



Using the GMN webXaccelerator over Fleet Broadband, and BGAN

Satellite Router with Access
Control and Data Acceleration

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1 Overview

The webXaccelerator Satellite Router with Access Control is the complete solution for every Fleetbroadband/BGAN user, installer and manager. Designed to help users and installers save time and money while getting more productivity from satellite airtime for ship-to-shore and remote communications, the webXaccelerator provides comprehensive data router features with 5X data acceleration, shared web caching, user-defined access control, load-balancing and on-the-fly failover, and simplified least-cost routing – with both onboard and shore side access to make IT management easy.

2 Key Features

Compatibility

The GMN webXaccelerator works with Inmarsat Fleet, Fleet Broadband, BGAN, or any IP-based connection. It works at all data rates at or above 2.4 KBps, and is specifically designed for the new generation of higher-speed satellite data systems such as Inmarsat FleetBroadband.

The GMN webXaccelerator works with Macintosh, Windows, and Linux-based machines.

The WiFi version is compatible with all standard WiFi devices, including Blackberry, Google Android, Apple iOS devices such as the iPhone and iPad, and standard computers.

Physical Versions

The GMN webXaccelerator is available in rack-mount, wall-mount and WIFI versions. All versions have a similar array of ports.



3 Common Applications Overview

Data acceleration and web caching over a LAN

Like many routers, the webXaccelerator can create a LAN with firewall controls, filtering, real-time reporting, comprehensive logs, and bandwidth shaping. It also offers data acceleration and shared web caching to increase data throughput and save airtime costs. Additionally, webXaccelerator offers comprehensive tools for web filtering based on hostname, domain, source and/or destination IP addresses, and/or URL regular expressions. Logging tools are provided to help IT personnel track down issues and to also generate reports on web browsing activity.

Create Internet café for crew morale using Access Codes.

Access codes, entered through a captive portal login page, can be created with user-defined rules, and then shared with crew, or sold to crew, passengers, or other visitors.

Load-balancing and automatic seamless failover

Active load balancing and on-the-fly failover can help in situations where users require increased bandwidth, travel on the edge of coverage areas, equipment failure, or when installations require sub-optimal placement that blocks antennas.

Simplified least-cost routing option

The webXaccelerator will always prioritize the feed in the first port, so that when a user connects the least-cost data feed to that port, it will be automatically selected any time it is available.

4 Key Features

The webXaccelerator is designed with a wide array of features in order to have all of the tools necessary to solve a wide variety of common installation and usage scenarios. These features fall into four general categories: data routing; installation control; data acceleration; and access control.

4.1 Data Routing

- Compatible with Microsoft Windows, Mac OS, and Linux operating systems
- Firewall filtering by MAC or TCP/IP address and/or port number provide advanced controls
- Bandwidth shaping lets you prioritize traffic
- Onboard and Shore side IT Manager access
- Content filtering and reporting – block and log website activity by URL, IP address, and dynamic content

4.2 Access Portal

- Captive Portal - Access Codes through the Captive Portal can be sold or shared, with user-defined limits
- Access Code controls can limit groups or individual users by time, megabytes, or web site white/black listing

- Time or data based access codes control Internet Access
- Peak/Off-Peak time slots can be chosen for access code usage
- Per user bandwidth limitation (e.g. 64 kbps up/down)
- Access codes can be locked to a specific unit
- Real time status information by access code number
- Detailed activity logs by access code number

4.3 Installation Control

- Load-balancing
- Automatic transparent failover from primary to secondary link assures smooth service delivery with no disruptions
- Shipboard and Shore-based access to all functions for IT managers
- Simplified least-cost routing prioritizes the data feeds you select based on cost

