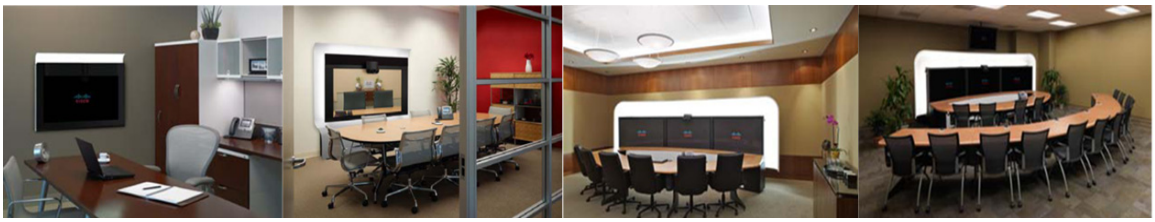

APPENDIX B

MIBs, RFCs, and SNMP Trap Messages for the Cisco TelePresence System

Revised: November 13, 2009, OL-13677-05
CTS 1.6.0

Note Use the information in this Appendix with the SNMP Configuration Parameters section of "Configuring a Cisco TelePresence Device" section on page 1-7.

Contents

This chapter contains the following information:

CTS SNMP Trap Message Matrix

Turning on a specific MIB enables an SNMP trap. Table B-1 lists MIBs, RFCs, and SNMP trap messages that are supported by the Cisco TelePresence System (CTS). SNMP MIB files can be found in the following directories:

- SNMP version 1 MIB files are in the v1 directory.
- SNMP version 2 MIB files are in the v2 directory.

Note For every MIB.my in the v2 directory, there is an SNMP version 1 MIB-V1SMI.my in the v1 directory.

Table B-1 CTS MIBs, RFCs, and SNMP Trap Messages

Trap Name	MIB File	RFCs
CTS 1.5 and CTS 1.6		
ctpcMgmtSysConnFailNotification	CISCO-TELEPRESENCE-CALL-MIB.my	—
ctpcStatNotificaion	CISCO-TELEPRESENCE-CALL-MIB.my	—
CTS 1.4		
ctpPeripheralErrorNotification	CISCO-TELEPRESENCE-MIB.my	—
ctpSysUserAuthFailNotification	CISCO-TELEPRESENCE-MIB.my	—
ciscoEnvMonTempStatusChangeNotif	CISCO-ENVMON-MIB.my	—
CTS 1.2		
clogMessageGenerated	CISCO-SYSLOG-MIB.my	—
coldStart	SNMPv2-MIB.my	—
warmStart	SNMPv2-MIB.my	—
authenticationFailure	SNMPv2-MIB.my	—
—	CISCO-SYSLOG-MIB.my	—
—	HOST-RESOURCES-MIB.my	—
—	IF-MIB.my	—
—	SNMP-FRAMEWORK-MIB.my	RFC 2571
—	SNMP-MPD-MIB.my	RFC 2572
—	SNMP-NOTIFICATION-MIB.my	RFC 2573
—	SNMP-TARGET-MIB.my	RFC 2573
—	SNMP-USM-MIB.my	RFC 2574
—	SNMP-VACM-MIB.my	RFC 2575
—	SNMPv2-MIB.my	—
—	SYSAPPL-MIB.my	—
—	RFC1213-MIB.my	—
—	TCP-MIB.my	—
—	UDP-MIB.my	—

Configuration Management Messages

Table B-2 lists configuration management messages.

Table B-2 Configuration Management

Notification	Action
ctpPeripheralErrorNotifyEnable	**Notify** • True (1) • False (2)
ctpSysUserAuthFailNotifyEnable	
ctpSystemReset	**Reset** • **noRestart (1)**—Read or written • **restartPending (2)**—Read or written • **resetPending (3)**—Read or written • **forceReset (4)**—Written but not read

Peripheral Status Messages

Table B-3 lists peripheral status messages.

