Highly Operationalized NoOps - How Craftsy uses Lambda

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sshhhhhh it's a secret

I hate NoOps

NoOps implies we don't kNOw what's going on

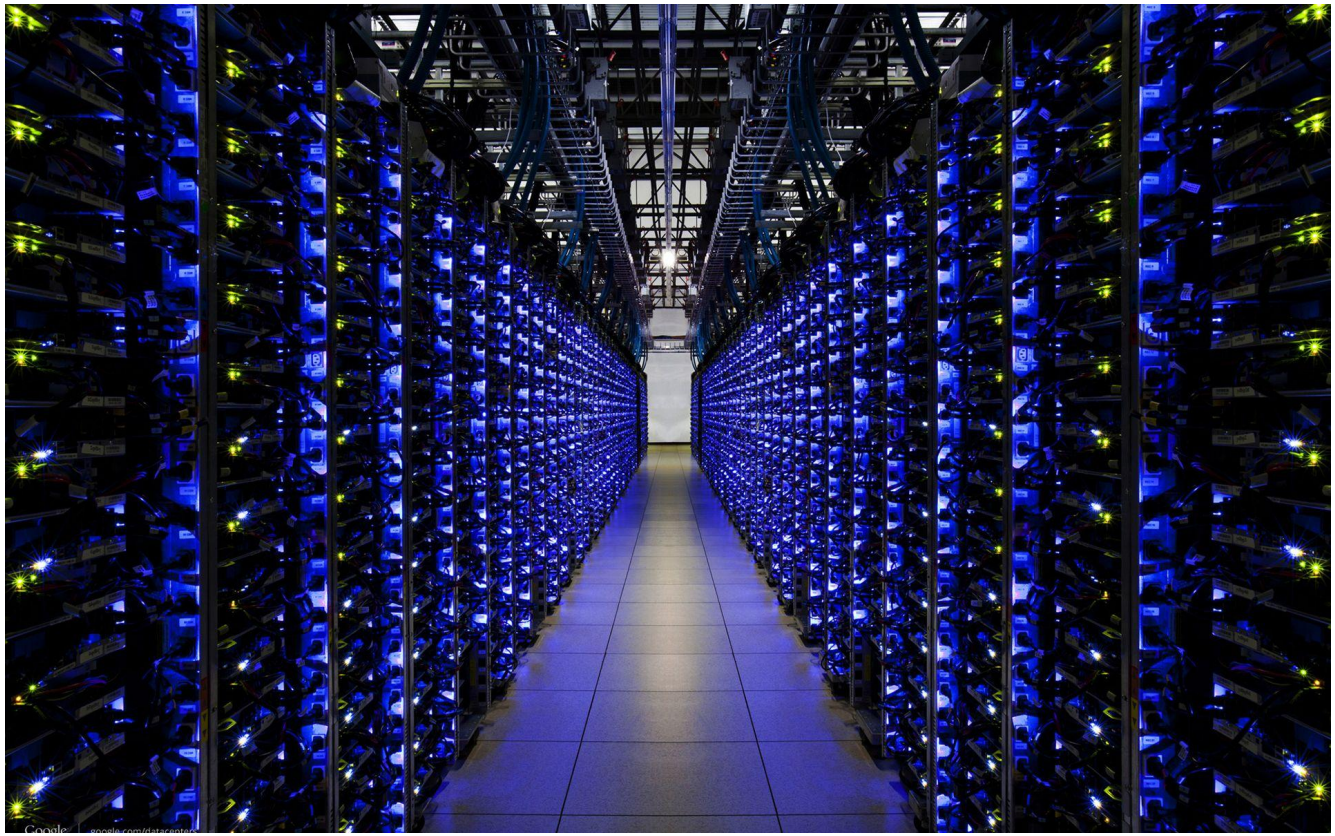
NoOps would be great in a perfectly spherical, frictionless chicken computing environment

The History of Computing

… as told by your humble narrator

A history lesson!

