



CYBERA MEMBERSHIP

Digital Resources for Alberta's
Public & Education Sectors





Cybera is Alberta's not-for-profit organization responsible for driving economic growth through the use of digital technology.

TABLE OF CONTENTS

ABOUT CYBERA	2
MEMBERSHIP OVERVIEW	2
CONNECT	4
CyberaNet: Alberta's Research & Education Network	4
Peering Service	5
Internet Buying Group	6
ENABLE	7
Cloud Services	7
Rapid Access Cloud	7
DAIR	7
Data Science Services	7
Data Science for Albertans	8
Callysto	8
Jupyter 'All-in-One' Science Platform	8
Supporting Adoption of New Technologies	8
SHARE	9
ShareIT	9
Canadian Access Federation – Federated Identity Management Service	9
eduroam	10
ADVOCATE	11
Advocacy	11
Cyber Summit	11
SECURE	13
Virtual Firewall Service	13
D-Zone Anycast DNS	13
D-Zone DNS Firewall	14
Shared Chief Information Security Officer	14
Security Information & Event Management	14
Alberta Post-Secondary Cybersecurity Initiative	14
FREQUENTLY ASKED QUESTIONS	15
CONTACT INFORMATION	17

ABOUT CYBERA

Since it was established in 1994, Cybera's core role has been to oversee the development and operations of Alberta's cyberinfrastructure – the advanced system of networks and computers that keep government, educators, not-for-profits, and entrepreneurs at the forefront of technological change.

This includes managing Alberta's ultra-high-speed advanced research network – CyberaNet. It connects local researchers, educators, and innovators to each other, and to data, technology, and colleagues around the world, through the National Research and Education Network.

Cybera also leads above-the-network projects that improve the lives of Albertans through the advancement of technology, digital literacy, and best practices.

ADOPTING NEW TECHNOLOGIES

Cybera pilots and rapidly scales new technologies to demonstrate their value to the government, education, and start-up sectors. This includes transformative digital tools involving cloud computing, networking, cyber security, machine learning, and data analytics.

ADVOCATING & ADVISING

Working with our partners, Cybera is creating a community that champions vital networking and computing services and utilities for everyone, everywhere. We also provide unbiased, highly skilled expertise on technology products, processes or services, as well as access to shared IT tools.

MEMBERSHIP OVERVIEW

Schools, libraries, research facilities, public institutions, and business incubators are welcome to join Cybera to benefit from its many networking and above-the-network services.

Membership falls into two categories: those who are connected to CyberaNet,

and those who are not connected but have joined to access Cybera's other services. For a breakdown of the cost of membership, see the Frequently Asked Questions on page 15.

To contact one of Cybera's staff, see the contacts list on page 17.

WHAT COMES WITH YOUR MEMBERSHIP	CONNECTED MEMBER	NON-CONNECTED MEMBER
High-bandwidth access to the National Research and Education Network	●	
Free IPv6 traffic	●	
Support with accessing CANARIE funding programs for research and networking infrastructure	●	
Access to the Canadian Access Federation and eduroam	●	
Early-bird access to new features on the Rapid Access Cloud for testing, as well as research and classroom support	●	●
Protection of Domain Name System using D-Zone Anycast and the D-Zone DNS Firewall (in partnership with CIRA)	●	●
Access to data science training, consultations, and tools, such as Jupyter	●	●
Access to technology-neutral advice on networking, data privacy management, cyber security, shared IT procurement, and policy	●	●
Participate in technical workshops with Cybera experts	●	●
Propose and participate in technology pilots	●	●
Discounted access to the Cyber Summit	●	●
Be part of a community that advocates for open data, shared services, efficient internet, and network expansions	●	●

ADD-ON SERVICES	CONNECTED MEMBER	NON-CONNECTED MEMBER
Access to ShareIT (Alberta's program for shared IT hardware and software procurement, knowledge transfer, and skills building)	●	●
Access to the Internet Buying Group for low-cost internet	●	
Direct peering to major content providers, removing up to 50% of traffic from commercial internet	●	
Shared networking services (including the Virtual Firewall)	●	
Access to security initiatives such as the shared CISO, SIEM, and Alberta post-secondary cybersecurity initiative	●	●

Connect

OFFERING HIGH-SPEED BANDWIDTH FOR ALBERTA'S PUBLIC SECTORS

The network is at the heart of what we do. Cybera connects Alberta researchers and educators to national and global tools, colleagues and classrooms through a dedicated, high-capacity, high-speed network.