Table B-3 Peripheral Status

Notification	Return Values

ctpPeripheralStatus—General information about a single peripheral	• **noError (0)**—Expected peripheral device is functioning through the attached port.
	• **other (1)**—None of the states listed.
	• **cableError (2)**—Expected peripheral device has a cabling issue.
	• **powerError (3)**—Expected peripheral device has a power issue.
	• **mgmtSysConfigError (4)**—Expected peripheral device has a communications management system configuration issue.
	• **systemError (5)**—Cisco Telepresence system error.
	• **deviceError (6)**—Expected peripheral device is attached but is not fully functional.
	• **linkError (7)**—Expected peripheral device has a port level link issue.
	Example
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralDescription.1 = STRING: UP_LINK`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralDescription.7 = STRING: AUX_CAM --`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralStatus.1 = INTEGER: noError(0)`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralStatus.7 = INTEGER: cableError(2)`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralStatus.13 = INTEGER: other(1)`

ctpEtherPeripheralStatus—Information about a single peripheral attached through an ethernet port.	• **noError (0)**—Expected peripheral device is functioning through the attached port.
	• **other (1)**—None of the states listed.
	• **cableError (2)**—Expected peripheral device has a cabling issue.
	• **powerError (3)**—Expected peripheral device has a power issue.
	• **mgmtSysConfigError (4)**—Expected peripheral device has a communications management system configuration issue.
	• **systemError (5)**—Cisco Telepresence system error.
	• **deviceError (6)**—Expected peripheral device is attached but is not fully functional.
	• **linkError (7)**—Expected peripheral device has a port level link issue.
	Example
	`CISCO-TELEPRESENCE-MIB::ctpEtherPeripheralIfIndex.1.1 = INTEGER: 7`
	`CISCO-TELEPRESENCE-MIB::ctpEtherPeripheralAddrType.1.1 = INTEGER: ipv4(1)`
	`CISCO-TELEPRESENCE-MIB::ctpEtherPeripheralAddr.1.1 = STRING:`
	`"10.16.123.4"`
	`CISCO-TELEPRESENCE-MIB::ctpEtherPeripheralStatus.1.1 = INTEGER:`
	`noError(0)`

Table B-3 Peripheral Status (continued)

Notification	Return Values

ctpHDMIPeripheralStatus—Information about a single peripheral attached through the HDMI port.	**Cable**
	• **plugged (1)**—Peripheral cable is plugged.
	• **loose (2)**—Peripheral cable is loose.
	• **unplugged (3)**—Peripheral cable is unplugged.
	• **unknown (4)**—Cannot detect peripheral cable status.
	• **internalError(5)**—Internal error.
	Power
	• **on (1)**—Peripheral power is on.
	• **standby (2)**—Peripheral power is in standby mode.
	• **off (3)**—Peripheral power is off.
	• **unknown (4)**—Cannot detect peripheral power status.
	• **internalError (5)**—Internal error.
	Example
	`CISCO-TELEPRESENCE-MIB::ctpHDMIPeripheralCableStatus.3.1 = INTEGER: plugged(1)`
	`CISCO-TELEPRESENCE-MIB::ctpHDMIPeripheralPowerStatus.4.1 = INTEGER: standby(2)`
	`CISCO-TELEPRESENCE-MIB::ctpHDMIPeripheralPowerStatus.7.1 = INTEGER: off(3)`

ctpDVIPeripheralStatus—Information about a single peripheral attached through a DVI port.	**Cable** • **plugged (1)**—Peripheral cable is plugged. • **loose (2)**—Peripheral cable is loose. • **unplugged (3)**—Peripheral cable is unplugged. • **unknown (4)**—Cannot detect peripheral cable status. • **internalError(5)**—Internal error. **Power** • **on (1)**—Peripheral power is on. • **standby (2)**—Peripheral power is in standby mode. • **off (3)**—Peripheral power is off. • **unknown (4)**—Cannot detect peripheral power status. • **internalError (5)**—Internal error. **Example** `CISCO-TELEPRESENCE-MIB::ctpDVIPeripheralCableStatus.9.1 = INTEGER: plugged(1)`

