

# Voice Port Configuration Commands

This chapter describes the commands used to configure voice ports. Table 9-1 lists the voice port configuration commands and maps which commands are supported on which voice call signaling types.

**Table 9-1 Voice Port Commands**

Voice Port Command	Type of Voice Port Supported On	FXO	FXS	E&M
<b>auto-cut-through</b>	Analog and Digital			X
<b>busyout forced</b>	Analog and Digital	X	X	X
<b>busyout-monitor</b>	Analog and Digital	X	X	X
<b>busyout-seize</b>	Analog and Digital	X	X	X
<b>codec</b>	Analog and Digital	X	X	X
<b>comfort-noise</b>	Analog and Digital	X	X	X
<b>compand-type</b>	Analog and Digital	X	X	X
<b>condition</b>	Digital only	X	X	X
<b>connection</b>	Analog and Digital	X	X	X
<b>cptone</b>	Analog only	X	X	X
<b>define</b>	Analog and Digital			X
<b>description</b>	Analog and Digital	X	X	X
<b>dial-type</b>	Analog and Digital	X		X
<b>echo-cancel coverage</b>	Analog and Digital	X	X	X
<b>echo-cancel enable</b>	Analog and Digital	X	X	X
<b>idle voltage</b>	Analog only		X	
<b>ignore</b>	Analog and Digital			X
<b>impedance</b>	Analog only		X	
<b>input gain</b>	Analog and Digital	X	X	X
<b>non-linear</b>	Analog and Digital	X	X	X
<b>operation</b>	Analog only			X
<b>output attenuation</b>	Analog and Digital	X	X	X
<b>playout-delay</b>	Analog and Digital	X	X	X

<b>Voice Port Command</b>	<b>Type of Voice Port Supported On</b>	<b>FXO</b>	<b>FXS</b>	<b>E&amp;M</b>
<b>ring cadence</b>	Analog only		X	
<b>ring frequency</b>	Analog only		X	
<b>ring number</b>	Analog and Digital	X		
<b>shutdown</b>	Analog and Digital	X	X	X
<b>signal</b>	Analog only	X	X	X
<b>snmp trap link-status</b>	Analog and Digital	X	X	X
<b>supervisory disconnect</b>	Analog and Digital	X		
<b>timeouts initial</b>	Analog and Digital	X	X	X
<b>timeouts interdigit</b>	Analog and Digital	X	X	X
<b>timeouts wait-release</b>	Analog and Digital	X	X	X
<b>timing clear-wait</b>	Analog and Digital			X
<b>timing delay-duration</b>	Analog and Digital			X
<b>timing delay-start</b>	Analog and Digital			X
<b>timing delay-with-integrity</b>	Analog and Digital			X
<b>timing dialout-delay</b>	Analog and Digital	X		X
<b>timing digit</b>	Analog and Digital	X	X	X
<b>timing guard-out</b>	Analog and Digital	X		
<b>timing interdigit</b>	Analog and Digital	X	X	X
<b>timing percentbreak</b>	Analog and Digital	X		X
<b>timing pulse</b>	Analog and Digital	X		X
<b>timing pulse-interdigit</b>	Analog and Digital	X		X
<b>timing wink-duration</b>	Analog and Digital			X
<b>timing wink-wait</b>	Analog and Digital			X
<b>type</b>	Analog only			X
<b>vad</b>	Analog and Digital	X	X	X
<b>voice confirmation-tone</b>	Analog and Digital	X	X	X
<b>voice-port busyout</b>	Analog and Digital	X	X	X

## auto-cut-through

To enable the Cisco MC3810 to complete a call when a PBX does not provide an M-lead response, use the **auto-cut-through** voice-port configuration command. Use the **no** form of this command to disable the auto-cut-through operation.

**auto-cut-through**  
**no auto-cut-through**

### Syntax Description

This command has no arguments or keywords.

### Defaults

Enabled

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.

### Usage Guidelines

The **auto-cut-through** command applies to E&M voice ports only on the Cisco MC3810.

### Examples

The following example enables the Cisco MC3810 to complete a call when a PBX does not provide an M-lead response:

```
voice-port 1/1
 auto-cut-through
```

## busyout forced

To force a voice port into busyout state, use the **busyout forced** voice-port configuration command. To remove a voice port from busyout state, use the **no** form of this command.

**busyout forced**  
**no busyout forced**

### Syntax Description

This command has no arguments or keywords.

### Defaults

The voice-port is not in busyout state.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
12.0(3) T	This command was first introduced.

### Usage Guidelines

If you have forced a voice port into busyout state, you must enter the **no busyout forced** command if you wish remove the busyout state from the voice port.

### Examples

The following example configures the voice port on the Cisco MC3810 into forced busyout state:

```
voice-port 1/1  
  busyout forced
```

### Related Commands

Command	Description
<b>busyout-monitor</b>	Places a voice port into busyout monitor state.
<b>busyout-seize</b>	Specifies the busyout seize procedure for a voice port.
<b>show voice busyout</b>	Displays information about the voice busyout state.
<b>voice-port busyout</b>	Places all voice ports associated with a serial or ATM interface into a busyout state.

## busyout-monitor

To place a voice port into busyout monitor state, use the busyout-monitor voice-port configuration command. To remove the busyout monitor state on the voice-port, use the no form of this command.

**busyout-monitor interface**

**no busyout-monitor interface**

### Syntax Description

*interface*

The interface associated with the voice port that will be monitored for events that would trigger a voice-port busyout. Choices are the following:

- Serial 0
- Serial 1
- Serial 0:0

### Defaults

The voice port is not in busyout monitor state.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
12.0(3) T	This command was first introduced.

### Usage Guidelines

This command is only supported on the Cisco MC3810.

When you place the voice port in busyout monitor state, the voice port monitors the serial interface for events that would trigger the voice port to enter busyout state.

### Examples

The following example configures the voice port to monitor serial port 0:0 for events that would trigger a busyout state on the voice port:

```
voice-port 1/1
  busyout-monitor serial 0:0
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>busyout forced</b>	Forces a voice port into busyout state.
<b>busyout-seize</b>	Specifies the busyout seize procedure for a voice port.
<b>show voice busyout</b>	Displays information about the voice busyout state.
<b>voice-port busyout</b>	Places all voice ports associated with a serial or ATM interface into a busyout state.

## busyout-seize

To specify the busyout seize procedure for a voice port, use the **busyout-seize** voice-port configuration command. To restore the default busyout seize state on the voice-port, use the **no** form of this command.

```
busyout-seize {ignore | repeat}  
no busyout-seize {ignore | repeat}
```

### Syntax Description

<b>ignore</b>	On busyout, leaves the loop open and ignores the incoming signal.
<b>repeat</b>	On busyout, seizes the far end and ignores all incoming signals until the far end release. Remove the seize signal, wait for one second before starting to seize the far end again.

### Defaults

On busyout, the loop is closed and remains in the busyout state.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
12.0(3) T	This command was first introduced.

### Usage Guidelines

This command is only supported on the Cisco MC3810.

### Examples

The following example configures the busyout seize to the ignore state:

```
voice-port 1/1  
  busyout-seize ignore
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>busyout forced</b>	Forces a voice port into busyout state.
<b>busyout-monitor</b>	Specifies the busyout seize procedure for a voice port.
<b>show voice busyout</b>	Displays information about the voice busyout state.
<b>voice-port busyout</b>	Places all voice ports associated with a serial or ATM interface into a busyout state.

