Planning and Designing an IP Contact Center (IPCC) Deployment

Session VVT-240

Agenda

- Multi-Channel Contact Center Challenges
- The Cisco IP Contact Center (IPCC) Solution
- IPCC Sample Single Site Call Flow
- IPCC Configuration Concepts
- IPCC Deployment Scenarios/Design Considerations
- IPCC Feature Review
Multi-Channel Contact Center Challenges

Multiple Contact Channels
Cisco IP Contact Center Solution

What Is Cisco’s IP Contact Center (IPCC)?

Cisco’s IPCC is a Solution

Traditional ACD

Services Plane
Call Control Plane
Connection Control

Application Layer (ICM, IPIVR)
Open/Standard Interface

Call Control (CallManager)
Open/Standard Interface

IP Infrastructure (Switches, Phones & VG's)
CallManager

- Provides PBX functionality
- Manages phones, gateways, and IP-IVR

Intelligent Contact Manager (ICM)

- Agent State Management
- Agent Selection and Reservation
- Multi-Channel Contact Routing and Queuing
- Real Time and Historical Reporting
- Communicates to Telephony Infrastructure via JTAPI Link
IPCC IVR Integration

- Done via IVR Service Control Interface to ICM
- Supports
  - Premises IP based IVRs
  - Premises TDM based IVRs
  - Network IP based IVRs
  - Network TDM based IVRs

IP Interactive Voice Response (IVR)

**Provides robust call treatment to callers**

- Prompts for route options: “For new orders press 1. For status on an existing order press 2.”
- Prompts for caller data: “Please enter your account number.”
- Static Queue Announcements: “All of our agents are currently busy, please hold” followed by elevator music.
- Dynamic Queue Announcements: “There are 12 calls in queue. Your expected wait time is 2 minutes.”
- Customer Specific Queue Announcements: “We are currently offering a special.....”
- Announcement combinations controlled through ICM script
IPCC Agent Desktop

- Agent State Controls
- Call Controls
- Screen Pop/CRM Integration
- Agent/Skill Group Statistics
- Media Termination Softphone
- Emergency Assist Control
- Agent/Supervisor Chat

IPCC Supervisor Desktop

- Same Functions as Agent
  - Barge-in/Intercept
  - Chat with agent/team
  - Initiate Call Recording
  - Emergency Assist Notice
  - Real-Time Agent Status Display
  - Agent State Change/Logout
IPCC Turnkey CTI Agent Desktop

- Minimal Screen Space
- Keystroke Macros Launch Desktop Apps.
- Quick Installation
- Easy Modifications

IPCC Turnkey CTI Supervisor Desktop

- Supervisor selects agent to be monitored
- Audio sent to Supervisor’s PC speakers
Multi-Channel Contact Routing

Multi-Channel Contact Reporting
Redundancy

Sample Single Site Call Flow
Sample Single Site IPCC Call Flow

Sample Single Site IPCC Call Flow
Sample Single Site IPCC Call Flow

1. Call delivered from PSTN to Voice Gateway
2. MGCP or H.323 Route Request sent to CallManager(CM)
3. JTAPI Route Request sent to ICM Central Controller
4. ICM CC runs routing script—no avail agent found—IP-IVR label returned from routing script
5. ICM CC instructs CM to transfer call to IP-IVR and CM does as instructed
6. IP-IVR notifies ICM CC call has arrived
7. ICM CC instructs IP-IVR to play queue announcements
8. Agent becomes avail
9. ICM CC sends call data to selected agent screen and instructs IP-IVR to transfer the call to the agent phone
10. IP-IVR transfers the VoIP voice path to selected agent phone
11. Call is answered by agent

IPCC Configuration Concepts
IPCC Software Requirements

• All ICM software components currently run on Window NT Server 4 SP 6
  Windows 2000 Server in certification
• CM and IP-IVR currently run on Windows 2000 Server
• All ICM software components can run on one server (two if redundancy required) or be separated onto multiple servers
  Based upon Busy Hour Call Attempts (BHCA)

