

Hydro One Telecom Can Help You Protect Data That Resides Outside Your Network

To mitigate the risks from data breaches, human error, ransomware and other threats, you need the ability to find, secure, protect and control of all your data — wherever it resides. With more business information being created and stored outside the data center than ever before- on personal laptops and tablets- protecting endpoint data outside of your network has become a priority.

With Hydro One Telecom’s Endpoint Protection- powered by Commvault- you can protect and secure end-user data to mitigate risk from any number of threats. You can also regain visibility and control over endpoint and cloud file-share data for compliance and litigation purposes — all from a single solution. It will improve productivity for end users and IT through self-service, collaboration, secure file-sharing and real-time mobile access.

Why does it matter?

A 2018 “Cost of a Data Breach” Study by Ponemon Institute reports that the global average cost of a data breach is up 6.4 percent over the previous year to \$3.86 million. The average cost for each lost or stolen record containing sensitive and confidential information also increased by 4.8 percent year over year to \$148 per record. How much is application downtime costing businesses realistically? According to Gartner, the average cost of IT downtime is \$5,600 per minute. Because there are so many differences in how businesses operate, their verticals and their environments, downtime, at the low end, can be as much as \$140,000 per hour, \$300,000 per hour on average, and as much as \$540,000 per hour at the higher end. (Gartner, Jun 18, 2018 / <https://www.the20.com/blog/the-cost-of-it-downtime/>). With such great risk, it is critical to select the features your endpoint protection plan needs.

What can you do?

HOT’s Endpoint Protection Service provides 6 ways to protect your company:

1. **Encrypt stored files:** Encrypt files and folders against would-be thieves on all your endpoint devices
2. **Control User Access:** Keep data safe from fake credentials with 2 factor authentication & single sign-on
3. **Remote Wipe a Laptop:** Full or selective wipes provide complete data security
4. **Encrypt data in-flight:** Secure data transfer protects moving data without a VPN
5. **Track that laptop down:** Geo-tracking lets you narrow down a missing laptop’s location by country, province, city, postal code and street
6. **Automate Security:** IT efficiently manages security for an entire mobile network

HOT's Endpoint Protection

CAPABILITY	BENEFITS
Endpoint Control and Visibility	<ul style="list-style-type: none"> Ensures a consistent end-user experience with expedited backups and scheduling based on multiple variables (CPU, power source and network conditions), data transfer speeds and bandwidth consumption.
Source-side (Client) Data De-duplication	<ul style="list-style-type: none"> Eliminates redundant data from the client before copying to the server Reduces server-side storage space, which reduces bandwidth consumption and speeds backup process. This helps to reduce costs.
Optimize Security and Data Loss Prevention (DLP)	<ul style="list-style-type: none"> Secure data at the endpoint, in transit and in the data center with SSL encryption and at rest via AES, Blowfish, 3DES and Ghost Encrypted at the file and folder level with proprietary modules which are FIPS 140-1 and 140-2 certified Other capabilities include device geo-location tracking and device lock and wipe
End User Self-Service Data Restore	<ul style="list-style-type: none"> Enables end-users to search, view and restore their own files and folders from Windows Explorer, Mac Finder, Android / iOS mobile apps, or a web interface
Simple Control Point for Access Control & Authentication	<ul style="list-style-type: none"> Granular role-based access control (RBAC) based on Active Directory, Domino Notes Directory, or LDAP Commvault two-factor PIN Authentication is available Single Sign On (SSO) support via Windows credentials, SAML and social media sites with OAuth
Simple to Use Backup Policy, Workflow Automation and Reporting	<ul style="list-style-type: none"> Reduces IT admin burden with a library of basic tasks, customization capabilities and automated workflows Endpoints are auto-detected to eliminate manual installation and configuration Real-time visibility into all running jobs and events with customized alerts Customizable and out-of-the-box reports and graphical dashboards
Accelerated Search, Compliance and E-Discovery Operations	<ul style="list-style-type: none"> Full-text indexing and searching against a single pool of data from all laptop and desktop users, and several cloud repositories, accelerates the identification of responsive data for legal hold, compliance audits and investigatory operations Legal hold (files and devices) workflow automation simplifies the process of ensuring electronically stored information (ESI) preservation
Virtually Unlimited Scalability	<ul style="list-style-type: none"> Scale easily from hundreds of users to hundreds of thousands and from a single location to hundreds of locations globally with an agile and web scale platform
Deployment Options	<ul style="list-style-type: none"> Deployment options include On-premises, Public / Hybrid Cloud and SaaS
SAAS App. Backup	<ul style="list-style-type: none"> Sync, store and share with G Suite by Google Cloud and Microsoft OneDrive
Licensing Options: <ul style="list-style-type: none"> Endpoint Data Protection Search add-on 	<ul style="list-style-type: none"> Backup, restore, Data Loss Prevention Metadata search and reporting – per user Advanced content-based search and legal hold – per user

