



Contents

| | |
|---|-----------|
| 1 About BC Gov Cloud | 2 |
| 2 SEA at BC Gov | 3 |
| 2.1 SEA Concepts | 4 |
| 2.2 Public Cloud SEA Services | 5 |
| 2.3 SEA Future Growth | 7 |
| 2.4 Training Landscape | 8 |
| 2.5 Training Components | 8 |
| 2.6 Training Track | 9 |
| 2.7 Audience | 10 |
| 3 Procurement Value Proposition | 11 |
| 3.1 Negotiation of our First Service Order | 11 |
| 3.2 Procurement Value Add for Ministries | 13 |
| 3.3 Cloud LifeCycle Value Add for Ministries | 14 |
| 4 Shared Responsibility Model | 14 |
| 5 Providing an SEA Service | 28 |
| 5.1 The SEA is non-trivial | 28 |
| 5.2 BC Gov AWS SEA | 30 |
| 6 Billing | 30 |
| 6.1 Billing Examples T-Shirt Estimate Scenario 1 - Small | 30 |
| 6.2 Billing Examples T-Shirt Estimate Scenario 2 - Medium | 31 |
| 6.3 Billing Examples T-Shirt Estimate Scenario 3 - Large | 31 |
| 6.4 Custom Cost Examples ? | 32 |
| 6.5 Billing Process Example | 33 |
| 7 Communities of practice | 34 |
| 7.1 Value of Communities | 34 |
| 7.2 Customer Focus – 3 CoPs | 34 |
| 7.3 Service Design Customer Focus | 35 |
| 7.4 Strong Communities in BC Gov | 35 |
| 7.5 Focus of Teams and Rocket Chat | 36 |
| 8 Service Levels | 40 |
| 9 Demo | 40 |

| | |
|-----------------------|-----------|
| 10 Questions ? | 41 |
| 11 Overview | 42 |

1 About BC Gov Cloud

- What is BC Gov Cloud Pathfinder ?
 - We're a central team in BC Gov tasked with delivering Cloud
 - We've onboarded to the GoC Cloud Brokerage
 - We have a service order with 1 Cloud Service Provider that includes an SEA
 - We are on a mission to collaborate with the GoC to use several CSPs
 - We want to offer a consistent service experience across several clouds; our on-prem OpenShift container platform, AWS and others.
 - Our clients are all Ministries in BC Government
- Customer Focus
 - Our Customers: Project Managers / Product Owners / Expense Authorities
 - Our Users: Developer Teams
 - Compliance Users: Security Operations OCIO
- Good Service
 - Who do I go to if I have quality issues with Cloud Pathfinder's service?

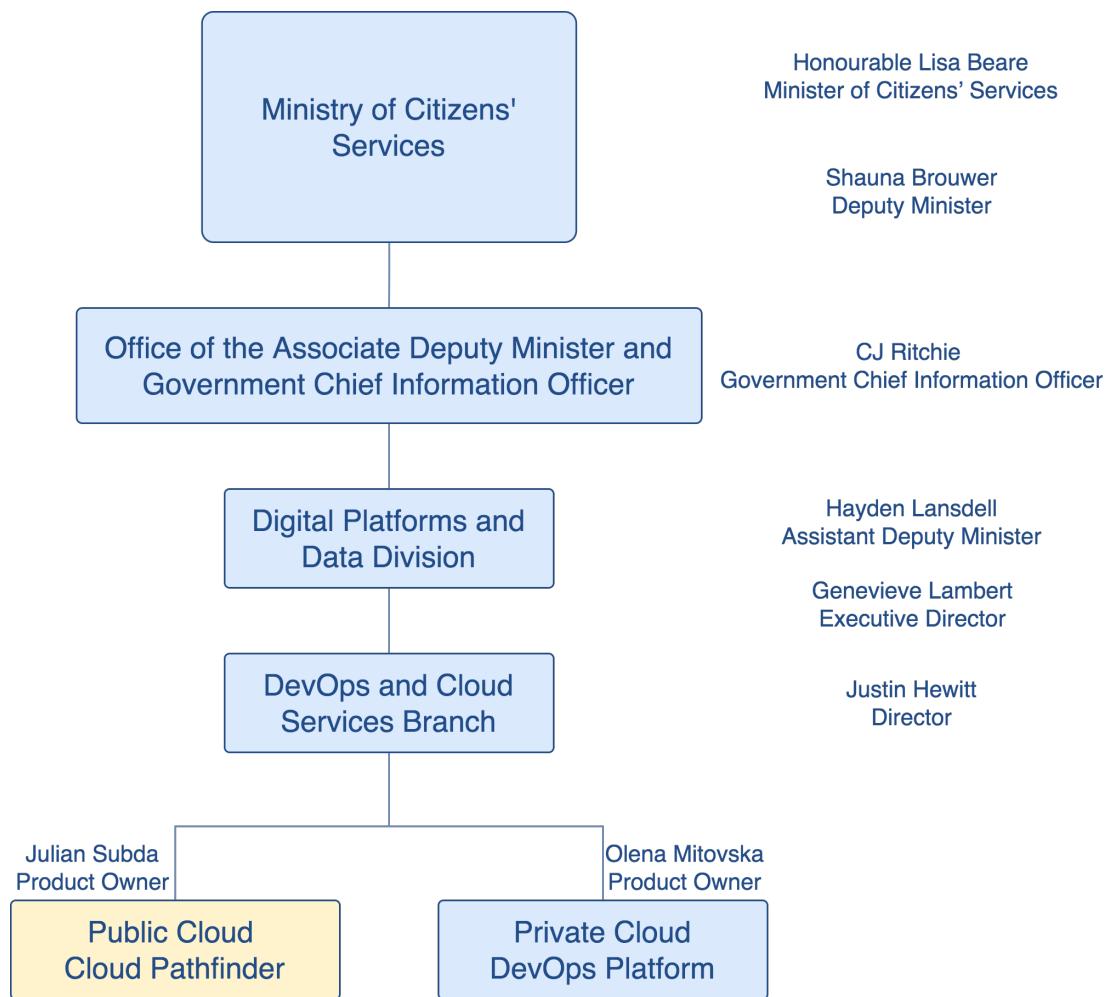


Figure 1: organization ladder

2 SEA at BC Gov

- AWS SEA at BC Gov

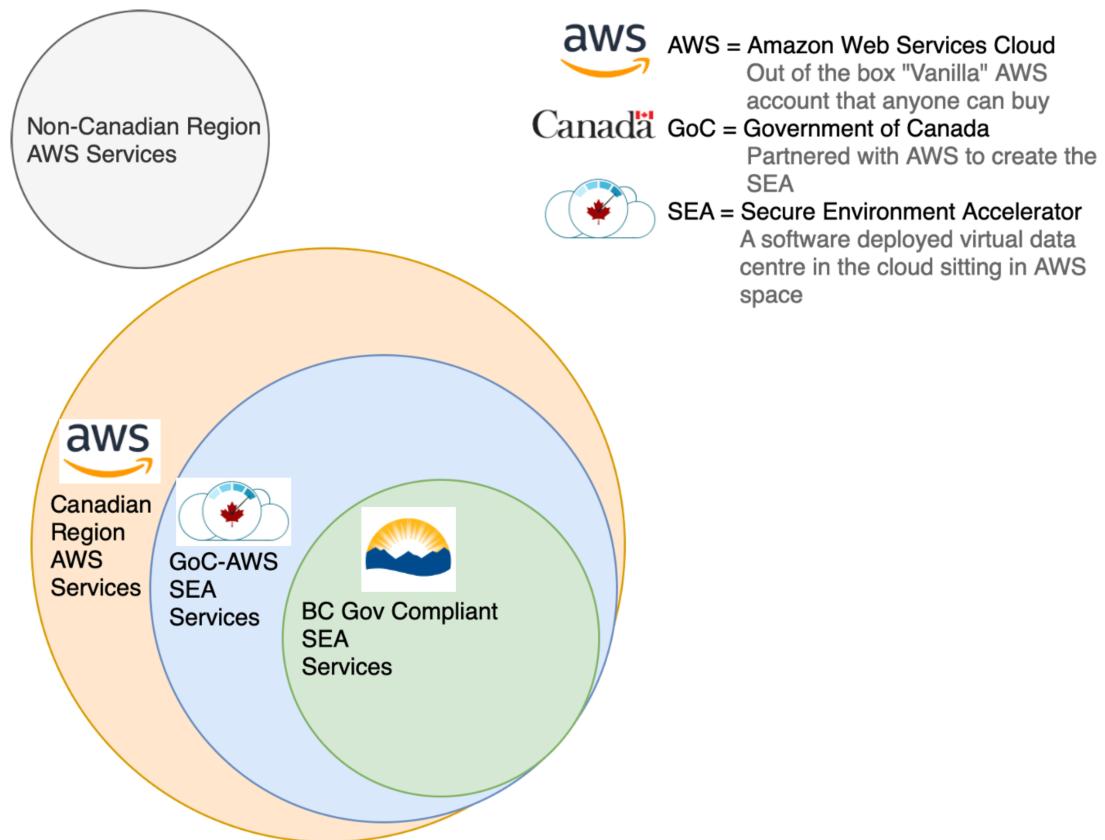


Figure 2: AWS SEA

- The above images shows the relationship between services offered in different scopes of the various contexts of the AWS SEA. BC Gov teams will be working primarily in the green area with some services from the blue.
- The green services have been tested by the Cloud Pathfinder team for good fit within the guardrails of the environment.
- Some services are not compatible but in general there is a pattern for teams to use the blue ones if needed.

