



AWS Machine Learning Competency

Consulting Partner Validation Checklist

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Version 3.0



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Introduction

The goal of the AWS Competency Program is to recognize APN Partners who demonstrate technical proficiency and proven customer success in specialized solution areas. The Competency Partner Validation Checklist is intended for APN Partners who are interested in applying for AWS Competency. This checklist provides the criteria necessary to achieve the designation under the AWS Competency Program. APN Partners undergo an audit of their capabilities upon applying for the specific Competency. AWS leverages in-house expertise and a third-party firm to facilitate the audit. AWS reserves the right to make changes to this document at any time.

Expectations of Parties

It is expected that APN Partners will review this document in detail before submitting an application for the AWS Competency Program, even if all of the prerequisites are met. If items in this document are unclear and require further explanation, please contact your Partner Development Representative (PDR) or Partner Development Manager (PDM) as the first step. Your PDR/PDM will contact the Program Office if further assistance is required.

When ready to submit a program application, APN Partners should complete the Partner Self-Assessment column of the AWS Competency Program Validation Checklist set forth below in this document.

To submit your application:

1. Log in to the [APN Partner Central](https://partnercentral.awspartner.com/) (<https://partnercentral.awspartner.com/>), as Alliance Lead
2. Select "View My APN Account" from the left side of the page
3. Scroll to "Program Details" section
4. Select "Update" next to AWS Competency you wish to apply for
5. Fill out Program Application and Click "Submit"
6. Email completed Self-Assessment to competency-checklist@amazon.com

If you have any questions regarding the above instructions, please contact your APN Partner Development Representative/Manager.

AWS will review and aim to respond back with any questions within five (5) business days to initiate scheduling of your audit or to request additional information.

APN Partners should prepare for the audit by reading the Validation Checklist, completing a self-assessment using the checklist, and gathering and organizing objective evidence to share with the auditor on the day of the audit.

AWS recommends that APN Partners have individuals who are able to speak in-depth to the requirements during the audit. The best practice is for the APN Partner to make the following personnel available for the audit: one or more highly technical AWS certified engineers/architects, an operations manager who is responsible for the operations and support elements, and a business development executive to conduct the overview presentation.

AWS Machine Learning Competency Program Prerequisites

AWS Machine Learning (“ML”) Competency APN Partners have demonstrated the ability to help large organizations solve the most challenging problems in AI including work around data engineering, data science, machine and deep learning and production deployment for inference at scale. By attaining the AWS ML Competency, you are demonstrating to our customers that you have deep expertise in AI on the AWS platform and have delivered solutions seamlessly in the AWS Cloud environment.

The following items will be validated by the AWS Competency Program Manager; missing or incomplete information must be addressed prior to scheduling of the validation review.

1.0 APN Program Requirements		Met Y/N
1.1 Program Guidelines	The APN Partner must read the Program Guidelines and Definitions before applying to the Machine Learning Competency Program. Click here for program details	
1.2 Consulting Partner Tier	APN Partner must be Advanced or Premier APN Consulting Partner before applying to the ML Competency Program.	
2.0 AWS Customer References		Met Y/N
2.1 ML-Specific Customer References	<p>APN Partner must have four (4) AWS customer references specific to completed ML projects; two (2) of these references must be publicly referenceable case studies.</p> <p>References must be for projects that are in production, rather than in pilot or proof of concept stage. Projects that are still in development stage will not be accepted.</p> <p>APN Partner must provide the following information for each reference:</p> <ul style="list-style-type: none"> ▪ Name of the customer ▪ Problem statement/definition ▪ What you proposed ▪ How AWS services were used as part of the solution ▪ Third party applications or solutions used ▪ Start and end dates of project ▪ Outcomes and results <p>This information will be requested as part of the Program Application process in APN Partner Central.</p>	
2.2 Notebook Use Case	At least one fully-developed sample use case, in Jupyter notebook form, illustrating an end to end solution to a customer-sourced problem. This could include the use of a publicly available dataset and should cover all aspects such as data ingestion, data visualization and cleaning, feature engineering (as applicable), model selection, model training, A/B testing, parameter tuning and deployment.	
2.3 Publicly Available Case Studies	<p>2.2.1 Two (2) of the four (4) AWS customer references <u>must be public</u>; evidence must be in the form of publicly available case studies, white papers, or blog posts.</p> <p>2.2.2 Public case studies must be easily discoverable on the APN Partner’s website, e.g., must be able to navigate to the case study from the APN Partner’s home page. APN Partner must provide link to these references.</p> <p>Note: For best practice on how to write an accepted Public Case Study See Here</p> <p>2.2.3 Public case studies must include the following:</p> <ul style="list-style-type: none"> ▪ Reference to the customer name, APN Partner Name, and AWS ▪ Problem statement/definition ▪ What you proposed ▪ How AWS services were used as part of the solution ▪ Outcome(s)/results <p>Note: Public references are used by AWS upon approval into the Competency to showcase the APN Partner’s demonstrated success in the practice area and provide customers with</p>	

