

Online Services & Quality



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Test in
Production
and
Continuous
Delivery

The Israel R&D Center



500 engineers
1 Product Asset
8 Product & Technology
areas

Industry &
Academia
Outreach

7 Acquisitions
4 Strategic agreements
& Investments

Microsoft
Research

Development & Research @ Israel

Cloud Business Intelligence



Entertainment & NUI




Information Platforms & Experiences



Management Protection & Access



Microsoft Research



Devices and services business



Boxed Products



Boxed Product – Requirements examples

Microsoft Forefront Endpoint Protection 2010

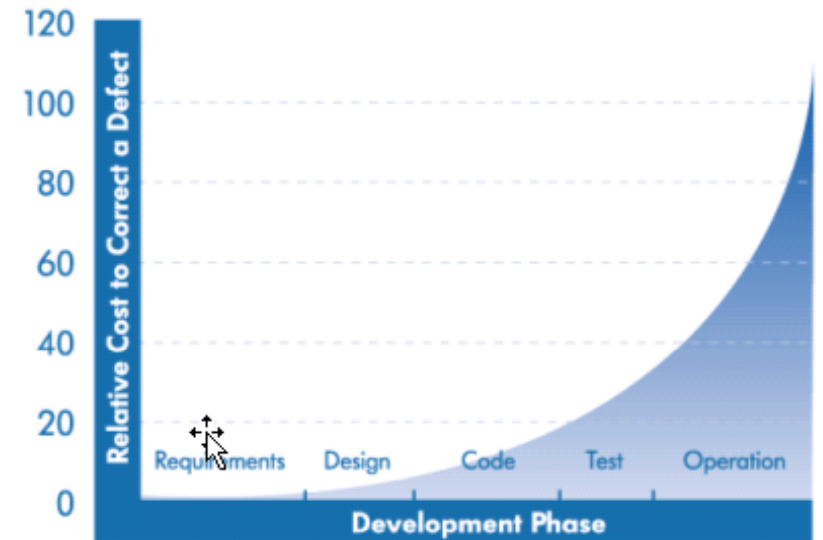
- *Home & Enterprise*
- *30 different languages*
- *32/64 bits*
- *Integration with other MS products*
- *Ship in one year, Support for 10 years*
- *Enterprise Scale - ~10-100K nodes*

Boxed Products

Will it work?

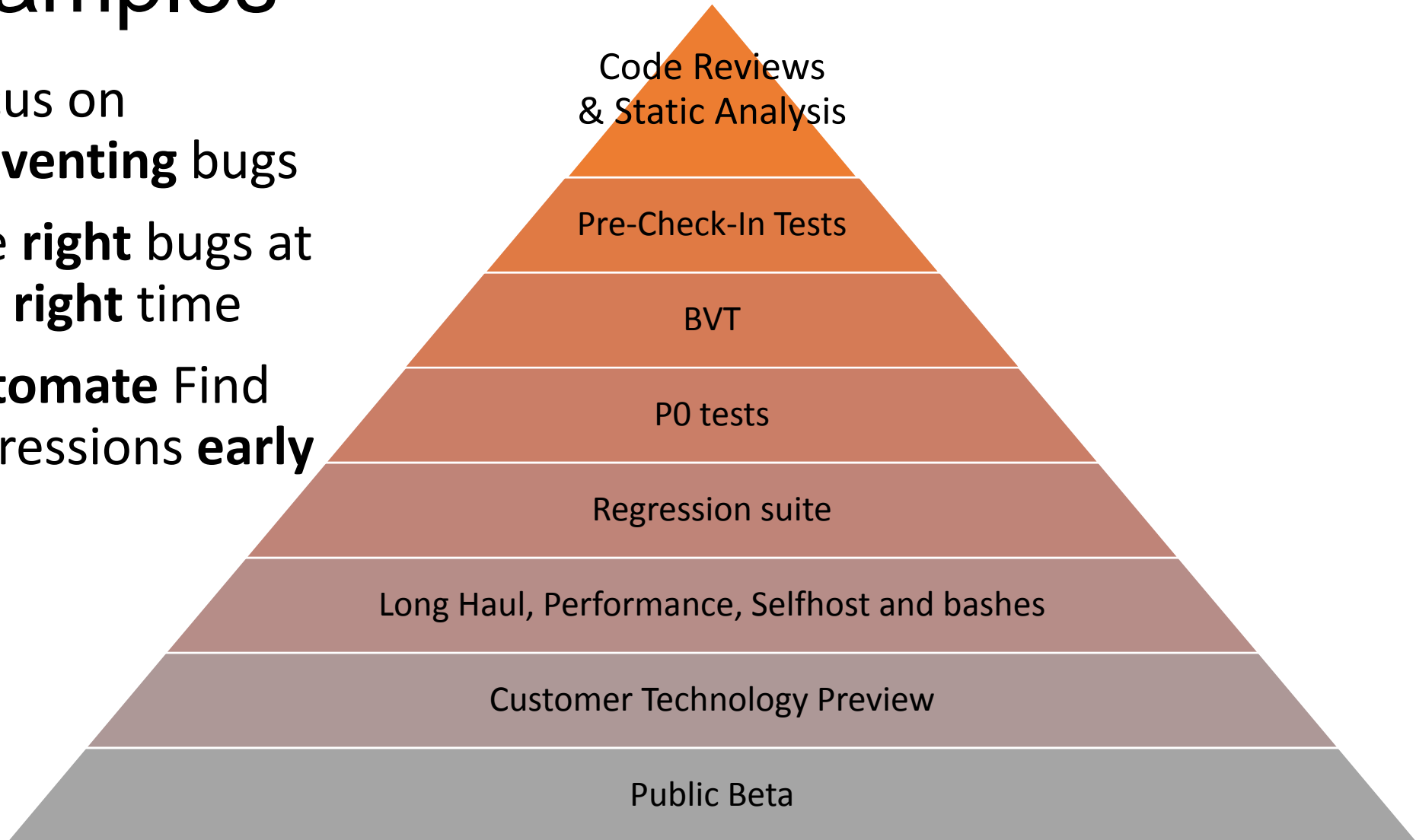
Boxed Products - Will it work?

