

TERAGO CONNECTIVITY PRODUCTS

TERAGO has been a leader in Fixed Wireless Communication Services for over 25 years, offering wireless solutions to Canadian businesses through our nationwide network. TERAGO's portfolio of products are built specifically to meet the demands of the business market.

1 Network & Services

TERAGO combines high speed wireless networks with a Canada wide fiber optic network to provide businesses with secure, reliable and scalable Internet, WAN and Private Networking solutions. TERAGO's network supports connectivity speeds up to 10 Gbps across a variety of access mediums, including licensed and unlicensed wireless, fiber, cable and DSL.

1.1 Dedicated Services

All TERAGO's Dedicated Private Connectivity and Internet services are provisioned with dedicated bandwidth. Dedicated bandwidth means that a customer's service is guaranteed a specific bandwidth or speed (in Mbps) through the TERAGO network. The customer's service is also capped at the dedicated bandwidth, meaning that the customer's service cannot exceed the subscribed bandwidth or speed through the TERAGO network.

1.2 Business Services

All TERAGO's Business Private Connectivity and Internet services are provisioned with business-grade bandwidth. The Business-grade bandwidth means that a customer's service is guaranteed to a minimum of 70% of the subscribed rate through the TERAGO network. The customer's service is also capped at the maximum bandwidth, meaning that the customer's service cannot exceed the subscribed bandwidth or speed through the TERAGO network.

2 Private Networking Services

TERAGO Private Networking provides business customers with private network connections between their facilities and offices. Private network connectivity means that the customer's data is securely transported across TERAGO's network, separated from other customer's traffic and not exposed to public networks (e.g., the Internet).

2.1 Ethernet Services

TERAGO Ethernet Services allow business customers to connect sites together leveraging Layer 2, Ethernet connections. TERAGO can support point-to-point and bridged Ethernet topologies with dedicated bandwidth speeds up to 10Gbps. Ethernet Services provide secure, low latency connections - ideal for companies with multiple offices, large interoffice data requirements or connections to data centers. Ethernet Services are delivered across dedicated, symmetrical wireless connections or across 3rd party fiber connections.

2.2 Private Wireless Networks

TERAGO Private Wireless Networks are on-site or localized wireless networks managed by TERAGO. Private Wireless Networks are customized solutions that are deployed to connect multiple customer sites in a localized geographic area together or are deployed to support wireless services within a specific customer facility. Private Wireless Networks can securely support dedicated bandwidth speeds up to 10 Gbps.

3 Internet Services

TERAGO provides scalable, business-grade Internet services with speeds up to 10 Gbps.

3.1 TERAGO Dedicated Internet

TERAGO Dedicated Internet is a wireless Internet connection with speeds up to 10Gbps. Dedicated Internet services are provisioned with dedicated symmetrical upload and download bandwidths, no usage caps, no additional usage fees and are delivered with a static IP.

3.2 TERAGO Business Internet

TERAGO Business Internet is a wireless Internet service with speeds up to 200M of download. Business Internet services are provisioned with business-grade asymmetrical upload and download bandwidths, no usage caps, no additional usage fees and are delivered with a static IP.

3.3 Fiber Internet Services

TERAGO will install, manage and maintain Fiber Internet services procured from 3rd party Service Providers. Fiber Internet services are available with speeds up 10Gbps. Fiber Internet services are provisioned with dedicated, symmetrical bandwidths, no usage caps, no additional usage fees and are delivered with a static IP.

3.4 Broadband Internet Services

TERAGO will install, manage and maintain Broadband Internet services procured from 3rd party Service Providers as requested. Broadband Internet services can include cable, DSL and wireless access products. Broadband Internet services are generally provisioned as best-effort, asymmetrical bandwidth, DHCP Internet products with no usage caps and no additional usage fees.

3.5 IP Addresses

All TERAGO Internet services are provisioned with a public /30 subnet (i.e., 1 static IP). TERAGO can allocate additional public IP addresses, subject to the customer meeting ARIN requirements. TERAGO will make reasonable efforts to allocate public IP addresses to customers on contiguous subnets, following standard IP subnet allocation methodologies. Customers may not allocate IP addresses to other parties or customers without TERAGO's written consent. Customers must complete and submit an IP Allocation Request Form if they require /28 or greater subnet (i.e., 16 or more public IPs).

Private IP addresses assigned by TERAGO cannot be viewed and are not routable outside the customer's Private network (i.e., they cannot be viewed and are not routable on the Internet, or on other Private networks). Private IP addresses may be allocated on subnets that are not contiguous with prior allocations. TERAGO will retain ownership of all Private IP addresses allocated to the customer.

Customers may not allocate IP addresses to other parties or customers without TERAGO's written consent.