	<i>confidence that APN Partner has the experience and knowledge needed to develop and deliver solutions to meet their objectives.</i>	
2.4 ML Specific Case Study Criteria	<p>APN Partner must be able to describe the full lifecycle of ML development:</p> <ul style="list-style-type: none"> ▪ Opportunity definition including ROI methodology for project selection. ▪ A comprehensive articulation of the problem and why/how machine learning can add value (i.e. automation efficiencies). ▪ Demonstration of the ability and a methodology to interact with customer data engineers to gather and process all manners of input data, from structured and queryable, to unstructured and streamed. This includes discovery skills to help the customer determine if the data are sufficient and relevant to solve the customers' business problems. ▪ Identification of toolset, algorithms and pre-trained models, if any, ▪ Qualitative and quantitative description of the outcome. ▪ Data management tools, including ingestion, ETL, storage and lifecycle. ▪ Model evaluation and performance criterion (minimal acceptable loss, KPIs etc.) and its refresh strategy. 	
3.0 AWS ML Practice and Focus		Met Y/N
3.1 APN Partner Practice Landing Page	<p>AWS customers are looking for expertise in the development and delivery of ML solutions on AWS; an APN Partner's internet presence specific to their AWS ML practice provides customers with confidence about the APN Partner's ML capabilities and experience.</p> <p>APN Partner must have a landing page that describes their AWS ML practice, AWS solutions and Competency use cases, technology partnerships, links to AWS customer references or case studies, and any other relevant information supporting the APN Partner's expertise related to ML and highlighting the partnership with AWS.</p> <p>ML practice page must be accessible from APN Partner home page. Home page is not acceptable as a practice page unless APN Partner is a dedicated ML consulting company and home page reflects the APN Partner's concentration on ML.</p> <p>Note: For best practice on how to build an accepted APN Partner Practice Landing Page See Here</p>	
3.2 ML Thought Leadership	<p>AWS ML Competency Partners are viewed as having deep domain expertise in ML, having developed innovative solutions that leverage AWS services.</p> <p>Specifically, APN Partners must provide evidence of their ability to communicate and educate on processes, vertical-specific use cases, and anti-patterns in machine learning.</p> <p>APN Partner must have public-facing materials (e.g., blog posts, press articles, videos, etc.) showcasing the APN Partner's focus on and expertise in ML. Links must be provided to examples of materials published within the last 12 months, examples of customer workshops/education and description of vertical use-cases offered.</p>	
3.3 ML Trained Staff	<p>Applicant must have at least five (5) employees (data scientists or ML practitioners) that have completed the AWS Solutions Training for Partners: Machine Learning on AWS – Technical course.</p>	
4.0 APN Partner Self-Assessment		Met Y/N
4.1 AWS Competency Partner Program Validation Checklist Self-Assessment	<p>APN Partner must conduct a self-assessment of their compliance to the requirements of the AWS ML Consulting Partner Validation Checklist.</p> <ul style="list-style-type: none"> ▪ APN Partner must complete all sections of the checklist. ▪ Completed self-assessment must be emailed to competency-checklist@amazon.com, using the following convention for the email subject line: "[APN Partner Name], ML Competency Consulting Partner Completed Self-Assessment." ▪ It is recommended that APN Partner has their Solutions Architect or Partner Development Manager (PDM) review the completed self-assessment before submitting to AWS. The purpose of this is to ensure the APN Partner's AWS team is engaged and 	