20 years ago, everything was physical servers
Couple applications per host at best

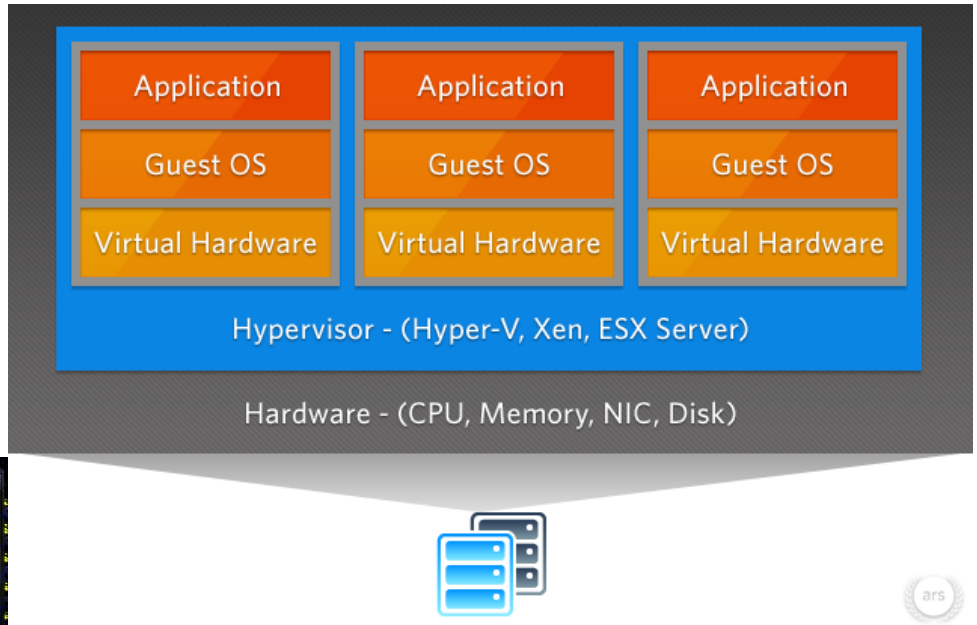


You were managing:
racks
power
cooling
screws and captive nuts
server lifts
cable ladders
ethernet cables
rack ears
switches
network addressing
routers
firewalls
server hardware (drives, etc)
operating system
GNU suite (take that Stallman!)
application engines
code

A history lesson!

10 years ago, we virtualized everything

Massive density - dozens of hosts per machine



You were still managing:

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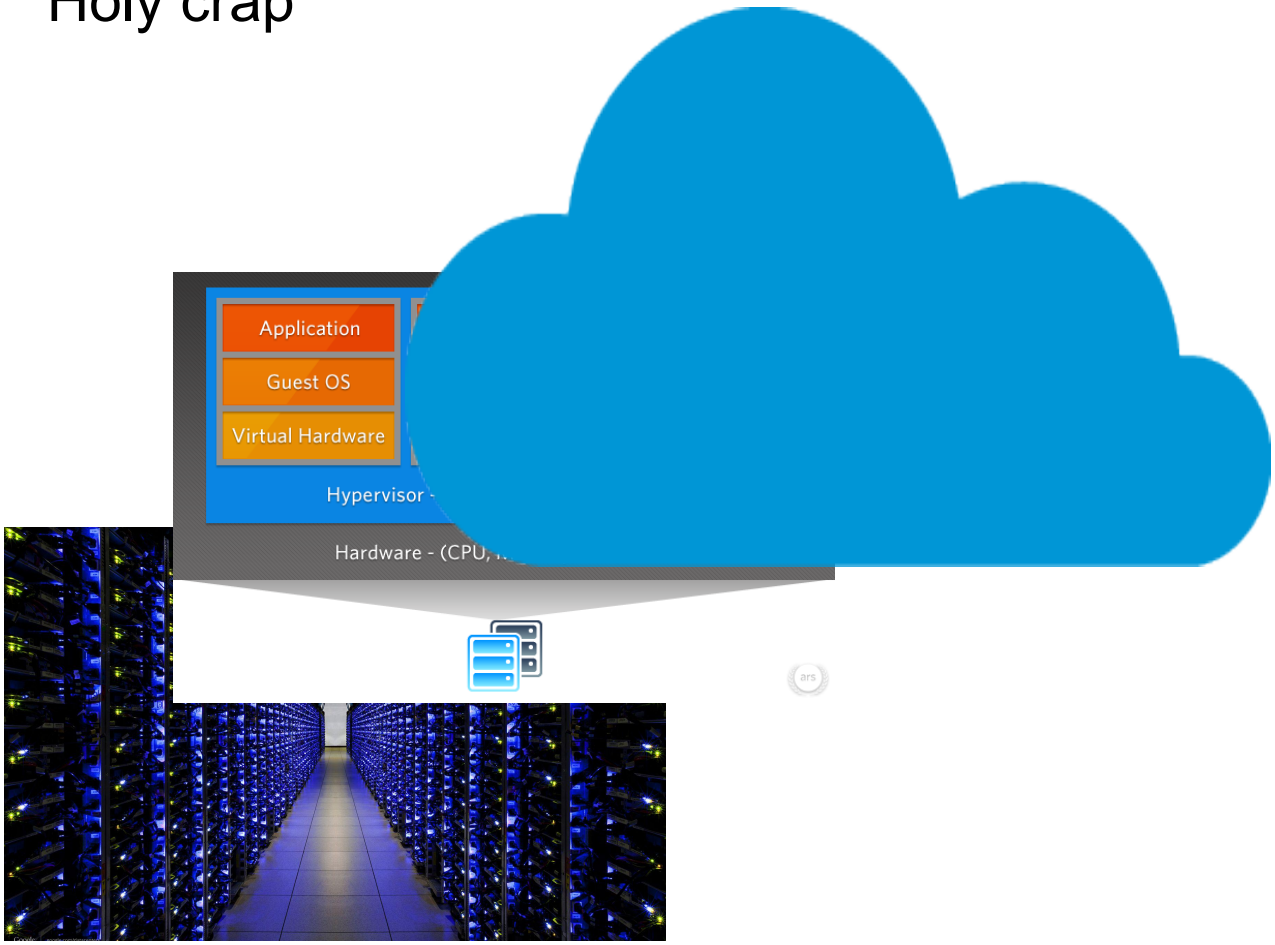
But now also:

Hypervisors!

Hooray DevOps!