4.4 Data Acceleration

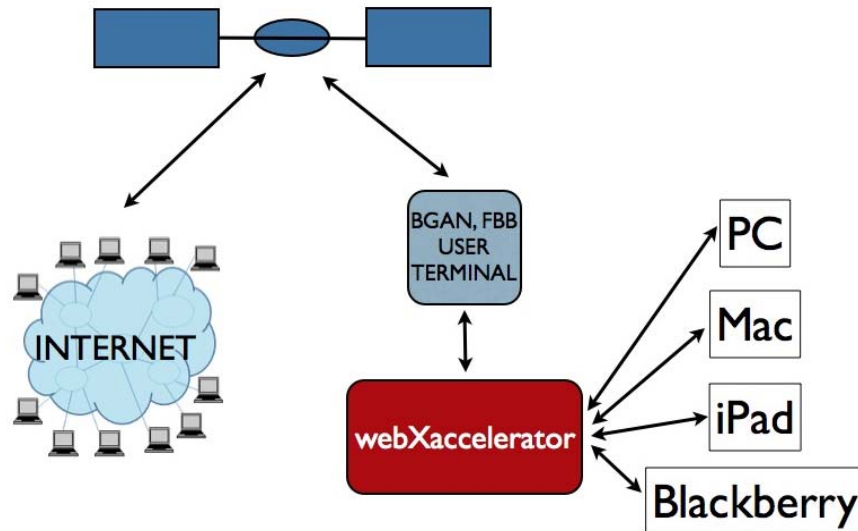
- Compression – delivers up to 5 times faster data than uncompressed rates
- Caching – Shared onboard web caching provides fast load times for commonly visited sites

Inmarsat BGAN Test Results

Web Page Address	With WebXaccelerator compression		No compression		Percent Savings	
	Size(kb)	Time(sec)	Size(kb)	Time(sec)	Data	Time
www.cnn.com	924.5	65	1843.2	179	49.84%	63.69%
www.foxnews.com	513.8	54	1536	207	66.55%	73.91%
www.yahoo.com	278.8	38	391.6	53	28.80%	28.30%
www.msn.com	135.4	33	447.6	76	69.75%	56.58%
www.espn.com	448.5	109	1022.7	111	56.15%	1.80%
www.nytimes.com	1228.8	125	1638.4	143	25.00%	12.59%
www.wallstreetjournal.com	498.4	30	783.2	72	36.36%	58.33%
www.usatoday.com	508.6	163	723.7	163	29.72%	0.00%
www.bbc.com	290.5	45	631.9	54	54.03%	16.67%
www.eltiempo.com	1024	72	1433.6	59	28.57%	-22.03%

5 BGAN and Fleet broadband Setup

5.1 Network Diagram



For this solution we will show how to connect a webXaccelerator to a Fleetbroadband/BGAN unit providing network wide web access with compression and caching.

5.2 Prerequisites

The following needs to be in place before the solution can be implemented

- A working BGAN unit with airtime activation.
- A webXaccelerator appliance
- A webXaccelerator account consisting of a username and password provided by a GMN reseller.
- An optional Ethernet switch or hub or wired local LAN installations
- 12V DC/110V AC/220 VAC power

5.3 Fleetbroadband and BGAN Configuration

Configure the LAN interface on the BGAN unit with DHCP enabled and place it in router mode. The unit can be configured for either background or streaming IP although for this application background IP is best. Consult your BGAN manufacturers user guide for instructions on configuring your terminal.

5.4 Hardware installation

1. Connect an Ethernet cable between the Fleetbroadband/BGAN unit and the ETH1 port on the webXaccelerator
2. Connect an Ethernet hub or switch to ETH0 on the webXaccelerator. A PC can be hooked up directly to ETH0 if only one wired computer is to be used. Note that no hub or switch is required for WIFI installations
3. Connect PCs to the Ethernet switch or hub
4. Apply power to the Fleetbroadband/BGAN unit first and wait until it is powered on before continuing
5. Apply power to the webXaccelerator
6. Apply power to PC's on the network

Note that by default the WAN/ETH1 port on the webXaccelerator is configured to acquire an IP address and the addresses of the DNS servers via DHCP. It is therefore important to power on the BGAN unit (the DHCP server) prior to the webXaccelerator or the appliance will not initialize its ports correctly.

For mobile environments where the satellite terminal and being turned on/off frequently it is highly recommended that webXaccelerator's WAN/ETH1 port be configured with a static IP address.

6 webXaccelerator's Configuration

6.1 webXaccelerator's Web Administrator

You can use a PC connected to the webXaccelerator via the wired or WIFI network. Use the following steps when connecting via a wired Ethernet connection.