## codec

To configure voice compression on the Cisco MC3810 voice port, use the **codec** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
codec {g729r8 | g729ar8 | g726r32 | g711alaw | g711ulaw}
no codec
```

### Syntax Description

<b>g729r8</b>	G729, 8k CSA-CELP compression. This is the default.
<b>g729ar8</b>	G729, 8k CSA-CELP Annex A compression.
<b>g726r32</b>	G.726 32K ADPCM compression.
<b>g711alaw</b>	G.711 64K PCM A-Law compression.
<b>g711ulaw</b>	G.711 64K PCM U-Law compression.

### Defaults

**g729ar8** compression mode is enabled.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.
12.0	The <b>g726r32</b> , <b>g711alaw</b> , and <b>g711ulaw</b> options were added.

### Usage Guidelines

The **g729ar8** compression mode can support a maximum of 24 simultaneously active on-net voice calls and has a nominal data rate of 8 kbps.

The **g729r8** compression mode can support a maximum of 12 simultaneously active on-net voice calls and has a nominal data rate of 8 kbps.

The **g726r32** compression mode has a nominal data rate of 32 kbps.

The **g711alaw** compression mode has a nominal data rate of 64 kbps.

The **g711ulaw** compression mode has a nominal data rate of 64 kbps.

This command applies to both analog and digital voice ports on the Cisco MC3810.

### Examples

The following example configures voice port 1/1 on the Cisco MC3810 to support g729r8 compression:

```
voice-port 1/1
  codec g729r8
```

### Related Commands

Command	Description
<b>compand-type</b>	Specifies the companding standard used to convert between analog and digital signals in PCM systems.

## comfort-noise

To generate background noise to fill silent gaps during calls if VAD is activated, use the **comfort-noise** voice-port configuration command. Use the **no** form of this command to provide silence when the remote party is not speaking and VAD is enabled at the remote end of the connection.

**comfort-noise**  
**no comfort-noise**

### Syntax Description

This command has no arguments or keywords.

### Defaults

Enabled

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **comfort-noise** command to generate background noise to fill silent gaps during calls if VAD is activated. If **comfort-noise** is not enabled, and VAD is enabled at the remote end of the connection, the user will hear dead silence when the remote party is not speaking.

The configuration of **comfort-noise** only affects the silence generated at the local interface; it does not affect the use of VAD on either end of the connection or the silence generated at the remote end of the connection.

---

**Note** On the Cisco MC3810, this command cannot be disabled.

---

### Examples

The following example enables background noise on the Cisco MC3810:

```
voice-port 1/1
 comfort-noise
```

### Related Commands

Command	Description
<b>vad</b>	Enables voice activity detection (VAD) on a voice port.

## compand-type

To specify the companding standard used to convert between analog and digital signals in PCM systems on the Cisco MC3810, use the **compand-type** voice-port configuration command. Use the **no** form of this command to disable the compand type.

```
compand-type { u-law | a-law }  
no compand-type { u-law | a-law }
```

### Syntax Description

<b>u-law</b>	Specifies the North American mu-law ITU-T PCM encoding standard.
<b>a-law</b>	Specifies the European a-law ITU-T PCM encoding standard.

### Defaults

**u-law** (T1 digital)  
**a-law** (E1 digital)

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.

### Usage Guidelines

This command applies only to the Cisco MC3810.

### Examples

The following example configures a-law encoding on voice port 1/1 on the Cisco MC3810:

```
voice-port 1/1  
compand-type a-law
```

### Related Commands

Command	Description
<b>codec</b>	Configures voice compression on a Cisco MC3810 voice port.

## condition

To manipulate the signaling bit-pattern for all voice signaling types on the Cisco MC3810, use the **condition** command. Use the **no** form of this command to turn off conditioning on the voice-port.

```
condition {[tx-a-bit | tx-b-bit | tx-c-bit | tx-d-bit] [rx-a-bit | rx-b-bit | rx-c-bit | rx-d-bit]}
{on | off | invert}
no condition {[tx-a-bit | tx-b-bit | tx-c-bit | tx-d-bit] [rx-a-bit | rx-b-bit | rx-c-bit | rx-d-bit]}
{on | off | invert}
```

### Syntax Description

<b>tx-a-bit</b>	Command affects the transmit A bit.
<b>tx-b-bit</b>	Command affects the transmit B bit.
<b>tx-c-bit</b>	Command affects the transmit C bit.
<b>tx-d-bit</b>	Command affects the transmit D bit.
<b>rx-a-bit</b>	Command affects the receive A bit.
<b>rx-b-bit</b>	Command affects the receive B bit.
<b>rx-c-bit</b>	Command affects the receive C bit.
<b>rx-d-bit</b>	Command affects the receive D bit.
<b>on</b>	Forces the bit state to be 1.
<b>off</b>	Forces the bit state to be 0.
<b>invert</b>	Inverts the bit state.

### Defaults

No bit state conditions are manipulated.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) MA3	This command was first introduced.

### Usage Guidelines

This command applies to the Cisco MC3810 only.

## condition

---

Use the **condition** command to manipulate the bit patterns sent or received by the Cisco MC3810 to match expected patterns on a connected device. Be careful not to destroy the information content of the bit pattern. For example, forcing the A-bit on or off will prevent FXO interfaces from being able to generate both an on-hook and off-hook state.

If conditioning is required, it typically is applied to both transmit and receive bits; however, conditioning can be applied to only transmit or receive bits, as required.

## Examples

The following example inverts the signaling format bit-pattern on voice port 1/1 on the Cisco MC3810:

```
voice-port 1/1
 condition tx-a-bit invert
 condition rx-a-bit invert
```

## Related Commands

Command	Description
<b>define</b>	Defines the transmit and receive bits for E&M and E&M Melcas voice signaling.
<b>ignore</b>	Configures an E&M or E&M Melcas voice port on the Cisco MC3810 to ignore specific receive bits.

## connection

To specify a connection mode for a voice port, use the **connection** voice-port configuration command. Use the **no** form of this command to disable a connection mode.

```
connection {plar | tie-line | plar-opx} string
no connection {plar | tie-line | plar-opx} string
```

### Syntax Description

<b>plar</b>	Specifies a private line auto ring down (PLAR) connection. PLAR is handled by associating a dial peer directly with an interface; when an interface goes off-hook, the dial peer is used to set up the second call leg and conference them together without the caller having to dial any digits.
<b>tie-line</b>	Specifies a tie-line connection to a private branch exchange (PBX).
<b>plar-opx</b>	Specifies a PLAR Off-Premises eXtension connection. The local voice port provides a local response before the remote voice port receives an answer. On FXO interfaces, the voice port will not answer until the remote side answers. This keyword was named <b>plar-opx-ringrelay</b> in earlier Cisco IOS releases.
<i>string</i>	Specifies the destination telephone number. Valid entries are any series of digits that specify the E.164 telephone number.

### Defaults

No connection mode is specified.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.
11.3(1) MA5 and 12.0(2) T	The <b>plar-opx</b> keyword was added.

### Usage Guidelines

Use the **connection** command to specify a connection mode for a specific interface. For example, use the **connection plar** command to specify a PLAR interface. The string you configure for this command is used as the called number for all calls coming in over this connection. The destination dial peer is determined by called number.

If the **connection** command is not configured, the standard session application outputs a dial tone when the interface goes off-hook until enough digits are collected to match a dial peer and complete the call.

The **connection tie-line** command is used on the Cisco MC3810 when a dial plan requires that additional digits be added in front of any digits dialed by the PBX, and that the combined set of digits be used to route the call via the dial peers and into the network. The operation is similar to the **connection plar** command operation, but in this case the tie-line port also waits to collect digits from the PBX. The tie-line digits are also automatically stripped by a terminating port.

### Examples

The following example selects tie-line as the connection mode on the Cisco MC3810, with a destination telephone number of 555-9262:

```
voice-port 1/1
  connection tie-line 5559262
```

### Related Commands

Command	Description
<b>session-target</b>	Configures a network-specific address for a dial peer.
<b>dial-peer voice</b>	Enters dial-peer configuration mode and specifies the method of voice-related encapsulation.
<b>destination-pattern</b>	Specifies either the prefix or the full E.164 telephone number to be used for a dial peer.

## cptone

To configure a voice call progress tone locale, use the **cptone** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
cptone locale
no cptone locale
```

### Syntax Description

*locale* Specifies the voice interface-related default tone, ring, and cadence setting for the specified country or territory. The default is **northamerica**.

