

### Description:

This document describes how to use advanced features with a Siretta Industrial Modem.

The modems covered by this document are listed below:

- ZETA-xxP-LTEM (GL) - LTE Cat M & LTE NB IoT Global Industrial Modem
- ZETA-xxP-LTE1 (EU) - LTE Cat 1 European Industrial Modem
- ZETA-xxP-LTE4 (EU) - LTE Cat 4 European Industrial Modem

The topics covered by the document are listed below:

- COM Port Setup
- Download Web Page Example
- Upload and Download File Using FTP Example

### Requirements

1. Siretta Industrial Modem
2. Data enabled 2G/3G/4G/LTE Cat M SIM card for 2G/3G/4G/LTE Cat M enabled modems / data enabled LTE Cat NB IoT SIM card for LTE Cat NB IoT enabled modems
3. Cellular antenna with SMA female connector

### First steps

- Insert the SIM card in to the modem and attach the antenna.
- Power up the modem and wait for at least 40 seconds for the unit to power on and register to the network.
- Connect the modem to the PC serial port.

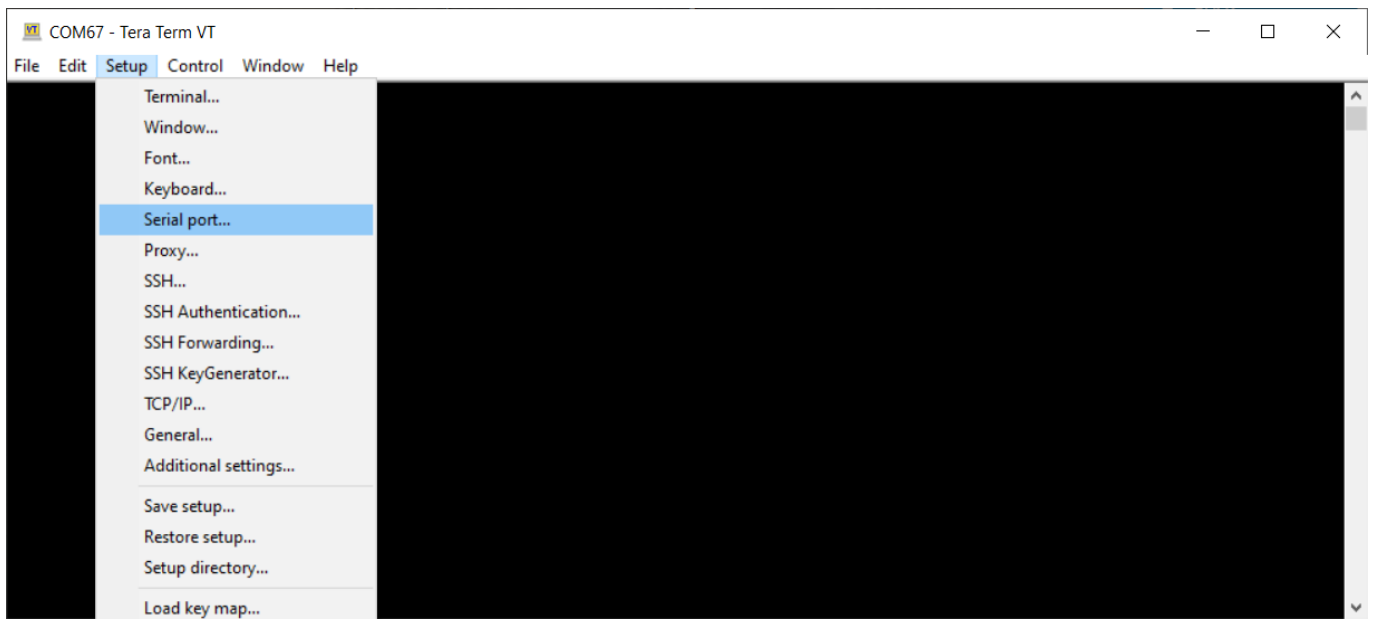
### COM Port Setup

Step 1) Open TeraTerm (or your preferred terminal emulator: PuTTY,Hyperterminal,RealTerm)

Step 2) Select new connection



Step 3) Setup the COM port for your connection.



Step 4) Configure the port with the following settings (These settings are standard for all Siretta Industrial Modems):

- Bits per second: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: none

Tera Term: Serial port setup ✕

<u>P</u> ort:	COM67 ▾	<input type="button" value="OK"/>
<u>B</u> aud rate:	115200 ▾	
<u>D</u> ata:	8 bit ▾	<input type="button" value="Cancel"/>
<u>P</u> arity:	none ▾	
<u>S</u> top:	1 bit ▾	<input type="button" value="H&lt;u&gt;e&lt;/u&gt;lp"/>
<u>F</u> low control:	none ▾	

Transmit delay

<input type="text" value="0"/>	msec/ <u>ch</u> ar	<input type="text" value="0"/>	msec/ <u>l</u> ine
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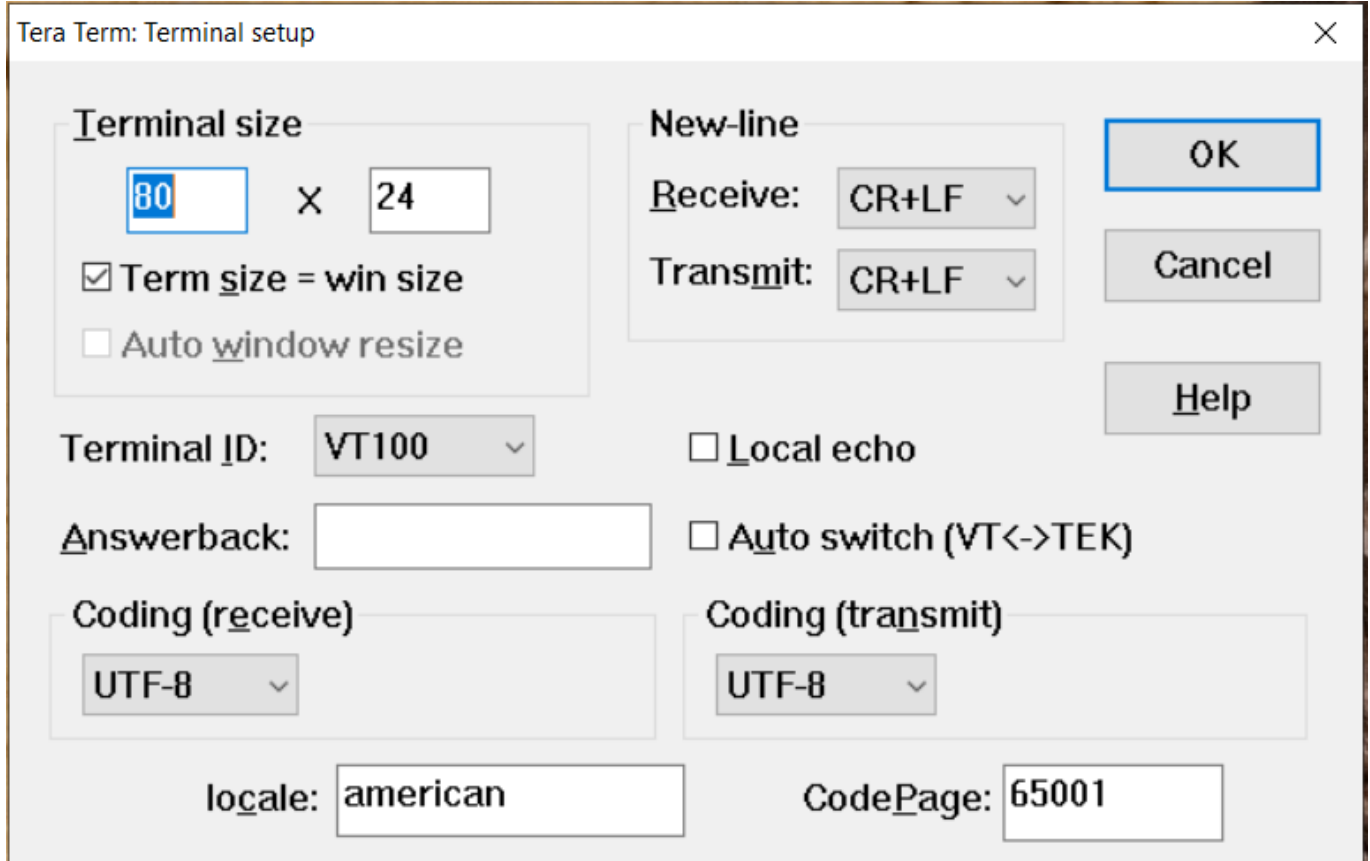
Step 5) Send AT commands to the unit. Send the initial 'AT' command to determine the serial communication with the modem is working correctly. If communication is successful, you will get an 'OK' response from the modem. You can then issue any other commands as required.

```
COM67 - Tera Term VT
File Edit Setup Control Window Help
AT
OK
AT+CGMR
20.00.404
OK
AT+CGSN
351622072806454
OK
AT+CMEE=2
OK
```

## Download Web Page Example

### Connect TCP socket to web server IP address or domain

Configure the terminal emulator to enable line feeds with carriage returns: + as shown in the figure below (Example using TeraTerm)



The screenshot shows the 'Tera Term: Terminal setup' dialog box. It contains several configuration options:

- Terminal size:** Columns: 80, Rows: 24.  Term size = win size,  Auto window resize.
- New-line:** Receive: CR+LF, Transmit: CR+LF.
- Terminal ID:** VT100.
- Answerback:** (empty text box).
- Coding (receive):** UTF-8.
- Coding (transmit):** UTF-8.
- locale:** american.
- CodePage:** 65001.
- Local echo.
- Auto switch (VT<->TEK).
- Buttons: OK, Cancel, Help.

