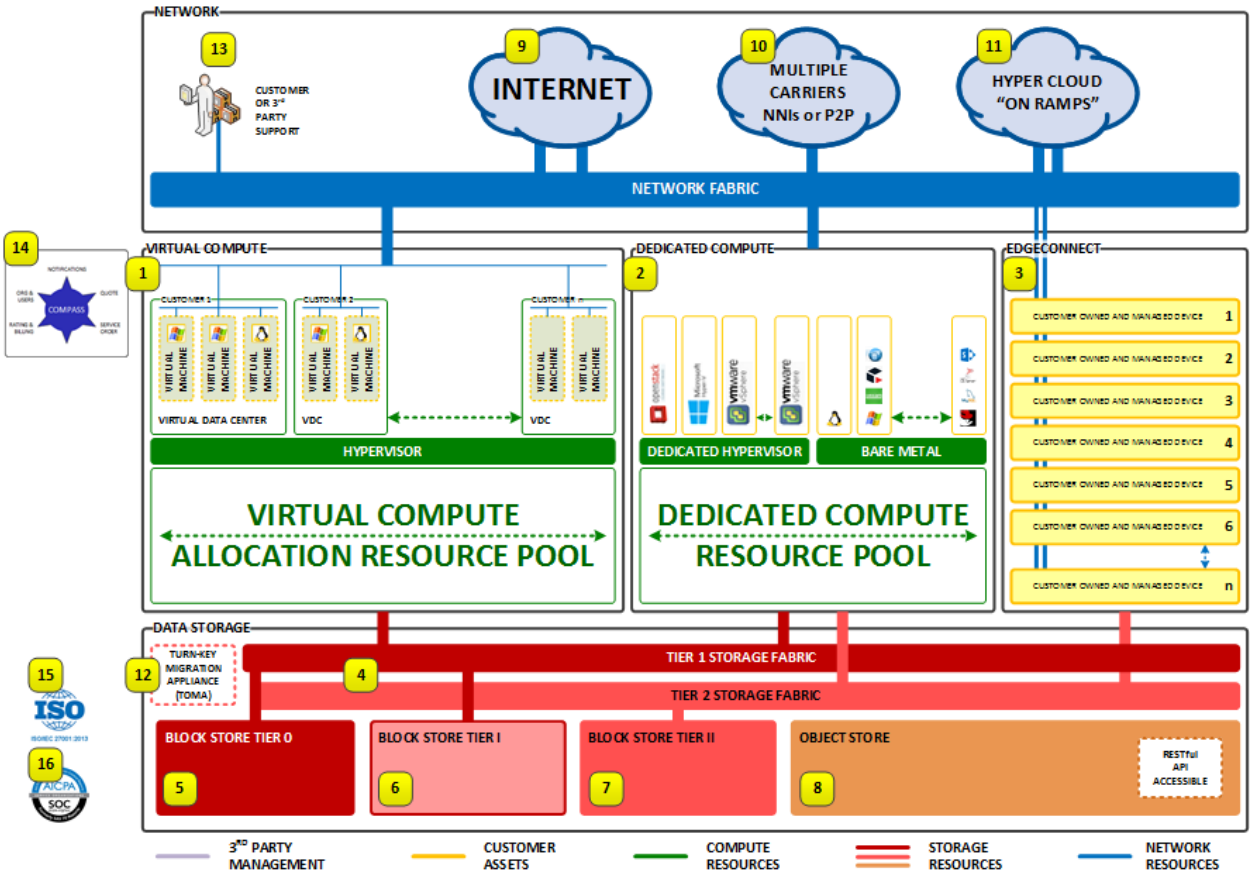
TIG is Canada's cloud provider of Infrastructure as a Service - The Software Accelerated Hybrid Cloud, powered by ThinkOn.

INFRASTRUCTURE

ThinkOn has built and operates Canada's only Converged Infrastructure as a Service utility. This utility is offered exclusively to SaaS providers, Integrators and VARs that desire to leverage a turn-key SLA backed service to support their go-to-market cloud initiatives. There are a number of compelling, and in some cases unique attributes associated with the ThinkOn design that are summarized following the service delivery architecture diagram found below.



1. **Virtual Compute:** Unlike many cloud providers that sell virtual servers, ThinkOn offers subscribers virtual data centres outfitted with a contracted amount of compute resources in a unit of measure called a "Cloud Compute Unit". A Cloud Compute Unit is comprised of 1Ghz of CPU and 2GBytes of RAM. Compute units are allocated to a virtual data centre at the time of purchase. Once allocated to a virtual data center the compute units can be used to construct a virtual server of any type simply by adjusting the Cloud Compute Units allocated.