2.1 SEA Concepts

- AWS SEA Concept

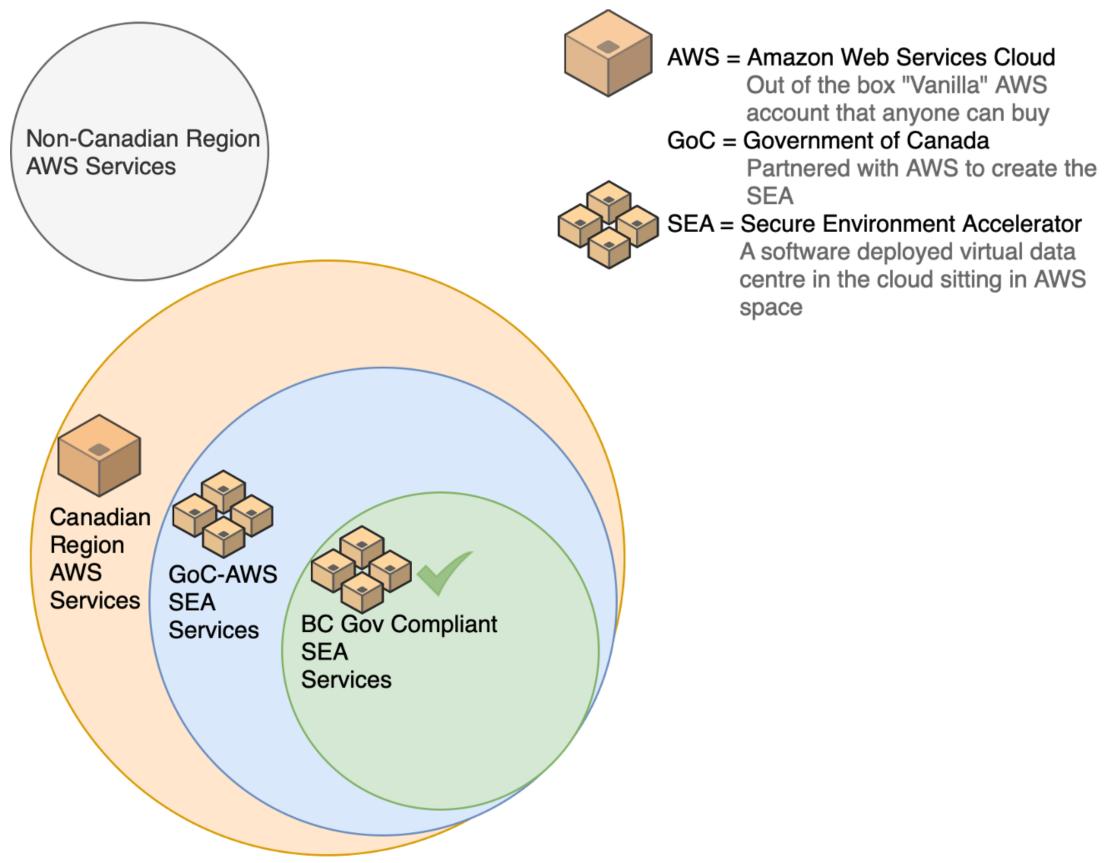


Figure 3: AWS SEA concepts

2.2 Public Cloud SEA Services

- AWS

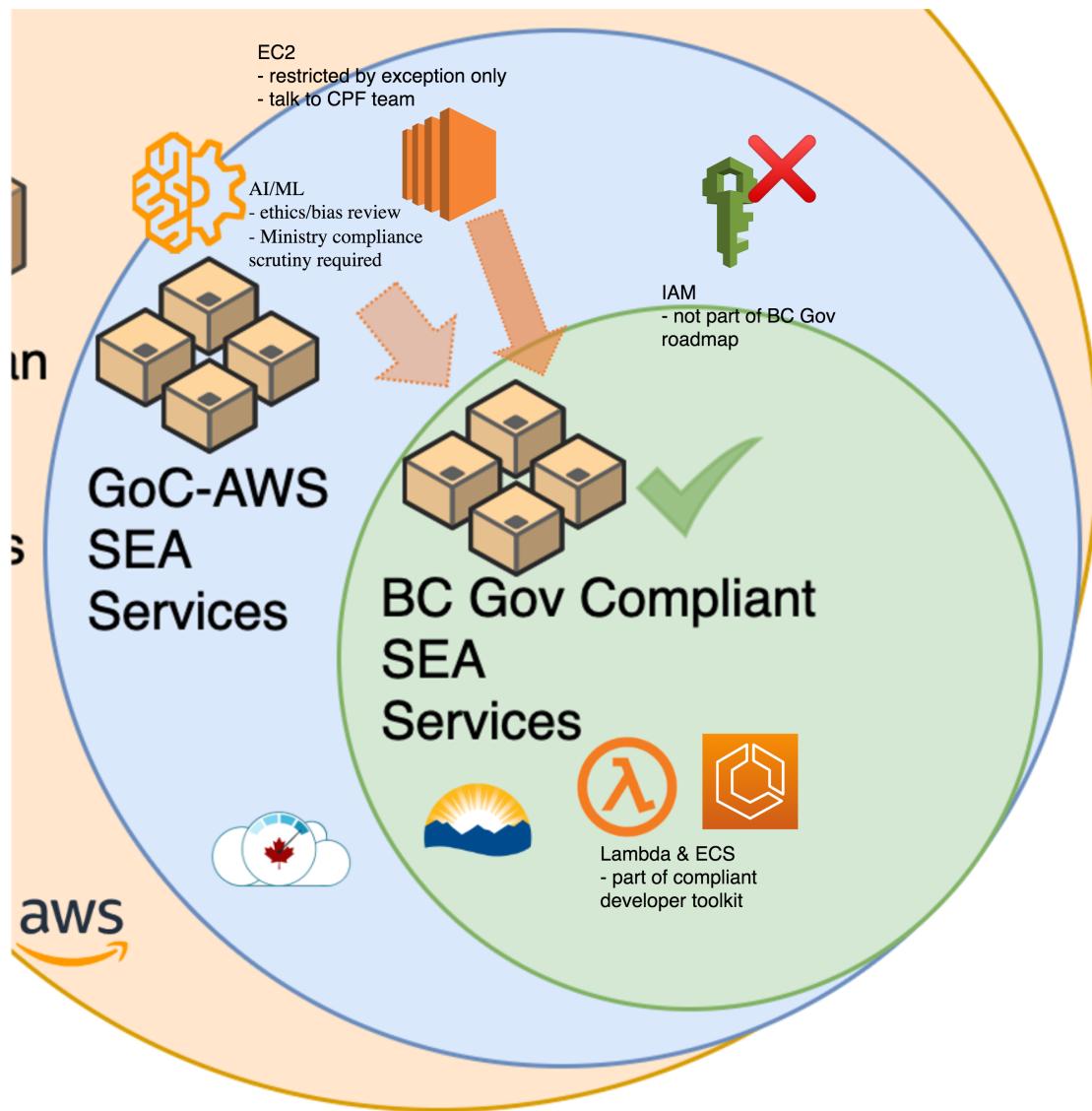


Figure 4: compliant services in aws

::: tip Acronyms

- **CPF**: Cloud pathfinder Team
- **ECS** = Elastic Container Service
- **EC2** = Elastic Compute Cloud/Virtual Machines
- **CSP** = Cloud Service Provider
- **Lambdas** = a serverless technology where code is run on CSP maintained servers, turned off when not in use
- **IAM** = Identity Access Management of users in the CSP
- **AI/ML** = Artificial Intelligence and Machine Learning Cloud services

:::

- We are aiming for a common service experience regardless of which cloud you are consuming in BC Gov.

2.3 SEA Future Growth

Depicted as follows is the growth of services in aws over time

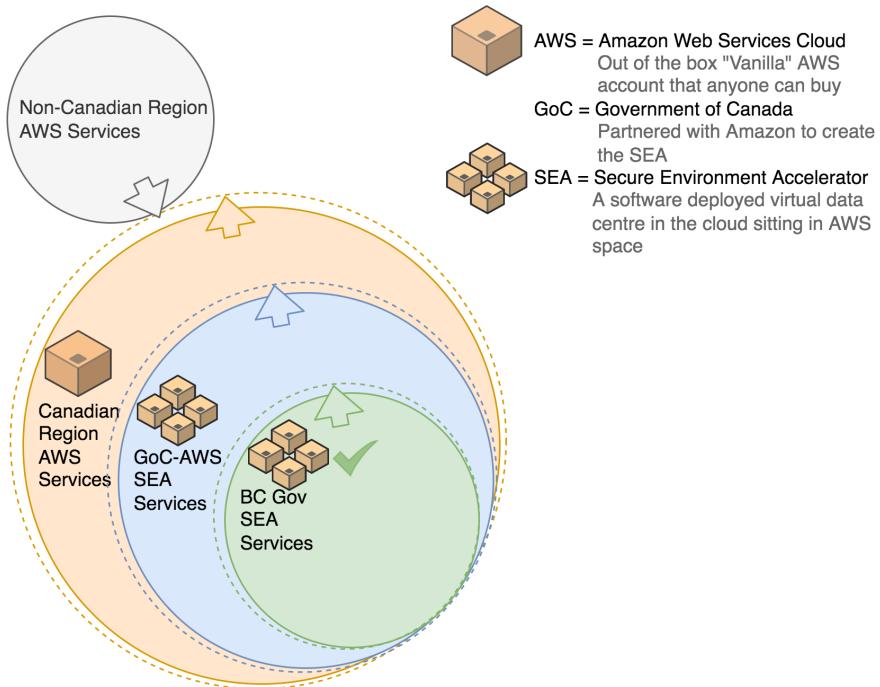


Figure 5: Future growth of AWS SEA

- Over time, regardless of the particular brand of the cloud, the number of services in the SEA available to BC Gov teams will go up and we expect the green set of services to mostly

overlap the blue.

