



## Cisco Unified TAPI Examples

This chapter provides examples that illustrate how to use the Cisco Unified TAPI implementation. This chapter includes the following subroutines:

- [MakeCall](#), on page 1
- [OpenLine](#), on page 2
- [CloseLine](#), on page 5

### MakeCall

```
STDMETHODIMP CTActrl::MakeCall(BSTR destNumber, long pMakeCallReqID,
    long hLine, BSTR user2user, long translateAddr) {
    AFX_MANAGE_STATE(AfxGetStaticModuleState())

    USES_CONVERSION;
    tracer->tracef(SDI_LEVEL_ENTRY_EXIT, "CTActrl::Makecall %s %d %d %s %d\n",
        T2A((LPTSTR)destNumber), pMakeCallReqID, hLine, T2A((LPTSTR)user2user),
        translateAddr);

    //CtPhoneNo m_pno;
    CtTranslateOutput to;

    //LPCSTR pszTranslatable;
    CString sDialable;

    CString theDestNumber(destNumber);

    CtCall* pCall;
    CtLine* pLine = CtLine::FromHandle((HLINE)hLine);

    if (pLine == NULL) {
        tracer->tracef(SDI_LEVEL_ERROR, "CTActrl::MakeCall : pLine == NULL\n");
        return S_FALSE;
    } else {
        pCall = new CtCall(pLine);
        pCall->AddSink(this);

        sDialable = theDestNumber;

        if (translateAddr) {
            //m_pno.SetWholePhoneNo((LPCSTR)theDestNumber);
            //pszTranslatable = m_pno.GetTranslatable();
            if (TSUCCEEDED(to.TranslateAddress(pCall->GetLine()->GetDeviceID(),
```

```

        (LPCSTR)theDestNumber)) ) {
            sDialable = to.GetDialableString();
        }
    }
    HRESULT tr = pCall->MakeCall((LPCSTR)sDialable, 0, this);
    if( TPENDING(tr) || TSUCCEDED(tr)) {
        //GCGC the correct hCall pointer is not being returned yet
        if (translateAddr)
            Fire_MakecallReply(hLine, (long)tr, (long)pCall->GetHandle(),
                sDialable.AllocSysString());
        else
            Fire_MakecallReply(hLine, (long)tr, (long)pCall->GetHandle(), destNumber);

        return S_OK;
    } else {
        //GCGC delete the call that was created above.
        tracer->tracef(SDI_LEVEL_ERROR, "CTActrl::MakeCall : pCall->MakeCall
failed\n");
        delete pCall;
        return S_FALSE;
    }
}
}
}

```

## OpenLine

```

STDMETHODIMP CTActrl::OpenLine(long lDeviceID, BSTR lineDirNumber,
    long lPriviledges,    long lMediaModes, BSTR receiveIPAddress,
    long lreceivePort) {
    USES_CONVERSION;
    tracer->tracef(SDI_LEVEL_ENTRY_EXIT, "CTActrl::OpenLine %d %s %d %s %d\n",
        lDeviceID, T2A((LPTSTR)lineDirNumber), lPriviledges, lMediaModes,
        T2A((LPTSTR)receiveIPAddress), lreceivePort);

    int lineID;
    HRESULT tr;
    CString strReceiveIP(receiveIPAddress);
    CString strReqAddress(lineDirNumber);

    //bool bTermMedia = ((!strReceiveIP.IsEmpty()) && (lreceivePort != 0));
    bool bTermMedia = ((lMediaModes & LINEMEDIAMODE_AUTOMATEDVOICE) != 0) &&
        (lreceivePort != 0) && (!strReceiveIP.IsEmpty());
    CtLine* pLine;

    AFX_MANAGE_STATE(AfxGetStaticModuleState())

    tracer->tracef(SDI_LEVEL_DETAILED, "TAC: --> OpenLine()\n");

    if ((lDeviceID<0) && !strcmp((char *)lineDirNumber, "")) {
        tracer->tracef(SDI_LEVEL_ERROR, "TCD: error -bad device ID and no dirn to
open\n");
        return S_FALSE;
    }
    lineID = lDeviceID;

    if (lDeviceID<0) {
        //search for line ID in list of lines.
        CtLineDevCaps ldc;
    }
}

