



Avaya™ Communication Manager

Release 2.0

ASAI Overview

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Preventing toll fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya fraud intervention

If you suspect that you are being victimized by toll fraud and you need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1-800-643-2353 for the United States and Canada. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Providing telecommunications security

Telecommunications security (of voice, data, and video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Use (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including, but not limited to, human and data privacy, intellectual property, material assets, financial resources, labor costs, and legal costs).

Your responsibility for your company's telecommunications security

The final responsibility for securing both this system and its networked equipment rests with you, an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources, including, but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- Your Avaya-provided telecommunications systems and their interfaces
- Your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products.

Warranty

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<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Comments

To comment on this document, send e-mail to crminfodev@avaya.com.

Acknowledgment

This document was written by the CRM Information Development group.

Avaya Communication Manager
Release 2.0
ASAI Overview

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About This Document

Introduction

This document provides an overview of the Adjunct Switch Application Interface (ASAI) and applications. Its purpose is to give the reader an understanding of ASAI, its functions, and the services that can be provided using this interface. The documents listed [Related Documents](#) on page 11 provide the details for using ASAI with business applications. These documents also describe the Avaya Communication Manager features used by ASAI.

Reason for Reissue

This document is reissued to reflect the new product name Avaya Communication Manager.

Topics in this Overview

The ASAI Overview includes the following topics:

- Typical business applications that use ASAI
- Link configurations
- Features and messages provided by ASAI
- ASAI Links
- Planning considerations for ASAI
- Services offered by Avaya
- Business Partners of Avaya
- CVLAN
- Avaya ComputerTelephony

Intended Audience

This document provides a high level description of ASAI features. It is intended for system managers, planners, and designers. It is the first document you should read before planning or writing an ASAI application.

Conventions Used in this Document

The following table describes command conventions used in this document.

Convention	Example	Usage
bold	status dlq cti-link	characters that you type exactly as depicted
bold italics in angle brackets	< <i>anoadj</i> >	characters or variables that you substitute
plain monospace	Port:	screen output on a system administration terminal (SAT)

Related Documents

This section describes additional ASAI documents as well as other Avaya documents that can be used to supplement this document.

ASAI Documents

The following documents are available on *Avaya Communication Manager, Release 2.0, ASAI Documents* 585-246-801, Issue 10 (CD-ROM).

- *Avaya Communication Manager, Release 2.0, ASAI Overview*, 555-230-225, Issue 9
Provides a general description of the Adjunct/Switch Application Interface (ASAI) and applications. It also describes the functions and services that ASAI provides.
- *Avaya Communication Manager, Release 2.0, ASAI Technical Reference*, 555-230-220, Issue 14
Describes ASAI services in terms of function sets or *capability groups*, which enable applications to monitor and control switching resources.
- *Avaya Communication Manager, Release 2.0, ASAI Protocol Reference*, 555-230-221, Issue 14
Explains how ISDN messages, Facility Information Elements, and Information Elements work together to implement ASAI. It goes on to describes the message types supported by ASAI, the structure of the information elements, and byte-level encodings of messages. It also includes sample message scenarios.
- *DEFINITY Enterprise Communications Server CallVisor ASAI Applications over MAPD Installation, Administration, and Maintenance*, 555-230-136, Issue 3
Describes the ASAI DEFINITY LAN Gateway and the CVLAN applications that run on a Multi-Application Platform for DEFINITY (MAPD).

Additional Avaya Product Documentation

For more information about Avaya Communication Manager Solutions see the following CD-ROM based libraries, and use the URLs listed in [How to obtain Avaya documents on the Web](#).

- *Avaya Communication Manager Guide to ACD Contact Centers*, 555-230-516
- *Avaya Communication Manager Contact Center Call Vectoring and Expert Agent Selection (EAS) Guide*, 555-230-517
- *Administrator's Guide for Avaya Communication Manager, Volumes 1, 2, and 3*, 555-233-506

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If you have internet access, you can view and download the latest version of Avaya documentation products.

Follow these steps to access an electronic version of a document.

1. Access the Avaya Web site at <http://www.avaya.com/support/>.
2. Click **Product Documentation**.
3. On the Technical Database/Product Documentation page, follow the tips under Find a Document to locate a document using the SEARCH SUPPORT text box.

Overview of ASAI

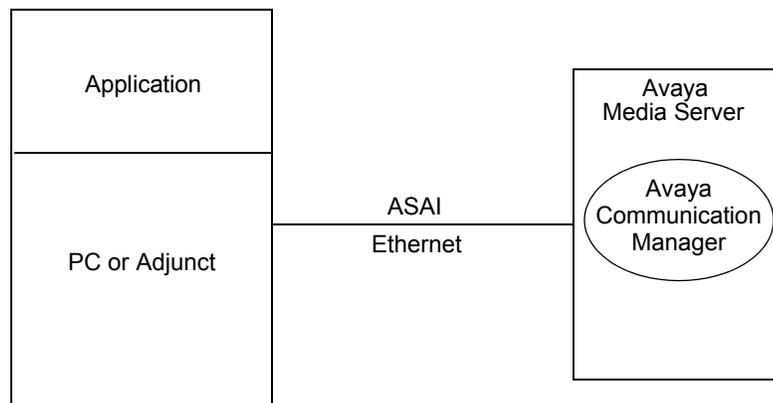
Introduction

ASAI is a communications interface. *ASAI* stands for *Adjunct-Switch Applications Interface*. Application software running on adjuncts can control calls through the ASAI interface. In the ASAI documents the term adjunct is often used as a synonym for application.

To connect to Communication Manager, ASAI uses an Ethernet Transmission Control Protocol/Internet Protocol (TCP/IP) link.

The following figure illustrates a simple configuration, an adjunct connected to Communication Manager using a single ASAI-Ethernet link.

Basic Connection for ASAI



Multiple ASAI links can be configured on Communication Manager. This means that more than one application can exist on adjuncts connected to Communication Manager.

Terms used in this Document

ACD

See [Automatic Call Distributor \(ACD\)](#).

ACD Hunt Group

A group of telephone extensions staffed by agents who are trained to handle a certain type of incoming call.

acknowledgement

A response to an ASAI request.

adjunct

A software application that communicates with Communication Manager through an ASAI interface.

It can also refer to large computer system, a personal computer, or any other intelligent device that communicates with Communication Manager through an ASAI interface.

Adjunct-Switch Application Interface (ASAI)

The protocol supported by Communication Manager that extends telephony features to adjuncts.

agent

A person who answers customer's calls. Agents usually work in groups, and Communication Manager selects the next available agent for an incoming call.

alerting

An event to signal the arrival of a call at a telephone. The arrival of the call can be an audible (ringing) or visible (the status lamp flashes) signal.

algorithm

A computer program.

annotate

To make notes or comments.

announcements

Recorded messages that are provided on telephone extensions.

application

A program running on a computer. Also a specific way of handling certain tasks.

ASAI

See [Adjunct-Switch Application Interface \(ASAI\)](#).

association

A logical communication channel between an adjunct and Communication Manager used for the exchange of messages. An active association refers to an existing call in Communication Manager or to a telephone extension on the call.

attendant

A person who handles incoming calls at the customer's site.

Automatic Call Distributor (ACD)

A Communication Manager feature that routes incoming calls to available agents.

Avaya Communication Manager

Avaya Communication Manager (also referred to as Communication Manager) is the telephony software component of Avaya MultiVantage.

Avaya Media Server

Avaya Media Server is a generic term for the hardware component that can run Communication Manager, such as Avaya S8100 Media Server, an Avaya S8300 Media Server, an Avaya S8500 Media Server, or an Avaya S8700 Media Server. In the context of ASAI documents, the generic term Avaya Media Server implies that it is running Avaya Communication Manager, unless explicitly stated otherwise.

Avaya MultiVantage

Avaya MultiVantage is the family name for all Avaya communication applications. Avaya Communication Manger is the telephony software component of Avaya MultiVantage.

AWOH

Administration without hardware.