1. Connect a PC to the ETH0 port (or a HUB/Switch connected to ETH0) on the webXaccelerator
2. After the PC has booted and acquired a DHCP address open a web browser and connect to <http://192.168.10.1>
3. You will now see webXaccelerator login screen. Enter the default username and password
Username: **admin**
Password: **webxaccess**
4. You should now see webXaccelerator's System Overview page
5. If you have recently powered on the unit then please wait until the Run Status indicates the unit is Operational

Use the following steps if using a WIFI connection to access the web administrator.

6. Once your PC is on connect to the *webXaccelerator* hotspot
7. Enter the following shared key when prompted
Pre Shared Key: **webXaccelerator**
8. Next open a web browser and connect to <http://192.168.10.1> and follow steps 3-5 above to login to the web administrator

6.2 Enabling Compression

Follow these steps to enable the web compression for all users on the network.

1. Login to the web administrator as described in the previous section
2. Select the *Services->Proxy Server* menu
3. Click on the compression tab and enable web compression
4. Enter a username and password provided by your webXaccelerator distributor
5. Finally select a compression level and hit save. Compression level sacrifices picture quality for speed. The higher the compression level the less bandwidth is used but the poorer the image quality

6.3 Going on Line

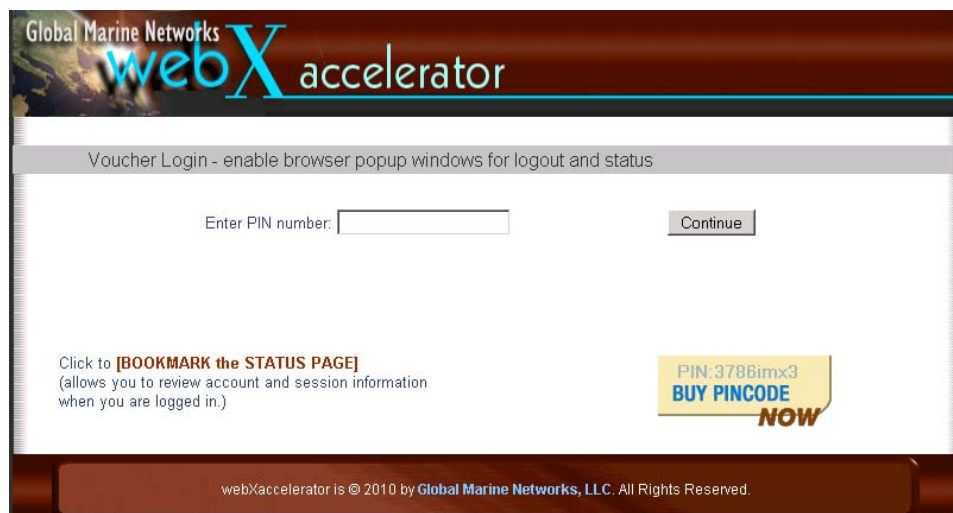
Take your BGAN unit on-line to start browsing the Internet with compression and web caching optimizations. Connect to the BGAN dashboard as described in your terminal's documentation and establish a connection to the Internet. Once connected all users on the LAN/WIFI will be able to browse the Internet effectively using webXaccelerator built in compression and web caching.

7 Internet Cafe

7.1 Captive Portal

The captive portal feature in webXaccelerator allows administrators to restrict access to the Internet on a per user basis via access codes. Users can then sell or share the access codes depending on their own business or personal needs.

When enabled, the captive portal directs users to a login page when they try to access the Internet using a web browser. Users are required to enter a valid access code before access is allowed. Once the access code is entered, the user can use the Internet for browsing and other applications (such as file transfer, instant messaging, gaming, etc.) within the constraints set by firewall rules and the access code itself.