Type in the following

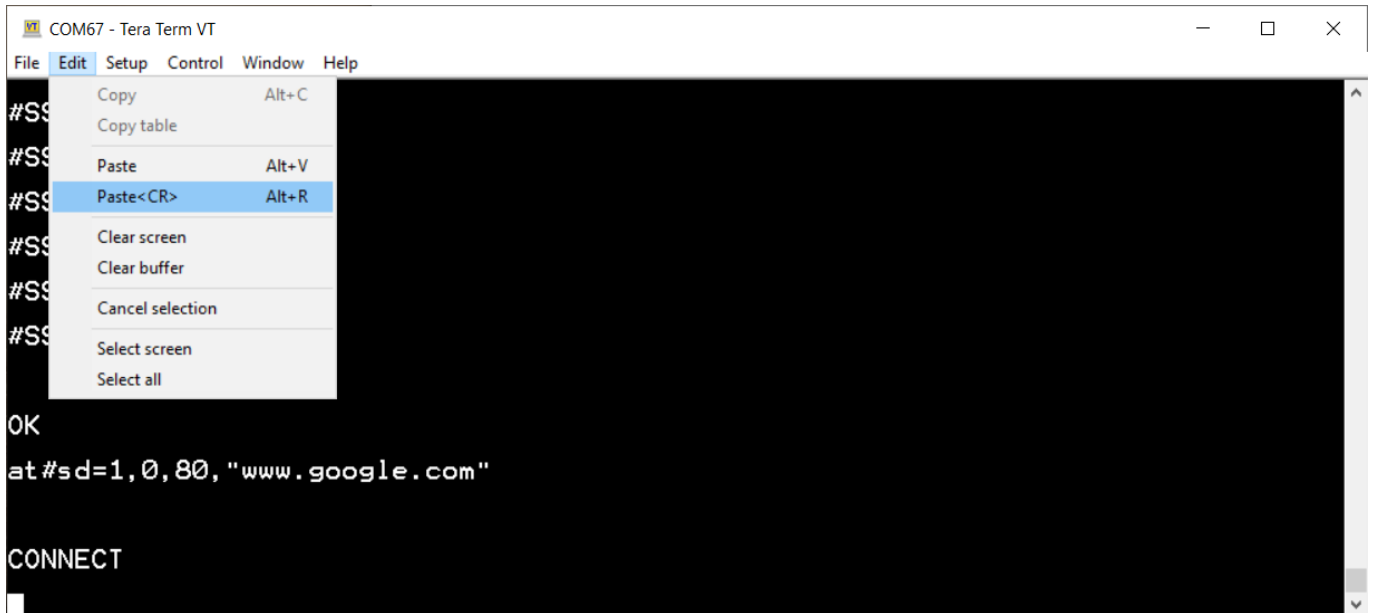
```
AT#SD=1,0,xxxx,"y.y.y.y"
```

```
//Example to download google home page
```

```
AT#SD=1,0,80,"www.google.com"
```

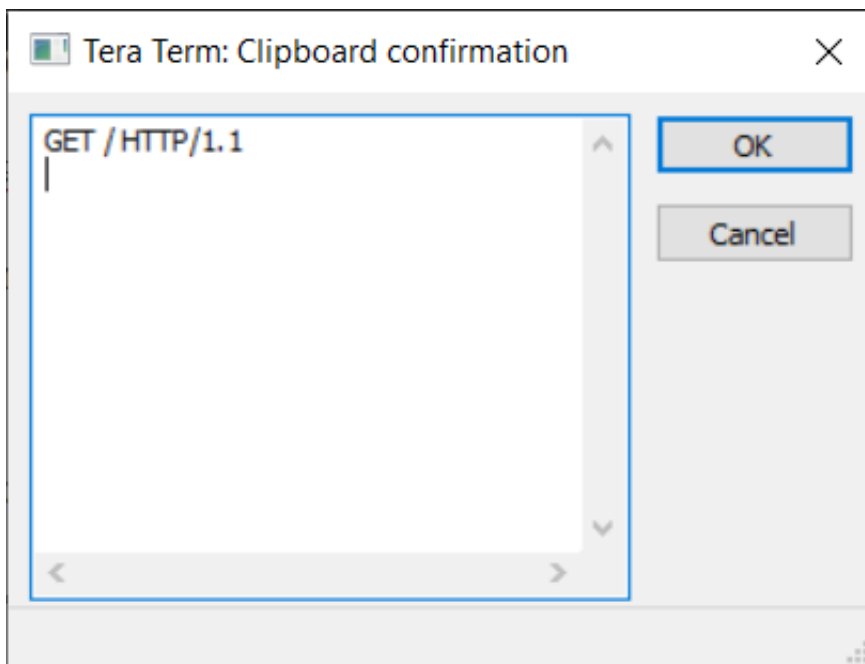
```
//Receive following when connection is established to server socket:
```

```
CONNECT
```



//Type the following to the server socket connection

```
GET / HTTP/1.1
```



**NOTE:**

1. There are two new lines after the GET / HTTP/1.1 statement
2. When executed this will send GET / HTTP/1.1 to the listening server but you will not see the output on the screen as it is being pushed directly to the listening server
3. Upon receipt of this command to the server it will respond

//You will receive the following:

```
////////////////////////////////////  
//Start Webpage download  
////////////////////////////////////
```

CONNECT

HTTP/1.1 200 OK

Date: Thu, 29 Aug 2019 13:55:34 GMT

Expires: -1

Cache-Control: private, max-age=0

Content-Type: text/html; charset=ISO-8859-1

P3P: CP="This is not a P3P policy! See g.co/p3phelp for more info."

Server: gws

X-XSS-Protection: 0

X-Frame-Options: SAMEORIGIN

Set-Cookie: 1P\_JAR=2019-08-29-13; expires=Sat, 28-Sep-2019 13:55:34 GMT; path=/; domain=.google.com; SameSite=none

Set-Cookie: NID=188=FJKdKxOBjEzmYQWKp\_7igZim-y8go9KRRVgh\_m9FmUjGgh8H00Fn7-sOWIRm7cy3eS9XahMaYZ84YL2RCo8GFX-Zrd\_JjBp0fYsHdOqgAb7HH9BdqThWyuJFdQJoP9Rvv3qj1FAZTeZqGijreSRU6pd\_89xthpwucbM76Ltbg\_A; expires=Fri, 28-Feb-2020 13:55:34 GMT; path=/; domain=.google.com; HttpOnly