Table B-3 Peripheral Status (continued)

Notification	Return Values

ctpRS232PeripheralStatus—Information about a single peripheral attached through an RS232 port.	• **connected (1)**—Peripheral connection via RS232 is working properly.
	• **unknown (2)**—Peripheral connection via RS232 is not working properly. It may due to device problem or connection problem.
	Example
	`CISCO-TELEPRESENCE-MIB::ctpRS232PortIndex.8.1 = INTEGER: 1`
	`CISCO-TELEPRESENCE-MIB::ctpRS232PeripheralConnStatus.8.1 = INTEGER: connected(1)`

ctpPeripheralAttribute—Peripheral attribute of the lamp and switch.	**Description**
	• **lampOperTime(1)**—The lamp operating time of a peripheral, in hours.
	• **lampState(2)**—The lamp state.
	• **powerSwitchState(3)**—Power on/off state of a peripheral.
	Value
	• **lampOperTime**—(0..4294967295)
	• **lampState**—on(1), off(2), failure(3), unknown(4)
	• **powerSwitchState**—on(1), off(2), unknown(3)
	Example
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralAttributeDescr.8.1 = INTEGER: lampOperTime(1)`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralAttributeDescr.8.2 = INTEGER: lampState(2)`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralAttributeDescr.11.1 = INTEGER: powerSwitchState(3)`

Event History Messages

Table B-4 lists event history notification messages.

Table B-4 Event History

Notification	Return Value

ctpPeripheralErrorHistTableSize—Fixed at 0	**Example**
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralErrorHistTableSize.0 = Gauge32: 0`
	`CISCO-TELEPRESENCE-MIB::ctpPeripheralErrorHistLastIndex.0 = Gauge32: 15`
	`CISCO-TELEPRESENCE-MIB::ctpSysUserAuthFailHistTableSize.0 = Gauge32: 0`
	`CISCO-TELEPRESENCE-MIB::ctpSysUserAuthFailHistLastIndex.0 = Gauge32: 2`

ctpPeripheralErrorHistLastIndex—Value of the last ctpPeripheralErrorHistoryIndex	
ctpSysUserAuthFailHistTableSize—Fixed at 0	
ctpSysUserAuthFailHistLastIndex—Value of the last ctpSysUserAuthFailHistoryIndex	

Trap Notification Messages

Table B-5 lists trap notification messages.

Table B-5 Trap Notification

Trap	Type
ctpSysUserAuthFailAccessProtocol—User authentication failure access protocol.	• **ctpSysUserAuthFailSourceAddrType—**Type of address contained in the corresponding instance. • **ctpSysUserAuthFailSourceAddr—**Source address when the user authentication failure occurred. • **ctpSysUserAuthFailSourcePort—**Source TCP/UDP port number. • **ctpSysUserAuthFailUserName—**User name that was used to gain system access. • **ctpSysUserAuthFailAccessProtocol—**Access protocol: http(1), snmp(2), ssh(3).
ctpPeripheralStatus—General info about single peripheral	• **ctpPeripheralErrorIndex**—Value of ctpPeripheralIndex. • **ctpPeripheralErrorStatus**—Peripheral status when error occurred. **Return Values** • **noError**—cableError, powerError, mgmtSysConfigError, systemError, deviceError, linkError • **other**—cableError, powerError, mgmtSysConfigError, systemError, deviceError, linkError

Cisco TelePresence Call (CTPC) MIBs

CTPC call MIBs allow you to make a call through the SNMP MIB. Cisco TelePresence Call MIBs include the following:

- Call Configuration Group MIBs, page B-8
- Call Information Group MIBs, page B-9
- Call Statistics Group MIBs, page B-9
- Call Event History Group MIBs, page B-14
- Call Notification Group MIBs, page B-14

Call Configuration Group MIBs

Table B-6 lists Cisco TelePresence Call Configuration Group MIBs.