MS OFFICE 365 BACKUP



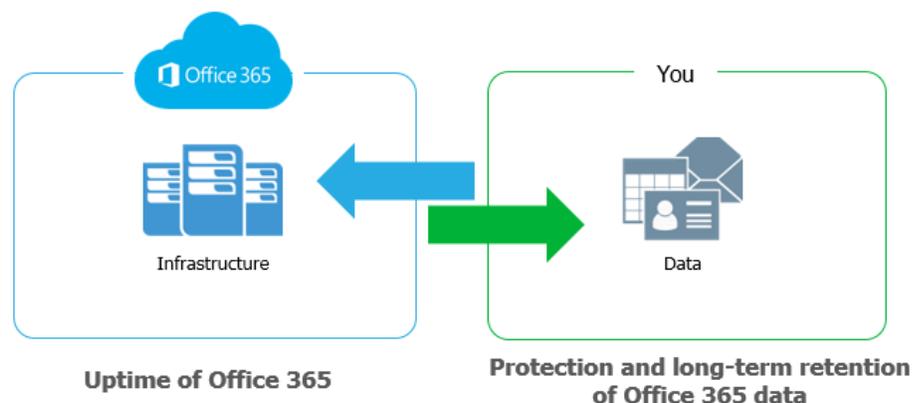
Hydro One Telecom Provides a Solution to Retain and Protect your Microsoft Office 365 Data

Microsoft provides a wide array of powerful services within MS Office 365 which enables your business to work anywhere, anytime, without the need to host your own email, files and content management infrastructure.

Even though Microsoft hosts the infrastructure, you are ultimately responsible for your data- and that includes maintaining a backup of your business-critical MS Office 365 data. Most companies don't realize this and don't realize how exposed they can be.

HOT is proud to offer the MS Office 365 Backup solution as part of its suite of Backup as a Service (BaaS) offerings. The MS Office 365 Backup solution eliminates the risk of losing access and control over your Office 365 data- including Exchange Online, SharePoint Online and OneDrive for business- so that your data is always available and protected.

Microsoft takes care of the infrastructure,
but the data remains your responsibility.



Microsoft Responsibility:

- Global infrastructure
- Recycle bin (limited, short-term data)
- MS Office 365 data replication
- Physical security, logical security, app-level security and user/admin controls

Your Responsibility:

- Recycle bin (limited, short-term data)
- Your MS Office 365 data
- Full data retention (short & long term retention)
- Security against accidental deletion, employee retaliation, ransomware, malware, rogue apps, hackers

To learn more about Backup as a Service, the MS Office 365 Backup Solution and other offerings, please contact us at HOTSales@HydroOne.com or (866) 345-6820 to speak with a Sales representative- or visit us at