   The Virtual Compute is enabled using VMware's vCloud service enablement software and is deployed on high-density compute blades which enable very high performance inter-blade traffic without

putting significant workload on our 10Gbit Juniper core network that has an aggregate communications capacity of nearly 1Tbit. We have developed our own portal technology the merges the various elements so that subscribers can interact with our service delivery infrastructure from a single “pane of glass”.

There is no limit to the variation of virtual servers being built and if your requirements exceed the available resources during deployment. It’s simply a matter of allocating additional Cloud Compute Units to the virtual data centre. Subscribers can deploy server images from the global service catalog or they can upload their own images and store them in their own template catalog.

A key aspect of the Virtual Compute design is that unlike the large public clouds each virtual server being deployed is inherently highly available and in the event a hardware component were to fail the affected workload would be automatically recovered on the remaining service delivery infrastructure.

2. **Dedicated Compute:** One of the greatest advantages of the ThinkOn service delivery architecture is the ability to deploy cloud and bare metal compute services within the same network and storage fabrics. This hybrid design allows subscribers the option of deploying a private cloud using any hypervisor technology or to deploy software that would benefit from being installed directly on bare metal. An example of such an application would be the analytics centric application – Hadoop. We provide two classes of dedicated compute; a low density option comes with 96GB of RAM and a minimum of 16 GHz of compute while the high density option includes 192GB of RAM and a minimum 24 GHz of compute. Both models include direct access to our storage fabrics as well as access to multiple 10Gbit network interfaces to ensure very high interconnectivity performance.

3. **EDGEconnect™:** Unlike most cloud only providers that do not allow subscriber owned assets to co-exist with their cloud environment, we believe it’s a great way to get the most out of the technology investments subscribers have already made. Our EDGEconnect™ service allows subscribers to place their own assets into our secure environment and cross connect directly into our service delivery network. We support redundant Ethernet and Fibre Channel connectivity so whether it’s a carrier’s router or a disk array we can make it work. This service is sold in one "U" (1.75") increments and includes 100 watts of power for every “U” ordered.

4. **Storage Fabric:** We take performance and data security very seriously. From our very beginnings we have been committed to helping our subscribers get the best performance possible while maintaining an ultra-reliable security framework. Many of our competitors believe they can cut corners by using iSCSI or other low cost and potentially insecure storage transport. We’ve taken a second step and isolated the high performance storage from our general purpose Tier 2 storage.

5. **Block Store Tier 0:** Is our highest performance tier of data storage. As an all-flash infrastructure It’s a perfect place for databases or any other performance sensitive storage applications. The storage volume appears as a native drive space to the host that is attached to it. Tier 0 storage infrastructure can be allocated to virtual compute and dedicated compute infrastructure. Pricing is per Gbyte and the minimum storage commitment is 100GB of storage. Data availability is supported through a high availability design. All data paths are redundant and the data itself is stored using RAID-6 data protection mechanisms.

6. **Block Store Tier 1:** Is our performance tier of data storage. It's a perfect place to store data for applications with traditional performance expectations but have large data volumes. To ensure optimal performance the service delivery infrastructure is constructed using a scale out service design. Scale out means that as we add storage capacity we also add storage controller and cache capacity to ensure the workload continues to be well served within the entire Tier 1 storage platform. The storage volume appears as a native drive space to the host that is attached to it. Storage is allocated directly to a virtual machine or dedicated compute and is consider in use upon allocation. Pricing is per Gbyte and the minimum storage commitment is 100GB of storage. Data availability is supported through a high availability design. All data paths are redundant and the data itself is stored using RAID-6 data protection mechanisms.

7. **Block Store Tier 2:** Is our general purpose storage tier. This storage service has write optimized performance characteristics to support near-line applications such as on-line backup and data archiving typical for data protection and media vaulting applications or any other application where write workloads significantly exceed reads. To ensure optimal performance the service delivery infrastructure is constructed using a scale out service design. Scale out means that as we add storage capacity we also add storage controller and cache capacity to ensure the workload continues to be well served as the storage platform grows. The storage volume appears as a native drive space to the host that is attached to it. Storage is allocated directly to a virtual machine or dedicated compute and is consider in use upon allocation. Pricing is per Gbyte and the minimum storage commitment is 100GB of storage. Data availability is supported through a high availability design. All data paths are redundant and the data itself is stored using RAID-6 data protection mechanisms.

8. **Object Store:** This service is ideal for applications requiring very high data durability more so than performance. The ThinkOn object store is fully S3 compatible and provides for a very high level of redundancy. One of the most compelling aspects of Object Store is that there is no pre-allocation required. Subscribers are billed on an "as used" basis in 1 Gbyte increments of consumed capacity with no minimum block size. Inbound data does NOT get tabulated with ThinkOn Internet Compute services volumes.

