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PROJECT

**Migration to Elastic
Container Service on
AWS**

For
PT Modern Data Solusi

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About eCloudvalley

eCloudvalley is a born-in-the-cloud Premier Consulting Partner of AWS that focuses on providing a complete AWS cloud service specializing in next generation managed services, cloud migrations, and data and analytics. We are 100% focused on AWS and we have over 500+ AWS certifications in the company. We have successfully designed, implemented, and delivered thousands of cloud initiatives for over 1,000+ customers and in partnership with over 50+ System Integrators across the APAC region.

AWS recognizes eCloudvalley with the competencies below:

The image displays a grid of AWS Partner Network (APN) competency badges. The top row features three large, prominent badges: 'AWS Premier Consulting Partner' (noting it as the 1st partner in the Global and APAC Region), 'Migration Competency' (noting it as an AWS MAP Partner and MSA with AWS), and 'Data & Analytics Competency' (noting 60+ Big Data and Machine Learning certifications and 50+ customer deployments). Below these are two rows of smaller badges. The second row includes: 'MSP Partner', 'Well Architected', 'SAP Competency', 'Security Competency', 'DevOps Competency', 'IoT Competency', 'Mobile Competency', and 'APN Training Partner'. The third row lists the corresponding competency names: 'AWS Audited Managed Services Provider', 'Well Architected Competency', 'SAP Competency', 'Security Competency', 'AWS DevOps Competency', 'IoT Competency', 'Mobile Competency', and 'AWS Authorized Training Partner'.

Our team of experts are committed to helping your business launch successful cloud initiatives to accelerate go-to-market, automate and strengthen security, increase stakeholder value, improve customer experiences, lower costs, and create an end-to-end digital transformation journey with you.



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1. Document Revision History

Date & Version	Summary	Remarks
19 th April 2024 V1.0	Initial	-

2. Customer Requirements

This project proposal outlines the suggested set up and estimated costs for Migration to Elastic Container Service on AWS Project across best practices and proven methodology of eCloudvalley.

Under this SOW, eCloudvalley will help and advice for Migration to Elastic Container Service on AWS Project.