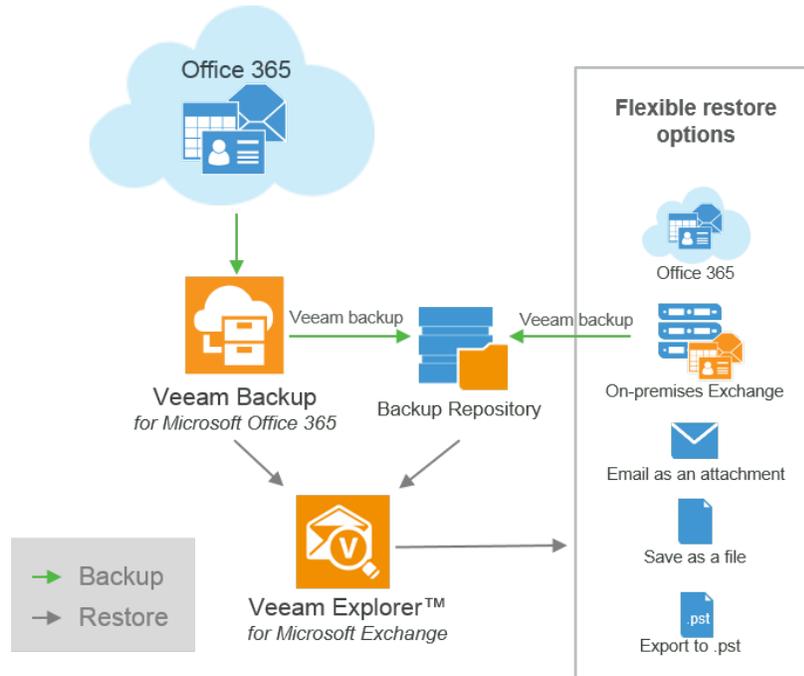
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Unified On-Premise and Office 365 Backup

Ensuring availability of email and content data requires a solution that can cover both MS Office 365 and any on-premise Exchange and SharePoint instances that you may have. HOT offers MS Office 365 Backup so that you can:

- **Protect your MS Office 365 data** from accidental deletion, security threats and retention policy gaps
- **Quickly restore individual MS Office 365 items** and files with easy to use self-service portals
- **Meet legal and compliance requirements** with flexible retention policies and easy restoration

How it Works



- **Backup** Exchange, OneDrive and SharePoint; on-line and on-premises, using native MS Office 365 APIs
- **Retain** your data with flexible retention policies of 1, 3, 7 years, and forever, which allows you to plan your backups in accordance with your needs
- **Store** backups conveniently and securely in Hydro One Telecom's cloud. Your data remains encrypted and accessible only to you
- **Search and Restore** quickly and at a granular level. Individual objects reside in a protected file format that is easily accessible to you using Veeam Explorer software for Exchange, Onedrive and SharePoint

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Hydro One Telecom's Object Based Storage Service Brings Structured Storage, Protection and Easy Retrieval to Unstructured Data

With the explosion of unstructured data and the proliferation of applications, servers and storage sprawl is resulting in silos of infrastructure for traditional and new workloads with your organization.