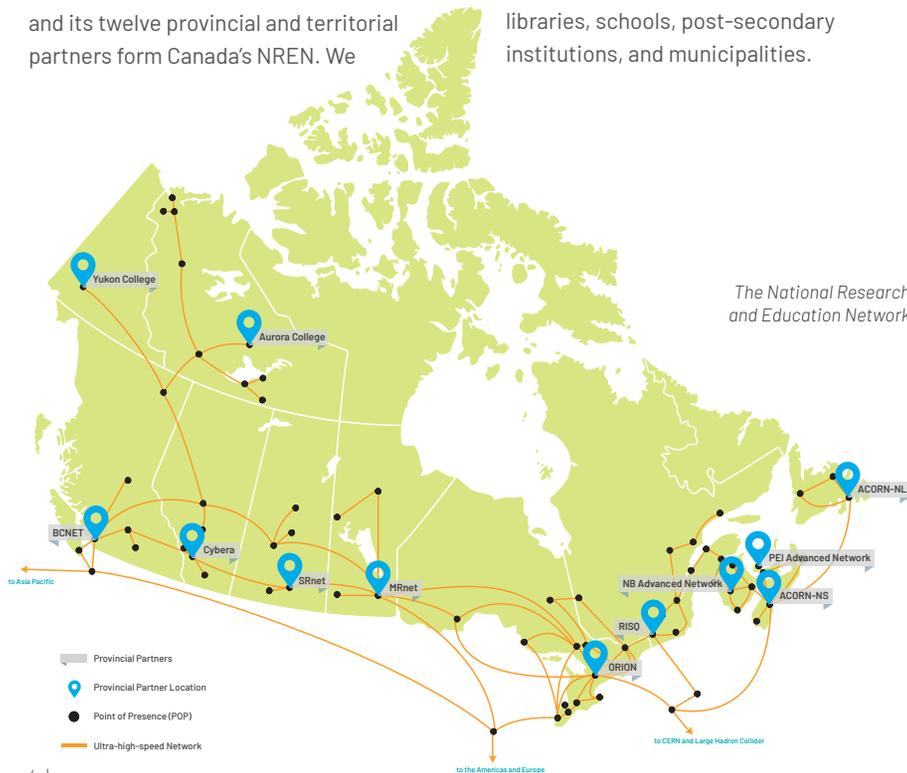
CYBERANET: ALBERTA'S RESEARCH & EDUCATION NETWORK

The National Research and Education Network (NREN) is an essential collective of infrastructure, tools, and people that bolsters Canadian leadership in research, education and innovation. CANARIE and its twelve provincial and territorial partners form Canada's NREN. We

connect Canada's researchers, educators and innovators to each other and to data, technology and colleagues around the world.

In Alberta, +735,000 people connect to Cybera. Connected members can also directly peer with other Cybera-connected institutions, including libraries, schools, post-secondary institutions, and municipalities.

The National Research and Education Network



WHO IS ELIGIBLE TO CONNECT?

All connected Cybera members have access to the NREN. This network is designed to support innovation and can be used for non-commercial traffic, including direct connections to other Cybera members.

REQUIREMENTS TO CONNECT

A physical network connection to CyberaNet is required. Contact our network team for more information (see page 17).

PEERING SERVICE

Cybera offers members direct connections to major content providers such as Google and YouTube.

