瞭解模擬E&M啟動撥號監督信令並排除故障

目錄

簡介

本檔案將討論類比接收和transMit(E&M)開始撥號監督訊號傳送。「開始撥號監督」是定義裝置如何捕獲E&M中繼和傳遞地址信令資訊(傳送雙音多頻(DTMF)數字)的線路協定。 在E&M電路上使用的三種主要起始撥號監督協定是Immediate Start、Wink Start和Delay Dial。

必要條件

需求

本文件沒有特定需求。

採用元件

本檔案中的資訊是根據以下硬體版本：

- Cisco 1750、2600、2800、3600、3800和VG200路由器

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱思科技術提示慣例。

背景資訊

您可以將此文檔用作思科路由器/網關和專用交換機(PBX)/電信裝置之間開始撥號監督問題的故障排除參考。

有關模擬E&M的概述，請參閱語音 — 模擬E&M信令概述。

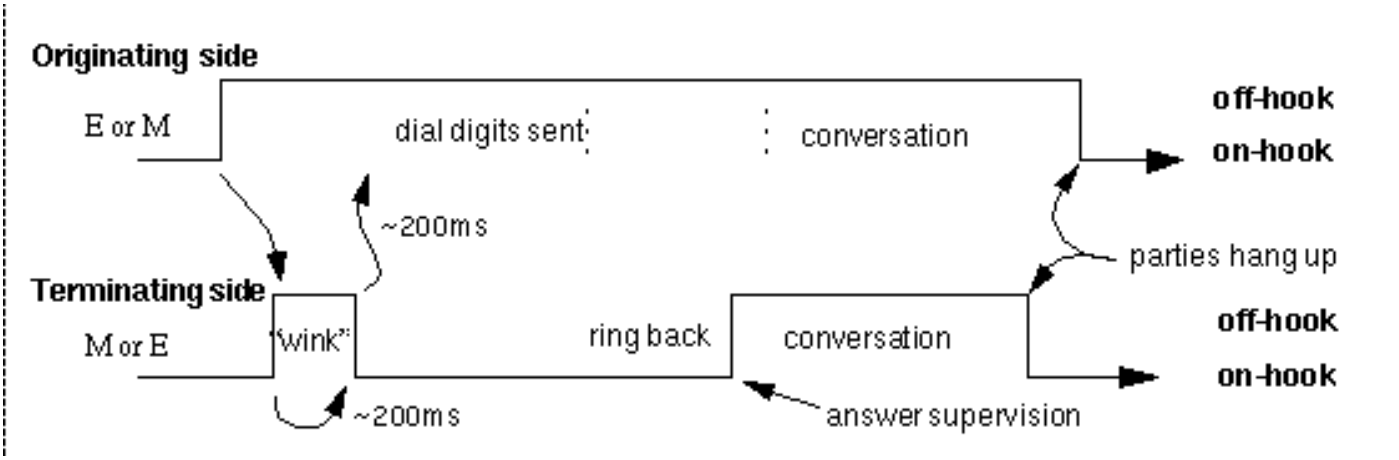
有關模擬E&M介面型別(I-V)和佈線問題的資訊，請參閱瞭解和排除模擬E&M介面型別和佈線問題。

Wink啟動訊號

Wink是最常用的協定。這是Wink啟動操作過程(請參閱圖):

1. 始發端通過摘機來獲取中繼。
2. 在連線數字收集裝置之前，終端側保持空閒（掛機）。
3. 一旦終端側準備就緒，它就會發出閃爍。眨眼是掛機到摘機到掛機轉換。此過渡期範圍為100至350毫秒(請參見圖)。
4. 一旦始發方收到閃爍（被解釋為繼續的指示），它傳送地址（數字）資訊。
5. 然後，呼叫被路由到其目的地。
6. 當遠端應答時，終端側通過摘機向始端傳送應答監督訊號。
7. 兩端在呼叫期間保持摘機。
8. 任一端都可以通過掛機斷開呼叫。