IPCC Configuration Concepts
Peripheral Gateways

• 2 PG’s (Peripheral Gateways) per server
• Multiple PIMs (Peripheral Interface Managers) per PG
  IVR PIM and one other PIM type can be mixed on same PG
  Other PIM types can’t be mixed on same PG
• One CTI Server per PG
• Each PIM has a unique peripheral ID
• Each PIM is configured as a routing client
• One PIM per CallManager 3.1 Cluster
• One PIM per IP-IVR
• Each PIM process listens on a unique IP socket/port
Peripheral Gateway Server Example

ICM Central Controller

PG 1
- OPC
- CTI Server
- CM PIM
- ICM PIM
- IVR PIM

PG 2
- OPC
- CTI Server
- ACD PIM
- IVR PIM

ICM Peripheral Gateway Terminology

- OPC—Open Peripheral Controller
  Central Process of PG

- PG Agent
  Process of PG which communicates to ICM CC
CM JTAPI User

Add a New User

CM JTAPI User Device Assignment
ICM Device Target Configuration

IPCC Configuration Concepts

Labels

- Each device target/routing client combination must have a label

  For example, an agent desktop in an environment with a 3 member CM cluster and 2 IPIVRs would need 3 labels configured

    One for the CM Cluster PIM and 1 for each of the IPIVRs

  Allows different dialing patterns to be used to reach a specific target

  For example, if this same environment included a carrier network routing client, then another label would be used. However as opposed to addressing this device by a 4 digit extension, the full PSTN phone number would be used
ICM Label Configuration

ICM Label Configuration (Cont.)
IPCC Configuration Concepts
Agent Desk Settings

- Agent profile which specifies
  - Auto-answer
  - Ring No Answer Timeout
  - Ring No Answer Dialed Number
  - Calling Privileges
  - Requirement for Logout/Idle Reasons
  - Requirement for Wrap-up Mode

ICM Agent Desk Settings Configuration
IPCC Configuration Concepts
Skill Groups/Agents

- Skill Groups
  Associated with a specific PIM

- Agents
  Associated with a specific PIM
  Assigned a peripheral number (login id)
  Associated with a desk settings profile
  Associated with one or more skill groups

ICM Agent Configuration
IPCC Configuration Concepts
Agent Desktop

- Desktop cticonfig.ini specifies
  IP Address of CTI Server
  CTI Server socket
  Peripheral ID

- Agent login
  Requires agent-id, password, and phone extension

- Associated with a specific device target/phone
  Based on extension supplied at login

- Agent ID, desktop IP address, and device target/phone extension associated at agent login
  Association released upon agent logout

IPCC Agent Desktop

Screen Pop/Call Data
Agent State Controls
Agent Statistics
Skill Group Statistics
Call Controls
IPCC Configuration Concepts

Dialed Number Plan

• Configured per PIM/routing client
• Used during make call, transfer, or conferences requests
• Matching dialed number specifies
  Whether post-route is required
  Dial number plan type to be checked against agent calling privileges in desk settings
ICM Dialed Number Plan Configuration

IPCC Configuration Concepts

VRU Scripts

• Specifies a discrete VRU action
  Play announcement, collect digits,…

• Invoked by “Run VRU Script” node from ICM Script Editor

• Interruptible to allow ICM to request IVR transfer when agent becomes available

• Supports sending/receiving of call data to/from ICM
ICM VRU Script Configuration

ICM Dialed Number Configuration
CM CTI Route Point Configuration

CTI Route Point Configuration

IPCC Deployment Scenarios/Design Considerations
De-Centralized Call Processing
IN Pre-Routing, Single NIVR Q-point, IN Transfers

Centralized Call Processing
IN Pre-Routing, Single NIVR Q-point, IN Transfers
De-Centralized Call Processing
NIVR Pre-Routing, Single NIVR Q-Point, NIVR Transfers

Centralized Call Processing
NIVR Pre-Routing, Single NIVR Q-Point, NIVR Transfers
De-Centralized Call Processing
Pre-Routing, Multiple IP-IVR Q-Points, PSTN Transfers