- Design and Code Reviews
- Focus on **preventing** bugs
- The **right** bugs at the **right** time
- **Involve** Developers and PM in testing
- **Automation**
- Find regressions **early**
- **Self-host**
- Learn and Improve!



Boxed Products - Quality Layers Examples

- Focus on **preventing** bugs
- The **right** bugs at the **right** time
- **Automate** Find regressions **early**



From Box to Cloud



Box



- Mean Time Between Failures
- Customer Operations
- Works at Customer sites
- Infrequent updates
- One customer

Service



- Mean Time To Recovery
- Company Operations
- Works at Company sites
- Continuous updates
- Many customers

Cloud Services

Will it work?

Is it working?

Is it working?

- Move from:

- Simulation to Monitoring

- Modelling to using the “Real thing”

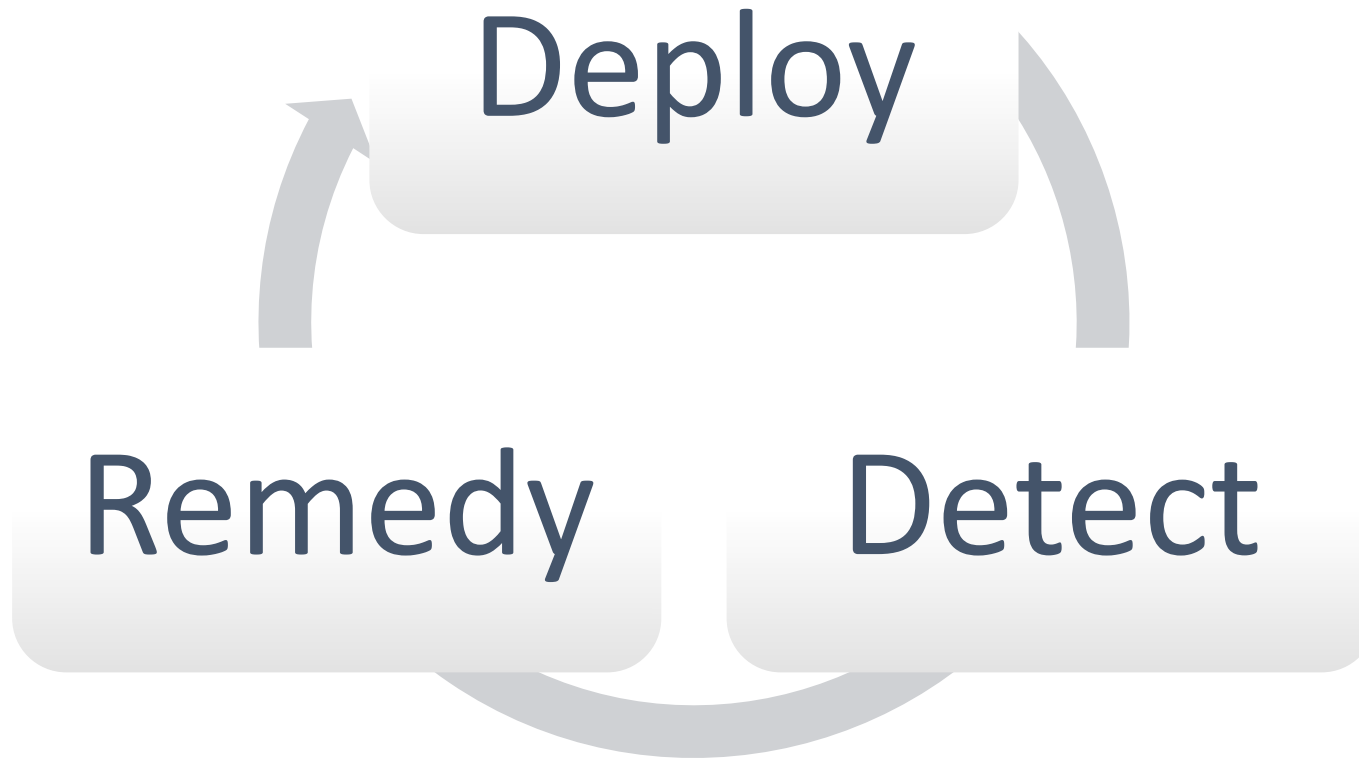
Cloud Services

Will it work?

Is it working?

Fast mitigations!

Continuous Deployment



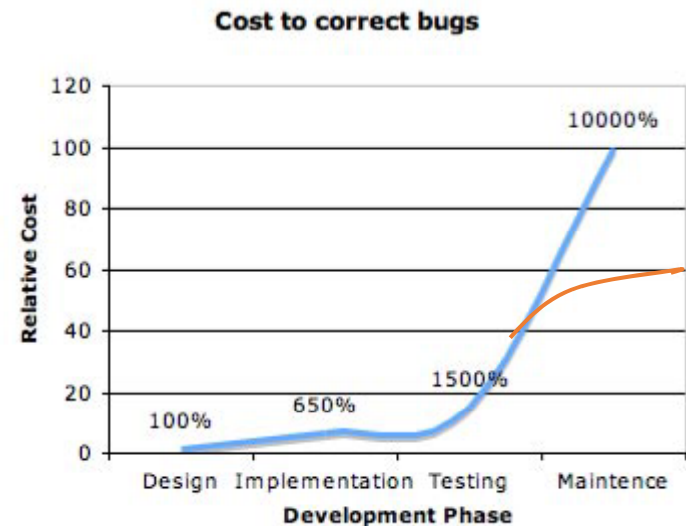
Testing In Production - TiP

Set of software methodologies that continuously and safely utilizes real users and live environments to leverage the diversity of production while mitigating risks to end users

