
AWS
re:Invent
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DOP303-R

AI for DevOps: Modernizing your DevOps operations with AWS

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Agenda

Modernizing DevOps

AI for developers/AI for operations

Use cases

Where to start?

Demo/discussion

Q&A

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Modernizing DevOps

- Devs:
  - Less building/more innovation
  - Low code/no code
  - Shift left
- Ops:
  - Reduce noise
  - Close the gap - DevOps
  - Proactive monitoring

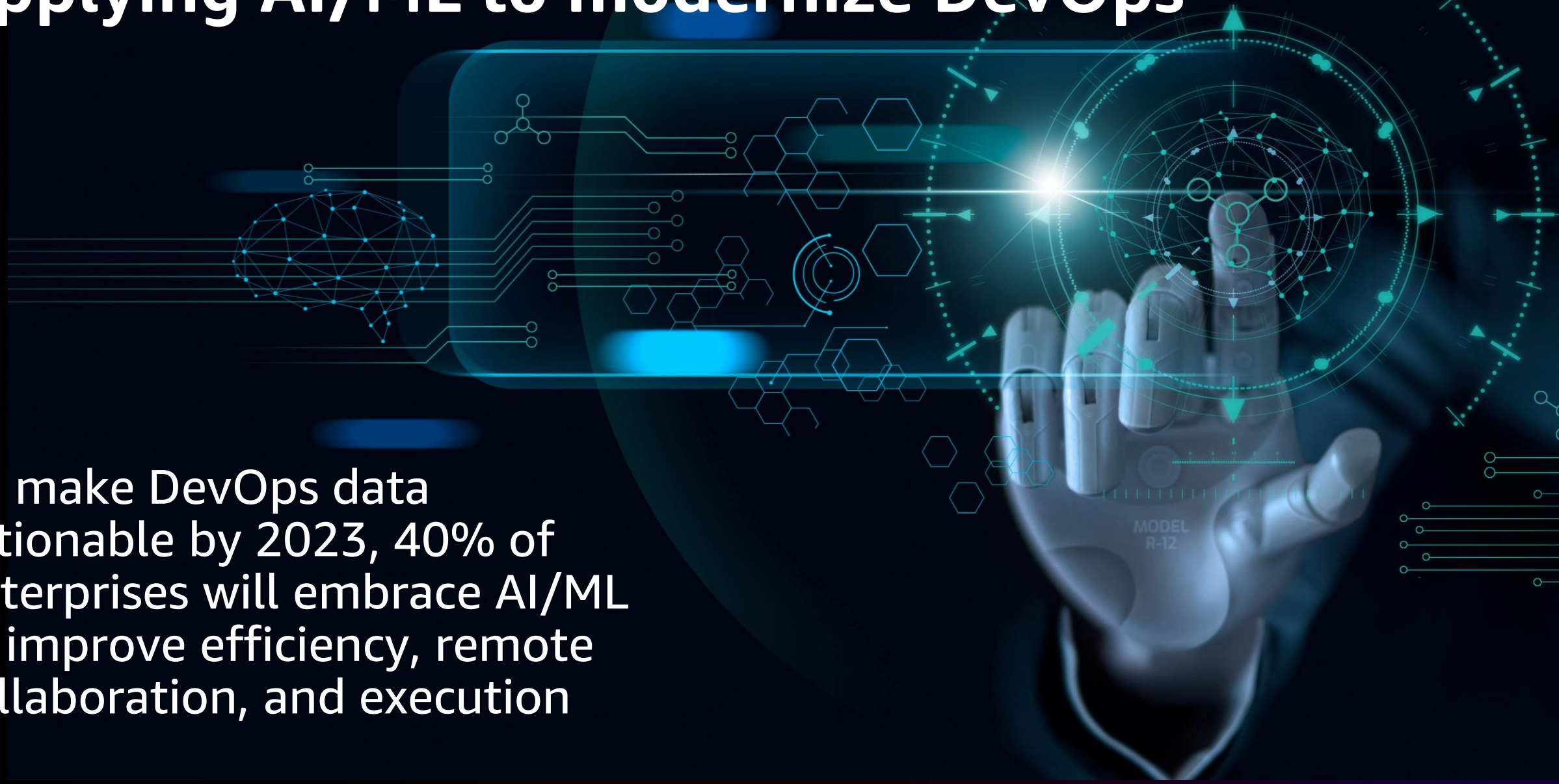


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Machine learning is transforming industries

