

## Contents

<b>CHAPTER 1. INTRODUCING CUPS.....</b>	<b>1</b>
PRESENCE OVERVIEW .....	1
<i>What is Presence?</i> .....	1
CUCM (BLF) vs. CUPS.....	1
CUPS FEATURES .....	3
<i>Instant Message</i> .....	4
<i>Presence - Reachability</i> .....	4
<i>Presence – Phone</i> .....	4
<i>Presence – Calendar</i> .....	5
<i>Presence - Combination</i> .....	5
<i>Phone – Desk Phone</i> .....	6
<i>Phone – Soft Phone</i> .....	7
<i>Video Call</i> .....	7
<i>Voicemail</i> .....	8
<i>Web Conferencing</i> .....	8
<i>LDAP Integration</i> .....	8
<i>IP Phone Messenger</i> .....	8
<i>Application Plug-ins</i> .....	9
<i>OCS/LCS integration</i> .....	9
MAJOR CUPS COMPONENTS.....	9
<i>Sync Agent</i> .....	10
<i>SIP Proxy</i> .....	10
<i>Presence Engine</i> .....	11
HOW THINGS WORK.....	11
<i>Instant Message</i> .....	11
<i>Presence – Reachability</i> .....	12
<i>Presence – Phone Presence</i> .....	13
<i>Presence – Calendar</i> .....	14
<i>Phone – Desk Phone</i> .....	15
<i>Phone – Soft Phone</i> .....	16
<i>Voicemail</i> .....	16
<i>Web Conference</i> .....	17
<i>LDAP</i> .....	17
<i>OCS/LCS integration</i> .....	19
<b>CHAPTER 2. TESTING AND TROUBLESHOOTING TOOLS .....</b>	<b>21</b>
CISCO UNIFIED PERSONAL COMMUNICATOR (CUPC).....	21
<i>Enabled Detailed Logging</i> .....	22
<i>Create Problem Report</i> .....	22
<i>Show Server Health</i> .....	23
REALTIME MONITORING TOOLS (RTMT).....	25
<i>Login</i> .....	25
<i>Collect Files</i> .....	26
<i>Options</i> .....	27

TEXT EDITOR .....	28
<i>Notepad</i> .....	28
<i>Wordpad</i> .....	29
<i>UltraEdit</i> .....	30
KEYWORD SEARCHER .....	31
<i>Text Editor</i> .....	31
<i>Windows Search</i> .....	31
<i>WinGrep</i> .....	32
SSH CLIENT .....	36
SFTP SERVER .....	38
PACKET SNIFFER .....	41
<i>Wireshark</i> .....	41
<i>Appliance built-in sniffer</i> .....	42
SIP ANALYZER .....	43
<i>SIP Workbench</i> .....	44
LOGS .....	45
<i>CUPC Logs</i> .....	45
<i>CUPS Logs</i> .....	45
<i>CUCM Logs</i> .....	45
WEB INTERFACE .....	46
<i>CUPS Administration Page</i> .....	46
<i>CUPS User Option Page</i> .....	47
<b>CHAPTER 3. INSTALLING CUPS.....</b>	<b>49</b>
PRE-INSTALLATION REQUIREMENTS .....	49
INSTALLATION STEPS .....	49
<i>Step 1 Add CUPS server name to CUCM Application Server list.</i> .....	49
<i>Step 2 Create an AXL user on CUCM.</i> .....	51
<i>Step 3 Boot CUPS server from the installation DVD</i> .....	53
<i>Step 4 CUP Node Configuration</i> .....	53
<i>Step 5 Auto Negotiation Configuration</i> .....	53
<i>Step 6 DHCP Configuration</i> .....	54
<i>Step 7 Static Network Configuration</i> .....	54
<i>Step 8 DNS Client Configuration</i> .....	55
<i>Step 9 Configure Platform Administrator Account</i> .....	55
<i>Step 10 CUCM Publisher Connectivity</i> .....	56
<i>Step 11 Application User Configuration</i> .....	57
<i>Step 12 AXL API Access</i> .....	58
<i>Step 13 SMTP Configuration</i> .....	58
<i>Step 14 Complete</i> .....	59
TROUBLESHOOTING INSTALLATION ISSUES .....	60
<i>Unsupported Platform</i> .....	60
<i>Trusted-peer Validation Error</i> .....	61
<b>CHAPTER 4. INITIAL SETUP .....</b>	<b>63</b>
SYNCHRONIZATION BETWEEN CUPS AND CUCM .....	63
TROUBLESHOOTING SYNCHRONIZATION ISSUES .....	64