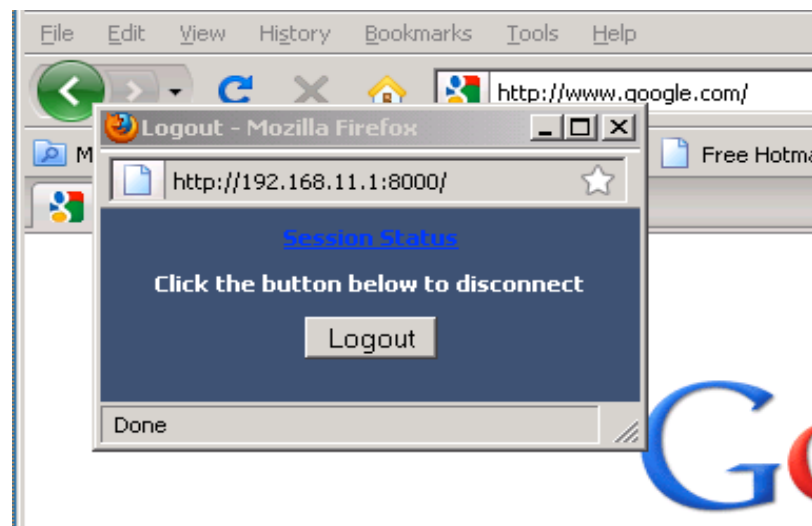


Access codes can restrict access to the Internet in several key ways.

1. Time - users are allowed a total number of minutes before their connection is terminated.
2. Data volume - users are allowed a total number of bytes transferred before their connection is terminated.
3. Time of day - users can be restricted to Internet access during a certain period of the day
4. Bandwidth - users can be restricted to a fixed bandwidth channel such as 64kbps. Data cannot be transferred up or down faster than the maximum specified bandwidth allocated to the access code.

When a user tries to access the Internet, he is presented with a login screen requesting an access code. Entering an invalid access code redirects the user to an error page. The user then has the option to return to the login page or (if the Buy Now feature is enabled) click on a link, which allows the purchase of an access code on the spot. After acquiring an access code, the user can then return to the login screen to access the Internet.

Upon entering a valid access code, the user is redirected to the original page that was requested and (if popups are not blocked by the browser) a popup window appears.



The popup window allows the user to either logout or click on a status link, which provides real-time status for the Internet connection and access code usage. To end a session, the user clicks on the logout button.

The status window is available for mobile devices and browsers that disallow popup windows via the use of a bookmark link on the login page. Users who do not have access to popup windows should pay close attention to the bookmark link since this link provides valuable session information.

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Account Information and Session LogOut 11:51:31 PM

Account Type: Time allocation at fixed bandwidth
Account Speed: 64 Kbps
Permitted Start Time: 00:00 (00:00 AM)
Required End Time: 00:00 (00:00 AM)
Data Limit for Card: NA
Time Limit for Card : 24:00:00
Total Time Used: 15:51:03
Data Incoming: 18.00 Mbytes
Data Outgoing: 86.26 Mbytes
Total Data Transferred: 104.25 Mbytes

Time left on Card: 08:08:56
Data Transfer left on Card: NA

CURRENT SESSION

Time Used This Session: 00:01:26
Data In This Session: 7.09 Kbytes
Data Out This Session: 95.24 Kbytes
Total Data This Session: 102.33 Kbytes

Click the button below to disconnect

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7.2 Enabling the Captive Portal

The following steps are required to enable the captive portal.

1. Contact your webXaccelerator to obtain access codes for users. When ordering access codes specify the quantity, time or data, and duration in minutes or amount of data in Mbytes.
2. Login to the web administrator and select the *Services->Captive portal* menu
3. Enable the captive portal
4. Select the interface that should be used. Either the LAN or the WLAN (WIFI) must be selected. Note that the captive portal can only be used on one interface.
5. Click the Save button to enable the captive portal

Crew members will not be prompted for an access code before they are allowed onto the Internet.

7.3 Least Cost Routing, Failover, and Load Balancing

webXaccelerator can be configured to communicate with two satellite devices simultaneously providing failover and/or load balancing between the units. In failover mode all traffic is routed through the primary interface. On failure of the primary interface traffic is then routed through the backup or secondary satellite unit until the primary comes back on line. In load balancing mode traffic is split between the two interfaces. If the low cost device is connected the primary interface of the webXaccelerator then a least cost routing solution is enacted where all traffic goes through the low cost interface unless it is down.

Failover can be used in situation where a low cost high bandwidth service is available using BGAN as a secondary failover device.

The following steps are required to setup a failover solution using webXaccelerator.

