

Ethernet Packet Loss or High Latency

If you believe that your customers circuit is experiencing Packet Loss or High Latency issues, then there are a couple of checks that you can do before you contact us.

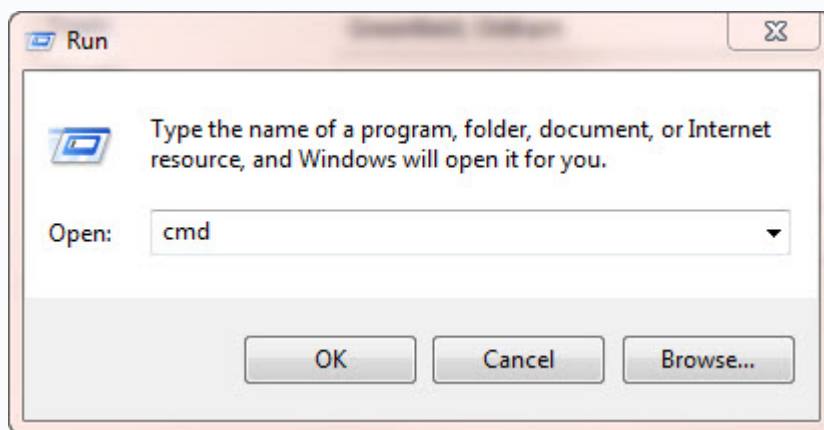
Step 1

We should do a “ping” test to check that the connection between your computer and a particular domain is working correctly.

Go to “Start” on your PC and then “Run”.

Within the text box of the “Run” facility, type in “cmd” and press “OK”.

This can also be achieved by going to Start > All Programs > Accessories > Command Prompt



Step 2

Type in “ipconfig” and press enter.

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\rjames>ipconfig
```

Step 3

Look for the Default Gateway address and make a note of this.

```
Administrator: C:\Windows\system32\cmd.exe
Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : 
IPv4 Address. . . . . : 
Subnet Mask . . . . . : 
Default Gateway . . . . . : 10.0.71.254

Tunnel adapter isatap.4:
Media State . . . . . : 
Connection-specific DNS Suffix . : 

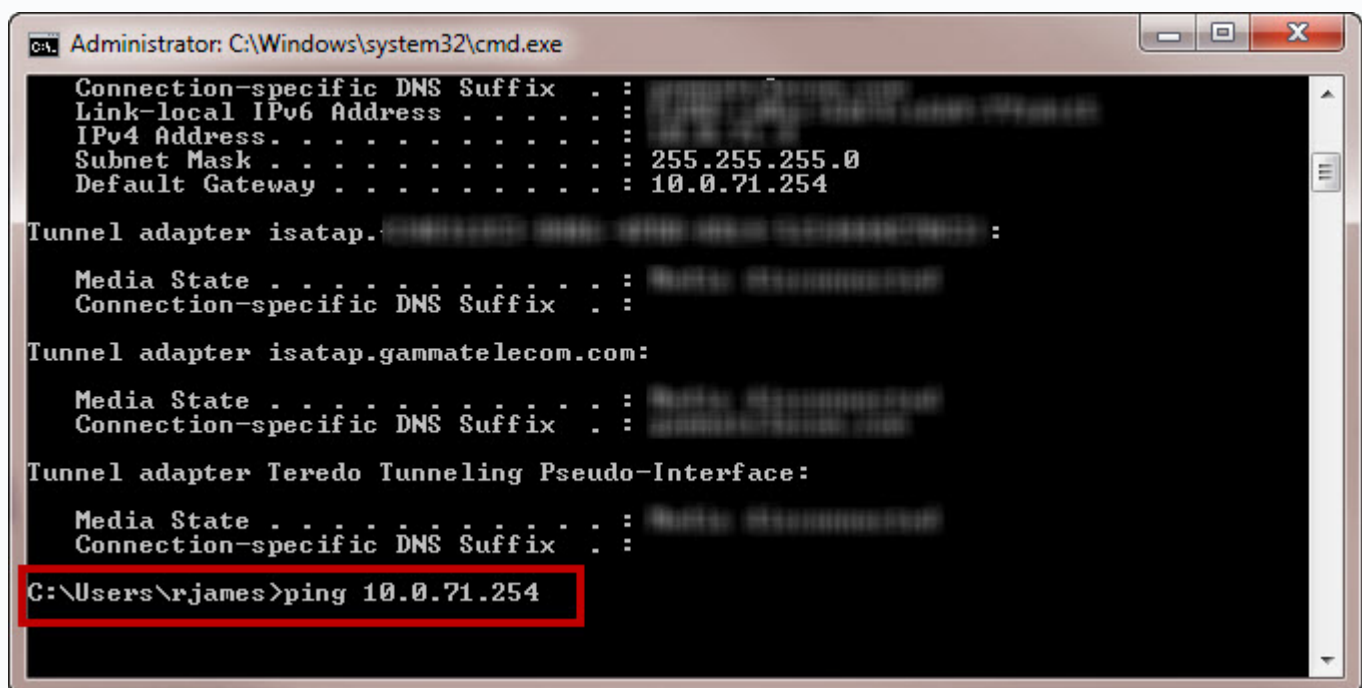
Tunnel adapter isatap.gammatelecom.com:
Media State . . . . . : 
Connection-specific DNS Suffix . : 

Tunnel adapter Teredo Tunneling Pseudo-:
Media State . . . . . : 
Connection-specific DNS Suffix . : 

C:\Users\rjames>
```

Step 4

Type in “ping” followed by a space, then the Default Gateway address and press enter.