Accept-Ranges: none

Vary: Accept-Encoding

Transfer-Encoding: chunked

```
<html itemscope="" itemtype="http://schema.org/WebPage" lang="en-GB"><head><meta content="text/html; charset=UTF-8" http-equiv="Content-Type"><meta content="/images/branding/googleg/1x/googleg_standard_color_128dp.png" itemprop="image"><title>Google</title><script nonce="qdD4ZHhZRvzTjuVgl9o8kg==">(function(){window.google={kEI:"VtlnXYbLKo6YlwS31rnwBg",kEXPI:'0,1353747,2014,2423,1225,731,223,510,1065,3151,378,207,1017,53,1431,40,536,3,124,10,713,39,187,90,22,260,1132205,332,1197592,329487,1294,12383,4855,32692,15247,867,12163,5281,1100,3335,2,2,6801,364,529,2790,5505,224,2212,5373,575,1119,2,578,728,2431,59,2,4,1297,4323,4968,773,2249,1408,4483,9,8159,669,1050,1808,1478,7,3,488,2044,7242,1667,1905,3392,157,1859,38,920,873,1217,1364,1611,2736,1558,1503,2,631,3240,1516,2,5928,620,2883,21,318,235,882,902,1153,975,1,368,2778,519,400,992,509,776,10,107,2687,967,48,553,11,14,1279,2212,202,39,284,5,1022,223,7,840,324,193,1522,820,2620,335,483,260,52,1136,3,1511,537,15,606,1839,184,546,49,1325,377,257,103,326,1071,190,693,54,61,184,72,112,44,207,1,895,327,1286,14,84,336,81,506,19,1901,144,1281,822,90,10,373,1178,161,729,501,343,214,669,2214,209,135,502,19,187,65,41,219,1013,2,273,240,286,5,504,224,591,524,76,619,356,1115,485,736,369,270,220,337,1307,21,112,111,310,57,59,118,838,1247,78,1031,1104,612,34,280,393,8,112,2,284,411,128,140,34,51,3,167,305,56,30,332,394,97,58,37,739,291,219,5898810,1873,1198,5997579,2799690,4,1572,549,333,444,1,2,80,1,900,579,13,304,1,8,1,2,2132,1,1,1,1,1,414,1,748,141,59,726,3,7,563,1,3560,1,8,77,5,17,4,2,24,20746286,1557154',authuser:0,kscs:'c9c918f0_VtlnXYbLKo6YlwS31rnwBg',kGL:'GB',kBL:'uT6_'};google.sn='webhp';google.kHL='en-GB';google.jsfs='Ffpdje'});(function(){google.lc=[];google.li=0;google.getEI=function(a){for(var b;a&&(!a.getAttribute||!(b=a.getAttribute("eid")));)a=a.parentNode;return b||google.kEI};google.getLEI=function(a){for(var b=null;a&&(!a.getAttribute||!(b=a.getAttribute("leid")));)a=a.parentNode;return b};google.https=function(){return"https"===window.location.protocol};google.ml=function(){return null};google.time=function(){return(new Date).getTime()};google.log=function(a,b,e,c,g){if(a=google.logUrl(a,b,e,c,g)){b=new Image;var d=google.lc,f=google.li;d[f]=b;b.onerror=b.onload=b.onabort=function(){delete
```

```
d[f]];google.vel&&google.vel.lu&&google.vel.lu(a);b.src=a;google.li=f+1}};google.logUrl=function(a,b,e,c,g){var d="",f=google.lsl||"";e||-1!=b.searc
h("&ei=")}|(d="&ei="+google.getEl(c),-1==b.search("&ei=")&&(c=google.getLEI(c))&&(d+="&ei="+c));c="";!e&&google.cshid&&-1==b.search("&c
shid=")&&"slh"!="a&&(c="&cshid="+google.cshid);a=e||"/"+(g||"gen_204")+ "?atyp=i&ct="+a+"&cad="+b+d+f+"&zx="+google.time()+c;/^http:/i.test(
a)&&google.https()&&(google.ml(Error("a"),1,{src:a,gimm:1}),a="");return a;});.call(this);(function(){google.y={};google.x=function(a,b){if(a)var
c=a.id;else(do c=Math.random();while(google.y[c]))google.y[c]=[a,b];return!1};google.lm=[];google.plm=function(a){google.lm.push.apply(google.
lm,a)};google.lq=[];google.load=function(a,b,c){google.lq.push([[a,b,c]]);google.loadAll=function(a,b){google.lq.push([a,b]);}.call(this);google.f={
};var a=window.location,b=a.href.indexOf("#");if(0<=b){var c=a.href.substring(b+1);/^(^)&q=/ .test(c)&&-1==c.indexOf("#")&&a.replace("/search?" +
c.replace(/^(^)&fp=[^&]*g, "")+ "&cad=h");};</script><style>#gb{font: 13px/27px Arial,sans-serif;height:30px}#gbz,#gbg{position:absolute;white-spa
ce:nowrap;top:0;height:30px;z-index: 1000}#gbz{left:0;padding-left:4px}#gbg{right:0;padding-
right:5px}#gbs{background:transparent;position:absolute;top:-999px;visibility:hidden;z-index:998;right:0}.gbito
#gbs{background:#fff}#gbx3,#gbx4{background-color:#2d2d2d;background-image:none;_background-image:none;background-position:0
-138px;background-repeat:repeat-x;border-bottom:1px solid #000;font-size:24px;height:29px;_height:30px;opacity:1;filter:alpha(opacity=100);po
sition:absolute;top:0;width:100%;z-index:990}#gbx3{left:0}#gbx4{right:0}#gbb{position:relative}#gbbw{left:0;position:absolute;top:30px;width:100
%}.gbtcb{position:absolute;visibility:hidden}#gbz .gbtcb{right:0}#gbg .gbtcb{left:0}.gbxx{display:none !important}.gbxo{opacity:0
!important;filter:alpha(opacity=0) !important}.gbm{position:absolute;z-index:999;top:-999px;visibility:hidden;text-align:left;border:1px solid
#bebebe;background:#fff;-moz-box-shadow:-1px 1px 1px rgba(0,0,0,.2);-webkit-box-shadow:0 2px 4px rgba(0,0,0,.2);box-shadow:0 2px 4px
rgba(0,0,0,.2)}.gbrtl .gbm{-moz-box-shadow:1px 1px 1px rgba(0,0,0,.2)}.gbito .gbm,.gbito #gbs{top:29px;visibility:visible}#gbz .gbm{left:0}#gbg .g
bm{right:0}.gbxms{background-color:#ccc;display:block;position:absolute;z-index:1;top:-1px;left:-2px;right:-2px;bottom:-2px;opacity:.4;-moz-bord
er-radius:3px;filter:progid:DXImageTransform.Microsoft.Blur(pixelradius=5)*opacity:1;*top:-2px;*left:-5px;*right:5px;*bottom:4px;-ms-filter:"progi
d:DXImageTransform.Microsoft.Blur(pixelradius=5)";opacity:1\0;/top:-4px\0;/left:-6px\0;/right:5px\0;/bottom:4px\0}.gbma{position:relative;top:-1p
x;border-style:solid dashed dashed;border-color:transparent;border-top-color:#c0c0c0;display:-moz-inline-block;display:inline-block;font-
size:0;height:0;line-height:0;width:0;border-width:3px 3px 0;padding-top:1px;left:4px}#gbztmls1,#gbi4m1,#gbi4s,#gbi4t{zoom:1}.gbtc,.gbmc,.gbm
cc{display:block;list-style:none;margin:0;padding:0}.gbmc{background:#fff;padding:10px 0;position:relative;z-index:2;zoom:1}.gbt{position:relativ
e;display:-moz-inline-block;display:inline-block;line-height:27px;padding:0;vertical-align:top}.gbt{*display:inline}.gbito{box-shadow:0 2px 4px
rgba(0,0,0,.2);-moz-box-shadow:0 2px 4px rgba(0,0,0,.2);-webkit-box-shadow:0 2px 4px
rgba(0,0,0,.2)}.gbzt,.gbgt{cursor:pointer;display:block;text-decoration:none !important}span#gbg6,span#gbg4{cursor:default}.gbts{border-left:1px
solid transparent;border-right:1px solid transparent;display:block;*display:inline-block;padding:0 5px;position:relative;z-
index:1000}.gbts{*display:inline}.gbzt .gbts{display:inline;zoom:1}.gbito .gbts{background:#fff;border-color:#bebebe;color:#36c;padding-
bottom:1px;padding-top:2px}.gbz0l .gbts{color:#fff;font-weight:bold}.gbtsa{padding-right:9px}#gbz .gbzt,#gbz .gbgt,#gbg
.gbgt{color:#ccc!important}.gbtb2{display:block;border-top:2px solid transparent}.gbito .gbzt .gbtb2,.gbito .gbgt .gbtb2{border-top-width:0}.gbtb .g
bts{background:url(https://ssl.gstatic.com/gb/images/b_8d5afc09.png);_background:url(https://ssl.gstatic.com/gb/images/b8_3615d64d.png);bac
kground-position:-27px -22px;border:0;font-size:0;padding:29px 0 0;*padding:27px 0 0;width:1px}.gbzt:hover,.gbzt:focus,.gbgt-
hvr,.gbgt:focus{background-color:#4c4c4c;background-image:none;_background-image:none;background-position:0 -102px;background-
repeat:repeat-x;outline:none;text-decoration:none !important}.gbpdjs .gbito .gbm{min-width:99%}.gbz0l .gbtb2{border-top-color:#dd4b39!importa
nt}#gbi4s,#gbi4s1{font-weight:bold}#gbg6.gbgt-hvr,#gbg6.gbgt:focus{background-color:transparent;background-image:none}.gbg4a{font-
size:0;line-height:0}.gbg4a .gbts{padding:27px 5px 0;*padding:25px 5px 0}.gbito .gbg4a .gbts{padding:29px 5px 1px;*padding:27px 5px
1px}#gbi4i,#gbi4id{left:5px;border:0;height:24px;position:absolute;top:1px;width:24px}.gbito #gbi4i,.gbito
#gbi4id{top:3px}.gbi4p{display:block;width:24px}#gbi4id{background-position:-44px -101px}#gbmpid{background-position:0 0}#gbmpi,#gbmpid{
border:none;display:inline-block;height:48px;width:48px}#gbmpiw{display:inline-block;line-height:9px;padding-left:20px;margin-
top:10px;position:relative}#gbmpi,#gbmpid,#gbmpiw{*display:inline}#gbg5{font-size:0}#gbgs5{padding:5px !important}.gbito #gbgs5{padding:7px
5px 6px !important}#gbi5{background:url(https://ssl.gstatic.com/gb/images/b_8d5afc09.png);_background:url(https://ssl.gstatic.com/gb/images/b
8_3615d64d.png);background-position:0 0;display:block;font-size:0;height:17px;width:16px}.gbito #gbi5{background-position:-6px -22px}.gbn
.gbmt,.gbn .gbmt:visited,.gbd .gbmt,.gbd .gbmt:visited{color:#dd8e27 !important}.gbf .gbmt,.gbf .gbmt:visited{color:#900
!important}.gbmt,.gbml1,.gbmlb,.gbmt:visited,.gbml1:visited,.gbmlb:visited{color:#36c !important;text-decoration:none
!important}.gbmt,.gbmt:visited{display:block}.gbml1,.gbmlb,.gbml1:visited,.gbmlb:visited{display:inline-block;margin:0
10px}.gbml1,.gbmlb,.gbml1:visited,.gbmlb:visited{*display:inline}.gbml1,.gbml1:visited{padding:0 10px}.gbml1-hvr,.gbml1:focus{outline:none;text-
