



**MANAGED
MICROSOFT® AZURE**

The question of on-premise or Cloud has been settled, and most would agree that Manage Microsoft Azure is a hybrid of both. This redefines the network perimeter that spans customer data centers, cloud providers, mobile devices and mobile applications. This is where Microsoft has been leading the way by offering seamless integrations with the latest versions of Windows and SQL Server, allowing Azure to differentiate itself from other hyper-scale clouds. With an expanded network perimeter and blurred lines between the cloud and physical aspects of the solution, security is no longer at the edge, but needs to be woven into the entire solution.

On top of this, Azure is constantly evolving with features regularly being released and updated, creating complexity that can be challenging to navigate. This is where Cogeco Peer 1 can help, as we simplify the journey so that our customers can focus on their core business. With a strong background in managing mission-critical infrastructure solutions for customers, we are well placed to advise on the best strategies to secure, scale and leverage the power of Azure. Our services create robust architectural designs, migrate services and provides ongoing management of the solution with the backing of a 24/7/365 team of experts keen to reduce complexity and risk.

ABOUT MANAGED MICROSOFT AZURE

Cogeco Peer 1 Managed Microsoft Azure provides day-to-day operational management of infrastructure within the Azure Cloud, including best practice advice, configuration assistance and troubleshooting services, along with OS patching, anti-malware, monitoring and backup services.

This is backed by our FirstCall Support Promise™ which means you just make one call to our support team, and we'll keep you informed as we work on your issue through to resolution. If there's a problem with your infrastructure, our team of system administrators will get to work to make it right – as soon as possible.

CUSTOMER BENEFITS

Managed Microsoft Azure services will help you to be even more successful as Cogeco Peer 1 takes on the responsibilities of managing the infrastructure, allowing you to focus on delivering a fantastic experience to your customers, growing your business and maximizing your return on investment. In addition, there are many other benefits which include:

- **Faster and more reliable connections with lower latencies** – We are Microsoft Connectivity provider* and this means we can deliver hybrid infrastructure via ExpressRoute. Using ExpressRoute connection to transfer data between on-premises systems and Azure can give you significant cost benefits.
- **Flexible, customizable solutions and the ability to meet fast growth** – Paired with a choice of additional services, you can customize the level of management required for each of your Azure subscriptions. Whether you require a self-service (Cogeco Peer 1 Microsoft Azure Self-Service), or a managed solution (Cogeco Peer 1 Managed Microsoft Azure), we will work with you to create the flexibility and reliability you need to fully accommodate your business. If you require solution deployment, our Design Build service can easily be added on to Managed Microsoft Azure Services, too. All our Microsoft Azure services are independent from others which provides customers with a great level of flexibility (no forced bundling of deployment services). Whether you've been in business for years or are a start-up company, Managed Microsoft Azure services will flex to accommodate your business operations today and grow with you in the future.
- **Fast, secure and reliable solutions** – Our team of experts will tailor the solution to your needs and are based on best practice recommendations that consider resiliency, security and performance. The systems are configured to receive security and critical updates and our teams set up monitoring alerts for system availability to help them detect and resolve problems early on, so you'll enjoy increased security and system uptime.
- **Budget friendly and cost efficient** – The management service is designed to scale with your business in the same way as your cloud infrastructure solution does. As a result, you will pay for management services only when the cloud services are active.

- **Protecting your critical data** – We will configure and monitor the success of Azure backups, protecting your business-critical infrastructure, according to the backup schedule and retention policy required by your business for data protection and compliance purposes.
- **Personalized and direct contact with our team of experts** – You receive high quality service and flexibility through our White Glove service. Our goal is to ensure efficient and effective collaboration for all of our customers and hence you will have direct contact with our team of experts. You will not only receive the solutions you need, but these will be delivered the way you want.
- **Increased security with our Identity Management System** – Our administrators may not always need to view the server password credentials to access your solution; the session launcher can automatically connect our administrators to your solution without passwords being exposed. Cogeco Peer 1 service passwords are automatically burned and rotated once viewed. Cogeco Peer 1 has the ability to audit which administrator has had access to the customer solution at any point in time. Customers are able to leverage private IP's on their solutions to limit the attack surface and still receive management services.

A CHOICE OF SERVICE LEVELS

Leverage the power of Azure safely with the knowledge that the Cogeco Peer 1 team of experts are here to help. Choose between the simple Platform Support included in the Cogeco Peer 1 Microsoft Azure Self-Service or upgrade to a Managed Cloud subscription with Cogeco Peer 1 Managed Microsoft Azure. For more information on Azure Platform Support, please see the Cogeco Peer 1 Microsoft Azure Self-Service service description.

Service levels are chosen by enabling or disabling management on the appropriate Azure subscription by ordering the Managed Microsoft Azure service.

The matrix below provides a comparison between Microsoft Azure Self-Service and Managed Microsoft Azure service levels:

MANAGEMENT TOOLS	MICROSOFT AZURE SELF-SERVICE	MANAGED MICROSOFT AZURE
Best practice recommendations, documentation and FAQs	✓	✓
Access to Cogeco Peer 1 management portal for Azure <ul style="list-style-type: none"> • Manage Azure resources & change service levels • Historical usage and predicted bills 	✓	✓
Access to the online ticket system and 24/7/365 phone support	✓	✓
TECHNICAL SERVICES	MICROSOFT AZURE SELF-SERVICE	MANAGED MICROSOFT AZURE
Best Practice Advisory service Provide opinions and best-practice advice on architecture, security and resilience.	Platform only	Platform and VM Infrastructure
Network Configuration Assistance <ul style="list-style-type: none"> • Virtual Networks (Azure Virtual Networks) • VPN (Azure VPN Gateway) • Firewall (Azure Network Service Groups) • Load Balancers (Azure Load Balancer) • ExpressRoute 		✓

Operating Systems (Virtual Machines) <ul style="list-style-type: none"> Configuration assistance and troubleshooting services - For Windows, Red Hat and CentOS operating systems. Operating system versions supported matches those supported by the operating system vendors. Managed operating system security updates and patches. Managed anti-malware updates Managed backup service 		✓
Monitoring <ul style="list-style-type: none"> Virtual Machine service availability alerting Integration with Cogeco Peer 1 incident management systems 		✓
Technical support for Microsoft Azure portal functionality*		✓
ACCOUNT MANAGEMENT	MICROSOFT AZURE SELF-SERVICE	MANAGED MICROSOFT AZURE
Account Manager	✓	✓
Customer Experience Management (CEM) Team	✓	✓
Technical Account Manager (TAM)	Available as an additional service	Available as an additional service
SERVICE MANAGEMENT	MICROSOFT AZURE SELF-SERVICE	MANAGED MICROSOFT AZURE
Service request & incident management	✓	✓
Azure platform escalation management	✓	✓

*Please see supported Azure services section for list of features currently supported.

