

Canada Brief

Our Opportunity: Realizing Canada's potential in the global digital economy

Cisco Canada Digital Readiness Index 2023

Foreward

Shannon Leininger, President

Over the past decade, full participation in society has increasingly relied on access to digital services. This reality was exacerbated when the pandemic hit three years ago. Whether that meant virtual healthcare, online school, remote work, social services, emergency information and more, the acceleration of Canada’s digitization since 2020 has been fast and furious and has inherently changed the way we experience everyday life.

The pandemic showed us how far we have come yet exposed the cracks of digital inequity experienced by many Canadians, especially those in rural, remote and Indigenous communities and those not able to fully participate due to socio or economic status.

The launch of the Cisco Canada Digital Readiness Index (DRI) comes at an opportune time. We have the luxury of hindsight to unpack the past three years – what worked, what did not and how we can use these learnings to inform future digital investments to strengthen our global competitiveness. We also have the foresight to understand that continued focus and investment to secure the full participation of our population in the digital economy and society will determine Canada’s future success.

At Cisco, we define ‘digital readiness’ as how well-positioned a country, province or territory is to benefit from the digital economy based on its digital capability and infrastructure. This is something we have been tracking at the global level since the release of our first Cisco Global Digital Readiness Index in 2017.

The DRI is a unique body of research that looks beyond technology to help us understand a country’s performance and get a holistic measure of our progress towards a digitally capable society. It also explores the impact of digitization and the factors that support a digitally inclusive society.



“Digital readiness is not static. The Digital Readiness Index demonstrates that Canada must continue investing to maintain its global leadership.”

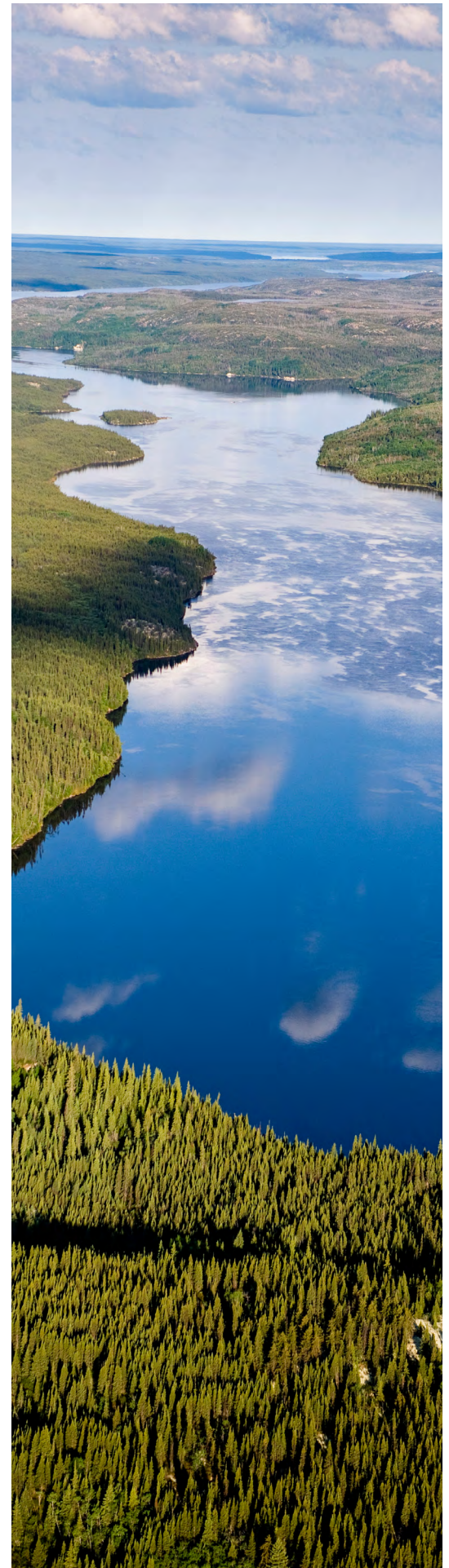
At a global level, Canada's digital readiness performance year-over-year remains strong and consistent, meaning that we are continuing to invest in critical areas that will help us advance and stay competitive. With the Canada DRI, we have adapted this global model to dive deep and explore digital readiness at the provincial and territorial level. The Cisco Canada DRI highlights strengths, gaps and key areas of opportunity for investment to help all Canadians become active members of the increasingly digital economy.