3. Proposed Architecture

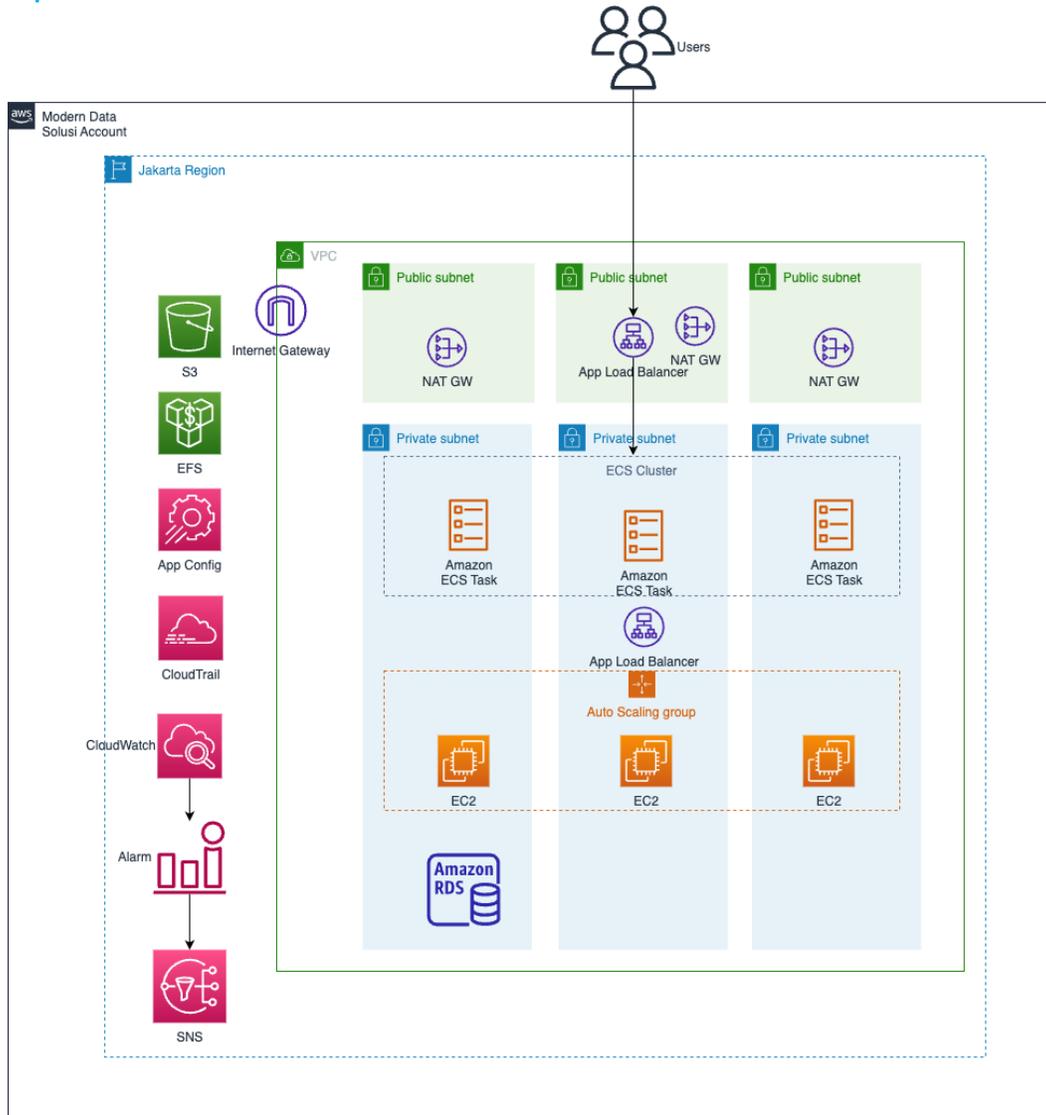


Figure: AWS Proposed Architecture

Please note that above AWS infrastructure design does not follow AWS Well-Architected Framework, which is the architectural best practices for designing and operating reliable, secure, efficient, and cost-effective systems in AWS.



4. Assumptions

- PT Modern Data Solusi to build their Cloud Center of Excellence (CCoE) team to participate actively in the migration,
- AWS Resources will be provisioned in Jakarta region,
- AWS Accounts access will be given,
- Code is stored in GitLab/github or Code Commit repositories that accessible from AWS env,
- OS for EC2 is using Linux,
- Application has been containerized before project started,
- Container spec (memory/CPU) Fargate, CPU: 2048, Memory: 8192,
- VPC CIDR is 10.0.0.0/16,
- Customer will provide desired S3 buckets name,
- Non-X86 apps are running on Linux based on provided inventory,
- Docker image is accessible from ECS and available at ECR (Image Registry),
- CI/CD changing is not in the scope for this project,
- Customer is aware that the CI/CD is out of the scope and will be cover by Devops team of customer with the support ECV Engineer,

5. Professional Service – Scope of Work

No.	Task
1.0	Project management and design – Jakarta
1.1	AWS environment Provisioning <ul style="list-style-type: none"> - Setup CloudTrail config for auditing - Setup AWS Config for environment logging - Setup IAM accounts (max: 3) - Configure CloudWatch alarm to monitor instances health and send health alarm notification (max: 3 email addresses)
1.2	AWS networking Setup <ul style="list-style-type: none"> - 1 x VPC design and setup - 2 x public subnets formation and configurations - 2 x private subnets formation and configurations - NACLs, Route Tables configurations - Internet Gateway provision and associations - 3 x NAT Gateway provision and associations - 1 x Auto Scaling Group with a Launch Configuration - 1 x ECS Cluster with 1 x Capacity Provider with managed scaling, - 1 x ECS Service for production and another <ul style="list-style-type: none"> - ECS service for Prod o The ECS Service is configured to send logs to a CloudWatch group
1.3	ECS Application Deployment for 1 application <ul style="list-style-type: none"> - Configure ECR docker image repository, - Setup image retention for docker for last 30 days, - Configure CodeBuild to build and upload docker image when application update, - Deploy application in Fargate, - Configure Application Load Balancer for traffic load balancing, - Enable ECS CircuitBreaker for automatic rollback on failure deployment (optional), - Enable ECS service auto scaling - Enable CloudWatch Log for ECS Tasks - Group ECS CloudWatch Log into corresponding Log Group
1.4	AWS database services provisioning and Migration <ul style="list-style-type: none"> - 1 x RDS: AWS - PostgreSQL, - Setup as Single-AZ - Enable RDS encryption, - Automated daily backup by default - Set backup retention period, - Basic Security Groups setup
1.5	AWS compute resources Provisioning <ul style="list-style-type: none"> - 3 x EC2 instances linux as per spec in calculator, - Configure basic security group for the instance - Enable automatic snapshots