Table B-6 Call Configuration Group MIBs

MIB	Type
Trap Notification Enable	
ciscoTpCallConfigurationGroup	• ctpcStatNotifyEnable • ctpcMgmtSysConnNotifyEnable
Monitoring Threshold Configuration	
ciscoTpCallConfigurationGroup	• ctpcStatRisingThreshold • ctpcStatFallingThreshold • ctpcStatStartupAlarm • ctpcStatMonitoredStatus
Monitoring Types	
ciscoTpCallConfigurationGroup	• latency.all (200ms) • jitter.video (20ms) • jitter.audio (20ms) • jitter.all (apply the thresholds for both video and audio streams) • packetLoss.video (0.1%) • packetLoss.audio (0.1%) • packetLoss.all (apply the thresholds for both video and audio streams) • authFailurePacket.all (1)

CTPC Configuration Examples

Note Configure a longer period of time for **snmpwalk** to obtain the peripheral status in real time so that it will not timeout. For example:

```
snmpwalk -t 10 <cts_ip> ctpPeripheralStatus
```

Trap Notification Enabling

```
#>snmpset cts1 ctpcStatNotifyEnable.0 i 1
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatNotifyEnable.0 = INTEGER: true(1)
```

Using default values

```
#>snmpset cts1 ctpcStatMonitoredStatus.latency.all i 5
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.latency.all = INTEGER:
createAndWait(5)

#>snmpwalk cts1 CtpcStatMonitoredEntry
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredUnit.latency.all = INTEGER: milliseconds(1)
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatRisingThreshold.latency.all = Gauge32: 200
```

```
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatFallingThreshold.latency.all = Gauge32: 180
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatStartupAlarm.latency.all = INTEGER:
risingOrFallingAlarm(3)
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.latency.all = INTEGER:
notInService(2)

#>snmpset cts1 ctpcStatMonitoredStatus.latency.all i 1
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.latency.all = INTEGER: active(1)
```

Disable Monitoring

```
#>snmpset cts1 ctpcStatMonitoredStatus.latency.all i 2
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.latency.all = INTEGER:
notInService(2)

#>snmpset cts1 ctpcStatMonitoredStatus.latency.all i 6
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.latency.all = INTEGER: destroy(6)
```

Call Information Group MIBs

Table B-7 lists Cisco TelePresence Call Information Group MIBs.

Table B-7 Call Information Group MIBs

MIB	Type
ciscoTpCallInformation	• **ctpcLocalDirNumTable**—CTS can associate to more than 1 directory number • **ctpcMode (CUCM mode)** • **ctpcActiveMgmtSysIndex** • **ctpcMgmtSysTable** – **ctpcMgmtSysAddrType** – **ctpcMgmtSysAddr**

Call Statistics Group MIBs

This section contains the following Call Status Group information:

CTPC Statistics Group MIB

Table B-8 lists Cisco TelePresence Call Statistics Group MIBs.

Table B-8 Call Statistics Group MIBs

MIB	Type
ciscoTpCallStatisticsGroup	• **ctpcStatObjects** • **ctpcTable** • **ctpcStatStreamTypeTable** • **ctpcStatStreamSourceTable**

CTPC Statistics Objects and Tables

This section contains the following information tables:

Call Statistics

Table B-9 contains CTPC statistics for a CTS.

Table B-9 CTPC Statistics

Call Statistics for a CTS	Type
—	• ctpcStatOverallCalls • ctpcStatOverallCallTime • ctpcStatTotalCalls • ctpcStatTotalCallTime

Call Control

Table B-10 contains call control information.

Table B-10 Call Information and Control

Call Specific Information and Call Control	Type
—	• ctpcRemoteDirNum • ctpcLocalSIPCallId • ctpcTxDestAddr • ctpcStartDateAndTime • ctpcDuration • ctpcType • ctpcSecurity • ctpcDirection • ctpcState • ctpcInitialBitRate • ctpcLatestBitRate • ctpcRowStatus **Note** Call entry cannot be destroyed once it is created. The oldest call entry will be removed once the maximum table size is reached.

Miscellaneous Call Control

Table B-11 contains extra call control information.