Testing In Production – Main Changes

- Less focus on **big up-front-testing** investments
- More focus on **Monitoring and Testing** of the **real service**
- Quality **features** which are part of the service
- **Fast** and **Safe** service **update** capabilities

- Being much more **Lean!**



TiP – Techniques

Passive

Active

Passive
Monitoring

Experimentation

Active
Monitoring

System
Resiliency

Data
Mining

Performance
Monitoring

Environment
Validation

A/B for
Design

Vcurr /
Vnext
for Quality

Dogfood
and Beta

API Level

User
Scenario


Load
Testing

Destructive
Testing

Experimentations: A/B for Design - Microsoft

A

Shopping Cart

 **Xbox 360 Elite Bundle** \$399.99

Quantity: 1

[Remove](#) Delivery Options: Ship It

Shipping Method

- UPS Ground - \$0.00 (3-7 business days)
- UPS 2nd Day - \$5.00 (2 business days)
- UPS Next Day - \$12.00

Subtotal: \$399.99
Shipping: \$0.00
Tax: \$38.00


Estimated Total: \$437.99

Enter Zip to calculate Tax: 98052

[E-mail Cart to a Friend](#)

B

Shopping Cart

 **Xbox 360 Elite Bundle** \$399.99

Quantity: 1

[Remove](#) Delivery Options: Ship It

Shipping Method

- UPS Ground - \$0.00 (3-7 business days)
- UPS 2nd Day - \$5.00 (2 business days)
- UPS Next Day - \$12.00

Subtotal: \$399.99
Shipping: \$0.00

[E-mail Cart to a Friend](#)

A

XBOX LIVE

Join Xbox LIVE It's Free!

Get Connected! Connect your Xbox 360 to Xbox LIVE. It's Free and Easy!

- Step 1: Connect your Xbox 360 to the Internet.
- Step 2: Turn on your Xbox 360 and go to the Xbox LIVE menu.
- Step 3: Follow the on-screen instructions to complete the setup.

Where Games, Movies and Friends Connect

Upgrade to Gold!

- Online Gaming
- Instant Downloading of better requests
- Extra services and exclusive benefits
- Multiplayer
- Photo sharing

Upgrade to the Best Xbox LIVE Experience With Xbox LIVE Gold

B

XBOX LIVE

PLAY TOGETHER

The online gaming and entertainment service for your Xbox 360. Xbox LIVE connects you to bring games, movies, music and fun with friends.

XBOX LIVE features	All LIVE Members	Gold Members
Free Game Demos	✓	✓
HD Movie & TV Shows	✓	✓
Game Add-ons	✓	✓
Downloadable Arcade Games	✓	✓
Games On Demand	✓	✓
Avatars	✓	✓
Avatar Fashion	✓	✓
Voices, Text Chat	✓	✓
Video Chat	✓	✓
Online Multi-Player Gaming	✓	✓
Early Access to Content	✓	✓
Streaming Netflix	✓	✓
Exclusive Discounts	✓	✓
Photo Sharing	✓	✓

Cloud Services

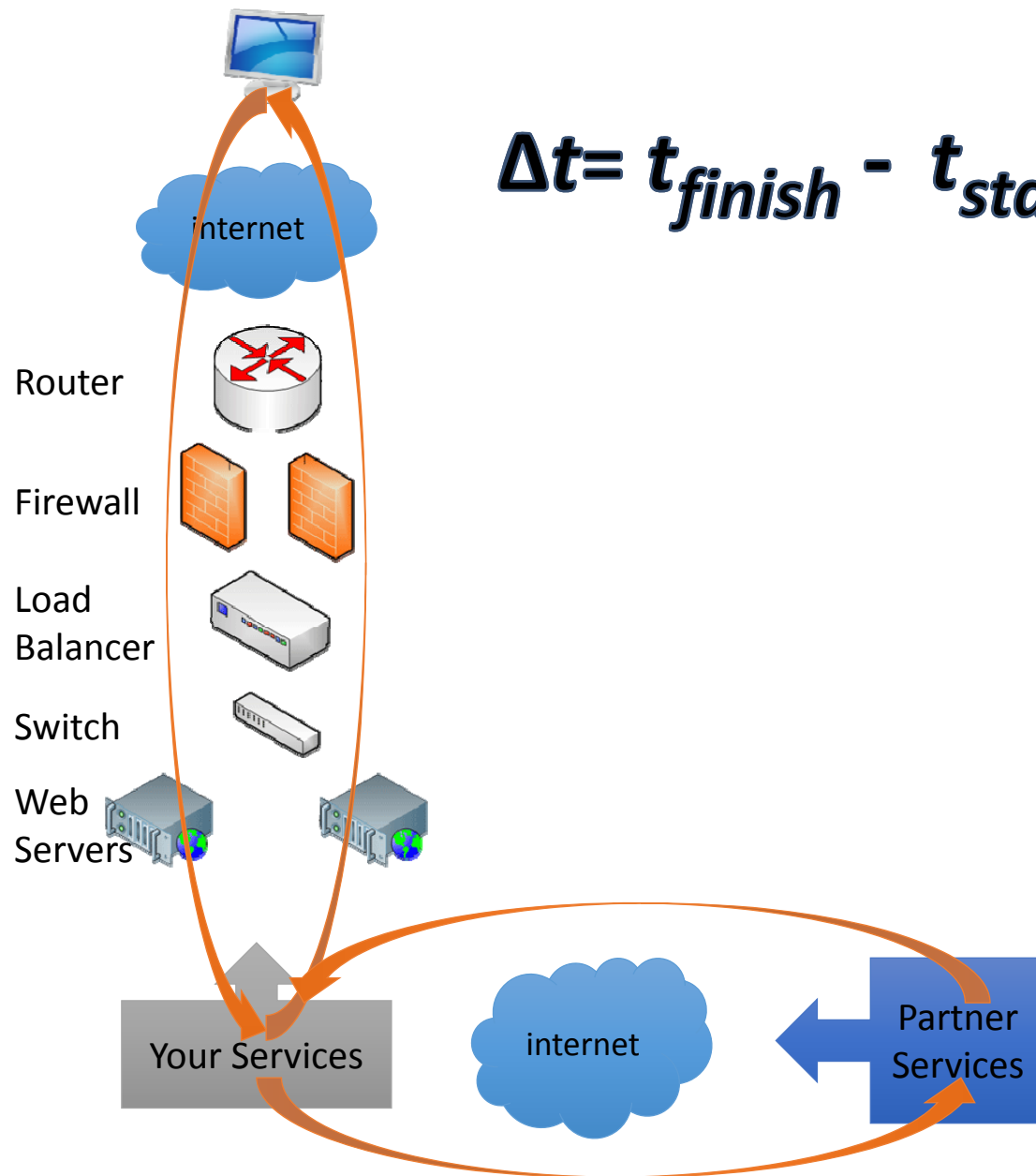
Will it work?