<i>Best practices</i> .....	64
<i>Initial Synchronization failed</i> .....	64
<i>CUCM updates not populated to CUPS immediately</i> .....	65
<i>Some data didn't synchronize from CUCM to CUPS</i> .....	65
<b>CHAPTER 5. DEPLOYING AND TROUBLESHOOTING FEATURES .....</b>	<b>67</b>
<b>BEST PRACTICES.....</b>	<b>67</b>
<b>LICENSING.....</b>	<b>67</b>
<i>Server Licensing</i> .....	67
<i>Client Licensing</i> .....	68
<b>LOGON .....</b>	<b>70</b>
<i>Prerequisites</i> .....	71
<i>Step 1: CUCM: License the user</i> .....	71
<i>Test</i> .....	72
<i>Troubleshooting</i> .....	73
CUPC crashes on startup .....	74
Unknown Login Failure .....	74
Incorrect username/password .....	76
Other logon issues .....	82
<b>LDAP .....</b>	<b>82</b>
<i>Prerequisites</i> .....	83
<i>Step 1: CUPS: Set LDAP server type for CUPC</i> .....	83
<i>Step 2: LDAP: Create a Service Account in LDAP</i> .....	84
<i>Step 3: CUPS: Create a LDAP server in CUPS</i> .....	85
<i>Step 4: CUPS: Create a LDAP profile in CUPS and add users to it</i> .....	86
<i>Test</i> .....	87
<i>Troubleshooting</i> .....	88
CUPC failed to connect to LDAP .....	89
CUPC didn't return search results .....	91
CUPC failed to add contacts.....	93
<b>CLIENT STATUS.....</b>	<b>93</b>
<i>Prerequisites</i> .....	94
<i>Step 1: CUPS: Configure Proxy Domain</i> .....	94
<i>Step 2: CUPS: Create a Proxy Profile and assign users to it</i> .....	95
<i>Step 3: Configure Digest Credential</i> .....	96
Option 1: CUCM: Digest Credential .....	96
Option 2: CUPS: Incoming ACL.....	97
Option 3: CUPS: Service Parameters .....	98
<i>Test</i> .....	99
<i>Troubleshooting</i> .....	99
Basic Concepts of SIP .....	99
Response .....	99
SIP messages between components.....	100
Best practices.....	101
Use SIP Workbench to isolate network issues.....	103
Self-status grey-out.....	104
Invalid Credentials .....	105
Proxy Domain not configured properly.....	105
Self-status not updated .....	106
Contact status not updated.....	107

PHONE STATUS .....	107
<i>Prerequisites</i> .....	107
<i>Step 1: CUCM: Create SIP trunk</i> .....	108
<i>Step 2: CUPS: Create CUCM Presence Gateway</i> .....	109
<i>Step 3: CUPS: Confirm SIP publish mode and SIP publish trunk</i> .....	109
<i>Step 4: CUCM: Associate line appearance with to end user</i> .....	110
<i>Test</i> .....	111
<i>Troubleshooting</i> .....	112
Best practices.....	113
Basic Configuration Error.....	113
CUCM-to-CUPS.....	114
CUPS – Presence Engine.....	116
CUPS – SIP Proxy .....	120
PHONE FEATURE .....	125
<i>Soft Phone</i> .....	125
<i>Prerequisites</i> .....	125
<i>Naming Convention</i> .....	126
<i>Step 1: CUPS: Configure TFTP address</i> .....	126
<i>Step 2: CUCM: Add “Cisco Unified Personal Communicator” phone</i> .....	127
<i>Step 3: CUCM: Device Configuration</i> .....	127
<i>Step 4: CUCM: Configure Directory Number</i> .....	128
<i>Step 5: CUCM: User Configuration</i> .....	129
<i>Test</i> .....	129
<i>Troubleshooting</i> .....	130
Phone Configuration – Download Failed .....	130
Failed to Connect – Server Connection Refused .....	132
Disconnecting (Pending Retry).....	135
Both Soft Phone and Desk Phone are “Not Active” .....	137
<i>Desk Phone</i> .....	137
<i>Prerequisites</i> .....	137
<i>Step 1: CUCM: Associate device to end user</i> .....	138
<i>Step 2: CUCM: Specify Primary Extension for end user</i> .....	138
<i>Step 3: CUCM: Add end user to Standard CTI Enabled group</i> .....	139
<i>Step 4: CUPS: Assign user to CTI Gateway Profile</i> .....	139
<i>Test</i> .....	140
<i>Troubleshooting</i> .....	141
Disconnecting (Pending Retry).....	141
Partial Connected – Cannot connect to phone .....	142
Not Connected – Stopped .....	143
Not Connected – Invalid Credentials.....	144
Both Soft Phone and Desk Phone are “Not Active” .....	146
<i>Application Dial Rules</i> .....	147
<i>Test</i> .....	149
<i>Troubleshooting</i> .....	149
Verify CUCM database .....	149
Verify CUPS database .....	149
Verify CUPC .....	150
<i>Directory Lookup Rules</i> .....	150
Name resolution for call information.....	151
Name resolution for other features.....	152
<i>Test</i> .....	154