working to provide recommendations prior to the audit and to help ensure a positive audit experience.

AWS ML Consulting Partner Validation Checklist

In preparation for the validation process, APN Partner should become familiar with the items outlined in this checklist and prepare objective evidence, including but not limited to: prepared demonstration to show capabilities, process documentation, and/or actual customer examples. APN Partners are not limited to the four (4) references submitted as part of the prerequisite process, but should be prepared to describe how the new references meets the minimum acceptable criteria for an AWS ML reference if being used during the validation.

1.0 ML Practice Overview		Met Y/N
1.1 Customer Presentation	<p>APN Partner has a company overview presentation that sets the stage for customer conversations about their AWS ML practice and showcases APN Partner’s demonstration capabilities.</p> <p>Presentation contains information about the APN Partner’s AWS ML practice, including AWS-specific differentiators, e.g., what is unique about the APN Partner’s ML practice that can only be accomplished leveraging AWS.</p> <p>Overview presentations contain:</p> <ul style="list-style-type: none"> ▪ Company history ▪ Office locations ▪ Number of employees ▪ Customer profile, including number and size of customers, including industry ▪ Overview of AWS ML Practice <p>Evidence must be in the form of a presentation delivered by a business development executive at the beginning of the validation session and should be limited to 15 minutes.</p>	
1.2 AWS ML Services Expertise	<p>AWS customers seeking ML consulting services view AWS ML Competency Partners as the go-to experts in the field. Potential customers often ask for examples of solutions built for other customers when choosing an APN Partner and want confidence that consultants are up to date on AWS ML services.</p> <p>For each of the following AWS ML services: Amazon Comprehend, AWS Deep Learning AMIs, AWS DeepLens, Amazon Lex, Amazon Machine Learning, Apache MXNet on AWS, Amazon Polly, Amazon Rekognition, Amazon SageMaker, Amazon Transcribe, Amazon Translate, APN Partner can provide the following:</p> <ul style="list-style-type: none"> ▪ Examples of customer solutions leveraging each service ▪ If AWS service is not being leveraged by an active customer, a hypothetical use case is available including where that service should be considered and how it will be supported ▪ Description of how services are supported by APN Partner, alone or as part of a solution comprising multiple services <p><i>Note: Evidence may also be found in the submitted customer references (Prerequisites, Section 2.0), AWS ML Practice and Focus (Prerequisites, Section 3.0), during the customer presentation (Section 1.1 above), or during review of other sections.</i></p>	
1.3 Maintaining AWS Expertise	<p>APN Partner can describe how they stay current on AWS Service releases related to their AWS ML Practice.</p> <p>Evidence must be in the form of a verbal description on enablement materials leveraged by APN Partner to stay current on AWS services and features.</p>	

2.0 Operational Excellence

Met Y/N

The operational excellence pillar focuses on running and monitoring systems to deliver business value, and continually improving processes and procedures. Key topics include managing and automating changes, responding to events, and defining standards to successfully manage daily operations.