Is it working?

Fast mitigations!

Are we building the right “it”?

TiP – Techniques: Performance Monitors



$$\Delta t = t_{finish} - t_{start}$$

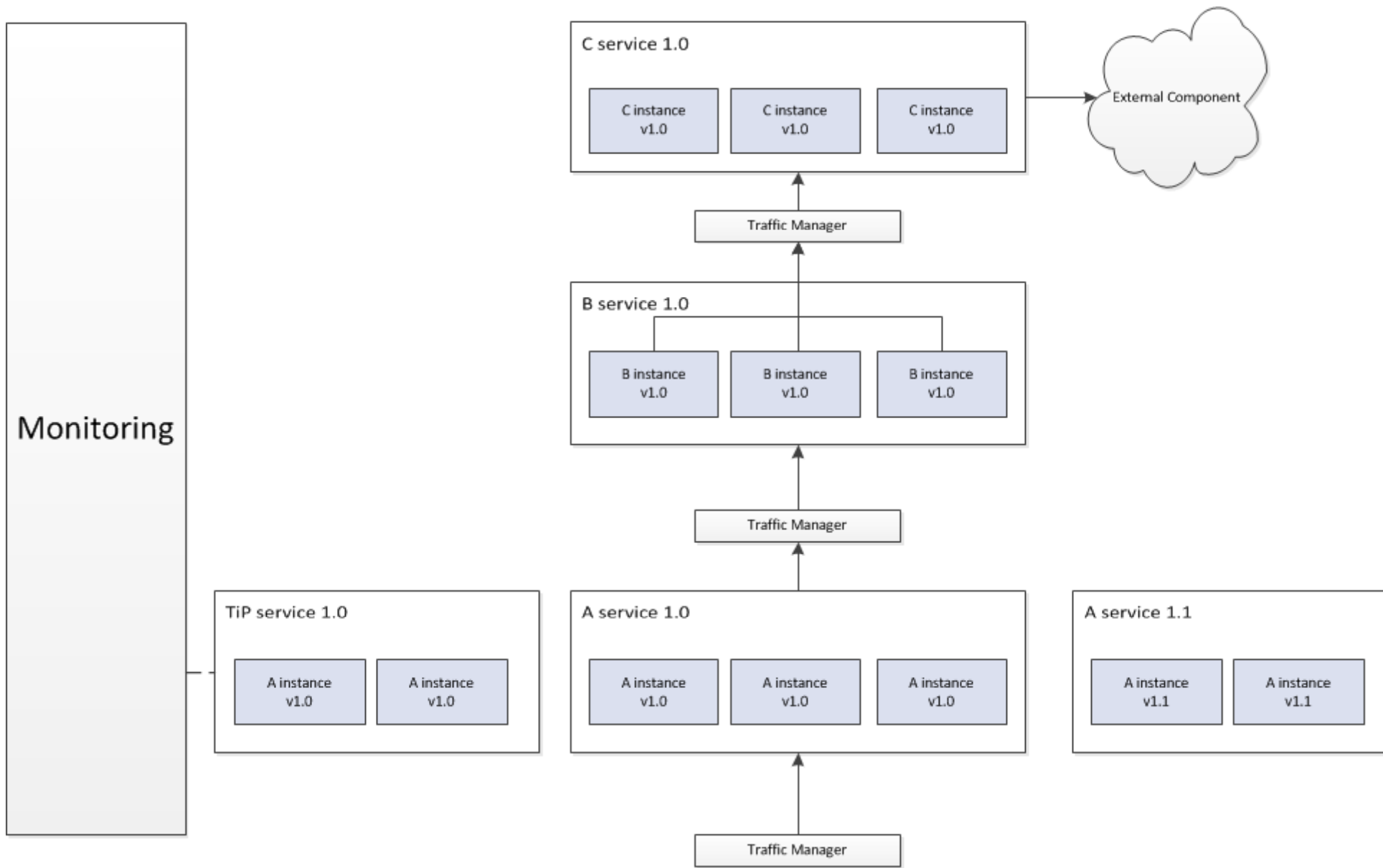