Billing Number (BN)

This is the number that is billed when a caller makes a toll call. In North America, this number is composed of ten digits; the number of digits may vary in other areas of the world. Billing Number is usually paired with Calling Party Number to completely identify the caller. See [calling party number \(CPN\)](#).

BN

See [Billing Number \(BN\)](#).

business partner

A company who works with Avaya and provides an ASAI library which runs on a specific adjunct that interfaces with Communication Manager.

call center

A central location where a group of agents (who represent a company) communicate with customers through incoming and outgoing calls.

call classifier

Special hardware that can detect the human voice, tones or an answering machine on an answered call.

call control

The ability to place calls, monitor the status of calls, put calls on hold, and disconnect from an adjunct.

call prompting

A call vectoring feature through which Communication Manager requests the caller to provide information (such as a credit card number) by using the touchtone keypad on the telephone. The call vectoring feature can then route incoming calls based on information entered by the caller.

call vectoring

A Communication Manager feature that allows customers to program the route of a call.

called party number

The telephone number that the caller used to place the call. In North America, this number is composed of ten digits; the number of digits may vary in other areas of the world.

calling party number (CPN)

The telephone number that identifies the caller. In North America, this number is composed of ten digits; the number of digits may vary in other areas of the world. This number is usually paired with the Billing Number to completely identify the caller.

ASAI

Product name for software that effects communication between Communication Manager and adjunct applications.

CallVisor PC

CallVisor Personal Computer (PC) software translates ASAI messages to an application programming interface (API) for application software. See CVLAN.

cause value

A cause value shows the reason why a message (request) was denied or the reason for an event.

Computer Telephony Integration (CTI)

A technology that acts as an electronic bridge connecting telephones with personal computers.

configuration

The combination of hardware and software that defines a computer or telecommunications system.

contiguous

Connected in an unbroken sequence.

control

To request call features for a telephone or trunk. Some control features are **hold** and **drop**.

coverage

An Avaya Communication Manager (Communication Manager) feature that allows incoming calls for a specific telephone to be sent to another telephone so that the calls can be answered.

CPN

See [calling party number \(CPN\)](#).

CTI

See [Computer Telephony Integration \(CTI\)](#).

CVLAN

CVLAN is a client/server implementation of the Call Visor PC API.

data

A representation of facts, concepts or instructions that can be communicated, processed, or interpreted. Data can be read on a screen, or from a document or memo. Information transmitted by voice is not considered data.

data terminal

A device that has a keyboard and a screen. A data terminal can be a personal computer (PC).

database

A structured set of files.

denying a request (message)

Denying a request is the same as a negative acknowledgement. The denial is sent within a Facility Information Element that contains the error condition. A cause value is included to specify the error condition. See [cause value](#).

Desk-Top Application

A program that runs on a personal computer (PC) which is typically used by a worker in an office. This program can also be called a Computer Telephony Integration (CTI) application. See [Computer Telephony Integration \(CTI\)](#).

Dialed Number Identification Service (DNIS)

A number dialed by the caller that can be used to identify why the caller is calling.

digit string

A sequence of digits.

disable

To remove an option on a form.

domain

An entity that can be controlled or monitored — such as a telephone or a Vector Directory Number (VDN).

DNIS

See [Dialed Number Identification Service \(DNIS\)](#).

drop

To end a call or disconnect a party from a call.

DTMF

See [Dual Tone Multi Frequency \(DTMF\)](#).

Dual Tone Multi Frequency (DTMF)

This term describes touch-tone dialing. A combination of two tones can be heard when a button is pressed on the dial pad — one tone is high frequency and the other tone is low frequency. The Send DTMF Signals feature allows Communication Manager to generate the DTMF tones at the adjunct's request.

ECMA

European Computer Manufacturers Association.

enable

To administer an option on a form.

encode

To convert data into code.

Ethernet

A local area network that connects computers, printers and personal computers within the same building.

event

In ASAI, a message that reports on the progress or changing state of a call.

event reports

The ASAI feature that allows Communication Manager to report call-related information to the adjunct. Events can be specifically defined to collect statistics on calls.

extension number

A 1-to-5 digit number assigned to a device such as a telephone, Vector Directory Number (VDN), Automatic Call Distributor (ACD), etc. Calls are routed through a communications system with extension numbers.

feature access code

A number used to activate a Communication Manager feature.

Flexible Billing

A feature that allows the adjunct to change the billing rate for incoming 900 calls.

handshake

A series of signals between Communication Manager and the adjunct that sets the parameters for passing data.

heartbeat

An ASAI maintenance feature that checks that the ASAI link is working.

ICM

See [Incoming Call Management \(ICM\)](#).

IE

See [Information Element \(IE\)](#).

II-Digits

See [Information Identifier Digits \(II-Digits\)](#).

in-band

Signals of tones that pass within the voice frequency band.

incoming call

A call that arrives at a Communication Manager server from other private telecommunications systems or from the public network.

Incoming Call Management (ICM)

Describes applications that receive incoming calls from callers and assigns these calls to agents according to a set of rules.

Information Element (IE)

A defined structure within an Integrated Services Digital Network (ISDN) message that contains specific information that is related to the call and that message.

Information Identifier Digits (II-Digits)

These are digits that provide information about the origin of the call (for example, the call may originate from a prison or a cellular telephone, etc.).

intraflow

The rerouting of calls from one Automatic Call Distributor (ACD) to a second ACD on the *same Communication Manager server* when there is an overload of incoming calls.

Integrated Services Digital Network (ISDN)

A public or private network that provides end-to-end digital communications to support a wide range of voice and data features.

interflow

The rerouting of calls from one Automatic Call Distributor (ACD) to a second ACD on *another Communication Manager server* when there is an overload of incoming calls.

Internet Protocol (IP)

Software that tracks the Internet addresses of nodes. It also routes outgoing messages and acknowledges incoming messages. See [Transmission Control Protocol/Internet Protocol \(TCP/IP\)](#).

IP

See [Internet Protocol \(IP\)](#).

ISDN

See [Integrated Services Digital Network \(ISDN\)](#).

LAN

See [Local Area Network \(LAN\)](#).

library

A set of programs that runs on an adjunct computer to provide the ASAI interface between Communication Manager and an application program.

link

A channel or system that connects two devices.

load balancing

In ASAI, the even distribution of messages or calls.

Local Area Network (LAN)

Two or more computers that are connected together by cable to exchange and share information and other resources (for example, printers and disk drives). LANs are limited to a locally-defined geographic area.

log in

Describes an agent signing into an Automatic Call Distributor (ACD) when calls are ready to be received.

log out

Describes an agent signing out of an Automatic Call Distributor (ACD) when calls are no longer being taken.

Multi-Application Platform for DEFINITY (MAPD)

A general-purpose circuit pack that is installed in the DEFINITY cabinet. It serves as a processor for a variety of applications. Two ASAI Applications can reside on the MAPD - the DEFINITY LAN Gateway (DLG) and CVLAN. For more information about the MAPD and the two applications that reside on it, see *DEFINITY ECS CallVisor ASAI Applications over MAPD*, 555-230-136.

MultiVantage

See [Avaya MultiVantage](#).

monitor

To receive event reports for call events that occur in Communication Manager.

node

A link or port on an ASAI connection.

notification

A feature that allows the adjunct to request and cancel event reports for calls.

OCM

See [Outgoing Call Management \(OCM\)](#).

off-hook

Describes the state of the telephone when the handset is lifted from the cradle. In this state, dial tone can be heard signaling that the telephone has connected to the central office and is ready for a call to be placed.

on-hook

Describes the state of the telephone when the handset is resting in the cradle. In this state, the telephone is not active but is ready to receive incoming calls. Users are alerted to an incoming call by the ringing of the bell in the telephone.

outcome

A result or end state.

outgoing call

A call placed from a server with Communication Manager to a destination residing on the public network or to another server with Communication Manager.

Outgoing Call Management (OCM)

Describes an application that places outgoing calls to customers (from agents). Agents can review product or customer information while the call is being placed.

party

A participant on a call.

PC

See [personal computer \(PC\)](#).

personal computer (PC)

A device that has a keyboard and a screen which is used to enter and receive information.

See also [data terminal](#).