Table B-11 Miscellandous Call Information and Control

Call Specific Information and Call Control	Type
—	• ctpcSamplePeriod • ctpcTableSize • ctpcTableLastIndex

CTPC Statistics Stream Type Table MIB

For an Audio/Visual call, both video and audio streams will be shown; otherwise, only audio streams are shown.

Table B-12 lists Statistics Stream Type Table MIBs.

Table B-12 Statistics Stream Type Table MIBs

MIB	Type
ctpcStatStreamTypeTable	• ctpcAvgPeriodLatency • ctpcAvgCallLatency • ctpcMaxPeriodLatency • ctpcMaxCallLatency • ctpcMaxCallLatencyRecTime **Note** Statistical data is reset if a call is placed on hold.

CTPC Statistics Stream SourceTable MIB

The Number of stream source is based on the CTS model and call type:

- CTS 1000 has only center and aux stream sources.
- CTS 3000 and CTS 3200 have center, left, right, and auxiliary stream sources.
- Legacy CTS stream statistics are shown on all CTS models for A/V calls for the following:
  - Outbound video(3) and audio(1) statistics.
  - Inbound audio(1) statistics.

Note It is up to CCA to turn on/off the legacy streams.

Table B-12 lists Statistics Stream Source Table MIBs.

Table B-13 Statistics Stream Source Table MIB

MIB	Type
ctpcStatStreamSourceTable	• ctpcTxActive • ctpcTxTotalBytes • ctpcTxTotalPackets • ctpcTxLostPackets • ctpcTxPeriodLostPackets • ctpcTxCallLostPackets • ctpcTxIDRPackets • ctpcTxShapingWindow • ctpcRxActive • ctpcRxTotalBytes • ctpcRxTotalPackets • ctpcRxLostPackets • ctpcRxPeriodLostPackets • ctpcRxCallLostPackets • ctpcRxOutOfOrderPackets • ctpcRxDuplicatePackets • ctpcRxLatePackets • ctpcRxIDRPackets • ctpcRxShapingWindow • ctpcRxCallAuthFailure • ctpcAvgPeriodJitter • ctpcAvgCallJitter • ctpcMaxPeriodJitter • ctpcMaxCallJitter • ctpcMaxCallJitterRecTime

Call Event History Group MIBs

Table B-14 lists Cisco TelePresence Call Event History Group MIBs.

Table B-14 Call Event History Group MIBs

MIB	Type
ciscoTpCallEventHistoryGroup	• ctpcStatEventHistTableSize – always set to 0 • ctpcStatEventHistLastIndex • ctpcStatEventHistoryTable • ctpcStatEventMonObjectInst • ctpcStatEventCrossedValue • ctpcStatEventCrossedType • ctpcStatEventTimeStamp

Call Notification Group MIBs

Table B-15 lists Cisco TelePresence Call Notification Group MIBs.

Table B-15 Call Notification Group MIBs

MIB	Type
ciscoTpCallNotificationGroup	• ctpcMgmtSysConnFailNotification – ctpcMgmtSysAddrType – ctpcMgmtSysAddr • ctpcStatNotificaion – ctpcStatEventMonObjectInst – ctpcStatEventCrossedValue – ctpcStatEventCrossedType

Call Statistics Trap Notification Examples

Note Configure a longer period of time for **snmpwalk** to obtain the peripheral status in real time so that it will not timeout. For example:

```
snmpwalk -t 10 <cts_ip> ctpPeripheralStatus
```

