



midwest
architecture community
collaboration

In a rapidly changing world, what's here to stay?

Adopting technologies and best practices that matter

Ravi Mupkala

Sr. Manager, Enterprise Architecture

MACC 2020 Virtual Conference



What to expect from this session?

This talk is not about disruptive technologies

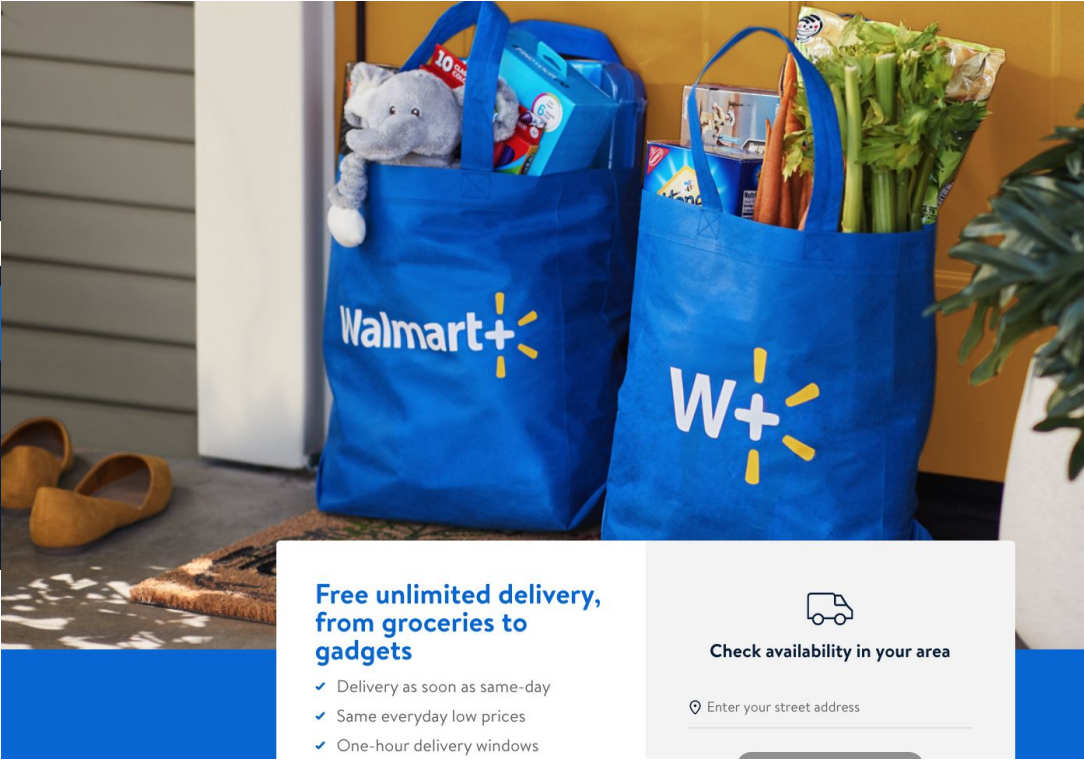
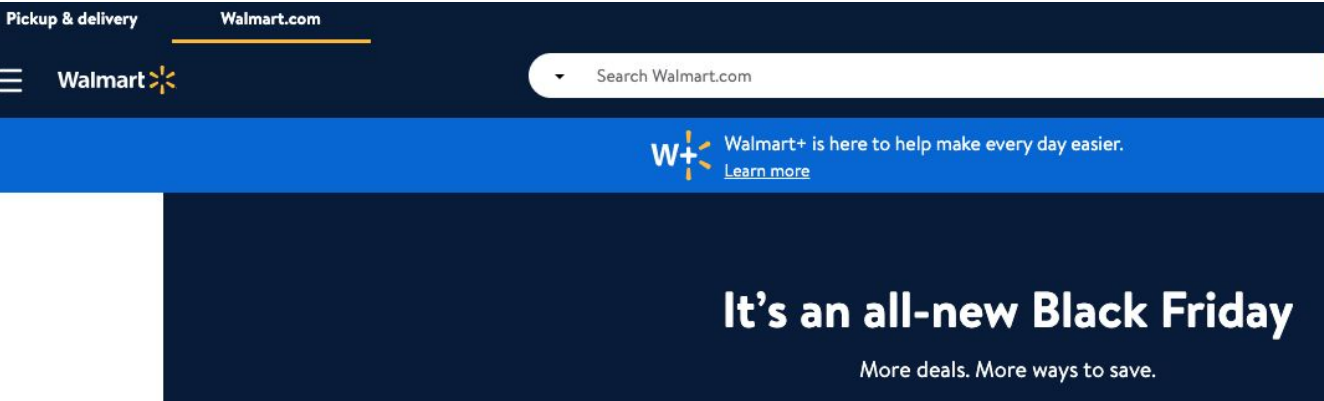
Hopefully not surprising topics

More from experience, make you think

Insights based on our tech journey and resilience

Is it time for Digital Transformation?