decoration:underline !important}#gbpm .gbml1{display:inline;margin:0;padding:0;white-space:nowrap}.gbmlb,.gbmlb:visited{line-
height:27px}.gbmlb-hvr,.gbmlb:focus{outline:none;text-decoration:underline !important}.gbmlbw{color:#ccc;margin:0 10px}.gbmt{padding:0
20px}.gbmt:hover,.gbmt:focus{background:#eee;cursor:pointer;outline:0 solid black;text-decoration:none
!important}.gbm0l,.gbm0l:visited{color:#000 !important;font-weight:bold}.gbmh{border-top:1px solid #bebebe;font-size:0;margin:10px 0}#gbd4
.gbmc{background:#f5f5f5;padding-top:0}#gbd4 .gbsbic::-webkit-scrollbar-track:vertical{background-color:#f5f5f5;margin-
top:2px}#gbmpdv{background:#fff;border-bottom:1px solid #bebebe;-moz-box-shadow:0 2px 4px rgba(0,0,0,.12);-o-box-shadow:0 2px 4px
rgba(0,0,0,.12);-webkit-box-shadow:0 2px 4px rgba(0,0,0,.12);box-shadow:0 2px 4px rgba(0,0,0,.12);position:relative;z-index:1}#gbd4 .gbmh{ma
rgin:0}.gbmtc{padding:0;margin:0;line-height:27px}.GBMCC:last-child:after,#GBMPAL:last-child:after{content:'\0A\0A';white-
space:pre;position:absolute}#gbmps{*zoom:1}#gbd4 .gbpc,#gbmpas .gbmt{line-height:17px}#gbd4 .gbpgs .gbmtc{line-height:27px}#gbd4
```

```
.gbmt{border-bottom:1px solid #bebebe}#gbd4 .gbpc{display:inline-block;margin:16px 0 10px;padding-right:50px;vertical-align:top}#gbd4
.gbpc{*display:inline}.gbpc .gbps .gbpc .gbps2{display:block;margin:0 20px}#gbmplp.gbps{margin:0 10px}.gbpc .gbps{color:#000;font-
weight:bold}.gbpc .gbpd{margin-bottom:5px}.gbpd .gbmt .gbpd .gbps{color:#666 !important}.gbpd
.gbmt{opacity:.4;filter:alpha(opacity=40)}.gbps2{color:#666;display:block}.gbp0{display:none}.gbp0 .gbps2{font-weight:bold}#gbd4
.gbpmcc{margin-top:5px}.gbpmmc{background:#fef9db}.gbpmmc .gbpmtc{padding:10px 20px}#gbpm{border:0;*border-collapse:collapse;border-
spacing:0;margin:0;white-space:normal}#gbpm .gbpmtc{border-top:none;color:#000 !important;font:11px Arial,sans-serif}#gbpms{*white-space:
nowrap}.gbpms2{font-weight:bold;white-space:nowrap}#gbmpal{*border-collapse:collapse;border-spacing:0;border:0;margin:0;white-
space:nowrap;width:100%}.gbmpala .gbmpalb{font:13px Arial,sans-serif;line-height:27px;padding:10px 20px 0;white-
space:nowrap}.gbmpala{padding-left:0;text-align:left}.gbmpalb{padding-right:0;text-align:right}#gbmpasb .gbps{color:#000}#gbmpal
.gbqfbb{margin:0 20px}.gbp0 .gbps{*display:inline}a.gbiba{margin:8px 20px 10px}.gbmpiaw{display:inline-block;padding-right:10px;margin-botto
m:6px;margin-top:10px}.gbxv{visibility:hidden}.gbmpiaa{display:block;margin-
top:10px}.gbmpia{border:none;display:block;height:48px;width:48px}.gbmprnw{display:inline-block;height:auto;margin:10px 0;vertical-align:top}
.gbqfb .gbqfba .gbqfbb{-moz-border-radius:2px;-webkit-border-radius:2px;border-radius:2px;cursor:default !important;display:inline-block;font-
weight:bold;height:29px;line-height:29px;min-width:54px;*min-width:70px;padding:0 8px;text-align:center;text-decoration:none !important;-moz-
user-select:none;-webkit-user-select:none}.gbqfb:focus .gbqfba:focus .gbqfbb:focus{border:1px solid #4d90fe;-moz-box-shadow:inset 0 0 1px
rgba(255, 255, 255, 0.5);-webkit-box-shadow:inset 0 0 1px rgba(255, 255, 255, 0.5);box-shadow:inset 0 0 1px rgba(255, 255, 255,
0.5);outline:none}.gbqfb-hvr:focus .gbqfba-hvr:focus .gbqfbb-hvr:focus{-webkit-box-shadow:inset 0 0 1px #fff,0 1px 1px rgba(0,0,0,.1);-moz-
box-shadow:inset 0 0 1px #fff,0 1px 1px rgba(0,0,0,.1);box-shadow:inset 0 0 1px #fff,0 1px 1px rgba(0,0,0,.1)}.gbqfb-no-
focus:focus{border:1px solid #3079ed;-moz-box-shadow:none;-webkit-box-shadow:none;box-shadow:none}.gbqfb-hvr .gbqfba-hvr .gbqfbb-
hvr{-webkit-box-shadow:0 1px 1px rgba(0,0,0,.1);-moz-box-shadow:0 1px 1px rgba(0,0,0,.1);box-shadow:0 1px 1px rgba(0,0,0,.1)}.gbqfb:-moz-
focus-inner .gbqfba:-moz-focus-inner .gbqfbb:-moz-focus-inner{border:0}.gbqfba .gbqfbb{border:1px solid #dcdcdc;border-
color:rgba(0,0,0,.1);color:#444 !important;font-size:11px}.gbqfb{background-color:#4d90fe;background-image:-webkit-gradient(linear,left top,left
bottom,from(#4d90fe),to(#4787ed));background-image:-webkit-linear-gradient(top,#4d90fe,#4787ed);background-image:-moz-linear-gradient(to
p,#4d90fe,#4787ed);background-image:-ms-linear-gradient(top,#4d90fe,#4787ed);background-image:-o-linear-gradient(top,#4d90fe,#4787ed);b
ackground-image:linear-
gradient(top,#4d90fe,#4787ed);filter:progid:DXImageTransform.Microsoft.gradient(startColorStr='#4d90fe',EndColorStr='#4787ed');border:1px
solid #3079ed;color:#fff !important;margin:0 0}.gbqfb-hvr{border-color:#2f5bb7}.gbqfb-hvr:focus{border-color:#2f5bb7}.gbqfb-hvr .gbqfb-
hvr:focus{background-color:#357ae8;background-image:-webkit-gradient(linear,left top,left bottom,from(#4d90fe),to(#357ae8));background-ima
ge:-webkit-linear-gradient(top,#4d90fe,#357ae8);background-image:-moz-linear-gradient(top,#4d90fe,#357ae8);background-image:-ms-linear-g
radient(top,#4d90fe,#357ae8);background-image:-o-linear-gradient(top,#4d90fe,#357ae8);background-image:linear-
gradient(top,#4d90fe,#357ae8)}.gbqfb:active{background-color:inherit;-webkit-box-shadow:inset 0 1px 2px rgba(0, 0, 0, 0.3);-moz-box-
shadow:inset 0 1px 2px rgba(0, 0, 0, 0.3);box-shadow:inset 0 1px 2px rgba(0, 0, 0, 0.3)}.gbqfba{background-color:#f5f5f5;background-
image:-webkit-gradient(linear,left top,left bottom,from(#f5f5f5),to(#f1f1f1));background-image:-webkit-linear-gradient(top,#f5f5f5,#f1f1f1);backgro
und-image:-moz-linear-gradient(top,#f5f5f5,#f1f1f1);background-image:-ms-linear-gradient(top,#f5f5f5,#f1f1f1);background-image:-o-linear-gradi
ent(top,#f5f5f5,#f1f1f1);background-image:linear-gradient(top,#f5f5f5,#f1f1f1);filter:progid:DXImageTransform.Microsoft.gradient(startColorStr='
#f5f5f5',EndColorStr='#f1f1f1')}.gbqfba-hvr .gbqfba-hvr:active{background-color:#f8f8f8;background-image:-webkit-gradient(linear,left top,left bot
tom,from(#f8f8f8),to(#f1f1f1));background-image:-webkit-linear-gradient(top,#f8f8f8,#f1f1f1);background-image:-moz-linear-gradient(top,#f8f8f8,
#f1f1f1);background-image:-ms-linear-gradient(top,#f8f8f8,#f1f1f1);background-image:-o-linear-gradient(top,#f8f8f8,#f1f1f1);background-image:l
inear-gradient(top,#f8f8f8,#f1f1f1);filter:progid:DXImageTransform.Microsoft.gradient(startColorStr='#f8f8f8',EndColorStr='#f1f1f1')}.gbqfbb{back
ground-color:#fff;background-image:-webkit-gradient(linear,left top,left bottom,from(#fff),to(#fbfbfb));background-image:-webkit-linear-gradient(to
p,#fff,#fbfbfb);background-image:-moz-linear-gradient(top,#fff,#fbfbfb);background-image:-ms-linear-gradient(top,#fff,#fbfbfb);background-image
:-o-linear-gradient(top,#fff,#fbfbfb);background-image:linear-gradient(top,#fff,#fbfbfb);filter:progid:DXImageTransform.Microsoft.gradient(startCol
orStr='#ffffff',EndColorStr='#fbfbfb')}.gbqfbb-hvr .gbqfbb-hvr:active{background-color:#fff;background-image:-webkit-gradient(linear,left top,left b
ottom,from(#fff),to(#f8f8f8));background-image:-webkit-linear-gradient(top,#fff,#f8f8f8);background-image:-moz-linear-gradient(top,#fff,#f8f8f8);b
ackground-image:-ms-linear-gradient(top,#fff,#f8f8f8);background-image:-o-linear-gradient(top,#fff,#f8f8f8);background-image:linear-gradient(to
p,#fff,#f8f8f8);filter:progid:DXImageTransform.Microsoft.gradient(startColorStr='#ffffff',EndColorStr='#f8f8f8')}.gbqfba-hvr .gbqfba-
hvr:active .gbqfbb-hvr .gbqfbb-hvr:active{border-color:#c6c6c6;-webkit-box-shadow:0 1px 1px rgba(0,0,0,.1);-moz-box-shadow:0 1px 1px
rgba(0,0,0,.1);box-shadow:0 1px 1px rgba(0,0,0,.1);color:#222 !important}.gbqfba:active .gbqfbb:active{-webkit-box-shadow:inset 0 1px 2px
rgba(0,0,0,.1);-moz-box-shadow:inset 0 1px 2px rgba(0,0,0,.1);box-shadow:inset 0 1px 2px rgba(0,0,0,.1)} #gbmpas{max-height:220px}#gbmm{
max-height:530px}.gbsb{-webkit-box-sizing:border-box;display:block;position:relative;*zoom:1}.gbsbic{overflow:auto}.gbsbis .gbsbt .gbsbis
.gbsbb{-webkit-mask-box-image:-webkit-gradient(linear,left top,right top,color-stop(0,rgba(0,0,0,.1)),color-stop(.5,rgba(0,0,0,.8)),color-
stop(1,rgba(0,0,0,.1)));left:0;margin-right:0;opacity:0;position:absolute;width:100%}.gbsb .gbsbt:after .gbsb
.gbsbb:after{content:"";display:block;height:0;left:0;position:absolute;width:100%}.gbsbis .gbsbt{background:-webkit-gradient(linear,left top,left b
ottom,from(rgba(0,0,0,.2)),to(rgba(0,0,0,0)));background-image:-webkit-linear-gradient(top,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:-moz-
linear-gradient(top,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:-ms-linear-gradient(top,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:-o-
```