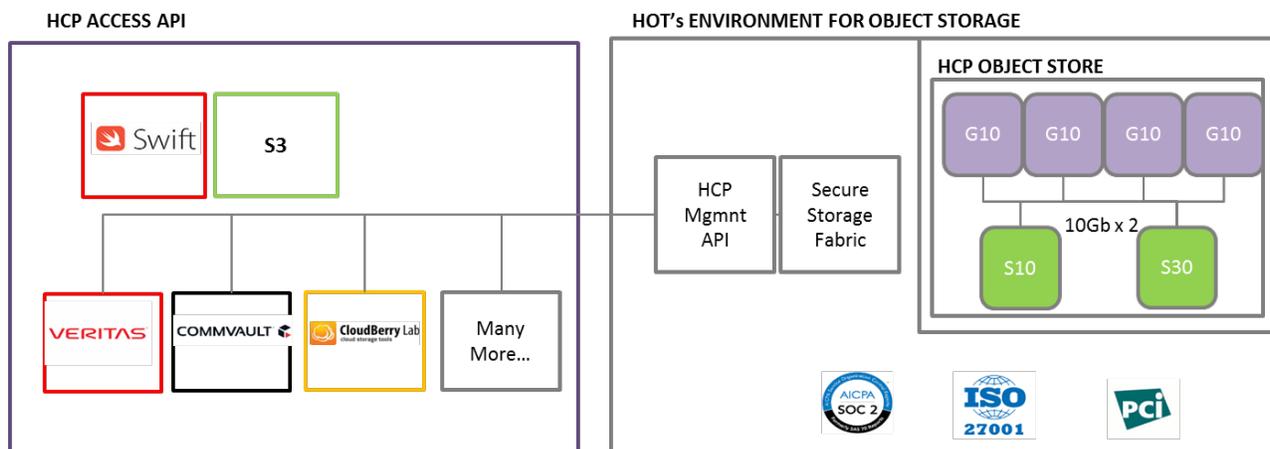
Hydro One Telecom provides an Object Based Storage Solution as part of its Backup as a Service (BaaS) suite of services to provide more capabilities, flexibility, configurability to benefit your business. With HOT's Object Storage Service, you can not only address today's challenges around storing and protecting data, but also set yourself up for the continued explosive growth of data.

The Hitachi Content Platform (HCP) that HOT's Object Storage Service leverages is a multipurpose distributed object-based storage system designed to support large-scale repositories of unstructured data. It enables its subscribers to store, protect, preserve and retrieve unstructured content with a single storage platform. This solution provides access to metadata and content search tools that enable more elegant and automated queries for faster, more accurate results. Through these features you can gain a better understanding of the content of stored files, how the content is used, and how objects may be related to one another. This understanding will help enable more intelligent automation, along with big data analytics based on best-in-class metadata architecture.

How it Works

Hydro One Telecom's Object Store Service provides secure, resilient, cost-effective and redundant storage for any data your applications produce or manage. The service is ideal for data archiving applications where accessibility and durability are higher priorities than performance, and cost is an important consideration.

The service maintains Amazon S3 compatibility so that applications capable of interacting with the Amazon restful storage API can be deployed on the HCP platform. A user interface for Object Storage can be provided by S3 explorers such as Cloudberry or S3 browsers and allow for management of buckets and files across the HOT cloud and local storage.



HOT's Object Storage Service Specifications- powered by HCP

HOT's Object Based Storage Solution Specifications				
	G10	VM ¹	S110	S30
Node Type	Access Storage		Economy Storage	
Storage	DAS, SAN, Cloud		DAS	
Disks	12 HDD x 4TB, RAID-6	VMDK or RDM	60 HDD x 10TB erasure code	954 HDD x 10TB erasure code
SAN Fibre channel)	80PB ²	37PB ²	N/A	
Cloud	Unlimited Amazon S3 ² , Microsoft Azure, Google Cloud			
Scale	4 to 80 nodes	4 to 40 nodes	1 to 80 nodes	
Minimum	1TB	1 TB	192 TB	560T
Maximum	1,008TB per node	944TB per node	560TB per node	9.4PB per node
All Nodes Total (raw)	800PB per site 4.8 exabyte (6 –site geo-distributed erasure coding)			
Hardware	2RU per node	User Supplied	4RU per node	16RU to 68RU per node
CPU and Memory	2 x 6 cores	4 to 8 vCPU	2 x 6 cores	4 x 6 cores
	64 to 256GB	16 to 256GB	64GB	512GB
SSD	2 x 1.9TB ¹	N/A	0	6 x 200GB
Networking	4 x 10GbE Base-T 4 x 10GbE SFP+ ² management port	4 x pNIC management port	4 x 10GbE SFP+ ² 4 x GbE management port	4 x 10GbE Base-T 4 x 10GbE SFP+ ² 4 x GbE management port

VMDK = Virtual Machine Disk, RMD = Remote Device Management, SSD = Solid State Disk, GbE – Gigabit Ethernet, HDD = Hard Disk Drive, RU = Rack Unit, vCPU = virtual CPU, pNIC = Peripheral Component Interconnect Network Interface Controller ¹ Supported Hypervisors include VMware ESX and KVM, ² Configuration options