Centralized Call Processing
Pre-Routing, Multiple IP-IVR Q-Points, PSTN Transfers
De-Centralized Call Processing
Pre-Routing, Multiple IP-IVR Q-Points, VoIP WAN Transfers

Centralized Call Processing
Single VG Location, Single IP-IVR Q-point, VoIP WAN Transfers
De-Centralized Call Processing
Single VG Location, Single IP-IVR Q-Point, VoIP WAN Transfers

Centralized Call Processing
Single VG Location, Single IP-IVR Q-Point, VoIP WAN Transfers, SOHO
Legacy IVR Integration
Behind the VoIP PBX

Legacy IVR Integration
Combined with NIVR Q-point via IN Transfers
Legacy ACD Integration
Multi-Site Pre-Routing

Legacy ACD Integration
Behind the PBX Deployment
Web Contact Integration
Text Chat, Web Callback, Web Collaboration

E-mail Integration
Cisco E-mail Manager (CeM)
Cisco IP Contact Center
Multi-Site, Multi-Channel, Legacy Equipment Integration

IPCC Feature Review
Phase I IPCC Features

Customer Interaction Features
- Automated Attendant (menu prompting)
- Caller Entered Digits (account if s,...)
- Announcements Based on Real-Time Conditions
- Announcements Based on Caller Origin
- Visible Queuing (Position/Expected Delay)

Routing Features
- Call by Call Routing
- Skills Based Routing
- TOD/DOW Routing
- Application Based Routing
- ANI/DNIS/DN/CED Routing
- Call Re-Routing based on Wait Time
- Conditional Routing
- Database/Profile Routing
- Dynamic Load Balancing/Network Interflow
- Look Ahead Queuing
- Priority Queuing

Agent Features
- Agent Statistics on Agent Desktop
- Log In/Log Out/Ready/Not Ready
- Wrap Up State/Wrap-up Information
- Auto Answer/Wrap-up
- Easily Customized Agent Desktop
- Hot Deskling
- Screen Pop (ANI, CID, DNIS, CED, call data)
- Transfer/Conference
- DHCP Support for Agent Desktops
- Option for integrated media termination (softphone)

Reporting Features
- GUI Based/Centralized Reporting
- Historical & Real-Time Reporting
- Standard & Customizable Report Templates
- Web Based Report Generation & Viewing
- Tabular and Graphical Reporting Views
- Call Detail/Type Reporting
- Skill Group and Service Reporting
- Thresholds/Drill Down Reports
- Scheduled Printing
- Data Export in Numerous Formats

Phase II IPCC Features

Supervisor Desktop Features
- Silent Monitor
- Barge-In/Intercept
- Whisper/Coaching
- Agent Help Request
- Agent Change State/Logout
- Data Monitoring

Other Features
- Improved Call Logging/Recording
- Improved Fault Tolerance
- Call Re-Routing Based on Non-Answer without loss of call data
- Improved Reporting/Routing Controls
- Zip/Warn Tone on Call Arrival
- Supervisor/Agent to Agent Chat
- Music on Hold
- Media Termination Softphone
Phase III IPCC Features

• Multi-Channel Contact Solutions Integration
  Collaborative Browsing
  Web Call-back/Text Chat
  E-mail Management/Distribution
  Multi-Channel Enabled Agents
  Universal Multi-Channel Contact Routing/Queuing
  Interruptible/Non-interruptible Channel Types
  Configurable per Agent
  Integrated Multi-Channel Contact Reporting

Future IPCC Features under Consideration

• Preview/Predictive Outbound Dialing
• Trunk Group Reporting
• Integrated Voicemail/Faxmail Routing
• Virtual Queuing/Scheduled Call-back
• Video Integration
Business Benefits of Cisco IPCC

- Enhances customer service
- Reduces operating costs
- Provides single set of business rules
- Offers multi-media blended agents
- Preserves the value of existing technology investments

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