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Applying AI/ML to modernize DevOps

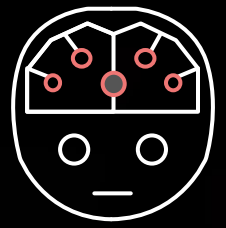


To make DevOps data actionable by 2023, 40% of enterprises will embrace AI/ML to improve efficiency, remote collaboration, and execution

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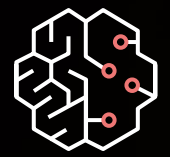
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What is it?



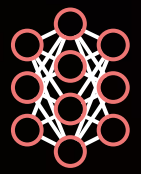
Artificial intelligence (AI)

Any technique that enables computers to mimic human intelligence using logic, if-then statements, and machine learning



Machine learning (ML)

A subset of AI that uses machines to search for patterns in data to build logic models automatically



Deep learning (DL)

A subset of ML composed of deeply multi-layered neural networks that perform tasks like speech and image recognition



Reinforcement learning (RL)

Reinforcement learning trains models by using a reward function of a desired outcome

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Do you use AI/ML to modernize your developer workflows today?

- ❑ Yes
- ❑ No

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Which part(s) of your DevOps workflow do you/would you use AI/ML for?

- ❑ Developing/writing code
- ❑ Review code/code security
- ❑ Application/code performance
- ❑ Monitoring/reliability

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Use cases



Write & review | Build & test | Deploy | Measure | Improve

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Use cases:
AI in code development

- Assist me with “how”
  - Frameworks/libraries/APIs
- Accelerate!
  - Code faster
- Enhance my code quality
  - With best practices



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AI in code development : Amazon CodeWhisperer

Provides code recommendations based on contextual information like prior code and comments

GENERATES:

- Entirely new code based on context
- Code from plain English comments
- Complete functions

SUPPORTS

- Python, JavaScript, Java
- VSCode, AWS Cloud9, JetBrains, AWS Lambda console

```python
# Function to detect objects in an image stored in S3
def detect_object(bucket, key):
    """
    The operation recognizes the labels in the supplied image file.
    Args:
        bucket: The S3 bucket that contains the image file.
        key: The file name of the image.
    Returns:
        labels: The list of labels in the image.
    """

    try:
        response = rekognition.detect_labels(
            Image={"S3Object": {"Bucket": bucket, "Name": key}},
            MaxLabels=10,
            MinConfidence=75,
        )
    except ClientError as e:
        logging.error(e)
        return None
    return response["Labels"]
```

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Use cases:
AI for code review

- Trained to find deeper vulnerabilities
- Reduce false positives
  - Frameworks/libraries/APIs
- Code Quality as well
  - Enhanced code reviews
- Functional vs. business logic
- Shift left



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How do you do code reviews today?

- ❑ Every pull request
- ❑ Feature branch → dev branch
- ❑ As time allows/other

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Use cases:
AI for operations (AIOps)

1. Release management
2. Monitoring (metrics, logs, & traces)
3. Incident management



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Use cases:
AI for operations (AIOps)