Digital readiness is not static. The DRI demonstrates that Canada must continue investing to maintain its global leadership. If we do not continue to invest in the key components outlined in the DRI, or at the very least keep pace with investments made by other countries, there is a very real risk of Canada lagging our peers and losing our hard-fought ground.

Importantly, the DRI highlights that digital readiness is not universal and that there is a pressing need to address domestic gaps in digital equity and inclusion. Otherwise, regions in Canada that perform at the lowest levels of digital readiness will fall further behind.

At Cisco, our purpose to Power an Inclusive Future for All inspires everything we do. The findings of the DRI further fuel this purpose and inform our ongoing efforts to support digitization in urban, rural, remote and Indigenous communities across the country. To build a society where everyone can participate in the digital economy equally requires ongoing efforts of both the public and private sectors to lend resources, expertise and knowledge to move the needle on digital readiness and maximize the social and economic benefits of digitization to be enjoyed by all.

Shannon Leininger
President
Cisco Canada



Powering an Inclusive Future for All

At Cisco, we are fuelled by our purpose to ‘Power an Inclusive Future for All’ by leveraging our technology, our expertise, and our extended ecosystem to bridge gaps of inequity and drive change. Cisco’s desire to solve global problems and create a more inclusive world through technology was the impetus behind the launch of the Global Digital Readiness Index (DRI) in 2017.

This report was developed to help Canadian public and private sector leaders understand their level of digital readiness and explore areas of opportunity to reach their full potential.

Our purpose drives us to ensure the benefits of digital readiness are shared equitably across all members of society, enabling all Canadians to participate in the digital era, regardless of their location and background. At Cisco Canada, we use the Digital Readiness Index to inform our impact investment strategy. These include:

- **Cisco’s Country Digital Acceleration program** – collaborations between Cisco and digital leaders to build sustainable, secure and inclusive communities powered by ethical and innovative technology solutions
- **Cisco Networking Academy** – one of the world’s largest skills-to-jobs programs that provides access to globally-recognized IT skills and credentials available for all Canadians and newcomers
- **Cisco’s Corporate Social Responsibility** programming which is designed to leverage our technology, skills and expertise to develop digital solutions that address some of Canada’s most urgent social issues

Our primary focus in Canada is rooted in digital equity and inclusion. We believe that Canadians should have access to the opportunities needed to reach their full potential, be it skills, education or healthcare.

- **The Connected North program** founded by Cisco Canada in 2013 now connects over 150 schools and 30,000 students in Canada’s most remote Indigenous communities to experiences and resources not available to them where they live.
- Over 300,000 students have participated in the **Networking Academy program** since its launch in 1997 receiving the training they need to build their careers in Canada’s digital economy.
- Our **Autonomous Living Project** is a pilot that is developing new digital models to enable and empower individuals in community living spaces to live independently.

These are examples of how we work to contribute to Canada’s Digital Readiness. By identifying areas of potential, we can bring our technology, the expertise of our people, our ecosystem of partners and our innovation to bear to support Canada’s digital leadership on the global stage.

The past few years have demonstrated that digital readiness is critical to Canada’s capabilities in responding to global forces of change and providing a basis for economic prosperity and growth. We hope that when reading this report, you will consider your own governments or organization’s contribution to digital readiness and what more can be done to create a vibrant and prosperous digital society.



About this Report

Digital readiness measures the ability to capture the opportunities that digital capabilities and investments create in a country, province or territory, and is directly tied to other measures of performance, both social and economic. The first Cisco Global Digital Readiness Index was published in 2017 and used a holistic approach to examine seven specific components of digital readiness to demonstrate the relationship between investing in digital capabilities, and the resulting positive social and economic outcomes.

This global study has since been repeated in 2019 and 2021. This year, Cisco compiled a country-specific version of the report - the Cisco Canada Digital Readiness Index, focused specifically on the performance of each of Canada's provinces and territories. The goals of this report are to highlight the importance of ongoing investment in digital capability and capacity, and to provide guidance regarding where future investments and interventions could be made to deliver the greatest possible uplift to digital readiness.

This holistic model measures digital readiness across many components beyond technology including basic needs, human capital and the business and start-up environment. While access to technology and the infrastructure to support digital technologies is critical, if individuals' basic needs are not met, a country cannot maximize the benefits of digital opportunity.