The valid entries are the following:

**argentina, australia, austria, belgium, brazil, china, columbia, czechrepublic, denmark, finland, france, germany, greece, hongkong, hungary, iceland, india, indonesia, ireland, israel, italy, japan, korea, luxembourg, malaysia, netherlands, newzealand, northamerica, norway, peru, philippines, poland, portugal, russia, singapore, slovakia, southafrica, spain, sweden, switzerland, taiwan, thailand, turkey, unitedkingdom, venezuela.**

### Defaults

northamerica.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **cptone** command to specify a regional analog voice interface-related tone, ring, and ring cadence setting for a specified voice port.

### Examples

The following example configures Singapore as the call progress tone locale on the Cisco MC3810:

```
voice-port 1/1
  cptone singapore
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>ring cadence</b>	Specify the ring cadence for an FXS voice port on the Cisco MC3810.

## define

To define the transmit and receive bits for E&M and E&M Melcas voice signaling on the Cisco MC3810, use the **define** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
define {Tx-bits | Rx-bits} {seize | idle} {0000 | 0001 | 0010 | 0011 | 0100 | 0101 |
0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111}

no define {Tx-bits | Rx-bits} {seize | idle} {0000 | 0001 | 0010 | 0011 | 0100 | 0101 |
0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111}
```

### Syntax Description

<b>Tx-bits</b>	Transmit signaling bits.
<b>Rx-bits</b>	Receive signaling bits.
<b>seize</b>	The bit pattern defines the seized state.
<b>idle</b>	The bit pattern defines the idle state.
<b>0000</b> through <b>1111</b>	Specifies the bit pattern.

### Defaults

The default is to use the preset signaling patterns as defined in ANSI and CEPT standards, as follows:

#### For E&M:

```
Tx-bits idle 0000 (0001 if on E1 trunk)
Tx-bits seize 1111
Rx-bits idle 0000
Rx-bits seize 1111
```

#### For E&M Melcas:

```
Tx-bits idle 1101
Tx-bits seize 0101
Rx-bits idle 1101
Rx-bits seize 0101
```

### Command Mode

Voice-port configuration

## define

---

### Command History

Release	Modification
11.3(1) MA3	This command was first introduced.

### Usage Guidelines

This command applies to digital voice ports associated with T1/E1 controllers on the Cisco MC3810 only.

Use the **define** command to match the E&M bit patterns with the attached telephony device. Be careful not to define invalid configurations, such as all 0000 on E1, or identical seized and idle states. Use this command with the **ignore** command.

### Examples

To configure a voice-port sending traffic in North American E&M signaling format to convert the signaling to Mercury Exchange Limited (MEL) CAS format, enter the following commands:

```
voice-port 1/1
  define rx-bits idle 1101
  define rx-bits idle 0101
  define tx-bits seize 1101
  define tx-bits seize 0101
```

### Related Commands

Command	Description
<b>condition</b>	Manipulate the signaling bit-pattern for all voice signaling types.
<b>ignore</b>	Configures an E&M or E&M Melcas voice port on the Cisco MC3810 to ignore specific receive bits.

---

## description

To include a description of what this voice port is connected to, use the **description** voice-port configuration command. Use the **no** form of this command to disable this feature.

**description** *string*  
**no description**

### Syntax Description

*string* Character string from 1 to 255 characters.

### Defaults

Enabled with a null string

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **description** command to include descriptive text about this voice-port connection. This information is displayed when you issue a **show** command and does not affect the operation of the interface in any way.

### Examples

The following example identifies voice port 1/1 on the Cisco MC3810 as being connected to the Marketing department:

```
voice-port 1/1
description marketing_dept
```

## dial-type

To specify the type of out-dialing for voice port interfaces, use the **dial-type** voice-port configuration command. Use the **no** form of this command to disable the selected type of dialing.

```
dial-type { dtmf | pulse }  
no dial-type
```

### Syntax Description

<b>dtmf</b>	DTMF (touch-tone) dialing.
<b>pulse</b>	Pulse (rotary) dialing.

### Defaults

**dtmf**

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.
11.3(1) MA3	The pulse-dialer option was added.

### Usage Guidelines

Use the **dial-type** command to specify an out-dialing type for an FXO or E&M voice port interface; this command is not applicable to FXS voice ports because they do not generate out-dialing. Voice ports can always detect dtmf and pulse signals. This command does not affect voice port dialing detection.

The **dial-type** command affects out-dialing as configured for the dial peer.

### Examples

The following example configures a voice port on the Cisco MC3810 to support a rotary (pulse tone) dialer:

```
voice-port 1/1  
  dial-type pulse
```

## echo-cancel coverage

To adjust the size of the echo canceller, use the **echo-cancel coverage** voice-port configuration command. Use the **no** form of this command to reset this command to the default value.

**echo-cancel coverage** *milliseconds*  
**no echo-cancel coverage** *milliseconds*

### Syntax Description

*milliseconds*      Number of milliseconds the echo-canceller will cover on a given signal. Valid values are 16, 24, and 32.

### Defaults

16 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 (1)T	This command was first introduced.

### Usage Guidelines

Use the **echo-cancel coverage** command to adjust the coverage size of the echo canceller. This command enables cancellation of voice that is sent out the interface and received back on the same interface within the configured amount of time. If the local loop (the distance from the analog interface to the connected equipment producing the echo) is longer, the configured value of this command should be extended.

If you configure a longer value for this command, it will take the echo canceller longer to converge; in this case, the user might hear slight echo when the connection is initially set up. If the configured value for this command is too short, the user might hear some echo for the duration of the call because the echo canceller is not cancelling the longer delay echoes.

There is no echo or echo cancellation on the network (for example, non-POTS) side of the connection.

---

**Note** This command is valid only if the echo cancel feature has been enabled. For more information, refer to the **echo-cancel enable** command.

---

## echo-cancel coverage

---

### Examples

The following example adjusts the size of the echo canceller to 16 milliseconds on the Cisco MC3810:

```
voice-port 1/1
  echo-cancel enable
  echo-cancel coverage 16
```

### Related Commands

Command	Description
<b>echo-cancel enable</b>	Enables echo cancellation on a voice port.

## echo-cancel enable

To enable the cancellation of voice that is sent out the interface and is received back on the same interface, use the **echo-cancel enable** voice-port configuration command. Use the **no** form of this command to disable echo cancellation.

**echo-cancel enable**  
**no echo-cancel enable**

### Syntax Description

This command has no arguments or keywords.

### Defaults

Enabled for all interface types.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The **echo-cancel enable** command enables cancellation of voice that is sent out the interface and is received back on the same interface; sound that is received back in this manner is perceived by the listener as an echo. Disabling echo cancellation might cause the remote side of a connection to hear an echo. Because echo cancellation is an invasive process that can minimally degrade voice quality, this command should be disabled if it is not needed.

The **echo-cancel enable** command does not affect the echo heard by the user on the analog side of the connection.

There is no echo path for a 4-wire E&M interface. The echo canceller should be disabled for that interface type.

---

**Note** This command is valid only if the **echo-cancel coverage** command has been configured. For more information, refer to the **echo-cancel coverage** command.