OPTIONAL ADDITIONAL SERVICES	MICROSOFT AZURE SELF-SERVICE	MANAGED MICROSOFT AZURE
Detailed Architectural Design & Deployment Services - Design Build Service <ul style="list-style-type: none"> Discovery sessions run by an experienced solutions consultant and architect team. Full documentation is created, including the Statement of Work document and detailed solution diagrams. Delivery of a customized infrastructure solution fully architected and deployed based on business requirements. 	Available as an additional service	Available as an additional service

Migration Services <ul style="list-style-type: none"> Services to help with migrating your applications and data to the new environment. Delivered by Cogeco Peer 1 or pre approved specialist migration partners. 	Available as an additional service	Available as an additional service
Project Management <ul style="list-style-type: none"> Experienced project managers to coordinate large and complex deployment projects. 	Available as an additional service	Available as an additional service
DBA Packages and Professional Services <ul style="list-style-type: none"> A team of certified DBA's who can help with performance and security optimizations of your business critical databases. Available for MySQL, MariaDB and Microsoft SQL Server platforms. 	Available as an additional service	Available as an additional service

MANAGED MICROSOFT AZURE SERVICE SUPPORTED FUNCTIONALITY

As a Cogeco Peer 1 Managed Microsoft Azure customer, you are able to purchase any Azure resource through your subscription; however, not all resource types can be covered by the Managed Microsoft Azure subscription.

The table below outlines the areas covered by the Managed Microsoft Azure subscription that the Cogeco Peer 1 technical teams are able to offer support for:

AZURE FEATURE	SUPPORTED FUNCTIONALITY
COMPUTE	
Virtual Machines	✓
DATABASES & STORAGE	
Azure Database for SQL*	✓
Storage	✓
NETWORKING	
Virtual Networks	✓
Network Security Groups	✓
ExpressRoute	✓
Load Balancer	✓
VPN Gateway	✓
MANAGEMENT	
Monitoring (Application Insights)	✓
Backup (Azure Backup)	✓

*Service availability, connectivity and troubleshooting only included in the package. Optional DBA services are available for assistance with advanced optimizations relating to database performance, scalability, replication and disaster recovery.

MANAGED MICROSOFT AZURE SUPPORT LEVEL

Cogeco Peer 1 provides 24/7/365 support through service centers in the US and Europe. Our experienced team of administrators are well-versed on the Microsoft Azure platform.

As a Managed Microsoft Azure customer, you are able to request operating system support which includes assistance with configuration and troubleshooting of virtual machine resources on the managed Azure subscription.

Service Overview

- 24/7/365 support is available by phone and the online ticket system at support.cogecopeer1.com. Email updates will be provided to keep you informed of progress.
- Incident Management ensures normal service is restored as soon as possible when there is an interruption in service. Our goal is to minimize any business impact that may result from the incident and ensure service level quality is maintained.
- Changes required to your environment will follow the standard service request process to ensure the requested changes are tracked and handled with minimal impact to the store.
- Access to the Peer 1 knowledge base which includes articles specific to the Azure platform.
- Azure platform escalation management.
- Our basic monitoring package is included to ensure swift response and notification of service availability and RAID problems (as detailed in the monitoring section). More advanced monitoring packages are available if you require rich reporting dashboards and custom notifications.
- The patch management service will automatically deploy security and critical updates to the operating system of customer servers (where subscribed to the managed patching services).
- The anti-malware system will automatically deploy the latest heuristic definitions to subscribed customer virtual machines.
- The Azure Backup service will be configured to automatically protect required virtual machines, and our engineers will monitor and remediate problematic backup jobs.

Azure subscriptions (Microsoft Azure Self-Service and Managed Microsoft Azure)

Service levels are chosen by enabling or disabling management on the appropriate Azure subscription by ordering or removing the Managed Microsoft Azure add-on.

Managed Microsoft Azure has a minimum subscription term of one month for the base subscription element, the variable usage element is billed as a percentage of the Azure resources consumed in the time period that the service is subscribed to.

Services allocated to a Microsoft Azure Self-Service subscription will receive troubleshooting support Azure portal functionality problems (configuration assistance and deployment activities are excluded) in line with the Microsoft Azure Self-Service service guide.

Services allocated to a Managed Microsoft Azure subscription will receive configuration assistance and troubleshooting support for activities that can be performed via the Azure portal or Command Line Interface (excludes deployment activities) in line with the services set out in the 'Managed Microsoft Azure Supported Functionality' section of this guide. Customers requiring deployment activities are requested to speak with one of our solutions consultants about the Design Build service.

Cogeco Peer 1 uses a secure identity management (IDM) system to manage customer Azure IaaS VM resources within the 'Managed Microsoft Azure' subscription that have been registered on the identity management system - the tool provides secure, audited and time-limited remote access functionality to customer infrastructure.

Virtual Machine Configuration Assistance and Troubleshooting (IaaS VMs)

The virtual machine configuration assistance and troubleshooting element of 'Managed Microsoft Azure' simplifies daily operating system management and minimizes the operational burden on internal IT staff by helping with the following areas:

- Core operating system services
- Web servers (IIS, NginX & Apache)
- FTP/SFTP/FTPS Servers
- Email servers (SMTP, Sendmail, q-mail & postfix)
- Database servers (MySQL, MariaDB & Microsoft SQL Server)
- Control Panels (cPanel & Plesk)
- Backups (Azure Backup)
- Monitoring

The virtual machine configuration assistance and troubleshooting service is only available with versions of Microsoft Windows, Red Hat and CentOS that are still officially supported by the operating system software vendors. No other versions or operating systems are eligible for this service.

