Call Commands

This section provides detailed information on call commands for the Cisco ATA:

- Call Command Structure, page 6-1
- Syntax, page 6-2
- Call Command Example, page 6-5
- Call Command Behavior, page 6-7

Service providers can offer many supplementary services, which can be activated, configured, or deactivated in more than one way. The CallCmd parameter allows you to define the behavior of supplementary services that the Cisco ATA supports.

Note The term *Cisco ATA* refers to both the Cisco ATA 186 and the Cisco ATA 188, unless otherwise stated.

Note This section contains call command information for the United States and Sweden. For information about other countries, contact the Cisco equipment provider for a specific country.

Call Command Structure

The entry in the CallCmd field is a character string composed of a sequence of instructions, which consist of a combination of three elements:

- Context—The Cisco ATA supplementary service operation is dependent upon a state and transition process. For example, the most common state is IDLE, in which the Cisco ATA is on-hook, waiting for an incoming call. Picking up the telephone handset causes the Cisco ATA to transition to the PREDIAL state, in which the user hears a dial tone and the Cisco ATA is waiting to detect DTMF digits. The Context portion of a Call Command string specifies the state for which the commands are defined.
- Input-Sequence—The input sequence is simply the input from the user, a combination of hook-flash and DTMF digits.
- Action—This specifies the action taken by the Cisco ATA. The action depends on the Input-Sequence that the user enters and the Context in which it is entered.

Syntax

The **CallCmd** string has the following structure:

Context-Identifier Command . . . Command; . . . Context-Identifier Command;

- Table 6-1 provides a list of Context-Identifiers, which show the state of the Cisco ATA.
- **Command** consists of the following items:

  Input-Sequence; Action-Identifier-1 Action-Identifier-2 [Input-Sequence]

  - **Input Sequence** consists of one or more characters from the set shown in Table 6-2.
  - Table 6-3 provides a list of Action Identifiers. **Action-Identifier-1** is for the first thread of a call; **Action-Identifier-2** is for the second thread of a call. Each Action Identifier is one character.

Each Context-Identifier is followed by one or more commands to allow a variable number of actions to be triggered by relevant user input commands for any state. Each command is composed of an Input-Sequence that the user enters when the Cisco ATA is in a given state and two Action-Identifier characters which define the action that the Cisco ATA performs in response to the Context-Identifier and Input-Sequence. If the Cisco ATA takes only one action, one of the two Action-Identifier characters is a null action.

Example 6-1 Syntax Example Using One Command

```
Af;AH;
```

In this simple example, the first “A” is the Context-Identifier, which means the Cisco ATA is in the CONFERENCE state, as shown in Table 6-1. The “f” is the input sequence, which is hook-flash, as shown in Table 6-2. Following the semicolon, the two action identifiers are “A” and “H”. These identifiers mean “NONE” and “Disconnect the call,” respectively, as shown in Table 6-3. Based on these action identifiers, the Cisco ATA disconnects the most recent callee, and remains connected to the first party. The state of the Cisco ATA becomes CONNECTED. Table 6-4 explains more about the various states of the Cisco ATA.

Example 6-2 Syntax Example Using Two Commands

```
CN;CAf;OF;
```

In this example, the first “C” is the Context Identifier, which means the Cisco ATA is in the PREDIAL_HOLDING state, as shown in Table 6-1. The “N” is the first input sequence, which is any part of the set of digits 0|1|2|3|4|5|6|7|8|9, as shown in Table 6-2. Following the first semicolon, the two action identifiers are “C” and “A”, which mean “Continue to Dial” and “NONE,” respectively, as shown in Table 6-3.

Following this pair of action identifiers is another input sequence, “f”, which means hook-flash, as shown in Table 6-2. Next is the semicolon, always required after the input sequence, followed by the corresponding action pair, “O” and “F”. These identifiers mean “Release the Call” and “Retrieve the Call,” respectively, as shown in Table 6-3.