Throughout the report we have highlighted examples of where the various digital readiness components have had a positive or detrimental effect on overall readiness. The goal is to offer insight into how public and private sector organizations can act to ensure that Canada remains at the forefront of digital capabilities.

The goal of the Cisco Canada Digital Readiness Index is to help leaders at all levels of the public and private sectors better understand the building blocks of digital readiness and explore opportunities to improve performance.



Setting the Stage: Global Digital Readiness Index model

A holistic assessment framework that goes beyond just technology

The Digital Readiness Index (DRI) measures digital readiness by examining seven components and 25 metrics which are aggregated to obtain an overall digital readiness score of a country. This allows us to measure key factors that paint a complete picture of digital readiness and isolate those elements that impacted overall scores.

The seven components of the DRI are:



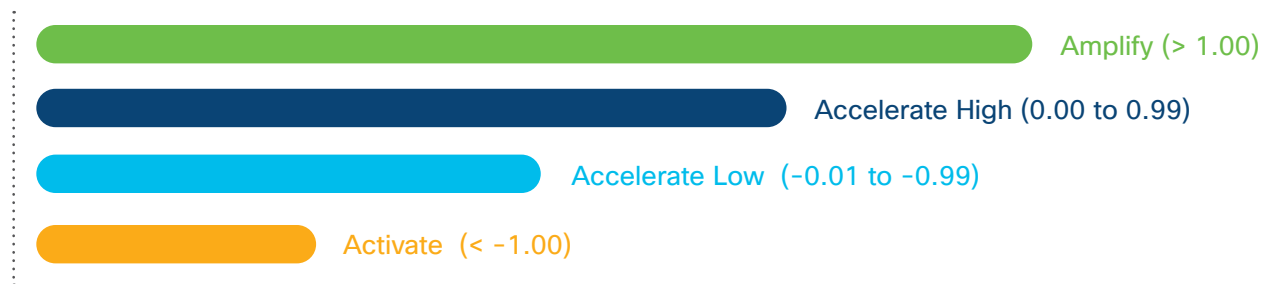
Stages of Digital Readiness

Once a digital readiness score is determined, countries fall into one of four stages – **Activate**, **Accelerate Low**, **Accelerate High** and **Amplify**.

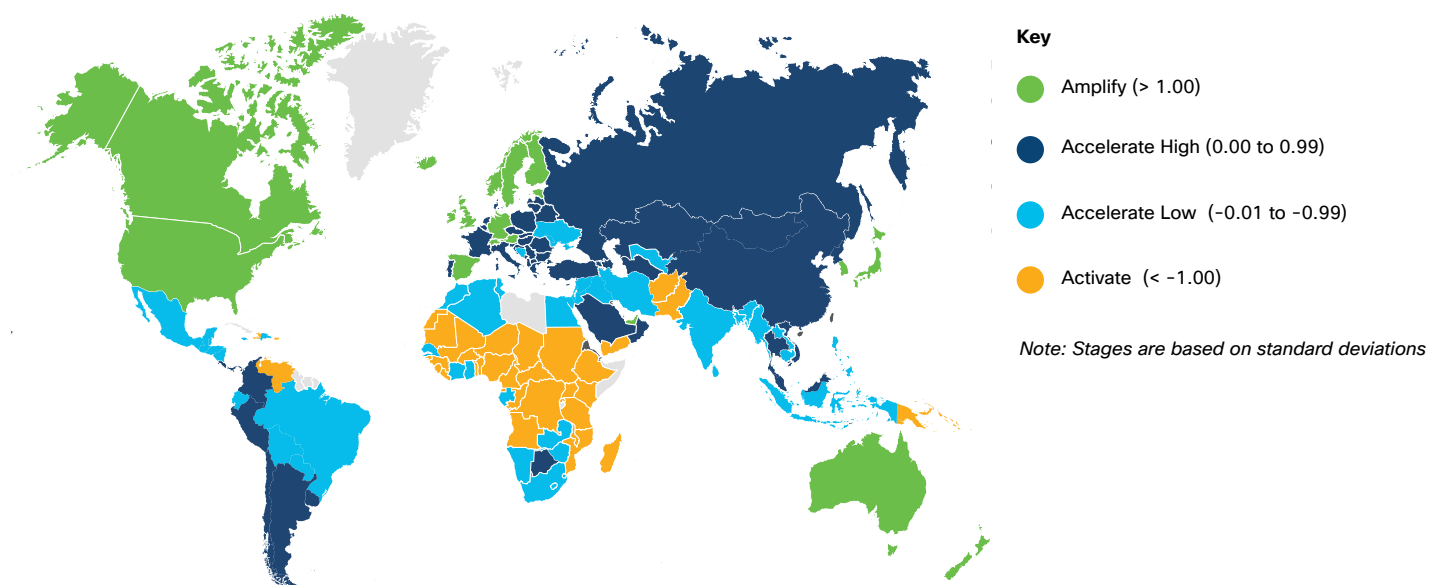
Countries in the Activate and Accelerate Low stages will benefit the most by making interventions in underlying factors such as Basic Needs, Human Capital, and Ease of Doing Business.