5 years ago, There Became A Cloud

Holy crap



Now you're managing

~~racks~~
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~~cooling~~
~~screws and captive nuts~~
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~~switches~~
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~~routers~~
firewalls
~~server hardware (drives, etc)~~
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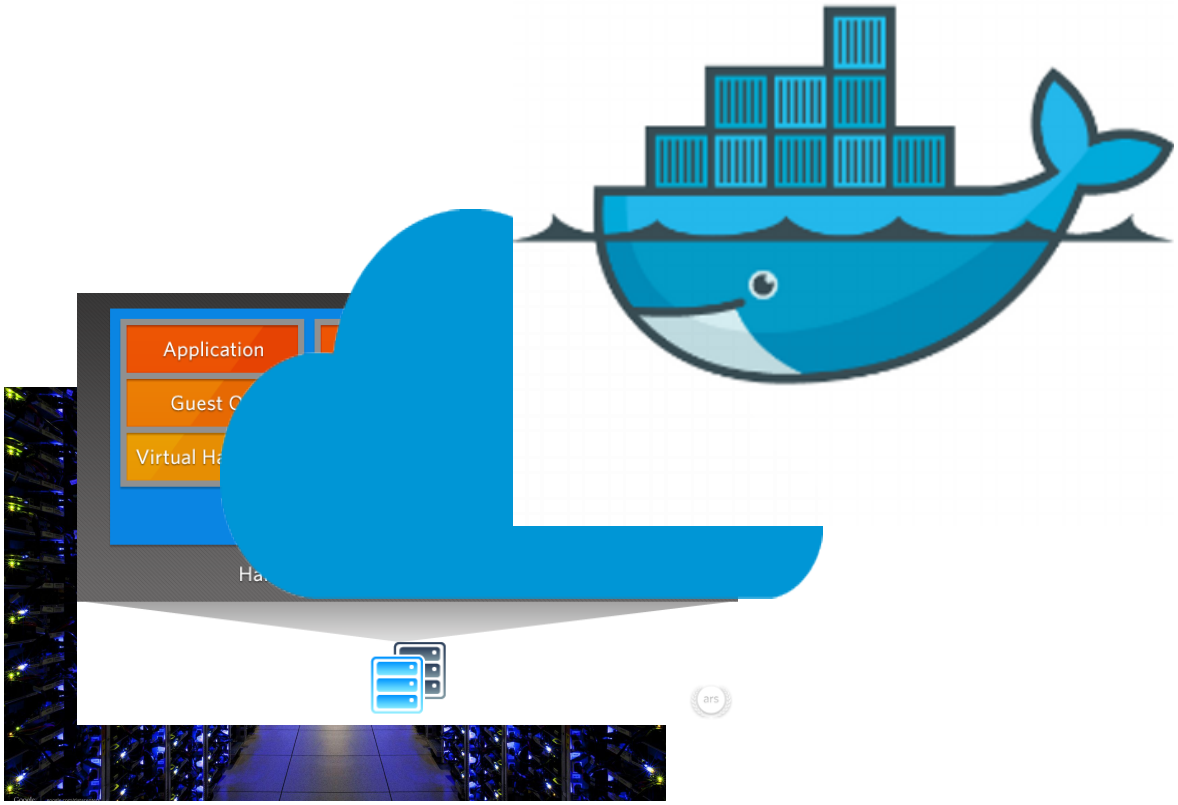
application engines
code

But now also:

Hypervisors!
Cloud Management Interface
Puppet/Chef/Ansible

A history lesson!

2 years ago, we virtualized virtualization
this is getting silly



Now you're managing
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~~rack ears~~
~~switches~~
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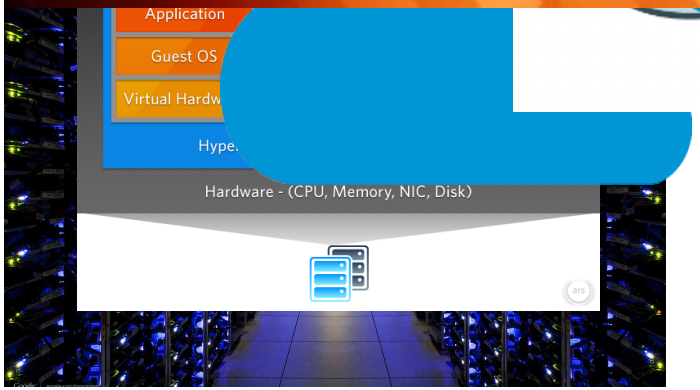
~~routers~~
firewalls
~~server hardware (drives, etc)~~
~~Operating System~~
~~GNU suite (take that Stallman!)~~
~~application engines~~
code
But now also:
~~Hypervisors~~!
Cloud Management Interface
Container stuff
~~**Puppet/Chef/Ansible**~~

A history lesson!

screw it, let's just quit managing everything



Now you're managing

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But now also:

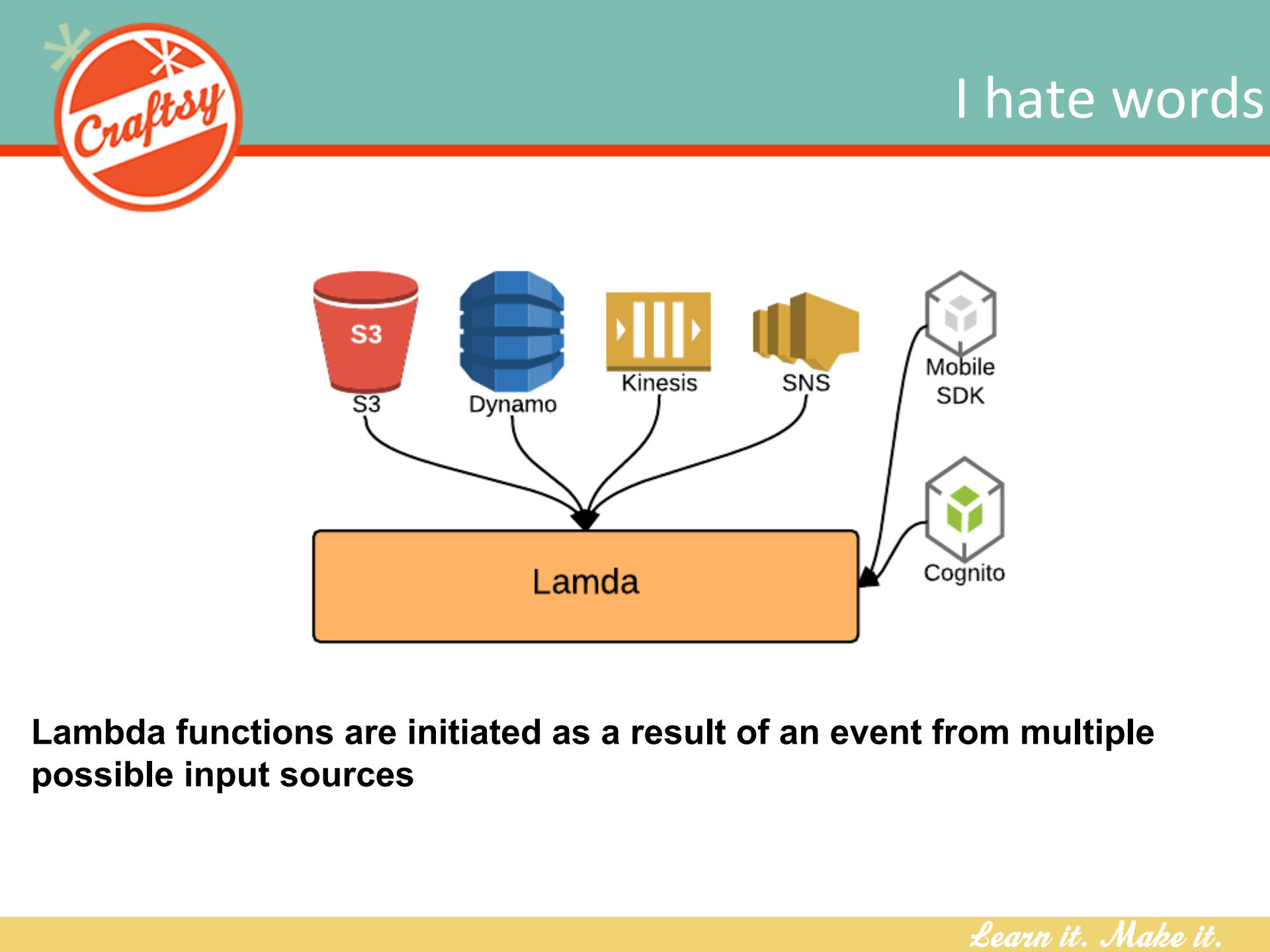
~~Hypervisors~~!
Cloud Management Interface
~~Puppet/Chef/Ansible~~

What is Lambda?