APN Partner Delivery Model

2.1 APN Partner Engagement with Customers	<p>APN Partner can describe whether their AWS ML practice delivers only project-based work, and hands off final solution to end customer per terms of the Statement of Work.</p> <p>or</p> <p>APN Partner delivers project-based work and retains contractual obligation to the customer to manage and operate ML workloads.</p> <p>Evidence must be in the form of a verbal description or evidence of APN Partner engagement model (e.g., SOWs, SLAs, or MSP contracts) for the customer references submitted to meet the Competency prerequisites.</p>	
2.2 MSP Program Participation and ML-Specific Differences	<p>Approved MSP Partners are subject to a rigorous onsite audit covering the full customer engagement lifecycle and are therefore eligible for waiver of a number of requirements in the following sections.</p> <p>If APN Partner manages workloads and is an approved AWS MSP Partner, APN Partner must describe any differences in their practice as it pertains to supporting ML workloads on an ongoing basis.</p> <p>Evidence must be in the form of a document listing unique considerations for managing ML environments.</p> <p><i>Note: Compliance with this requirement allows APN Partner to claim a waiver for all requirements listed in this Checklist as “Waived if APN Partner is approved AWS MSP.”</i></p>	
2.3 Customer Handoff and Acceptance for ML Projects (for non-MSP Partners)	<p>If APN Partner performs SOW-only work, APN Partner can describe each phase of the customer handoff and acceptance process.</p> <p>Evidence must be in the form of verbal description, customer training documents, and/or SOW language describing handoff responsibilities.</p>	
2.4 ML Training for Internal Personnel	<p>For SaaS and IoT ML Implementations APN Partner has a process to ensure that there are sufficient ML trained personnel to effectively support customers.</p> <p>Evidence must be in the form of:</p> <ul style="list-style-type: none"> ▪ An established training plan including on-boarding processes that identify job roles (sellers, solutions architects, project managers) and required training paths ▪ A verbal description of methods used to allocate required resources to ML projects 	
2.5 Disaster Recovery Planning and Testing	<p>For SaaS and IoT ML Implementations APN Partner demonstrates evidence of disaster recovery planning.</p> <p>Evidence must be in the form of a documented disaster recovery process, with evidence of testing within the last 12 months.</p> <p>Evidence of current ISO 22301 certification provides exemption.</p>	
2.6 ML-specific Disaster Recovery Considerations	<p>For SaaS and IoT ML Implementations APN Partner has incorporated ML-specific disaster recovery considerations into disaster recovery planning (e.g., edge device management, backup, etc.).</p> <p>Evidence must be in the form of ML-specific disaster recovery considerations especially for downstream services such as Amazon EC2 and that those services follow best disaster recovery practices.</p>	
Designing for Operations		
2.7 ML Design Process: Overall Planning	<p>For SaaS and IoT ML Implementations APN Partner has design process to ensure ML solution designs account for how workload will be deployed, updated, and operated.</p>	

	Evidence must be in the form of verbal description and process documentation referring to specific ML customer references.	
2.8 Business Problem Understanding and Articulation	APN Partner has significant depth in understanding problems that customers have in specific verticals and be able to articulate back to the customer the problem in a manner where AI brings solutions, particularly new paradigms. This includes providing a set of high-impact use cases with quantified business value.	
	Evidence must be in the form of verbal description and process documentation referring to specific ML customer references.	
2.9 Data Gathering	APN Partner has the ability and a methodology to interact with customer data engineers to gather and process all manners of input data, from structured and queryable, to unstructured and streamed. They must also have discovery skills to help the customer determine if the data are sufficient and relevant to solve the customers' business problems.	
	Evidence must be in the form of verbal description and process documentation referring to specific ML customer references.	
2.10 Feature Engineering	Data gathering and feature engineering could make up more than 70% of any project. For cases where the amount of data may be large but not representative enough to make predictions, or data may be relevant but not sufficient in quantity to make predictions, APN Partner can assess and determine whether dataset features can be derived to make a POC viable and the risk profile of the project.	
	Evidence must be in the form of verbal description and process documentation referring to specific ML customer references.	
2.11 ML Design Process: Metrics	APN Partner has implemented analytics collection that validate model and inference engine performance, service level commitments, marketing, and customer experience objectives.	
	Evidence must be in the form of verbal description, process documentation, and/or technology demonstrations.	
2.12 ML Design Process: Quality Control	APN Partner has implemented engineering practices that align with defect reduction and quick and safe fixes.	
	Evidence must be in the form of verbal description, process documentation, and/or technology demonstrations if applicable.	
2.13 Iterative Improvement of models	APN Partners must provide continuous integration of ground truth with updated models and deployment of models in accordance with a cadence required by business objectives. This includes the initial data operations on historical data, guidance on data ingestion, preparation, and feature engineering. Where any aspect of data science for a particular client requires working with outside firms the APN Partner must demonstrate a process whereby the outsourced firm meets or exceed the exact same level of operational excellence.	
2.14 Model Development Expertise	APN Partner can demonstrate expertise in model development on Amazon SageMaker or other platform, internally developed or otherwise, and implements one or more of the following: <ul style="list-style-type: none"> • CNN - Convolutional Neural Nets • RNN - Recurrent Neural Networks / LSTM • Clustering - K-Means / t-SNE / LDA • Reinforcement Learning • Collaborative Filtering - Recommender Systems • Directed Graphical Models • Factorization Machines • GAN - Generative Adversarial Network • Interaction in the Environment - robotics / ML • Dimensionality reduction: Principal Component Analysis • Other predictive models based on data 	
	Evidence must be in the form of verbal description and process documentation referring to specific ML customer references.	