VIRTUAL MACHINE OPERATING SYSTEM FEATURE	SUPPORTED	NOT SUPPORTED
Core Operating System Services		
DNS Server Role	✓	
Network Configuration and troubleshooting	✓	
Disk Management	✓	
Permissions, Local Users and Groups	✓	
Installation of server roles	✓	
Scheduled Tasks or Cron Jobs	✓	
Remote access (RDP & SSH) issues	✓	
Network shares	✓	
Performance issues relating to the operating system	✓	
Firewall configuration and troubleshooting	✓	
Configuration of operating system automatic patch installation scheduling	✓	
Installation of anti-malware agent	✓	
Disk and file encryption		✓
Web Servers (IIS, Apache & NGinX)		
Creation or configuration of websites and vhosts (directory, bindings, host headers, etc)	✓	
Website and URL redirects (excluding custom syntax)	✓	
Installation and binding of SSL certificates	✓	
Web processor installation, configuration and troubleshooting (ASP/PHP)	✓	

Load balancer configuration and troubleshooting (health checks, loopbacks and website bindings)	✓	
Website permissions	✓	
Website performance, connectivity issues and errors relating to the web server, operating system and hardware	✓	
Website performance, connectivity issues and errors relating to application and code		✓
URL rewrites		✓
Remediation actions required for failed PCI scans relating to webserver security settings		✓
File Transfer Protocol Servers (FTP, SFTP & FTPS)		
Creation and configuration of FTP/SFTP/FTPS sites	✓	
Management of permissions	✓	
Installation and binding of SSL certificates	✓	
FTP user isolation		✓
FTP client troubleshooting		✓
Email Servers (IIS SMTP, MailEnable, Sendmail, Q-Mail and Postfix)		
SMTP Smart Host configuration	✓	
Mailbox setup and configuration	✓	
Domain configuration	✓	
Whitelist entries	✓	
Troubleshooting mail connectivity issues	✓	
Inbound SPAM issues	✓	
Outbound SPAM issues	Available optional professional service	
IP blacklist removal		✓
Upgrade/downgrade of mail server version if Plesk is installed		✓
Email client troubleshooting		✓
Database Servers (MS SQL, MySQL, MariaDB and Percona DB)		
Installation of a Cogeco Peer 1 licensed database engine & components (e.g. SSRS, SSIS, SSAS)	✓	

Configuration of automated SQL tasks or cron jobs	✓	
Database user configuration	✓	
Database connectivity issues and errors relating to the database engine service availability, operating system & hardware	✓	
Database issues and errors relating to database queries or code	Available with optional professional service or a DBA Plan	
Database alerting configuration	Available with optional professional service or a DBA Plan	
Database clustering & replication	Available with optional professional service or a DBA Plan	
Database tuning and optimization	Available with optional professional service or a DBA Plan	
Installation of customer supplied database engine	Available with optional professional service or a DBA Plan	
Database version upgrades and migration services	Available with optional professional service or a DBA Plan	
Control Panels (Plesk and cPanel)		
Best practice advice and access to control panel specific knowledge base articles	✓	
Configuration assistance and troubleshooting of control panel functionality and features	✓	
Enablement of control panel features	✓	
Major release upgrades for Cogeco Peer 1 supplied control panels when new versions are purchased	Available optional professional service	
Manual control panel installation		✓
Installation of third-party add-ons not supplied with the control panel		✓
Modifications of controlled elements outside of the control panel (i.e. directly through the operating system)		✓
Azure Backups		
Creation and configuration of Azure backup vault	✓	
Installation of Azure backup agent	✓	

Configuration of backup scheduling policy	✓	
Configuration of backup file exclusion filters (Windows only)	✓	
Monitoring of backup jobs and investigation of failures	✓	
Assistance restoring protected data	✓	
Backup data integrity testing		✓
Monitoring		
Creation of customer virtual machine health monitoring alert rules	✓	
Respond to and troubleshoot monitoring alerts related to virtual machine health	✓	
Third Party Applications		
Support for any applications not provided by Cogeco Peer 1		✓

Supported Software Versions - Please note Cogeco Peer 1 support extends to current versions of operating systems, mail servers, web servers and database engines where the software vendor provides active support. The configuration assistance and troubleshooting services are available for software licenses that have been provided by Cogeco Peer 1.

Realms of Support - If you require assistance with an item that extends beyond the typical scope for configuration assistance and troubleshooting (for example a third party application, or bulk administration tasks that goes beyond reasonable use), our staff of experienced systems may offer assistance as a professional service on an adhoc basis.

Fair Usage Statement - Reasonable use for systems administration is defined as administration tasks that require a dedicated systems administrator less than 30 minutes to complete. Any tasks exceeding this usage of a repetitive nature will be considered a bulk administration activity and may be scoped / quoted as a professional services engagement which the customer has an option to take up.

Customer Management Infrastructure (CMI) Server Information

Cogeco Peer 1 uses a sophisticated toolset to manage, monitor and access customer Azure IaaS VM resources. An element of this toolset is the Identity Management software which provides secure, audited and time-limited remote access functionality with automatic credential rotation. As part of the Managed Microsoft Azure service, Cogeco Peer 1 requires a dedicated customer management infrastructure server be established in the customer environment.

The CMI server will be created by Cogeco Peer 1 within a specific subnet with a minimum specification outlined below:

Instance Type	A2 Basic*
Operating System	Windows 2016 Standard Edition
CPU Cores	2
RAM	3.5Gb
Disk Size	40Gb Persistent Storage

*The A2 Basic specification CMI server should be sufficient for the majority of customer solutions, but in rare circumstances the customer solution may outgrow the A2 Basic specification and may need to be replaced with a higher specification virtual machine.

The CMI server acts as a secure jumpbox to allow the Cogeco Peer 1 support team engineers to access and monitor your Microsoft Azure environment resources on public or private networks. The CMI server will be located on a dedicated Azure CMI

subnet within the same Virtual Network as the rest of solution to be managed. Access to the CMI network is restricted to Cogeco Peer 1 support IP ranges only.