Troubleshooting.....	154
<b>VOICEMAIL.....</b>	<b>154</b>
<i>Retrieve Voicemail.....</i>	<i>154</i>
Prerequisites .....	154
Enable IMAP access on Unity Connection .....	155
Enable IMAP access on Exchange .....	157
Step 1: CUPS: Create Unity Server .....	159
Step 2: CUPS: Create Unity Profile and assign users to it.....	160
Step 3: CUPC: Configure user credential.....	160
Troubleshooting.....	161
Configuration issue .....	161
IMAP connectivity/authentication issue.....	161
IMAP referral issue.....	163
<i>Send Calls to Voicemail.....</i>	<i>164</i>
Configuration .....	164
Troubleshooting.....	164
“Send to Voicemail” button grey out .....	164
“Send to Voicemail” button clicked, but call was not sent to voicemail .....	165
“Send to Voicemail” worked in Soft Phone mode but didn’t work in Desk Phone mode .....	165
<b>CALENDAR.....</b>	<b>166</b>
<i>Prerequisites.....</i>	<i>166</i>
<i>Best practices.....</i>	<i>166</i>
<i>Introduction to certificates .....</i>	<i>166</i>
<i>Step 1: Exchange: Enable SSL for OWA .....</i>	<i>171</i>
External CA.....	172
Internal CA .....	172
Self-signed certificate .....	173
CN (Common Name) .....	173
Expiration .....	174
Certificate Authority Bit.....	175
Steps to generate self-signed certificate and enable SSL.....	176
<i>Step 2: Exchange: Create view-only service account.....</i>	<i>179</i>
Exchange 2003 .....	179
Delegate “View Only Administrator” control .....	180
Add “Receive As” permission.....	182
Exchange 2007 .....	184
Delegate “View Only Administrator” control .....	184
Add “Receive As” permission.....	184
<i>Step 3: CUPS: Upload Certificates .....</i>	<i>185</i>
<i>Step 4: CUPS: Configure Outlook Gateway.....</i>	<i>187</i>
<i>Step 5: CUPC: Enable calendaring.....</i>	<i>188</i>
<i>Test .....</i>	<i>190</i>
<i>Troubleshooting.....</i>	<i>190</i>
Configuration issue.....	190
You forgot to enable calendar integration from client side. ....	190
CUPS server time is different with Exchange time. ....	191
You uploaded the Exchange end entity certificate instead of its CA certificate.....	191
You didn’t upload all CA certificates in certificate chain.....	192
You use IP address in presence gateway configuration while the Exchange certificate CN is FQDN .....	193
Typical log snippets.....	194
Starting up .....	195