Phantom Calls

A call from a station administered without hardware. Phantom Calls are placed at the request of an adjunct (computer). They are used for conference or transfer of trunk to trunk connections.

port

An entrance into an interface board that allows devices to be connected to a system.

predictive call

An outgoing call placed from within Communication Manager to a destination; Communication Manager detects the call status (ring, no answer, answer, busy, etc.) and decides what to do with that call. Typically, an answered call is directed to an agent, and a busy call or a call that is not answered, is disconnected.

predictive dialing

This is an Outgoing Call Management (OCM) feature that allows the adjunct to place calls for an agent. Answered calls are sent to an agent and non-answered calls are disconnected.

preview dialing

This is an Outgoing Call Management (OCM) feature that allows the adjunct to display customer information about the call before the call is placed by the agent.

PRI

See Primary Rate Interface (PRI).

Primary Rate Interface (PRI)

The frame format standard of Integrated Services Digital Network (ISDN) that specifies the protocol that is used between two communications systems.

See *also* Integrated Services Digital Network (ISDN).

protocol

A set of rules or standards that describes how information is organized and how this information is transmitted and received.

queue

An ordered sequence of calls.

relinquish

A term that means to surrender or give up. For example, to relinquish control of a call.

resume

A term that means to start again or to restore. For example, to resume alarms.

routing

Directing a call to a specific destination.

screen pop

A screen that is displayed temporarily to request or display information.

selective

A term that refers to a specific choice or action. For example, the Selective Listening feature in ASAI indicates that a specific party can be disconnected from listening to a second party, and still be connected to listen to other parties on the call.

server

The component used to connect calls; in this document *server* refers to Communication Manager.

set value

This is an ASAI feature that allows the adjunct to define values for certain items such as a billing rate or for the message waiting lamp on the telephone.

skill

In a call center, a skill is a specific business requirement. Agents in Automatic Call Distributor (ACD) hunt groups are assigned to specific skills. For example, an agent may be assigned to a skill that provides customer service for a specific product.

split

This is an ACD hunt group. See “ACD Hunt Group.”

suspend

This is a term that means to stop (for example, to suspend alarms or to suspend a process).

Telephony Server Applications Program Interface (TSAPI)

This is a programming interface that is used for call control, call monitoring, and call routing.

threshold

A numeric value that sets upper limits for performance.

touch-tone detector

A hardware component that collects the Dual Tone Multi Frequency (DTMF) digits entered by the caller.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A set of protocols that can link together different types of computers across many types of networks.

See also [Internet Protocol \(IP\)](#).

trunk

A communication line between the telephone network and Communication Manager.

TSAPI

See [Telephony Server Applications Program Interface \(TSAPI\)](#).

UCID

See Universal Call Identifier.

Universal Call Identifier

A unique ID, created by Communication Manager, for every call. It is used by an application to track a call for its life, from origination to disconnect.

User-to-User Information (UUI)

The Integrated Services Digital Network (ISDN) information element that is used to carry customer-specific data between the devices or applications.

UUI

See [User-to-User Information \(UUI\)](#).

VDN

See Vector Directory Number.

vector

A program that describes how a call should be handled. A vector has one or more vector steps (vector commands).

vector command

A single vector step for an incoming call.

Vector Directory Number (VDN)

Vector Directory Number is a special extension number that provides access to a vector.

version

This refers to an ASAI link. Newer link versions support more features. A specific link version includes all the features that were included in all the previous link versions. A link version is negotiated by Communication Manager and the adjunct on a per-link basis when the link is restarted.

Voice Response Unit (VRU)

A communications device that works in conjunction with Communication Manager. This device can speak instructions. In some cases the VRU can replace humans to collect information from callers.

VRU

See Voice Response Unit.

work modes

These are the various states that an agent in an Automatic Call Distributor (ACD) can enter after logging into an ACD hunt group. The following are work modes: when agents are ready to take ACD calls, when agents are not taking ACD calls but are working on ACD-related tasks, and when agents are not taking ACD calls because they are at lunch or on a coffee break.

ASAI Applications

The following are examples of the types of applications that are possible using ASAI. This is not a complete list, but only examples of possibilities. Two types of applications are described:

- **Desk-top applications** — These are used by individuals in an office. Typically, desk-top applications integrate the personal computer (PC) with the telephone and allow a worker to control the telephone from the PC. Although a PC is not required (a simple data terminal is sufficient), a PC is often used for this type of application.
- **Applications for Call Centers** — These are used by agents talking to customers. Call Center applications handle either incoming or outgoing calls, or both. For example, they route incoming calls to a group of agents, place outgoing calls, or enhance the agent's productivity by delivering a screen pop together with the voice call. This type of application does not require a personal computer (PC) for each agent (a simple data terminal is sufficient).

Screen Pop and Voice/Data Transfer

A Screen Pop and Voice/Data Transfer application can use the calling party number or the called party number (or any other information received with the call) to obtain data needed for display on the agent's data terminal. When an agent conferences or transfers a call to another agent, the application can use the information received to automatically transfer the screen to the receiving agent.

An example of a Screen Pop and Voice/Data Transfer application follows:

1. The application monitors calls arriving at the target Vector Directory Number (VDN) or Automatic Call Distributor (ACD).
2. When a call reaches the monitored ACD hunt group or VDN, Communication Manager informs the adjunct with an event report. Information received from the network with the call (such as Calling Party Number, Dialed Number, User-to-User Information, collected digits, etc.) is also passed to the application in the event report.
3. The application does a database search using this information and collects the data which is displayed to the agent at a later time.
4. When the call is alerting an available agent, Communication Manager sends an event report containing the agent's extension. The application then delivers the assembled data screen to the agent's data terminal.
5. If the agent conferences or transfers the call to another agent, Communication Manager sends an event report indicating the new destination. The application can duplicate or re-create the information and display it at the new destination.

6. When someone disconnects from the call, an event report is sent so that the application can clear its records.

Screen Pop with Call Prompting

The application can use the Call Prompting feature to obtain additional information (for example, account number) from the caller. This information can be used to display the correct screen pop.

An example of a Screen Pop with Call Prompting application follows:

1. The customer administers a vector with a “collect digits” command as part of the Call Prompting feature.
2. The application monitors the Vector Directory Number (VDN).
3. When a call arrives at the monitored VDN, Communication Manager sends an event report containing the digits that have been collected in the “Collect digits” vector command.
4. The application does a database search, based on the digits that were collected and obtains the data to display on the screen.
5. When the call is delivered to an available agent, Communication Manager sends an event report containing the agent’s extension. The application then delivers the assembled data to the screen associated with the agent.

Speech Processing Integration

Speech Processing Integration is possible when a Voice Response Unit (VRU) is used to communicate with the caller. Calls are routed to VRU ports for announcements and the collection of information from the caller. The VRU sends this information to the ASAI application. The ASAI application can use this information to prepare the data screen or to route the call to the appropriate destination.

An example of a Speech Processing Integration application follows:

1. The customer administers the VRU ports as agents [members of an Automatic Call Distributor (ACD) hunt group].
2. The application monitors all incoming calls to the ACD hunt group associated with the VRU ports.
3. The VRU login, logout and change of work modes are done by the ASAI application.
4. When a call arrives at the monitored ACD hunt group, Communication Manager sends event reports to the adjunct. These event reports contain information about the calling number, called number, or other information related to the call.

5. When a call is answered by the VRU, the application uses the VRU's voice processing to communicate with the caller. After listening and responding to the VRU, the caller can choose to talk to an agent (for example, after listening to account balances, the caller could transfer funds).
6. The application transfers the call to the agent or ACD hunt group appropriate for this type of caller.
7. When an available agent is selected, Communication Manager sends an event report containing the agent's extension to the application. The application then delivers the assembled data to the screen associated with the agent. Typically, the VRU sends the information to the adjunct through the Communication Manager server or by using the local area network (LAN).