MEMBER BENEFITS

- Members divert, on average, 50% of their commercial internet traffic, creating major internet savings.
 - These cost-savings increase as more content providers peer with Cybera.
- Web content loads faster, even during peak times.

MEMBERSHIP REQUIREMENTS

Access to the Peering service is available to all connected Cybera members.

REQUIREMENTS TO CONNECT*

To connect to Peering, the member institution must have:

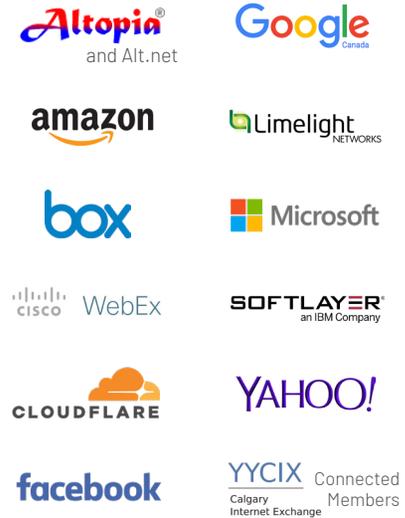
- A physical network connection to CyberaNet.
- Its own public IP address.
- Multi-homing** capabilities: Participating members need to

connect to both CyberaNet as well as their commercial Internet Service Provider. This requires networking equipment that supports Border Gateway Protocol (BGP), as well as an Autonomous System Number (ASN).

**Cybera is able to provide technical assistance with this process.*

***Note: This requirement does not apply to members who are in the Internet Buying Group.*

CONTENT PROVIDERS WE PEER WITH



PEERING SERVICE ADMINISTRATIVE FEE

This fee is based on the number of full-time equivalent (FTE) students or employees within the organization:

SIZE OF ORGANIZATION	COST
Less than 1,000 FTE	\$50/month
1,001 - 10,000 FTE	\$100/month
More than 10,000 FTE	\$500/month



INTERNET BUYING GROUP

Cybera aggregates connected members' bandwidth requirements and purchases internet in bulk (on their behalf) from upstream providers, to secure more competitive pricing.

MEMBER BENEFITS

- Members are only charged a metered (\$/Mbps) rate for the Internet Buying Group's transit internet.
 - Peering service traffic (which is automatically included in the Internet Buying Group) is unmetered and charged separately under one flat administrative fee.
- Free IPv6 internet traffic (network permitting).
- Members have reported dramatic cost savings.

Visit Cybera's "Internet Cost Calculator" to compare the Internet Buying Group to your existing commercial internet contract:
Cybera.ca/internetcostcalculator.

The Internet Buying Group is a month-to-month service, with no long-term contract or commitment.

MEMBERSHIP REQUIREMENTS

Access to the Internet Buying Group is available to all connected Cybera members.

COST

Visit Cybera.ca/services/internet-buying-group/ to view the current price for bandwidth.

Note: Internet Buying Group members are also subject to the Peering Service administrative fee.

REQUIREMENTS TO CONNECT*

To connect to the Internet Buying Group, the member institution must have:

- A physical network connection to CyberaNet.
- Its own public IP address.

**Cybera is able to provide technical assistance with this process.*

Enable

ENABLING RESEARCH AND INNOVATION.

Cybera explores next-generation technologies (including data science and machine learning) that will feed into Alberta's economic growth. We also offer cloud resources for innovators and entrepreneurs to test their ideas.



CLOUD SERVICES

Cybera houses some of the top cloud experts in Canada. They operate and support two national cloud resources that are freely available to Alberta researchers and innovators.

These cloud services are intended to:

- Help researchers and innovators run testing, analysis and experimentation.
- Offer businesses a staging ground to test ideas for cloud-based services.
- Provide a learning environment for educators, students, and the general public.



RAPID ACCESS CLOUD

Cybera's Rapid Access Cloud is an award-winning program that provides free cloud computing resources to innovators, researchers, not-for-profit organizations, and educators. New capabilities are continually added to the cloud, including digital software testing and GPUs. Albertans can begin using the Rapid Access Cloud by visiting:
Rac-portal.cybera.ca.