Initial attempt .....	195
Loading certificates .....	195
Form Based Authentication .....	196
IIS redirect .....	199
Initial subscription response .....	200
Calendar search .....	200
Calendar Status.....	201
Certificate issues.....	202
Hostname does not match.....	202
CA not trusted .....	202
No CA bit in certificate .....	205
Permission issue.....	206
Use end user account in Outlook Gateway configuration.....	206
Use service account to access end user's mailbox .....	206
Exchange interoperability issue .....	207
INSTANT MESSAGE .....	208
<i>Prerequisites</i> .....	208
<i>Enable Instant Messaging</i> .....	208
<i>Test</i> .....	208
<i>Troubleshooting</i> .....	209
Best Practices.....	209
SIP domain issue.....	209
Logs .....	210
IP PHONE MESSENGER.....	210
<i>Prerequisites</i> .....	210
<i>Step 1: Create IPPM application user</i> .....	210
<i>Step 2: Associate phones to IPPM application user</i> .....	210
<i>Step 3: Create IPPM phone service</i> .....	211
<i>Step 4: Subscribe phone to IPPM service</i> .....	212
<i>Step 5: Configure IPPM on CUPS</i> .....	214
<i>Test</i> .....	214
<i>Troubleshooting</i> .....	215
Best Practices.....	215
No visual or audio alerts on phone when message arrives .....	215
IPPM logs .....	215
WEB CONFERENCE.....	216
<i>Prerequisites</i> .....	216
<i>Best Practices</i> .....	216
<i>Step 1: CUPS: Configure MeetingPlace server</i> .....	216
<i>Step 2: CUPS: Configure MeetingPlace Profile and assign users to it</i> .....	217
<i>Step 3: CUPC: Configure MeetingPlace credential</i> .....	217
<i>Test</i> .....	218
<i>Troubleshooting</i> .....	218
CUPC does not launch MP automatically .....	218
Password issue.....	219
OCS/LCS/MOC INTEGRATION .....	219
<i>Prerequisites</i> .....	220
<i>Best Practices</i> .....	220
<i>Step 1: CUCM: End User Provisioning</i> .....	220
<i>Step 2: CUCM: Application User Provisioning</i> .....	221

<i>Step 3: CUPS: Configure CTI Gateway .....</i>	221
<i>Step 4: CUPS: MOC assignment.....</i>	222
<i>Step 5: CUPS: Incoming and Outgoing ACLs.....</i>	223
<i>Step 6: OCS: Static Route and Host Authorization.....</i>	223
<i>Step 7: Active Directory: Server URI and Line URI.....</i>	225
<i>Test .....</i>	226
<i>Troubleshooting.....</i>	227
Simplify the integration.....	227
Divide and conquer .....	227
MOC -> OCS .....	228
OCS -> CUPS .....	229
CUPS -> CUCM/Phone .....	232
<b>CHAPTER 6. OPERATION AND MAINTENANCE .....</b>	<b>233</b>
USER MANAGEMENT.....	233
<i>Add a user.....</i>	233
Step 1: CUCM: Create End User.....	233
Step 2: CUCM: Provision Desk Phone.....	233
Step 3: CUCM: Provision Soft Phone .....	234
Step 4: CUCM: Configure End User .....	234
Step 5: CUCM: License End User .....	234
Step 6: CUPS: Configure End User.....	235
<i>Delete a user.....</i>	235
Remove a user from CUPS.....	235
Remove CUPC soft phone from CUCM .....	235
Remove a user from CUCM .....	235
<i>Change a user.....</i>	236
BULK ADMINISTRATION TOOL (BAT).....	236
BACKUP AND RESTORE .....	239
PATCH AND UPGRADE .....	239
<b>CHAPTER 7. ADVANCED TOPICS.....</b>	<b>241</b>
MULTI-NODE.....	241
<i>CUPC .....</i>	241
Failover .....	241
CUPC 1.2.x .....	242
CUPC 7.0.x with CUPS 7.0.x .....	242
Load-balancing.....	242
CUPC 1.2.x .....	242
CUPC 7.0.x with CUPS 7.0.x .....	243
<i>CUCM.....</i>	244
<i>OCS.....</i>	245
INTER-CLUSTER .....	245
<i>Steps to deploy inter-clustering .....</i>	246
Step 1: CUPS: Configure same proxy domain for each cluster .....	246
Step 2: CUPS: Create AXL group for each cluster.....	246
Step 3: CUPS: Create AXL user for each cluster .....	247
Step 4: CUPS: Configure Inter-cluster peers .....	248
Step 5: CUPS: Activate AXL Service .....	248
Step 6: CUPS: Verify Services .....	248

Troubleshooting.....	249
<b>APPENDIX.....</b>	<b>251</b>