	Statistical modeling alone is not acceptable.	
	Inventive use of AWS managed services may qualify provided the use case includes deep insight into the customer's needs, exceptional outcomes, and that the design pattern can be replicated widely.	
Operational Readiness		
2.15 Deployment Checklist	APN Partner uses consistent processes (e.g., checklists) to know when ready to go live with a workload. Evidence must be in the form of completed checklists leveraged for ML solutions.	Waived if APN Partner is approved AWS MSP.
2.16 Runbooks/ Playbooks	For SaaS and IoT ML Implementations APN Partner uses runbooks that document routine activities and playbooks that guide the issue resolution process. Evidence must be in the form of runbooks/playbooks for relevant components of ML solutions.	Waived if APN Partner is approved AWS MSP.
2.17 Automation through Scripting	For SaaS and IoT ML Implementations APN Partner leverages scripting and tagging to automate execution of runbooks if/where applicable. Evidence must be in the form of script library/demonstration.	Waived if APN Partner is approved AWS MSP.
Understanding Operational Health		
2.18 Metrics and Performance Dashboards	For SaaS and IoT ML Implementations APN Partner leverages metrics and performance dashboards to measure operational health. (e.g. Amazon CloudWatch Logs, Amazon Elasticsearch Service, Personal Health Dashboard, AWS Service Health Dashboard). Evidence must be in the form of verbal description and demonstration of operational health metrics/dashboard.	
Responding to Events		
2.19 Planned and Unplanned Event Planning	For SaaS and IoT ML Implementations APN Partner has a process to anticipate operational events, both planned (for example, sales promotions, deployments, and failure tests) and unplanned (for example, surges in utilization and component failures). Evidence must be in the form of verbal description with examples of both planned and unplanned events that impacted ML practice.	Waived if APN Partner is approved AWS MSP.
2.20 ML Operations: Event, Incident, and Problem Management	For SaaS and IoT ML Implementations APN Partner has event, incident, and problem management processes, including escalation paths and root cause analysis. Evidence must be in the form of APN Partner demonstration of how events are captured, allocated, escalated, and managed to closure.	Waived if APN Partner is approved AWS MSP.
Learning from Experience		
2.21 Lessons Learned	APN Partner demonstrates that lessons learned from each deployment are documented and shared across teams to share the benefits of those lessons. Evidence must be in the form of lessons-learned documentation.	
3.0 Security		Met Y/N
The security pillar focuses on protecting information & systems. Key topics include confidentiality and integrity of data, identifying and managing who can do what with privilege management, protecting systems, and establishing controls to detect security events.		
User Security Best Practices		
3.1 Identity and Access Management	APN Partner has a documented Access Management Strategy, including but not limited to: AWS Identity and Access Management (IAM) users, symmetric access keys, asymmetric X.509 certificates, console passwords, and hardware or virtual multi-factor authentication (MFA) devices. Evidence must be in the form of a technology demonstration, process documentation that addresses the above, and one customer example.	Waived if APN Partner is approved AWS MSP.
3.2 Protection of Root Account Credentials	APN Partner does not administrate AWS accounts by use of root account credentials. Evidence must be in the form of a technology demonstration.	Waived if APN Partner