DAIR

Since 2011, Cybera has partnered with CANARIE to manage the cloud infrastructure for its DAIR program. Small-to-medium sized enterprises are eligible to receive free cloud resources to test, validate, and prove their product or service ideas. DAIR users can also access BoosterPacks (canarie.ca/cloud/dair-boosterpacks), which offer tools and resources on emerging technologies. Canadian businesses can access the DAIR program by visiting: Canarie.ca/cloud.



DATA SCIENCE SERVICES

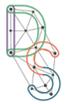
Data Science uses a scientific approach to analyze data stemming from a variety of sources and formats — such as open, sensor or social media data — to extract insights to create new products or optimize operations.

Cybera's Data Science team is working with the public and private sectors to accelerate the learning and adoption of data science practices through:

- Collaborating on data science projects.

- Providing access, and training, for open-source data science tools.
- Advising on how to begin a data science project.

Organizations looking to gain insights from their data to drive new efficiencies and decision-making are welcome to contact Cybera’s data science team (see page 17 for contact details).



DATA SCIENCE FOR ALBERTANS

Cybera offers a free data science training and consultation program to Alberta entrepreneurs and small-to-medium sized businesses. Through a series of workshops, multi-week fellowships, lunch-and-learn presentations, and one-on-one consultations, we’re helping Alberta companies better leverage their in-house data. We are also giving budding data scientists real-world experience. For more information, visit: Cybera.ca/datascience.



CALLYSTO

Cybera is bringing computational thinking into Canadian classrooms using Callysto, a free, open-source online learning tool. The goal is to provide training and resources that will prepare Grades 5-12 students – and teachers – for the in-demand skills of tomorrow, including coding and data analysis. Working with teachers, Cybera and the Pacific Institute for the Mathematical Sciences are building learning resources that work

with existing school curricula, across all subject areas. To find out more, visit: Callysto.ca.



JUPYTER ‘ALL-IN-ONE’ SCIENCE PLATFORM

Jupyter incorporates math, science and engineering tools, along with communication and visualization resources, in one web-based platform. Cybera and the Pacific Institute for the Mathematical Sciences are working to increase the awareness and use of Jupyter. Cybera is hosting the platform on its cloud, and offers free access (and advice on how to get started) to Canadians looking to trial this technology. To trial Jupyter, visit: Cybera.szygy.ca.



SUPPORTING ADOPTION OF NEW TECHNOLOGIES

Our tech-neutral expertise in cloud, networking, data science, cybersecurity, IT procurement, and policy is available to our stakeholder communities through workshops or one-on-one advisory sessions (see page 17 for contact details).

Share

COLLABORATING ON SHARED IT SERVICES

Shared services are used by Cybera’s members to adopt, build, and work together on IT tools and software. These initiatives, in turn, reduce costs and streamline the delivery of services. Working with members, we offer an Alberta-wide IT procurement service, as well as support to enable single sign-on to internet resources.

share IT SHAREIT

ShareIT is an Alberta-based program managed by Cybera, that leverages economies of scope and scale to give members access to a broader, more powerful, and more economic suite of computing technologies. It also offers valuable knowledge transfer and skill-building opportunities.

ShareIT was formed by Alberta’s post-secondary institutions in 2017 to pool their hardware and software purchasing needs, thereby increasing their negotiating powers with third-party providers. It has since expanded its scope to professional development building and cybersecurity services. It is also available to K-12 school districts in Alberta.

By using ShareIT’s procurement services, educators can expand the services they offer, while sharing best practices with other members. This in turn boosts the capabilities and offerings of smaller educational institutions, while allowing institutions of all sizes to save resources.

Since its launch, ShareIT has saved member institutions millions of dollars in IT costs and time spent on procurement.