Context-Identifiers

Table 6-1 Context-Identifiers

Identifier	Context (State of Cisco ATA)
A	CONFERENCE
B	PREDIAL
C	PREDIAL_HOLDING
D	CONNECTED
E	CONNECTED_HOLDING
F	CONNECTED_ALERTING
G	HOLDING
H	CONFIGURING
I	CONFIGURING_HOLDING
J	3WAYCALLING
K	CALLWAITING
L	IDLE
M	RINGING
N	DIALING
O	CALLING
P	Reserved (ANSWERING)
Q	Reserved (CANCELING)
R	Reserved (DISCONNECTING)
S	WAITHOOK
T	DIALING_HOLDING
U	CALLING_HOLDING
V	Reserved (ANSWERING_HOLDING)
W	Reserved (HOLDING_HOLDING)
X	Reserved (CANCELING_HOLDING)
Y	Reserved (DISCONNECTING_HOLDING)
Z	Reserved (HOLDING_ALERTING)
a	WAITHOOK_ALERTING
b	WAITHOOK_HOLDING

Input Sequence Identifiers

Table 6-2 Input Sequence Identifiers

Identifier	Input Sequence
0-9,#*	DTMF digits
f	hook flash
o	off-hook
@	anytime; for example, **@f** means anytime hook-flash occurs
h	on-hook
S	#|*
N	0|1|2|3|4|5|6|7|8|9
D	N|S
v	a variable number (1 or more) of characters from the above list. It must be followed by a character which acts as the terminator of this variable part.

Action Identifiers

Table 6-3 Action Identifiers

Identifier	Action
A	NONE
B	Seizure (User intends to dial or configure)
C	Continue to dial
D	Call Return
E	Hold the active call
F	Retrieve the waiting call
G	Cancel the call attempt
H	Disconnect the call
I	Blind transfer the call to the number
N	Go to configuration mode
O	Release the call
P	Answer the incoming call
Q	Transfer with consultation
R	Say busy to the caller
a	None
b	Forward all calls to the given number

Table 6-3 Action Identifiers (continued)

c	Forward on busy to the given number
d	Forward on no answer to the given number
e	Cancel call forward
f	CLIP for the next call
g	CLIR for the next call
h	Enable Call Waiting for the next call
i	Disable Call Waiting for the next call
x	Enable Fax Mode for the next call
y	Disable Fax Mode for the next call

Call Command Example

In addition to call commands that you configure, the Cisco ATA has a default list of call commands to handle common call scenarios. Configured call commands overwrite default call commands. If any Context-Identifier or Input-Sequence elements appear in both the default Call Command string and the manually entered string, the manually entered value takes precedence.

The following string shows a sample Call Command:

```
Bf;BAN;CA;CN;CAf;OF;Df;EB;I@f;OF;H@f;OA;Lo;BAf;BA;Mo;PA;ND;CAf;OA;Of;GA;Pf;HA;Qf;OA;Rf;OA;
Sf;OA;TD;CAf;OF;Uf;GF;Vf;HF;Wf;FF;Xf;AF;Yf;AF;Zf;AP;bf;OF;af;OP;
```

In this section, the Call Command string is broken down into its components as follows:

```
Call Command Fragment;
    Context-Identifier
        Input-Sequence1; Action1 Action2;
        (optional) Input-Sequence2; Action1 Action2;
```

Note If you use a second input sequence, this sequence follows the Action Identifier pair without a separating semicolon.

Refer to the preceding tables to determine the meanings of the identifiers.