```
Administrator: C:\Windows\system32\cmd.exe
Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : 
IPv4 Address. . . . . : 
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.0.71.254

Tunnel adapter isatap. : 
Media State . . . . . : 
Connection-specific DNS Suffix . : 

Tunnel adapter isatap.gammatelecom.com: 
Media State . . . . . : 
Connection-specific DNS Suffix . : 

Tunnel adapter Teredo Tunneling Pseudo-Interface: 
Media State . . . . . : 
Connection-specific DNS Suffix . : 

C:\Users\rjames>ping 10.0.71.254
```

Step 5

If you get replies from the ping (like in the screen shot across), this means that you can connect to the router and you should proceed to Step 6.

If you get no results from the router, this means that you have no connection to the router and would need to contact your IT Administrator.

```
Administrator: C:\Windows\system32\cmd.exe

Tunnel adapter [Name]
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

C:\Users\rjames>ping 10.0.71.254

Pinging 10.0.71.254 with 32 bytes of data:
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255

Ping statistics for 10.0.71.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\rjames>
```

Step 6

If you get a reply from the router ping, you would need to ping a live web address. We recommend sending a ping to Google's address.

To do this, type in "ping 8.8.8.8" and press enter.

```
Administrator: C:\Windows\system32\cmd.exe

Tunnel adapter [Name]
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

C:\Users\rjames>ping 10.0.71.254

Pinging 10.0.71.254 with 32 bytes of data:
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255

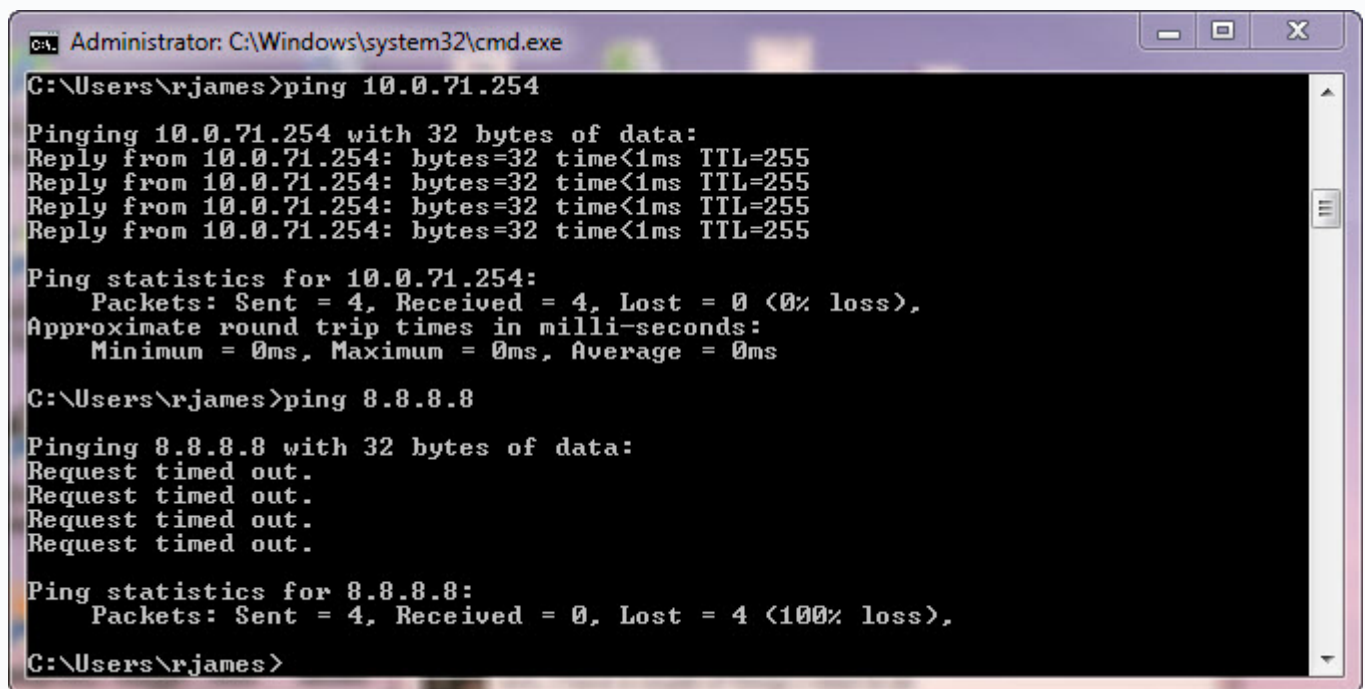
Ping statistics for 10.0.71.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\rjames>ping 8.8.8.8
```

Step 7

If you are unable to get a reply from the Google DNS ping (example in the screen shot across), this would suggest that it is a local firewall issue and you would need to speak to your IT Administrator regarding this. If your IT Administrator confirms that the firewall is working as it should be, contact Gamma.

If you have got a ping result back from Google, you have access to the Internet and need to do some more tests. Please see Step 8.