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linear-gradient(top,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:linear-gradient(top,rgba(0,0,0,.2),rgba(0,0,0,0));height:6px;top:0}.gbsb
.gbsbt:after{border-top:1px solid #ebeb;border-color:rgba(0,0,0,.3);top:0}.gbsb .gbsbb{-webkit-mask-box-image:-webkit-gradient(linear,left
top,right top,color-stop(0,rgba(0,0,0,.1)),color-stop(.5,rgba(0,0,0,.8)),color-stop(1,rgba(0,0,0,.1)));background:-webkit-gradient(linear,left
bottom,left top,from(rgba(0,0,0,.2)),to(rgba(0,0,0,0)));background-image:-webkit-linear-gradient(bottom,rgba(0,0,0,.2),rgba(0,0,0,0));background-
image:-moz-linear-gradient(bottom,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:-ms-linear-gradient(bottom,rgba(0,0,0,.2),rgba(0,0,0,0));back
ground-image:-o-linear-gradient(bottom,rgba(0,0,0,.2),rgba(0,0,0,0));background-image:linear-
gradient(bottom,rgba(0,0,0,.2),rgba(0,0,0,0));bottom:0;height:4px}.gbsb .gbsbb:after{border-bottom:1px solid #ebeb;border-
color:rgba(0,0,0,.3);bottom:0} </style><style>body,td,a,p,.h{font-family:arial,sans-serif}body{margin:0;overflow-y:scroll}#gog{padding:3px 8px
0}td{line-height:.8em}.gac_m td{line-height:1.7px}form{margin-bottom:20px}.h{color:#36c}.q{color:#00c}.ts td{padding:0}.ts{border-
collapse:collapse}em{font-weight:bold;font-style:normal}.lst{height:25px;width:496px}.gsfi,.lst{font:18px arial,sans-serif}.gsfs{font:17px arial,sans-
serif}.ds{display:inline-block;margin:3px 0 4px;margin-left:4px}input{font-family:inherit}.a.gb1,.a.gb2,.a.gb3,.a.gb4{color:#11c
!important}body{background:#fff;color:black}.a{color:#11c;text-decoration:none}.a:hover,.a.active{text-decoration:underline}.fl
a{color:#36c}.a.visited{color:#551a8b}.a.gb1,.a.gb4{text-decoration:underline}.a.gb3:hover{text-decoration:none}#ghead .a.gb2:hover{color:#fff
!important}.sblc{padding-top:5px}.sblc a{display:block;margin:2px 0;margin-left:13px;font-size:11px}.lsbb{background:#eee;border:solid
1px;border-color:#ccc #999 #999 #ccc;height:30px}.lsbb{display:block}.ftl,#fill a{display:inline-block;margin:0
12px}.lsb{background:url(/images/nav_logo229.png) 0 -261px repeat-
x;border:none;color:#000;cursor:pointer;height:30px;margin:0;outline:0;font:15px arial,sans-serif;vertical-
align:top}.lsb.active{background:#ccc}.lst:focus{outline:none}</style><script nonce="qdD4ZHhZRvzTjuVgl9o8kg==">(function(){try{var
e=this||self;var aa=function(a,b,c,d){d=d||{};d._sn="cfg",b,c}.join("");window.gbar.logger.ml(a,d);var
g=window.gbar=window.gbar||{};h=window.gbar.i=window.gbar.i||{};ba=function _tvn(a,b){a=parseInt(a,10);return isNaN(a)?b:a}function
_tvf(a,b){a=parseFloat(a);return isNaN(a)?b:a}function _tvv(a){return!!a}function
p(a,b,c){(c||g)[a]=b}.bv={_tvn:"2",0},r:"","f:".66.41.".e:"1300102,3700328",m:_tvn("1",1)};function ca(a,b,c){var
d="on"+b;if(a.addEventListener)a.addEventListener(b,c,!1);else if(a.attachEvent)a.attachEvent(d,c);else{var f=a[d];a[d]=function(){var
k=f.apply(this,arguments),m=c.apply(this,arguments);return void 0==k?m:void 0==m?k:m&&k}}var da=function(a){return function(){return
g.bv.m==a},ea=da(1),fa=da(2);p("sb",ea);p("kn",fa);h.a=_tvv;h.b=_tvf;h.c=_tvn;h.i=aa;var r=window.gbar.i.i;var
t=function(){},ha=function(){},ka=function(a){var b=new Image,c=ia;b.onerror=b.onload=b.onabort=function(){try{delete
ja[c]}catch(d){}};ja[c]=b;b.src=a;ia=c+1},ja=[],ia=0;p("logger",{il:ha,ml:t,log:ka});var u=window.gbar.logger;var
v={},la={},w=[],ma=h.b("0.1",1),na=h.a("1",!0),oa=function(a,b){w.push([a,b])},pa=function(a,b){v[a]=b},qa=function(a){return a in
v},x={},A=function(a,b){x[a]||x[a]=[];x[a].push(b)},B=function(a){A("m",a)},ra=function(a,b){var
c=document.createElement("script");c.src=a;c.async=na;Math.random()<ma&&(c.onerror=function(){c.onerror=null;t(Error("Bundle load failed:
name="+b+"UNK")+ " url="+a)});(document.getElementById("xjsc")||document.getElementsByTagName("body")[0])
document.getElementsByTagName("head")[0].appendChild(c)},D=function(a){for(var b=0,c=(c=w[b])&&c[0]!=""?c[0]:c[1].s||c[1].s=!0,sa
(2,a),c[1].url&&ra(c[1].url,a),c[1].libs&&C&&C(c[1].libs)),ta=function(a){A("gc",a)},ua=null,va=function(a){ua=a},sa=function(a,b,c){if(ua){a={t:a,b:
b};if(c)for(var d in c)a[d]=c[d];try{ua(a)}catch(f){}};p("mdc",v);p("mdi",la);p("bnc",w);p("qGC",ta);p("qm",B);p("qd",x);p("lb",D);p("mcf",pa);p("bcf",o
a);p("aq",A);p("mdd", ""); p("has",qa);p("trh",va);p("tev",sa);if(h.a("m;/_scs/abc-
static/_js/k=gapi.gapi.en.JNa9MntajDY.O/d=1/rs=AHpOoo_db4DX0hhorP4qsjM6Ki5qzOgeUA/m=__features__")){var F=function(a,b){return
wa?a||b:b},xa=h.a("1"),ya=h.a("1"),za=h.a("1"),wa=h.a("1"),Aa=window.gapi=F(window.gapi,{}),Ba=function(a,b){var
c=function(){g.dgl(a,b)};xa?B(c):(A("gl",c),D("gl"))},Ca={},Da=function(a){a=a.split(":");for(var
b;(b=a.pop())&&Ca[b]);:return!b},C=function(a){function b(){for(var
c=a.split(":"),d=0,f=f=c[d];++d)Ca[f]=1;for(c=0;d=w[c];++c)d=d[1],(f=d.libs)&&!d.l&&d.i&&Da(f)&&d.i()}g.dgl(a,b)},G=window.__jsl=F(window.__
jsl,{});G.h=F(G.h,"m;/_scs/abc-static/_js/k=gapi.gapi.en.JNa9MntajDY.O/d=1/rs=AHpOoo_db4DX0hhorP4qsjM6Ki5qzOgeUA/m=__features__
");G.ms=F(G.ms,"https://apis.google.com");G.m=F(G.m,"");G.l=F(G.l,[]);G.dpo=F(G.dpo,"");xa||w.push(["gl",{url:"/ssl.gstatic.com/gb/js/abc/glm_e
7bb39a7e1a24581ff4f8d199678b1b9.js"}]);var
Ea={pu:ya,sh:"",si:za,hl:"en"};v.gl=Ea;wa?Aa.load||p("load",Ba,Aa):p("load",Ba,Aa);p("dgl",Ba);p("agl",Da);h.o=xa;var Fa=h.b("0.1",.001),Ga=0;
function _mlToken(a,b){try{if(1>Ga){Ga++;var c=a;b=b||{};var d=encodeURIComponent,f=["/www.google.com/gen_204?atyp=i&zx=",(new Date)
.getTime(),"&jexpid=",d("28834"),"&srcpg=",d("prop=1"),"&jsr=",Math.round(1/Fa),"&ogev=",d("VtlnXfS5K4LQaYLunbgE"),"&ogf=",g.bv.f,"&ogrp=
",d(""),"&ogv=",d("265367620.0"),"&oggv="+d("es_plusone_gc_20190630.0_p0"),"&ogd=",d("com"),"&ogc=",d("GBR"),"&ogl=",d("en")];b._sn&&(
b._sn="og"+b._sn);for(var k in b)f.push("&"+f.push(d(k)),f.push("="),f.push(d(b[k]));f.push("&msg=");f.push(d(c.name+":"+c.message));var
m=f.join("");Ha(m)&&(m=m.substr(0,2E3));var n=m;var l=window.gbar.logger._aem(a,n);ka(l)}catch(q){}}var Ha=function(a){return
2E3<=a.length},la=function(a,b){return b};function Ja(a){t=a;p("_itl",Ha,u);p("_aem",la,u);p("ml",t,u);a={};v.er=a}h.a("1")?Ja(function(a){throw
a});h.a("1")&&Math.random()<Fa&&Ja(_mlToken);var _E="left",Ka=h.a("1"),J=function(a,b){var c=a.className;H(a,b)||a.className+=""!=""?c?
":")&&b)),K=function(a,b){var c=a.className;b=new
RegExp("\\s?\\b"+b+"\\b");c&&c.match(b)&&(a.className=c.replace(b,"")),H=function(a,b){b=new
RegExp("\\b"+b+"\\b");a=a.className;return!(a||!a.match(b))},La=function(a,b){H(a,b)?K(a,b):J(a,b)},Ma=function(a,b){a[b]=function(c){var
d=arguments;g.qm(function(){a[b].apply(this,d)}),Na=function(){return"1"}, Oa=function(a){a=["/www.gstatic.com","/og/_js/d=1/k=", "og.og2.en
```

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US.8Lf1Pd7Dxg.O", "rt=j/m=", "a", "rs=", "AA2YrTsfZYnB3ch32qNOe_RpHyKI_KoR3Q"];Ka&&a.push("?host=www.gstatic.com&bust=og.og2.en_US.GV0p4eKywTo.DU");a=a.join("");ra(a);p("ca",J);p("cr",K);p("cc",H);h.k=J;h.l=K;h.m=H;h.n=La;h.p=Oa;h.q=Ma;h.r=Na;var Pa=["gb_71", "gb_155"];Qa=function Ra(a){Qa=a}function Sa(a){var b=Qa&&!a.href.match(/.*\VaccountsVClearSID[?]/)&&encodeURIComponent(Qa());b&&(a.href=a.href.replace(/([?&]continue=)[^&]*$/, "$1"+b))}function Ta(a){window.gApplication&&(a.href=window.gApplication.getTabUrl(a.href))}function Ua(a){try{var b=(document.forms[0].q[1]).value;b&&(a.href=a.href.replace(/([?&])q=[^&]*$/, function(c,d){return(d["&"]+"q="+encodeURIComponent(b))});catch(c){r(c, "sb", "pq")}} var Va=function(){for(var a=[],b=0,c=Pa[b];++b)(c=document.getElementById(c))&&a.push(c);return a},Wa=function(){var a=Va();return 0<a.length?a[0]:null},Xa=function(){return document.getElementById("gb_70")},L={},M={},Ya={},N={},O=void 0,cb=function(a,b){try{var c=document.getElementById("gb");J(c, "gbpajs");P();Za(document.getElementById("gb"))&&J(c, "gbtrl");if(b&&b.getAttribute){var d=b.getAttribute("aria-owns");if(d.length){var f=document.getElementById(d);if(f){var k=b.parentNode;if(O==d)O=void 0, K(k, "gbto");else{if(O){var m=document.getElementById(O);if(m&&m.getAttribute){var n=m.getAttribute("aria-owner");if(n.length){var l=document.getElementById(n);l&&l.parentNode&&K(l.parentNode, "gbto")}}$a(f)&&ab(f); e4 O=d;J(k, "gbto")}}B(function(){g.tg(a,b,!0)});bb(a)}catch(q){r(q, "sb", "tg")}};db=function(a){B(function(){g.close(a)});eb=function(a){B(function(){g.rdd(a)});Za=function(a){var b,c=document.defaultView;c&&c.getComputedStyle( 5125 a=c.getComputedStyle(a, ""))&&(b=a.direction):b=a.currentStyle? a.currentStyle.direction:a.style.direction;return rtl"==b},gb=function(a,b,c){if(a){try{var d=document.getElementById("gbd5");if(d){var f=d.firstChild,k=f.firstChild,m=document.createElement("li");m.className=b+"gbmtc";m.id=c;a.className="gbmt";m.appendChild(a);if(k.hasChildNodes()){c=["gbkc"],["gbf", "gbe", "gbn"],["gbkp"],["gbnd"]];d=0;var n=k.childNodes.length;f=!1;for(var l=-1,q=0,E=E+c[q];q++)for(var U=0,l=E[U];U++)for(;d<n&&H(k.childNodes[d],l);d++,if(l==b){k.insertBefore(m,k.childNodes[d]) null);f=!0;break}}if(f){if(d+1<k.childNodes.length){var V=k.childNodes[d+1];H(V.firstChild, "gbmh")}fb(V,E)}(l=d+1)}else if(0<=d-1){var W=k.childNodes[d-1];H(W.firstChild, "gbmh")}fb(W,E)}(l=d)}break)0<d&&d+1<n&&d++}if(0<=l){var y=document.createElement("li"),z=document.createElement("div");y.className="gbmtc";z.className="gbmt gbmh";y.appendChild(z);k.insertBefore(y,k.childNodes[1])g.addHover&&g.addHover(a)}else k.appendChild(m)}catch(Eb){r(Eb, "sb", "al")}};fb=function(a,b){for(var c=b.length, d=0;d<c;d++)if(H(a,b[d]))return!0;return!1},hb=function(a,b,c){g b(a,b,c),ib=function(a,b){gb(a, "gbe", b)},jb=function(){B(function(){g.pcm&&g.pcm()}}),kb=function(){B(function(){g.pca&&g.pca()}}),lb=function(a, b,c,d,f,k,m,n,l,q){B(function(){g.paa&&g.paa(a,b,c,d,f,k,m,n,l,q)}),mb=function(a,b){L[a][L[a]=[]];L[a].push(b)},nb=function(a,b){M[a][M[a]=[]];M [a].push(b)},ob=function(a,b){Ya[a]=b},pb=function(a,b){N[a][N[a]=[]];N[a].push(b)},bb=function(a){a.preventDefault&&a.preventDefault();a.returnValue=!1;a.cancelBubble=!0},qb=null,ab=function(a,b){P();if(a){rb(a, "Opening...");Q(a,!0);b="undefined"! =typeof b?b:1E4;var c=function(){sb(a)};qb=window.setTimeout(c,b)};tb=function(a){P();a&&(Q(a,1),rb(a, ""));sb=function(a){try{P();var b=a|document.getElementById(O);b&&(rb(b, "This service is currently unavailable.