2.4 Training Landscape

Below is the Training landscape for the AWS

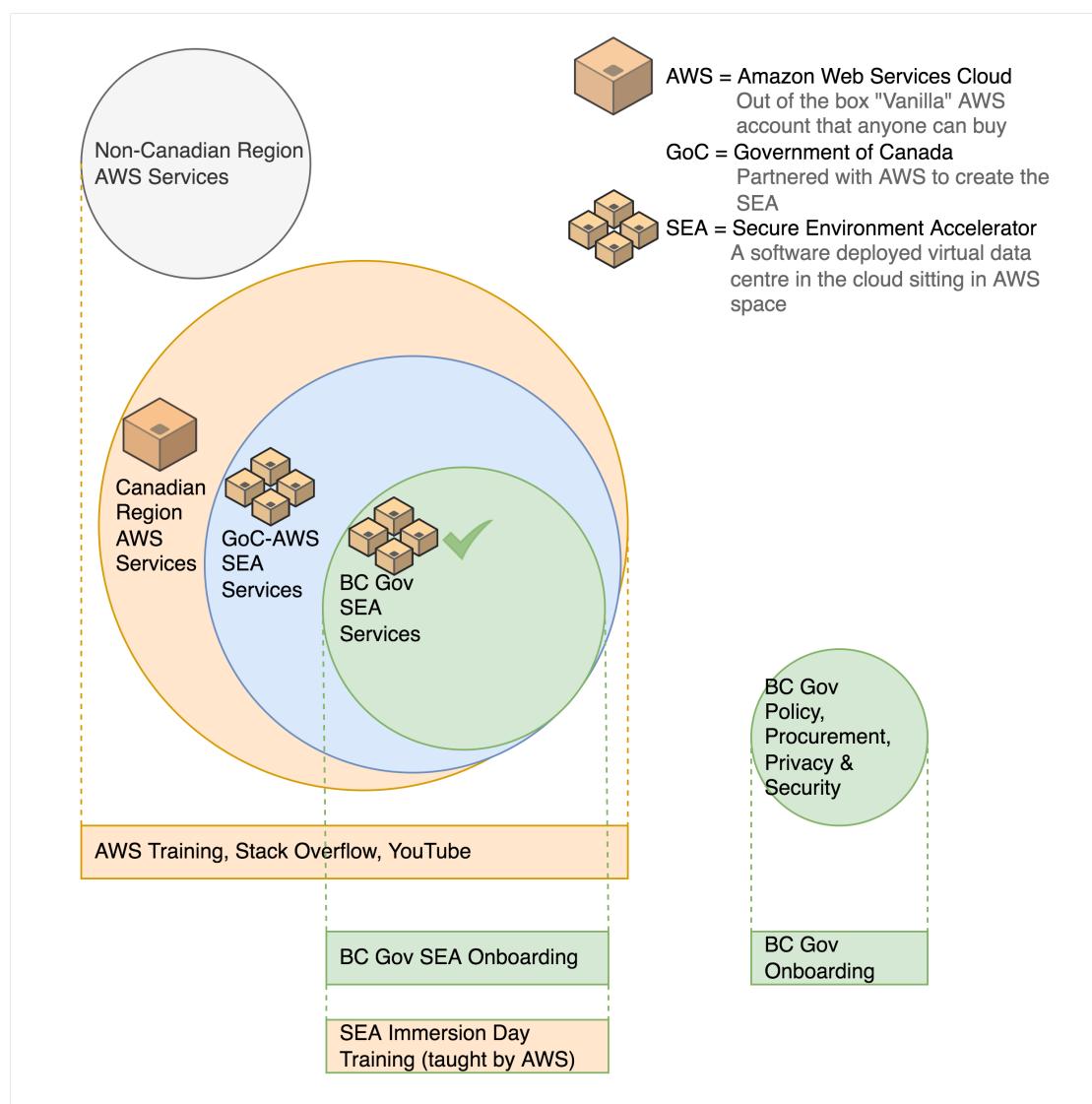


Figure 6: Trainig Landscape

2.5 Training Components

- AWS SEA Training Components

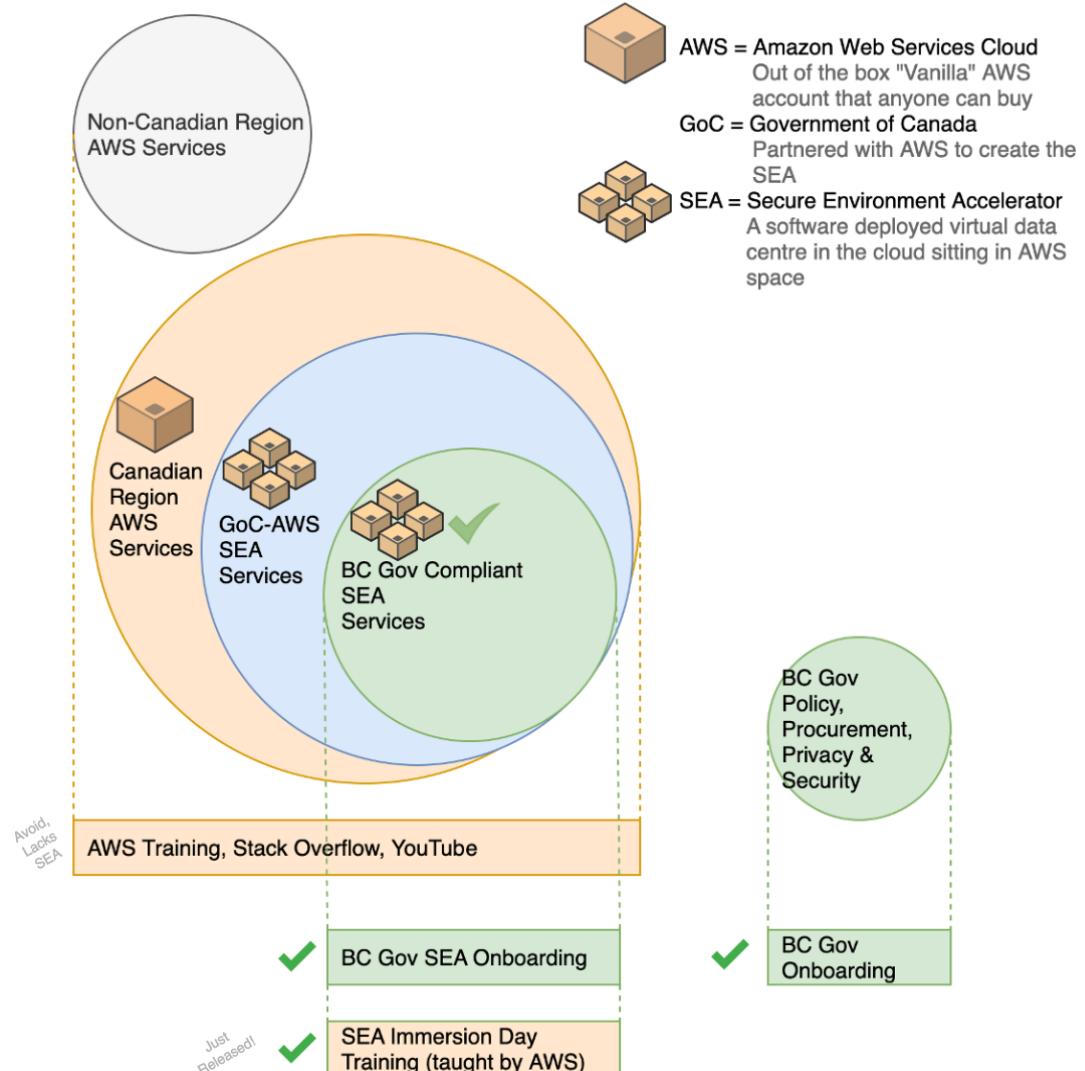


Figure 7: Training Components

- We see here that the training available online and from each Cloud Service Provider like AWS does not take into account the SEAs as these are very cutting-edge environments. Over time the training will catch up. For now, we have customized training so that teams do not get confused when the patterns they learned elsewhere do not function in the SEA. We show them equivalent, safe ways of operating in the SEA.

2.6 Training Track

- Training Track (all CSP pattern)

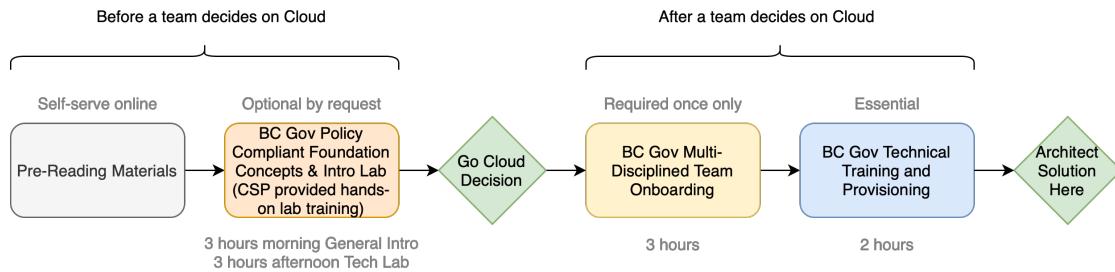


Figure 8: Trainig Track

2.7 Audience



Figure 9: people jumping into a swimming pool together

- POs, Devs and Compliance; group start
- Shared understanding from the beginning
- Journey together

