WaTech’s Cloud Highway
Service Overview

Presented by: WaTech’s Network Services Division (NSD)
What is WaTech’s Cloud Highway?

Secure, high-speed connectivity from WaTech data centers to the Northwest’s largest cloud exchange (Seattle)

- Enables seamless & secure access to hundreds of cloud resources & services

Leverages enterprise services & capabilities:

- Identity Management
- Managed Firewalls
- Support Services
- Cyber Security
- Network Core
Current Cloud Hwy Use Cases

- Data Disaster Recovery (Backup Data Repository)
- Hosting Internet-Facing Applications & Services
- Application (Software) Development
- AD FS Authentication / Domain Controllers
- Proof of Concept Testing of Cloud Architecture & Design
- Various Cloud Services provided by both Microsoft & AWS
- Microsoft Identity Manager (MIM)
- Data Center Migrations (DCs in the Cloud)
Cloud Highway Architecture Overview
“50,000-foot view”

“Leave the transport to WaTech”

Customer’s Wide Area Network (WAN) → WaTech’s Network Core → Cloud Highway → Equinix Cloud Ecosystem

“High-Speed, Low-Drag”
“10,000-foot view”
Customer Point of Presence

This represents a state agency’s point of view reflecting the SGN security zone & the legend used for the next three slides.
This represents the SGN security zone illustrating the connectivity of the state’s data centers with respect to the SMON for situational awareness.
WaTech’s Point of Presence in Seattle

This represents the connectivity in the Equinix Data Center in the Seattle Westin.
Direct Connects & FastConnects = Fiber patch cables
This represents the general connectivity to the cloud service providers & the cloud services & capabilities they provide.
Cloud Highway
Value Propositions
Service Value Proposition
– Benefits & Advantages

• **Scalable:**
  o Easily scales per customer demand*

• **End-to-End Support:**
  o WaTech’s Network Operations Center available 24/7/365
  o Internet support is extremely limited

• **Partnership:** WaTech is your Network Design Consultant
  o United front in completing an OCS Security Design Review
  o Sanity check for how customer cloud environments connect to WaTech’s Cloud Highway
Service Value Proposition  
– WaTech Security

• “The Security of the SGN” (Leverages carrier-class security infrastructure that safeguards the SGN).
• OCS compliance (OCIO Standard 141.10).
• Only required security layers are used (Firewalls & IPS). Internet connectivity requires additional security layers which can impact performance, speed, customer experience, & your lines of business.
• “Templatized” OCS-approved traffic flows shopping menu.

*Note: standard agency peering “may not pertain to HQ hairpin designs”*
Service Value Proposition
– Performance

• **Predictability:**
  o Routing Traffic Flows Hop-by-Hop
  o Not an inherent trait of the Internet

• **Latency: contractually \( \leq 15 \text{ ms} \)**
  o Not an inherent trait of the Internet

• **Packet Loss:**
  o Ethernet connectivity used to ensure no packet loss and error-free transmission (no guarantees inherent to the Internet)
Service Value Proposition
– Performance (cont’d)

• **Availability (Uptime):**
  - 99.9% [excluding planned maintenance]
  - Not an inherent trait of the Internet
  - Internet uptime is best effort

• **Bandwidth Customization**
  - Aligns with the bandwidth tiers of Microsoft & AWS
  - 50Mb, 200Mb, 500Mb, 1Gb, 2Gb, 3Gb (AWS only), 4Gb (AWS only), 5Gb (MS only)
Service Value Proposition – Performance (cont’d)

• **Quality of Service (QoS):**
  - Supported to the Front Door of the Cloud Service Providers like Azure & AWS.
  - Not an inherent trait of the Internet nor most other vendor solutions:
    - Class of Service (Layer 2 – frames)
    - Quality of Service (Layer 3 – packets)
Service Value Proposition – AWS Performance Testing

- **Performance Tests:**
  - Over a 1 week timeframe to/from Boardman, OR & the SDC

- **Results:**
  - **Jitter** \(\leq 1\text{ms}\) (Cloud Hwy 75% ↓ than the Internet)
  - **Latency** \(\leq 13\text{ms}\) (Cloud Hwy 50% ↓ than the Internet)
  - **Throughput** w/o IPSEC (Cloud Hwy = 896 Mbps)
  - **Throughput** w/ IPSEC (Cloud Hwy = 620 Mbps)
  - **Hop-Count** 8 (Cloud Hwy 68% ↓ than the Internet)

Note: continuous polling used during a typical week.
Service Value Proposition
– Azure Performance Testing

• **Performance Tests:**
  - Over a 1 week timeframe to/from Quincy, WA & the SDC

• **Results:**
  - **Jitter** \( \leq 1.5 \text{ms} \) (Cloud Hwy 57% ↓ than the Internet)
  - **Latency** \( \leq 10 \text{ms} \) (Cloud Hwy 48% ↓ than the Internet)
  - **Throughput** w/o IPSEC (Cloud Hwy = 905 Mbps)
  - **Throughput** w/ IPSEC (Cloud Hwy = 656 Mbps)
  - **Hop-Count** 7 (Cloud Hwy 59% ↓ than the Internet)