Lambda is the logical conclusion of the progressive layers of abstraction that now separate us from our Ops roots.

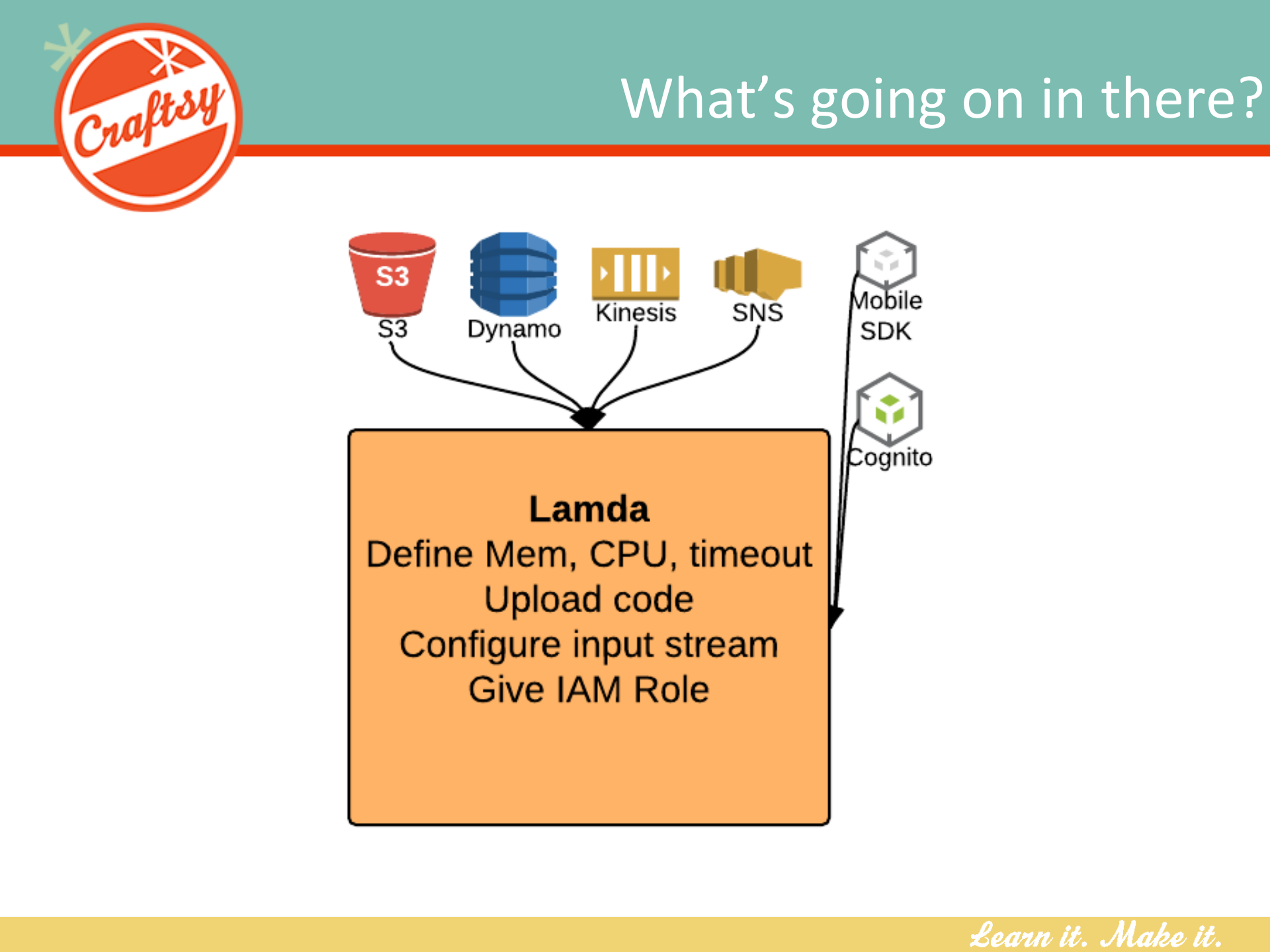
Lambda is an event-driven, compute *service* that automatically manages *everything under your code.*

Lambda is stateless. Lambda scales ... all the way.