Wink Start（超過Immediate Start）的主要原因是確保接收DTMF數字的一方已準備好接收它們。對於PBX和中央辦公室(CO)產品，DTMF接收器是共用資源，其中可能少於匯流排路和中繼。另一個原因是眩光減少。當中繼的兩端試圖同時奪取中繼時，就會發生眩光。



在Cisco 1750、2600、2800、3600、3800和VG200路由器（使用E&M語音介面卡[VIC]）中（使用E&M模擬個人化模組[APM]），預設閃爍延遲為200毫秒。有關如何驗證和修改閃爍延遲引數的詳細資訊，請參閱驗證閃爍啟動信令延遲輸出。

驗證Wink啟動信令延遲

```
3660-2#show voice port 1/0/0
```

```
recEive And transMit 1/0/0 Slot is 1, Sub-unit is 0, Port is 0
 Type of VoicePort is E&M
 Operation State is DORMANT
 Administrative State is UP
 No Interface Down Failure
 Description is not set
 Noise Regeneration is enabled
 Non Linear Processing is enabled
 Non Linear Mute is disabled
 Non Linear Threshold is -21 dB
 Music On Hold Threshold is Set to -38 dBm
 In Gain is Set to 0 dB
 Out Attenuation is Set to 0 dB
 Echo Cancellation is enabled
 Echo Cancellation NLP mute is disabled
 Echo Cancellation NLP threshold is -21 dB
 Echo Cancel Coverage is set to 8 ms
 Playout-delay Mode is set to adaptive
 Playout-delay Nominal is set to 60 ms
 Playout-delay Maximum is set to 200 ms
 Playout-delay Minimum mode is set to default, value 40 ms
 Playout-delay Fax is set to 300 ms
 Connection Mode is normal
 Connection Number is not set
 Initial Time Out is set to 10 s
 Interdigit Time Out is set to 10 s
 Call Disconnect Time Out is set to 3 s
 Ringing Time Out is set to 180 s
 Wait Release Time Out is set to 30 s
 Companding Type is u-law
 Region Tone is set for US

 Analog Info Follows:
 Currently processing none
 Maintenance Mode Set to None (not in mtc mode)
 Number of signaling protocol errors are 0
 Impedance is set to 600r Ohm
 Station name None, Station number None
 Translation profile (Incoming):
 Translation profile (Outgoing):

 Voice card specific Info Follows:
 Operation Type is 2-wire
 E&M Type is 1
 Signal Type is wink-start
 Dial Out Type is dtmf
 In Seizure is inactive
 Out Seizure is inactive
 Digit Duration Timing is set to 100 ms
 InterDigit Duration Timing is set to 100 ms
 Pulse Rate Timing is set to 10 pulses/second
 InterDigit Pulse Duration Timing is set to 750 ms
 Clear Wait Duration Timing is set to 400 ms
 Wink Wait Duration Timing is set to 200 ms
 Wait Wink Duration Timing is set to 550 ms
 Wink Duration Timing is set to 200 ms
 Delay Start Timing is set to 300 ms
 Delay Duration Timing is set to 2000 ms
 Dial Pulse Min. Delay is set to 140 ms
 Percent Break of Pulse is 60 percent
 Auto Cut-through is disabled
 Dialout Delay is 70 ms
```

[修改Wink計時引數]