To view ShareIT’s catalogue of services, visit: Cybera.ca/services/shareit



canarie

CANADIAN ACCESS FEDERATION – FEDERATED IDENTITY MANAGEMENT SERVICE

Federated Identity Management makes it easier for staff and students to collaborate on research projects, and securely access shared tools and software. Participating institutions are able to securely access a central catalogue of services and resources that operate within the same trust framework. Cybera works with its national partner, CANARIE, to develop and promote identity and access management solutions for post-secondary educators through an initiative called Canadian Access Federation – Federated

Identity Management. CANARIE is the national operator of the Canadian Access Federation, which is linked to international access federations. Post-secondary institutions looking to set up Federated Identity Management must first join this federation. To join the Canadian Access Federation, visit: Canarie.ca/identity/join.*

**Cybera is also able to provide technical assistance.*

EDUROAM

Education roaming (eduroam) is a secure, world-wide roaming internet access service. Students, researchers, and staff from participating post-secondary institutions can automatically achieve internet connectivity when visiting other participating institutions by simply opening their laptop. The eduroam service is available across Canada and in 106 countries around the world. Cybera is able to provide technical assistance to members looking to set up eduroam.



Advocate

SEEKING UNIVERSAL ACCESS TO TECHNOLOGY

Cybera frequently advocates for improvements to the quality and availability of digital services in Canada. Teaming up with government, education, and the private sector, Cybera is creating a community that champions vital networking and computing services and utilities for everyone, everywhere.



ADVOCACY

As an innovation enabler (that connects and supports over 800,000 students, teachers, researchers, innovators and government decision-makers), Cybera realizes the importance of advising policymakers on the digital needs of Canadians. We work to raise awareness and understanding of the technologies that support business and education.

Examples of Cybera's advocacy efforts include:

- Advising the provincial government on its long-term information and communication technology infrastructure plans.
- Participating in federal proceedings on the future of broadband connectivity in Canada.
- Advising communities as they build their broadband policy frameworks.
- Responding to government consultations related to computing and digital infrastructure.
- Giving presentations across Alberta

and Canada on the importance of digital technologies in innovation, education, and the economy.

- Coordinating with CANARIE and our National Research and Education Network partners to build new research, innovation and networking tools.
- Championing shared services, network expansions, IPv6, and internet efficiencies at a local and international level.
- Producing reports on the state of digital infrastructure in Alberta.
- Working with provincial stakeholders to build a framework for an Alberta broadband strategy.
- Participating in international coalitions on internet governance.



CYBER SUMMIT

Each year, Cybera hosts a Cyber Summit for the digital leaders in Alberta's public, education, research and start-up sectors. Since 2015, we have teamed up with our sister networks in Saskatchewan and Manitoba,

SRNet and MRnet, to put on this event. Our goal is to inspire more Canadians to make the most of technological innovations and collaborations, for the economic benefit of all.

Over the last ten years, the Summit themes have covered timely issues and new tools to transform Western Canada's digital economy, including:

- Open data
- Public cloud computing
- Crowdsourcing
- Data science for public good
- Privacy, security, and the ambiguous ethics of technology
- The need for ubiquitous access to internet and computing
- Open-source and accessible technologies

The Summit has become the go-to event for technology leaders in the Prairies who are looking to understand what technologies are coming down the pike to support their organizations. The event shows them what they can do now to prepare their schools, governments and businesses for the evolving digital economy.

Secure

PROTECTING ALBERTA'S DATA

With cybersecurity incidents increasing nationally and globally, collaboration will be key to managing and responding to these threats.



VIRTUAL FIREWALL SERVICE

Most organizations host their own firewall equipment, which can drain valuable staff time, as well as department resources. The Virtual Firewall Service alleviates these issues by placing a virtual firewall upstream on Cybera's network gateway.

MEMBER BENEFITS

- Organizations do not have to buy and host their own physical firewall appliances.
- Reduces "hair-pinning" (where internet traffic through the centralized firewall doubles back on itself), saving on bandwidth.
- Offers a secure, scalable environment to trial new network technologies.
- Additional advantages of an Alberta-based cloud infrastructure: local data storage, Calgary/Edmonton redundancy, and reliable failover.