%1$sPlease try again later.", "%1$s"),Q(b,!0)}catch(c){r(c, "sb", "sdhe")}};rb=function(a,b,c){if(a&&b){var d=$a(a);if(d){if(c){d.innerHTML="";b=b.split(c);c=0;for(var f;f=b[c];c++)for(var k=document.createElement("div"); k.innerHTML=f;d.appendChild(k))}else d.innerHTML=b;Q(a,!0)}},Q=function(a,b){(b=void 0! ==b?b:!0)?J(a, "gbmsgo"):K(a, "gbmsgo")},$a=function(a){for(var b=0,c=a.childNodes[b];b++)if(H(c, "gbmsg"))return c},P=function(){qb&&window.clearTimeout(qb),ub=function(a){var b="inner"+a;a="offset"+a;return window[b]?window[b]:document.documentElement&&document.documentElement[a]?document.documentElement[a]:0},vb=function(){return!1},wb=function(){return!0};p("so",Wa);p("sos", Va);p("si",Xa);p("tg",cb); p("close",db);p("rdd",eb);p("addLink",hb);p("addExtraLink",ib);p("pcm",jb);p("pca",kb);p("paa",lb);p("ddld",ab);p("ddrd",tb );p("dderr",sb);p("rtl",Za);p("op",wb);p("bh",L);p("abh",mb);p("dh",M);p("adh",nb);p("ch",N);p("ach",pb);p("eh",Ya);p("aeh",ob);ba=h.a("")?Ta:Ua;p("qs",ba);p("setContinueCb",Ra);p("pc",Sa);p("bsy",vb);h.d=bb;h.j=ub;var xb={};v.base=xb;w.push({"m", {url:"//ssl.gstatic.com/gb/js/sem_591eec649ac9b932a5d8552377d75579.js"});g.sg={c:"1";p("wg", {rg:});var yb={tiw:h.c("15000",0),tie:h.c("30000",0)};v.wg=yb;var zb={thi:h.c("10000",0),thp:h.c("180000",0),tho:h.c("5000",0),tet:h.b("0.5",0)};v.wm=zb;if(h.a("1")){var Ab=h.a("");w.push({"gc", {auto:Ab,url:"//ssl.gstatic.com/gb/js/abc/gci_91f30755d6a6b787dcc2a4062e6e9824.js",libs:"googleapis.client.plusone:gapi.iframe"}});var Bb={version:"gci_91f30755d6a6b787dcc2a4062e6e9824.js",index:"",lang:"en"};v.gc=Bb;var Cb=function(a){window.googleapis&&window.iframe s?a&&a():(a&&ta(a),D("gc"))};p("IGC",Cb);h.a("1")&&p("IPWF",Cb);window.__PVT="";if(h.a("1")&&h.a("1")){var Db=function(a){Cb(function(){A("pw",a);D("pw")});p("IPW",Db);w.push({"pw", {url:"//ssl.gstatic.com/gb/js/abc/pwm_45f73e4df07a0e388b0fa1f3d30e7280.js"});var Fb=[],Gb=function(a){Fb[0]=a},Hb=function(a,b){b=b||{};b._sn="pw";t(a,b)},Ib={signed:Fb,elog:Hb,base:"https://plusone.google.com/u/0",loadTime:(new Date).getTime()};v.pw=Ib;var Jb=function(a,b){var c=b.split(" ");b=function(){var m=arguments;a(function(){for(var n=g,l=0,q=c.length-1;l<q;l++)n=n[c[l]];n[c[l]].apply(n,m)}});for(var d=g,f=0,k=c.length-1;f<k;f++)d[d[c[f]]=d[c[f]]]{};return d[c[f]]=b};Jb(Db, "pw.clk");Jb(Db, "pw.hvr");p("su", Gb,g.pw)};var Kb=[1,2,3,4,5,6,9,10,11,13,14,28,29,30,34,35,37,38,39,40,41,42,43,48,49,500];var Lb=h.b("0.001",1E-4),Mb=h.b("1",1),Nb=!1,Ob=!1;if(h.a("1")){var Pb=Math.random();Pb<Lb&&(Nb=!0);Pb<Mb&&(Ob=!0)}var R=null; function Qb(a,b){var c=Lb,d=Nb;var f=a;if(!R){R={};for(var k=0;k<Kb.length;k++)for var m=Kb[k];R[m]=!0}if(f!=R[f])c=Mb,d=Ob;if(d){d=encodeURIComponent;if(g.rp){var n=g.rp();n="-1"! =n?"n":""}else n="";f=(new Date).getTime();k=d("28834");m=d("VtinXfS5K4LQaYLunbgE");var l=g.bv.f,q=d("1");n=d(n);c=Math.round(1/c);var E=d("265367620.0"),U="&ogv="+d("es_plusone_gc_20190630.0_p0"),l=d("com"),V=d("en"),W=d("GBR");var y=0;h.a("")&&(y|=1);h.a("")&&(y|
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=2);h.a("")&&(y|=4);a=["//www.google.com/gen_204?atyp=i&zx=",f,"&oge=",a,"&ogex=",k,"&ogev=",m,"&ogf=",l,"&ogp=",q,"&ogrp=",n,"&ogsr=",c,"&ogv=",E,U,"&ogd=",l,"&ogl=",V,"&ogc=",W,"&ogus=",y];if(b){"ogw" in b&&(a.push("&ogw="+b.ogw),delete b.ogw);f=[];for(z in b)0!=f.length&&f.push(",");f.push(Rb(z)),f.push(".");f.push(Rb(b[z]));var z=f.join("");"!z&&(a.push("&ogad="),a.push(d(z)))ka(a.join(""))}function Rb(a){"number"==typeof a&&(a+="");return"string"==typeof a?a.replace(".", "%2E").replace(",","%2C"):a}ha=Qb;p("il",ha,u);var Sb={};v.il=Sb;var Tb=function(a,b,c,d,f,k,m,n,l,q){B(function){g.paa(a,b,c,d,f,k,m,n,l,q)}},Ub=function(){B(function){g.prm()}},Vb=function(a){B(function){g.spn(a)}},Wb=function(a){B(function){g.sps(a)}},Xb=function(a){B(function){g.spp(a)}},Yb={"27":"https://ssl.gstatic.com/gb/images/silhouette_24.png","27":"https://ssl.gstatic.com/gb/images/silhouette_24.png","27":"https://ssl.gstatic.com/gb/images/silhouette_24.png"},Zb=function(a){return(a=Yb[a])||"https://ssl.gstatic.com/gb/images/silhouette_24.png"},$b=function(){B(function){g.spd()}};p("spn",Vb);p("spp",Xb);p("sps",Wb);p("spd",$b);p("paa",Tb);p("prm",Ub);mb("gbd4",Ub); if(h.a("")){var ac={d:h.a(""),e:"",sanwh:h.a(""),p:"https://ssl.gstatic.com/gb/images/silhouette_96.png",cp:"1",xp:h.a("1"),mg:"%1$s (delegated)",md:"%1$s (default)",mh:"220",s:"1",pp:Zb,ppl:h.a(""),ppa:h.a(""),ppm:"Google+ page"};v.prf=ac;var S,b,c,T,cc,X=0,dc=function(a,b,c){if(a.indexOf)return a.indexOf(b,c);if(Array.indexOf)return Array.indexOf(a,b,c);for(c=null==c?0:0>c?Math.max(0,a.length+c):c;c<a.length;c++)if(c in a&&a[c]==b)return c;return-1},Y=function(a,b){return-1==dc(a,X)?(r(Error(X+" "+b),"up","caa"),!1):!0},fc=function(a,b){Y([1,2],"r")&&(S[a]=S[a]||[]),S[a].push(b),2==X&&window.setTimeout(function(){b(ec(a)),0}),gc=function(a,b,c){if(Y([1],"nap")&&c){for(var d=0;d<c.length;d++)bc[c[d]]=!0;g.up.spl(a,b,"nap",c)}},hc=function(a,b,c){if(Y([1],"aop")&&c){if(T)for(var d in T)[d]=T[d]&&-1==dc(c,d);else for(T={},d=0;d<c.length;d++)T[c[d]]=!0;g.up.spl(a,b,"aop",c)}},ic=function(){try{if(X=2,!cc){cc=!0;for(var a in S)for(var b=S[a],c=0;c<b.length;c++)try{b[c](ec(a))}catch(d){r(d,"up","tp")}}catch(d){r(d,"up","mtp")}},ec=function(a){if(Y([2],"ssp")){var b=bc[a];T&&(b=b&&!T[a]);return b};cc=!1;S={};bc={};T=null;X=1; var jc=function(a){var b=!1;try{b=a.cookie&&a.cookie.match("PREF")}catch(c){return!b},kc=function(){try{return!e.localStorage&&"object"==typeof e.localStorage}catch(a){return!1}},lc=function(a){return a&&a.style&&a.style.behavior&&"undefined"!=typeof a.load},mc=function(a,b,c,d){try{jc(document)}(d||{b="og-up"+b}),kc()?e.localStorage.setItem(b,c):lc(a)&&(a.setAttribute(b,c),a.save(a.id))}catch(f){f.code!=DOMException.QUOTA_EXCEEDED_ERR&&r("up","spd")},nc=function(a,b,c){try{if(jc(document))return""; c||(b="og-up"+b);if(kc())return e.localStorage.getItem(b);if(lc(a))return a.load(a.id),a.getAttribute(b)}catch(d){d.code!=DOMException.QUOTA_EXCEEDED_ERR&&r(d,"up","gpd")},oc=function(a,b,c){a.addEventListener?a.addEventListener(b,c,!1):a.attachEvent&&a.attachEvent("on"+b,c)},pc=function(a){for(var b=0,c=a[b];b++){var d=g.up;c=c in d&&d[c];if(!c)return!1}return!0},qc=function(a,b){try{if(jc(a))return-1;var c=a.cookie.match(/OGPC=(?:[;]*)/);if(c&&c[1]){var d=c[1].match(new RegExp("\\b+ b+(-(0-9)+:");if(d&&d[1])return parseInt(d[1],10)}catch(f){f.code!=DOMException.QUOTA_EXCEEDED_ERR&&r("up","gcc")return-1};p("up",{r:fc,nap:gc,aop:hc,tp:ic,ssp:ec,spd:mc,gpd:nc,aeh:oc,aal:pc,gcc:qc});var Z=function(a,b){a[b]=function(c){var d=arguments;g.qm(function(){a[b].apply(this,d)});Z(g.up,"sl");Z(g.up,"si");Z(g.up,"spl");Z(g.up,"dpc");Z(g.up,"iic");g.mcf("up",{sp:h.b("0.01",1),tid:"co.uk",pid:"1"});function rc(){function a(){for(var l;(l=k[m++])&&"m"!=l[0]&&!l[1].auto);l&&(sa(2,l[0]),l[1].url&&ra(l[1].url,l[0]),l[1].libs&&C&&C(l[1].libs));m<k.length&&setTimeout(a,0)}function b(){0<f-?setTimeout(b,0):a()}var c=h.a("1"),d=h.a(""),f=3,k=w,m=0,n=window.gbarOnReady;if(n)try{n()}catch(l){r(l,"ml","or")}d?p("ldb",a):c?ca(window,"load",b):b()}p("rdl",rc);}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});});(function(){try{var a=window.gbar;a.mcf("pm",{p:""});}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});});(function(){try{var a=window.gbar;a.mcf("mm",{s:"1"});}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});});(function(){try{var d=window.gbar.i.i;var e=window.gbar;var f=e.i;var g=f.c("1",0),h=/bgbmt\b/,k=function(a){try{var b=document.getElementById("gb_"+g),c=document.getElementById("gb_"+a);b&&f.l(b,h.test(b.className)?"gbm0l":"gbz0l");c&&f.k(c,h.test(c.className)?"gbm0l":"gbz0l")}catch(l){d(l,"sj","ssp")}g=a},m=e.qs,n=function(a){var b=a.href;var c=window.location.href.match(/.*?:\V{^V}*/)[0];c=new RegExp("^+c+\/search\?");(b=c.test(b))&&!/\V{?}&ei=/.test(a.href)&&(b=window.google&&k.EXPI&&(a.href+="&ei="+b.kE1)),p=function(a){m(a);n(a)},q=function(){if(window.google&&window.google.sn){var a=/. *hp$/;return a.test(window.google.sn)?":1"return"-1";e.rp=q;e.slp=k;e.qs=p;e.qsi=n;}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});});(function(){try{var a=this|self;var b=window.gbar;var c=b.i;var d=c.a,e=c.c,f={cty:"GBR",cv:"265367620",dbg:d(""),ecv:"0",ei:"VtlnXfS5K4LQaYLnbgE"},ele:d("1"),esr:e("0.1"),evts:["mousedown","touchstart","touchmove","wheel","keydown"],gbl:"es_plusone_gc_20190630.0_p0",hd:"com",hl:"en",irp:d(""),pid:e("1"),snid:e("28834"),to:e("300000"),u:e(""),vf:".66.41."},g=f,h=["bndcfg"],k=a;h[0]in k||"undefined"==typeof k.execScript||k.execScript("var "+h[0]);for(var l;h.length&&(l=h.shift());)h.length||void 0===g?k[l]&&k[l]==Object.prototype[l]?k[l]:k[l]={k[l]=g};}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});});(function(){try{window.gbar.rdl();}catch(e){window.gbar&&gbar.logger&&gbar.logger.ml(e,{_sn:"cfg.init"});}); /</script></head><body bgcolor="#fff"><script nonce="qdD4ZHhZRVzTjuVgl9o8kg==">(function(){var src="/images/nav_logo229.png";var iesg=false;document.body.onload = function(){window.n && window.n();if (document.images){new Image().src=src; if (!iesg){document.f&&document.f.q.focus();document.gbqf&&document.gbqf.q.focus();} }});</script><div id="mngb"> <div id=gb><script>window.gbar&&gbar.eli&&gbar.eli()</script><div id=gbw><div id=gbz><span class=gbtbc></span><ol id=gbzc class=gbtc><li class=gbt><a onclick=gbar.logger.il(1,{t:1}); class="gbzt gbz0l gbp1" id=gb_1 href="https://www.google.co.uk/webhp?tab=ww"><span class=gbtb2></span><span class=gbts>Search</span></a></li><li class=gbt><a onclick=gbar.logger.il(1,{t:2}); class=gbzt id=gb_2 href="http://www.google.co.uk/imghp?hl=en&tab=wi"><span class=gbtb2></span><span class=gbts>Images</span></a></li><li class=gbt><a onclick=gbar.logger.il(1,{t:8}); class=gbzt id=gb_8 href="http://maps.google.co.uk/maps?hl=en&tab=wl"><span class=gbtb2></span><span class=gbts>Maps</span></a></li><li class=gbt><a onclick=gbar.logger.il(1,{t:78}); class=gbzt id=gb_78