Incoming Call Management

Monitoring of Automatic Call Distributor (ACD) Call Activity

The Monitoring of ACD Call Activity is an application that uses event reports to follow the calls arriving at Vector Directory Numbers (VDNs), ACD hunt groups, or individual agents. The application may use these event reports to generate ACD reports containing information such as:

- The call distribution by Calling Party and Billing Number for each Dialed Number
- The total number of calls that were handled by each VDN, ACD hunt group, and/or agent
- The total number of calls that were dropped by the caller while in queue (in other words, a record is kept of the Calling Number that disconnected from the queue)
- Total number of ACD, agent-to-agent, agent-to-supervisor, and personal calls that were placed and received by each agent
- The average and maximum time the call stayed in queue
- The average and maximum length of the queue
- The average and maximum time a call was on hold
- The average time that each agent spent on a call
- The total number of calls that interflowed or intraflowed

In addition, reports about each agent's login and logout activity could be generated.

An example of an ACD Call Activity Monitoring application follows:

1. The application monitors the calls arriving at certain ACDs and agents.

2. Communication Manager sends event reports (for example, Call Initiated, Call Alerting, Call Connected, Call Transferred, or Call Dropped) to the application for each call.
3. The event reports allow the application to generate the ACD Call Activity reports that were previously described.

Adjunct Routing

The Adjunct Routing application helps Communication Manager route calls to the proper destination. This is useful when the rules for routing the call are adjunct driven.

An example of an Adjunct Routing application follows:

1. The customer administers a vector with an “adjunct routing” command (part of the Call Vectoring feature).
2. When a call reaches an “adjunct routing” command, Communication Manager sends a message to the adjunct requesting a route for the call. This message includes the Calling Number, the Vector Directory Number (VDN) reached by this call, and any other information available for this call.
3. The application selects the destination (based on the call information that has been passed) and sends a message to Communication Manager with the selected destination. Communication Manager then routes the call as indicated by the application. The destination can be reached by Network Call Redirection when the service is available.
4. Communication Manager informs the application whether the call was successfully sent to the destination. If it was not successfully sent, the reason for the failure is provided.

The Call Prompting feature can also be used to collect additional information from the caller before Communication Manager requests a route from the application. The application can use the collected digits (for example, Sales, Parts, or Service department selection) to select the appropriate destination for the call.

When requesting a route from an application, Communication Manager may do the following:

- Pass User-to-User Information. This type of information is typically received from the network or stored in the call by an ASAI application.
- Inform the adjunct if Flexible Billing is available on an incoming call. This information could be used to route calls.
- Pass Caller Information that has been provided by the network (and collected through a “collect digit” command) to the application.
- Pass Information Identifier Digits (II-Digits) received from the network.

The server can request routing information from multiple applications at the same time. This is useful when two or more adjuncts are used for load balancing or as a backup when

another adjunct is not working. The first adjunct to respond determines the route, the others are ignored. This feature is called Multiple Outstanding Route Requests.

When selecting a route, the application can:

- Request that Dual Tone Multi Frequency (DTMF) digits are collected from the caller. This feature is called “ASAI-Requested Digit Collection.” The digits collected in this manner are passed to the ASAI application within an event report. Vector Processing is not used in this case.
- Pass digits to the server. These digits can then be passed by the server to another application. This feature is called “ASAI-Provided Digits” and is useful when two or more applications need to share information about a call.

Digits collected through ASAI-Requested Digit Collection or passed directly by the application using the ASAI-Provided Digits feature can be used later by vector processing.

Logging for Call Back

The Logging for Call Back application uses the Calling Number and any digits collected using the Call Prompting Feature. This allows the recording of the telephone number for any caller who had disconnected after waiting in queue (before the call was answered by an agent). The application can then call back when there are agents available to speak with the customer.

An example of a logging for Call Back application follows:

1. The application monitors the target Vector Directory Number (VDN) or Automatic Call Distributor (ACD) hunt groups.
2. During periods of increased call activity with many queued calls, the caller receives an announcement with some options: to leave a phone number where the caller can be reached, to simply hang up (if Communication Manager already has the caller's number), or wait in queue.
3. After the caller enters the telephone number for call back, Communication Manager sends the information to the application and disconnects the call.
4. When agents are available, the adjunct can use either a Predictive or a Preview Dialing application to return calls to the disconnected callers.

Automatic Reconfiguring of Agents

The Automatic Reconfiguring of Agents application uses login and logout through the ASAI application. Based on the call activity levels (for example, queue length, time in queue), the application can increase the number of agents available in some Automatic Call Distributor (ACD) hunt groups. This is done by logging out agents from ACD hunt groups that have decreased activity levels and logging those agents into ACD hunt groups with increased activity levels.

An example of an automatic Reconfiguring of Agents follows:

1. The application monitors the target ACD hunt groups.
2. The application tracks the number of calls in queue and the number of available agents for each ACD hunt group.
3. Based on thresholds built into the application (for example, the number of calls in queue), the application logs agents in and out of ACD hunt groups.

Sequence Dialing using ASAI

Sequence dialing can be done by using the “ASAI-Requested Digit Collection” feature. [This is a combination of ASAI and Return Destination for Vector Directory Number (VDN).] In this application, the call is routed by ASAI adjunct routing. The application requests digit collection, and Communication Manager inserts a touch tone detector to collect digits. When the call is routed to a number that is busy (or does not answer), the caller can enter a digit (or digit string), which is passed to the application. The application can interpret this as a request to disconnect the busy party and allow the call to return to vector processing for repeat dialing.

Outgoing Call Management

Preview Dialing

Here is a preview dialing sequence.

1. The agent uses a data terminal to log into the adjunct that runs the outgoing call management application. The application monitors the activity at each agent's telephone.
2. The agent enters information indicating readiness to preview the data (at the data terminal).

3. The adjunct application displays a screen of data to the agent.
4. When the agent enters information, the application uses ASAI to place an outgoing call from the agent's telephone to the number shown on the data screen. There are two ASAI features that can be used here (see later sections on [Third Party Auto Dial](#) and [Third Party Make Call](#)).
5. Communication Manager sends the adjunct event reports about the call until the call disconnects.

Predictive Dialing

Predictive dialing uses special hardware, called a call classifier. The call classifier can detect ringing, voice energy, special tones, and answering machines on outgoing calls. Predictive dialing saves time for the agents because they do not have to listen to busy signals or ringing with no answer. Agents only receive calls that have been answered.

1. An agent uses a data terminal to log into the adjunct that is running the outgoing application.
2. The application (through ASAI) places a call to the destination number. Typically, these numbers come from a calling list maintained for the outgoing telemarketing application. The application usually has a pacing algorithm that dials calls ahead of available agents.
3. When the call classifier detects an answer or an answering machine, Automatic Call Distributor (ACD) software distributes the call to an available agent or queues the call if no agent is available. Communication Manager software can be configured to disconnect calls if an answering machine is detected.
4. Communication Manager provides the application with event reports for calls that reach an ACD. The application also can display related information on the agent's display terminal when the call is given to that agent.

Office Automation -- (Computer Telephony Integration)

Office Automation applications benefit customers by combining the features of the desk-top personal computer (PC) with those of the telephone:

- The customer can view the status of the telephone or call on the PC screen.
- The customer can place calls through the PC, or can transfer or put calls on hold, etc., through the PC.
- The customers can enable Communication Manager features for their telephone (call forward, call coverage, etc.) through the PC.

- The customer is notified when a message is present (through the Message Waiting lamp on the telephone which can be controlled through the PC).

Incoming Call Identification

The Incoming Call Identification (ICI) application displays the calling party name and telephone number on the data terminal. Based on the displayed information, the customer can decide what to do with the call.

An example of an incoming Call Identification application follows:

1. The application monitors the customer's telephone.
2. When an incoming call arrives, Communication Manager sends an event report with the Calling Number.
3. The application searches the database (for example, a corporate directory or a customers' database) of names and telephone numbers, and displays the calling party name and number on the data terminal.
4. Based on the information displayed at the data terminal, the customer or the application can answer the call or request the "Send All Calls" feature from either the data terminal or the telephone. The application can request that the call be sent somewhere else.