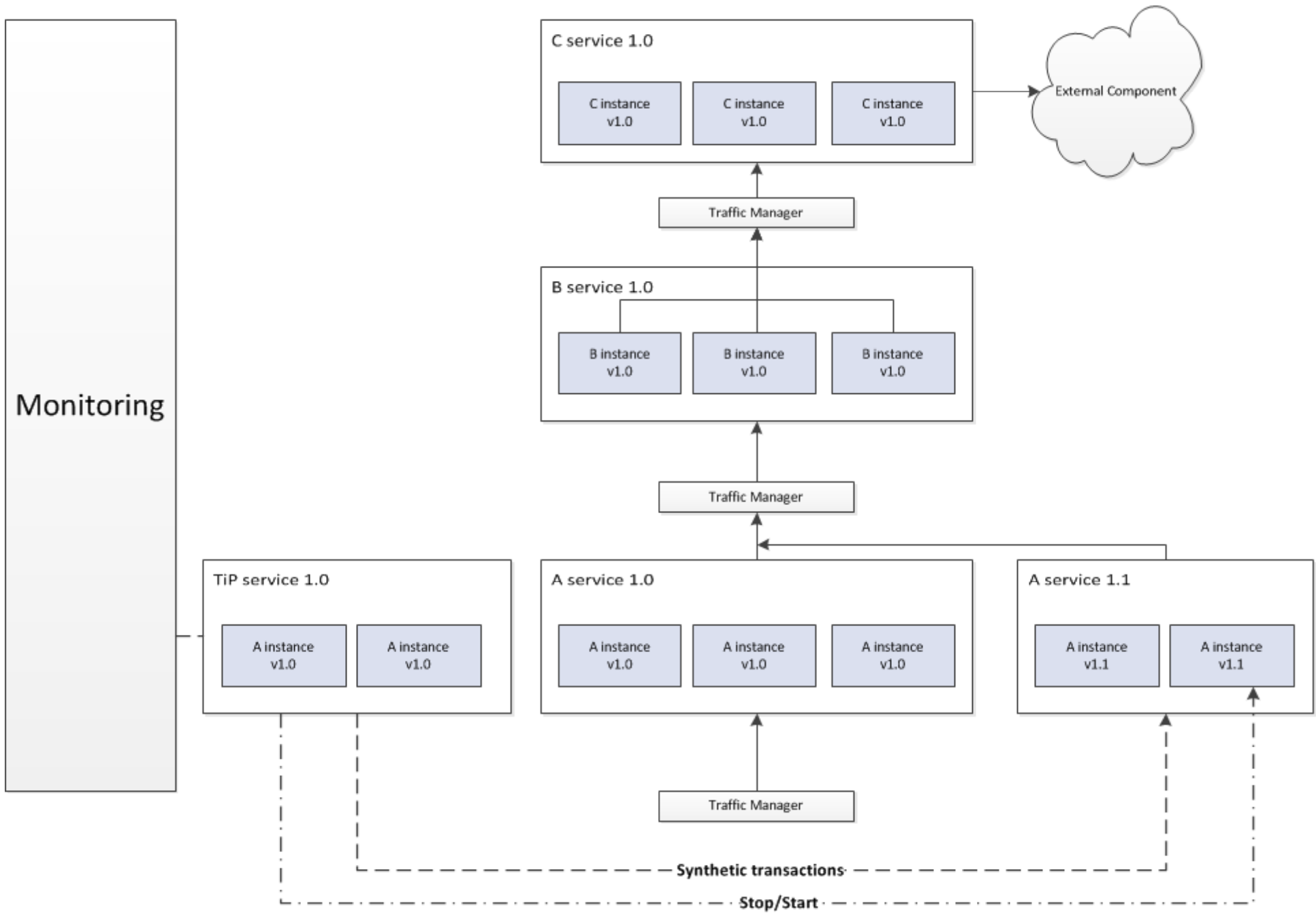
TiP – Techniques

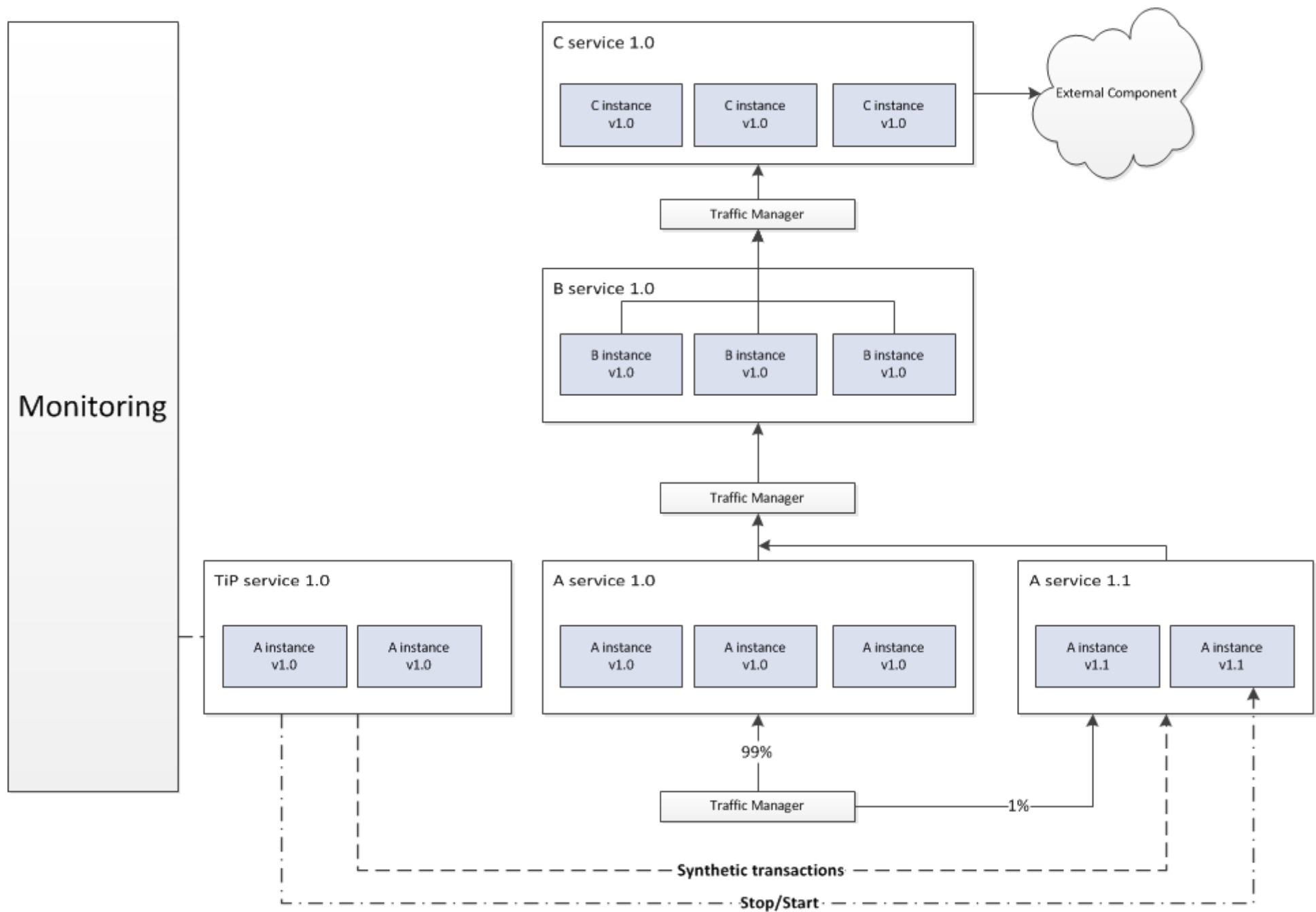
Passive/Active Monitoring

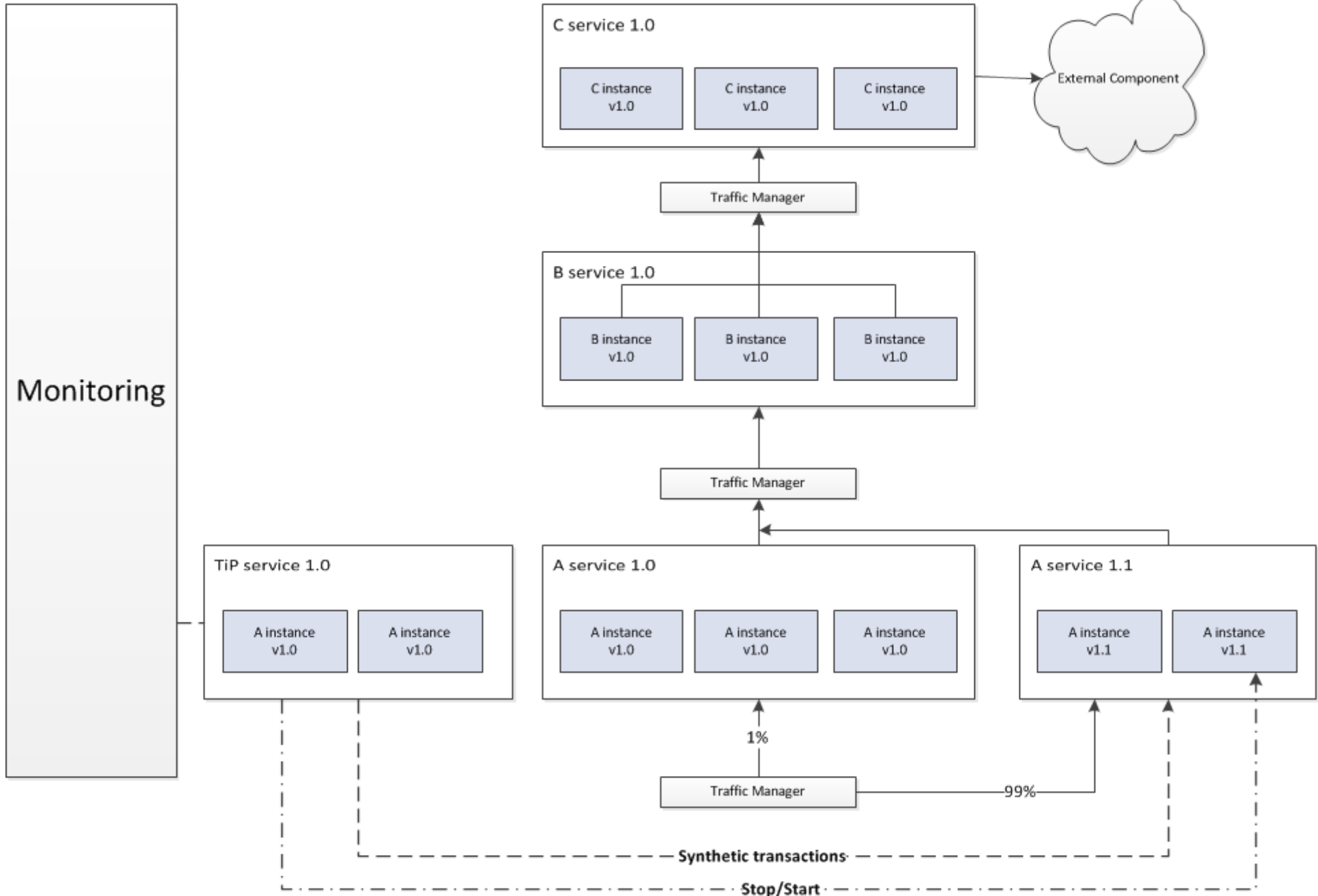
V_{curr}/V_{next} for Quality