Once access to the CMI server is established, the support team will connect via a proxy connection to your virtual machine resources using Remote Desktop Protocol (RDP) or SSH to assist with configuration or troubleshooting. Traffic from the CMI server will transit from the CMI virtual subnet to the subnets within your Azure infrastructure solution.

You will be billed for resources consumed by the CMI server as a part of the Azure subscription; however, the CMI server Identity Management Engine and Logic Monitor Collector (if installed) roles will be licensed by Cogeco Peer 1 on your behalf for up to five CMI servers. The CMI server will be fully maintained by Cogeco Peer 1 and should not perform any other roles beyond those outlined in this document.

A CMI server will be required for each Microsoft Azure Virtual Network you have in a solution, even if these are located in the same Microsoft Azure region.

Monitoring and Response

Cogeco Peer 1 includes the Basic Monitoring package by default as part of your Managed Cloud Service. Basic monitoring will perform a series of checks against your virtual machines that are most critical to protect against application downtime. In the case of an event, Cogeco Peer 1 will notify you and perform a pre determined action on your behalf, according to our standard runbook actions.

The default alerting options configured are as follows:

ALERT METRIC	THRESHOLD	DESCRIPTION
System Check	High CPU inactivity	Alert if the CPU sustains 95% CPU activity for over 5 minutes.
System Check	Network In - No traffic	Alert if inbound network traffic reports a sustained zero bytes activity level.
System Check	Network Out - No traffic	Alert if outbound network traffic reports a sustained zero bytes activity level.

For customers looking for more detailed reporting and customization of thresholds and alerts they wish to receive, the Standard Monitoring package is available for an additional fee. The Standard Monitoring package is a powerful self-service monitoring and reporting platform that provides a unified solution to monitor all of your managed servers, devices and applications with a single pane of glass for all your graphs, reports and alerts on your hybrid cloud and server infrastructure.

Automated OS Patching

Effective patch management of your cloud infrastructure services is crucial to ensuring your environment is protected from the most recent vulnerabilities and system instabilities that can cause downtime and loss of service.

Cogeco Peer 1 can configure customer virtual servers on Azure with either of the following patching configurations:

Automatic Scheduled Patching – with this selection customers can select to have operating system security patches and updates installed on an automatic basis during a regular timeslot to suit business needs.

Manual Patching – this method disables the automatic scheduled updates on the server should the customer wish to manually control the operating system patch installation schedule by manually installing the updates themselves.

Cogeco Peer 1 will not automatically apply updates to database engines, clustered environments, or update middleware and other applications due to the risk to the customer environment.

Please note – Cogeco Peer 1 offers manual patching as a professional service if you would prefer our support team to manually install the security updates and patches on your behalf.

Antivirus Service

Customers may choose to opt services into the Cogeco Peer 1 Managed Antivirus service. The service includes installation of the Antivirus agent with a predefined exclusion configuration and updates the antivirus definitions as they are made available.

Managed Backups Service

The Cogeco Peer 1 team will work with the customer to configure Azure backup to backup customer IaaS virtual machines with

file level backups using the agent (Windows only) and image level backups on the Azure platform.

Azure File Backups (Windows only) – Customers will indicate the desired schedule and the files and folders on each virtual machine to be backed up using the agent. Cogeco Peer 1 will install the agent on selected virtual machines, configure the desired inclusions and scheduling, and monitor for successful outcomes.

Azure Image Backups (Windows & Linux) – Customers will indicate the desired schedule and the IaaS virtual machines to be backed up with Azure backup image level backups function. Cogeco Peer 1 will configure image level backups for the selected virtual machines, configure scheduling and monitor for successful outcomes. Azure supports file-consistent backups on Linux and application consistent backups on Windows. Backups are non-intrusive and allow restoration of the entire virtual machine.

To request an IaaS virtual machine be configured for Azure backups, customers should submit a service request detailing the virtual machine to be backed up, including the inclusion, retention and scheduling information needed. To request assistance with restoring data from the Azure backup vault, customers can submit a service request and provide details of the virtual machine to be restored and the restore date.

Customers who require their Azure backup data to be encrypted at rest should ensure their virtual machines are enabled for encryption, as Azure Backup depends on the virtual machine being encrypted to ensure data at rest is stored in an encrypted state.

Cogeco Peer 1 is not liable for data integrity of Azure backups; it is recommended customers regularly test restoration of data and virtual machines as part of a regular business continuity test plan.

Azure Platform Escalation Management

Regardless of the subscribed service level, Cogeco Peer 1 is the primary point of contact for support on your Azure environments. In the event that an escalation to Microsoft is required, Cogeco Peer 1 will manage this escalation on your behalf. Escalations to Microsoft may be required in the following scenarios:

- An issue with the Azure platform itself where multiple customers are impacted.
- An issue where Cogeco Peer 1 lacks access required to complete the request.
- An issue where Cogeco Peer 1 has exhausted internal knowledge for a specific area.
- An Azure SLA credit request.

PLATFORM DELIVERY AND ONBOARDING

With the Managed Microsoft Azure subscription, Cogeco Peer 1 support teams are available to help with queries relating to how to configure in-scope elements of the Azure platform.

The Managed Microsoft Azure does not include solution deployment services, although our support team can provide expert advice and best practice recommendations. For customers requiring in-depth design and managed deployment services, Cogeco Peer 1 offers a Design Build professional service. All Design Build service engagements include detailed architectural design diagrams and a Statement Of Work covering all aspects of the solution to be deployed. Further information on this service is available in the Design Build service description.

Upon ordering Managed Microsoft Azure through the management portal, you will be eligible to receive management services for resources in the Managed Cloud subscription; however, these services will not automatically be setup.

- To enable virtual machine configuration and assistance-related managed services for the first time following an order for the service, Cogeco Peer 1 will deploy the Customer Management Infrastructure (CMI) server within the customer environment. This deployment enables access to, and the remote management of the customer solution.
- To initiate the configuration of a virtual machine with management services (monitoring, Azure backups, operating system patches and anti-malware agent), customers can submit a service request to the Cogeco Peer 1 support team, who will setup the services requested on the virtual machine.

