haciendo la NAT trasversal más simple. Usted puede preguntar si su proveedor SIP implementa una “solución NAT” y si emplea un “media relay” en particular; el cual significa el proveedor puede actuar como proxy para sus llamadas.

IX. ¿PORQUE ME ESCUCHO A MI MISMO?

MIX-MINUS Y LA ELIMINACIÓN DEL ECO

La integración telefónica en estudio es un proceso de doble sentido. La persona que llama debe enviar su audio al estudio, pero también recibe un retorno de feed que le permite interactuar con otras fuentes, como por ejemplo el conductor/presentador. Un elemento importante de la telefonía de voz implica permitir a una persona escuchar su propia voz en su auricular. Este sonido paralelo provee al orador el confort de saber que su voz está llegando y hace que la comunicación fluya más fácilmente.



Pero por diferentes razones, el sonido paralelo siempre es generado de manera local en el equipamiento del orador en vez de generarse en el otro extremo de la llamada. Esto sucede porque los humanos tienen dificultad en manejar el pequeño retraso en su señal paralela. En las pruebas, hemos encontrado que cualquier retraso cerca de 10mS comienza a tener un efecto llamado "slapback" (eco) donde el orador no puede mantener la conversación y comienza a detenerse y tartamudear.

Hasta en los viejos circuitos telefónicos analógicos, es posible crear un retraso de ida y vuelta de 10mS en una llamada de larga distancia. Ahora agregue el requerimiento que los sistemas VoIP modernos tienen inherent windowing y buffer delays y es fácil acumular un retraso de ida y vuelta de más de 100mS en una llamada. Un retraso de esta magnitud típicamente no impedirá conversación interactiva, pero creará un ambiente con un "slapback" intolerable si la persona que llama escucha su propia voz con un atraso.

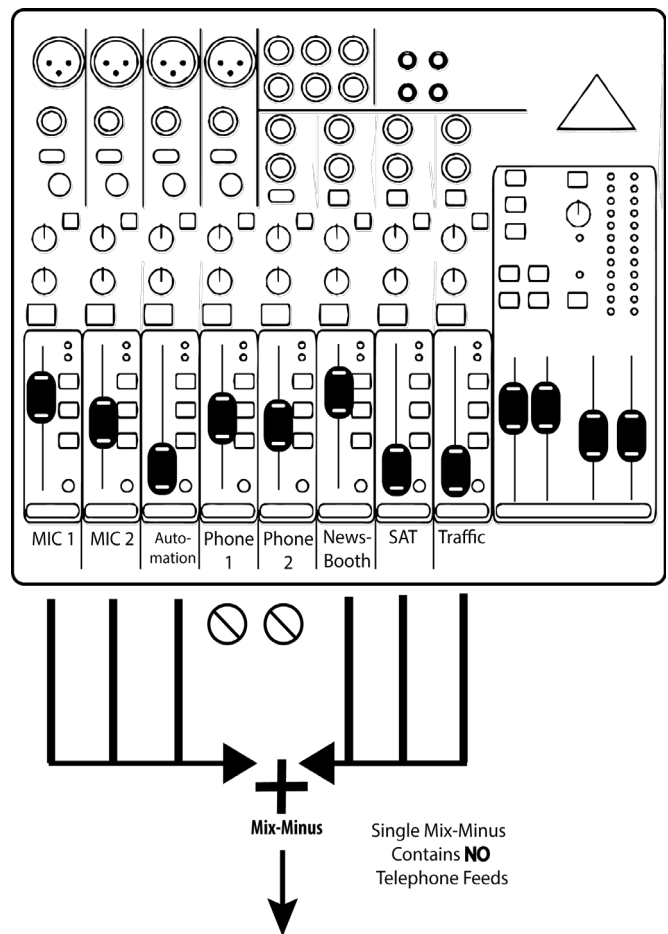
La cadena telefónica emplea canceladores digitales de eco en varios nodos a lo largo del camino de una llamada para evitar este escenario. Y cuando funcionan mal o no están “entrenados” al inicio de una llamada, el efecto es un eco dramático en el oído de la persona que llama.