Countries in the Accelerate High stage can achieve uplift by focusing on the business components, such as Start-up Environment, Ease of Doing Business, and Business and Government Investment.

Countries in the highest stage of readiness (Amplify) tended to score strongly in investment-intensive categories such as Technology Infrastructure and Technology Adoption but are advised to increase their level of support for these components and others such Business and Government Investment and Start-Up Environments. If Amplify countries don't continue investments in these components, they risk falling behind more competitive jurisdictions.



Digital readiness scores generally reflect overall economic development, with countries in the earliest Activate stage primarily located in Africa, and countries in the highest Amplify stage located in North America, Western Europe, and parts of Asia Pacific. Those in the Accelerate stage could be found all over the world, but particularly in parts of Southeast Asia, Eastern Europe, Latin America, and the Middle East.



Canada's 2021 Global DRI Ranking and Insights

Canada ranked 17th out of 146 countries on the 2021 global DRI, placing the country in the Amplify category – the highest stage of digital readiness, along with 22 other countries.

Amplify countries demonstrate they have the foundation needed to take advantage of digital opportunities, by scoring well on Basic Needs and Human Capital components. Canada is no exception, ranking 17th on Basic Needs and fifth on Human Capital. Canada's strong education system helps support its population to become a digitally skilled workforce.

Canada also ranked high on Technology Adoption, coming in third and has improved its overall performance across most technology metrics since the 2019 study. Despite these improvements across technology metrics, Technology Infrastructure is one of Canada's lowest rankings across the components at 23rd, along with Ease of Doing Business (31st) and Start-up Environment (21st). Canada needs to continue to invest in these components or risk falling behind.

There are some clear areas of opportunity for Canada that would not only help support the technology needed to unlock digital innovation, but also provide businesses the support they need to succeed. These include:



Canada ranks 3rd in the world for Technology Adoption, which consists of Internet Usage, Mobile Cellular Subscriptions, and Cloud Services – demonstrating a high capacity to integrate new technologies into the economy.



Canada ranked fifth in the Human Capital component, driven by a 13th ranking on the UNDP Education Index, which considers years of schooling, and ninth on the World Bank's Harmonized Test scores.



Canada ranked 13th globally on venture capital investment and ninth on patents and trademarks but comes in 131st on new business density (Start-up Environment metrics). Canada has improved overall on this component since 2019 but further investment to support new businesses would be beneficial.

Support and investments in these areas would increase the country's performance on both components and help provide a business environment needed to innovate, compete and succeed.

During the pandemic, many businesses quickly adopted and invested in new technologies that helped them digitize. More Canadians began working remotely, attending school, accessing services and shopping online. While the pandemic restrictions on businesses have lifted, several of the technological shifts are here to stay.

To support these shifts, Canada needs to continue to increase its availability and affordability of mobile cellular and broadband offerings. The Government of Canada's 2019 Connectivity Strategy, which sets a target of connecting 100% of Canadians to high-speed internet by 2030, is a positive stride.

However, in 2021 Canada ranked 104th on mobile cellular subscriptions and 66th on mobile broadband subscriptions – the lowest ranked Amplify country on both metrics. The Government of Canada's February 2023 policy direction to the Canadian Radio-television and Telecommunications Commission (CRTC) for competition, affordability, consumer rights and universal access¹ recognizes what the Canada DRI also found: finding ways to make cellular and broadband subscriptions more available and/or affordable is advantageous. Improvements in these areas will boost Canada's digital readiness scores on both Technology Adoption and Technology Infrastructure components, which are critical for global competitiveness.