SERVICE REQUESTS AND INCIDENT MANAGEMENT PROCESSES

The two primary ticket types for new support tickets are Incidents and Service Requests.

An Incident ticket is created to manage the restoration of service. Examples of incidents might include, but are not limited to:

- Server down
- Degraded performance
- Website inaccessible

Incidents are prioritized based on the impact and the urgency of the issue.

A Service Request ticket is created to track and manage changes that are required. Examples of service requests include, but are not limited to:

- New orders / provisioning
- User administrator
- Firewall rule changes
- Patching / software updates
- Reboot requests

Service requests will be assigned a lower priority than incident tickets.

Incident Management

Cogeco Peer 1 will endeavor to provide a rapid response to any reported incident that may be impacting your Azure Hosting Platform. An incident is classified as an event where the restoration of service is the primary objective.

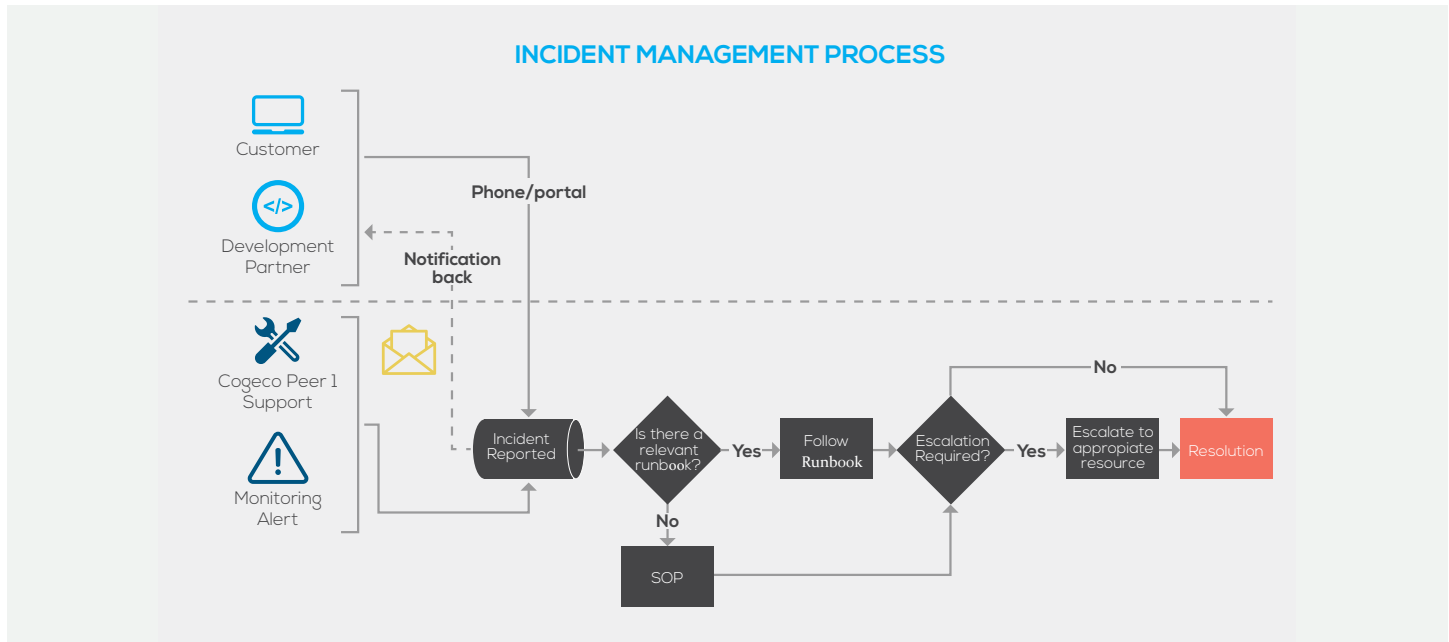
Cogeco Peer 1 will work with you and your development partner (as appropriate) to restore service as quickly as possible when an incident occurs. Ensuring effective communication during the lifecycle of all incidents is our number one priority.

You can engage our experts to assist with incidents relating to the Azure hosting platform by creating a ticket in the Cogeco Peer 1 online ticketing system or by calling the advertised support phone numbers. Cogeco Peer 1 will create tickets for events generated by the monitoring system which will require your attention or the attention of the Cogeco Peer 1 support team. All updates on incidents will be communicated to you via email from the Cogeco Peer 1 ticketing system.

Cogeco Peer 1 will triage the incident according to the impact and urgency of the event and assign a ticket priority. Should you desire an escalation of priority, please contact your Cogeco Peer 1 support team who will consult with you on the priority level.

Cogeco Peer 1 will collaborate with you and your development partner until the incident is resolved, at which point the ticket enters a two-week cooling period before closure. During this process, the Cogeco Peer 1 support team will communicate regularly with you throughout the incident, detailing their findings and actions taken.

The diagram below describes the incident management process:



Incident Management Process Overview:

1. For new incidents, the first action is to triage the criticality and urgency of the incident, so the appropriate priority level can be assigned.
2. Incidents are handled by the support team and will be escalated to senior system administrators where it is determined that specialized skill sets are required.
3. Throughout the process, the support team will work with you as needed and will provide updates through to the point of resolution.
4. When incidents are resolved they will remain in this status for 14 days to allow customers to test or re open if the fault reoccurs, where it reoccurs after this period it is logged as a new incident.

Service Requests and Changes

The Service Request Process utilizes our standard ticketing processes to deliver efficient and prompt handling of changes to your environment and uses the ticket system to ensure information relating to the activity performed is recorded.

For any requests that may impact your monthly billing, your Cogeco Peer 1 Account Manager will be able to help advise you and your development partner on how to create the most optimized and cost efficient solution. Examples include increased traffic for your site that may require additional RAM, CPU or storage. Optional design and deployment services are available on request.

Service requests will typically have a longer lead time before being executed than an incident which carries a higher priority due to the service impacting nature of an incident. Please ensure you plan sufficient lead time in advance when submitting a service request to be processed, particularly if they are time sensitive in nature.