要調整傳送訊號後等待閃爍訊號的最長時間，請使用voice-port命令**timing wait-wink *<msec>***。預設值為550 ms。

要調整閃爍的持續時間，請使用voice-port命令**timing wink-duration *<msec>***。預設值為200 ms。

要調整語音埠等待來自連線系統的閃爍的時間量，請使用voice-port命令**timing wink-wait *<msec>***。預設值為200 ms。

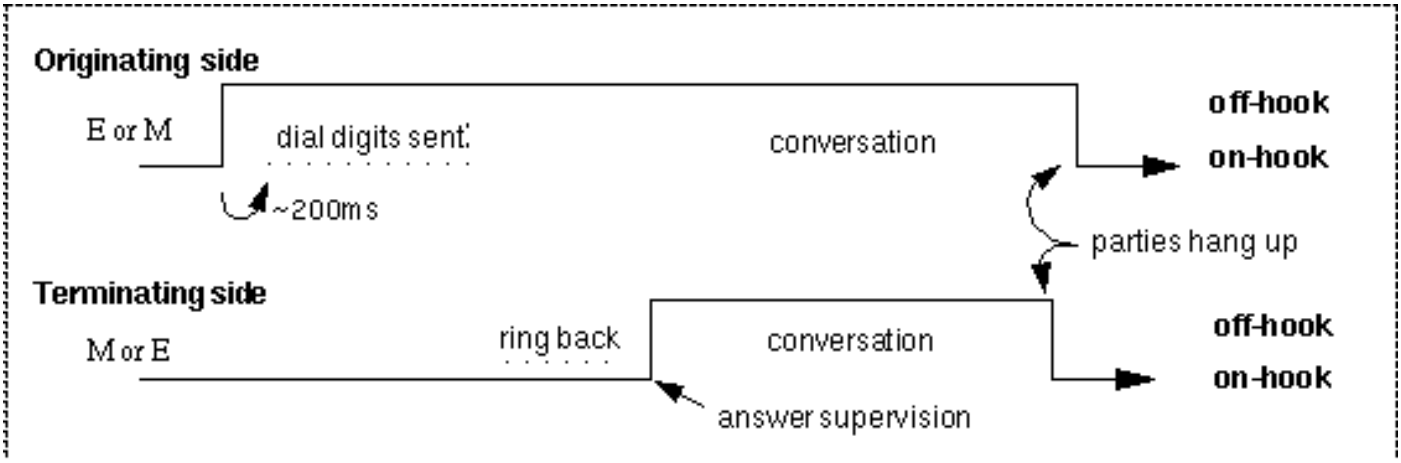
```
3660-2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
3660-2(config)#voice-port 1/0/0
3660-2(config-voiceport)#timing ?
  clear-wait         time of inactive seizure signal to declare call cleared in
                     milliseconds
  delay-duration     Max delay signal duration for delay dial signaling in
                     milliseconds
  delay-start        Timing of generation of delay start sig from detect
                     incoming seizure in milliseconds
  dial-pulse         dial pulse
  dialout-delay      delay before sending out digit or cut-thru
  digit              DTMF digit duration in milliseconds
  hookflash-in       Hookflash input duration in milliseconds
  inter-digit        DTMF inter-digit duration in milliseconds
  percentbreak       the break period of a dialing pulse
  pulse              pulse dialing rate in pulses per second
  pulse-inter-digit  pulse dialing inter-digit timing in milliseconds
  wait-wink          Max time to wait for wink signal after sending outgoing
                     seizure in milliseconds
  wink-duration      Max wink duration for wink start signaling in
                     milliseconds
  wink-wait          Time to wait before sending wink signal after detecting
                     incoming seizure in milliseconds

3660-2(config-voiceport)#timing wait-wink ?
  <100-5000>  milliseconds
3660-2(config-voiceport)#timing wait-wink 300
3660-2(config-voiceport)#timing wink-duration ?
  <50-3000>  milliseconds
3660-2(config-voiceport)#timing wink-duration 250
3660-2(config-voiceport)#timing wink-wait ?
  <100-5000>  milliseconds
3660-2(config-voiceport)#timing wink-wait 350
```

有關計時命令的更多資訊，請參閱多服務應用命令。

即時啟動訊號

立即啟動信令是最基本的協定。始發端摘機，等待一段有限的時間（例如200毫秒），然後傳送撥號數字而不考慮遠端(請參閱圖)。

即時啟動信令方法比Wink Start可靠性低。在「立即開始」模式中，接收呼叫的終端不會閃爍以表示已準備好接受數字。在某些情況下，PBX可能負荷過重，無法足夠快地將DTMF接收器切換到位，以接收來自思科產品的數字。在這種情況下，呼叫無法完成，因為思科產品在PBX準備接受之前傳送DTMF數字。因此，為獲得最大可靠性，Wink Start比Immediate Start更優先。