```
C:\Users\rjames>ping 10.0.71.254

Pinging 10.0.71.254 with 32 bytes of data:
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255

Ping statistics for 10.0.71.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\rjames>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\rjames>
```

Step 8

We now need to ping a web address, again we recommend google. In the command prompt, type in "ping google.co.uk".

If you get no results back, this would suggest a DNS error. You should speak to Gamma if you have got this error.

If you have got results back, then you should be OK to view web pages. If you are still unable to view web pages, then this could be a Browser error or a proxy may be enabled, and again you'd need to speak to your IT Administrator.

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\rjames>ping 10.0.71.254

Pinging 10.0.71.254 with 32 bytes of data:
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255
Reply from 10.0.71.254: bytes=32 time<1ms TTL=255

Ping statistics for 10.0.71.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\rjames>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

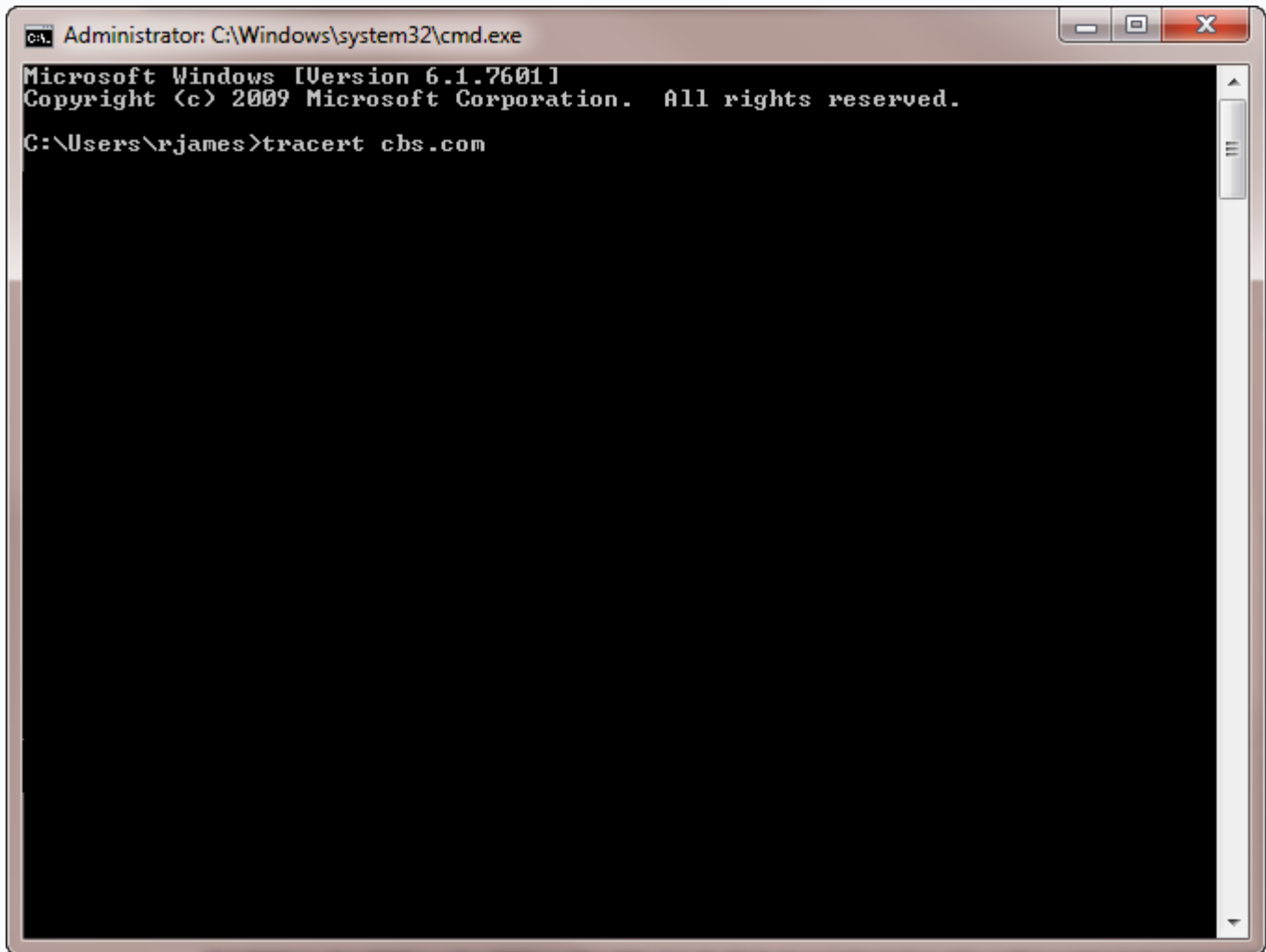
Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\rjames>
```

Trace Route

Step 1

Once again in cmd prompt, type in "tracert cbs.com" and hit enter.