9. **InternetConnect™:** The ThinkOn InternetConnect™ is a multi-homed, carrier diverse managed Internet service. In order to access any of the above services it is necessary to subscribe to minimum of 1 Mbps of data transit or an EdgeConnect service. Pricing is per Mbit of outbound transit used based on 95th percentile calculations for the billing period.

10. **Carrier Connectivity:** As described in the EDGEconnect™ section earlier ThinkOn can support carrier provided circuit termination equipment and directly connect that same carrier circuit to a subscriber owned virtual or dedicated compute instance. We support all major direct carriers as well as several 3rd party value added network resellers. The net result to our subscribers and their subscribers is that we can easily support a quality of service backed connection which isn't something you can get from an Internet centric service provider.

11. **Hyper-Cloud On-Ramps:** ThinkOn's service delivery infrastructure has pre-configured connections to the largest hyper-clouds. These on ramp services are provided to facilitate connectivity to subscriber managed assets with the hyper-cloud platforms. In order to utilize this infrastructure the subscriber is required to have their own hyper-cloud service account.

12. **TOMA:** The ThinkOn Migration Appliance is purpose built to enable the high-speed bulk transfer of large data sets from a subscriber premise to the ThinkOn Service Delivery infrastructure. TOMA is available in 20, 50 and 80 TByte configurations and supports NFS, Fibre Channel and iSCSI attachment while at the subscriber premise.

13. **Application and Guest VM Management:** ThinkOn provides a unique way for both subscribers and authorized 3rd parties to securely access and remotely manage the virtual and dedicated compute deployed as part of any subscriber solution. It starts with our ability to securely connect subscribers through our service delivery infrastructure. We accomplish this through a none-shared design whereby no two subscribers ever exist either on the same private VLAN and we can extend this design to network termination points within the EDGEconnect environment.

14. **Compass:** ThinkOn's Service Order Management platform provides governance oriented workflow and oversight for our resellers and subscribers. Compass provides a platform for subscribers to receive notifications, usage data and order services, all under the management and procurement controls not found in public clouds.

15. **ISO 27001:** As a testament to ThinkOn's commitment to providing a secure service delivery infrastructure for it subscribers it achieved ISO 27001 certification in early 2017. This ISO certification applies to ThinkOn's entire service delivery infrastructure and operational support infrastructure.

16. **SOC II:** ThinkOn achieved its SOC II certification in 2016. This certification is important as it forms a baseline for service delivery consistency through the establishment of management policies and support procedures that ensure all ThinkOn subscribers receive reliable service. The ThinkOn operational procedure library covers all aspects of the operation of the service delivery infrastructure.

Physical Facilities: ThinkOn utilizes the best data centres available. Due to the nature of the colocation business there are a number of excellent options available and we've deployed in multiple facilities to maintain both geographical and vendor redundancy. The map to the right depicts where ThinkOn maintains its service delivery infrastructure.

To ensure service consistency we have defined a minimum acceptable facility standard. The purpose of this standard is to ensure that all ThinkOn subscribers can be confident that their application infrastructure is only deployed

within a physical facility that meets or exceeds the ThinkOn standard. These key facility attributed are identified in the table below.

Item	Specification(s) and/or Compliance
Certifications	SOC II Type II
Redundant Power Source	The entire power delivery architecture is redundant in an N+1 configuration.
Backup Power Systems	UPS battery backup with a minimum run time of 30 minutes and redundant diesel backup generators with a minimum of 1 day of fuel on hand with delivery contracts in place with multiple vendors.
Environmental Control	State of the art climate control systems N+1, environment maintained to ASHRAE server inlet standards.
Fire Suppression	Pre-action dry pipe sprinkler system with clean agent fire extinguishers.
Raised Floor	Minimum two foot high anti-static system.
24/7 Support	Monitoring of all critical systems 24x7x365, plus around-the-clock access to phone or online support.
Access entry controls	Token based entry controls in place at all facility access points. Biometric access controls integrated into all facility access points.
Video monitoring	100% internal and external area coverage via CCTV with a minimum of 30 days retention
Alarms	Intruder and door tampering alarms in place.

SUMMARY

For 36+ Years, TIG has delivered innovative technology solutions to a diverse customer base in enterprise, government agency, educational, and SMB markets. Our ability to stay agile is a vital part of our business achievements and essential to our customer's long-term sustainability. TIG offers custom built IT Solutions around the globe.

Learn more at www.tig-canada.com/sahc