3 Procurement Value Proposition

3.1 Negotiation of our First Service Order

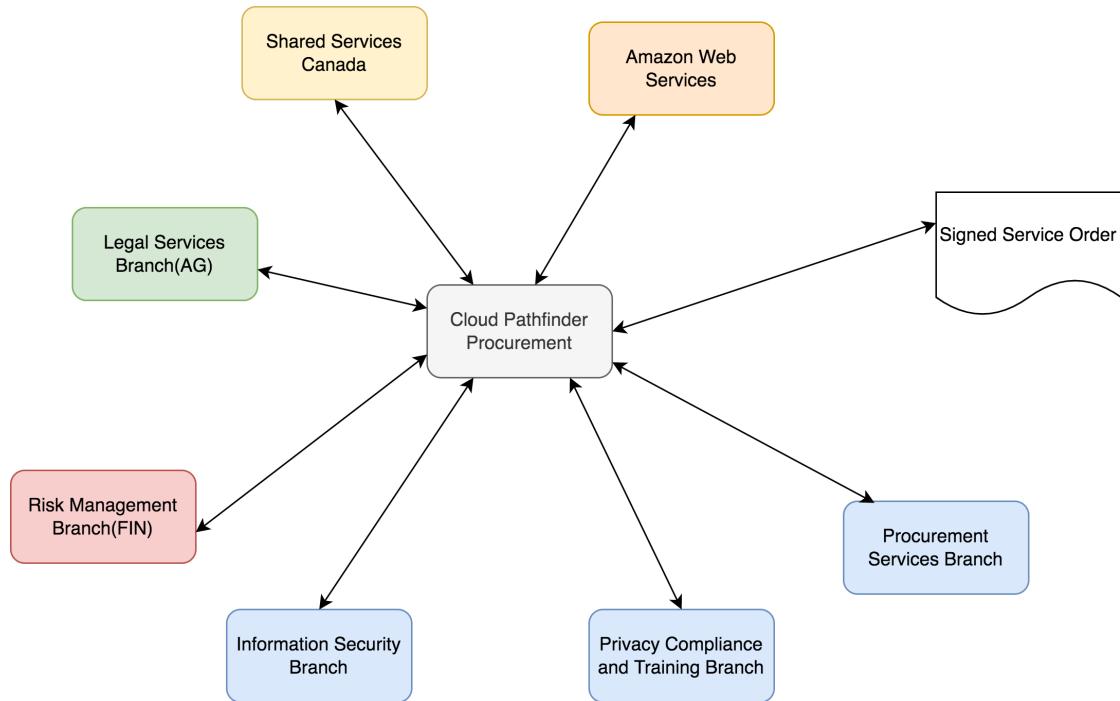


Figure 10: negotiation of our first service order

Actually it went more like this

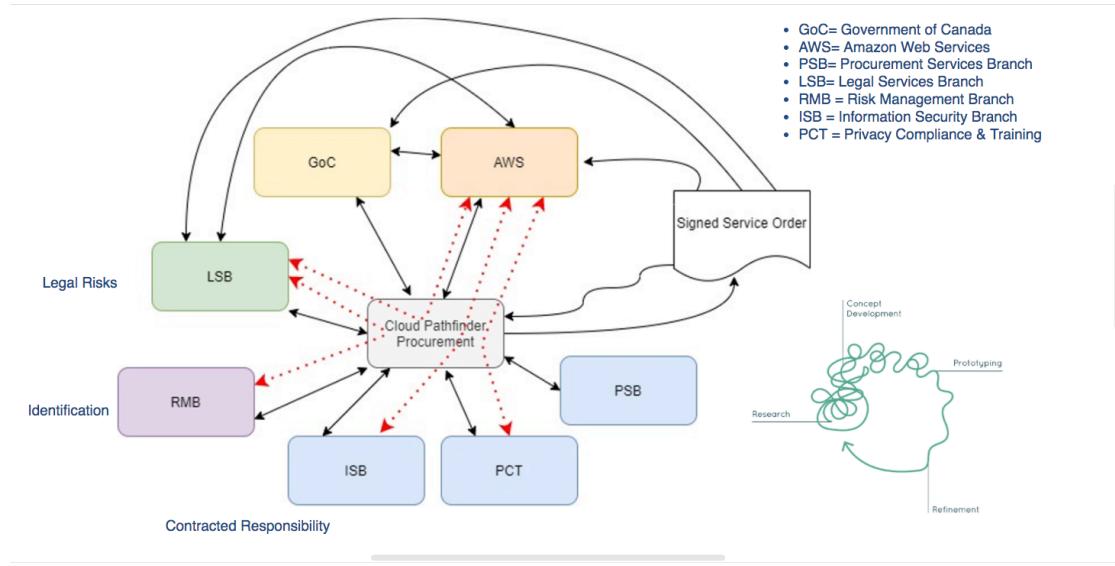


Figure 11: How it actually went

3.2 Procurement Value Add for Ministries

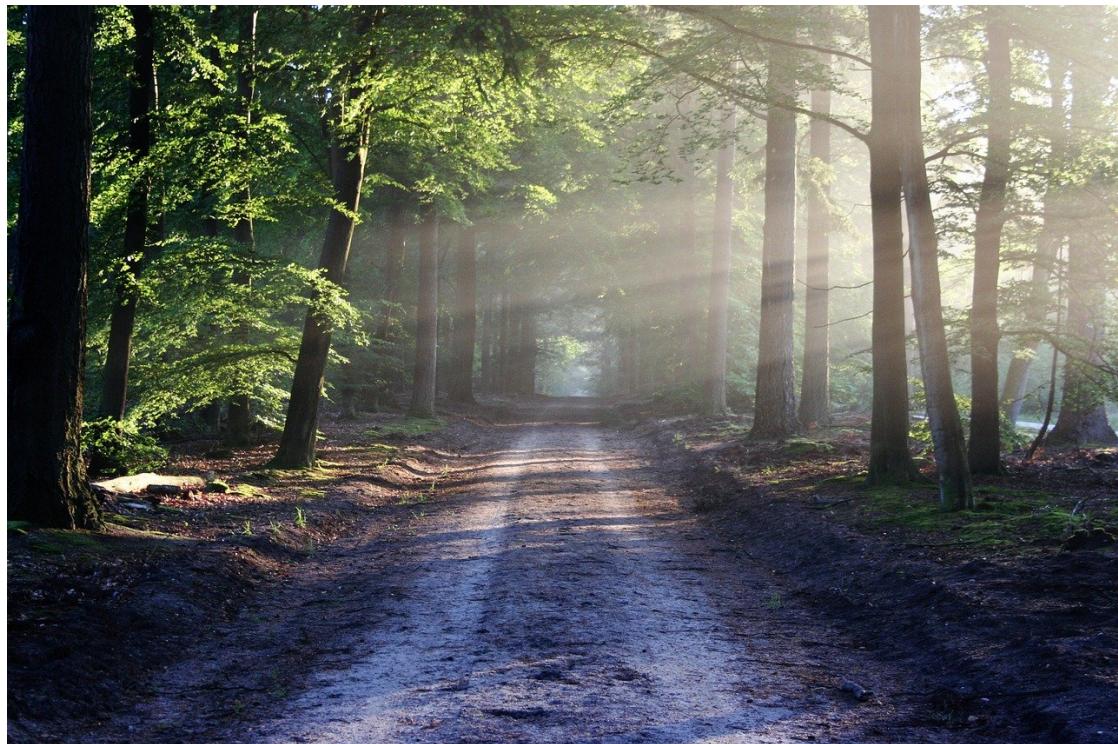


Figure 12: pathway in a forest with trees on either side

- Don't have to negotiate privacy, security, legal terms with vendors
- Don't have to dig into the cloud services
- Only need to focus on describing their project in the PIA and STRA

3.3 Cloud LifeCycle Value Add for Ministries

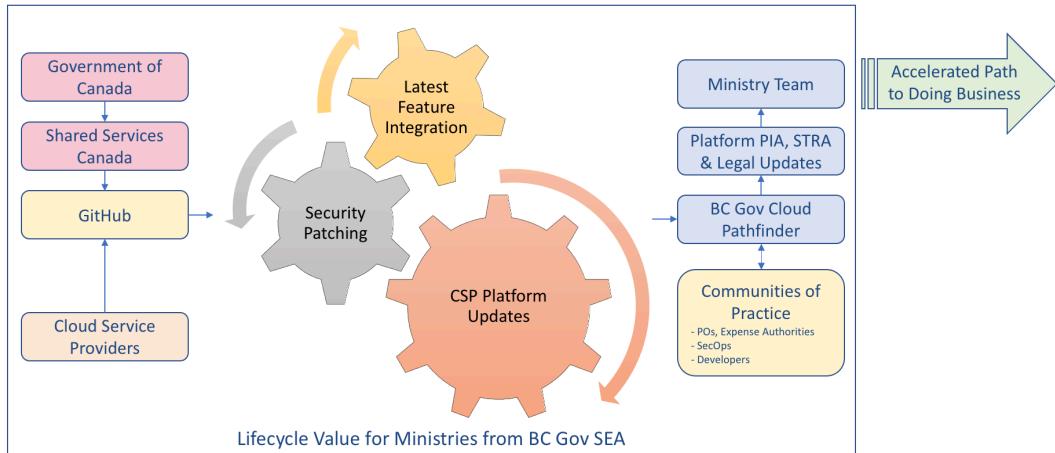


Figure 13: cloud value for ministries

4 Shared Responsibility Model

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                        <span style="font-family: open sans light; color: #214c87">Apply Financial</span>
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            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 228px; height: 100px">

```

```
<div style="box-sizing: border-box; font-size: 0px; text-align: center;">
    <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: rg
        <span style="font-family: open sans light; color: #214c87; font-size: 14px">Manage
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 269px; height
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Code Management (GitHub)
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 269px; height
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Build & Deploy Pipel
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Support app and any 3rd p
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Backup and restore</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">DR plan and test</span>
            </div>
        </div>
    </div>
</div>
```

```
</div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 208px; height: 100px; background-color: #e0e0e0; border-radius: 10px; margin: auto; font-size: 14px; color: #214c87; font-family: Helvetica; font-weight: bold; padding: 10px; border: 1px solid #214c87">
        <b>
            <span style="font-family: open sans light; color: #214c87" color="#214c87; font-size: 14px; font-weight: bold; border-bottom: 2px solid #214c87; padding-bottom: 2px; margin-bottom: 5px; display: inline-block; width: 150px; border-radius: 10px; border: 1px solid #214c87; background-color: #f0f0f0; text-decoration: none; text-align: center; line-height: 1.2; transition: all 0.3s ease-in-out; text-decoration: underline; text-decoration-color: #214c87; text-decoration-style: underline; text-decoration-width: 2px; text-decoration-position: under;">Regular cadence ofintroductions andRegular cadence ofRegular cadence ofRegular cadence ofintroductions andRegular cadence ofRegular cadence ofRegular cadence ofintroductions andRegular cadence ofRegular cadence ofRegular cadence ofRegular cadence ofRegular cadence ofintroductions andRegular cadence ofRegular cadence ofRegular cadence ofRegular cadence of
```