Telephone Management and Directory Services

A Telephone Management and Directory Services application allows customers to do the following by using their data terminal [personal computer (PC)]:

- Dial, answer, and control calls at their telephone by using hold, transfer, reconnect, answer, conference, and drop
- Dial a call by using the called party name (instead of the number)
- Create a personal directory list (the customer can define any directory to be used by the application when searching for a telephone number)
- Send calls to the message desk, to coverage, or anywhere else they wish

An example of a Telephone Management and Directory Services application follows:

1. The application monitors the telephone.
2. A customer invokes the telephone management application on the screen and enters the name of the person he or she wants to call.

3. The application searches the customer's personal directory or corporate directory for the telephone number associated with the called name. As soon as a telephone number is found, the application dials the call for the customer.
4. The application receives event reports for the call indicating the status of the call. The application displays the status of the call at the customer's data terminal.
5. The customer can hold, transfer, conference, or drop the call by entering commands at the PC.
6. The customer can send incoming calls to the message desk, coverage, or anywhere else.

Message Desk

A Message Desk application provides customers with dialing and messaging services. These services allow customers to take messages from callers, search for numbers in a directory database, and use on-screen commands to dial, receive, and control calls (for example, hold, transfer). In addition, the Message Desk application can control the state of the message waiting lamp on the telephone to notify customers when there is a message (voice or text) waiting.

An example of a Message Desk application is as follows:

1. The application monitors the group of telephones defined as the message desk (for example: a secretary or another coverage point could be the message desk).
2. When a call is sent to the message desk (by using Send All Calls or call coverage), the application receives an event report containing the original dialed number, the calling party number, the alerting telephone number, and the reason the call was sent to the message desk.
3. The application uses these numbers (calling party, dialed, and alerting) to search and display (on the data terminal of the message desk) the messages left by the originally called party. The called party had used electronic mail to create and send these messages to the message desk application. These messages are delivered to callers by the message desk attendant. If no message was provided, a standard message is given to the caller.
4. Messages left by callers are entered as text by the message desk attendant. The application sends electronic mail to the called person. Each message contains the calling party number. The application then enables the message waiting lamp at the telephone.
5. After the customer has read the messages left at the message desk, the application disables the message waiting lamp at the telephone.
6. If the application provides voice mailboxes, the customer can listen to voice mail messages. This is possible when the application places a call between the customer's

Overview of ASAI

telephone and the customer's voice mailbox. The customer can listen, delete, forward, annotate, skip, or save the voice mail messages.

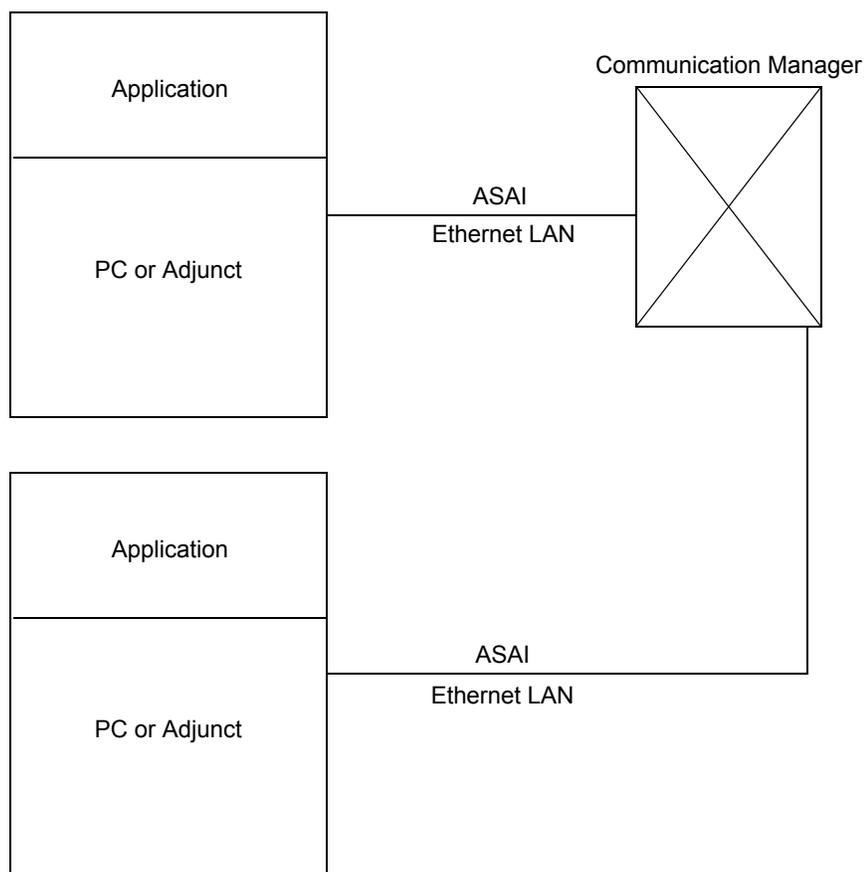
7. The customer can also request to dial a call back to the person that left the message. The application can place the call while the customer continues to read the messages.

Link Configurations

Communication Manager supports up to sixteen Computer Telephony Integration (CTI) links, which use TCP/IP. For more information about link capacities, on a per-platform basis, see Appendix B of *Avaya Communication Manager, ASAI Technical Reference 555-230-220*. Each link can connect to a different adjunct, or all the links can connect to the same adjunct, depending on your business requirements (see Figure 1).

Communications between Communication Manager and adjuncts are enabled by the DEFINITY LAN Gateway (DLG). The DLG can reside on a MAPD, a separate circuit pack, or it can be co-resident with other software on an Avaya server. See Chapter 13 of the *ASAI Technical Reference* for more information about the DLG.

Figure 1. Example: Connectivity of ASAI Links



ASAI Features and Event Reports

ASAI provides the following features to an adjunct:

- Call Control
- Domain Control
- Notification
- Adjunct Routing
- Request Feature
- Value Query
- Set Value
- Maintenance

Call Control Features

The Call Control features allow the adjunct to place a call, monitor a call, and control a call as it moves through Communication Manager. With call control, an adjunct can control any and all parties that are participating in that call. “Control” means that the adjunct can tell Communication Manager what to do with the call (for example, hold, transfer, drop). “Control” also implies Communication Manager sends call event reports to the adjunct. The following are features available with Call Control:

- Third Party Make Call
- Third Party Take Control
- Third Party Selective Hold
- Third Party Reconnect
- Redirect Call
- Third Party Merge
- Third Party Selective Drop
- Third Party Selective Listening
- Third Party Single-Step Conference
- Third Party Relinquish Control
- Third Party Clear Call
- Third Party Send DTMF Signals
- Third Party Call Ended

Third Party Make Call

There are five different ways of making a call using Third Party Make Call:

- **Switch-classified calls** — these are used for predictive dialing. With a switch-classified call, the destination is alerted first. When the destination party answers, the call is transferred to an agent. Calls that are not answered are disconnected. Usually these calls require that a call classifier port be inserted to determine the outcome of the call (answered, busy, no answer, etc.).

Another capability, Global Call Classification supports recognition and classification of progress tones, special information tones, answering machines, and modem tones in most countries. The accuracy of classification varies with the type of tone and method of tone generation.

- **user classified calls** — these are normal calls placed on behalf of a telephone. They are called “user classified” because the user (human being) determines the outcome of the call (by listening to the in-band call progress tones).
- **Phantom Calls** — these can be initiated through ASAI as user-classified calls. The user-classified Third Party Make Calls can only be originated from physical stations but Phantom Calls can be originated either from a station AWOH (Administered Without Hardware) or from a non-ACD Hunt Group made up of AWOH stations.
- **direct agent calls** — these are an Automatic Call Distributor (ACD) type of calls which are intended for a specific agent. These are used when an application selects a specific agent for a call.
- **supervisor assist calls** — these are ACD, priority calls that are placed by an agent to a supervisor to request assistance.

All of the above Third Party Make Call requests contain information about the calling party, called party, and various call options. In addition, the adjunct can include special information (User-to-User Information) that is delivered with the call when it arrives at the destination.

When an adjunct places a third party make call, the events that flow as a result of that call are provided to the adjunct. In addition, that adjunct can control the call and each party in the call.