I hate words

Lambda functions are initiated as a result of an event from multiple possible input sources


What's going on in there?
S3
S3
Dynamo
Kinesis
SNS
Mobile
SDK
Cognito
Lamda
Define Mem, CPU, timeout
Upload code
Configure input stream
Give IAM Role
Learn it. Make it.

Uses

- Real-time log processing
- Media manipulation (image resize, crop, replication)
- Lightweight ETL functions
- “Stored procedures” in Dynamo (every DBA is cringing)
- Data shipping/backups

Any stateless, event driven operation!

Per-Request

- First 1 million requests per month are free
- $0.20 per 1 million requests thereafter ($0.0000002 per request)

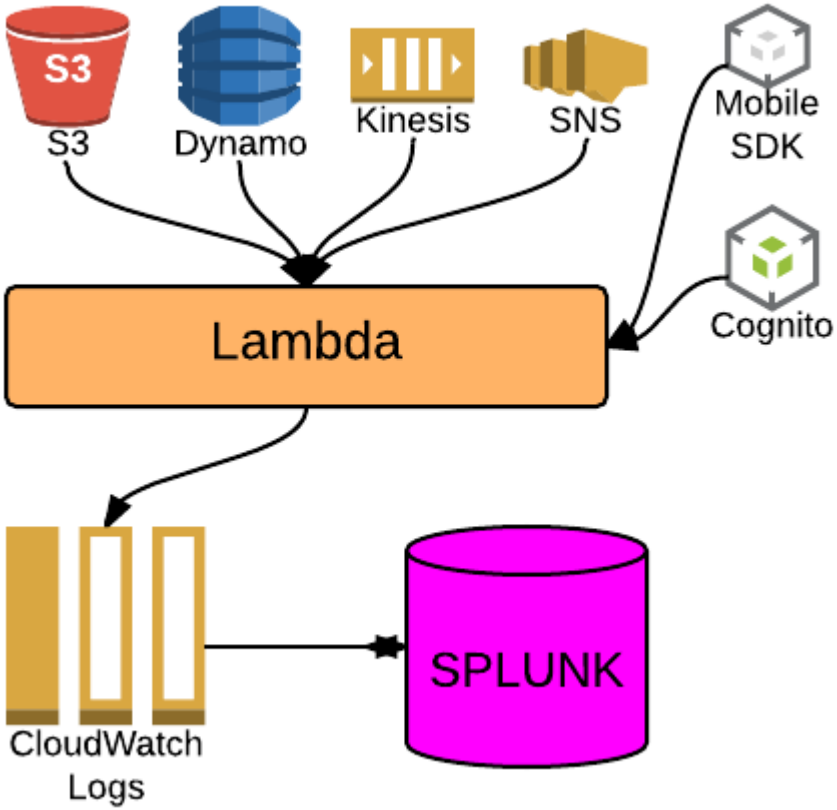
Per GB-Second

- $0.00001667 per GB-Second of memory used

Talk about a hard sell

I thought you hated NoOps?

What if it breaks?