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href="https://play.google.com/?hl=en&tab=w8"><span class=gbtb2></span><span class=gmts>Play</span></a></li><li class=gbt><a
onclick=gbar.logger.il(1,{t:36}); class=gbzt id=gb_36 href="http://www.youtube.com/?gl=GB&tab=w1"><span class=gbtb2></span><span
class=gmts>YouTube</span></a></li><li class=gbt><a onclick=gbar.logger.il(1,{t:5}); class=gbzt id=gb_5
href="http://news.google.co.uk/nwshp?hl=en&tab=wn"><span class=gbtb2></span><span class=gmts>News</span></a></li><li class=gbt><a
onclick=gbar.logger.il(1,{t:23}); class=gbzt id=gb_23 href="https://mail.google.com/mail/?tab=wm"><span class=gbtb2></span><span
class=gmts>Gmail</span></a></li><li class=gbt><a onclick=gbar.logger.il(1,{t:49}); class=gbzt id=gb_49
href="https://drive.google.com/?tab=wo"><span class=gbtb2></span><span class=gmts>Drive</span></a></li><li class=gbt><a class=gbt
id=gbztr href="https://www.google.co.uk/intl/en/about/products?tab=wh" onclick="gbar.tg(event,this)" aria-haspopup=true aria-
owns=gbd><span class=gbtb2></span><span id=gbztrms class="gbts gbtb"><span id=gbztrms1>More</span><span
class=gbma></span></span></a><div class=gbm id=gbd aria-owner=gbztrms><div id=gbmrmb class="gbmc gbsb gbsbis"><ol id=gbmm
class="gbmcc gbsbic"><li class=gbmtc><a onclick=gbar.logger.il(1,{t:24}); class=gbmt id=gb_24
href="https://www.google.com/calendar?tab=wc">Calendar</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:51}); class=gbmt id=gb_51
href="http://translate.google.co.uk/?hl=en&tab=wT">Translate</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:10}); class=gbmt id=gb_10
href="https://books.google.co.uk/bkshp?hl=en&tab=wp">Books</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:6}); class=gbmt id=gb_6
href="https://www.google.co.uk/shopping?hl=en&source=og&tab=wf">Shopping</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:30});
class=gbmt id=gb_30 href="http://www.blogger.com/?tab=wj">Blogger</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:27}); class=gbmt
id=gb_27 href="http://www.google.co.uk/finance?tab=we">Finance</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:31}); class=gbmt
id=gb_31 href="https://photos.google.com/?tab=wq&pageId=none">Photos</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:12});
class=gbmt id=gb_12 href="http://video.google.co.uk/?hl=en&tab=vw">Videos</a></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:25});
class=gbmt id=gb_25 href="https://docs.google.com/document/?usp=docs_alc">Docs</a></li><li class=gbmtc><div class="gbmt
gbmh"></div></li><li class=gbmtc><a onclick=gbar.logger.il(1,{t:66}); href="https://www.google.co.uk/intl/en/about/products?tab=wh"
class=gbmt>Even more »</a></li></ol><div class=gbsbt></div><div class=gbsbb></div><div></div></li></ol></div><div id=gbg><h2
class=gbxx>Account Options</h2><span class=gbtcb></span><ol class=gbtcb><li class=gbt><a target=_top
href="https://accounts.google.com/ServiceLogin?hl=en&passive=true&continue=http://www.google.com/" onclick="gbar.logger.il(9,{l:'i'})"
id=gb_70 class=gbgt><span class=gbtb2></span><span id=gbgs4 class=gmts><span id=gbi4s1>Sign in</span></span></a></li><li class="gbt
gbtb"><span class=gmts></span></li><li class=gbt><a class=gbgt id=gbg5 href="http://www.google.co.uk/preferences?hl=en" title="Options"
onclick="gbar.tg(event,this)" aria-haspopup=true aria-owns=gbd5><span class=gbtb2></span><span id=gbgs5 class=gmts><span
id=gbi5></span></span></a><div class=gbm id=gbd5 aria-owner=gbg5><div class=gbmc><ol id=gbom class=gbmcc><li class="gbkc
gbmtc"><a class=gbmt href="/preferences?hl=en">Search settings</a></li><li class=gbmtc><div class="gbmt gbmh"></div></li><li class="gbkp
gbmtc"><a class=gbmt href="http://www.google.co.uk/history/optout?hl=en">Web History</a></li></ol></div></li></ol></div><div
id=gbx3></div><div id=gbx4></div><script>>window.gbar&&gbar.elp&&gbar.elp()</script></div></div><center><br clear="all" id="lgpd"><div
id="lga"><br><br></div><form action="/search" name="f"><table cellpadding="0"
cellspacing="0"><tr valign="top"><td width="25%"></td><td align="center" nowrap=""><input name="ie" value="ISO-8859-1"
type="hidden"><input value="en-GB" name="hl" type="hidden"><input name="source" type="hidden" value="hp"><input name="biw"
type="hidden"><input name="bih" type="hidden"><div class="ds" style="height:32px;margin:4px 0"><input
style="color:#000;margin:0;padding:5px 8px 0 6px;vertical-align:top" autocomplete="off" class="lst" value="" title="Google Search"
maxlength="2048" name="q" size="57"></div><br style="line-height:0"><span class="ds"><span class="lsbb"><input class="lsb" value="Google
Search" name="btnG" type="submit"></span></span><span class="ds"><span class="lsbb"><input class="lsb" value="I'm Feeling Lucky"
name="btnI" onclick="/gws_metadata_pragma__js_inline_handler*/ if(this.form.q.value){ this.checked=1; if
(this.form.ifsig)this.form.ifsig.disabled=false; } else top.location=/doodles/" type="submit"></span></span></td><td class="fl sbic" align="left"
nowrap="" width="25%"><a href="/advanced_search?hl=en-GB&authuser=0">Advanced search</a><a href="/language_tools?hl=en-
GB&authuser=0">Language tools</a></td></tr></table><input id="gbv" name="gbv" type="hidden" value="1"><script
nonce="qdD4ZHhZRvzTjuVgl9o8kg==">(function(){var a,b="1";if(document&&document.getElementById){if("undefined"! =typeof
XMLHttpRequest)b="2";else if("undefined"! =typeof XMLHttpRequest){var
c,d,e=["MSXML2.XMLHTTP.6.0","MSXML2.XMLHTTP.3.0","MSXML2.XMLHTTP","Microsoft.XMLHTTP"];for(c=0;d=e[c++]);try{new
ActiveXObject(d),b="2"}catch(h){}a=b;if("2"==a&&-1==location.search.indexOf("&gbv=2")){var f=google.gbvu,g=document.getElementById("gbv
");g&&(g.value=a);f&&window.setTimeout(function(){location.href=f,0});}.call(this);}</script></form><div id="gac_scont"></div><div style="font-
size:83%;min-height:3.5em"><br></div><span id="footer"><div style="font-size:10pt"><div style="margin:19px auto;text-align:center" id="fill"><a
href="/intl/en/ads/">Advertising Programmes</a><a href="/services/">Business Solutions</a><a href="/intl/en/about.html">About Google</a><a
href="http://www.google.com/setprefdomain?prefdom=GB&prev=http://www.google.co.uk/&sig=K_Y7xFuusZgGFp1wpGxxaRaHnTsOk%3D">G
oogle.co.uk</a></div></div><p style="color:#767676;font-size:8pt">© 2019 - <a href="/intl/en/policies/privacy/">Privacy</a> - <a
href="/intl/en/policies/terms/">Terms</a></p></span></center><script
nonce="qdD4ZHhZRvzTjuVgl9o8kg==">(function(){window.google.cdo={height:0,width:0};(function(){var
a=window.innerWidth,b=window.innerHeight;if(!a||!b){var c=window.document,d="CSS1Compat"==c.compatMode?c.documentElement:c.body;
```



```
a=d.clientWidth;b=d.clientHeight;a&&b&&(a!=google.cdo.width||b!=google.cdo.height)&&google.log("", "", "/client_204?&atyp=i&biw="+a+"&bih="+b+"&ei="+google.kE1);).call(this;);(function(){var u='/xjs/_/js/k/x3dxjs.hp.en.bMD9NsEptgg.O/m/x3dsb_he,d/am/x3dHhbUBA/d/x3d1/rs/x3dACT90oGUOtM16rbPflEbsQ66cAfjD-1DzA';setTimeout(function(){var a=document.createElement("script");a.src=u;google.timers&&google.timer.s.load&&google.tick&&google.tick("load", "xjs");document.body.appendChild(a),0;});(function(){window.google.xjsu='/xjs/_/js/k/x3dxjs.hp.en.bMD9NsEptgg.O/m/x3dsb_he,d/am/x3dHhbUBA/d/x3d1/rs/x3dACT90oGUOtM16rbPflEbsQ66cAfjD-1DzA';});function _DumpException(e){throw e;} function _F_installCss(c){(function(){google.spjs=false;google.snet=true;google.em=[];google.emw=false;})();google.sm=1;(function(){var pmc='{x22JnTczA\x22:{},x22Qnk92g\x22:{},x22RWGcrA\x22:{},x22U5B21g\x22:{},x22YFCs/g\x22:{},x22YQeDTA\x22:{},x22ZI/YVQ\x22:{},x22d\x22:{},x22mVopag\x22:{},x22sb_he\x22:{x22agen\x22:true,x22cgen\x22:true,x22client\x22:x22heirloom-hp\x22,x22dh\x22:true,x22dhqt\x22:true,x22ds\x22:x22x22,x22ffq\x22:x22en\x22,x22fl\x22:true,x22host\x22:x22google.com\x22,x22isbh\x22:28,x22jsonp\x22:true,x22msgs\x22:{x22cibl\x22:x22Clear Search\x22,x22dym\x22:x22Did you mean:\x22,x22lcky\x22:x22I\u0026#39;m Feeling Lucky\x22,x22lml\x22:x22Learn more\x22,x22oskt\x22:x22Input tools\x22,x22psrc\x22:x22This search was removed from your \u003Ca href\x3d\u0026#39;/history\u0026#39;/\u003EWeb History\u0026#39;/a\u0026#39;\x22,x22psrl\x22:x22Remove\x22,x22sbit\x22:x22Search by image\x22,x22srch\x22:x22Google Search\x22},x22ovr\x22:{},x22pq\x22:x22x22,x22refpd\x22:true,x22rfs\x22:[],x22sbpl\x22:24,x22sbpr\x22:24,x22scd\x22:10,x22sce\x22:5,x22stok\x22:x222QGh-StKM4prqiVAQnH6d1IqTv8\x22,x22uhde\x22:false}';google.pmc=JSON.parse(pmc);})();</script> </body></html>
```