Canada, like other Amplify countries that have a strong foundation for digital innovation, needs to recognize areas of opportunity, and continue innovating and investing to remain global digital leaders, or risk falling behind.

¹ <https://ised-isde.canada.ca/site/mobile-plans/en/order-issuing-direction-crtc-renewed-approach-telecommunications-policy>



Global DRI Best Practices

A continued commitment to technology, business and government investment, and a supportive start-up ecosystem will help fuel Canada's digital readiness now and into the future.

High performing Amplify countries tend to score well on Basic Needs, Human Capital, and Ease of Doing Business. But to keep pace and maintain momentum on digital readiness, Amplify countries should make ongoing strategic investments across key components – including technology, business and start-up environments – or they risk falling behind in the global race to digitize.

This section consolidates global and regional best practices and features shared characteristics that contribute to digital success and opportunity.

Country level commitment to technology:

Singapore ranks in the top five across every component except for Business and Government Investment (ranked 11th). The country has committed to transforming through technology, focusing on society, the economy and government. This holistic approach resulted in Singapore's top score on the DRI. Singapore's vision is to fully integrate technology across all ecosystems including industry, government, and society.

High-level of business & government

European countries dominated as the most digitally ready, comprising 14 of the 23 Amplify countries (of which nearly half were in northern Europe). The five Nordic countries – Iceland, Sweden, Denmark, Norway, and Finland – scored strongly on Business and Government Investment, and Ease of Doing Business. Iceland scored exceptionally high on renewable energy investment; Sweden, Norway and Finland also ranked in the top five on this component.

A strong start-up ecosystem:

Luxembourg ranked second overall on the DRI, largely driven by its strong performance on Start-up Environment. Luxembourg ranked second on venture capital investment, sixth on new business density and first on patents and trademarks. The government's Luxembourg Future Fund, at €150 million, aims to stimulate the diversification and sustainable development of its economy by attracting Venture Capital fund managers and early to later stage innovative businesses. A second fund was launched in March 2023 to further advance the country's start-up ecosystem.

Investments in business, innovation, and technology:

The U.S. is ranked in the top 10 across investment-intensive categories. It is in the top two for Technology Adoption and Technology Infrastructure, fifth on Business and Government Investment, and seventh on Start-up Environment. Despite ranking 35th on Basic Needs, these strong performances on investment-intensive categories places the U.S. 4th overall on the DRI. The country is down one spot from the 2019 study, demonstrating that continued investment is critical to remain competitive.



Cisco Canada Digital Readiness Index

Canada is at the forefront of global digitization with a thriving tech industry, highly educated labour force and strong technology adoption, making it well positioned to continue to innovate and lead in the global digital economy.

Cisco's global DRI framework was adapted to a regional level to assess the digital readiness of Canada's provinces and territories.

The metrics used to measure Cisco Canada's seven DRI components are unique to Canada and differ from those used in the global model. This was done to reflect Canadian nuances and the distinctive economic and social characteristics for each province or territory. Therefore, the scores in this model cannot be compared with the results in the global model.



Basic Needs

Basic needs for a population to survive and thrive

Metrics

- Life expectancy
- Low Income
- Food insecurity
- Housing affordability



Business & Government Investment

Private and public investment in innovation and technology

Metrics

- Business expenditure on R&D
- Government expenditure on R&D
- Infrastructure investment



Ease of Doing Business

Basic infrastructure/policies needed to support business continuity

Metrics

- Business density
- Business growth
- Business confidence
- Internal trade barriers



Human Capital

Skilled labour force to support digital innovation (build and maintain)

Metrics

- Labor force participation
- Youth population
- Post-secondary education
- Immigration



Start-Up Environment

Environment which fosters innovation within a community

Metrics

- Venture capital investment
- Business entries
- Access to financing



Technology Adoption

Demand for digital products/services continuity

Metrics

- Zero emission vehicle (ZEV) registrations
- Broadband subscriptions
- Online sales