		is approved AWS MSP.
3.3 Least Privilege Principle	<p>APN Partner has system that provides access to customer resources to its engineers based on the principle of least privilege. A process for defining and maintaining the appropriate level of access is in place. Access to critical or sensitive data (as defined by the customer) is further controlled by multi-factor or quorum authentication with access-based alerts.</p> <p>Evidence must be in the form of a demonstration of internal capabilities and processes for maintaining least privilege access policies.</p>	Waived if APN Partner is approved AWS MSP.
Monitoring and Detection		
3.4 Detective Controls	<p>Activity is monitored appropriately, including by maintenance of logs for capturing performance and security event data, for example CloudWatch Logs, events, VPC Flow Logs, Elastic Load Balancing logs, Amazon Simple Storage Service (Amazon S3) bucket logs, etc.</p> <p>Evidence must be in the form of an example of logs maintained, including demonstration that logs are retained per customer-agreed retention periods.</p>	Waived if APN Partner is approved AWS MSP.
Infrastructure and Data Protection		
3.5 Multi-Factor Authentication	<p>APN Partner ensures that multi-factor authentication is activated on all APN Partner and customer AWS root accounts.</p> <p>APN Partner must show evidence of the use of technology (e.g., AWS Trusted Advisor) for regular auditing of accounts for MFA activation and activation of MFA on new AWS root accounts.</p>	Waived if APN Partner is approved AWS MSP.
3.6 Protection of Internal Systems from Attacks	<p>For SaaS and IoT ML Implementations APN Partner has established security policies and procedures to monitor and protect its own systems from attacks.</p> <p>Evidence must be in the form of security policies and procedures; may also be in the form of current industry certification related to information security (e.g., ISO 27001) or proof of infrastructure security and information security management processes and associated approvals.</p>	Waived if APN Partner is approved AWS MSP.
3.7 Protection of Customer Systems from Attacks	<p>APN Partner has security policies and procedures to protect its customers' systems from attacks.</p> <p>Evidence must be in the form of security policies and procedures; may also be in the form of industry certification related to information security management (e.g., ISO 27001).</p>	Waived if APN Partner is approved AWS MSP.
3.8 Communication of Security Best Practices	<p>APN Partner ensures <u>customers</u> understand AWS security processes and technologies as outlined in https://aws.amazon.com/whitepapers/aws-security-best-practices/.</p> <p>Evidence must be in the form of onboarding and educational documents provided to customers that specifically cover customer security considerations in the APN Partner's environment.</p>	Waived if APN Partner is approved AWS MSP.
3.9 Data Encryption	<p>Customer contact and business/personal information is encrypted on all Partner systems including APN Partner, billing, and ticketing systems.</p> <p>Evidence must be in the form of documentation of customer information storing systems with proof of encryption.</p>	Waived if APN Partner is approved AWS MSP.

4.0 Reliability		Met Y/N
The reliability pillar focuses on the ability to prevent, and quickly recover from failures to meet business and customer demand. Key topics include foundational elements around setup, cross project requirements, recovery planning, and how we handle change.		
Network		
4.1 Service Availability	<p>APN Partner has process to determine service availability needs for customers.</p> <p>See AWS Reliability Pillar whitepaper for specific considerations and guidance on how to calculate service availability with downstream dependencies.</p> <p>Evidence must be in the form of verbal description and/or process documentation.</p>	Waived if APN Partner is approved AWS MSP.