NO CARRIER

```
////////////////////////////////////  
//Finish Webpage download  
////////////////////////////////////
```

//Receive following when connection is dropped (Serial port no longer connected to server socket):

NO CARRIER

**NOTE:**

When connecting to a server to download the webpage content the following should be considered:

1. You can use the IP address or domain name in the "y.y.y" field for the server you wish to contact
2. Using port 80 will allow you to access the HTTP data from the server, but it will be shown as HTML and Javascript code and not nicely rendered

## Upload and Download File Using FTP Example

### Connect embedded FTP client to the remote FTP sever

```
AT#FTPOPEN="IP address:port / Domain:port","FTP Username","FTP Password"
```

//Example to connect to Siretta Test FTP Server (The password has not been shown for security purposes):

```
AT#FTPOPEN="ftp.siretta.com","ftptest@siretta.com","xxxxxxxxxxxx"
```

//Receive following when connection is established to FTP server:

OK

//Type the following to list the files in the directory

```
AT#FTPLIST
```

//You will receive the following:

CONNECT

```
drwxr-xr-x 2 sirettacom sirettacom 4096 Aug 29 15:13 .  
drwxr-xr-x 2 sirettacom sirettacom 4096 Aug 29 15:13 ..  
-rw----- 1 sirettacom sirettacom 4 Aug 29 15:13 .ftpquota
```

NO CARRIER

//To upload a file to the server type the following where 'uploadfile.txt' is the file name:

```
AT#FTPPUT="uploadfile.txt"
```

//You will receive the following:

CONNECT

//Now you can type the contents to be stored in the file and use the escape sequence '+++' to save the file. When the file is saved you will see the following:

NO CARRIER

//Type the following to list the files in the directory

```
AT#FTPLIST
```

//You will receive the following:

CONNECT

```
drwxr-xr-x 2 sirettacom sirettacom 4096 Aug 29 15:18 .  
drwxr-xr-x 2 sirettacom sirettacom 4096 Aug 29 15:18 ..  
-rw----- 1 sirettacom sirettacom 4 Aug 29 15:13 .ftpquota  
-rw-r--r-- 1 sirettacom sirettacom 36 Aug 29 15:18 uploadfile.txt
```

NO CARRIER

//To download the file to the local device type the following where 'uploadfile.txt' is the file name:

```
AT#FTPGET="uploadfile.txt"
```

//You will receive the following:

CONNECT

hello this is the uploaded file data

NO CARRIER

**NOTE:**



When connecting to an FTP server to download files the contents of the files will be downloaded in their RAW format:

1. You can use the IP address or domain name in the "y.y.y.y" field for the server you wish to contact.
2. Using port 21 will allow you to access the FTP server directory on the server, you can browse the directories but any file downloaded will be shown as RAW data.
3. To save the file to the local machine you will need to copy the RAW file contents in to a local document with the correct file extension.