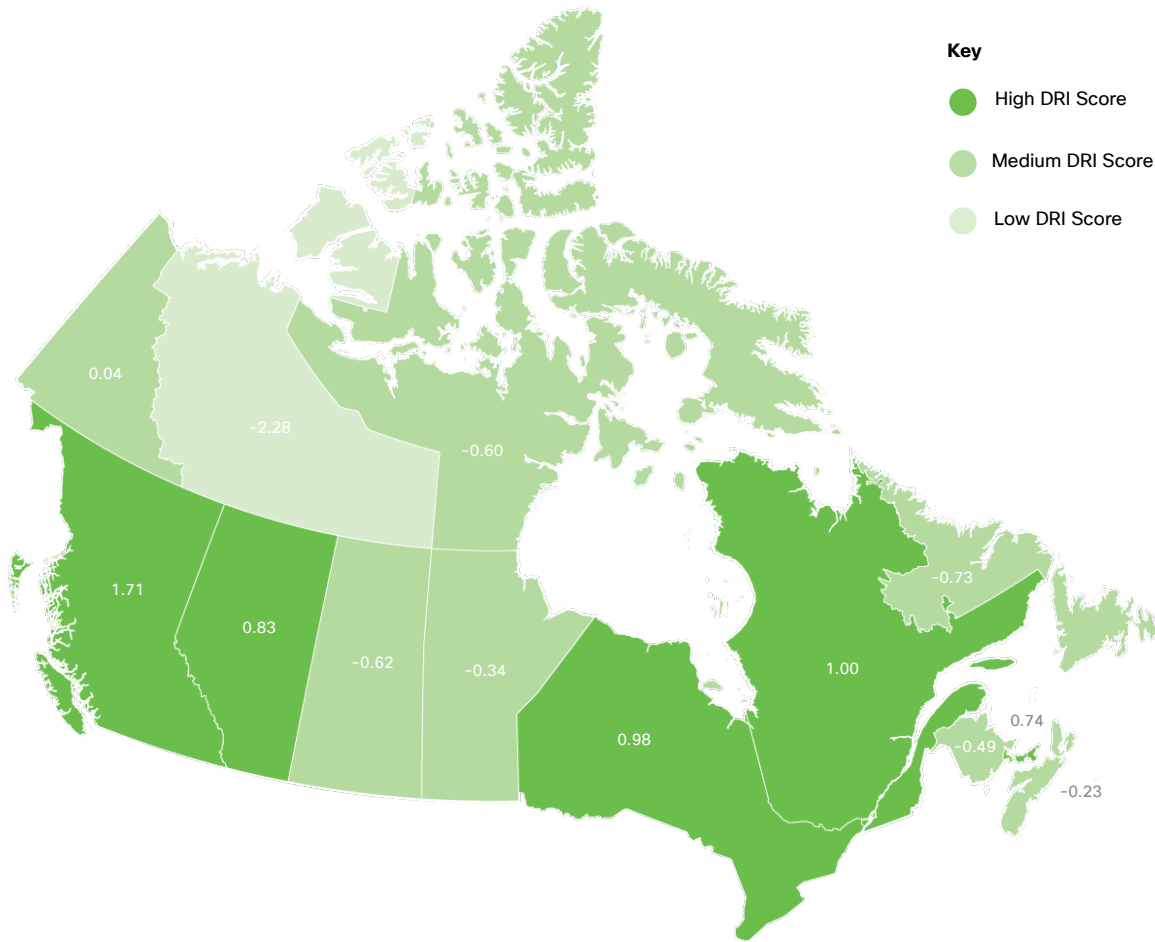
Technology Infrastructure

Infrastructure available to enable digital activities and connected to consumers (IoT, Cloud)

Metrics

- Broadband availability
- LTE coverage
- EV charging stations
- Internet affordability

The Cisco Canada DRI highlights areas of strength and opportunity for each province and territory, with a spotlight on programs and initiatives that reflect regional priorities, drive impact and contribute to Canada's digital acceleration.



Canada's relative DRI scores by province and territory



Key Provincial and Territorial Findings

British Columbia

BC received the highest DRI score in Canada driven by its first-place scores on Ease of Doing Business, Start-Up Environment and Technology Adoption.

Québec

QC ranked second overall with top scores in Basic Needs, Business and Government Investment and Technology Infrastructure.

Ontario

ON ranked third, with high scores in Business and Government Investment and Start-Up Environment.

Alberta

AB ranked fourth with strong scores on Business and Government Investment and Technology Adoption.

Prince Edward Island

PEI's DRI score placed it fifth in Canada driven by strong performance in Ease of Doing Business, Human Capital and Technology Infrastructure.

Yukon

YT ranked sixth, reflecting its strong performances in Basic Needs, Human Capital and Ease of Doing Business.