Muchos usuarios que instalan un sistema telefónico de estudio por primera vez cometen el error de aplicar audio al puerto de “envío” saliente que contiene el feed del programa principal – el mismo audio utilizado para alimentar el transmisor o webstream. Ya que este mix contiene el propio audio de la persona que llama y hay un retraso inherente en los sistemas digitales modernos, el efecto de “slapback” es inmediato.

La solución es mix-minus – un término utilizado para una mezcla especial de audio que excluye explícitamente una fuente – el audio entrante desde el lugar donde mix-minus es enviado. En otras palabras, mix-minus es la mezcla completa del estudio menos una fuente de audio.

¿Como creamos esta mezcla especial de audio? En los sistemas modernos de estudio se define claramente y es fácil de hacer. Muchas consolas tienen canales dedicados a la interfaz telefónica y parte del canal es una salida mix-minus creada automáticamente.

En las consolas con menos características, mix-minus puede ser creado con un bus con función de auxiliar o de audición. Seleccionando todas las fuentes entrantes en el bus excepto el fader telefónico, usted puede hacerlo fácilmente. La siguiente figura muestra el diagrama de un solo feed mix-minus siendo generado en una consola de mezcla.

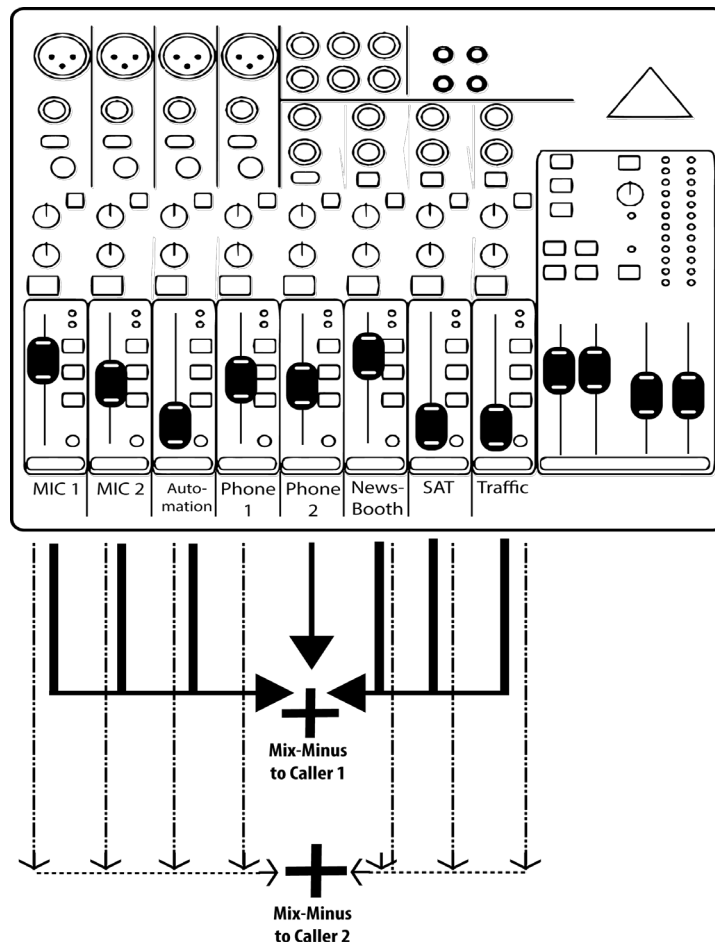


SINGLE MIX-MINUS NO TELEPHONE FEEDS

En algunos ambientes es importante que la persona que llama escuche al conductor/presentador y es menos importante que la persona que llama pueda escuchar el sistema de automatización, reportes de noticias, codecs, etc. Es posible que dirigiendo una versión amplificada de la señal del micrófono del estudio al input "enviar" cumpla aquellas necesidades.