A screenshot of a Windows command prompt window. The title bar reads "Administrator: C:\Windows\system32\cmd.exe". The window content shows the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\rjames>tracert cbs.com
```

Step 2

Trace Route will now trace the route a packet of information takes from your computer to the cbs.com address, which is located in Los Angeles.

Look at the below table for a description on what the trace route results mean:

Each hop is tested three times, hence three response times

If you get an asterisk, this means that the hop has timed out on that router, so the next line will attempt a different router.

Use this [Airport City Codes Reference](#) website to see where a hop is currently located. Routers commonly use airport city reference codes so you can roughly see where a packet is.

```

Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\rjames>tracert cbs.com

Tracing route to cbs.com [64.30.230.36]
over a maximum of 30 hops:

  0  1 ms    3 ms    <1 ms   10.0.69.252
  1  2 ms    2 ms    1 ms    88.215.44.44
  2  34 ms   35 ms   32 ms   88.215.42.72
  3  2 ms    3 ms    4 ms    88.215.57.226
  4  18 ms   20 ms   9 ms    1343.xe-2-2-1.mpr2.lhr3.uk.above.net [213.161.92
.237]
  5  24 ms   26 ms   29 ms   ge-4-2-0.mpr1.lhr3.uk.above.net [64.125.27.157]

  6  127 ms  123 ms  125 ms  xe-4-3-0.cr2.dca2.us.above.net [64.125.24.41]
  7  214 ms  152 ms  162 ms  xe-1-0-0.cr1.dca2.us.above.net [64.125.28.249]
  8  110 ms  114 ms  148 ms  xe-4-0-0.cr1.iah1.us.above.net [64.125.31.245]
  9  162 ms  166 ms  145 ms  xe-1-3-0.cr1.lax112.us.above.net [64.125.26.122]

 10  176 ms  141 ms  141 ms  xe-1-0-1.er3.lax112.us.above.net [64.125.30.113]

 11  169 ms  172 ms  166 ms  208.185.20.194.ipyx-064152-zyo.above.net [208.18
5.20.194]
 12  170 ms  148 ms  158 ms  64.30.231.185
 13  148 ms  149 ms  165 ms  64.30.231.178
 14  167 ms  168 ms  157 ms  cbscom-proxy-vip1.drt.cbsig.net [64.30.230.36]

Trace complete.