The obvious...



Somewhat obvious...



[Home](#) / [Grocery Delivery And Pickup](#)

Free pickup or delivery.

Prime members: Skip the lines, skip the hassle and get your Whole Foods Market favorites carefully packed and ready to go or delivered for free — all on your schedule. It's that easy.



Not so obvious...



A glimpse of our own...



[Credit Cards](#) [Checking & Savings](#) [Auto Loans](#) [Business](#) [Commercial](#) [Learn & Grow](#)

[Search](#) [Help](#) [Location](#) [Sign In](#)

Username

Remember Me

Password

[Forgot Username or Password?](#)

Sign In

[Set Up Online Access](#)

Find Better Deals

Capital One Shopping applies coupon codes to your order automatically.

[Get it for Free](#)

TECHNOLOGY THAT LOOKS OUT FOR YOU

Meet Eno

Capital One

Eno is at work 24/7, looking out for you and helping you

[Meet Eno](#)

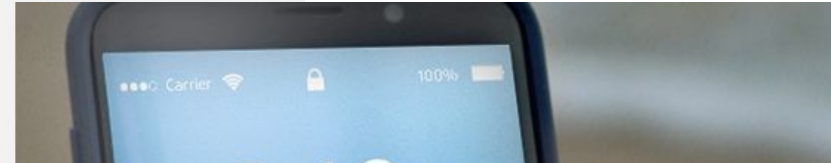
9:41 AM 40%
Credit Summary

720
GOOD
Next update 4 Days

300 850

What Impacts Your Credit?

On-Time Payments 100% made on time	EXCELLENT
Oldest Credit Line 17 years	GOOD
Credit Used 10% used	GOOD



FINANCIAL WELLNESS

What's your credit score?

Join CreditWise® and get personalized suggestions to help improve your numbers. It's free and it won't hurt your credit.²

[Get Started](#)



Three aspects of our Tech Transformation...



Cloud



Data



Machine Learning



Bonus topic

Cloud Transformation

Things to consider



When to Start?

As early as possible

End of 2014



How much cloud vs. on-prem?

As much as you can

2016: declared all-in on Cloud



Public or Private Cloud?

Public has its benefits

Public Cloud



Multi-Cloud or Single?

It depends

Predominantly AWS

Challenges

Leadership Buy-in

Not just part of IT Strategy

Talent / Skills

Education, Up skill, Learning

Over 3400 AWS Certifications

Existing Architectures

Lift and Shift, Re-Architect, Decommission

Governance / Compliance

Well-managed, controls



Cloud Custodian

Opensource Cloud Security, Governance, and Management



The Path to a Well Managed Cloud

Cloud Custodian enables users to be well managed in the cloud. The simple YAML DSL allows you to easily define rules to enable a well-managed cloud infrastructure, that's both secure and cost optimized. It consolidates many of the ad-hoc scripts organizations have into a lightweight and flexible tool, with unified metrics and reporting.

Custodian supports managing AWS, Azure, and GCP public cloud environments.

🔒 Real-time Compliance

Besides just providing reports of issues, Custodian can actively enforce the security policies you define.

🕒 Cost Management

Setup off-hours to save you money, by turning-off resources when they're not being used. Garbage collect unused resources by looking into utilization metrics.

➤ Run Anywhere

Custodian can be run locally, on an instance, or Serverless in AWS Lambda.

🔗 Open Source

Cloud Custodian is open source and free for everyone to use.

📄 Simple DSL

Use Custodian to build complex workflows or simple queries, millions of policies can be constructed using our easy to read DSL.