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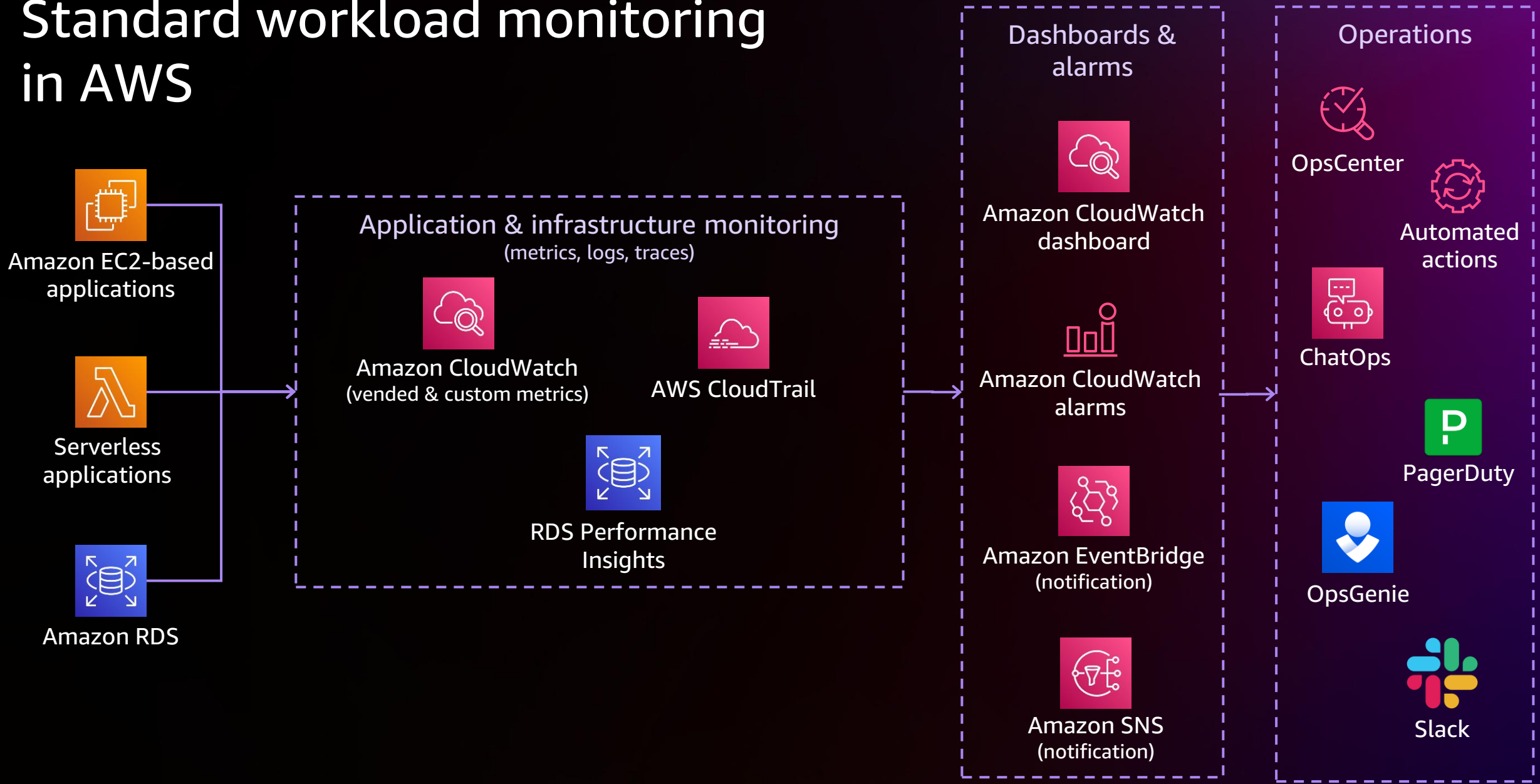
AI with ITOps

1. Rapid growth in monitoring data
2. Proliferation of monitoring actions – create alarms, dashboards
3. Proactively monitor thresholds & application trends
4. Shift left ITOps – align operations to early in development pipeline
5. Elevate your IT operators to focus on high-value projects