4 Additional Connectivity Products

4.1 TERAGO Managed SD-WAN

TERAGO Managed SD-WAN is a virtualized Wide Area Network (WAN) that can be deployed over public and private network connections. TERAGO Managed SD-WAN seamlessly connects customer branch offices, datacenters and cloud services through a centralized, cloud-based management system.

4.2 TERAGO Managed Network Services

TERAGO Managed Network Services allows business Customers to optimize their network performance and IT resources by leveraging TERAGO's advanced management systems and team of network experts to manage their network infrastructure.

4.3 TERAGO Cloud Connect

TERAGO Cloud Connect provides customers with secure, private connectivity to AWS Direct Connect and Microsoft Azure ExpressRoute. TERAGO Cloud Connect supports connections from customer-owned facilities, third-party facilities and data centers. TERAGO Cloud Connect is provided as a Layer 2, Ethernet connection with available bandwidths from 50Mbps to 10Gbps. TERAGO Cloud Connect from customer-owned or third-party facilities will only be supported across fiber or TERAGO provided wireless connectivity.

4.4 Distributed Denial of Services (DDoS) Protection

TERAGO's DDoS Mitigation Services monitor all traffic entering the TERAGO network for large-volume flood and intrusion attacks, among other anomalies.

The service is composed of two key systems: a detection system and an attack mitigation system. The detection system is inserted in front of the TERAGO Gateways and is configured towards host detection. From there, it monitors traffic. Host detection can trigger an alert for an enabled misuse type. If excessive traffic is detected for multiple misuse types that are enabled, then a single alert is created instead of separate alerts for each misuse type. The alert includes each misuse type that had excessive traffic. This provides continuous threat detection against Volumetric and SYN Attacks. Once a threat is detected, and the traffic exceed high severity rate and latency period, then the attack mitigation system will automatically use local blackholing until the attack is ended. If the attack lasts longer than 15 minutes and is higher than 5Gbps, upstream blackholing is activated, until the attack ended. DDoS protected clients are identified by their IP address. Their traffic is protected and routed to clean their data. Those without DDoS protection may be quarantined.

TERAGO DDoS Mitigation Services is offered in a several packages.

	Attack Type Protection (Refer to table for exact types)	DDoS Reporting Available?	TERAGO Managed Service Included?
Bronze	Volumetric	None available	Yes - no report per customer
Silver	Bronze + Low and Slow, SIP Attacks, Memory attacks, DNS Query Floods, etc.	Yes, Generalized and not at a single IP	Yes

Attack Protections by Package

Bronze	Zero Minute Volumetric / Reflection Attacks	Full behavioral dynamic protection	No
Bronze	Zero Minute Flood Attacks	Full behavioral dynamic protection	No
Bronze	TCP Syn Floods	Full behavioral dynamic protection	No
Bronze	TCP SYN+ ACK Floods	Full behavioral dynamic protection	No
Bronze	TCP Reset Floods	Full behavioral dynamic protection	No
Bronze	TCP Fin floods	Full behavioral dynamic protection	No
Bronze	TCP Fragment Floods	Full behavioral dynamic protection	No
Bronze	ICMP Floods	Full behavioral dynamic protection	No
Bronze	UDP Floods	Full behavioral dynamic protection	No
Bronze	UDP Fragmented Floods	Full behavioral dynamic protection	No
Bronze	IGMP Floods	Full behavioral dynamic protection	No
Bronze	L3 / L4 Black Listing	On-demand (only during event if needed)	No
Bronze	RFC Violation Attacks / Packet Anomaly	Yes. (limited to 15 most common violations and best effort on demand)	No
Silver	Low and Slow attacks	Yes; known attack tools like LOIC and HOIC	High level shared report
Silver	TCP Stack Resource Floods	Limited (to known one fragmented stateless attack and best effort on demand)	High level shared report
Silver	DoS Vulnerability Attacks	Yes. (limited to 32 most common violations and best effort)	High level shared report
Silver	Memory Allocation Attacks	Limited (only 3 known stateless buffer overflow type of attacks and best effort on demand)	High level shared report
Silver	SIP Attacks	Limited (Limited to 10 known stateless SIP attacks and best effort on demand)	High level shared report

Silver	DNS Query Floods	Included (very small query floods will not be covered)	High level shared report
Silver	ACK Floods	On-demand (only during event if needed. Rate limit only)	High level shared report

5 Terms, Conditions & Service Level Objectives

Service level objectives related to TERAGO’s connectivity products and services can be found in TERAGO’s Service Level Agreement. Terms and conditions related to TERAGO’s connectivity products and services can be found in TERAGO’s Master Services Agreement. TERAGO’s Service Level Agreement and TERAGO’s Master Services Agreement are available on TERAGO’s web site:

<https://terago.ca/legal/>