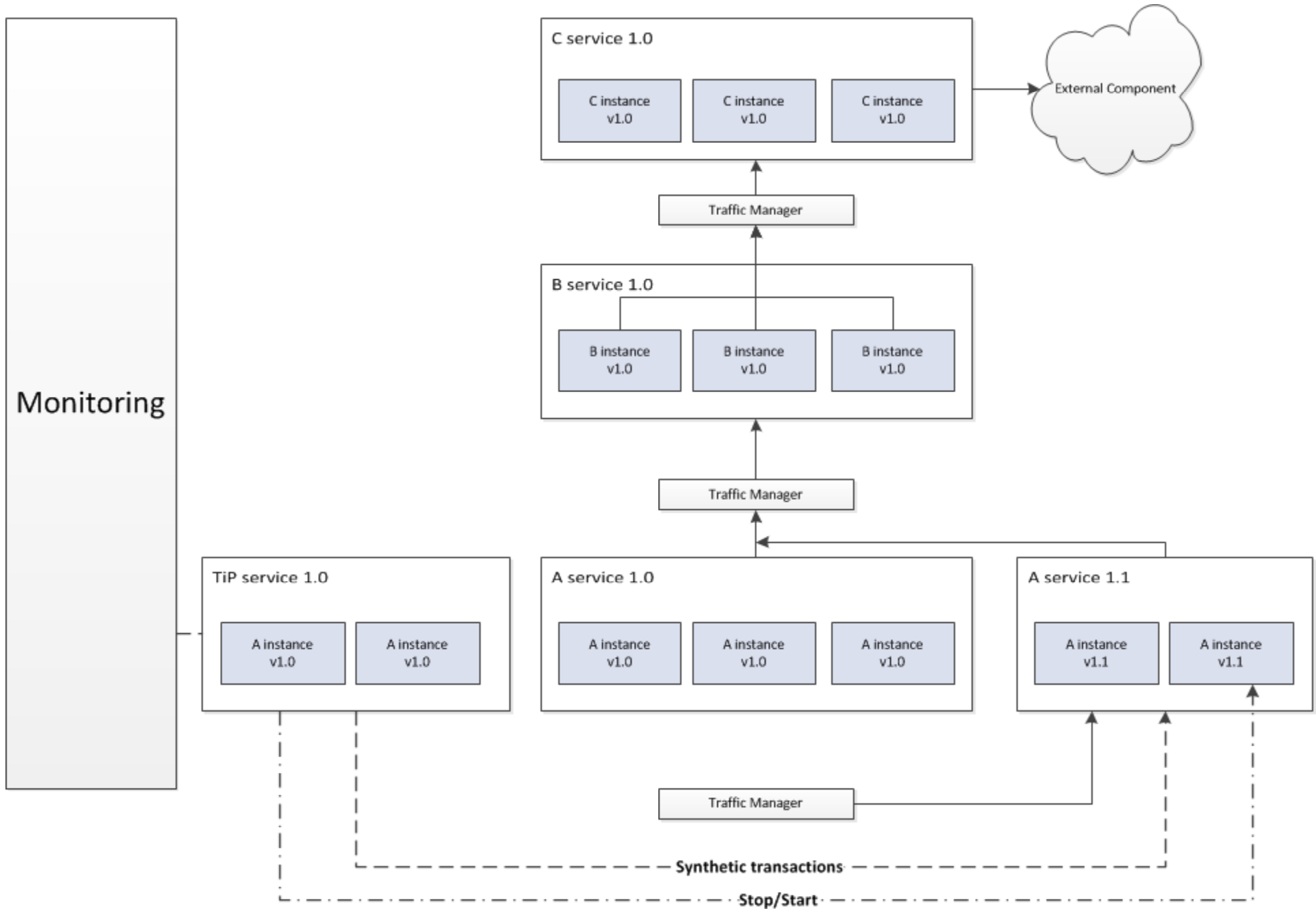
Exposure Control and System Resiliency

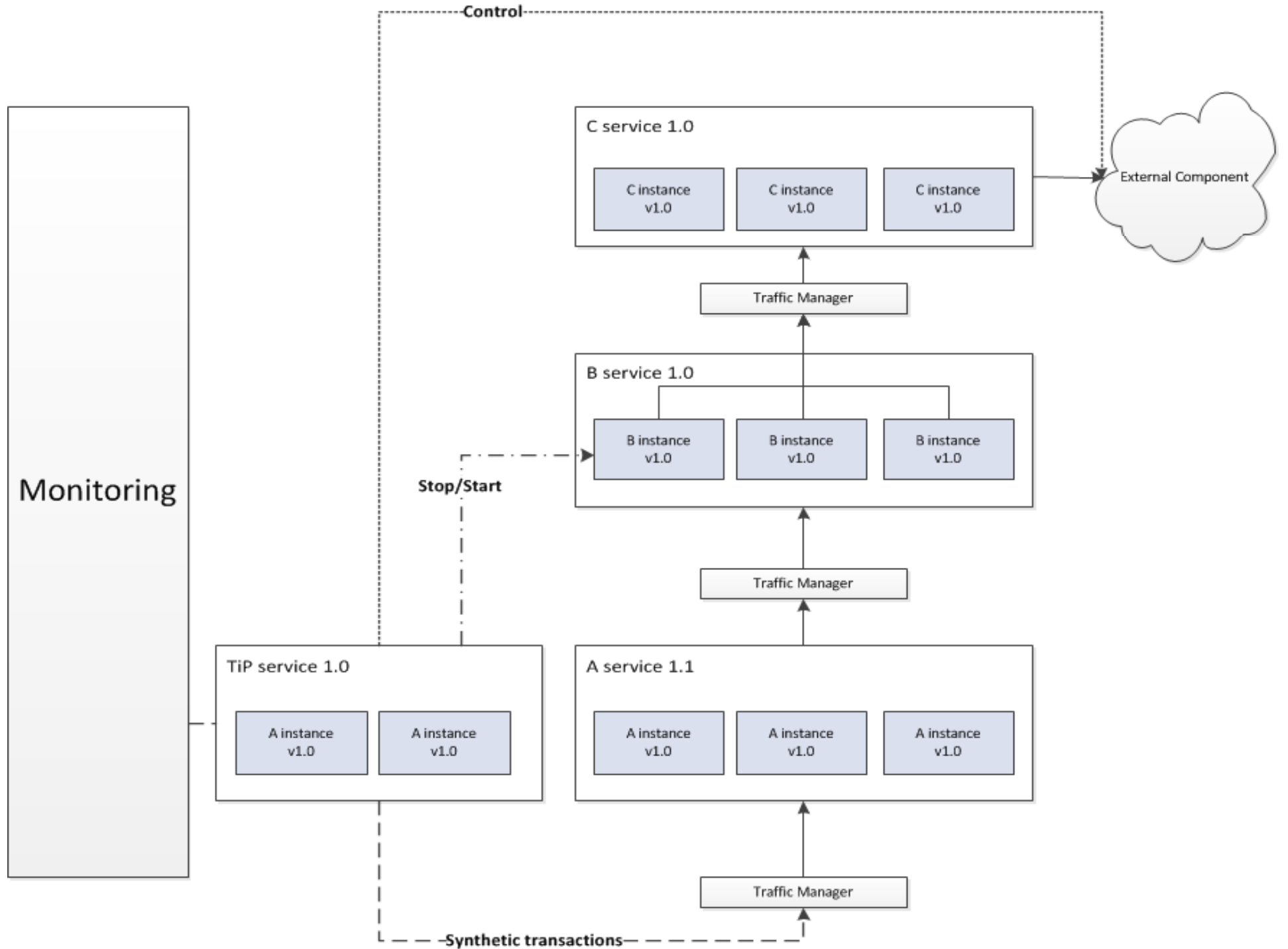




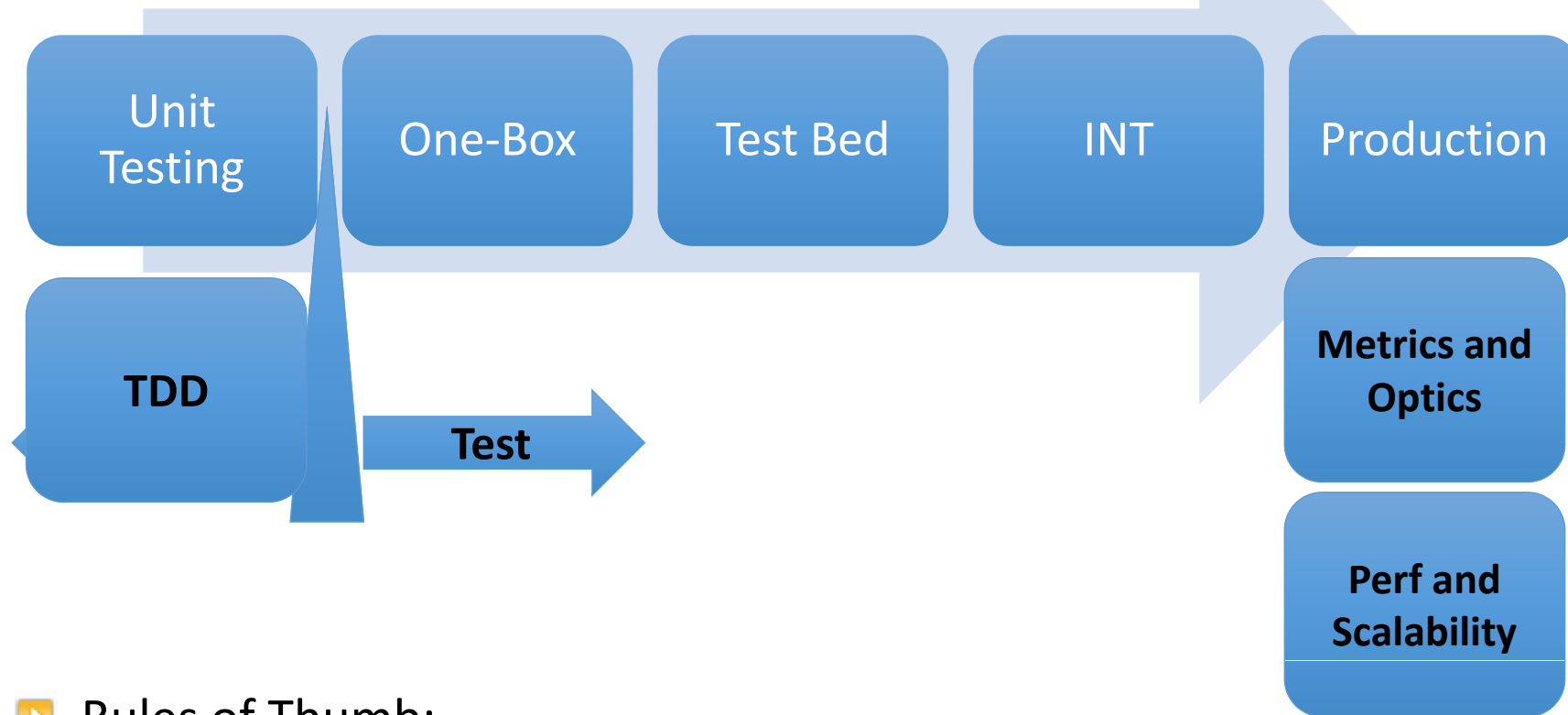








TiP and The Dev / Test Balance



▶ Rules of Thumb:

- ▶ Should not find bugs that you could have found in earlier stage
- ▶ Dev focus on functional & code quality – Test can help with strategy
- ▶ Test focus on service quality – Dev can help with implementation

Move to Services

- Cultural changes
- Role changes
- Requires new set of techniques
 - [Big] Data analysis and automation (machine learning)



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