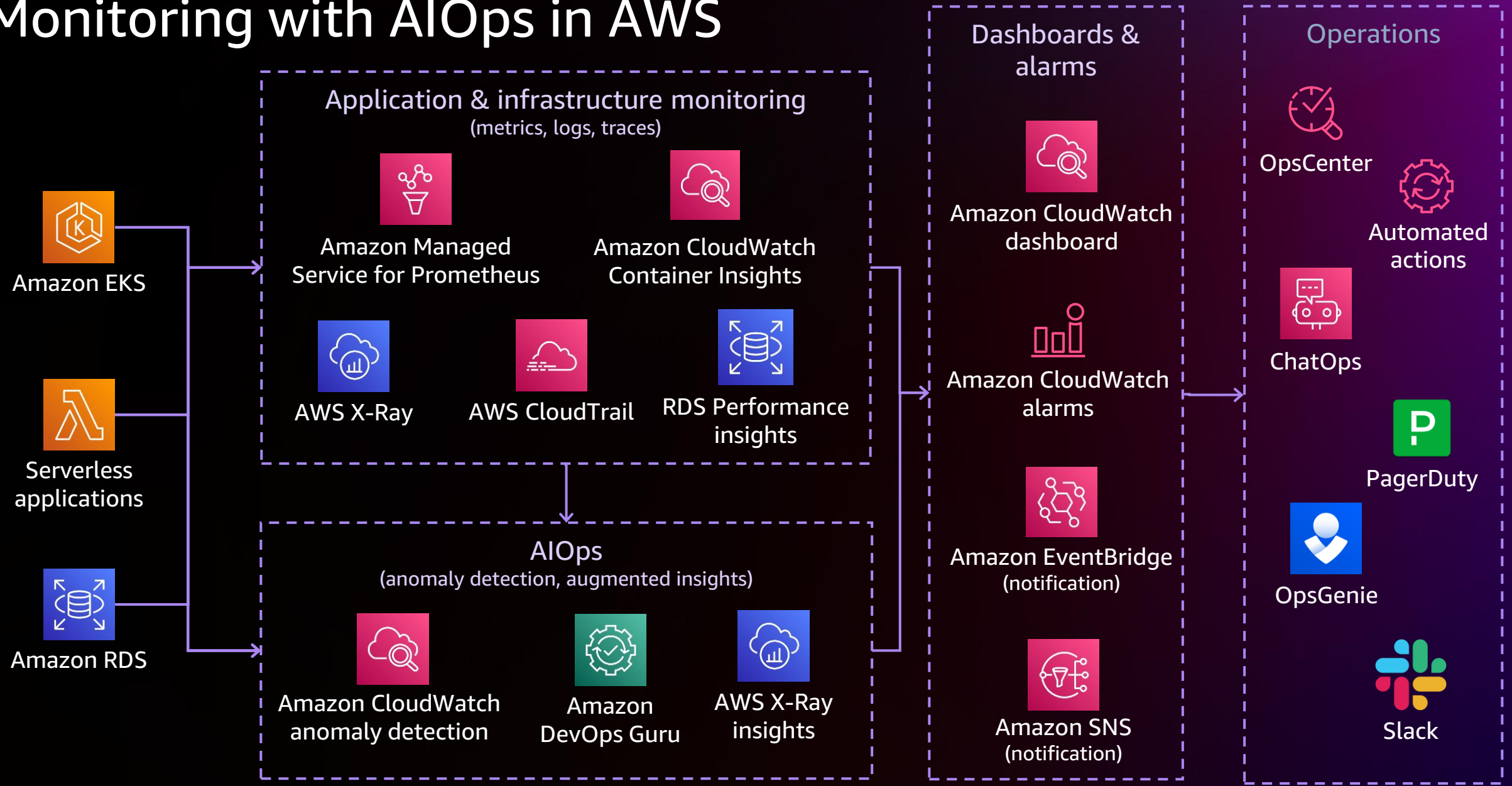
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Standard workload monitoring in AWS



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Monitoring with AIOps in AWS



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Discussion & common questions

- Technology decisions based on what is available now?
- I want to wait for v3.0
- How much of this is “black box”? I need more control
- I have very specific use cases
- AIOps → Does this achieve full automation? Self healing?

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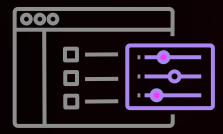
How to get started and what's next?



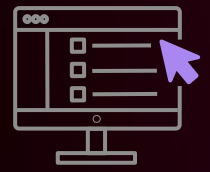
Identify a critical workload



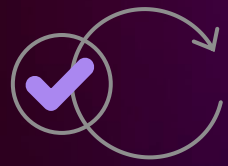
Identify your operational metrics



KPI → Operational Metrics



Implement and verify results



Iterate/expand over time

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Thank you!

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