---

## echo-cancel enable

---

### Examples

The following example enables the echo cancellation feature and adjusts the size of the echo canceller to 16 milliseconds on the Cisco MC3810:

```
voice-port 1/1
  echo-cancel enable
  echo-cancel coverage 16
```

### Related Commands

Command	Description
<b>echo-cancel coverage</b>	Sets the echo-cancel coverage duration in milliseconds.
<b>non-linear</b>	Enables non-linear processing in the echo canceller.

## idle voltage

To change the idle state voltage presented to the line by an FXS voice port on a Cisco MC3810, use the **idle voltage** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
idle voltage {low | high}
no idle voltage {low | high}
```

### Syntax Description

<b>low</b>	Sets the idle voltage to 24-volt battery feed.
<b>high</b>	Sets the idle voltage to 48-volt battery feed.

### Defaults

Idle voltage is low (24-volt battery feed).

### Command Mode

Voice-port configuration

### Command History

Release	Modification
<b>12.0(3) XG and 12.0(4) T</b>	This command was first introduced.

### Usage Guidelines

This command applies only to analog FXS voice ports on the Cisco MC3810. If the idle voltage is set to **high**, the battery feed voltage reverts to 24V whenever any device connected to the port is active (off hook).

Set the idle voltage to **high** when connecting to devices that monitor the line voltage to determine if a parallel load has already answered calls.

### Examples

To set the idle voltage to **high** on voice port 1/1, enter the following commands:

```
voice-port 1/1
idle voltage high
```

## ignore

To configure the E&M or E&M Melcas voice port on the Cisco MC3810 to ignore specific receive bits, use the **ignore** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
ignore { rx-a-bit | rx-b-bit | rx-c-bit | rx-d-bit }
no ignore { rx-a-bit | rx-b-bit | rx-c-bit | rx-d-bit }
```

### Syntax Description

<b>rx-a-bit</b>	Ignores the receive A bit.
<b>rx-b-bit</b>	Ignores the receive B bit.
<b>rx-c-bit</b>	Ignores the receive C bit.
<b>rx-d-bit</b>	Ignores the receive D bit.

### Defaults

The default is mode-dependent:

#### E&M:

```
no ignore rx-a-bit
ignore rx-b-bit, rx-c-bit, rx-d-bit
```

#### E&M Melcas:

```
no ignore rx-b-bit, rx-c-bit, rx-d-bit
```

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.

### Usage Guidelines

This command applies only to digital voice ports on the Cisco MC3810.

Use this command with the **define** command.

### Examples

To configure voice-port 1/1 to ignore receive bits b, c, and d, enter the following commands:

```
voice-port 1/1
ignore rx-b-bit
ignore rx-c-bit
ignore rx-d-bit
```

## Related Commands

<b>Command</b>	<b>Description</b>
<b>condition</b>	Manipulates the signaling bit-pattern for all voice signaling types.
<b>define</b>	Defines the transmit and receive bits for E&M and E&M Melcas voice signaling.

## impedance

To specify the terminating impedance of an FXS voice port interface, use the **impedance** voice-port configuration command. Use the **no** form of this command to restore the default value. This command applies to analog voice ports only.

```
impedance { 600c | 600r | 900c | 900r | complex1 | complex2 }  
no impedance
```

### Syntax Description

<b>600c</b>	600 ohms complex (600 ohms in series with 2.15 $\mu$ f).
<b>600r</b>	600 ohms resistive (real).
<b>900c</b>	900 ohms complex (900 ohms in series with 2.15 $\mu$ f).
<b>900r</b>	900 ohms resistive (real).
<b>complex1</b>	220 ohms in series with the parallel combination of 820 ohms and 115 nf.
<b>complex2</b>	270 ohms in series with the parallel combination of 750 ohms and 150 nf.

### Defaults

Impedance is 600 ohms resistive.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **impedance** command to specify the terminating impedance of an FXS voice-port interface. The impedance value selected needs to match the specifications from the specific telephony system to which it is connected.

If the impedance is set incorrectly, gain settings might not work correctly, and there will be a significant amount of echo generated (which could be masked if the **echo-cancel** command has been enabled).

A voice port must be shut down and reopened for a new impedance value to take effect.

### Caveats

This command has no effect if it is entered for an FXO or E&M voice port (the impedance of FXO and E&M voice ports is not configurable). However, if the command is inadvertently entered for a nonconfigurable voice port, the **show voice port** command will return a false impedance value.

## Examples

The following example configures an FXS voice port on the Cisco MC3810 for a terminating impedance of 900 ohms (complex):

```
voice-port 1/1
 impedance 900c
```

## input gain

To configure a receive gain value, use the **input gain** voice-port configuration command. Use the **no** form of this command to disable the selected amount of inserted gain.

**input gain** *dB gain*  
**no input gain** *dB gain*

### Syntax Description

*dB gain*                      Receive dB gain to be inserted at the receiver side of the interface.  
Acceptable value is any integer from -6 to 14.

### Defaults

No gain is inserted.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

A system-wide loss plan must be implemented using both **input gain** and **output attenuation** commands. Other equipment (including PBXs) in the system must be taken into account when creating a loss plan. This default value for this command assumes that a standard transmission loss plan is in effect, meaning that normally, there must be -6dB attenuation between phones. Connections are implemented to provide -6dB of attenuation when the **input gain** and **output attenuation** commands are configured with the default value of 0.

You can't increase the gain of a signal going out into the PSTN, but you can decrease it. Therefore, if the voice level is too high, you can decrease the volume by either decreasing the input gain value or by increasing the output attenuation.

You can increase the gain of a signal coming in to the router. If the voice level is too low, you can increase the input gain.

## Examples

The following example configures a 3-dB gain to be inserted at the receiver side of the interface in the Cisco MC3810:

```
port 1/1
  input gain 3
```

## Related Commands

Command	Description
<b>output attenuation</b>	Configures a transmit attenuation value for a voice port.

## non-linear

To enable non-linear processing in the echo canceller, use the **non-linear** voice-port configuration command. Use the **no** form of this command to disable non-linear processing.

**non-linear**  
**no non-linear**

### Syntax Description

This command has no arguments or keywords.

### Defaults

Non-linear processing is enabled for all voice-port types.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The function enabled by the **non-linear** command is also generally known as residual echo suppression. This command is associated with the echo canceller operation. The **echo-cancel enable** command must be enabled for the **non-linear** command to take effect. Use the **non-linear** command to shut off any signal if no near-end speech is detected.

Enabling the **non-linear** command normally improves performance, although some users might perceive truncation of consonants at the end of sentences when this command is enabled.

### Examples

The following example enables non-linear call processing on the Cisco MC3810:

```
voice-port 1/1  
non-linear
```

### Related Commands

Command	Description
<b>echo-cancel enable</b>	Enables the cancellation of voice that is sent out the interface and is received back on the same interface.

## operation

To select a cabling scheme for an E&M voice port, use the **operation** voice-port configuration command. Use the **no** form of this command to restore the default.

```
operation {2-wire | 4-wire}
no operation {2-wire | 4-wire}
```

### Syntax Description

<b>2-wire</b>	2-wire E&M cabling scheme.
<b>4-wire</b>	4-wire E&M cabling scheme.

### Defaults

E&M ports are set for 2-wire operation.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The **operation** command only affects voice traffic. Signaling is independent of 2-wire versus 4-wire settings. If the wrong cable scheme is specified, the user might get voice traffic in only one direction.

Configuring the **operation** command on a voice port changes the operation of both voice ports on a voice interface card (VIC) in a Cisco 2600 or 3600 series router. In the Cisco MC3810 this command applies only to the analog voice module (AVM), and it affects the operation of the E&M voice port on each analog personality module (APM) individually.

This command is not applicable to FXS or FXO interfaces, because they are always 2-wire interfaces.

The voice port must be shut down and then opened again for the new value to take effect.