1.5	Provisioning AWS App Load Balancer <ul style="list-style-type: none">- Create 1x internet application load balancer
1.6	AWS storage services provisioning <ul style="list-style-type: none">- S3 Bucket x 1 (Media storage) AWS EFS provisioning <ul style="list-style-type: none">- Setup and Configure EFS- Configure file system access (3 AZs)- Mounting Amazon EFS File System automatically- Configure EC2 to mount EFS
2	Documentations <ul style="list-style-type: none">- AWS Resources Configuration List
3	Infrastructure Acceptance Test with client

6. Customer Responsibility

Devops Team (Application Team and Product Owner):

- Standardize the list of options developers can select for deployment,
- Customize ECS task definition based on the provided JSON template (e.g., foreground process command, environment variables, container port, CPU and memory allocation)
- Configure the application to output application log to stdout (standard out) instead of a log file
- Generate readable and parsable log for log management,
- Develop Dockerfile for container applications,
- Assign access level for each personnel,
- Uploading code to GitLab Repositories and following the git-flow practice of having “master” as the production branch
- Any initial post-deployment procedure necessary to run the application (e.g., create/ /seed/migrate the database, etc.)
- Provisioning RDS instances and other dependencies (e.g., ElasticCache cluster). Setting up network connectivity between the ECS Service and the database
- Design and develop unit test scripts and provide a procedure to execute test automatically
- Supply the needed buildspec.yml for every project
- Supply the Serverless Framework template for every serverless project
- Determine and supply the appropriate Deployment.yaml for the CodeBuild environment. The Deployment.yaml should contain the necessary runtime and dependencies that the application may need for testing, packaging, building the application.
- Ensuring application code is secure and robust
- Domain and SSL management,
- Provide Docker image,
- Provide Source code for Docker Image (if necessary).
- **Application installation & configuration:**
 - OS for EC2 Linux Server need to be provided,
 - Any application development effort required,
 - Recompile non-x86 application to x86 compatible
 - Perform software configuration change, including but not limited to: Database endpoint update, software endpoint update,
 - Various testing, including but not limited to: Load Tests, Stress Tests, Integration Tests, User Acceptance Tests, Regression Tests,
 - Application testing and debugging,
 - Handle change or upgrade in application and database, including but not limited to: Application driver, Software library, Middleware program
- **Database:**
 - Provide the original database schema design, configuration, user, tablespace specification and parameters
 - Handle any sensitive data that eCloudvalley is not authorized to have access to, including but not limited to: Data export, Data import, Data migration
 - Verify the migrated database objects
 - Validates DB data and DB objects, including but not limited to: Packages, Store procedure, Function, Sequence, Views

7. Infrastructure Acceptance Test Success Criteria

After eCloudvalley has conducted the acceptance test of the service with client, client shall, within one (1) week thereafter, either:

A: Confirm the service ready for use by issuing an acceptance certificate to eCloudvalley; or

B: Give instructions in writing to eCloudvalley specifying all the work that is required to be done by eCloudvalley before such acceptance certificate can be issued, in which case eCloudvalley shall not make any further request for an Acceptance Certificate until such work is completed to the client's satisfaction.

Case 1

Scenario:	Login and network checking
Expected Result:	Success to remote login or SSH to EC2 instances.

Case 2

Scenario:	ECS Deployment
Expected Result:	Success to access the application that is provisioned in the ECS Service. Success to provision infrastructure <ul style="list-style-type: none">• Network Infrastructure• ECS Infrastructure

8. Out of Scope

- Developing Dockerfiles to containerized existing or new applications,
- Any application-level debugging
- Optimizing the application-level code to enhance application performance,
- Any VPC endpoints or interfaces necessary to save bandwidth for AWS services or third-party services that the app might frequently be getting access to
- The setup of any peering connection to another VPC (VPC Peering), or connection to another network (IPSEC VPN) that the application may need,
- Acquiring reserved instances for RDS, and other services for long-term savings
- Resources level compliance check
- UI / UX automated test,
- Creating buildspec.yml for each project
- Determining the compute and memory requirements for each project
- Non-x86 migration is not included,
- Refactoring and re-architecture of application is not included,
- Any application deployment and development,
- Update software endpoint,
- Update external DNS record of customer domains,
- Configuration on application,
- OS and software patching
- Application testing and debugging
- High Availability design and implementation for application not built for high availability,
- Configuring AWS load balancers for traffic load balancing
- Auto-scaling for EC2 instances
- Any AWS services that are not listed, unless mutually agreed to be include in-scope
- Load Test and Stress Test
- Server log consolidation and management
- Instance and OS hardening,
- Landing Zone deployment, including but not limited to: Operation integration with customer existing workflow, Security baselines, Cloud connectivity,
- Any licensed tools required to perform migration discovery (e.g. Network based dependency discovery tool, Application portfolio data collection)
- Software support for any migrated workload, including software migrated by utilizing the End-of-support Migration Program (EMP) solution,