```

```

int numLines = ::TfxGetNumLines();
for( DWORD nLineID = 0; (int)nLineID < numLines; nLineID++ ) {
    if( /*ShouldShowLine(nLineID) &&*/ TSUCCEDED(ldc.GetDevCaps(nLineID)) ) {
        CtAddressCaps ac;
        tracer->tracef(SDI_LEVEL_DETAILED, "CTACtrl::OpenLine :
            Calling ac.GetAddressCaps %d 0\n", nLineID);
        if ( TSUCCEDED(ac.GetAddressCaps(nLineID, 0)) ) {
            // GCGC only one address supported
            CString strCurrAddress(ac.GetAddress());
            if (strReqAddress == strCurrAddress) {
                lineID = nLineID;
                break;
            }
        }

        } else {
            tracer->tracef(SDI_LEVEL_ERROR, "TAC: error -GetAddressCaps() failed\n");
        }
    }

    if (lDeviceID<0) {
        tracer->tracef(SDI_LEVEL_ERROR,
            "TAC: error -could not find dirn %s to open line.\n", (LPCSTR)lineDirNumber);

        return S_FALSE;
    }

    // if we are to do media termination; negotiate the extensions version

    DWORD retExtVersion;
    if (bTermMedia) {
        TRESULT tr3;
        tracer->tracef(SDI_LEVEL_DETAILED,
            "TAC: lineNegotiateExtVersion -appHandle = %d, deviceID = %d, API ver = %d,
                HiVer = %d, LoVer = %d\n", CtLine::GetAppHandle(), lineID,
                CtLine::GetApiVersion(lineID),
                0x80000000 | 0x00010000L,
                0x80000000 | 0x00020000L );
        tr3 = ::lineNegotiateExtVersion(CtLine::GetAppHandle(),
            lineID, CtLine::GetApiVersion(lineID),
            0x80000000 | 0x00010000L, // TAPI v1.3,
            0x80000000 | 0x00020000L,
            &retExtVersion);
        tracer->tracef(SDI_LEVEL_DETAILED,
            "TAC: lineNegotiateExtVersion returned: %d\n", tr3);
    }

    pLine = new CtLine();
    tr = pLine->Open(lineID, this, lPriviledges, lMediaModes);
    if( TSUCCEDED(tr) ) {
        if (bTermMedia) {
            if (retExtVersion == 0x10000) {
                CiscoLineDevSpecificUserControlRTPStream dsucr;
                dsucr.m_RecievePort = lreceivePort;
                dsucr.m_RecieveIP = ::inet_addr((LPCSTR)strReceiveIP);
                TRESULT tr2;

                tr2 = ::lineDevSpecific(pLine->GetHandle(),
                    0,0, dsucr.lpParams(), dsucr.dwSize());
                tracer->tracef(SDI_LEVEL_DETAILED,
                    "TAC: lineDevSpecific returned: %d\n", tr2);
            } else {

```

```

//GCGC here put in the new calls to set the media types!
CiscoLineDevSpecificUserControlRTPStream2 dsucr;
dsucr.m_RecievePort = lreceivePort;
dsucr.m_RecieveIP = ::inet_addr((LPCSTR)strReceiveIP);
dsucr.m_MediaCapCount = 4;

dsucr.m_MediaCaps[0].MediaPayload = 4;
dsucr.m_MediaCaps[0].MaxFramesPerPacket = 30;
dsucr.m_MediaCaps[0].G723BitRate = 0;
dsucr.m_MediaCaps[1].MediaPayload = 9;
dsucr.m_MediaCaps[1].MaxFramesPerPacket = 90;
dsucr.m_MediaCaps[1].G723BitRate = 1;
dsucr.m_MediaCaps[2].MediaPayload = 9;
dsucr.m_MediaCaps[2].MaxFramesPerPacket = 90;
dsucr.m_MediaCaps[2].G723BitRate = 2;
dsucr.m_MediaCaps[3].MediaPayload = 11;
dsucr.m_MediaCaps[3].MaxFramesPerPacket = 90;
dsucr.m_MediaCaps[3].G723BitRate = 0;

TRESULT tr2;

tr2 = ::lineDevSpecific(pLine->GetHandle(),
                      0,0, dsucr.lpParams(),dsucr.dwSize());
tracer->tracef(SDI_LEVEL_DETAILED,
              "TAC: lineDevSpecific returned: %d\n", tr2);
}
}

CtAddressCaps ac;
LPCSTR pszAddressName;
if ( TSUCCEDED(ac.GetAddressCaps(lineID, 0)) ) {
    // GCGC only one address supported
    pszAddressName = ac.GetAddress();
} else {
    pszAddressName = NULL;
    tracer->tracef(SDI_LEVEL_ERROR, "TAC: error -GetAddressCaps() failed.\n");
}

OpenedLine((long)pLine->GetHandle(), pszAddressName, 0);

// now let's try to open the associated phone device
// Get the phone from the line

DWORDnPhoneID;
bool b_phoneFound = false;
CtDeviceID did;
if((m_bUsesPhones) && TSUCCEDED(did.GetID("tapi/phone", pLine->GetHandle()))
) {
    nPhoneID = did.GetDeviceID();
    tracer->tracef(SDI_LEVEL_DETAILED,
                  "TAC: Retrieved phone device %d for line.\n",nPhoneID);

    // check to see if phone device is already open

    long hPhone;
    CtPhone* pPhone;
    if (!m_deviceID2phone.Lookup((long)nPhoneID,hPhone)) {
        tracer->tracef(SDI_LEVEL_SIGNIFICANT,
                      "TAC: phone device not found in open list, opening it...\n");

        pPhone = new CtPhone();
        TResult tr_phone;
        tr_phone = pPhone->Open(nPhoneID,this);
        if (TSUCCEDED(tr_phone)) {