Nova Scotia

NS's DRI score was close to average, driven by the province's Ease of Doing Business. With the third highest broadband availability rate and sixth highest LTE coverage, Nova Scotia has made concerted investments to connect its population.

Manitoba

MB's DRI score placed the province below the national average. However, the province's low internal trade barriers, high youth population and labour force participation are great strengths.

New Brunswick

NB scored below the national average with lower scores on Human Capital, and Business and Government Investment. However, it's above average scores in Basic Needs, Start-up Environment and Technology Infrastructure provide New Brunswick with a strong foundation for business investment, talent attraction and inclusion.

Northwest Territories

NWT ranked 10th, with low scores in Technology Adoption and Technology Infrastructure. However, it scored well in Ease of Doing Business, Start-up Environment and Human Capital, with one of the highest youth populations in Canada.

Saskatchewan








SK's DRI score placed the province below the national average with room for improvement on Start-Up Environment and Technology Adoption. However, its high labour force participation rates and a high youth population are assets.

Newfoundland and Labrador

NL was well below the national average, but scores very strongly in Business and Government Investment and Start-up Environment. Lower scores in Human Capital and Technology Infrastructure impacted its score.

Nunavut

NU's DRI score – the lowest in Canada – reinforces the need for all levels of government to address Basic Needs of the population and build a solid, enduring foundation for digital readiness.

Province/Territory	Overall Ranking							
British Columbia	1	12	4	1	4	1	1	3
Québec	2	1	1	10	7	7	2	1
Ontario	3	8	2	8	5	2	3	4
Alberta	4	2	5	3	3	10	4	6
Prince Edward Island	5	5	11	2	2	3	5	2
Yukon	6	3	10	4	1	9	8	11
Nova Scotia	7	10	8	5	10	11	7	7
Manitoba	8	9	9	7	9	8	9	8
New Brunswick	9	4	13	11	12	5	6	5
Northwest Territories	10	11	7	6	6	6	13	13
Saskatchewan	11	7	6	9	8	12	12	10
Newfoundland and Labrador	12	6	3	12	13	4	10	12
Nunavut	13	13	12	13	11	13	11	9

Looking Forward: Maintaining and securing Canada's leadership

The Cisco Canada DRI provides a comprehensive foundational overview of Canada's digital readiness. This understanding of the country's capabilities and gaps provides insights and direction for areas of investment, policy, action and collaboration for the public and private sectors.

The Cisco Canada DRI findings demonstrate that despite Canada ranking highly in the global study, not all Canadian provinces and territories have the same level of digital readiness. This points not only to a lack of equity of economic and social opportunity, but also a risk to Canada's continued economic growth and global leadership. There is a real risk that, if governments and policy makers do not address this gap with continued focus and investment, regions in Canada that perform at the lowest levels of digital readiness will fall further behind, decreasing Canada's digital leadership position.

Improving Connectivity: Close opportunity gaps to ensure digital equity and inclusion

All Canadians deserve to have access to reliable, high-speed internet and cellular coverage to be able to participate in an increasingly digital society. The federal government has made positive strides to address challenges in broadband availability through Canada's *Connectivity Strategy*, which sets a target of connecting 100% of Canadians to high-speed internet by 2030.

The Government of Canada has also made additional commitments to improve connectivity through two significant initiatives: the February 2023 policy direction to the CRTC for competition, affordability, consumer rights and universal access; and a commitment to implement the recommendations made by the federal Auditor General in the March 2023 report, *Connectivity in Rural and Remote Areas*. The Cisco Canada DRI supports a key premise of these policies, most notably that rural, remote, Northern and Indigenous communities continue to face a major connectivity gap.

Nunavut, for example, is dependent on satellite-only broadband infrastructure. This means that the limited broadband coverage available in regions of Nunavut is mostly low quality, unreliable, and unaffordable. As of December 2022, there are still no households in Nunavut with access to high-speed internet, compared to the 93.5% of households in the rest of Canada.



² <https://ised-isde.canada.ca/site/mobile-plans/en/policy-direction-crtc-competition-affordability-consumer-rights-and-universal-access>

³ <https://www.canada.ca/en/innovation-science-economic-development/news/2023/03/statement-from-minister-hutchings-on-the-auditor-general-of-canadas-report-on-rural-and-remote-connectivity.html>

The Government of Canada should continue to prioritize rural, Northern and Indigenous communities within Canada's *Connectivity Strategy*. Even in provinces and territories that have high levels of high-speed connectivity, rural and remote communities are disproportionately impacted. Without adequate, high-speed internet access in these communities, the connectivity gap across Canada will continue to grow. This creates challenges for achieving digital equity and inclusion and will result in untapped opportunities for human development and economic growth.