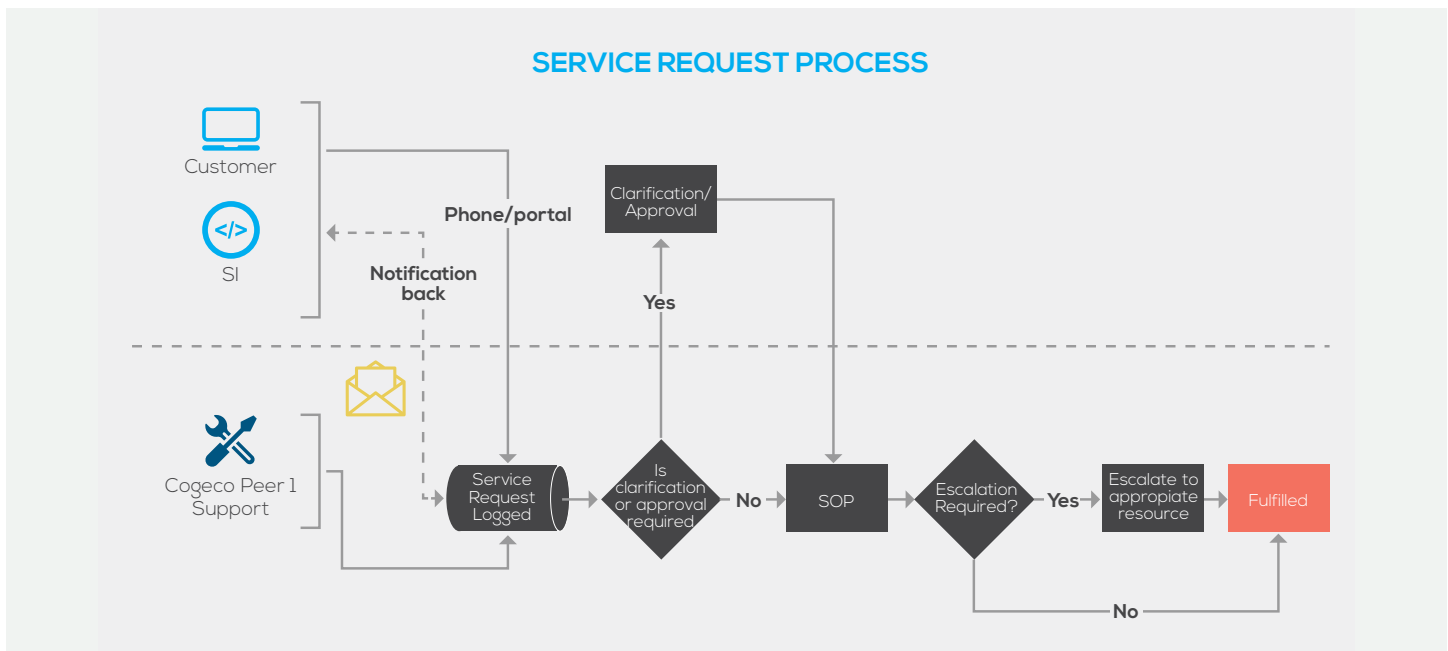
You are encouraged to create a ticket to track any solution changes that you or your development partner are planning to make to the Azure solution. This ensures the Cogeco Peer 1 support team is aware of these activities and can support you through the process.

CUSTOMER OR DEVELOPMENT PARTNER INITIATED CHANGES

Changes to the environment may be requested from your authorized technical contacts on your Cogeco Peer 1 account. All changes should be made by opening a service request online, or by contacting the Cogeco Peer 1 support team.

COGECO PEER 1 INITIATED CHANGES

In the event that Cogeco Peer 1 recommends a change to your solution, you will be notified of the recommendation by phone call or email notification. The execution of the change will follow the Service Request process.



Service Request Process Overview

1. For new service requests the first action is to evaluate to ensure all required details and approvals needed to fulfill the request are present.
2. Service requests will be scheduled and/or actioned by the support team, or escalated to senior system administrators if appropriate based on the specialized skill sets that will be required.
3. Throughout the process, the support team will work with you as needed and will provide updates through to the point of fulfillment.
4. When service requests are completed they will remain in the resolved status for 14 days to allow customers to test or reopen if needed.

ROLES AND RESPONSIBILITIES

Reducing risk and setting clear expectations around the roles and responsibilities is key to a successful deployment and the management of your Azure infrastructure solution. The responsibilities matrix below provides you with the necessary details relating to the services included with your Cogeco Peer 1 Managed Microsoft Azure subscription. The table also includes best practice recommendations for you and your development partner as you work together to support your business applications.

RA CI: R=Responsible | A=Accountable | C=Consulted | I=Informed

ACTIVITY	CUSTOMER (OR DEVELOPMENT PARTNER)	COGECO PEER 1
SERVICE LEVEL ACTIVITIES		
Customer Online Portal	CI	RA
24/7 Response to Incident Management & Service Requests via tickets or phone	I	RA
Change management through ticketing	RACI	RCI
Escalation management for Microsoft Azure platform	CI	RA
ACCOUNT & SOLUTION MANAGEMENT ACTIVITIES		
Consolidated billing of customer Azure CSP subscriptions	CI	RA
Allocate resources to the Azure Managed Cloud, or Azure Platform Support subscriptions	RA	CI
Deploy and manage the Customer Management Infrastructure (CMI) servers to enable remote access to the environment	CI	RA
Provide a named Account Manager for the account	CI	RA
Provide named Customer Experience Manager (CEM) for eligible accounts	CI	RA
Provide named Technical Account Manager (TAM) for eligible accounts	CI	RA
SOLUTION DESIGN ADVISORY SERVICE		
Understand customer objectives	RACI	RCI
Provide solution best practice recommendations	CI	RA
Select and implement preferred solution	RA	CI