Best Practices

Automation, CI/CD

Automate everything

DevOps

More than technology

Our YBYO Culture

Resiliency, SRE

Stability in adversity

Cost Optimization

Simple to complex solutions

Open Source

What's open will remain open

Containers

Pets vs. Cattle

Portability

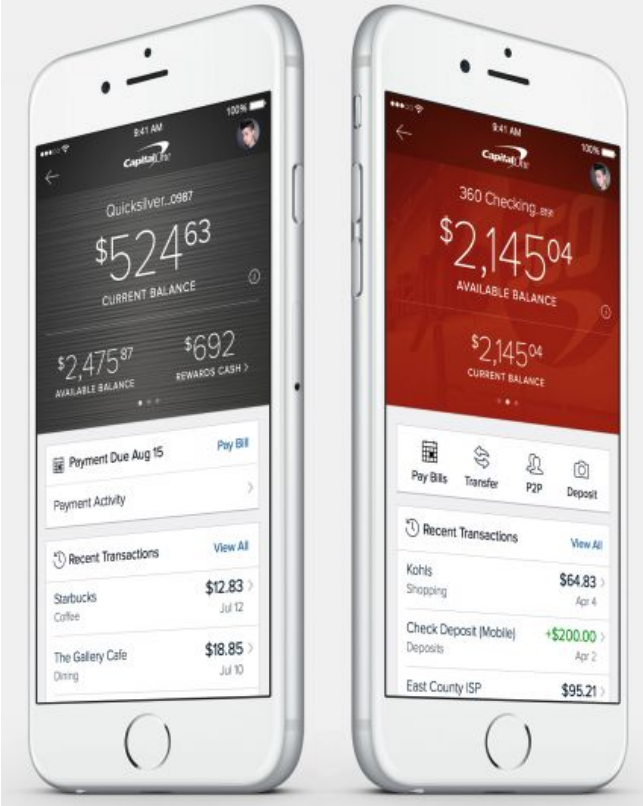
Observability

Instrument everything

Security

Shared responsibility

Some recent examples



Data Transformation

Things to consider



Where to Start?

Review your existing systems

We discovered systems built when
compute, storage was limited



Is the ecosystem Cloud ready?

Leverage the benefits of cloud

Rebuilding our data ecosystem



How long is it going to take?

It depends, plan your journey

Still in our multi-year transformation



Will something break?

Likely. Ensure business continuity

Utilized interim states

Challenges

Breaking the silos

Enterprise effort

Data Management

Data quality, governance, inventory

Producers, Consumers

Existing Architectures, Legacy Technologies

Data migration, Decommission

Integrating newer architectures

Compliance, Security

Regulation, Tokenization, DLP

Best Practices

Data Quality

Ensure validation at source

Fit for purpose

Over one size fits all

Separate compute vs. storage

Where possible

Data Inventory, metadata

Know where your data lives

Open Source

What's open will remain open

Focus on high priority data

Migrate based on usage and abstract your transformations

Leverage streaming data

Identify use cases

Machine Learning (ML)

Things to consider



Where to Start?

Start with your data, ask questions

Data has been at the core of our business



What does Cloud offer?

ML for the masses

We use both Cloud and in-house products



Hype vs Value?

When data leads to usable answers

Successfully leveraging ML in business



Centralized or Federated?