All the output

splunk> App: Craftsy | matthew.boeckman | Messages | Settings | Activity | Help | Find

Search | Craftsy Web | Web Perf | Craftsy Java | DB | JSEL | Blog | Cache/GC | OBT | Misc | Craftsy

New Search — Save As — Close

index=lambda — Week to date

Finalizing job... — Job — Fast Mode

Events (360,847) | Patterns | Statistics | Visualization

Format Timeline — Zoom Out — Zoom to Selection — Deselect — 1 hour per column

14,000 / 10,000 / 6,000

Sun Apr 12 2015 | Mon Apr 13 | Tue Apr 14 | Wed Apr 15 | Thu Apr 16 | Fri Apr 17 | Sat Apr 18

List — Format — 20 Per Page — Prev 1 2 3 4 5 6 7 8 9 ... Next

Hide Fields — All Fields

Selected Fields
- a host 1
- a source 1
- a sourcetype 1

Interesting Fields
- a index 1
- # linecount 5
- a splunk_server 3
- Extract New Fields

i	Time	Event
>	4/18/15 4:45:24.957 PM	EVENTS 1429397124957 REPORT RequestId: 9114f548-e61c-11e4-b901-2b24e73088df Duration: 6643. 74 ms Billed Duration: 6700 ms Memory Size: 1024 MB Max Memory Used: 14 MB 1429397116731 host = [redacted] source = /opt/splunk/var/log/cloudwatch/lambda/east-to-west-s3-sync.log sourcetype = cloudwatch
>	4/18/15 4:45:24.957 PM	EVENTS 1429397124957 END RequestId: 9114f548-e61c-11e4-b901-2b24e73088df 1429397116730 host = [redacted] source = /opt/splunk/var/log/cloudwatch/lambda/east-to-west-s3-sync.log sourcetype = cloudwatch
>	4/18/15 4:45:24.957 PM	EVENTS 1429397124957 START RequestId: 9114f548-e61c-11e4-b901-2b24e73088df 1429397110087

All the details

```
> 4/18/15 4:43:46.346 PM  EVENTS  1429397041374  2015-04-18T22:43:46.346Z  5f76c768-e61c-11e4-be5f-c7eb0ff03bba
{
  "Records": [
    {
      "eventVersion": "2.0",
      "eventSource": "aws:s3",
      "awsRegion": "us-east-1",
      "eventTime": "2015-04-18T22:43:46.232Z",
      "eventName": "ObjectCreated:Put",
      "userIdentity": {
        "principalId": "[redacted]"
      },
      "requestParameters": {
        "sourceIPAddress": "[redacted]"
      },
      "responseElements": {
        "x-amz-request-id": "DE857040513014A0",
        "x-amz-id-2": "53/IfR8CTOCQn8pEKgRTKVxIgoF9iVW6YcaLpu+GFO9mL0XRxiJlzrcffYhL0nyt"
      },
      "s3": {
        "s3SchemaVersion": "1.0",
        "configurationId": "lambda-s3-sync-east-west",
        "bucket": {
          "name": "sympoz-wal-e-prod-93",
          "ownerIdentity": {
            "principalId": "[redacted]"
          },
          "arn": "arn:aws:s3:::sympoz-wal-e-prod-93"
        },
        "object": {
          "key": "wal_005/00000001000051CE0000004E.lzo",
          "size": 7835829,
          "eTag": "ef6a9a5dfa66315e57ee07f9760f695f"
        }
      }
    }
  ]
}
1429397026346
```

Execution time, performance deets

>	4/18/15 4:45:24.957 PM	EVENTS 1429397124957 REPORT RequestId: 9114f548-e61c-11e4-b901-2b24e73088df Duration: 6643.74 ms Billed Duration: 6700 ms Memory Size: 1024 MB Max Memory Used: 14 MB 1429397116731 host = [redacted] source = /opt/splunk/var/log/cloudwatch/lambda/east-to-west-s3-sync.log sourcetype = cloudwatch
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>	4/18/15 4:45:24.957 PM	EVENTS 1429397124957 START RequestId: 9114f548-e61c-11e4-b901-2b24e73088df 1429397110087 host = [redacted] source = /opt/splunk/var/log/cloudwatch/lambda/east-to-west-s3-sync.log sourcetype = cloudwatch

Highly Operationalized NoOps

"All the art of living lies in a fine mingling of letting go and holding on."

– Henry Havelock Ellis