C:\Users\rjames>

```

Hop Number	1st Hop Response Time	2nd Hop Response Time	3rd Hop Response Time	Destination of Hop	Description
1	1ms	3ms	<1ms	10.0.69.252	This is the internet gateway on the network that the traceroute has been done from. We'd expect the response times to be really quicker here (i.e. as close to 0ms as possible)
2	2ms	2ms	1ms	88.215.44.44	The packet is now passing through the Gamma network.

3	34ms	35ms	32ms	88.215.42.72	The packet is now passing through the Gamma network.
4	2ms	3ms	4ms	88.215.57.226	The packet is now passing through the Gamma network.
5	18ms	20ms	9ms	1343.xe-2-2-1.mpr2.lhr3.uk.above.net 213.161.92	The packet has now reached another router in the UK, and based on the "lhr3" code, we can tell that this router is near London (lhr is the airport code for London Heathrow). We'd expect a little jump in response time for the packet now.
6	24ms	26ms	29ms	ge-4-2-0.mpr1.lhr.uk.above.net 64.125.27.157	The packet has now hopped to another router that is still in the UK and still near London based on the "lhr" code.

7	127ms	123ms	125ms	xe-4-3-0.cr2.dca2.us.above.net 64.125.24.41	The packet has now hopped over the Atlantic, as we can see with the ".us." within the destination, and based on the airport code, we can see it's on the east coast around Washington DC (dca). We can see that the response time has gone up now, which is to be expected as it is now covering a greater geographical distance.
8	214ms	152ms	162ms	xe-1-0-0.cr1.dca2.us.above.net 64.125.28.249	The packet has now hopped over to another router around the Washington DC area.
9	110ms	114ms	148ms	xe-4-0-0.cr1.iah.us.above.net 64.125.26.122	The packet has now hopped to a new geographic area, this time Houston, Texas (iah is the airport code for Houston). We'd expect to see similar times to the hop that happened from London to Washington as it's a similar geographical distance.

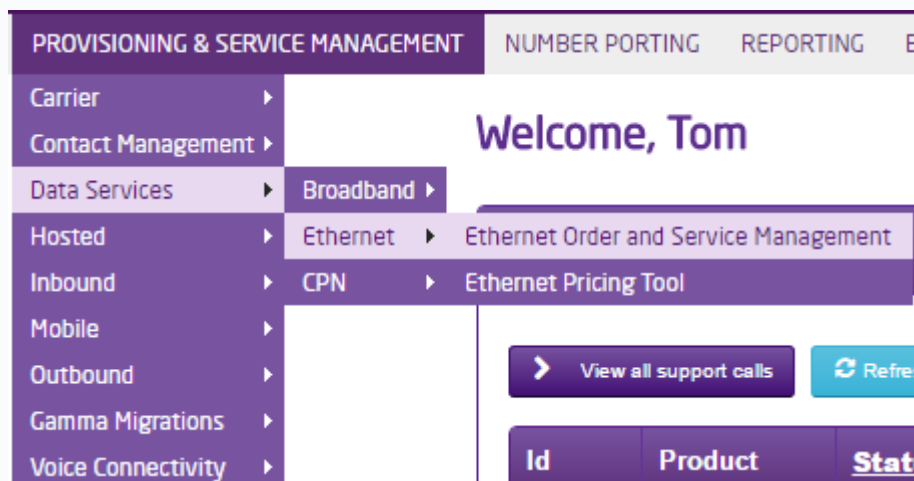
10	162ms	166ms	145ms	xe-1-3-0.cr1.lax112.us.above.net 64.125.26.122	This hop is now Houston to Los Angeles, California (lax is the airport code for Los Angeles). This is quite a large geographic distance for this hop, so we'd expect it to be a little longer.
11	176ms	141ms	141ms	xe-1-0-1.er2.lax112.us.above.net 64.125.30.113	This hop is to another router within the Los Angeles area.
