Diving Deep into Bedrock AgentCore

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AgentCore

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Event ends in 17 hours 59 minutes.

Hosting Runtime Agent

Overview

Amazon Bedrock AgentCore Runtime enables developers to deploy and run AI Agents in a secure and scalable serverless environment. The Bedrock AgentCore Runtime provides a secure, serverless hosting environment necessary for deploying and running AI agents and tools without managing infrastructure. By offering a framework-agnostic and model-flexible runtime, the AgentCore Runtime enables organizations to leverage their existing agent code and models, rather than being limited to a specific development framework or AI architecture.

How it works

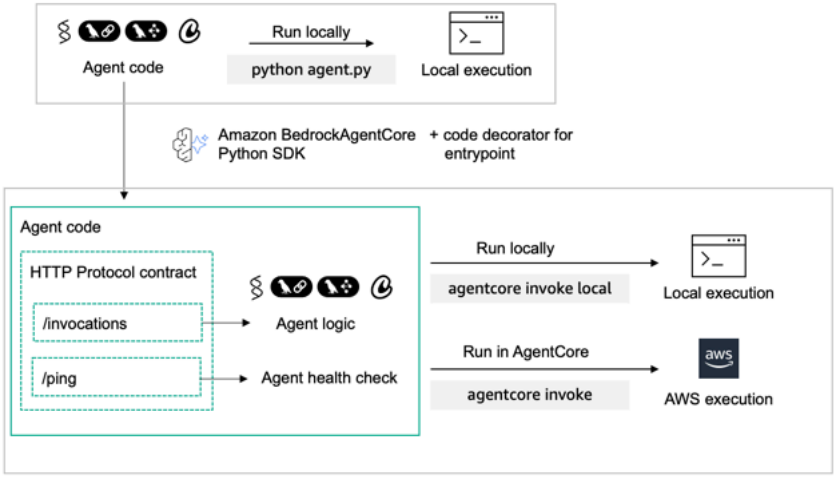
The Amazon Bedrock AgentCore Python SDK acts as a wrapper that:

- **Transforms** your agent code into AgentCore's standardized protocols
- **Handles** HTTP and MCP server infrastructure automatically
- **Lets you focus** on your agent's core functionality
- **Supports** two protocol types:
  - **HTTP Protocol**: Traditional request/response REST API endpoints
  - **MCP Protocol**: Model Context Protocol for tools and agent servers

High Level Architecture

When hosting agents, the SDK automatically:

- Hosts your agent on port `8080`
- Provides two key endpoints:
  - `/invocations`: Primary agent interaction (JSON input → JSON/SSE output)
  - `/ping`: Health check for monitoring



Getting Started

First, you need to implement an AI Agent using the framework of your choice. In this example, we implement a simple AI Agent using the Strands Agent framework:

```python
from strands import Agent, tool
from strands_tools import calculator
import argparse
import json
from strands.models import BedrockModel

@tool
def weather():
    """ Get the weather """
    return "sunny"

model_id = "us.anthropic.claude-3-7-sonnet-20250219-v1:0"
model = BedrockModel(
    model_id=model_id,
)
agent = Agent(
    model=model,
    tools=[calculator, weather],
    system_prompt="You're a helpful assistant. You can perform simple math calculations and tell
)

def strands_agent_bedrock(payload):
    """
    Invoke the agent with a payload
    """
    user_input = payload.get("prompt")
    response = agent(user_input)
    return response.message['content'][0]['text']

if __name__ == "__main__":
    parser = argparse.ArgumentParser()
    parser.add_argument("payload", type=str)
    args = parser.parse_args()
    response = strands_agent_bedrock(json.loads(args.payload))
    print(response)
```

Prepare the Agent for AgentCore Runtime

The Amazon Bedrock AgentCore Python SDK provides a lightweight wrapper that helps you deploy your agent functions as HTTP services compatible with Amazon Bedrock AgentCore.

You can convert **your existing agent function** into an Amazon Bedrock AgentCore-compatible service with just **four steps**:

1. Import the Runtime App with `from bedrock_agentcore.runtime import BedrockAgentCoreApp`
2. Initialize the App in our code with `app = BedrockAgentCoreApp()`
3. Decorate the invocation function with the `@app.entrypoint` decorator
4. Let AgentCoreRuntime control the running of the agent with `app.run()`

```python
# strands_claude.py
from strands import Agent, tool
from strands_tools import calculator # Import the calculator tool
import argparse
import json
from bedrock_agentcore.runtime import BedrockAgentCoreApp
from strands.models import BedrockModel

app = BedrockAgentCoreApp()

# Create a custom tool
@tool
def weather():
    """ Get weather """ # Dummy implementation
    return "sunny"


model_id = "us.anthropic.claude-sonnet-4-20250514-v1:0"
model = BedrockModel(
    model_id=model_id,
)
agent = Agent(
    model=model,
    tools=[calculator, weather],
    system_prompt="You're a helpful assistant. You can do simple math calculation, and tell the weather."
)

@app.entrypoint
def strands_agent_bedrock(payload):
    """
    Invoke the agent with a payload
    """
    user_input = payload.get("prompt")
    print("User input:", user_input)
    response = agent(user_input)
    return response.message['content'][0]['text']

if __name__ == "__main__":
    app.run()
```

Invoke your Agent

You can invoke the agent using the `InvokeAgentRuntime` operation:

```python
import boto3
import json

# Initialize the Bedrock AgentCore client
agent_core_client = boto3.client('bedrock-agentcore', region_name="us-east-1")


# Prepare the payload
payload = json.dumps({"prompt": prompt}).encode()

# Invoke the agent
response = agent_core_client.invoke_agent_runtime(
    agentRuntimeArn=agent_arn,
    runtimeSessionId=session_id,
    payload=payload
)
```

Try it out

At an AWS Event

In the JupyterLab UI, navigate to `01-AgentCore-runtime/01-hosting-agent/01-strands-with-bedrock-model`

Self-paced

Here's are notebooks that lets you try out the above and extend the patterns to other frameworks and models

Example	Framework	Model	Description
strands-with-bedrock-model	Strands Agents	Amazon Bedrock	Basic agent hosting with AWS native models
langgraph-with-bedrock-model	LangGraph	Amazon Bedrock	LangGraph agent workflows

Example	Framework	Model	Description
strands-with-openai-model	Strands Agents	OpenAI	Integration with external LLM providers

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