1. Configure webXaccelerator for compression based browsing with optional captive portal as described in previous sections. Test to make sure that the unit is working correctly over the primary WAN (ETH1) interface
2. Connect BGAN unit to the WAN2(ETH2) interface and configure to automatically connect to the Internet with network activity
3. Access the web administrator and select the *System->General* menu
4. Enter WAN and WAN2 DNS servers into the appropriate boxes and disable "Allow DNS server list to be overridden by DHCP/PPP on WAN". You can use 208.67.220.220 and 208.67.222.222 if you don't know the IP address of your DNS servers
5. Next select *Services->Load balancer* and click on the + to create a new pool
6. Give the pool a name such as "Failover" and a description. Select "Gateway" for the type and "Failover" for the behavior.
7. Select DNS Server 1 for the Monitor IP and WAN for the interface and click the "Add to pool" button
8. Select DNS Server 2 for the Monitor IP and WAN2 for the interface and click the "Add to pool" button a second time

Name	Type	Servers/Gateways	Port	Monitor	Description
Failover	gateway (failover)	wan opt1		208.67.222.222 208.67.220.220	Failover from WAN to WAN2

9. Hit the save button and confirm that the load balancing pool looks similar to the following
10. Select the *Status->Load balancer* menu and confirm that that both satellite systems are on line. The display should look similar to the following

Name	Type	Gateways	Status	Description
Failover	gateway (failover)	wan opt1	Online Delay: 45.814ms, Loss: 0.0% Online Delay: 38.626ms, Loss: 0.0%	Failover from WAN to WAN2

11. Select *Firewall->Rules* from the web admin menu and then click on the LAN tab. Click the "e" next to the rule and scroll to the bottom of the form
12. Change the Gateway to "Failover" or whatever you named the failover pool above in step 6

NOTE: schedule logic can be a bit different. Click [here](#) for more information.

Gateway

- default
- ✓ Failover
- OPT1 - WAN2

Leave as default to use the system routing table. Or choose a gateway to utilize policy based routing.

13. Hit save to record the changes
14. Next enable failover for the compression proxy server by selecting *Services->Proxy server* from the web admin menu
15. Enable Failover, set the type to "Failover" and bind each of the compression proxy servers to an interface as displayed below

Enable Failover or Load balancing	<input checked="" type="checkbox"/>	This option enables proxy failover or load balancing. NOTE: Don't forget to create static routes for proxy hosts when configuring multi-WAN load balancing or failover. Static routes are configured below in "Bind proxy servers to interfaces".
Secondary proxy server	<input type="text" value="xweb2.gmn-usa.com"/>	Select secondary proxy server. Must differ from the primary server.
Service Type	<input type="text" value="Failover"/>	Select load balancing or failover mode.
Bind proxy servers to interfaces	<input checked="" type="checkbox"/>	Bind routes to primary and secondary compression proxy servers to network interfaces.
Primary proxy interface	<input type="text" value="WAN"/>	The interface the primary proxy server will bind to. Hint: usually WAN.
Secondary proxy interface	<input type="text" value="WAN2"/>	The interface the secondary or backup proxy server will bind to. Hint: usually WAN2 (or OPT1).

16. Hit Save to activate load balancing

Failover setup is now complete. Users will be transparently routed to through the backup BGAN unit when then primary unit is unavailable.

8 Specifications

8.1 Physical Specifications

- **Dimensions** 7.9" x 6.3" x 2.4" (200mm x 160mm x 60mm)
- **Weight** 0.99lbs (.045 Kg)
- **Operating Temperatures:** 32° F to 122° F (0° C to 50° C) 12 volt DC- 2 amp
- **Compliance:** FCC, CE and RoHS

8.2 Access Code Specifications

Access Codes can be purchased at any time and emailed directly to the end user. Resellers can customize the captive portal login page with a link to their shopping cart for immediate and convenient access code sales—in real time.

The webXaccelerator offers full control over user access to satellite links:

- Time-based controls from 1 to 24 hours.
- Data-based controls from 1 to 100 MB.
- Peak/Off-Peak time slots can be chosen for access code usage.
- Bandwidth limitation by user (e.g. 64 kbps up/down).
- Access codes can be locked to a specific unit.
- Real time status information with detailed activity logs.
- Access codes may be activated within 24 months from date of issue.
- Activated access codes are valid for 12 months and can easily be sold as an ongoing revenue stream.