4.2 Network Capacity	For SaaS and IoT ML Implementations APN Partner plans network topology for IP-based networks to account for future growth and compatible addressing structures. Evidence must be in the form of network growth considerations leveraged for an existing ML customer.	Not Eligible for Waiver
4.3 Network Resiliency	For SaaS and IoT ML Implementations APN Partner plans network topology to ensure the resiliency of connectivity including planning for DoS attacks, unexpected increase in traffic, or removal of connectivity due to misconfiguration errors. Evidence must be in the form of verbal description and/or process documentation.	Not Eligible for Waiver
Application Design for High Availability		
4.4 Application Availability	APN Partner designs applications according to customer needs, factoring in cost of building/maintaining that application to the desired availability levels. Evidence must be in the form of verbal description and/or partner documentation leveraged in design process.	Not Eligible for Waiver
4.5 Service Interruption	For SaaS and IoT ML Implementations APN Partner understands and has processes to automatically remediate common causes of service interruption including but not limited to: hardware failure, deployment failure, load induced interruptions, data induced interruptions, credential expiration, failure of dependent services, infrastructure availability related to power or environmental sources, and/or identifier exhaustion (exceeding available capacity). Evidence must be in the form of verbal description how these interruptions are accounted for in customer designs, with description of automated remediation that has been established.	Not Eligible for Waiver
Testing		
4.6 Testing for Availability	APN Partner uses testing to ensure availability goals are met. This can include, but is not limited to: unit testing, load testing, and performance testing, while simulating failure modes while under these tests. Testing should account for dependency unavailability and deployment failures. Evidence must be in the form of description of testing and results compared to committed application availability of the application or service.	Not Eligible for Waiver
Failure Management		
4.7 Root Cause Analysis	For SaaS and IoT ML Implementations APN Partner conducts Root Cause Analysis on failures based on significant events to evaluate the architecture. Evidence must be in the form of records of root cause analysis for previous failure with resulting architectural recommendations.	Not Eligible for Waiver

5.0 Performance Efficiency

For this section, APN Partner must select two (2) of the four (4) submitted customer references and discuss performance efficiency considerations for both examples.

The performance efficiency pillar focuses on using IT and computing resources efficiently. Key topics include selecting the right resource types and sizes based on workload requirements, monitoring performance, and making informed decisions to maintain efficiency as business needs evolve.

Customer References for Performance Efficiency Considerations	[Insert Customer Reference #1 Here]	[Insert Customer Reference #2 Here]
Selection		
5.1 Compute	APN Partner to describe considerations for how they select the right AWS compute options specifically outlining choice of instances, containers, and functions.	

	<p>Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.</p>		
5.2 Storage	<p>APN Partner to describe considerations for how they select the right AWS Storage options specifically outlining access method, pattern of access, throughput required, frequency of access, frequency of update, and availability and durability constraints.</p> <p>Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.</p>		
5.3 Database	<p>APN Partner to describe considerations for how they select the right AWS database options specifically outlining requirements for availability, consistency, partition tolerance, latency, durability, scalability, and query capability.</p> <p>Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.</p>		
5.4 Network	<p>For SaaS and IoT ML Implementations APN Partner to describe considerations for how they select the right Network options specifically outlining latency, throughput requirements, and location.</p> <p>Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.</p>		
Performance Monitoring and Review			
5.5 Resource Review	<p>APN Partner has implemented a means of acquiring and preserving ground truth data for continuous improvement ML models and inference engines.</p> <p>Evidence must be provided in the form of verbal description</p>		

	as it relates to two (2) of the four (4) submitted customer references.		
5.6 Performance Monitoring	APN Partner uses techniques to monitor devices after deployment to test the performance and availability of a device.		
	Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.		
	For IoT and Component ML Implementations APN Partner ensures devices can function in an offline state.		
	Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.		
5.7 Tradeoffs	For IoT and Component ML Implementations APN Partner conducts testing to verify device offline capabilities.		
	Evidence must be provided in the form of verbal description as it relates to two (2) of the four (4) submitted customer references.		