Third Party Take Control

This is a feature that allows an adjunct to control a call (or all parties in a call) even though it did not place the call through a third party make call. The adjunct must have known about the call through some other event report. Only one adjunct (through one link) can control a call at any given time.

Third Party Selective Hold

This feature allows an adjunct to put a party on the call on hold (just as if the HOLD button was used at the telephone). This feature is also used when holding a call that is to be conferenced or transferred.

Third Party Reconnect

This feature allows an adjunct to restore the connection for a held party and allow the party to be reconnected to others on the call.

Redirect Call

This feature allows an adjunct to take a call that is alerting at a telephone and redirect it to another destination. The alternate destination can be locally or remotely connected to Communication Manager. Redirecting is useful when the adjunct needs to keep track of un-answered calls so that it knows where to send these calls.

Third Party Merge

This feature is used to combine two calls that exist at a telephone in order to create a conference or accomplish a transfer. One of the calls must be in the held state, while the other is in the active state at the controlling party's telephone. With the "conference" option, this feature combines two calls and places all the parties in the conferenced call. With the "transfer" option, this feature combines the two calls, but disconnects the controlling party from the call.

Third Party Selective Drop

This feature allows an adjunct to drop (or disconnect) a selected party from a call. This can be a telephone or a trunk connected in a call.

Third Party Selective Listening

This feature allows the adjunct to temporarily disconnect a specific party from listening to other parties on the call. Using this feature, it is also possible to reconnect a specific party back to the original state, so that this party can listen to other parties in the call.

Third Party Single-Step Conference

This feature allows applications to add a telephone (or a similar device) into an existing call. This can be a recording device, or an announcement. It can also be a telephone administered with or without hardware. This is done with a single ASAI request, without the need for placing a call on hold or initiating a new call. Third Party Single-Step Conference can be used to transfer or conference a call even if the call has only trunks connected. This is done by first adding a station (with or without hardware) to the call. Then the call can be conferenced or transferred on behalf of that station using (Third Party Hold, Third Party Make Call, then Third Party Merge).

Third Party Relinquish Control

Once an adjunct no longer wants to control a call or receive call event reports, this feature can be requested to relinquish such control. After requesting this feature, no more event reports about the call are sent to the adjunct.

Third Party Clear Call

An adjunct uses this feature to immediately disconnect all parties from a controlled call.

Third Party Send DTMF Signals

This feature is used by an adjunct to provide Dual Tone Multi Frequency (DTMF) digits for transmission to all parties in a call.

Third Party Call Ended

This feature is used by Communication Manager to inform the adjunct that a call has ended (all parties have disconnected).

Domain Control Features

This feature allows the adjunct to place, monitor, and control all calls at a specific telephone. Domain control is similar to Call Control, except that the adjunct can only manipulate calls at a single telephone (the one that is domain controlled). The following are services available with Domain Control:

- Third Party Domain Control Request
 - for telephone extension
 - for Automatic Call Distributor (ACD) hunt group extension
- Third Party Answer
- Third Party Auto Dial
- Third Party Selective Hold
- Third Party Reconnect
- Redirect Call
- Third Party Merge
- Third Party Selective Drop
- Third Party Relinquish Control
- Third Party Send Dual Tone Multi Frequency (DTMF) Signals
- Third Party Single-Step Conference
- Third Party Domain Control Ended

Third Party Domain Control Request

The adjunct uses this to start monitoring and controlling a domain. In this case, “domain” refers to either a telephone extension or an Automatic Call Distributor (ACD) hunt group extension. If used with a telephone extension, this allows the adjunct to receive event reports about any of the calls arriving at that telephone extension. In addition, the adjunct can control these calls.

If used with an ACD hunt group extension, the monitoring results in events related to the agent's logging into and logging out from the domain controlled ACD hunt group.

Note:

The following features are available with both Call Control and with Domain Control: Third Party Hold, Third Party Reconnect, Redirect Call, Third Party Merge, Third Party Selective Drop, Third Party Send DTMF Signals, and Third Party Single-Step Conference. See the descriptions in the previous Call Control section. However, remember that domain control features are only applicable to the telephone that is domain controlled. In addition, the next list of features are only available with Domain Control:

Third Party Answer

When a call is alerting at an extension that is domain controlled, the adjunct can use this feature to answer the call. This assumes that the telephone has a speakerphone and that it can be taken off hook to answer.

Third Party Auto Dial

This is similar to Third Party Make Call. Unlike a Third Party Make Call, which can be dialed on behalf of any party, Third Party Auto Dial can only be done from the telephone extension that is domain controlled.

Third Party Relinquish Control

Once the adjunct no longer wants to receive events about any (and all) calls at a specific telephone extension, it can use this feature to relinquish its control.

Third Party Domain Control Ended

This feature is used by Communication Manager to notify the adjunct that the domain controlled association has ended. Usually, the association is ended because the telephone has been removed or changed from the domain-controlled state.

Event Notification

The Event Notification feature allows the adjunct to request events for certain calls from Communication Manager. Calls entering the domain for which notification was requested [Vector Directory Number (VDN), Automatic Call Distributor (ACD)] cause event reports to be sent to the adjunct. With notification, the adjunct can only observe a call, but can not control it. The following are features available with Notification:

- Event Notification Request
- Event Notification Cancel
- Stop Call Notification
- Event Notification Ended

Event Notification Request

The adjunct uses Event Notification Request to request event reports for calls entering domains of Vector Directory Numbers (VDNs) and Automatic Call Distributor (ACD) hunt groups. Calls entering these types of domains generate event reports that allow the adjunct to follow the call as it is processed or transferred.

The adjunct requests Event Notification on all trunk groups (a single Event Notification Request) to request that ISDN Advice of Charge information be sent to the adjunct. This feature allows the adjunct to keep a meter running for the cost of each active, outgoing call. Charge information about the call is returned to Communication Manager in the form of message units that are sent during the call or at the end of the call as a total count of charges to the call. This feature is supported in Australia, France, Germany, Italy, and Spain as well as other European countries.

Event Notification Cancel

The adjunct uses Event Notification Cancel when it no longer needs to receive event reports for any of the calls entering the notification domain.

Stop Call Notification

The adjunct uses Stop Call Notification when it no longer needs to receive event reports for a specific call.

Event Notification Ended

The adjunct uses Event Notification Ended to inform the adjunct that notification has ended for a particular domain (usually because of Communication Manager administration changes).

Adjunct Routing

Communication Manager uses this feature to request and receive routing instructions for a call. These instructions, issued by the adjunct, are based on information received about the call. A sequence of three messages is included in adjunct routing:

- Route Request
- Route Select
- Route End

Route Request

This is a message sent by Communication Manager to the adjunct when it must obtain a route for a call. A Route Request provides any available information about the incoming call, such as: Calling Party Number, Called Party Number, caller-entered digits, User-to-User Information (UUI), Information Identifier Digits (II-Digits), and Flexible Billing information.

Route Select

The adjunct uses the information received in the Route Request to select the destination for the call, and then provides a response to Communication Manager in the Route Select. While providing the new destination for the call, the adjunct can insert up to 24 digits which can be stored with the call as dial-ahead digits. UUI can also be attached to a call through the Route Select message.

Route End

This message is used to end the route dialog. It is normally sent by Communication Manager after the Route Select message was processed and the call was routed.

However, it can also be sent by the adjunct to end routing (for example when a valid destination can not be located).

Request Feature

The adjunct uses Request Feature to request or cancel Communication Manager features such as Agent Login, Work Mode Changes, Call Forwarding, Send All Calls. These are a subset of features that are available on Communication Manager and can be used when Feature Access Codes are dialed from the telephone. There is only one message for Request Feature. The following features are supported:

- Agent Login
- Agent Logout
- Change Agent Work Modes
- Call Forwarding
- Send All Calls

Agent Login

This feature allows the adjunct to log an agent into an Automatic Call Distributor (ACD) hunt group or skill and to specify an initial work mode.

Agent Logout

This feature allows the adjunct to log an agent out from an Automatic Call Distributor (ACD) hunt group or skill.

Change Agent Work Mode

This feature allows the adjunct to request a change in the agent's work mode for an Automatic Call Distributor (ACD) hunt group or skill.