```

```

::phoneSetStatusMessages(pPhone->GetHandle(),
    PHONESTATE_DISPLAY | PHONESTATE_LAMP |
    PHONESTATE_HANDSETHOOKSWITCH | PHONESTATE_HEADSETHOOKSWITCH |
    PHONESTATE_REINIT | PHONESTATE_CAPSCHANG | PHONESTATE_REMOVED,
    PHONEBUTTONMODE_KEYPAD | PHONEBUTTONMODE_FEATURE |
    PHONEBUTTONMODE_CALL |
    PHONEBUTTONMODE_LOCAL | PHONEBUTTONMODE_DISPLAY,
    PHONEBUTTONSTATE_UP | PHONEBUTTONSTATE_DOWN);
m_phone2line.SetAt((long)pPhone->GetHandle(), (long)pLine->GetHandle());
m_line2phone.SetAt((long)pLine->GetHandle(), (long)pPhone->GetHandle());
m_deviceID2phone.SetAt((long)nPhoneID, (long)pPhone->GetHandle());
m_phoneUseCount.SetAt((long)pPhone->GetHandle(), 1);
} else {
    tracer->tracef(SDI_LEVEL_ERROR,
        "TAC: error -phoneOpen failed with code %d\n", tr_phone);
}
} else {
    pPhone = CtPhone::FromHandle((HPHONE)hPhone);
    long theCount;

    if (m_phoneUseCount.Lookup((long)pPhone->GetHandle(), theCount))
        m_phoneUseCount.SetAt((long)pPhone->GetHandle(), theCount+1);
    else {
        //GCGC this would be an error condition!
        tracer->tracef(SDI_LEVEL_ERROR,
            "TAC: error -m_phoneUseCount does not contain phone entry.\n");
    }
} else {
    tracer->tracef(SDI_LEVEL_ERROR,
        "TAC: error -could not retrieve PhoneID for line.\n");
}
tracer->tracef(SDI_LEVEL_DETAILED, "TAC: <--OpenLine()\n");
return S_OK;
} else {
    tracer->tracef(SDI_LEVEL_ERROR, "TAC: error -lineOpen failed: %d\n", tr);
    tracer->tracef(SDI_LEVEL_DETAILED, "TAC: <--OpenLine()\n");
    OpenLineFailed(tr, 0);
    delete pLine;
    return S_FALSE;
}
}
}

```

## CloseLine

```

STDMETHODIMP CTActrl::CloseLine(long hLine) {
    AFX_MANAGE_STATE(AfxGetStaticModuleState())

    tracer->tracef(SDI_LEVEL_ENTRY_EXIT, "CTActrl::CloseLine %d\n", hLine);

    CtLine* pLine;
    pLine = CtLine::FromHandle((HLINE) hLine);

    if (pLine != NULL) {
        // close the line
        pLine->Close();
        // remove it from the list
        delete pLine;
        long hPhone;
    }
}

```

```
long theCount;
if ((m_bUsesPhones) && (m_line2phone.Lookup(hLine,hPhone))) {
    CtPhone* pPhone = CtPhone::FromHandle((HPHONE)hPhone);
    if (pPhone != NULL) {
        if (m_phoneUseCount.Lookup(hPhone,theCount))
            if (theCount>1) {
                // decrease the number of lines using this phone
                m_phoneUseCount.SetAt(hPhone,theCount-1);
            }
            else {
                //nobody else is using this phone, so let's remove it.
                m_deviceID2phone.RemoveKey((long)pPhone->GetDeviceID());
                m_phone2line.RemoveKey(hPhone);
                m_phoneUseCount.RemoveKey(hPhone);

                //now let's close the phone
                pPhone->Close();
            }
        }
        //either way, remove the map entry from line to phone.
        m_line2phone.RemoveKey(hLine);
    }
    return S_OK;
}
else
    return S_FALSE;
}
```