MEMBERSHIP REQUIREMENTS

Available to any Cybera member organization that is a part of the Internet Buying Group.

COST

Visit Cybera.ca/services/virtual-firewall-service to view the current price, and to find out how to join.

CIRA D-ZONE ANYCAST DNS

Cybera has partnered with the Canadian Internet Registration Authority (CIRA) to offer members free access* to improved Domain Name System (DNS) protection and performance. The D-Zone Anycast DNS is useful for larger public and education institutions in Alberta that run their own .ca domain, and are at risk of Distributed Denial-of-Service (DDoS) attacks.

MEMBER BENEFITS

- High Reliability: D-Zone eliminates the single point of failure. DNS queries are automatically routed around outages or server failures.
- High Performance: D-Zone servers are located close to major internet hubs, reducing latency and improving performance.
- Distributed Denial-of-Service mitigation: Global servers absorb the DDoS attacks.

*Cybera will provide one free D-Zone account per interested member.

cira D-ZONE DNS FIREWALL

Cybera is working with CIRA to promote the first made-in-Canada DNS-based firewall solution for educational institutions: the D-Zone DNS Firewall.

MEMBER BENEFITS

- Blocks communications that contain malicious code.
- Blocks malicious software from reaching host servers.
- Continuously updates as new threats are detected using advanced data analysis of internet queries.

In addition, the D-Zone DNS Firewall provides advanced content filtering capabilities (by content type and time of day). For more information on fees and getting set up, visit:

Cira.ca/cybersecurity/firewall.



SHARED CHIEF INFORMATION SECURITY OFFICER

The Alberta Shared Chief Information Security Officer (CISO) project is managed by Cybera, and provides participating post-secondary institutions with access to a shared CISO. This allows institutions to save costs while being able to utilize top talent for the design and implementation of their security programs.

For more information or to participate, contact: security@cybera.ca.



SECURITY INFORMATION & EVENT MANAGEMENT

Cybera has teamed up with its 12 provincial, territorial and federal partners in Canada's National Research and Education Network (NREN) to build a Security Information and Event Management (SIEM) solution. This represents an unprecedented pan-Canadian effort to coordinate network threat monitoring, and thereby strengthen the overall security of Canada's NREN infrastructure. A future goal is to incorporate Cybera members onto the SIEM platform, which will further increase collaboration on detecting and addressing security issues.



ALBERTA POST-SECONDARY CYBERSECURITY INITIATIVE

Alberta's 26 post-secondary institutions are teaming up to collectively share information and strategies to enhance the security and privacy of their digital assets. Facilitated by Cybera, this collaboration will benchmark current and future needs in the province, and identify opportunities for shared technical skills and infrastructure investment. The goal is to build a community approach to addressing next-generation threats and problems.

For more information, contact: security@cybera.ca.

FREQUENTLY ASKED QUESTIONS

CYBERA

How long has Cybera been around?

Cybera's roots are in the Western Universities Research Consortium Network (WURCNet), formed in 1994. From this, the western provinces evolved their own Research and Education Network organizations in 1999, with Netera Alliance set up to manage and operate Alberta's network. Netera became Cybera in 2007, with an expanded mandate to accelerate technology adoption in the province through the use of digital infrastructure.

How is Cybera funded?

Cybera is funded by a grant from the Government of Alberta, as well as through membership and network administration fees. Cybera's members receive an annual membership invoice in March or April of each year.

We also receive additional funding to pilot and operate add-on services for specific members or sectors. These services include Peering and the Internet Buying Group, the Virtual Firewall Service, as well as more work-intensive projects. For these services, Cybera may charge additional fees to the users, or look to third-party grants for cost recovery, as needed. For the list of Cybera's Add-On Services, see page 3.

NETWORKING

Can I sign up for either the Peering service or the Internet Buying Group, or are they a bundled package?

Connected members can sign up to receive just the Peering service.