### Examples

The following example specifies a 2-wire cabling scheme for an E&M port on the Cisco MC3810:

```
voice-port 1/1
 operation 2-wire
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>signal</b>	Specifies the type of signaling for a voice port.
<b>type</b>	Specifies the E&M interface type.

## output attenuation

To configure a transmit attenuation value, use the **output attenuation** voice-port configuration command. Use the **no** form of this command to disable the selected output attenuation value.

**output attenuation** *dB attenuation*  
**no output attenuation**

### Syntax Description

*dB attenuation* Attenuation in dB at the transmit side of the interface. Acceptable value is any integer from 0 to 14.

### Defaults

No transmit attenuation is inserted.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

A system-wide loss plan must be implemented using both **input gain** and **output attenuation** commands. Other equipment (including PBXs) in the system must be taken into account when creating a loss plan. This default value for this command assumes that a standard transmission loss plan is in effect, meaning that there is 6 dB of attenuation between phones. Connections are implemented to provide 6 dB of attenuation when the **input gain** and **output attenuation** commands are configured with the default value of 0.

You cannot increase the gain of a signal transmitted to the PSTN, but you can decrease it. Therefore, if a voice level is too high, you can decrease the volume by either decreasing the receive gain or by increasing the transmit attenuation.

### Examples

The following example on the Cisco MC3810 inserts 6 dB of attenuation on at the transmit side of the voice port:

```
voice-port 1/1
 output attenuation 6
```

## output attenuation

---

### Related Commands

Command	Description
<b>input gain</b>	Configures a receive gain value for a voice port.

## playout-delay

To tune the playout buffer on the Cisco MC3810 to accommodate packet jitter caused by switches in the WAN, use the **playout-delay** voice-port configuration command. Use the **no** form of this command to restore the default value.

```
playout-delay { maximum | nominal } milliseconds
no playout-delay { maximum | nominal } milliseconds
```

### Syntax Description

<b>maximum</b>	Maximum playout delay. The maximum delay is the time the Cisco MC3810 DSP starts to discard voice packets.
<b>nominal</b>	Nominal playout delay. The nominal delay is the wait time that the Cisco MC3810 DSP starts to play out the voice packets.
<i>milliseconds</i>	Playout-delay in milliseconds. The range for maximum playout delay is 40 to 320, and the range for nominal playout delay is 40 to 240.

### Defaults

The maximum playout delay is 160 milliseconds.  
The nominal playout delay is 80 milliseconds.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.

### Usage Guidelines

This command applies only to the Cisco MC3810.

### Examples

The following example configures a nominal playout delay of 80 milliseconds and a maximum playout delay of 160 milliseconds on voice-port 1/1 on the Cisco MC3810:

```
voice-port 1/1
  playout-delay nominal 80
  playout-delay maximum 160
```

## ring cadence

To specify the ring cadence for an FXS voice port on the Cisco MC3810, use the **ring cadence** voice-port configuration command. Use the **no** form of this command to restore the default value.

**ring cadence [on1 | off1] [on2 | off2] [on3 | off3] [on4 | off4] [on5 | off5] [on6 | off6]**  
**no ring cadence**

### Syntax Description

<b>on1</b>	Pulses on for 100 milliseconds.
<b>off1</b>	Pulses off for 100 milliseconds.
<b>on2</b>	Pulses on for 200 milliseconds.
<b>off2</b>	Pulses off for 200 milliseconds.
<b>on3</b>	Pulses on for 300 milliseconds.
<b>off3</b>	Pulses off for 300 milliseconds.
<b>on4</b>	Pulses on for 400 milliseconds.
<b>off4</b>	Pulses off for 400 milliseconds.
<b>on5</b>	Pulses on for 500 milliseconds.
<b>off5</b>	Pulses off for 500 milliseconds.
<b>on6</b>	Pulses on for 600 milliseconds.
<b>off6</b>	Pulses off for 600 milliseconds.

### Defaults

**on2 off4** (default North American ring pattern)

### Command Mode

Voice-port configuration

### Command History

<b>Release</b>	<b>Modification</b>
<b>11.3 MA</b>	This command was first introduced.

### Usage Guidelines

This command applies only to the Cisco MC3810.

## Examples

The following example configures the ring cadence for 0.4 second on and 0.2 second off on voice port 1/1 on the Cisco MC3810, enter the following:

```
voice-port 1/1
 ring cadence on4 off2
```

## Related Commands

<b>Command</b>	<b>Description</b>
<b>ring frequency</b>	Specifies the ring frequency for an FXS voice port.
<b>ring number</b>	Specifies the number of rings for an FXO voice port.

## ring frequency

To specify the ring frequency for a specified FXS voice port, use the **ring frequency** voice-port configuration command. Use the **no** form of this command to restore the default value for this command.

**ring frequency** *frequency*  
**no ring frequency**

### Syntax Description

*frequency* Ring frequency (Hertz) used in the FXS interface. Valid entries on the Cisco MC3810 are 20 and 30.

### Defaults

20 Hz

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **ring frequency** command to select a specific ring frequency for an FXS voice port. Use the **no** form of this command to reset the default value for this command. The ring frequency you select must match the connected equipment. If set incorrectly, the attached phone might not ring or might buzz. In addition, the ring frequency is usually country-dependent and you should take into account the appropriate ring frequency for your area before configuring this command.

This command does not affect ringback, which is the ringing a user hears when placing a remote call.

### Examples

The following example configures the ring frequency on the Cisco MC3810 for 20 Hz:

```
voice-port 1/1  
ring frequency 20
```

### Related Commands

Command	Description
<b>ring cadence</b>	Specifies the ring cadence for an FXS voice port.
<b>ring number</b>	Specifies the number of rings for an FXO voice port.

## ring number

To specify the number of rings for a specified FXO voice port, use the **ring number** voice-port configuration command. Use the **no** form of this command to restore the default value.

**ring number** *number*  
**no ring number** *number*

### Syntax Description

*number*                      Number of rings detected before answering the call. Valid entries are numbers from 1 to 10. The default is 1.

### Defaults

One ring

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **ring number** command to set the maximum number of rings to be detected before answering a call over an FXO voice port. Use the **no** form of this command to reset the default value, which is one ring.

Normally, this command should be set to the default so that incoming calls are answered quickly. If you have other equipment available on the line to answer incoming calls, you might want to set the value higher to give the equipment sufficient time to respond. In that case, the FXO interface would answer if the equipment on line did not answer the incoming call in the configured number of rings.

This command is not applicable to FXS or E&M interfaces because they do not receive ringing to receive a call.

### Examples

The following example on the Cisco MC3810 sets five rings as the maximum number of rings to be detected before closing a connection over this voice port:

```
voice-port 1/1
 ring number 5
```

**ring number**

---

Related Commands

<b>Command</b>	<b>Description</b>
<b>ring frequency</b>	Specifies the ring frequency for an FXS voice port.

## shutdown

To take the voice port offline, use the **shutdown** voice-port configuration command. Use the **no** form of this command to put the port back in service.

**shutdown**  
**no shutdown**

### Syntax Description

This command has no arguments or keywords.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

When you enter the **shutdown** command, all ports on the voice interface card are disabled. When you enter the **no shutdown** command, all ports on the voice interface card are enabled. A telephone connected to an interface will hear dead silence when a port is shut down.

### Examples

The following example takes voice port 1/1 on the Cisco MC3810 series offline:

```
configure terminal
voice-port 1/1
shutdown
```

## signal

To specify the type of signaling for a voice port, use the **signal** voice-port configuration command. Use the **no** form of this command to restore the default value for this command. This command applies to analog voice ports only.

For FXO and FXS:

```
signal { loop-start | ground-start }
no signal
```

For E&M:

```
signal { wink-start | immediate | delay-dial }
no signal
```

### Syntax Description

<b>loop-start</b>	Loop start signaling for FXO and FXS interfaces. This is the default setting for FXO and FXS voice ports.
<b>ground-start</b>	Ground start signaling for FXO and FXS interfaces.
<b>wink-start</b>	Wink start signaling for E&M interfaces. This is the default setting for E&M voice ports.
<b>immediate</b>	Immediate start signaling for E&M interfaces.
<b>delay-dial</b>	Delay dial signaling for E&M interfaces.

### Defaults

Loop-start for FXO and FXS interfaces; wink-start for E&M interfaces

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Configuring this command for an E&M voice port changes only the signal value for the selected voice port. In either case, the voice port must be shut down and then activated before the configured values will take effect.

Some PBXs will miss initial digits if the E&M voice port is configured for Immediate signaling. If this occurs, use Delay-Dial signaling instead. Some non-Cisco devices have a limited number of DTMF receivers. This type of equipment must delay the calling side until a DTMF receiver is available.

## Examples

The following example configures ground start signaling on voice port 1/1:

```
configure terminal
voice-port 1/1
signal ground-start
```

## Related Commands

Command	Description
<b>timing delay-duration</b>	Specifies the delay signal duration for a voice port.
<b>timing delay-start</b>	Specifies the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing wink-duration</b>	Specifies the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Specifies the maximum wink-wait duration for a voice port.

## snmp trap link-status

To enable Simple Network Management Protocol (SNMP) trap messages to be generated when this voice port is brought up or down, use the **snmp trap link-status** voice-port configuration command. Use the **no** form of this command to stop generating these trap messages.

**snmp trap link-status**  
**no snmp trap link-status**

### Syntax Description

This command has no arguments or keywords.

### Defaults

The default for this command is enabled.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **snmp trap link-status** command to enable SNMP trap messages (linkup and linkdown) to be generated whenever this voice port is brought online or offline.

If you are managing the equipment with an SNMP manager, this command should be enabled. Enabling link-status messages allows the SNMP manager to learn of a status change without polling the equipment. If you are not using an SNMP manager, this command should be disabled to avoid unnecessary network traffic.

### Examples

The following example enables SNMP trap messages for voice port 1/1 on the Cisco MC3810:

```
voice-port 1/1
 snmp trap link-stat
```

## supervisory disconnect

To enable a supervisory disconnect signal on FXO ports, use the **supervisory disconnect** voice-port configuration command. Use the **no** form of this command to disable the supervisory disconnect signal.

```
supervisory disconnect
no supervisory disconnect
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

Enabled

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA	This command was first introduced.

### Usage Guidelines

This command indicates whether or not supervisory disconnect signaling is available on the FXO port. Supervisory disconnect signaling is a power denial from the switch lasting at least 350 milliseconds. When this condition is detected, the system interprets this as a disconnect indication from the switch and clears the call.

You should configure **no supervisory disconnect** on the voice port if there is no supervisory disconnect available from the switch.

---

**Note** If there is no disconnect supervision on the voice port, the interface could be left active if the caller abandons the call before the far end answers. After the router collects the dialed digits but before the called party answers, the router starts a tone detector. Within this time window, the tone detector listens for signals (such as a fast busy signal) that occur if the originating caller hangs up. If this occurs, the router will interpret those tones as a disconnect indication and close the window.

---

### Examples

The following example configures supervisory disconnect on a Cisco MC3810 voice-port:

```
voice-port 1/1
supervisory disconnect
```

## timeouts initial

To configure the initial digit timeout value for a specified voice port, use the **timeouts initial** voice-port configuration command. Use the **no** form of this command to restore the default value.

**timeouts initial** *seconds*  
**no timeouts initial** *seconds*

### Syntax Description

*seconds* Initial timeout duration in seconds. Valid entries are any integer from 0 to 120.

### Defaults

10 seconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **timeouts initial** command to specify the number of seconds the system will wait for the caller to input the first digit of the dialed digits. The **timeouts initial** timer is activated when the call is accepted and is deactivated when the caller inputs the first digit. If the configured timeout value is exceeded, the caller is notified through the appropriate tone and the call is terminated.

To disable the **timeouts initial** timer, set the *seconds* value to **0**.

### Examples

The following example sets the initial digit timeout value on the Cisco MC3810 to 10 seconds:

```
voice-port 1/1
timeouts initial 10
```

### Related Commands

Command	Description
<b>timeouts interdigit</b>	Configures the interdigit timeout value for a voice port.
<b>timeouts wait-release</b>	Configures the timeout value for releasing voice ports.

## timeouts interdigit

To configure the interdigit timeout value for a specified voice port, use the **timeouts interdigit** voice-port configuration command. Use the **no** form of this command to restore the default value.

**timeouts interdigit** *seconds*  
**no timeouts interdigit** *seconds*

### Syntax Description

*seconds* Interdigit timeout duration in seconds. Valid entries are any integer from 0 to 120.

### Defaults

10 seconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **timeouts interdigit** command to specify the number of seconds the system will wait (after the caller has input the initial digit) for the caller to input a subsequent digit of the dialed digits. The timeouts interdigit timer is activated when the caller inputs a digit and restarted each time the caller inputs another digit until the destination address is identified. If the configured timeout value is exceeded before the destination address is identified, the caller is notified through the appropriate tone and the call is terminated.

To disable the timeouts interdigit timer, set the *seconds* value to **0**.

### Examples

The following example sets the interdigit timeout value on the Cisco MC3810 for 10 seconds:

```
voice-port 1/1
  timeouts interdigit 10
```

### Related Commands

Command	Description
<b>timeouts initial</b>	Configures the initial-digit timeout value for a voice port.
<b>timeouts wait-release</b>	Configures the timeout value for releasing voice ports.

## timeouts wait-release

To configure the timeout value for releasing voice ports on the Cisco MC3810, use the **timeouts wait-release** voice-port configuration command. Use the no form of this command to restore the default value.

```
timeouts wait-release {seconds | infinity}  
no timeouts wait-release {seconds | infinity}
```

### Syntax Description

**seconds** The duration in seconds that a voice port stays in the call-failure state while the Cisco MC3810 sends a busy tone, reorder tone, or an out-of-service tone to the port. The range is 5 to 3600. The default is 30.

**infinity** The voice port is never released from call-failure state.

### Defaults

30 seconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) MA	This command was first introduced.

### Usage Guidelines

### Examples

The following example configures voice port 1/1 on the Cisco MC3810 to stay in the call-failure state for 180 seconds while a busy tone, reorder tone, or out-of-service tone is sent to the voice port.

```
voice-port 1/1  
  timeouts wait-release 180
```

### Related Commands

Command	Description
<b>timeouts initial</b>	Configures the initial-digit timeout value for a voice port.
<b>timeouts interdigit</b>	Configures the interdigit timeout value for a voice port.

## timing clear-wait

To indicate the minimum amount of time between the inactive seizure signal and the call being cleared for a specified voice port, use the **timing clear-wait** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing clear-wait** *milliseconds*  
**no timing clear-wait** *milliseconds*

### Syntax Description

*milliseconds* Minimum amount of time in milliseconds between the inactive seizure signal and the call being cleared. Valid entries on the Cisco MC3810 are numbers from 100 to 2000. Supported on E&M ports only.

### Defaults

400 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

### Examples

The following example configures the clear-wait duration on a Cisco MC3810 voice port to 300 milliseconds:

```
voice-port 1/1
 timing clear-wait 300
```

Related Commands

Command	Description
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing dialout-delay</b>	Configures the dialout delay for the sending digit on a voice port.
<b>timing wink-duration</b>	Configures the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing delay-duration

To specify the delay signal duration for a voice port, use the **timing delay-duration** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing delay-duration** *milliseconds*  
**no timing delay-duration** *milliseconds*

### Syntax Description

*milliseconds* Delay signal duration for delay dial signaling, in milliseconds. Valid entries are numbers from 100 to 5000. Supported on E&M ports only.