SOLUTION ARCHITECTURE (OPTIONAL DESIGN & BUILD SERVICE)		
Understand customer business objectives	RACI	RCI
Deep technical discovery session	CI	RA
Provide additional detailed implementation requirements	RACI	CI
Make recommendations on architecture for new solution based on customer business objectives and with considerations for high-availability, security, scalability and performance	CI	RA
Decide on preferred architecture for new solution	RA	CI
Create logical solution diagram & Statement Of Work (SOW) document with detailed configuration information (e.g. Virtual Networks, IP addresses, security groups, etc)	CI	RA
SOLUTION DEPLOYMENT (OPTIONAL DESIGN & BUILD SERVICE)		
Prepare and deploy customer infrastructure environment (e.g. Compute, Network and storage)	CI	RA
Initial deployment and configuration of supported IaaS virtual machine infrastructure	CI	RA
Initial deployment and configuration of unsupported IaaS virtual machines	CI	RA
Ongoing configuration of unsupported IaaS virtual machines	RA	CI

Configure and test Cogeco Peer 1 supplied connectivity elements (VPNs and ExpressRoute)	RCI	RACI
User acceptance testing and sign off	RA	CI
NETWORK SERVICES & SECURITY		
Assistance with creating, configuring identity access management (IAM) roles & application of policies	RCI	RA
Assistance with creating and configuring Azure network security groups (NSGs)	RCI	RA
Assistance with creating, configuring and testing load balancer rules	RCI	RA
Installation of antivirus agent and definition updates	CI	RA
VIRTUAL MACHINES		
Operating system user management	RA	CI
Installation and management of third party applications and code	RA	CI
Automated installation of Operating system updates	CI	RA
Configuration assistance and troubleshooting of operating system components*	CI	RA
BACKUPS		
Selecting data backup strategy (choice of backup tools)	RA	CI
Implement backup strategy and configure policies	RA	ACI
Monitoring of backup failures to be investigated	CI	RA
Validation and testing of backup strategy	RA	CI
Maintenance of local backup script	RA	CI
Initial configuration of scripted database backup	RA	CI
Restoration of data from backup tool	RA	CI
MONITORING AND ALERT HANDLING		
Configure monitoring for customer servers	CI	RA

Specification of run-book actions	RA	CI
Validation of monitoring alerts (testing)	RA	CI
Incident management of basic alerts	RCI	RA
STANDARD MONITORING (OPTIONAL MONITORING PACKAGE)		
Selection of monitoring level (options)	RA	CI
Monitoring alert threshold tuning (optimization based on requirements)	RA	CI
Configuration of alerts	RA	CI
Response and remediation of alerts	RA	CI
APPLICATION CONFIGURATION		
Acquire licenses for custom applications	RA	CI
Installation and ongoing management of custom applications	RA	CI
Auto-scaling for custom applications	RA	CI
Code deployment	RA	CI
Migration of application data	RA	CI

*Please see the previous 'Virtual Machine Configuration Assistance & Troubleshooting (IaaS)' section for more information on configuration assistance and the support elements.

SERVICE LEVEL AGREEMENT (SLA)

Network uptime and server availability are of the highest importance and Azure solutions are backed up with SLAs from Microsoft.

When thinking about your Azure solution, it is important to design for availability to ensure every step has been taken to minimize downtime caused by maintenance or faults. Microsoft reflects this in the Azure SLAs; for instance, virtual machines in an availability group are offered a 99.95% SLA, whereas a single instance (non-redundant) virtual machine receives a reduced SLA of 99.9%.

The Microsoft Azure Service Level Agreement found at <https://azure.microsoft.com/en-gb/support/legal/sla/> applies to the Microsoft Azure services purchased through your Cogeco Peer 1 Azure and Managed Azure subscriptions.

Microsoft does not automatically issue SLA credits, so if you believe that you are eligible for an SLA credit please submit a service request ticket to the Cogeco Peer 1 support team who will contact Microsoft on your behalf.

BILLING

Managed Microsoft Azure will be billed in arrears as it is calculated based on your Azure Cloud resource usage. There are two billing elements to the Managed Microsoft Azure to provide a cost effective price structure for the management service:

- Base subscription element – The base subscription element is billed at a fixed rate per month, and this amount is billed for each Managed Microsoft Azure subscription on the account.

- Variable usage element – The variable usage element is billed as a percentage of your Azure Cloud resource usage billing. The percentage charged is reduced as Azure spend increases, building an automatic volume discount into the price structure.

Please refer to the sales quotation for more information on the subscription and variable usage elements as they relate to your account.

LIMITATIONS AND REQUIREMENTS

Please note the following important notes relating to Managed Microsoft Azure:

- Any escalations or requests for service credits relating to the Azure platform, which require Microsoft intervention, must be reported to Cogeco Peer 1 as first port of call.
- All services assigned the Managed Microsoft Azure subscription will be subject to management charges and billed accordingly. The customer is solely responsible for determining which of the resources should be allocated to the Managed Microsoft Azure subscription and ensuring any services to be self-managed are allocated to a non-managed Azure subscription.
- The base subscription element of the Managed Microsoft Azure Service has a minimum term of one month and will be billed for the full month if managed services is subscribed for a shorter period of time.
- IaaS virtual machine services can only be managed if they are running an in-life (vendor supported) version of Microsoft Windows, Red Hat or CentOS.
- Configuration assistance and support is limited to licenses or distributions provided by Cogeco Peer 1.
- The customer should create a ticket to inform Cogeco Peer 1 when a new IaaS virtual machine has been added to the Managed Azure subscription, should it need to be setup for management services.
 - Cogeco Peer 1 will then add the Virtual Machine to the Identity Management System and subscribe the VM for monitoring, patching, anti virus, Azure Backup and monitoring services according to the customer requirements.
 - Cogeco Peer 1 will apply custom Azure templates to the virtual machine to configure these roles.
 - Without the ticket to request management service being setup, the virtual machine will not be automatically setup for these services.
- To receive Managed Cloud services, the customer will authorize Cogeco Peer 1 access to their Azure account and resources needed to deliver the service.
- A Customer Management Infrastructure (CMI) server is required to be active in the customer's Azure account in order to provide access and fulfill the Identity Management and Monitoring roles required for Cogeco Peer 1 to provide Managed Cloud Services.
 - The CMI server is for the exclusive use of Cogeco Peer 1 for these roles and should not perform any other function.
 - The CMI server will be managed and maintained by Cogeco Peer 1 and will be subject to a regular security and critical update cycle, during which authentication and monitoring services may be temporarily inhibited.
 - The CMI server costs will be charged to the customers Managed Azure subscription as a consumed resource.
- Any additional requests relating to elements outside of the included components and software in the solution will be considered a professional services activity and quoted separately.