Call Forwarding

This feature allows the adjunct to request that Call Forwarding be enabled for a telephone; all calls that arrive at the telephone will be forwarded to a specified destination.

Send All Calls

This feature allows the adjunct to request that currently alerting calls and subsequent calls arriving at the telephone be sent to coverage.

Value Query

This feature allows the adjunct to query for information about Communication Manager resources; for example, number of agents logged in, the trunks being used, the call classifiers being used, etc. Communication Manager provides information based on the request. The following are features available with Value Query:

- Automatic Call Distributor (ACD) Agent Login Query
- ACD Agent Status Query
- ACD Hunt Group Status Query
- Call Classifier Status Query
- Call Information Query
- Date/Time Query
- Extension Type Query
- Integrated Directory Database Query
- Party Identification (ID) Query
- Station Feature Query
 - Call Forwarding
 - Message Waiting Lamp
 - Send All Calls
- Station Status Query
- Trunk Group Status Query
- UCID (Universal Call ID) Query

ACD Agent Login Query

This query responds with the physical extension for each agent logged into the ACD Hunt Group.

ACD Agent Status Query

This query responds with the work mode and the state (idle or busy) of an agent.

ACD Hunt Group Status Query

This query responds with the number of ACD agents that are available to receive calls, the number of calls that are in queue, and the number of agents that are logged in.

Call Classifier Status Query

This query responds with the number of ports that can be used for call classification. Ports that are idle as well as those currently in use are provided in the message.

Call Information Query

This query responds with a list of calls present at a telephone.

Date and Time Query

This query responds with the year, month, day, hour, minute, and second.

Extension Query

This query responds with information about the type of extension.

Integrated Database Query

When the extension number is provided, Communication Manager responds with the name administered in Communication Manager for that number.

Party ID Query

This query responds with a list of identifiers for the endpoints on the call.

Station Feature Query

Call Forwarding - This query indicates whether this feature is enabled or disabled at a telephone. If the feature is enabled, the telephone number used to answer forwarded calls is also provided.

Message Waiting Lamp - This query responds with the status of the Message Waiting Lamp (enabled or disabled) for ASAI, Property Management, Message Center, Voice Messaging, and Leave Word Calling.

Send All Calls - This query indicates if this feature is enabled or disabled at a telephone.

Station Status Query

This query indicates the state (idle or busy) for a telephone.

Trunk Group Status Query

This query responds with the number of trunks in a trunk group. Trunks that are idle as well as trunks that are currently in use are provided in the message.

UCID Query

This query responds with the Universal Call ID assigned to the call by Communication Manager. Each call is assigned a unique call id.

Set Value

This feature allows the adjunct to set specific values in Communication Manager for the following items:

- Message Waiting Lamp
- Billing Rate

Message Waiting Lamp

This feature allows the adjunct to turn the message waiting lamp *on* or *off* at a telephone.

Billing Rate

This feature allows the adjunct to set (or to change) the billing rate of a 900-type call that is received over an Integrated Services Digital Network-Primary Rate Interface (ISDN-PRI) trunk.

Maintenance

The Maintenance feature allows Communication Manager and the adjunct to communicate about the status of the end-to-end connection. The following are features available with Maintenance:

- Heartbeat
- Suspend Alarms
- Resume Alarms
- Restart

Heartbeat

This feature allows either Communication Manager or the adjunct to verify that the other end is functional and that the ASAI link is working.

Suspend Alarms

This feature allows the adjunct to turn off alarms raised on the ASAI link. It can be used before using routine maintenance procedures, or before removing the ASAI link from service.

Resume Alarms

This feature allows the adjunct to turn on alarms raised on the ASAI link.

Restart

This feature allows the adjunct or Communication Manager to start an application from the beginning. All data structures and resources that are associated with the link are cleared, both at the sending and receiving end. The restart message allows the adjunct to negotiate a link version number with Communication Manager. Currently, three link version numbers are supported.

Event Reports

Event Reports are one-way messages sent by Communication Manager to the adjunct. Event reports inform the adjunct about the state of the call or agent. They are provided when the following features are active:

- Call Control Group
- Domain Control Group
 - Telephone
 - Automatic Call Distributor (ACD) Hunt Group
- Notification Group

The adjunct does not respond to event reports.

Call Control Event Reports

Call control event reports are provided when an application monitors or controls a call. The following reports are available for controlled calls:

- Alerting
- Answered
- Busy/Unavailable
- Call Conferenced
- Call Transferred
- Connected
- Cut-Through
- Disconnect/Drop
- Entered Digits
- Hold
- Queued
- Reconnected
- Reorder/Denial
- Trunk Seized

Domain Event Reports for the Telephone

Domain event reports are provided when an application monitors or controls a telephone. The following reports are available for telephones:

- Alerting
- Answered
- Busy/Unavailable
- Call Conferenced
- Call Initiated
- Call Originated
- Call Redirected
- Call Transferred
- Connected
- Cut-Through
- Disconnect/Drop
- Hold
- Queued
- Reconnected
- Reorder/Denial
- Trunk Seized

Domain Control Event Reports for Automatic Call Distributor (ACD) Hunt Group

These events are sent by Communication Manager to an adjunct when the application monitors an ACD hunt group. Agent activity (login and logout) is reported as “agent login” or “agent logout” event reports. Currently, a change in the agent’s work mode is not reported. These “agent” reports are not related to call activity.

- Login
- Logout

Notification Event Reports

These event reports are sent by Communication Manager to the adjunct for calls that use telephones that are assigned to Vector Directory Numbers (VDNs) or Automatic Call Distributor (ACD) hunt groups:

- Alerting
- Busy/Unavailable
- Call Conferenced
- Call Ended
- Call Offered to Domain
- Call Redirected
- Call Transferred
- Connected
- Cut-Through
- Disconnect/Drop
- Entered Digits
- Hold
- Queued
- Reconnected
- Reorder/Denial
- Trunk Seized

Descriptions of Event Reports

Each event report is presented in alphabetical order in the following list. See the *Avaya Communication Manager, ASAI Technical Reference* for additional information about each report. The *Avaya Communication Manager, ASAI Protocol Reference*, 555-230-221, provides information about how to encode each message.

Alerting - This event report is generally provided when a call arrives and is alerting at a telephone.

Answered - This event report is only provided for predictive dialing calls, when Communication Manager has detected that someone has answered the call.

Busy or Unavailable - This event report is provided when a call placed (or monitored) through an ASAI link has reached a busy destination.

Call Conferenced - This event report is provided when two calls (one held, the other active) have been merged together to form a conference.

Call Ended - This event report is provided when the last party has disconnected from the call and the entire call record has been cleared (no other parties remain on the call).

Call Initiated - This event report is provided when a telephone is taken off hook and dial tone is provided.

Call Offered to Domain - This event report is provided when a call enters a monitored domain such as a Vector Directory Number (VDN) or an Automatic Call Distributor (ACD) hunt group.

Call Originated - This event report is provided when an internal caller has completed dialing all the digits for a call.

Call Redirected - This event report is provided when a call is removed from a telephone because the call has been redirected (using call coverage, redirection, etc.), but not because it has been disconnected.

Call Transferred - This event report is provided when two calls are merged and the user is disconnected as a result of the transfer.

Connected - This event report is provided when a call has been answered and Communication Manager has knowledge of the answered call. It is also provided when a telephone is Single-Step Conferenced into a call.

Cut-Through - This event report is provided for Integrated Services Digital Network (ISDN) trunks when the call goes from an ISDN trunk to a non-ISDN trunk.

Disconnect/Drop - This event report is provided when a party disconnects (drops) from a call.

Entered Digits - This event report is provided when Communication Manager has collected a specified number of digits as a result of the ASAI-Requested Digits option of Adjunct Routing.

Hold - This event report is provided when a party puts a call on hold.

Login - This event report is provided when an agent logs into an Automatic Call Distributor (ACD) hunt group.

Overview of ASAI

Logout - This event report is provided when an agent logs out of an Automatic Call Distributor (ACD) hunt group.