It depends

We have a COE and also federated groups

Challenges

Getting from hype to value

Start with low hanging fruit

Talent / Skills

Attract and retain talent

Education, Up skill, Learning

Identifying Use Cases

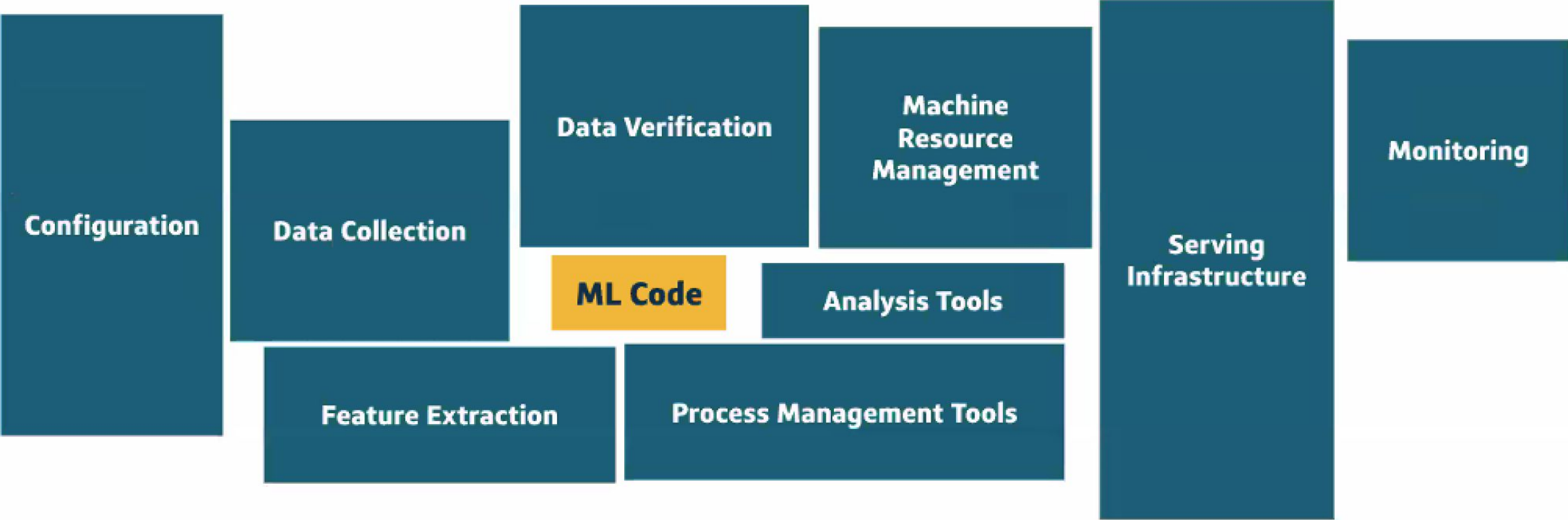
Collaborate with business

Exploration vs. Production

Data scientist's machine

Build or leverage off the shelf

ML Code vs. real-world production ML systems



Best Practices

Create ML Pipelines

Automate the deployment of models

Re-use

Models, pipelines, infrastructure

Know the roles

Data Scientist, Data Engineer, ML Engineer

Know your data

Data is as important as your code

Open Source

What's open will remain open

Explainability

Responsible AI and Bias

Model Risk Governance

Validating, Monitoring models for accuracy

Architecture / Architects

Things to consider



Strategy

Be open to new avenues

Focus on operational excellence



Agile

Nimble and adapt to change

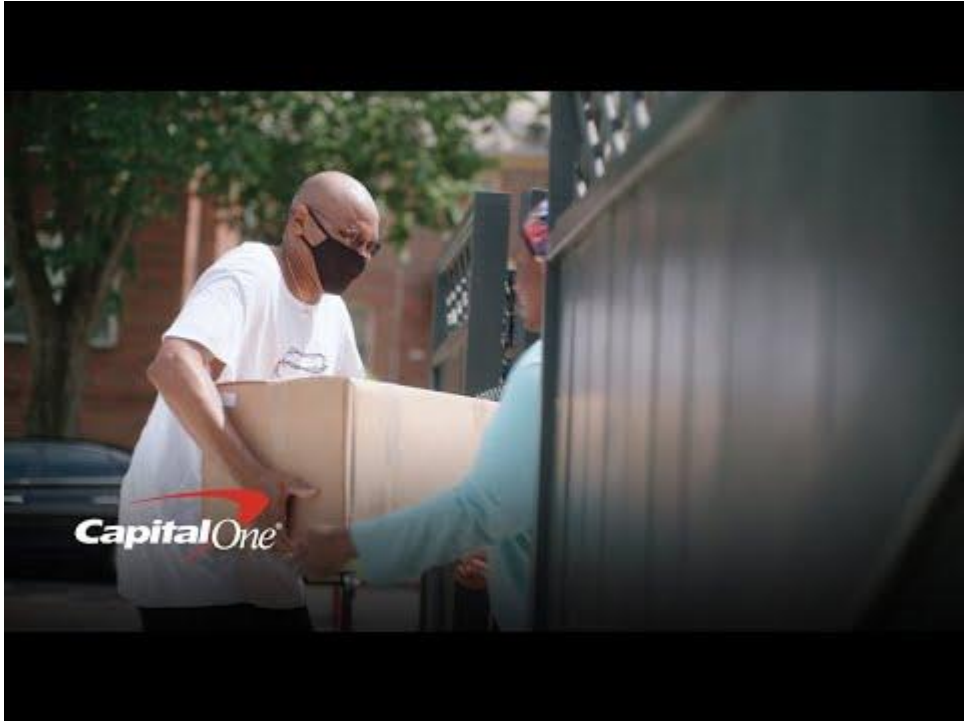


Resilience

Enable your customers

Prepared for the comeback

Resilience Reimagined



Things to consider



Strategy

Be open to new avenues
Focus on operational excellence



Agile

Nimble and adapt to change



Resilience

Enable your customers
Prepared for the comeback



Kindness

Show empathy
Where it's not expected!

THANK YOU!

Continue the conversation...

Email: ravi.mupkala@gmail.com

Connect: [Linked In](#)

Speaker Bio:

Ravi Mupkala is an Architecture and Engineering Leader at Capital One (McLean, VA) providing technology strategy, leadership, vision, architecture and implementation guidance to high performing engineering teams, architects and product teams. Prior to Capital One, Ravi has significant experience leading transformation initiatives for Fortune 500 companies and for public sector.

Ravi's current focus is on Cloud, Data and ML. He has led a team as the lead inventor to file for multiple patents leveraging ML and technology to solve business problems. He also has some great memories of partnering with friends at MACC and IASA MN.