Example 6-3 Call Command String

```
Bf;BAN;CA;
    Predial
         hook-flash; Seizure NONE
         0|1|...|9; Continue-to-dial NONE;
CN;CAf;OF;
    Predial_Holding
         0|1|...|9; Continue-to-dial NONE
         hook-flash; Release-the-call Retrieve-the-waiting-call;
Df;EB;
    Connected
         hook-flash; Hold-the-active-call Seizure;
I@f;OF;
    Configuring_Holding
         hook-flash (at any time); Release-the-call Retrieve-the-waiting-call;
H@f;OA;
```

```
    Configuring
         hook-flash (at any time); Release-the-call NONE;
Lo;BAf;BA;
    Idle
         off-hook; Seizure NONE;
         hook-flash; Seizure NONE;
Mo;PA;
    Ringing
         off-hook; Answer-the-incoming-call NONE;
ND;CAf;OA
    Dialing
         0|1|...|9|#|*; Continue-to-dial NONE
         hook-flash; Release-the-call NONE;
Of;GA;
    Calling
         hook-flash; Cancel-the-call-attempt NONE;
Pf;HA;
    Answering
         hook-flash; Disconnect-the-call NONE;
Qf;OA;
    Canceling
         hook-flash; Release-the-call NONE;
Rf;OA;
    Disconnecting
         hook-flash; Release-the-call NONE;
Sf;OA;
    Waithook
         hook-flash; Release-the-call NONE;
TD;CAf;OF;
    Dialing_Holding
         0|1|...|9|#|*; Continue-to-dial NONE;
         hook-flash; Release-the-call NONE;
Uf;GF;
    Calling_Holding
         hook-flash; Cancel-the-call-attempt Retrieve-the-waiting-call;
Vf;HF;
    Answering_Holding
         hook-flash; Disconnect-the-call Retrieve-the-waiting-call;
Wf;FF;
    Holding_Holding
         hook-flash; Retrieve-the-waiting-call Retrieve-the-waiting-call;
Xf;AF;
    Canceling_Holding
         hook-flash; NONE Retrieve-the-waiting-call;
Yf;AF;
    Disconnecting_Holding
         hook-flash; NONE Retrieve-the-waiting-call;
Zf;AP;
    Holding_Alerting
         hook-flash; NONE Answering;
bf;OF;
    Waithook_Holding
         hook-flash; Release-the-call Retrieve-the-waiting-call;
af;OP;
    Waithook_Holding
         hook-flash; Release-the-call Answer-the-incoming-call;
```

Call Command Behavior

Table 6-4 summarizes differing Call Command behavior based on the U.S. and Sweden default call commands.

U.S. Call Command Default

Af;AH;BS;NA;CS;NA;Df;EB;Ff;EP;Kf;EFh;HH;Jf;AFh;HQ;I*67;gA*82;fA#90v#;OI;H#72v#;bA#74v#;cA#75v#;dA#73;eA*67;gA*82;fA*70;iA*69;DA*99;xA;Uh;GQ;

Sweden Call Command Default

BS;NA;CS;NA;Df;EB;Ff0;ARf1;HPf2;EPf3;AP;Kf1;HFf2;EFf3;AFf4;HQh;HH;Jf1;HFf2;EFf3;AFf4;HQ;Af4;HQ;I*31#;gA#31#;gA*90*v#;OI;H*21*v#;bA*61*v#;dA*67*v#;cA#21#;eA#61#;eA#67#;eA*31#;gA#31#;gA*43#;hA#43#;iA*69#;DA*99#;xA;Uh;GQ;

Table Notations

The following notations are used in Table 6-4:

- FE—Far end
- AFE—Active Far End, which is a connected far end that is not placed on hold
- WFE—Waiting Far End, which is a connected far end being placed on hold, or an incoming caller waiting to be answered
- R—Hook Flash
- ONH—On Hook
- OFH—Off Hook
- 0-9,*,#—DTMF digits
- v—a variable length string, usually a phone number, and does not include #
- CWT—call-waiting tone

Note The notations in Table 6-4 include abbreviations for input sequence behavior. Refer to the tables and syntax examples shown earlier in this section. The Summary of Commands column in Table 6-4 is based on the actual command syntax used in the default Call Command strings for the United States and Sweden.

Table 6-4 Call Command Behavior

Cisco ATA State and its Definition	Summary of Commands (Input Sequence and Actions)
IDLE: Phone is on-hook; Cisco ATA is waiting for incoming call	• OFH—Start dial tone and go to PREDIAL state. • New incoming call or a waiting call (started before it enters IDLE)—Start ringing the phone and go to the RINGING state.
PREDIAL: Phone just went off-hook but no DTMF has been entered yet; Cisco ATA plays dial-tone	United States and Sweden: • # , *—Stop dial-tone, go to the CONFIG state, and prepare to accept a complete configuration sequence. • 0-9: Stop dial tone, start invoking dial-plan rules, and go to the DIALING state to accept a complete phone number.