```
</div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 278px; height:>
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87; font-size: 14px">Establish
                <br style="color: rgb(33 , 76 , 135) ; font-family: open sans light ; font-size:>
                <span style="font-family: open sans light; color: #214c87; font-size: 14px">adminis
                <br style="color: rgb(33 , 76 , 135) ; font-family: open sans light ; font-size:>
                <span style="font-family: open sans light; color: #214c87; font-size: 14px">monit
                <br style="color: rgb(33 , 76 , 135) ; font-family: open sans light ; font-size:>
                <span style="font-family: open sans light; color: #214c87; font-size: 14px">audit
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: flex-start; width: 929px; he
        <div style="box-sizing: border-box; font-size: 0px; text-align: left;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">&ampnbsp Automate policy
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 277px; height:>
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">1st stage procurement,
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 598px; height:>
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Cloud Security and Pri
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 267px; height:>
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: rg
                <span style="font-family: open sans light; color: #214c87">Corporate PIA for clou
            </div>
        </div>
    </div>
</div>
```

```
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 267px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Corporate STRA for each
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Centralized logging</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Platform level incident</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">IM IT Policy and Standard</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 257px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: #214c87; font-size: 14px">
                <span style="font-family: open sans light; color: #214c87; font-size: 14px">Order
            </div>
        </div>
    </div>
</div>
</div>
```

```
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100px">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Manage catalogue(s) of products</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100px">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Develop library of services</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100px">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Corporate Services (like HR, Payroll, etc.)</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 268px; height: 100px">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87">
                <span style="font-family: open sans light; color: #214c87">Provide curated selection of products</span>
            </div>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 192px; height: 100px">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: #214c87">
                <b>
                    <span style="font-family: open sans light; color: #214c87">
                        <span style="font-family: open sans light; color: #214c87; font-size: 17px">Product A</span>
                        <span style="font-family: open sans light; color: #214c87; font-size: 17px">Product B</span>
                    </span>
                </b>
            </div>
        </div>
    </div>
</div>
```

```
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 126px; height: 100%">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: rg">
                <b>
                    <span style="font-family: open sans light; color: #214c87; font-size: 12px; w">
                </b>
            </div>
        </div>
    </div>
</div>
<div style="visibility: visible; margin-top: 0.5px; margin-left: 0.5px; height: 100%; width: 100%">
    <div style="height: 180px; width: 210px; background-color: #e1d5e7; margin-top: 862px; margin-left: 0.5px; height: 180px; width: 299px; background-color: #e1d5e7; margin-top: 862px; margin-left: 0.5px; height: 180px; width: 299px; background-color: #e1d5e7; margin-top: 862px; margin-left: 0.5px; height: 180px; width: 299px; background-color: #e1d5e7; margin-top: 862px; margin-left: 0.5px; height: 180px; width: 270px; background-color: #f0f0f0; margin-top: 885px; margin-left: 0.5px; height: 54px; width: 270px; background-color: #f0f0f0; margin-top: 946px; margin-left: 0.5px; height: 54px; width: 273.75px; background-color: #f0f0f0; margin-top: 885px; margin-left: 0.5px; height: 61px; width: 273.75px; background-color: #f0f0f0; margin-top: 946px; margin-left: 0.5px; height: 20.5px; width: 247.5px; background-color: #f0f0f0; margin-top: 902px; margin-left: 0.5px; height: 20.5px; width: 247.5px; background-color: #f0f0f0; margin-top: 922.5px; margin-left: 0.5px; height: 20.5px; width: 247.5px; background-color: #f0f0f0; margin-top: 943px; margin-left: 0.5px; height: 56px; width: 247.5px; background-color: #f0f0f0; margin-top: 971.5px; margin-left: 0.5px; height: 100%; width: 100%; position: absolute;">

```

```
<div style="display: flex; align-items: center; justify-content: center; width: 192px; height: 100%; position: absolute; left: 0; top: 0; right: 0; bottom: 0; margin: auto; font-family: open sans light; color: #214c87">
    <div style="display: flex; align-items: center; justify-content: center; width: 100%; height: 100%; margin: auto; font-family: open sans light; color: #214c87; font-size: 14px; font-weight: bold; border: 1px solid #214c87; padding: 10px; border-radius: 10px; text-align: center; background-color: white; transition: all 0.3s ease-in-out">
        <b>
            <span style="font-family: open sans light; color: #214c87">
                <span style="font-family: open sans light; color: #214c87; font-size: 17px; margin-right: 10px">Provide tools for monitoring and alerting</span>
                <span style="font-family: open sans light; color: #214c87; font-size: 17px; margin-right: 10px">Offer a selection of pre-built security controls</span>
                <span style="font-family: open sans light; color: #214c87; font-size: 17px; margin-right: 10px">Security (including patch management)</span>
                <span style="font-family: open sans light; color: #214c87; font-size: 17px; margin-right: 10px">Compliance with industry standards</span>
            </span>
        </b>
    </div>
</div>
```