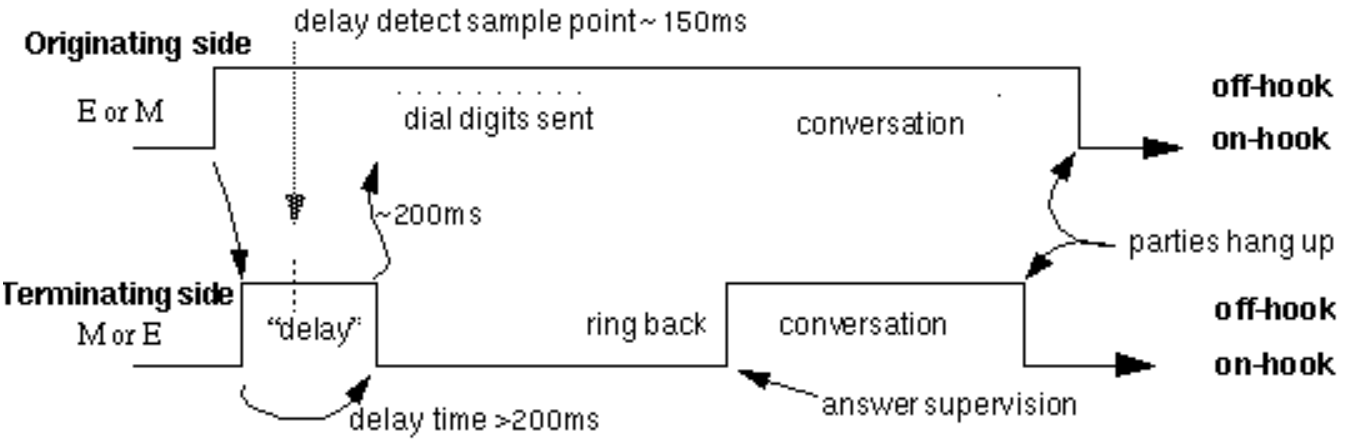


延遲撥號訊號

延遲撥號操作過程如下所示(請參閱圖):

1. 始發端通過摘機來獲取中繼。
2. 終端側通過摘機來響應扣押。
3. 終端側保持摘機狀態，直到準備好接收地址資訊。
4. 當終端側準備就緒時，它會掛機。摘機間隔是延遲撥號訊號。
5. 始發端開始傳送地址資訊。
6. 呼叫被路由到其目的地。
7. 當遠端應答時，終端側通過摘機向始端傳送應答監督訊號。
8. 兩端在呼叫期間保持摘機。
9. 任一端都可以通過掛機斷開呼叫。

由於該欄位中的Wink Start仍然存在問題，因此建立延遲撥號。欄位中有裝置會傳送閃爍，但它在傳送閃爍後無法立即接收數字。



在Cisco 1750、2600、2800、3600、3800和VG200（使用E&M VIC）中，預設眨眼延遲為200毫秒。有關如何驗證和修改延遲撥號信令引數的詳細資訊，請參閱驗證延遲撥號信令延遲示例輸出。

驗證延遲撥號信令延遲

```
3660-2#show voice port 1/0/1

recEive And transMit 1/0/1 Slot is 1, Sub-unit is 0, Port is 1
 Type of VoicePort is E&M
```

```
Operation State is DORMANT
Administrative State is UP
No Interface Down Failure
Description is not set
Noise Regeneration is enabled
Non Linear Processing is enabled
Non Linear Mute is disabled
Non Linear Threshold is -21 dB
Music On Hold Threshold is Set to -38 dBm
In Gain is Set to 0 dB
Out Attenuation is Set to 0 dB
Echo Cancellation is enabled
Echo Cancellation NLP mute is disabled
Echo Cancellation NLP threshold is -21 dB
Echo Cancel Coverage is set to 8 ms
Playout-delay Mode is set to adaptive
Playout-delay Nominal is set to 60 ms
Playout-delay Maximum is set to 200 ms
Playout-delay Minimum mode is set to default, value 40 ms
Playout-delay Fax is set to 300 ms
Connection Mode is normal
Connection Number is not set
Initial Time Out is set to 10 s
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Ringing Time Out is set to 180 s
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Companding Type is u-law
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Analog Info Follows:
Currently processing none
Maintenance Mode Set to None (not in mtc mode)
Number of signaling protocol errors are 0
Impedance is set to 600r Ohm
Station name None, Station number None
Translation profile (Incoming):
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Voice card specific Info Follows:
Operation Type is 2-wire
E&M Type is 1
Signal Type is delay-dial
Dial Out Type is dtmf
In Seizure is inactive
Out Seizure is inactive
Digit Duration Timing is set to 100 ms
InterDigit Duration Timing is set to 100 ms
Pulse Rate Timing is set to 10 pulses/second
InterDigit Pulse Duration Timing is set to 750 ms
Clear Wait Duration Timing is set to 400 ms
Wink Wait Duration Timing is set to 200 ms
Wait Wink Duration Timing is set to 550 ms
Wink Duration Timing is set to 200 ms
Delay Start Timing is set to 300 ms
Delay Duration Timing is set to 2000 ms
Dial Pulse Min. Delay is set to 140 ms
Percent Break of Pulse is 60 percent
Auto Cut-through is disabled
Dialout Delay is 300 ms
```