Table 6-4 Call Command Behavior (continued)

Cisco ATA State and its Definition	Summary of Commands (Input Sequence and Actions)
DIALING: User is entering phone number, which is parsed with the given dial-plan rules	• R—Abort dialing, restart dial tone, and revert to PREDIAL state. • Invalid phone number—Abort dialing, plays fast-busy, and go to WAITHOOK state.
CONFIG: User configuring a supplementary service in the United States	• *69—Call Return • #72v#—Forward unconditional to number specified in 'v'l (PacBell use 72#). • #73—Cancel any call forwarding (PacBell use 73#). • #74v#—Forward on busy to number specified in 'v' (PacBell does not enable this service from the phone). • #75v#—Forward on no answer to number specified in 'v' (Pac Bell does not enable this service from the phone). • *67—CLIR in the next call (if global profile is CLIP) • *82—CLIP for the next call (if global user profile is CLIR) • *70—Disable call waiting in the next call. • *99—Enable Fax Mode in the next call (non-standard). • Dial-tone—Revert to PREDIAL state. • Any complete configuration sequence—Carry out the configuration command, restart dial-tone, and revert to PREDIAL state.
CONFIG: User configuring a supplementary service in Sweden	• *21*v#—Forward unconditionally to number specified in 'v'. • *67*v#—Forward on busy to number specified in 'v'. • *61*v#—Forward on no answer to number specified in 'v'. • #21#—Cancel any call forwarding. • #67#—Cancel any call forwarding. • #61#—Cancel any call forwarding. • #31#—CLIR in the next call. • *31#—CLIR in the next call. • *43#—Enable call waiting in the next call (Sweden allows globally disable call waiting). • #43#—Disable call waiting in the next call. • *69#—Call Return • (non-standard)*99#—Enable Fax Mode in the next call (non-standard). All Regions: • R or any unrecognized sequence—Abort configuration, restart dial tone and revert to PREDIAL state. • Any complete configuration sequence—Carry out the configuration command, restart dial tone, and revert to PREDIAL state.
CALLING: Phone number is sent; Cisco ATA is waiting for response from the far end	• R—Cancel the outgoing call, restarts dial-tone, and revert to PREDIAL state.

Table 6-4 Call Command Behavior (continued)

Cisco ATA State and its Definition	Summary of Commands (Input Sequence and Actions)
RINGING: Cisco ATA is ringing the phone to alert user of an incoming call	• OFH—Stop ringing, answer the call, and go to CONNECTED state.
CONNECTED: The Cisco ATA is connected with one far end party; Cisco ATA may be the caller or the callee	United States and Sweden: • R—Hold current call, play dial-tone to dial second number, and go to PREDIAL_HOLDING state.
WAITHOOK: Far end hangs up while in CONNECTED state; Cisco ATA plays fast-busy after five seconds in this state	• R—Stop fast-busy, start dial-tone, and go to PREDIAL state.
CONNECTED_ALERTING: Cisco ATA receives another call while in CONNECTED state; Cisco ATA plays Call Waiting tone periodically (every 10 seconds for US; every second for Sweden)	United States: • R—Place current call on-hold, answer the waiting call, and go to CALLWAITING state. Sweden: • R0—Continue current call, reject the waiting call, and revert to CONNECTED state. • R1—Disconnect current call, answer the waiting call, and go to CONNECTED state. • R2—Place current call on-hold, answer waiting call, and go to CALLWAITING state. • R3—Continue with current call, answer the waiting call and go to CONFERENCE state. All Regions: • ONH—Disconnect current call and go to IDLE state (the Cisco ATA then automatically starts ringing the phone, and goes to RINGING state). • AFE hangs up—Go to WAITHOOK_ALERTING state, continue to play CWT. • WFE cancels the call—Stop CWT and revert to CONNECTED state.
CALL WAITING: Cisco ATA is connected to two far end users on the same line; one is in active conversation (the active far end or AFE) while the other is on-hold (the waiting far end or WFE). This state is initially entered when the Cisco ATA is connected to one of the far ends while the other far end calls into the Cisco ATA.	United States: • R—Place the AFE on-hold and retrieve the WFE. • ONH—Transfer the WFE to the AFE, drop out of the call, and go to PREDIAL state. Sweden: • R1—Disconnect current call, answer the waiting call, and go to CONNECTED state. • R2—Place the AFE on-hold and retrieve the WFE. • R3—Retrieve the WFE, and go to CONFERENCE state. • R4—Transfer the WFE to the AFE, drop out of the call, and go to PREDIAL state.