```
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 178px; height: 100px; margin-left: 10px;">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 12px; font-family: Helvetica; color: #214c87; margin-bottom: 5px;">Data</div>
            <span style="font-family: open sans light; color: #214c87; font-size: 14px">Data</span>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 246px; height: 100px; margin-left: 10px;">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87; margin-bottom: 5px;">Compute</div>
            <span style="font-family: open sans light; color: #214c87">Compute</span>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 246px; height: 100px; margin-left: 10px;">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87; margin-bottom: 5px;">Storage</div>
            <span style="font-family: open sans light; color: #214c87">Storage</span>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 246px; height: 100px; margin-left: 10px;">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87; margin-bottom: 5px;">Network</div>
            <span style="font-family: open sans light; color: #214c87">Network</span>
        </div>
    </div>
</div>
<div style="overflow: visible; text-align: left; height: 100%; width: 100%; position: absolute;">
    <div style="display: flex; align-items: center; justify-content: center; width: 248px; height: 100px; margin-left: 10px;">
        <div style="box-sizing: border-box; font-size: 0px; text-align: center;">
            <div style="display: inline-block; font-size: 14px; font-family: Helvetica; color: #214c87; margin-bottom: 5px;">Hardware Infrastructure</div>
            <span style="font-family: open sans light; color: #214c87">Hardware Infrastructure</span>
        </div>
    </div>
</div>
</div>
```

5 Providing an SEA Service

5.1 The SEA is non-trivial

- There is a lot of complexity that is simplified by Cloud Pathfinder providing SEA as a service to Ministries
- Several thousand dollars per month to run empty
- Requires a full-time highly-skilled team to stay on top of it

The Below Images shows the Complexity of the SEA

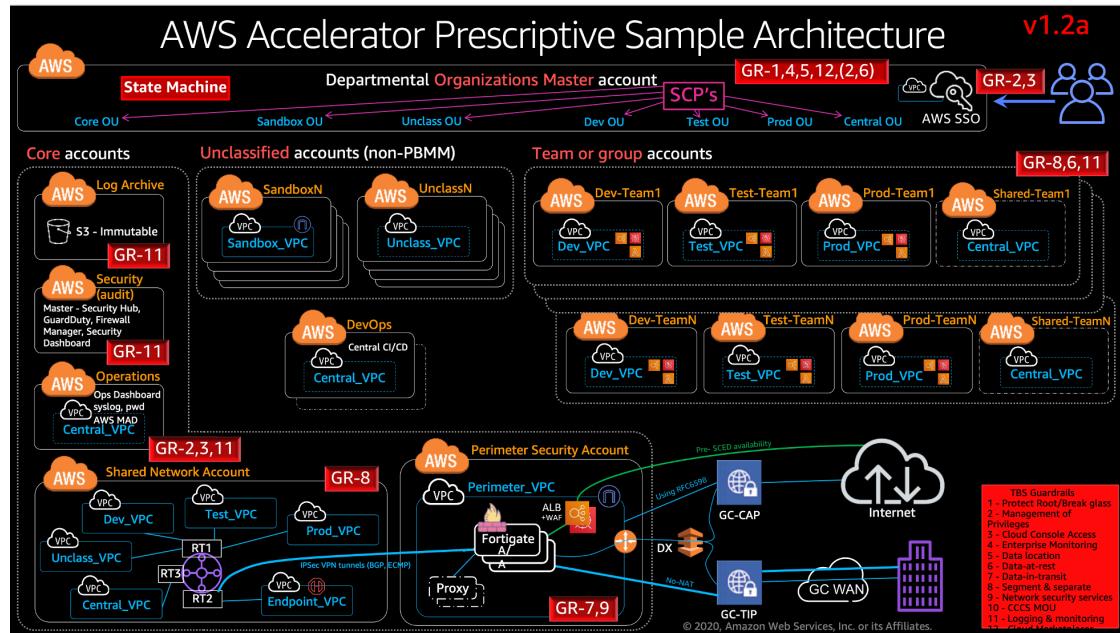


Figure 14: The SEA Architecture

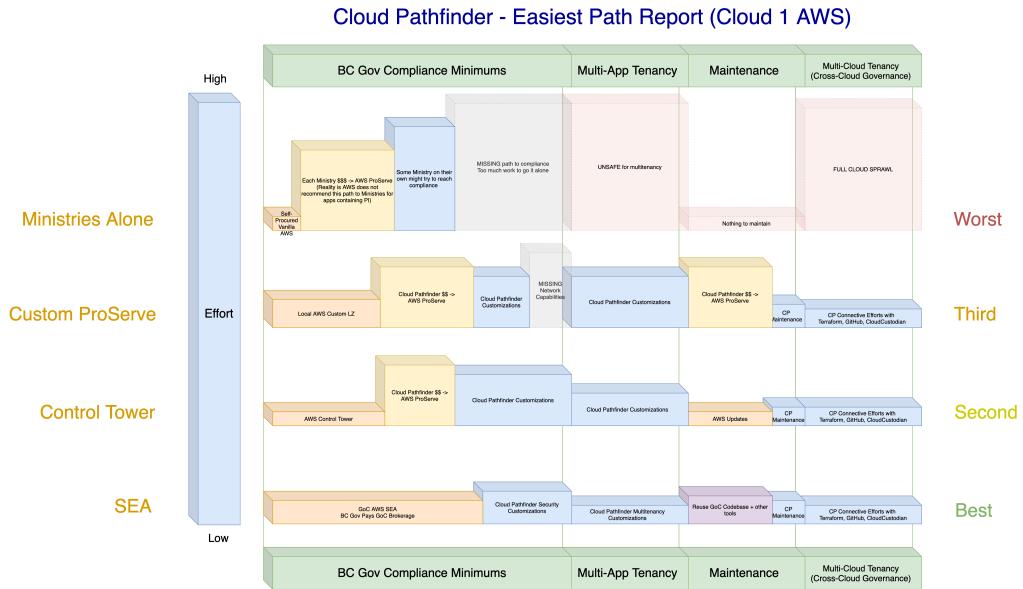


Figure 15: Cloud pathfinder easiest path report

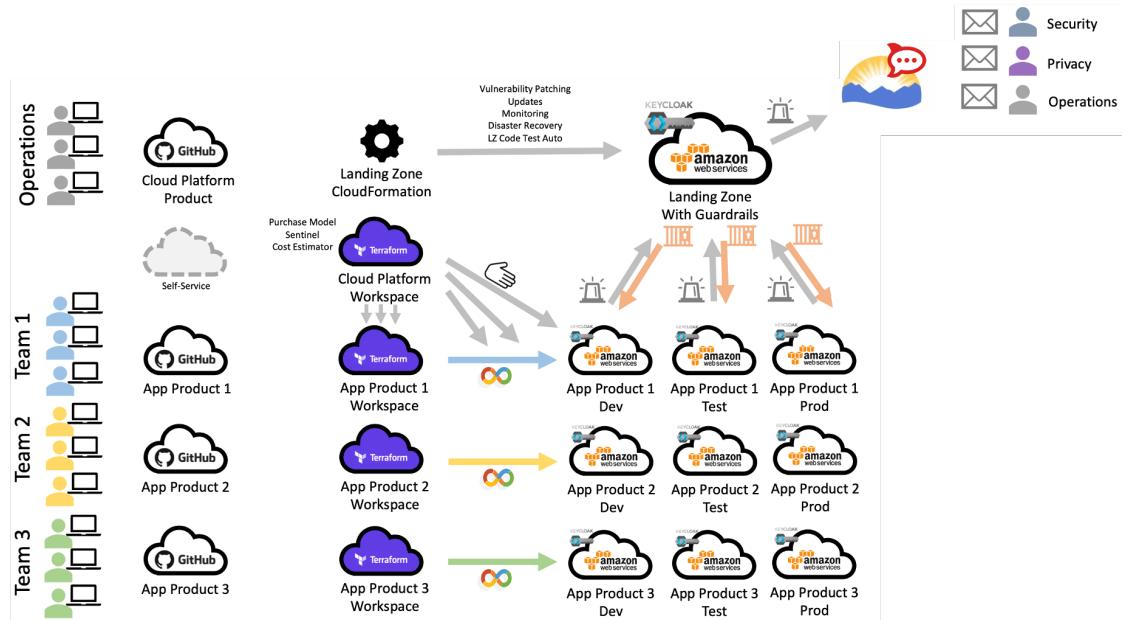


Figure 16: BC Gov AWS Early version

- AWS calls this a “Lightweight Landing Zone”

- Product Custom built by AWS Professional Services “ProServe”

5.2 BC Gov AWS SEA

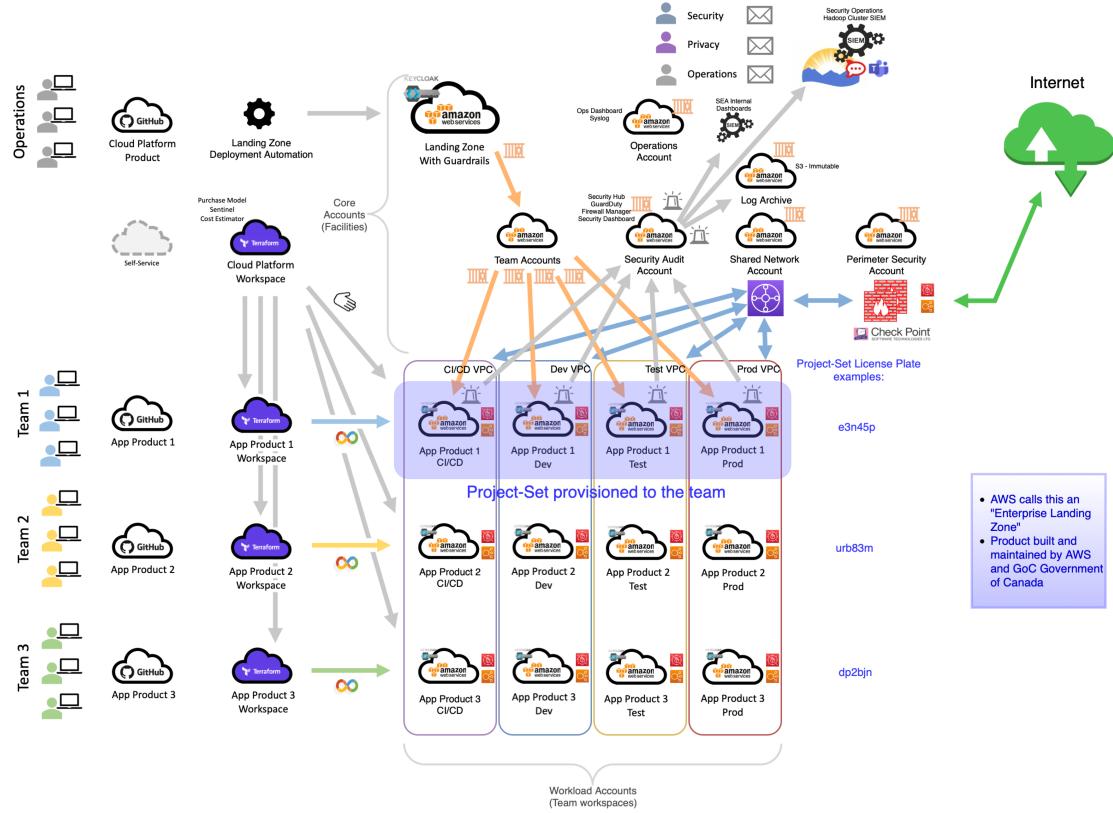


Figure 17: BC Gov AWS SEA

- AWS calls this an “Enterprise Landing Zone”
- Product built & maintained by AWS and GoC Government of Canada

6 Billing

6.1 Billing Examples T-Shirt Estimate Scenario 1 - Small

! Usage based Expense may increase or decrease

| AWS Services | Metrics | Estimated Expense / Month |
|-------------------------------|--------------------------------|---------------------------|
| Traffic | 25 Visitors a day | |
| Amazon Simple Storage Service | 80 GB | \$ 2.00 |
| Elastic Load Balancer | 300KB/second/client connection | \$ 25.00 |
| CloudPathfinder | | 30 |

| AWS Services | Metrics | Estimated Expense / Month |
|-------------------------------------|--|---------------------------|
| Amazon DynamoDB | 1 GB, 1 million requests | \$ 4.00 |
| Elastic Container Service - Fargate | 1 container deployed twice, each 2 vCPU, 4GB | \$ 48.39 |
| Data Transfer Out | 50 GB | \$ 4.50 |
| Amazon CloudWatch Logs | 50 GB | \$ 28.00 |
| AWS SEA Services(*) | Amazon GuardDuty, AWS Config, KMS | \$ 40.00 |
| Estimated Monthly Total | - | \$ 129.14 |

- ALB: 1.08GB/hr, 25connections/sec, 2min duration,1 request per second
- Factor in backups, cold storage, dev & test environments which will increase costs depending on how far a team chooses to implement.

6.2 Billing Examples T-Shirt Estimate Scenario 2 - Medium

! Usage based Expense may increase or decrease

| AWS Services | Metrics | Estimated Expense / Month |
|-------------------------------------|--|---------------------------|
| Traffic | 250 Visitors a day | |
| Amazon Simple Storage Service | 800 GB | \$ 20.00 |
| Elastic Load Balancer | 300KB/second/client connection | \$ 88.00 |
| Amazon DynamoDB | 10 GB, 10 million requests | \$ 18.00 |
| Elastic Container Service - Fargate | 3 container deployed twice, each 2 vCPU, 4GB | \$ 145.16 |
| Data Transfer Out | 500 GB | \$ 45.00 |
| Amazon CloudWatch Logs | 500 GB | \$ 278.00 |
| AWS SEA Services(*) | Amazon GuardDuty, AWS Config, KMS | \$ 40.00 |
| Estimated Monthly Total | - | \$ 634.16 |

- ALB: 10.8gb/hr, 250connections/sec, 2min duration,10 request per second
- Factor in backups, cold storage, dev & test environments which will increase costs depending on how far a team chooses to implement.

6.3 Billing Examples T-Shirt Estimate Scenario 3 - Large

! Usage based Expense may increase or decrease

| AWS Services | Metrics | Estimated Expense / Month |
|-------------------------------------|--|---------------------------|
| Traffic | 2500 Visitors a day | |
| Amazon Simple Storage Service | 8,000 GB | \$ 200.00 |
| Elastic Load Balancer | 300KB/second/client connection | \$ 712.00 |
| Amazon DynamoDB | 100 GB, 100 million requests | \$ 178.00 |
| Elastic Container Service - Fargate | 3 container deployed twice, each 2 vCPU, 4GB | \$ 145.16 |