修改延遲撥號引數

要調整延遲訊號持續時間，請使用voice-port命令**timing delay-duration *<msec>***。預設值為2000 ms。

要調整出站呼叫佔線前的最小延遲，請使用voice-port命令**timing delay-start *<msec>***。預設值為300 ms。

```
3660-2(config)#voice-port 1/0/1
3660-2(config-voiceport)#timing ?
  clear-wait          time of inactive seizure signal to declare call cleared in
                      milliseconds
  delay-duration      Max delay signal duration for delay dial signaling in
                      milliseconds
  delay-start         Timing of generation of delay start sig from detect
                      incoming seizure in milliseconds
  dial-pulse          dial pulse
  dialout-delay       delay before sending out digit or cut-thru
  digit               DTMF digit duration in milliseconds
  hookflash-in        Hookflash input duration in milliseconds
  inter-digit         DTMF inter-digit duration in milliseconds
  percentbreak        the break period of a dialing pulse
  pulse               pulse dialing rate in pulses per second
  pulse-inter-digit   pulse dialing inter-digit timing in milliseconds
  wait-wink           Max time to wait for wink signal after sending outgoing
                      seizure in milliseconds
  wink-duration       Max wink duration for wink start signaling in
                      milliseconds
  wink-wait           Time to wait before sending wink signal after detecting
                      incoming seizure in milliseconds

3660-2(config-voiceport)#timing delay-duration ?
  <100-5000>  milliseconds
3660-2(config-voiceport)#timing delay-duration 1000

3660-2(config-voiceport)#timing delay-start ?
  <20-2000>  milliseconds
3660-2(config-voiceport)#timing delay-start 100
```

有關計時命令的更多資訊，請參閱多服務應用命令。

開始撥號監督不匹配

有時，PBX對入站和出站呼叫使用不同的開始撥號監督協定。如果遠端沒有設定為正確處理這種情況，可能會導致不穩定的行為。此常規規則集適用：

- Immediate Start介面通常可以發起對Wink Start介面的呼叫。
- 如果延遲脈衝短於立即啟動延遲，立即啟動介面通常可以呼叫*延*遲撥號介面。否則，操作不穩定。
- 如果有延遲脈衝，Wink Start介面通常可以向*延*撥介面發起呼叫。否則，無論工作與否，呼叫將有50%的機率掛起。
- 延遲撥號介面可以將呼叫發起到Immediate Start或Wink Start介面。

相關資訊

- **語音 — 模擬E&M信令概述**

- 瞭解模擬E&M介面型別和佈線安排並排除故障
- 多重服務應用命令
- 配置語音埠
- 將Cisco 1750/2600/3600 E&M VIC連線到Lucent PBX G3R E&M中繼的E&M電纜引腳佈局
- 將Cisco 1750/2600/3600 E&M VIC連線到Nortel PBX選項11 E&M中繼的E&M電纜引腳佈局
- 語音技術支援
- 語音和IP通訊產品支援
- Cisco IP電話故障排除
- 技術支援 - Cisco Systems