Advantages of HOT's Object Storage Services:

Ensure Your Data Is Tamper Proof	<ul style="list-style-type: none"> • Ensure your data is Tamper Proof • Firewall, vulnerability scanned, IDS-data encrypted in flight & at rest
Optimize Your Data Lifecycle	<ul style="list-style-type: none"> • Define your own data retention periods & redundancy • Immutable storage (WORM) with 100% log retention of interactions • Incorporate true End of Life destruction with certification
Ensure The Service Is Cost Effective	<ul style="list-style-type: none"> • No hidden or unpredictable costs (egress, puts, gets, scans, retrievals, deletes)
Easily Find What You're Looking For	<ul style="list-style-type: none"> • Full context indexing, including Meta data • Programmatically incorporate Search into App stack
Insulate your data from disruption	<ul style="list-style-type: none"> • Leverages multiple storage nodes with option for geo-redundancy • Autonomic infrastructure isolates data from upgrades & equipment replacement
Securely Share Your Data Between Application Environments	<ul style="list-style-type: none"> • Unique keys can be created for each data access client

To learn more about HOT's Object Storage Service and other offerings, please contact us at HOTSales@HydroOne.com or (866) 345-6820 to speak with a Sales representative- or visit us at www.HydroOneTelecom.com

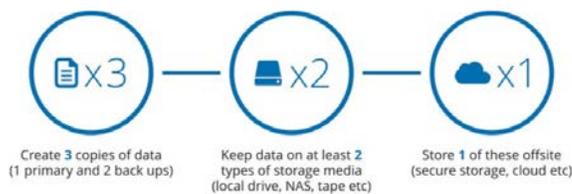
BAAS - VEEAM CLOUD CONNECT



We know that your company’s single most valuable asset may be its data. Customer data, product data, financial data, employee data — it’s the lifeblood of any organization. When something goes wrong it’s critical to get your data back; all your data, all at once, accurately and consistently. That’s why Hydro One Telecom provides the Veeam Cloud Connect Solution as part of its Backup as a Service (BaaS) offering.

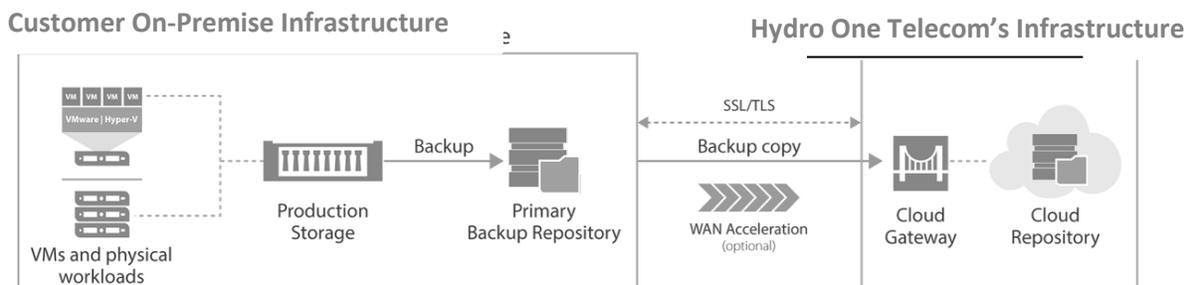
The most common events requiring service restoration are: flood or fire, man-made or natural disasters, data corruption due to malware attacks, system or equipment failures and increasingly more prevalent-cryptominer and ransomware attacks that literally hold your company hostage. In 2018, ransomware attacks were decreasing in volume but increasing in sophistication. In fact, ransomware and other cybercrimes are projected to cost the global economy \$6 trillion per year by 2021- which represent 7.5% of the total value of the global economy (*The Weekly Standard- 05/07/2018*).