Algunos sistemas telefónicos de estudio, como Comrex EarShot IFB, permiten a las personas que llaman aparecer en uno de los dos outputs (y por ende en dos faders de consolas separadas). En esta circunstancia, usted tiene la opción de entregar un mix-minus con ninguna de las fuentes de audio telefónicas presentes o dos feeds distintos de mix-minus.

En el caso de dos feeds, es importante notar que mix-minus A debe incluir el audio B de la persona que llama y vice-versa. La siguiente figura ilustra este concepto. Muchas consolas con canales telefónicos duales son diseñadas para operar de esta manera y deberían entregar el set correcto de mezclas automáticamente.



TWO MIX-MINUS FEEDS

X. INFORMACIÓN DE EARSHOT

IFB PARA MANAGERS IT

UNIDAD PRINCIPAL

EarShot IFB mainframe es un dispositivo Linux embebido con puertos duales Ethernet 10/100/1000Base-T. El dispositivo contiene una versión optimizada de Linux Kernel 3.12. Los parámetros IP son fijados utilizando GUI que requiere una conexión de un teclado y de un monitor VGA al dispositivo.

Alternativamente, durante los primeros cinco minutos, los parámetros IP pueden ser fijados por una PC en la LAN local utilizando un protocolo propietario broadcast UDP. Comrex provee el software **Device Manager** para que cumpla esta función en la PC local. Luego de cinco minutos de operación, esta función es desactivada.

El dispositivo corre diferentes servicios en diferentes puertos, detallados aquí.

SERVICIOS ENTRANTES

El dispositivo hospeda un servicio combinado de **HTTP/XML** en **TCP 80**. Este servicio se necesita afuera del firewall, el puerto necesitará ser dirigido a la unidad principal.

Actualizaciones de firmware en el dispositivo son instaladas utilizando Device Manager. Este proceso de actualización está protegido por una contraseña y es realizado vía **XML** en el puerto **TCP 80**. Además de la protección por contraseña, la data de la actualicen debe tener una firma digital criptográfica de Comrex o de manera contraria será rechazada. Para que la unidad sea actualizada remotamente, **TCP Puerto 80** debe ser apuntado al dispositivo. Alternadamente, las actualizaciones pueden ser iniciadas desde cualquier PC local utilizando el software **Device Manager**.

El dispositivo puede soportar una conexión a un servicio troncal SIP, el cual requiere un servicio entrante en un solo puerto **USP SIP** (usualmente **5060**) y dos puertos **UDP RTP** en el rango de **16384-16432**.

El dispositivo puede soportar una conexión a un servicio SIP registrado. En este caso, la conexión **UDP SIP** sería la saliente y los dos puertos **UDP RTP** serán la entrante en el rango de **16384-16482**.

Normalmente, los servicios SIP se apoyan en la presencia de **SIP ALG** en el firewall para abrir puertos RTP.

El dispositivo puede albergar una conexión SIP a sus accesorios de control sobre puerto **UDP 5060** y streams **RTP** en el rango de **16384-16482 UDP**. La conexión con control superficies fuera de la LAN subnet no son soportados actualmente.

Si se requiere soporte de Comrex, le pediremos acceso al SSH host en el mainframe en **TCP 22**. SSH service es protegido por una keypair privada, la cual no es entregada a los clientes. SSH service puede ser desactivado en el menú de configuración.

Outgoing Services

Como se describió más arriba, el mainframe hará conexiones salientes para registrarse con proveedores SIP (usualmente al puerto **UDP 5060**) combinadas con RTP entrante y saliente en el rango de **16384-16482 UDP**.

Un cliente NTP es implementado por default to **UDP 123**.

El mainframe se sincroniza por default al servidor en la nube de Comrex en **TCP 8090**. Esto no es requerido para un funcionamiento normal.

Los intentos de conexión SIP a veces harán conexiones externas STUN con **UDP 3478**.

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