9. Project Stage & Payment Terms

Stage	Payment Schedule	Project Completion
Down payment		50%
Milestone 1		
Milestone 2	100%	50%

*After eCloudvalley has conducted the acceptance test of the service with client, client shall, within one (1) week thereafter, either:

- A. Confirm the service ready for use by issuing an acceptance certificate to eCloudvalley; or
- B. Give instructions in writing to eCloudvalley specifying all the work that is required to be done by eCloudvalley before such acceptance certificate can be issued, in which case eCloudvalley shall not make any further request for an Acceptance Certificate until such work is completed to the client's satisfaction.

10. Cost Estimation

AWS Monthly Cost Estimation in monthly basis for Migration to Elastic Container Service on AWS described the table below:

Region	Description	Service	Monthly (USD)	First 12 months total (USD)	Configuration summary
Asia Pacific (Jakarta)	RDS Instance	Amazon RDS for PostgreSQL	229.67	2,756.04	Storage volume (General Purpose SSD (gp3)), Storage amount (200 GB), Nodes (1), Instance Type (db.t4g.medium), Utilization (On-Demand only) (100 %Utilized/Month), Deployment Option (Multi-AZ), Pricing Model (OnDemand)
Asia Pacific (Jakarta)	EFS File System	Amazon Elastic File System	46.88	562.56	Desired Storage Capacity (500 GB per month), Provisioned Throughput (MB/s per month)
Asia Pacific (Jakarta)	EC2 Instances	Amazon EC2	1,137.60	13,651.20	Tenancy (Shared Instances), Operating system (Linux), Workload (Consistent, Number of instances: 3), Advance EC2 instance (m6i.2xlarge), Pricing strategy (On-Demand Utilization: 100 %Utilized/Month), Enable monitoring (disabled), EBS Storage amount (300 GB), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)
Asia Pacific (Jakarta)	Load Balancers	Application Load Balancer	252.00	3,024.00	Number of Application Load Balancers (1)
Asia Pacific (Jakarta)	Load Balancers	Network Load Balancer	23.87	286.44	Number of Network Load Balancers (1), Average number of new TCP connections (1000 per second), Average TCP connection duration (60 seconds)
Asia Pacific (Jakarta)	NAT Gateway	NAT Gateway	146.91	1,762.92	Number of NAT Gateways (3)
Asia Pacific (Jakarta)	NAT Gateway	Public IPv4 Address	10.95	131.40	Number of In-use public IPv4 addresses (3)
Asia Pacific (Jakarta)	Elastic IP Addresses	Public IPv4 Address	10.95	131.40	Number of In-use public IPv4 addresses (3)
Asia Pacific (Jakarta)	ECS Cluster	AWS Fargate	47.46	569.52	Operating system (Linux), CPU Architecture (x86), Average duration (60 minutes), Number of tasks or pods (10 per day), Amount of ephemeral storage allocated for Amazon ECS (100 GB), Amount of memory allocated (8 GB)
Asia Pacific (Jakarta)	CloudWatch Alarms	Amazon CloudWatch	23.30	279.54	Number of Metrics (includes detailed and custom metrics) (5), GetMetricData: Number of metrics requested (5), GetMetricWidgetImage: Number of metrics requested (5), Number of other API requests (5), Standard Logs: Data Ingested (5 GB), Logs Delivered to CloudWatch Logs: Data Ingested (5 GB), Logs Delivered to S3: Data Ingested (5 GB), Number of Dashboards (5), Number of Standard Resolution Alarm Metrics (5), Number of High Resolution Alarm Metrics (5), Number of composite alarms (5), Number of alarms defined with a Metrics Insights



					query (5), Average number of metrics scanned by each Metrics Insights query (5)
Asia Pacific (Jakarta)	Cloudtrail - Audit	AWS CloudTrail	20.00	240.00	Management events units (millions), Write management trails (1), Read management trails (1), Data events units (millions), S3 trails (1), Lambda trails (1), Insight events units (millions), Trails with Insight events (1), Write management events (100 per month), Read management events (100 per month), Lambda data events (5 per month), Number of write management events analyzed (5 per month)
Total			1,949.59	23,395.02	

AWS Estimation URL : <https://calculator.aws/#/estimate?id=6d05047eb3f8e9a8bb38059a3f77d29752450b54>

Terms and Condition :

- The estimated pricing above does not include tax
- The AWS Infrastructure cost above is an estimation and actual cost may vary depending on the monthly usage and data traffic. The actual cost will be based on eCloudValley's monthly billing report and invoice.
- The rate of exchange used in computing the amount of all fees and payment equivalent in Indonesia IDR will be based on the exchange rate between USD and IDR as reported by PT. ECV Technology Service. The pricing exchange rate shall be the rate reported on the first working day of each month by Bank of Indonesia.