At Hydro One Telecom we aim to support the 3:2:1 rule of thumb for Data Protection: This rule states that you need to keep *three* copies of your data, stored on *two* types of media, with *one* copy being offsite. Getting backups to and from offsite locations can be challenging due to limited bandwidth, exploding data volumes and a lack of resources required to build or maintain a true offsite backup repository.



To address these challenges, HOT leverages the Veeam Cloud Connect Solution to provide a complete cloud-based backup solution for virtual environments for our customers.

With Hydro One Telecom as *your* service provider, you can master the 3-2-1 rule without expending money and resources into a second site or adding bandwidth— just leverage HOT’s connectivity and the Veeam Cloud Connect backup repository solution and take advantage of Veeam’s Built-in WAN Acceleration technology and so much more.



Use a backup job to store data on-premises for fast local restores, then use a backup copy job to send data offsite to a secure, robust cloud repository for risk mitigation.

BAAS - VEEAM CLOUD CONNECT



How it Works

1. A Veeam server located at your premise backs up your data and consolidates any changed data prior to being replicated to the offsite Cloud connect enabled data vault
2. Your replicated data is stored within a secure Tier II data storage fabric
3. When there is a need to recover the data, the Veeam server located at your premise restores backup data to the server on your premise from the cloud. If your server is not accessible, restoration of your data can be performed by leveraging virtual resource capabilities inside the HOT network

It's Easy to Add Cloud Backup

Hydro One Telecom delivers powerful and reliable features and functionality to help you avoid the risk of catastrophic data loss. With our Veeam Cloud Connect Solution, you get:

- **Hosted Offsite Backups:** Get your backups offsite to a hosted cloud repository through a secure SSL connection with no additional Veeam licensing required
- **A Modern Backup Architecture:** Leverage Veeam's modern backup technology, including Backup Copy jobs with built-in WAN Acceleration, forever incremental backups, parallel processing for VMs and VM disks, GFS (grandfather-father-son) retention policies and more—all built into one product
- **End-to-End Encryption:** Rest easy - all data is encrypted at source (before it leaves your network perimeter), in flight and at rest, without negatively impacting the data reduction ratios of built-in compression and WAN Acceleration.

Why Hydro One Telecom's Veeam Cloud Connect Solution

- Secure and high performance network options that provide faster backup and restore solutions
- All your data remains in Canada and is subject to Canadian data privacy laws
- Reliable data protection and availability with flexible retention periods



Hosted offsite backups

Physical and virtual backups offsite through a secure SSL connection



Modern backup architecture

Built-in WAN acceleration with multiple retention policies to choose from



End to end Encryption

Encrypt data at source before sending it to the cloud



Complete Visibility and Control

Use your Veeam console to manage and track your on-premises and cloud infrastructure

To learn more about Backup as a Service- Veeam Cloud Connect and other offerings, please contact us at HOTSales@HydroOne.com or (866) 345-6820 to speak with a Sales representative- or visit us at

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We know that Virtual Data Centres (VDCs) are increasingly popular because of their ease of deployment, cost effectiveness, security, scalability and reliability. That's why Hydro One Telecom (HOT) offers a secure multi-tenant public cloud as part of its Infrastructure as a Service (IaaS) suite of services. Our VDC leverages VMware Cloud Technology enabling HOT to provide an agile, robust and flexible cloud platform that is truly enterprise ready.

In a virtual data center environment, the software application is decoupled from the hardware, allowing the flexibility to operate multiple IT workloads on a shared pool of infrastructure resources. Hot's VDC provides clients with cost effective virtual computing services that incorporate workload scalability and both scale-out and scale-up tuning.

Why VDCs

With the proliferation of applications and data, physical data centre resources and capital budgets have been stretched thin. In fact, one of the biggest problems facing data centres today is exponential growth. So it's no wonder that virtualization is increasing in popularity. After all, the consolidation of running more workloads on less hardware presents an attractive option for efficiency and cost-reduction.