### Defaults

2000 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call direction for the **timing delay-duration** command is out.

### Examples

The following example configures the delay signal duration on a Cisco MC3810 voice port to 3000 milliseconds:

```
voice-port 1/1
 timing delay-duration 3000
```

Related Commands

Command	Description
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing dialout-delay</b>	Configures the dialout delay for the sending digit on a voice port.
<b>timing wink-duration</b>	Configures the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing delay-start

To specify the minimum delay time from outgoing seizure to outdial address for a voice port, use the **timing delay-start** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing delay-start** *milliseconds*  
**no timing delay-start** *milliseconds*

### Syntax Description

*milliseconds* Minimum delay time in milliseconds from outgoing seizure to outdial address. Valid entries are numbers from 20 to 2000. Supported on E&M ports only.

### Defaults

150 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call direction for the **timing delay-start** command is outgoing.

### Examples

The following example configures the delay-start duration on a Cisco MC3810 voice port to 250 milliseconds:

```
voice-port 1/1
 timing delay-start 250
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing dialout-delay</b>	Configures the dialout delay for the sending digit on a voice port.
<b>timing wink-duration</b>	Configures the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing delay-with-integrity

To specify the duration of the wink pulse for the delay dial for a specified voice port on the Cisco MC3810, use the **timing delay-with-integrity** voice-port configuration command. Use the **no** form of this command to restore the default value.

**timing delay-with-integrity** *milliseconds*  
**no delay-with-integrity** *milliseconds*

### Syntax Description

*milliseconds*                      Duration of the wink pulse for the delay dial, in milliseconds. Valid entries are numbers from 0 to 5000. Supported on E&M ports only.

### Defaults

0 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Examples

The following example configures the duration of the wink pulse for the delay dial on a Cisco MC3810 voice port to 10 milliseconds:

```
voice-port 1/1
 timing delay-with-integrity 10
```

### Related Commands

Command	Description
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing dialout-delay</b>	Configures the dialout delay for the sending digit on a voice port.
<b>timing wink-duration</b>	Configures the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing dialout-delay

To specify the dialout delay for the sending digit on a specified voice port on the Cisco MC3810, use the **timing dialout-delay** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing dialout-delay** *milliseconds*  
**no timing dialout-delay** *milliseconds*

### Syntax Description

*milliseconds* Dialout delay in milliseconds for the sending digit or cut-through on an FXO trunk or an E&M immediate trunk. Valid entries are 100 to 5000.

### Defaults

300 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) MA1	This command was first introduced.

### Usage Guidelines

This command applies to only the Cisco MC3810.

### Examples

The following example configures the dialout delay on a Cisco MC3810 voice port to 350 milliseconds:

```
voice-port 1/1
 timing dialout-delay 350
```

Related Commands

Command	Description
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing wink-duration</b>	Configures the maximum wink signal duration for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing digit

To specify the DTMF digit signal duration for a specified voice port, use the **timing digit** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing digit** *milliseconds*  
**no timing digit** *milliseconds*

### Syntax Description

*milliseconds*                      The DTMF digit signal duration in milliseconds. Valid entries are numbers 50 to 100. Supported on FXO, FXS and E&M ports.

### Defaults

100 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing digit** command is outgoing.

### Examples

The following example configures the DTMF digit signal duration on a Cisco MC3810 voice port to 50 milliseconds:

```
voice-port 1/1
 timing digit 50
```

### Related Commands

Command	Description
<b>timing interdigit</b>	Configures the DTMF inter-digit duration for a voice port.

## timing guard-out

To specify the guard-out duration of an FXO voice port, use the **timing guard-out** voice-port configuration command. Use the **no** form of this command to restore the default value.

**timing guard-out** *milliseconds*  
**no timing guard-out** *milliseconds*

### Syntax Description

*milliseconds*                      Duration in milliseconds of the guard-out period. The range is 300 to 3000.

### Defaults

2000 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3 MA5	This command was first introduced.

### Usage Guidelines

This command is supported on FXO voice ports only

### Examples

The following example configures the timing guard-out duration on a Cisco MC3810 voice port to 1000 milliseconds:

```
voice-port 1/1
 timing guard-out 1000
```

## timing interdigit

To specify the DTMF inter-digit duration for a specified voice port, use the **timing interdigit** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing interdigit** *milliseconds*  
**no timing interdigit** *milliseconds*

### Syntax Description

*milliseconds* DTMF inter-digit duration in milliseconds. Valid entries are numbers 50 to 500. Supported on FXO, FXS and E&M ports.

### Defaults

100 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing interdigit** command is outgoing.

### Examples

The following example configures the DTMF inter-digit duration on a Cisco MC3810 voice port to 150 milliseconds:

```
voice-port 1/1
 timing interdigit 150
```

### Related Commands

Command	Description
<b>timing digit</b>	Configures the DTMF digit signal duration for a voice port.

## timing percentbreak

To specify the percentage of the break period for dialing pulses for a specified voice port on the Cisco MC3810, use the **timing percentbreak** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing percentbreak** *percent*  
**no timing percentbreak** *percent*

### Syntax Description

*percent* Percentage of the break period for dialing pulses. Valid entries are numbers 20 to 80. Supported on FXO and E&M ports only.

### Defaults

50 percent

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) MA4	This command was first introduced.

### Examples

The following example configures the break period percentage on a Cisco MC3810 voice port to 30 milliseconds:

```
voice-port 1/1
 timing percentbreak 30
```

### Related Commands

Command	Description
<b>timing pulse</b>	Configures the pulse dialing rate for a voice port.
<b>timing pulse-interdigit</b>	Configures the pulse inter-digit timing for a voice port.

## timing pulse

To specify the pulse dialing rate for a specified voice port, use the **timing pulse** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing pulse** *pulses-per-second*  
**no timing pulse** *pulses-per-second*

### Syntax Description

*pulses-per-second* Pulse dialing rate, in pulses per second. Valid entries are numbers 10 to 20. Supported on FXO and E&M ports only.

### Defaults

20 pulses per second

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing pulse** command is outgoing.

### Examples

The following example configures the pulse dialing rate on a Cisco MC3810 voice port to 15 pulses per second:

```
voice-port 1/1
 timing pulse 15
```

### Related Commands

Command	Description
<b>timing percentbreak</b>	Configures the percentage of the break period for dialing pulses on a voice port.
<b>timing pulse-interdigit</b>	Configures the pulse inter-digit timing for a voice port.

## timing pulse-interdigit

To specify the pulse inter-digit timing for a specified voice port, use the **timing pulse-interdigit** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing pulse-interdigit** *milliseconds*  
**no timing pulse-interdigit** *milliseconds*

### Syntax Description

*milliseconds* Pulse dialing inter-digit timing in milliseconds. Valid entries are numbers 100 to 1000. Supported on FXO and E&M ports only.

### Defaults

500 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing pulse-interdigit** command is outgoing.

### Examples

The following example configures the pulse-dialing inter-digit timing on a Cisco MC3810 voice port to 300 milliseconds:

```
voice-port 1/1
 timing pulse-interdigit 300
```

### Related Commands

Command	Description
<b>timing percentbreak</b>	Configures the percentage of the break period for dialing pulses on a voice port.
<b>timing pulse</b>	Configures the pulse dialing rate for a voice port.

## timing wink-duration

To specify the maximum wink signal duration for a voice port, use the **timing wink-duration** voice-port configuration command. Use the **no** form of this command to restore the default value.

**timing wink-duration** *milliseconds*  
**no timing wink-duration** *milliseconds*

### Syntax Description

*milliseconds* Maximum wink signal duration in milliseconds for a wink-start signal. Valid entries are numbers 100 to 400. Supported on E&M ports only.

### Defaults

200 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing wink-duration** command is outgoing.

### Examples

The following example configures the wink signal duration on a Cisco MC3810 voice port to 300 milliseconds:

```
voice-port 1/1
 timing wink-duration 300
```

Related Commands

Command	Description
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing wink-wait</b>	Configures the maximum wink-wait duration for a voice port.

## timing wink-wait

To specify the maximum wink-wait duration for a voice port, use the **timing wink-wait** voice-port configuration command. Use the **no** form of this command to reset the default value.

**timing wink-wait** *milliseconds*  
**no timing wink-wait** *milliseconds*

### Syntax Description

*milliseconds* Maximum wink-wait duration in milliseconds for a wink start signal. Valid entries are numbers 100 to 5000. Supported on E&M ports only

### Defaults

200 milliseconds

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

The call signal direction for the **timing wink-wait** command is out.

### Examples

The following example configures the wink-wait duration on a Cisco MC3810 voice port to 300 milliseconds:

```
voice-port 1/1
 timing wink-wait 300
```

Related Commands

Command	Description
<b>timing clear-wait</b>	Configures the minimum amount of time between the inactive seizure signal and the call being cleared for a voice port.
<b>timing delay-duration</b>	Configures the delay signal duration for a voice port.
<b>timing delay-start</b>	Configures the minimum delay time from outgoing seizure to outdial address for a voice port.
<b>timing delay-with-integrity</b>	Configures the duration of the wink pulse for the delay dial for a voice port.
<b>timing wink-duration</b>	Configures the maximum wink-signal duration for a voice port.

## type

To specify the E&M interface type, use the **type** voice-port configuration command. Use the **no** form of this command to reset the default value.

**type** {**1** | **2** | **3** | **5**}  
**no type**

### Syntax Description

- 1**           Lead configuration:  
E—Output, relay to ground.  
M—Input, referenced to ground.
  
- 2**           Lead configuration:  
E—Output, relay to SG.  
M—Input, referenced to ground.  
SB—Feed for M, connected to -48V.  
SG—Return for E, galvanically isolated from ground.
  
- 3**           Lead configuration:  
E—Output, relay to ground.  
M—Input, referenced to ground.  
SB—Connected to -48V.  
SG—Connected to ground.
  
- 5**           Lead configuration:  
E—Output, relay to ground.  
M—Input, referenced to -48V.

### Defaults

Lead configuration type is **1**.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **type** command to specify the E&M interface for a particular voice port. With type **1**, the tie-line equipment generates the E-signal to the PBX type grounding the E-lead. The tie-line equipment detects the M-signal by detecting current flow to ground. If you select **1**, a common ground must exist between the line equipment and the PBX.

With type **2**, the interface requires no common ground between the equipment, thereby avoiding ground loop noise problems. The E-signal is generated toward the PBX by connecting it to SG. The M-signal is indicated by the PBX connecting it to SB. While Type 2 interfaces do not require a common ground, they do have the tendency to inject noise into the audio paths because they are asymmetrical with respect to the current flow between devices.

---

**Note** E&M Type 4 is not a supported option. However, Type 4 operates similarly to Type 2 except for the M-lead operation. On Type 4, the M-lead states are open/ground, compared to Type 2, which is open/battery. Type 4 can interface with Type 2. To use Type 4 you can set the E&M voice port to Type 2 and perform the necessary M-lead rewiring.

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With type **3**, the interface operates the same as Type 1 interfaces with respect to the E-signal. The M-signal, however, is indicated by the PBX connecting it to SB on assertion and alternately connecting it to SG during inactivity. If you select **3**, a common ground must be shared between equipment.

With type **5**, the Type 5 line equipment indicates E-signal to the PBX by grounding the E-lead. The PBX indicates M-signal by grounding the M-lead. A Type 5 interface is quasi-symmetrical in that while the line is up, current flow is more or less equal between the PBX and the line equipment, but noise injection is a problem.

## Examples

The following example selects Type 3 as the interface type for your voice port on the Cisco MC3810:

```
voice-port 1/1
 type 3
```

## Related Commands

Command	Description
<b>operation</b>	Selects a cabling scheme for an E&M analog voice port.
<b>signal</b>	Specifies the signaling type for a voice port.

## vad

To enable voice activity detection (VAD) for the calls using this voice port, use the **vad** voice-port configuration command. Use the **no** form of this command to disable VAD.

**vad**  
**no vad**

### Syntax Description

This command has no arguments or keywords.

### Defaults

VAD is not enabled

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) T	This command was first introduced.

### Usage Guidelines

Use the **vad** command to enable voice activity detection. With VAD, silence is not transmitted over the network, only audible speech. If you enable VAD, the sound quality will be slightly degraded but the connection will monopolize much less bandwidth. If you use the **no** form of this command, VAD is disabled on the voice-port.

### Examples

The following example enables VAD on voice-port 1/1:

```
voice-port 1/1  
vad
```

### Related Commands

Command	Description
<b>comfort-noise</b>	Generates background noise to fill silent gaps during calls if VAD is activated.

## voice confirmation-tone

To enable the two-beep confirmation tone for PLAR or PLAR Off Premises eXtension (OPX) connections, use the **voice confirmation-tone** voice-port command. Use the **no** form of this command to disable the two-beep confirmation tone.

**voice confirmation-tone**  
**no voice confirmation-tone**

### Syntax Description

This command has no arguments or keywords.

### Defaults

The two-beep confirmation tone is enabled on the PLAR or PLAR OPX connection.

### Command Mode

Voice-port configuration

### Command History

Release	Modification
11.3(1) MA5	This command was first introduced as the <b>voice-confirmation-tone-disable</b> command.
12.0(3) T	This command was changed to <b>voice confirmation-tone</b> .

### Usage Guidelines

Use this command to enable the two-beep confirmation tone that a caller hears when picking up the handset for PLAR and PLAR OPX connections. This command is only valid if the voice port **connection** command is set to PLAR or PLAR OPX.

### Examples

The following example enables the two-beep confirmation tone on voice port 1/1 on the Cisco MC3810:

```
voice-port 1/1
connection plar-opx
voice confirmation-tone
```

### Related Commands

Command	Description
<b>connection</b>	Specifies a connection mode for a voice port.

## voice-port busyout

To place all voice ports associated with a serial or ATM interface into a busyout state, use the **voice-port busyout** interface configuration command. To remove the busyout state on the voice ports associated with this interface, use the **no** form of this command.

**voice-port busyout**

**no voice-port busyout**

### Syntax Description

This command has no arguments or keywords.

### Defaults

The voice port(s) on the interface are not in busyout state.

### Command Mode

Interface configuration

### Command History

Release	Modification
12.0(3) T	This command was first introduced.

### Usage Guidelines

This command is supported on the Cisco MC3810 only.

This command busyies out all voice port associated with the interface, except any voice ports configured to busyout under specific conditions using the **busyout monitor** and **busyout-seized** commands.

### Examples

The following example turns the voice-port(s) associated with serial interface 1 into busyout state:

```
interface serial 1
  voice-port busyout
```

The following example turns the voice-port(s) associated with ATM interface 0 into busyout state:

```
interface atm 0
  voice-port busyout
```

## Related Commands

<b>Command</b>	<b>Description</b>
<b>busyout forced</b>	Places a voice port into busyout monitor state.
<b>busyout-monitor</b>	Specifies the busyout seize procedure for a voice port.
<b>busyout-seize</b>	Displays information about the voice busyout state.
<b>show voice busyout</b>	Places all voice ports associated with a serial or ATM interface into a busyout state.