Queued - This event report is provided when a call has entered an Automatic Call Distributor (ACD) queue.

Reconnected - This event report is provided when a party reconnects from a held state.

Reorder/Denial - This event report is provided when a call is placed to an incorrect telephone number.

Trunk Seized - This event reported is provided for non-Integrated Services Digital Network (ISDN) trunks for outgoing calls as the equivalent of "trunk off hook."

ASAI Links

ASAI Link Versions

Currently, four versions of ASAI are supported in Communication Manager. Each version supports all the features for the previous version plus extra ones specific to that version. Using versions is useful when an older release of Communication Manager must communicate with a newer adjunct or vice versa. The version used by Communication Manager (server) and the adjunct (computer) is negotiated when the link is brought up. A “handshake” takes place between Communication Manager and the adjunct, in which the two agree on the version that should be used. This is typically the most recent version supported by both Communication Manager and the adjunct.

ASAI Link Administration

Beginning in R11, each link is administered with the **add cti-link** command from a system access terminal (SAT). Link capacities, on a per-platform basis, are provided in Appendix B of the *Avaya Communication Manager, ASAI Technical Reference*, 555-230-220.

Planning for ASAI Applications

This section describes the considerations, decision points, and planning tasks required to implement an ASAI application. It is provided as a general guide for the person planning and coordinating the implementation of ASAI. The first step in planning an ASAI configuration is to define the application. You and your Avaya representative must be able to describe the business needs addressed by the application and provide in words or diagrams a general description of the application. You should consider each part of your current operation and how it can be improved. Examples of improvements in operations are shown in the following table.

Proposed ASAI Improvements (Example)

Operation	Proposed Change with ASAI
Credit Verification	Use Calling Party Number/Billing Number (CPN/BN) to automatically search for accounts.
New Accounts	Save CPN/BN to analyze advertising effectiveness.
Credit Extension	Use Dialed Number Identification Service (DNIS) to allow agents to handle both credit extension and verification calls.
Voice Response	Use DNIS to automatically invoke a voice script, thereby saving Voice Response Unit (VRU) ports. Use CPN/BN to verify caller identification.
Collections	Use past due records of 90 days to call customers automatically when there are fewer incoming calls.
Customer Service	Have User to User Information (UUI) pass customer information to an Automatic Call Distributor (ACD) or another Communication Manager that has less load to handle.
Priority Routing	Based on Information Identifier Digits (II-Digits) and possibly CPN/BN. Route calls that arrive from special places to the appropriate agent.

Once you have selected areas for improvement, identify the impact these changes will have on current operations. Agents and personnel involved in current operations may need additional training as a result of the impact of ASAI.

Your Avaya representative can work with you to define ASAI components needed for your application. The computing platform, application provider and configuration must next be selected. If you do not have a preferred computer platform or software provider, your Avaya representative can provide additional options.

A Project Coordinator is then selected to prepare the master plan for the design, implementation, maintenance, and monitoring of all products involved in your application. Avaya also offers (under a separate contact) a service for planning and installation of ASAI applications.

Next, a detailed configuration is prepared. The Project Manager verifies that the detailed configuration can be supported by all the proposed components. Avaya provides consultation services for ASAI applications.

The ordering of components takes place next. At this point, you should consider purchasing one of the Avaya service offerings as part of the ongoing maintenance of your ASAI application. This is particularly recommended if you plan on using multiple software applications, multiple ASAI links, if you plan to integrate your application with Voice Response Units (VRUs) or other network features.

The ASAI application should be installed and tested before putting the ASAI application in service. It is recommended that the ASAI application be put into service gradually so that the features can be tested on a limited basis.

Maintenance Support Services are available from Avaya on an on-going basis.

ASAI System Capacities

See the Appendix B of the *Avaya Communication Manager, ASAI Technical Reference* (which is included on the ASAI documentation CD-ROM) for ASAI-specific system capacities. For the most comprehensive information, see *System Capacities Table for Avaya Communication Manager on Avaya Media Servers* 555-245-601. To get the latest copies of the System Capacities document and other Avaya documents, see [How to obtain Avaya documents on the Web](#) on page 12.

Hardware Requirements

The ASAI CTI link may require the following hardware components:

- An Ethernet interface for connectivity to adjuncts. The platform configuration determines the Ethernet interface.
- Packet Controller Circuit Card (for internal communications)
- Packet Maintenance Circuit Pack

Check that your server has the previously described components. If installation of any of the previously described components is required, see the maintenance manual for your server platform (for example, DEFINITY Server Si or Avaya S8700 Media Server).

For more information, see Chapter 14 of the *Avaya Communication Manager, Release 2.0, ASAI Technical Reference* (555-230-220).

Software Requirements

In addition to the ASAI and the Communication Manager basic software, the following software might be needed for your specific ASAI installation. For more information, refer to the documents listed in [Additional Avaya Product Documentation](#) on page 32.

- Automatic Call Distribution (ACD) Software -- for ACD configurations
- Automatic Route Selection (ARS) Software -- for ISDN-PRI call routing
- ISDN-PRI Software -- for ISDN-PRI trunks
- Vectoring Basic Software -- for call vectoring applications and ASAI adjunct routing
- Vectoring Prompting Software -- for integrated call prompting applications
- Vectoring (ANI II Digits Routing)
- Vectoring (G3V4 enhanced)
- Vectoring (G3V4 advanced routing)

- EAS Agent Skills

For ASAI software options information, see Chapter 14 of the *Avaya Communication Manager, Release 2.0, ASAI Technical Reference (555-230-220)*.

ASAI Administration

In addition to administering the ASAI link, other administration could be necessary for some Communication Manager features. This additional administration depends on the specific application. For example, Call Vectoring must be administered as an option before using the Adjunct Routing feature.

For more information, see Chapter 14 of the *Avaya Communication Manager, Release 2.0, ASAI Technical Reference (555-230-220)*.

ASAI Link Testing

Test the ASAI link by using standard Communication Manager commands; for example, **status bri-port** or **status dlq cti-link** and **status dlq interface** can be used.

Service Offerings

Avaya offers three types of installation and maintenance services as described below.

Basic Installation

Specialized and experienced people are available to ensure that ASAI is correctly installed, administered, connected to the adjunct, and tested.

Consultation Services

Technical expertise is available to help you with the following activities:

- identify the project objectives
- identify the call center applications
- identify the call examples and review them with the application vendor
- finalize and document the call examples
- integrate the call flows with Communication Manager configuration
- develop the Busy Hour Call Completion specifications and the ASAI link capacity
- develop and configure Communication Manager configuration
- finalize and document the ASAI application
- provide recommendations about the best way to achieve a business goal through the use of ASAI

Single Point of Contact

Avaya can serve as your single point of contact during the installation and implementation of all components of an ASAI application. In addition, Avaya can act as your agent in solving problems after your application is placed in service.

CVLAN

CVLAN is a client/server implementation of the CallVisor API, and is considered as the successor to the CallVisor PC product. CVLAN software consists of a client component and a server component.

- The CVLAN server provides LAN connectivity to remote workstations that require access to the CallVisor PC API. CVLAN provides LAN connectivity to both UNIX based applications and Windows-based applications. CVLAN is available for the following systems:
 - Windows NT, 4.0 or higher
 - Windows 2000
 - Windows XP
- The CVLAN client can be installed on a server or on a client workstation. It provides clients with access to the switch via the CVLAN server. Avaya provides CVLAN client packages for the following platforms:
 - UnixWare
 - Solaris x86
 - Solaris Sparc
 - Windows NT 4.0, or higher
 - Windows 2000
 - Windows XP
 - IBM Advanced Interactive Executive (AIX)

For more information about CVLAN, see the *Avaya Computer Telephony CVLAN Programmer's Reference* (on the Avaya Computer Telephony CD-ROM).

Avaya Computer Telephony

Avaya Computer Telephony provides a standard Telephony Services API (TSAPI) interface for writing applications. It is compatible with European Computer Manufacturers Association (ECMA) standards, and it works in a client-server environment. In addition, the Avaya Computer Telephony software can be configured to interface with servers other than Communication Manager. A JTAPI interface is also available.

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