“By 2025, 80% of enterprises will have shut down their traditional data center, versus 10% today.” Gartner -*The Data Center is Dead, and Digital Infrastructures Emerge*, David Cappuccio, April 2018

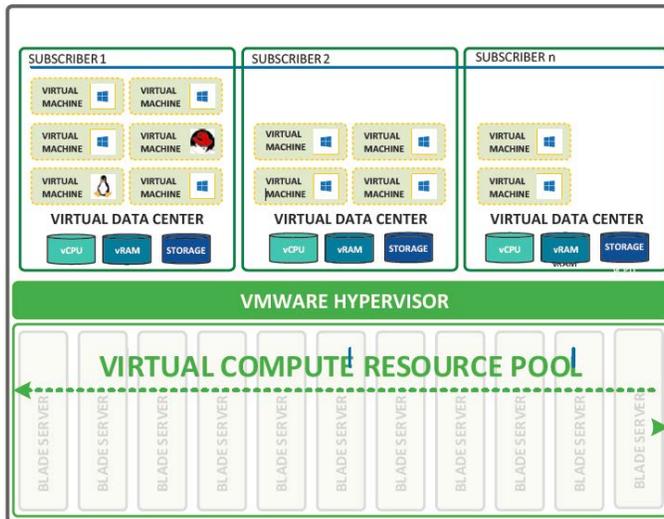
HOT's VMware-powered multi-tenant VDC provides the easiest and most seamless way for enterprises to adopt cloud services. Our clients can leverage our VDC together with one of our backup or replication services for a holistic solution, all from one provider.

As interconnect services, cloud providers, the Internet of Things (IoT), edge services and SaaS offerings continue to proliferate, the rationale to stay in a traditional physical data center topology will have limited advantages. HOT can help you determine what is best for your business now, and going forward, and work with you to evolve to where you want to be.

How it Works

The VMware based multi-tenant VDC provided by HOT offers effective segmentation and isolation of your assets and resources within a multi-tenant environment which allows you to securely separate workloads at the application level while effectively managing costs. Our solution is resource-based, with no over-subscription or arbitrary virtual machine host-sizing. You can allocate resources as needed into a completely isolated VDC with contracted amounts of compute and storage resources allowing you to build virtual

servers of different sizes based on your specific requirements. In fact, we offer three different levels of storage within these VDCs: Tier 0: SSD/flash, Tier 1: High Performance HDD, and Tier 2: Write-Optimized Archive HD.



Top Reasons to Choose HOT's VDC

- Accelerated & Simplified Migration
- Increased Security Means Less Risk
- Less Downtime and No Disruption
- Automation and Governance
- Improved ROI
- 100% Data Sovereignty
- Predictable Pricing
- HOT's Exceptional Customer Service

Features of HOT's Virtual Data Centre

Hydro One Telecom's VDC solution delivers powerful and reliable features and functionality including:

- **Fully Certified VMware Stack:** The HOT delivery infrastructure is VMware certified and offers enterprise-ready cloud infrastructure. It is easy to deploy and manage using your native VMware tools
- **Scalable High Performance Storage:** HOT's delivery infrastructure incorporates redundant network infrastructure, and N+2 redundancy for storage infrastructure & compute- ensuring high availability
- **Fixed & Predictable Pricing:** No hidden fees- you get full visibility to costs before using the service
- **Support for all Carrier Connectivity:** Although we can provide your network connectivity directly, we also work with all national and many regional carriers. As your needs increase, we can help you scale up
- **Integrate your Own Assets:** Our flexible service delivery infrastructure allows you to incorporate your legacy devices (servers or firewalls) which can then be connected to your public cloud infrastructure
- **Comprehensive Data Sovereignty:** We are 100% Canadian owned and operated. As such your data remains in Canada and is governed by Canadian privacy laws which inhibit foreign access

To learn more about HOT's Infrastructure as a Service- Virtual Data Centres and other offerings, please contact us at HOTSales@HydroOne.com or (866) 345-6820 to speak with a Sales representative- or visit us at

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