12	169ms	172ms	166ms	208.185.20.194.ipyz-064152-zyo.above.net 208.18.5.20.194	And now it's getting to close to the server that cbs.com is hosted on, this is on a zayo server.
13	170ms	148ms	158ms	64.30.231.185	A router within the zayo network.
14	148ms	149ms	165ms	64.30.231.178	A router within the zayo network.
15	167ms	168ms	157ms	cbscom-proxy-vip1.drt.cbsig.net 6430.230.36	This is the computer / proxy that cbs.com is hosted on. The packet has hopped 15 times from my computer in Manchester, through to London, Washington, Houston and finally Los Angeles.

You are unable to check the Bandwidth for Converged IPDC and Internet Access products. If you have Converged IPDC and Internet Access, then please skip to the "Local Checks" section.

A cause of packet loss / high latency for Ethernet is the bandwidth being maxed out. You can check this by using the Ethernet Service Management tool within the Gamma Portal.

Step 1

Log into the Gamma Portal and go to Provisioning and Service Management, Data Services, Ethernet and select Ethernet Service Management.



Step 2

Search for the Ethernet circuit you are having the packet loss or high latency issues by any of the criteria that is available to you. We'd recommend searching using the Service Ref, which begins "CES" followed by a series of numbers.

Click "Search".

Step 3

To get to the Service Management screen, click into the Service Reference, which is a purple link.

Ethernet Order and Service Management

Account: XXXX - Gamma Test 1 - [dropdown] ✓

Service/Circuit Ref: [input] Circuit Status: (Any) [dropdown]

Channel Partner Ref: [input] Product: (Any) [dropdown]

Postcode: [input] Service Type: (Any) [dropdown]

Notifications: [input] NO [info icon]

Records Per Page: 10 [dropdown] Max results returned: 100 [dropdown]

[Reset] [Search]

Orders and Services

[Download] [dropdown] Showing 1 to 10 of 100

Service Ref	Circuit Ref	Channel Partner Ref	Circuit Status	Order Status	Product	Company Name
CES						Gamma Telecom

Step 4

You'll be taken to the main Ethernet Service Details screen, which is broken up into three sections. These sections are:

Header

This includes the basic service details and the Ethernet product details.