If you join the Internet Buying Group, you are also automatically signed up for the Peering service. As a member of the Internet Buying Group, all of your internet traffic is sent to Cybera, where it will then be split between peered traffic and commercial internet. For more information, see the Peering service section on page 5, or the Internet Buying Group section on page 6.

What are the steps involved in joining the Internet Buying Group, Peering, or Virtual Firewall Service?

The first step is to contact: membership@cybera.ca. We will organize an introduction meeting to discuss how you can benefit from Cybera's internet and firewall services. This will be followed by a discussion between your network technicians and Cybera's technical team, who will guide the process from that point onward.

How long does it take to get set up?

Getting set up for the Internet Buying Group, Peering, or the Virtual Firewall Service takes approximately 4 - 10 weeks, depending on your connection type.

What is the duration of the Internet Buying Group contract agreement?

The duration of the contract agreement is one month. You can change the amount of bandwidth each month.

If I am currently in a contract agreement with an Internet Service Provider, should I still become a Cybera member?

The answer to this question depends on a number of factors and merits a discussion with Cybera. We are a neutral organization

and can offer advice on how to optimize the efficiency of your internet access.

Even if you do not connect to our network, there may be other reasons to join Cybera, such as access to advanced technology pilots and shared services. For more information, see the Membership Overview section on page 3.

MEMBERSHIP

Who is eligible to become a Cybera member?

Membership is available to any Alberta post-secondary institution, K-12 school district, public organization (such as municipalities and libraries), or organization in Alberta's start-up incubator community.

Do all members have access to the same services?

Different Cybera services and pilot projects are available to different members, depending on their location and sector. Cybera's membership team can discuss with you what services are available to your organization.

HOW MUCH DOES IT COST TO BECOME A CYBERA MEMBER?

TYPE OF MEMBERSHIP	TYPE OF ORGANIZATION	ANNUAL MEMBERSHIP FEES
CLASS A	Post-secondary institutions with a significant research focus	\$30,000
CLASS B	Organizations that are connected to CyberaNet with 500 or more FTE students or employees	\$3,500 plus \$0.50 per student/employee (whichever is greater) to a maximum of \$20,000*
	Organizations that are connected to CyberaNet with fewer than 500 FTE students or employees	\$1,000 plus \$0.50 per student/employee (whichever is greater)*
	Non-connected organizations	\$500

* For municipality members the fees may vary. FTE = full-time equivalent

How are Cybera members classified?

Class A members are typically post-secondary institutions with a significant research mandate. These members help set the direction for Cybera as voting members at its Annual General Meeting.

Class B members typically include post-secondary institutions (without a significant research mandate), as well as K-12 school boards, and public and not-for-profit organizations. These members do not vote in Cybera's Annual General Meeting, but have access to the same services as *Class A* members.

Is my organization a member of Cybera?

To view the list of current members, visit: Cybera.ca/membership/current-members.

If your organization is not listed, and you wish to become a member, contact: membership@cybera.ca.

CONTACT INFORMATION

GENERAL INFORMATION

info@cybera.ca

MEMBERSHIP/MEMBER SERVICES

membership@cybera.ca

NETWORKING

network@cybera.ca

VIRTUAL FIREWALL SERVICE

firewall@cybera.ca

RAPID ACCESS CLOUD

rac-admin@cybera.ca

DATA SCIENCE/DATA SCIENCE FOR ALBERTANS

datascience@cybera.ca

SHAREIT

shareit@cybera.ca

PRIVACY

privacy@cybera.ca

SECURITY

To notify us of cybersecurity incidents, contact: security@cybera.ca

PROJECTS

To discuss possible project opportunities, contact: projects@cybera.ca

The information contained in this booklet is current at the time of publishing, however, information and rates are subject to change. Please visit our website or contact our membership team for the most up-to-date information.

ADVOCACY

If you would like to participate in Cybera's advocacy efforts, or are aware of a digital accessibility issue that you would like Cybera to help address, contact: policy@cybera.ca

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