Table 6-4 Call Command Behavior (continued)

Cisco ATA State and its Definition	Summary of Commands (Input Sequence and Actions)
3WAYCALLING: Cisco ATA is connected to two far end users on the same line; one of them is in active conversation (the active far end or AFE) while the other is on-hold (the waiting far end or WFE). This state is initially entered when the Cisco ATA is connected to one of the far ends, then places this far end on hold and calls the second far end.	United States: • R—Retrieve the WFE and go to CONFERENCE state. • ONH—The default behavior is to disconnect both the current call and the held call, then go to the PREDIAL state. The enhanced behavior (with the call-waiting hang-up alert feature enabled) is to disconnect the current call, retrieve the held call, go to the CONNECTED state, then alert the user of the call on hold by ringing the phone. Sweden: • Same as for CALLWAITING state
CONFERENCE: Cisco ATA is connected to two active far ends simultaneously; Cisco ATA performs audio mixing such that every party can hear the other two parties but not themselves.	United States: • R—Disconnect the last callee and stay connected with the first party, and revert to CONNECTED state. Sweden: • R4—Transfer one FE to the other, drop out of the call, and go to PREDIAL state.
PREDIAL_HOLDING: Cisco ATA user places a connected call on-hold and prepares to dial a second number; Cisco ATA plays dial-tone.	United States and Sweden: • *,#—Stop dial-tone, go to CONFIG_HOLDING state, and prepare to collect a configuration command. • 0-9—Stop dial-tone, go to DIALING_HOLDING state, and prepare to complete dialing a second phone number. All Regions: • Stop dial-tone, retrieve the WFE, and revert to CONNECTED state.
CONFIG_HOLDING: A connected FE is placed on hold, while the Cisco ATA is entering a configuration command.	United States: • *67—CLIR for the next call • *82—CLIP for the next call • #90v#—Blind transfer to the number specified in 'v'; disconnect the call and go to PREDIAL state. Sweden: • #31# or *31#—CLIR in the next call • *90*v#—Blind transfer to the number specified in 'v'; disconnect the call and go to PREDIAL (non-standard) state. All Regions: • R or any unrecognized sequence—Abort configuration, restart dial tone, and go to PREDIAL_HOLDING state. • A complete configuration sequence—Carry out the command, and go to PREDIAL_HOLDING state.

Table 6-4 Call Command Behavior (continued)

Cisco ATA State and its Definition	Summary of Commands (Input Sequence and Actions)
DIALING_HOLDING: Cisco ATA user is entering a second phone number to call while placing a connected call on hold	• Collected digits match a dial-plan rule—Call the new number, and go to CALLING_HOLDING state • R—Abort dialing and revert to PREDIAL_HOLDING state.
CALLING_HOLDING: Cisco ATA is waiting for a second far end to respond while placing a connected call on hold	• R—Cancel the call and revert to PREDIAL_HOLDING state. • ONH—Cancel the call and transfer the waiting party to the callee, and revert back to PREDIAL state.
WAITHOOK_HOLDING: The AFE hangs-up to disconnect the current call while there is a WFE being put on hold	• R—Retrieve the WFE and go to CONNECTED state.
AITHOOK_ALERTING: The AFE hangs up while a waiting call alerts	• R—Stop CWT, answer the waiting call, and go to CONNECTED state. • WFE: Cancel the call; stop CWT, go to WAITHOOK state. • ONH—Go to IDLE state (in which Cisco ATA automatically starts ringing the phone, and goes to RINGING state).