Service Details

Here is information on where the circuit is, what router is used with the circuit and it's Serial Number and WAN MAC Address, Customer Subnet, Default Gateway and Channel Partner/Technical/In and Out of Hours contact details.

Monitoring Graphs

These are some graphs that we've got that will allow you to have a look at how the circuit is being used, broken down by hourly, daily, weekly, monthly and yearly graphs. These graphs are for the WAN port traffic and do not represent the LAN.

Ethernet Service Details

Basic Service Details		Ethernet Product Details	
Gamma Service Reference:	CES000000	Product:	Converged Horizon & Internet Access
Channel Partner Service Reference:	Gamma Malt House Primary	Resilient:	No
Service Status:	Active	Service Type:	Managed Service
Service Activation Date:	11/09/2012	Internet Bandwidth (Mbps):	25
Length of Term:	60	Voice Bandwidth (Mbps):	5
Bearer:	100Mb Fibre	Horizon Site Ref.:	
Bandwidth (Mbps):	30		

Service Details | **Monitoring Graphs**

[Return to Ethernet Service Management](#)

[Ethernet Service Management Guidelines: Help](#)

Address Details	
Company Name:	Gamma Malt House Primary
Building Name:	Malt House
Building Number:	
Street:	Elevator Road
Town:	Manchester
Postcode:	M17 1BR

Router Details	
CPE Make/Model:	Cisco 1921
CPE Serial Number:	XXXXXXXXXX
CPE WAN MAC Address:	XXXXXXXXXX

Customer LAN Details		
Service	Customer Subnet	Default Gateway
Internet	88.215.44.32/28	88.215.44.47
Voice	192.168.1.0/24	192.168.1.1

[\[top\]](#)

Channel Partner Contact Details	
Channel Partner Forename:	XXXXX
Channel Partner Surname:	XXXXXXXXXX
Channel Partner Email:	XXXX.XXXXXXXXXX@XXXXXX.CO.UK
Channel Partner Phone:	XXXXXXXXXXXX

Technical Contact Forename:	XXXXX
Technical Contact Surname:	XXXXXXXXXX
Technical Contact Email:	XXXX.XXXXXXXXXX@XXXXXX.CO.UK
Technical Contact Phone:	XXXXXXXXXXXX

Business Hours Contact Forename:	XXXXX
Business Hours Contact Surname:	XXXXXXXXXX
Business Hours Contact Email:	XXXX.XXXXXXXXXX@XXXXXX.CO.UK
Business Hours Contact Phone:	XXXXXXXXXXXX

Out of Hours Contact Forename:	XXXXX
Out of Hours Contact Surname:	XXXXXXXXXX
Out of Hours Contact Email:	XXXX.XXXXXXXXXX@XXXXXX.CO.UK

Step 5

Click the "Monitoring Graphs" tab to load up the graphs. These are split into the following:

Ethernet Service Details

CES00005659

Ethernet Service Summary				Ethernet Service Management Guidelines - Ethernet Service Level Agreement			
Circuit Ref	Product	Status	Resilience	Bearer	Bandwidth	Channels	Reseller Ref

[← Return to Ethernet Service Management](#)

Contact Details | CES00005659-01 | **Monitoring Graphs**

Please note: graph data is captured approximately every 15 minutes and is not displayed in real time.

CES

Traffic Monitoring Graphs

- View Hourly
- View Daily
- View Weekly
- View Monthly
- View Yearly

Daily WAN Traffic

CES00005659-01 - Traffic - Gi0/0

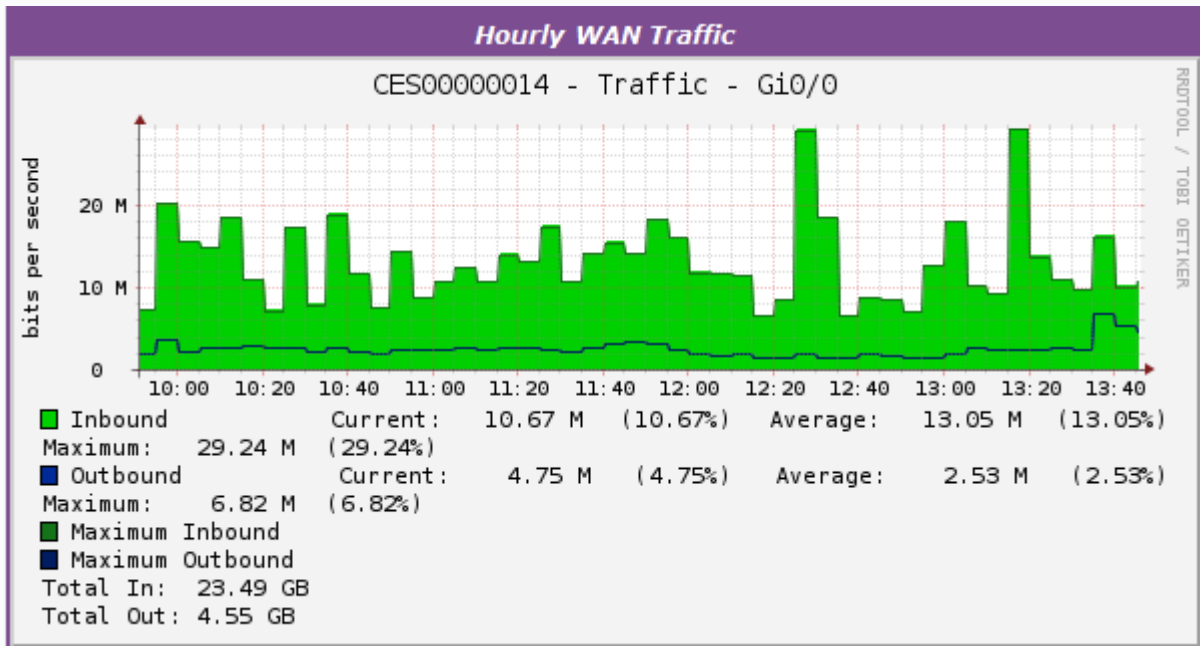
Inbound	Current: 709.12	(0.00%)	Average: 1.49 k	(0.00%)
Maximum:	44.37 k	(0.04%)		
Outbound	Current: 732.83	(0.00%)	Average: 1.49 k	(0.00%)
Maximum:	43.05 k	(0.04%)		
Maximum Inbound				
Maximum Outbound				
Total In:	15.87 MB			
Total Out:	15.88 MB			

Monitoring Graphs

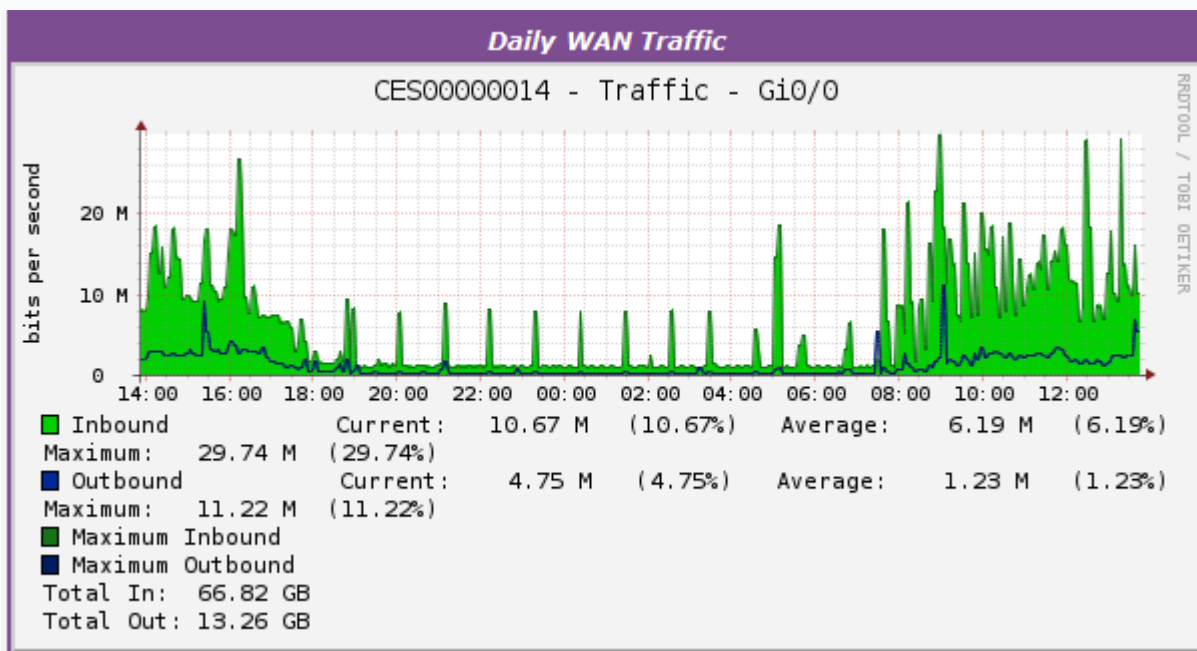
The Monitoring Graphs tab is displayed only for circuits in Active status. These are some graphs that we've got that will allow you to have a look at how the circuit is being used, broken down by hourly, daily, weekly, monthly and yearly graphs.

Click the "Monitoring Graphs" tab to load up the graphs. These are split into the following:

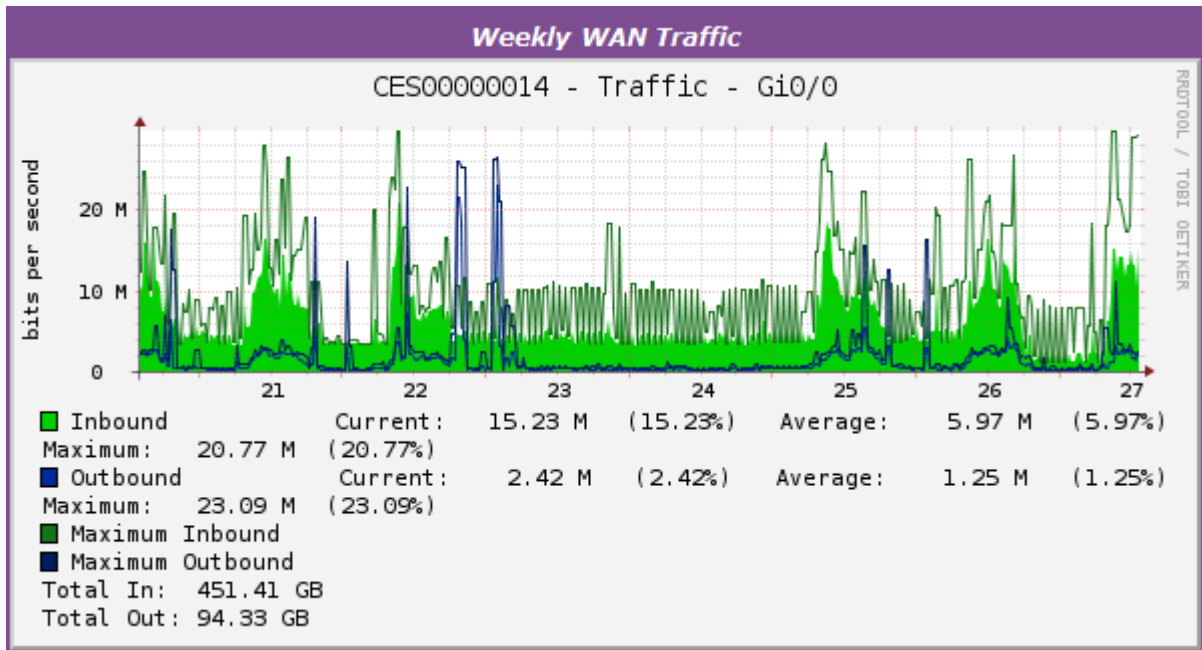
Hourly



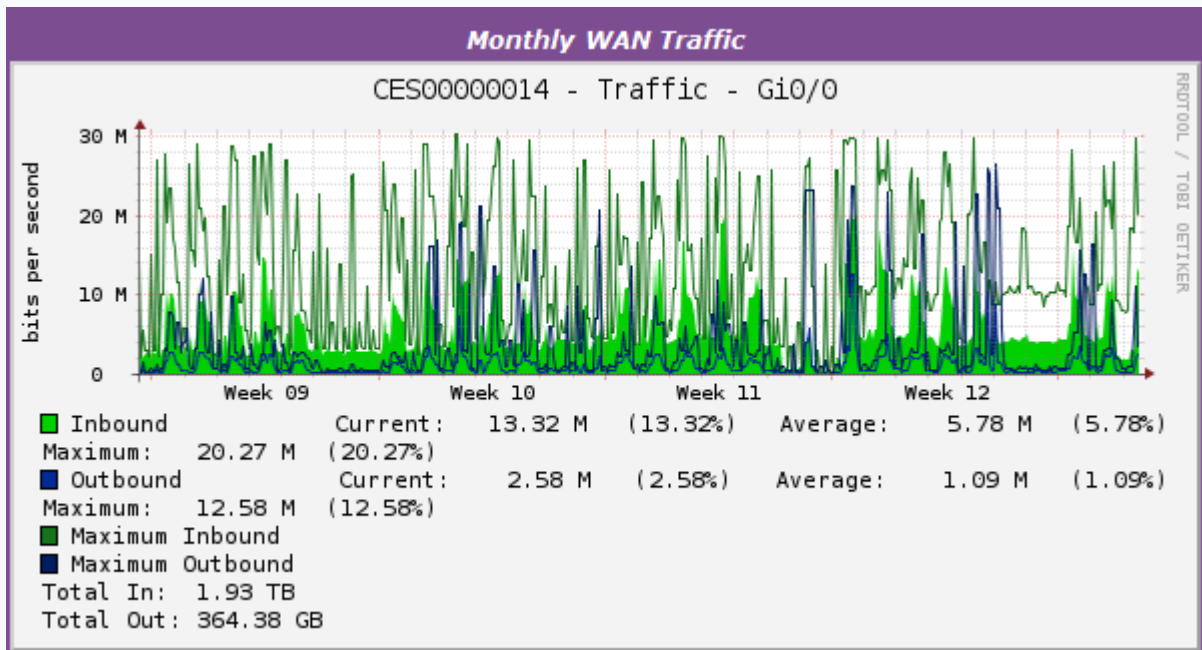
Daily



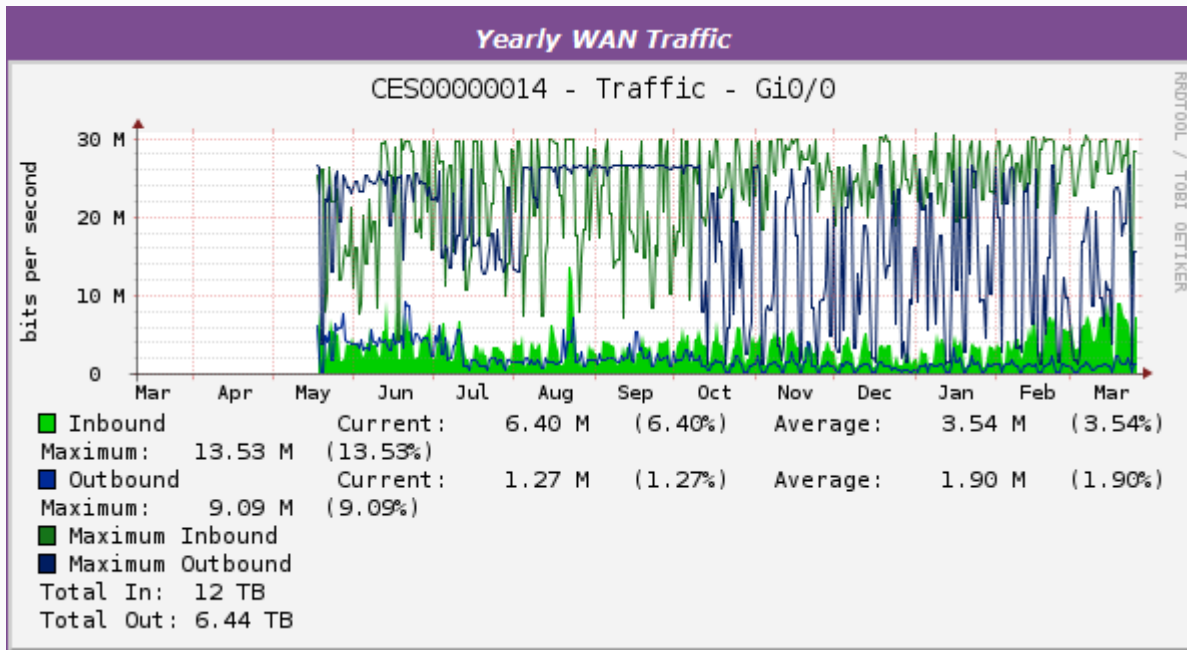
Weekly



Monthly



Yearly



We need to compare the bandwidth (you can get this from the header) with the graphs to see if your customer is coming anywhere near the bandwidth allowance. You use the different views of the graphs to see if this is case by comparing it with the bandwidth your customer pays for and what the bars/lines on the graph come to. In this example, we can see that we've got 30MBPS Bandwidth and on the daily graph we're using on average 6.16MBPS with a maximum usage of 29.74MBPS.

If the bandwidth is being regularly maxed out, then you should speak to your BDM about increasing your bandwidth.

If your bandwidth is not being maxed out, then you should contact the Service Desk (details in the Wholesale Customer Service Plan) with the results of your Ping, Trace Route and Bandwidth checks.