AZURE SERVICE MANAGER (ASM) AND AZURE RESOURCE MANAGER (ARM)

Microsoft Azure allows customers to deploy infrastructure using two models: Azure Service Manager (ASM - sometimes called Classic or V1) and Azure Resource Manager (ARM, Resource Manager or V2). Microsoft is recommending new deployments utilize the newer ARM platform where possible to take advantage of the benefits of this deployment methodology.

There are some differences between solutions deployed in ASM and ARM, as such they are not completely compatible with each other and in some cases certain resources may need to be redeployed via the ARM deployment method. Benefits of ARM over ASM are:

- MS usually releases the newest features to ARM first
- Faster deployment times of VMs due to parallel deployment functionality
- Templates to help standardize and make deployments easily repeatable
- Security benefits
- Role based access control (RBAC) functionality to Azure resources

Subscriptions purchased from Cogeco Peer 1, as a Microsoft Cloud Service Provider (CSP), are ARM in type. ASM subscriptions are not available in the Microsoft CSP program.

FREQUENTLY ASKED QUESTIONS

What are the differences between the service levels?

We offer two levels of service for Microsoft Azure:

- Microsoft Azure Self-Service - This is an entry level option and is a self-managed service. Cogeco Peer 1 will assist with best practice advice on all issues and troubleshooting support for the Azure platform or connectivity, but we will not log into any virtual machines or assist without charging professional services.
- Managed Microsoft Azure Services - This is an enhancement to Microsoft Azure Self-Service and offers you peace of mind that we will support your virtual machines and infrastructure in line with the service description outlined in this document. Please note that this support level does not include any deployment activities. Additional packages are available to assist with this if required.

Can I choose different service levels for each of my environments?

Yes, it is possible to set the service levels for your different environments. This is done by purchasing at least one Managed Microsoft Azure subscription and one Microsoft Azure Self-Service only subscription. You can then simply allocate resources to the appropriate subscription, based on the desired level of service needed for that resource.

Please note - while it is possible to migrate services between subscriptions, it can be complicated to make the technical modifications necessary to reconfigure the Azure environment and these changes may be service impacting.

Can I upgrade or downgrade the service level?

The service level on a subscription can be changed at any time. If you wish to upgrade or downgrade your service level this can be achieved by selecting the desired type (Managed Microsoft Azure or Microsoft Azure Self Service only) in the cloud services management portal.

Managed Microsoft Azure subscriptions have both fixed and variable subscription elements. The base subscription element has a minimum term of one month and will be billed for the full month if managed services are subscribed to for a shorter period of time.

Can I purchase Managed Cloud for Azure if I'm not using Azure Resource Manager (ARM)?

Not directly; however, if you migrate your existing resources to a Managed Cloud Azure subscription purchased through Cogeco Peer 1 then Managed Cloud services will be available to you.

Customers wishing to migrate to Cogeco Peer 1 with existing services on Azure Service Manager (ASM) will need to convert ASM resources to ARM before they can be migrated to Cogeco Peer 1. Cogeco Peer 1 offers a migration professional service which may be able to assist with converting a resource from ASM to ARM. Please contact your Cogeco Peer 1 sales representative for more information on this service.

Please note – Microsoft CSP providers, such as Cogeco Peer 1, are restricted to providing ARM subscriptions, as such Managed Cloud for Azure is only available for customers using Azure Resource Manager subscriptions purchased from Cogeco Peer 1.

Are there any limits to the number of support requests I can have on each service level?

There are no limits to the number of in-scope support requests that can be logged with each service level, although a fair usage statement applies and customers with a high number of support requests may be encouraged to subscribe to a higher service level to obtain a more comprehensive overall support experience.

ADDITIONAL SERVICES

What else should I consider for my environment?

Cogeco Peer 1 offers a variety of additional services that you can layer upon the core infrastructure services, beyond those already discussed, including:

- High Availability Solutions – availability groups, replication, redundant hardware infrastructure, clusters, virtualization and load balancing technologies.
- Managed Backup Solutions with secure disk based backups, flexible retention policies and scheduling, all monitored by our backup administrators.
- Content Delivery Networks (CDN) to ensure your website is delivered quickly.

Database Administration Packages for the Cloud

Cogeco Peer 1 has in-depth experience and comprehensive services available to provide database support and optimization services for Microsoft SQL Server, MySQL, MariaDB and PerconaDB.

We provide the expertise needed to optimize databases through our DBA Program at a fraction of the cost of hiring in-house MySQL certified DBAs. The DBA Program assigns a highly experienced database administrator to work directly with you to tune database solution performance, security and resiliency.

Please ask us about our Database Administration plans. These are available for services in the cloud.

Design, Deployment and Migration Services

Cloud technology is in a constant state of change, and just as your business needs change, products and features change and technology evolves. Designing the right cloud for your strategic goals is critical to your success but this transformation can become complex and expensive.

Cogeco Peer 1 Design Build services for Microsoft help customers build highly secure and efficient Microsoft Azure infrastructure that supports mission-critical business functions and scales with their organization as they grow. Design Build services are delivered through four phases that include consultation, architecture, deployment, and testing.

With one single sourced process, customers can lower cost and decrease time-to-market.

Customers interested in the Design Build services should speak with one of our solutions consultants about this service to learn more.

ABOUT COGECO PEER 1

Cogeco Peer 1 is a wholly-owned subsidiary of Cogeco Communications Inc. (TSX:CCA) and is a global provider of essential business-to-business products and services, such as colocation, network connectivity, hosting, cloud and managed services that allow customers across Canada, Mexico, the United States, and Western Europe to focus on their core business. With 16 data centers, extensive FastFiber Network® and more than 50 points of presence in North America and Europe combined, Cogeco Peer 1 is a trusted partner to businesses small, medium and large, providing the ability to access, move, manage and store mission-critical data worldwide, backed by superior customer support.

Why not put Cogeco Peer 1 to work for you?

info@cogecopeer1.com
www.cogecopeer1.com