Currently, the national standard for high-speed internet, set in 2016, is 50 Mbps download speeds and 10 Mbps upload speeds (50/10 Mbps) with unlimited data usage. To keep up with digital leaders among developed economies internationally, the federal government also has an opportunity to be ambitious in modifying its national standard.

Maximizing Our Human Capital Advantage: Investing in digital skills to build the most highly trained labour force

Canada is a global leader in Human Capital development, which it can continue to build on to accelerate its digital readiness. The federal government – in partnership with the public and private sector – has supported opportunities for Canadians to build the skills necessary for the jobs of the future. Through the Future Skills Centre and other federal investments, the government is evaluating promising new skills training models, which partners in all sectors can work to scale.

According to the Century Initiative's recent report, *Seizing Our Advantage: National Scorecard on Canada's Growth and Prosperity*, Canadians need the skills that tomorrow's economy requires if we're to compete and prosper globally. While Canada's education systems remain among the best in the world, our investments and programs to support life-long learning and upskilling trail our peers. Canada must improve its lifelong learning opportunities so that the workforce can keep up with technological and labour market changes.⁴

Furthermore, there are clear disparities in educational attainment and labour force participation within Indigenous communities. Only 49.2% of Indigenous people in Canada have completed post-secondary education compared to 68% of non-Indigenous people.⁵ To ensure everyone in Canada has the opportunity to participate in a growing digital economy, the government should continue to work with Indigenous communities to build education attainment by leveraging digital literacy and skills.



⁴ https://uploads-ssl.webflow.com/5f931bffa6e7ca287dbada2/645bec06ddb23bf062f20dbd_2023%20National%20Scorecard%20Key%20Insights.pdf

⁵ <https://www150.statcan.gc.ca/t1/en/tv.action?pid=9810041401&pickMembers%5B0%5D=1.1&pickMembers%5B1%5D=5.1&pickMembers%5B2%5D=4.1&pickMembers%5B3%5D=3.5&pickMembers%5B4%5D=2.1>

Closing the Cybersecurity Readiness Gap: Canada's security resilience imperative

As Canada strives to become a more digitally ready country, its cybersecurity frameworks and approaches must be increasingly stronger and more secure to respond to an evolving threat landscape. Canadian residents and businesses will be more open to adopting technologies of the future if they can trust that these technologies will be safe, private and secure.

Canadian organizations are falling behind their global peers on cybersecurity preparedness according to *Cisco's Cybersecurity Readiness Index*. This study found a mere 9% of Canadian organizations have the 'mature' level of readiness needed to be resilient against today's modern cybersecurity risks, compared to 15% globally.

According to Canada's Cyber Threat Assessment for 2023-2024, cybercrime (including ransomware) remains the cyberthreat most likely to impact individuals, businesses, and governments.⁶ Newfoundland and Labrador's 2022 ransomware attack on health networks and other confirmed ransomware attacks on other Canadian public and private sector organizations show that there is an ongoing need for governments to enhance cybersecurity measures to detect and protect against growing threats and attacks.

The Government of Canada continues to take leadership action in this area including with its *National Cyber Security Strategy* and related action plan, the creation of the *Canadian Centre for Cyber Security*, the introduction of Bill C-26 and other initiatives. Provinces and territories are also taking action such as Quebec's *Ministry of Cybersecurity and Digital Technologies*, Ontario's *Cyber Security Expert Panel* and *Cyber Security Centre of Excellence* and Alberta's *Cyber Security Strategy*.

While progress is being made, closing the cyber security readiness gap is imperative or Canada risks falling further behind in an increasingly complex threat landscape. Leaders in Canada's public and private sectors should be laser-focused on addressing the national cyber security readiness gap and shift to thinking about security resilience⁷ as a means to close that gap. To support these efforts, governments should consider providing additional funding and supports to businesses to adopt stronger cybersecurity measures.

⁶ <https://www.cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2023-2024>

⁷ https://www.cisco.com/c/dam/m/en_us/products/security/cybersecurity-reports/cybersecurity-readiness-index/2023/cybersecurity-readiness-market-snapshot-canada.pdf