Threshold Setting

```
#>snmpwalk -m ALL cochan-cts4 ctpcStatMonitoredTable

CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredUnit.jitter.audio = INTEGER: milliseconds(1)
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatRisingThreshold.jitter.audio = Gauge32: 2
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatFallingThreshold.jitter.audio = Gauge32: 1
```

```
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatStartupAlarm.jitter.audio = INTEGER:
risingOrFallingAlarm(3)
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatMonitoredStatus.jitter.audio = INTEGER: active(1)

2008-08-19 21:31:58 <UNKNOWN> [UDP: [172.28.28.24]:32793]:
SNMPv2-MIB::sysUpTime.0 = Timeticks: (4431) 0:00:44.31
SNMPv2-MIB::snmpTrapOID.0 = OID: CISCO-TELEPRESENCE-CALL-MIB::ctpcStatNotificaion
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventMonObjectInst.1 = OID:
CISCO-TELEPRESENCE-CALL-MIB::ctpcAvgCallJitter.1.audio.priCodec
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventCrossedValue.1 = Opaque: UInt64: 3
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventCrossedType.1 = INTEGER: risingThreshold(1)
2008-08-19 21:32:38 <UNKNOWN> [UDP: [172.28.28.24]:32793]:
SNMPv2-MIB::sysUpTime.0 = Timeticks: (8433) 0:01:24.33
SNMPv2-MIB::snmpTrapOID.0 = OID: CISCO-TELEPRESENCE-CALL-MIB::ctpcStatNotificaion
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventMonObjectInst.4 = OID:
CISCO-TELEPRESENCE-CALL-MIB::ctpcAvgCallJitter.1.audio.priCodec
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventCrossedValue.4 = Opaque: UInt64: 0
CISCO-TELEPRESENCE-CALL-MIB::ctpcStatEventCrossedType.4 = INTEGER: fallingThreshold(2)
```

Supported Call States MIBs

Table B-16 contains supported call states MIBs.

Table B-16 Supported Call States MIBs

MIB	Type
CtpcStateCode	• unknown(1) • other(2) • noMgmtSysConn(3) • noDialTone(4) • invalidNumber(5) • ringing(6) • noAnswer(7) • inProgress(8) • remoteHold(9) • shareLineActive(10) • inLocalConference(11) • terminatedbyError(12) • localHold(13) • terminatedNormally(14) • answer(15) • resume(16)

SNMP Objects Value Persistence

SNMP objects are reset to pre-saved values when SNMPD is restarted. Supported objects are listed in Table B-17. Command-line interface (CLI) is used to preserve the pre-set values for the objects listed in, as described in the "SNMP Objects Value Persistence CLI" section on page B-16.

Table B-17 SNMP Objects Value Persistence

Supported Devices and Applications	Object Type
CTS	
—	• CTMS/CTS-MAN objects • ciscoEnvMonEnableStatChangeNotif • ctpPeripheralErrorNotifyEnable • ctpSysUserAuthFailNotifyEnable • ctpPeripheralErrorHistTableSize • ctpSysUserAuthFailHistTableSize • ctpcStatNotifyEnable • ctpcMgmtSysConnNotifyEnable • ctpcStatMonitoredTable (all active rows) • ctpcStatEventHistTableSize
CTMS and CTS-Man	
—	• clogNotificationsEnabled • clogMaxSeverity • clogHistTableMaxLength

SNMP Objects Value Persistence CLI

The following commands are supported in admin mode:

Command	Description
help utils snmp save **snmp save help**	Saves a set of current SNMP object values. The saved values replace the object default values when SNMPD is restarted.
help utils snmp reset **snmp reset help**	Resets SNMP default values. Current SNMP objects value will not be affected. The default values are used the next time SNMPD is restarted.

Tip Remember to save your settings for reboot so that you do not have to load the entire code again.

SNMP Special Characters

Table B-18 lists special SNMP characters that are supported on the Cisco Unified CM Administration interface.

Table B-18 Supported SNMP Graphic User Interface Characters

Character	Description
1	Number one
2	Number two
@	“At” symbol
#	Number sign or hash mark
$	Currency symbol
%	Percent symbol
^	Carat symbol
*	Asterisk
( )	Left and right parenthesis
_	M-dash
-	hyphen
+	Plus sign
/	Forward slash
?	Question mark
{ }	Wavy brackets
[ ]	Straight brackets
,	Comma
.	Period
h	Letter h of the alphabet, lower case
F	Letter F of the alphabet, upper case
E	Letter E of the alphabet, upper case