Performance Tradeoffs

5.7 Tradeoffs	APN Partner considers tradeoffs during design to ensure an optimal approach for the customer; this may include tradeoffs for consistency, durability, or latency, in order to deliver higher performance.		
	Evidence must be provided in the form of verbal description of how tradeoffs were implemented for two (2) of the four (4) submitted customer references, including for example, caching, partitioning or sharding, compression, and buffering.		

6.0 Cost Optimization

Met Y/N

Cost Optimization focuses on avoiding un-needed costs. Key topics include understanding and controlling where money is being spent, selecting the most appropriate and right number of resource types, analyzing spend over time, and scaling to meet business needs without overspending.

Resource Planning

6.1 Service and Pricing Models	<p>APN Partner considers cost when selecting AWS services, including optimizing by using the most appropriate services and by selecting the appropriate pricing models to meet cost targets, including by the use of Reserved Instances and Spot Instances and by factoring costs into Region selections.</p> <p>Evidence must be in the form of a description of how services and price models are selected for cost optimization.</p>	<p>Not Eligible for Waiver</p>
6.2 Supply and Demand	<p>APN Partner ensures that capacity matches but does not exceed what is needed, including by using a demand-based, buffer-based, or time-based approach.</p> <p>This includes testing for data usage at scale, to account for larger deployments.</p> <p>Evidence must be in the form of a description of capacity planning activities, including testing for demand at scale.</p>	<p>Not Eligible for Waiver</p>
6.3 Payload Size	<p>For IoT and Component ML Implementations APN Partner has made a "Cost Optimization" effect to ensure the smallest possible payload size.</p> <p>Evidence must be in the form of an evaluation of expected payload costs by month with best known data volume expectations.</p>	<p>Not Eligible for Waiver</p>
6.4 Bandwidth Costs	<p>For IoT and Component ML Implementations APN Partner solutions are designed to keep bandwidth and message costs down by eliminating unnecessary messaging.</p> <p>Evidence must be in the form of an evaluation of expected payload costs by month with best known data volume expectations.</p>	<p>Not Eligible for Waiver</p>
6.5 Data Transfer	<p>For IoT and Component ML Implementations APN Partner architects to optimize data transfer, using application design, WAN acceleration, Multi-AZ, Region selection, etc.</p> <p>Evidence must be in the form of an evaluation of expected payload costs by month with best known data volume expectations.</p>	<p>Not Eligible for Waiver</p>
Spend Visibility and Tracking		
6.6 Usage and Spend Awareness	<p>APN Partner leverages billing and cost management tools to monitor usage and spend.</p> <p>Evidence must be in the form of a demonstration of billing and cost management tools used.</p>	<p>Waived if APN Partner is approved AWS MSP.</p>
Cost Optimization over Time		
6.7 Cost Review and Improvement	<p>For SaaS and IoT ML Implementations APN Partner has established a regular cadence to review internal performance and provide recommendations for improvement. Internal optimization involves looking for efficiencies within the APN Partner's operations that result in financial efficiencies, process efficiencies, and/or greater customer satisfaction.</p> <p>Evidence must be in the form of explanation of internal review cadence, and any efficiencies implemented as part of the process (e.g., billing alerts, etc.).</p>	<p>Waived if APN Partner is approved AWS MSP.</p>

AWS Resources

Title	Description
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How to Build a Practice Landing Page	Provides guidance how to build a Practice/solution page that will meet the prerequisites of the Program.
How to write a Public Case Study	Provides guidance how to build a Public Customer Case Study that will meet the prerequisites of the Program.
How to build an Architecture Diagram	Provides guidance how to build a architecture diagrams that will meet the prerequisites of the Program.
Partner Readiness Doc	Provides guidance and best practice examples of the Program perquisites.
Machine Learning Blog	Stay up to date on the latest Machine Learning news, practice and technology.

AWS reserves the right to make changes to the AWS Competency Program at any time and has sole discretion over whether APN Partners qualify for the Program.