11. Project Stage & Payment Terms

Stage	Payment Schedule	Project Completion
Down payment		50%
Milestone 1		
Milestone 2	100%	50%

*After eCloudvalley has conducted the acceptance test of the service with client, client shall, within one (1) week thereafter, either:

- C. Confirm the service ready for use by issuing an acceptance certificate to eCloudvalley; or
- D. Give instructions in writing to eCloudvalley specifying all the work that is required to be done by eCloudvalley before such acceptance certificate can be issued, in which case eCloudvalley shall not make any further request for an Acceptance Certificate until such work is completed to the client's satisfaction.

12. Pricing

Professional Services for support for Modern Data Solusi

No.	Role	Effort Hours/Day	MD	Pricing (USD)
1	PM (Project Manager)	-	-	
2	CE (Cloud Engineer)	-	-	
3	SA (Solution Architect)	-	-	
Total				7500



13. Acceptance

Customer and eCloudvalley agree to the terms outlined in this project proposal.

For and on behalf of:
PT Modern Data Solusi

For and on behalf of:
PT. ECV Technology Service

Signature

Signature

Name

Name

Title

Title

Date

Date



Appendix A: eCloudvalley Managed Services

Cloud technology is recolonizing the traditional IT models in various ways, from IT infrastructure to Development methodology, even triggers the business culture within an organization. The trend of cloud creates a new kind of IT servicing requirement of what so called with Next-generation Managed Services.

Managed Services: Differences between Traditional and Cloud

	Traditional MSP	Next Generation MSP
Focus	Run and operate focus	Design, architect, automate
Solutions	Hardware based solutions	Cloud and software-based solutions
Operations	Centralized operations	Distributed operations and resources
SLAs	Device based SLAs	Solution/ Application based SLAs
Management	Complex, manual change management	DevOps, CI/CD self-healing solutions, infrastructure as code
Monitoring	Static monitoring with fixed thresholds	Dynamic monitoring, anomaly detection, machine learning
Security	Security risk mitigation	Security by design, continuous compliance
Provider	Outsourcing vendor	Trusted advisor and partner

eCloudvalley Managed Services

As a born-in-the-cloud AWS partner, we understand the best to the Cloud operations, and we have served our trusted Managed Services to over 500 customers. We have been listed as **Notable Vendor in Gartner's** Asia/Pacific Magic Quadrant for Public Cloud Infrastructure Managed Service Providers.

What We Deliver - 5 Key Value

- Operation Excellence
- Cost Optimization
- Performance Improvement
- Security Enhancement
- Fault Tolerance

How We Deliver - 3 Approaches

- Visibility
- Standardization
- Automation

Appendix B: Cloud Management Platform – ATLAS

Atlas is a Cloud Management Platform developed by eCloudvalley with our machine learning algorithm & cloud management experiences to help our customers quickly deploy cloud resources, optimize cloud performances and reduce cost. Atlas helps streamline & automate your cloud operations.

Atlas Features	
	Cloud Billing Management Atlas analyzes your cloud usage, gives detailed billing reports for you to easily predict future cloud expenses and usage trends. With Atlas billing alerts, users will be notified automatically to prevent overspending on the planned budget.
	Automation and Service Monitoring Aside from automating EC2 and RDS, Atlas could also provide backup scheduling and RDS cross-region backup with just ONE click. Atlas's powerful monitoring service combines with state-of-the-art automation across various cloud services, in which enterprises can optimize cost and free up IT personnel to focus on higher valued tasks.
	Cost Optimization Atlas can effectively track and visualize your cloud usage, cost and performance to conduct right-sizing suggestions, RI best recommendation and cost analysis which helps you build a better cloud environment.
	ONE Click to Cloud Best Practice Just with one click, Atlas can generate a wide variety of cloud reports including cost report, usage report, high availability report performance report etc., and users can easily optimize their cloud environments based on the insights extracted from these reports.
	Security is Job Zero Atlas is a cloud management platform with ISO 27017 certification for information security controls and its international standard of security and compliances. Helping enterprises secure sensitive data and protect their privacy. Atlas also helps enterprises automate security compliances to continuously improve their cloud security based on valuable suggestions generated from the security report. The effort and commitment put into protecting enterprises' data has allowed their cloud services to become the leading exemplar of cloud security.