| Data Transfer Out | 5000 GB | \$ 450.00 |
| Amazon CloudWatch Logs | 5000 GB | \$ 2,775.00 |
| AWS SEA Services(*) | Amazon GuardDuty, AWS Config, KMS | \$ 40.00 |
| Estimated Monthly Total | - | \$ 4,500.16 |

- ALB: 10.8gb/hr, 250connections/sec, 2min duration,10 request per second
- Factor in backups, cold storage, dev & test environments which will increase costs depending on how far a team chooses to implement.

6.4 Custom Cost Examples ?

Yes!

- AWS Pricing Calculator

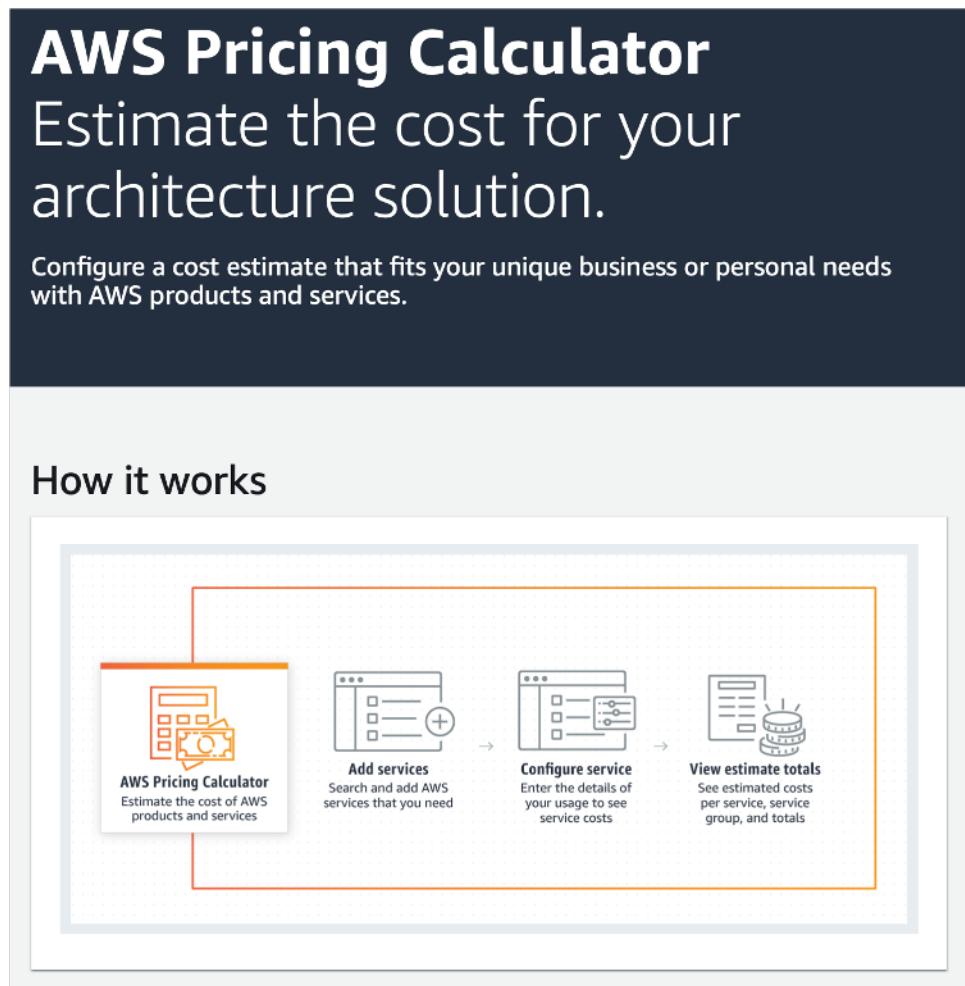


Figure 18: Screen Shot of the AWS Price Calculator page

- Use AWS Pricing Calculator for now

6.5 Billing Process Example

- These are samples of periodic billing report files we generate for Ministry teams

| A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|------|-------|----------------------------|----------------|----------|---------------|-------------|---------------|------------|-------------|------------------------|------------------------------------|-----------------------|----------|
| year | month | line_item_usage_account_id | Account_Name | Project | License_Plate | Environment | Billing_Group | Owner_Name | Owner_Email | line_item_product_code | product_product_name | line_item_billed_cost | CAD |
| 1 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSCloudTrail | AWS CloudTrail | \$0.25 | \$0.32 |
| 2 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSServiceCatalog | AWS Service Catalog | \$1.00 | \$124.48 |
| 3 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSLambda | Amazon Lambda | \$18.39 | \$23.35 |
| 4 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSLambda | AWS Lambda | \$0.14 | \$0.17 |
| 5 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSecretsManager | Amazon Secrets Manager | \$0.00 | \$0.10 |
| 6 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSecretsManager | Amazon Secrets Manager | \$0.81 | \$1.03 |
| 7 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSecurityHub | AWS Security Hub | \$0.74 | \$9.83 |
| 8 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.00 | \$0.00 |
| 9 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.25 | \$0.32 |
| 10 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AWSSysLog | Amazon CloudWatch Metrics | \$0.08 | \$0.10 |
| 11 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonCloudWatch | Amazon CloudWatch | \$0.08 | \$0.10 |
| 12 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonGuardDuty | Amazon GuardDuty | \$1.75 | \$4.76 |
| 13 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonKinesis | Amazon Kinesis | \$0.25 | \$0.32 |
| 14 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonRDS | Amazon Relational Database Service | \$12.67 | \$16.09 |
| 15 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonS3 | Amazon Simple Storage Service | \$0.01 | \$0.01 |
| 16 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | AmazonSNS | Amazon Simple Notification Service | \$0.00 | \$0.00 |
| 17 | 2022 | 1 | xgrDqg-dev | SSO Team | xgrDqg | dev | SSD | | | awslogs | AWS X-Ray Management Service | \$0.01 | \$0.02 |
| 18 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSCloudTrail | AWS CloudTrail | \$0.24 | \$0.31 |
| 19 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSServiceCatalog | AWS Service Catalog | \$0.77 | \$1.23 |
| 20 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSLambda | AWS Lambda | \$0.00 | \$0.00 |
| 21 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSSQS | Amazon Simple Queue Service | \$0.00 | \$0.00 |
| 22 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.83 | \$1.04 |
| 23 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSSecurityHub | AWS Security Hub | \$4.58 | \$10.89 |
| 24 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.00 | \$0.00 |
| 25 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonAPIGateway | Amazon API Gateway | \$0.00 | \$0.00 |
| 26 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonCloudWatch | Amazon CloudWatch | \$0.00 | \$0.11 |
| 27 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonEC2 | Amazon Elastic Compute Cloud | \$17.15 | \$47.18 |
| 28 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonGuardDuty | Amazon GuardDuty | \$34.44 | \$44.37 |
| 29 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonKinesis | Amazon Kinesis | \$0.25 | \$0.32 |
| 30 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonRDS | Amazon Relational Database Service | \$0.34 | \$0.43 |
| 31 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonS3 | Amazon Simple Storage Service | \$0.11 | \$0.15 |
| 32 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | AmazonSQS | Amazon Simple Queue Service | \$0.00 | \$0.00 |
| 33 | 2022 | 1 | xgrDqg-sandbox | SSO Team | xgrDqg | sandbox | SSD | | | awslogs | AWS X-Ray Management Service | \$3.11 | \$3.95 |
| 34 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSCloudTrail | AWS CloudTrail | \$0.24 | \$0.30 |
| 35 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSServiceCatalog | AWS Service Catalog | \$13.50 | \$14.72 |
| 36 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSLambda | Amazon Lambda | \$18.39 | \$23.35 |
| 37 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSSQS | Amazon Simple Queue Service | \$0.08 | \$0.11 |