Note: continuous polling used during a typical week.
Service Value Proposition – Cost Benefit Analysis

- **Cost Efficiency**: Leverages the State’s Economies of Scale (resulting in greater savings to the State)
- **Cost-Sharing** of state infrastructure, architecture, & resources
- **Cost-Avoidance**: Keep more money in your pockets to advance your business(es)
- **Timeline**: Currently working with multiple customers & meeting customer timelines & expectations
Egress Fees (data transfer OUT) via the Internet =
  - Azure is 8.7¢ per Gb
  - AWS Commercial (S3) is 9¢ for 1 Gb < 10 Tb

Egress Fees (data transfer OUT) via the Cloud Highway =
  - Azure is 2.5¢ per Gb
  - AWS is 2¢ per Gb
Cloud Highway
Cost Models
## Cloud Highway Rates (Service Capacity Tier)

<table>
<thead>
<tr>
<th>Cloud Highway Capacity Tier</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Mb</td>
<td>$200</td>
</tr>
<tr>
<td>200 Mb</td>
<td>$775</td>
</tr>
<tr>
<td>500 Mb</td>
<td>$1,925</td>
</tr>
<tr>
<td>1 Gb</td>
<td>$3,925</td>
</tr>
<tr>
<td>2 Gb</td>
<td>$7,850</td>
</tr>
<tr>
<td>3 Gb</td>
<td>$11,775</td>
</tr>
<tr>
<td>4 Gb</td>
<td>$15,700</td>
</tr>
</tbody>
</table>

*Note:* These tiers align with the SKUs available from Microsoft and AWS. There are no One-Time Setup costs.
## Cloud Highway Off-Ramp Rates

~Cloud Virtual Circuits~

<table>
<thead>
<tr>
<th>Cloud Virtual Circuits</th>
<th>Monthly</th>
<th>One-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Mb</td>
<td>$110</td>
<td>$600</td>
</tr>
<tr>
<td>200 Mb</td>
<td>$175</td>
<td>$600</td>
</tr>
<tr>
<td>500 Mb</td>
<td>$300</td>
<td>$600</td>
</tr>
<tr>
<td>1 Gb</td>
<td>$475</td>
<td>$600</td>
</tr>
<tr>
<td>2 Gb to 10 Gb</td>
<td>$2,750</td>
<td>$600</td>
</tr>
</tbody>
</table>

**Note:** Cloud Virtual Circuits are only applicable with the Equinix Cloud Exchange.
Cloud Highway Off-Ramp Rates
~Cloud Cross Connects

<table>
<thead>
<tr>
<th>Cloud Cross Connects</th>
<th>Monthly</th>
<th>One-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Connect</td>
<td>$460 each</td>
<td>$1,200 each</td>
</tr>
</tbody>
</table>

**Note:** Only if required; customers are encouraged to not assume that you will need this expense. This will be discussed & flushed out during the formulation of a High-Level Design.
Allocated Virtual Environments

• 5x Routing Tables (VRF) per Allocated Agency
• 3x Virtual Firewall (VDOM) per Allocated Agency
  o Of which only 2 are managed by WaTech

<table>
<thead>
<tr>
<th>Additional Costs</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routing Table (VRF)</td>
<td>$2,750 each</td>
</tr>
<tr>
<td>Virtual Firewall (VDOM)</td>
<td>$1,750 each</td>
</tr>
</tbody>
</table>

**Note:** Only if required.
Cloud Highway Architecture & Consulting Fee

<table>
<thead>
<tr>
<th>Architecture &amp; Consulting Fee</th>
<th>One-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering, Design, &amp; Implementation</td>
<td>$8,100</td>
</tr>
</tbody>
</table>

Deliverables:
- High-Level [Connectivity] Design
- Low-Level Design
- Implementation Processes & Documentation
Customer Responsibilities

- **Costs associated with Customer Cloud environment(s)**
  - AWS & Microsoft costs
  - Direct Connects (AWS) & Express Routes (MS)
  - Egress fees associated with Cloud Service Providers
  - Any Additional Cloud Services

- Work with selected cloud service providers

- Determine if additional back-up services are needed via WaTech’s Cloud VPN Service (additional $285 MRC per tunnel)
Cloud Highway Onboarding Process

Phase 1 – Informational Consultation w/ WaTech (no charge)

Phase 2 – Architectural & Design Consultation
Architectural & Consulting Fee $8,100

Phase 3 – Partner w/ WaTech to Design Cloud Hwy Solution
Off-Ramp Quotes

Phase 4 – Start Taking advantage of Cloud Services

Exploratory Phase
Consultation Phase
“Green Means Go”
Architectural & Design Phase

Done!
How does a customer get started?

Contact WaTech’s Support Center – Press Option 0

WaTech Support Center
855.WaTech1 or (360) 586-1000
Press 1 for Secure Access Washington (SAW)
Press 2 for WebEx or Conference Bridge
Press 3 for Applications and Desktop Support
Press 0 for All Other Requests
Support@WaTech.wa.gov
Cloud Highway Service Webpage

URL ref: (https://watech.wa.gov/solutions/it-services/Cloud-Highway)