| 38 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.00 | \$0.00 |
| 39 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSSecurityHub | AWS Security Hub | \$0.91 | \$1.03 |
| 40 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.00 | \$0.00 |
| 41 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AWSSystemsManager | AWS Systems Manager | \$0.00 | \$0.00 |
| 42 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonAPIGateway | Amazon API Gateway | \$0.25 | \$0.32 |
| 43 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonCloudWatch | Amazon CloudWatch | \$0.05 | \$0.06 |
| 44 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonGuardDuty | Amazon GuardDuty | \$3.49 | \$4.44 |
| 45 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonKinesis | Amazon Kinesis | \$0.25 | \$0.32 |
| 46 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonRDS | Amazon Relational Database Service | \$10.69 | \$13.58 |
| 47 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonS3 | Amazon Simple Storage Service | \$0.01 | \$0.01 |
| 48 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | AmazonDNS | Amazon Simple Notification Service | \$0.00 | \$0.10 |
| 49 | 2022 | 1 | xgrDqg-prod | SSO Team | xgrDqg | prod | SSD | | | awslogs | AWS X-Ray Management Service | \$0.01 | \$0.02 |

Figure 19: sample monthly billing report

7 Communities of practice

7.1 Value of Communities

- A strong community will
 - Provide an answer before the platform team can
 - * Operational cost savings
 - * Faster Service turnarounds
 - Self-organize to co-create reusable artifacts
 - * Reduce duplication and one-offs
 - * Lighten application maintenance lifecycle requirements
 - Create Stewards
 - * Early adopters become Influencers
 - * Influencers become Stewards

7.2 Customer Focus – 3 CoPs

::: tip Acronyms

- **OCIO** = Office of the Associate Deputy Minister and Government Chief Information Officer
- **CoP** = Community of Practise
- **SecOps** = OCIO Security Operations Team
- **MISO** = Ministry Information Security Officer, embedded as part of the developer team
- :::
- Our Customers: Project Managers / Product Owners / Expense Authorities

- Our Users: Developer Teams
- Compliance Users: Security Operations OCIO, MISOs

7.3 Service Design Customer Focus

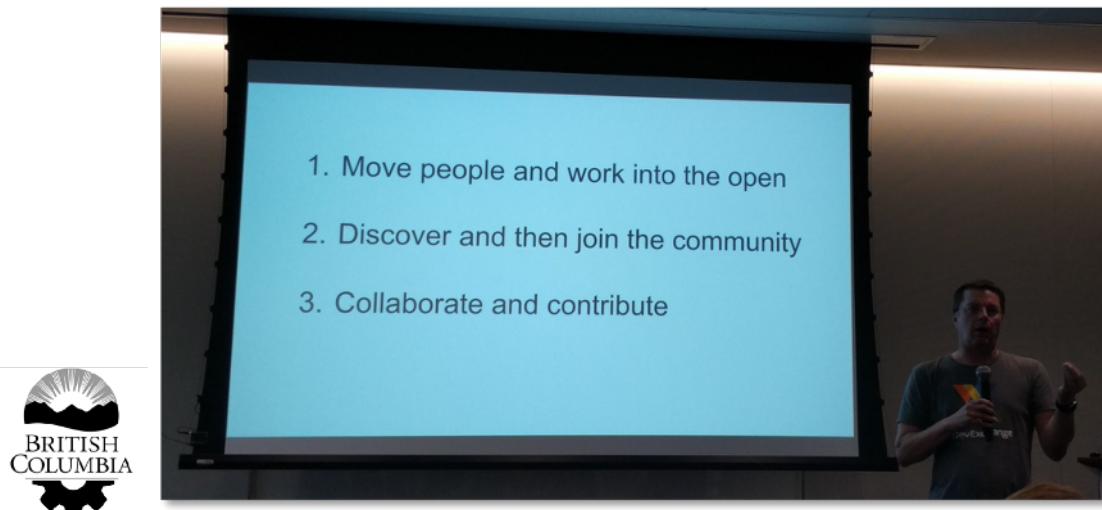
:: tip Acronyms - **UX**: User Experience experts - **SD**: Service Designer :::

- UX / SD engage with 3 Customer/Users groups
 - Gain deep understanding of needs, workflows, pain points
 - Create tickets from this work prioritizing needs
 - Focus on delivery time
 - * Self-serve or fast turnaround
 - * Reliability
 - * Tools teams need

7.4 Strong Communities in BC Gov

- Devops Commons





- Features
 - Every 2 Months
 - History from 2016 onwards
 - Community Focused
 - Daily Open Participation
- Promotes
 - Collaboration on Shared efforts
 - Networking across silos
 - Best practices via Stewards

7.5 Focus of Teams and Rocket Chat

Focus on Teams

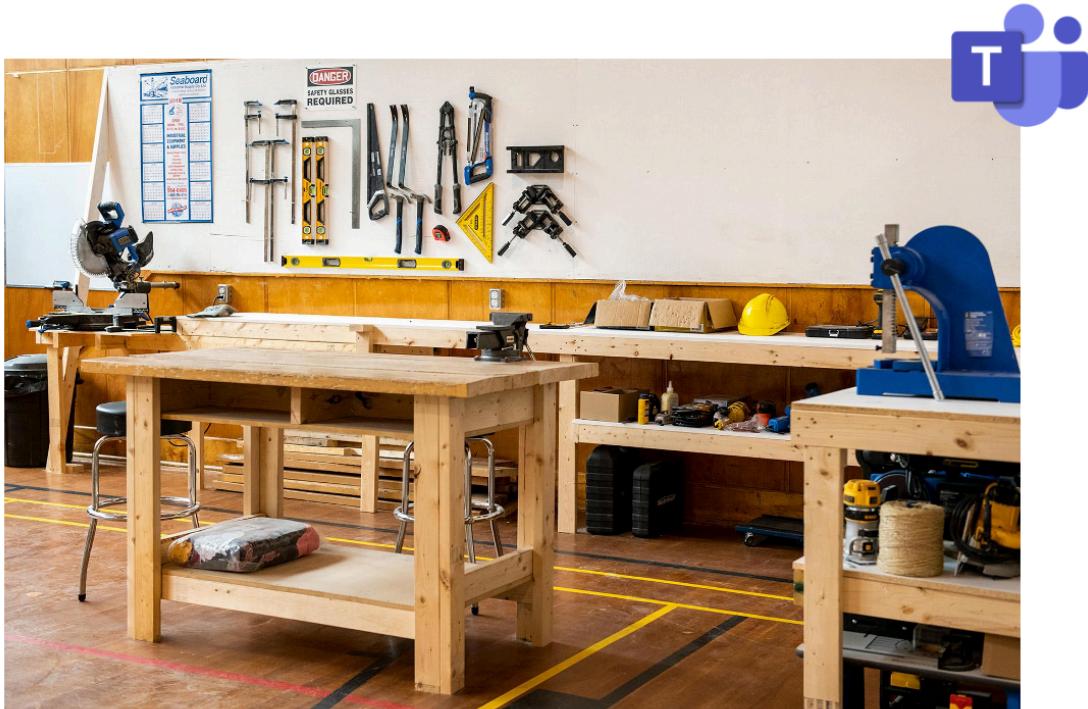


Image credit to www.mikewashburn.net/blog/2020/2/19/but-what-are-you-making

Figure 20: image of microsoft teams

- Teams
 - “The Workshop”, it
 - * Internally connects team
 - * Eases conferencing out
 - * Is focused primarily on
 - Leadership
 - Scrum Masters
 - Employees

Focus of RocketChat

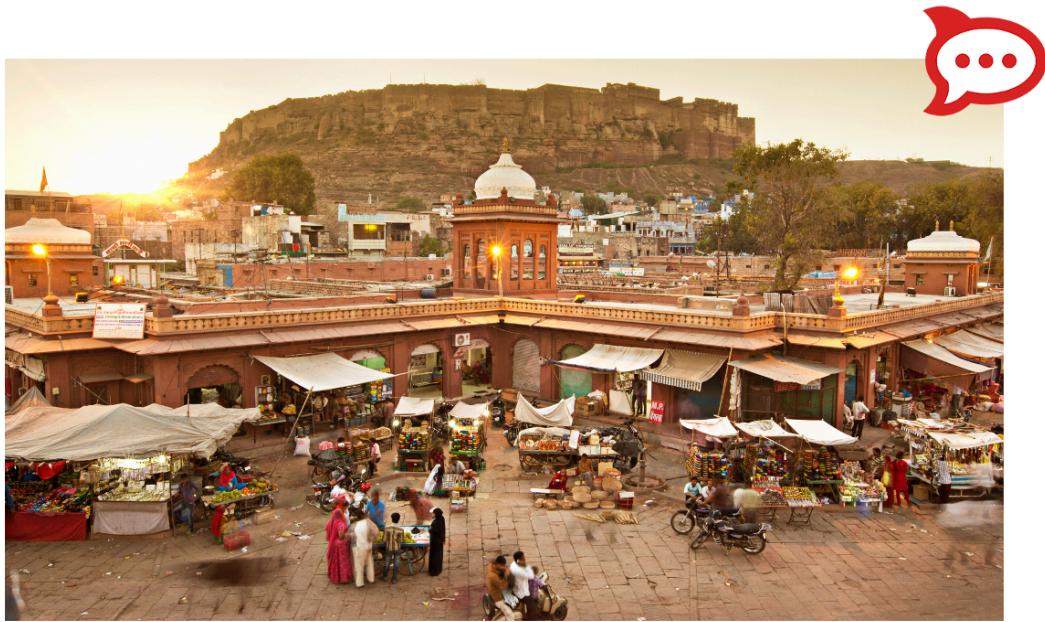


Image credit to placetovisit.city/places-in-jodhpur

Figure 21: image of rocketchat

- RocketChat
 - “The Bazaar”, and just like OCIO Connect, it
 - * Connects People
 - * Highlights Best Practices
 - * Is Inclusive
 - Contractors
 - vendors
 - Leadership
 - Scrum Masters
 - Employees

Recommend Both!



Image credit to [Creative Commons](#)

Bazaar Frontage with Workshops

Figure 22: image of rocket chat

- Bazaars and Workshops
 - Together both provide team's collaboration space and access to community
 - Allows others to find your team and modern video call meetings

A Teams platform



Figure 23: logo of microsoft teams

A Community platform



Figure 24: Rocket chat logo

- Cloud Pathfinder is available on both
- Cloud Pathfinder Rocket chat channel : aws-lz2

8 Service Levels

- Cloud Pathfinder Service Levels
 - Provide training for teams
 - Provision new team members (0.5 business day turnaround)
 - Facilitate and respond to open and private support channels
 - Connect vendor support (cut through vendor complexity)
 - Review and include new requests for cloud components (usually 3 week turnaround)
 - Provide clear billing in multi-tenancy
 - Remove overhead of offboarding contractors or departing employees (IDIR gone? AWS gone!)

9 Demo

- Demo of Authentication to AWS
 - Showing lack of users to manage
 - Make your life easy to not have to delete users

10 Questions ?



Figure 25: image for questions and answers

- *This is where we would normally have a discussion if we were doing a live session



Figure 26: logo called Cloud Pathfinder

11 Overview

Welcome to the Cloud Pathfinder Pre-Reading Material which is the information Pack for BC Gov Ministry Teams Considering Cloud.

Today we will go over the below topics

- About BC Gov Cloud
- SEA at BC Gov
- Procurement Value Proposition
- Shared Responsibility
- Providing an SEA service
- Billing
- Communities of Practice
- Service Levels
- Demos
- Questions & Answers