Building Large Scale Services

PRESENTED BY Jennifer Davis | November 8, 2013
TWITTER: @SIGJE
EMAIL: SIGJE@YAHOO.COM
SYSADMIN CONTROLS ALL THE THINGS
SHARED DEPENDENCIES
THE REALITY...
THE DREAM...
HOW?
DEFINE CORE PRINCIPLES

- Common
  - Collaboration across teams, companies, industry, define standards
  - Incident, Problem, Change, Config, Release management

- Distinct
  - Specifics to an application or service
  - Availability, Service, Business Continuity, Capacity
KILL THE MYTHS

- Stupid User
KILL THE MYTHS

- Stupid User
- System Admin == Operator
Failing Gracefully

SKILLS

CHEF
NOSQL
TCP/IP
SECURITY

PERL
UNIX
BASH
PUPPET
RUBY
MySQL

Operability
KILL THE MYTHS

- Stupid User
- System Admin == Operator
- Words have a common universal implicit meaning
LEARN TO MODULATE YOUR MESSAGE
Team

- People working towards common goal.
- Different roles.
- Different views.
- Same objectives.
Suggestion: Don’t talk about the “devs” request, talk about Elaine’s request.
Suggestion: Don’t talk about the “devs” request, talk about Elaine’s request.

Suggestion: Verify that your team has the same vision.
UNDERSTAND THE VISION.

- Are there other options, open source or not within the company?
- Are there other options outside the company?
- Is EVERYONE on the same page about what the service is?
VISION STATEMENT

- Clear statement about the problem that the service is solving.
  - Direction
  - Identity management
  - Team cohesion

New product? Be part of creating that vision!
SHERPA’S VISION

.. Distributed replicated eventually consistent key value store that had a focus on scalability ..
MY JOB

- Examine software
- Define risk
- Communicate cost of risks
- Mitigate risks
- Identify events
- Manage events
FRAGILE PLATFORMS ARE BAD.
CHANGE IS INEVITABLE

- Products pivot based on needs.
- Requirements change and evolve.
- Know core issues.
KNOW CORE ISSUES

- Limit the scope of focus.
Know Core Issues

- Limit the scope of focus.
- Focus on the biggest priorities.
Know Core Issues

- Limit the scope of focus.
- Focus on the biggest priorities.
  - Understand Development Methodology: Waterfall, Scrum, ?
KNOW CORE ISSUES

- Limit the scope of focus.
- Focus on the biggest priorities.
  - Understand Development Methodology: Waterfall, Scrum, ?
  - Identify the key “time” elements.
KNOW CORE ISSUES

- Limit the scope of focus.
- Focus on the biggest priorities.
  - Understand Development Methodology: Waterfall, Scrum, ?
  - Identify the key “time” elements.
  - Talk to them. Identify their key terms. “Enhancements”, “Defects”
KNOW CORE ISSUES

- Limit the scope of focus.
- Focus on the biggest priorities.
  - Understand Development Methodology: Waterfall, Scrum, ?
  - Identify the key “time” elements.
  - Talk to them. Identify their key terms. “Enhancements”, “Defects”
  - Establish the “Top” list.
CREATE CHECKLISTS

- Not because people are dumb.
- Not only because of automation.
- When things break, knowing what needs focus.
- During normal maintenance, can identify “not OK”.
  - Audit checklists for deployment through staging environment.
Know Outputs

- Identify components.
- Well defined protocols between components.
- Expected Inputs.
- Expected Outputs.
yal_abs_poll_times:
  yal_user_tz: pt
  yal_user_query_status: 1
  time_stamp: 1335437261
  msg_type: Insert
  counter: 1
  failure_reason: {
    "description": "Error in fetching records from datastore",
    "detail": {
      "content": {
        "Error 421 on Sherpa request:RecordNotFound;",
        "lang": "en-US",
        "uri": null
      }
    },
    "lang": "en-US",
    "uri": null
  }
*************************** 2. row **********************
Cross colo link slow, partially or fully failed due to network, or software issue.

Sherpa GET Request

Sherpa Service Network

Sherpa SET Request

CLIENT
SRC doesn't know that DEST should get table data, doesn't send. SRC set failed.

Sherpa Service Network

Sherpa GET Request

Sherpa SET Request

CLIENT

CLIENT
Know State Transitions Explicitly.

- When component is installed but not ready
Know State Transitions Explicitly.

- When component is installed but not ready
- When the colo is going away
- Go through What If Scenarios.
  - Document them.
KNOW CHOKE POINTS EXPLICITLY.

- Memory
- Disk
- Bandwidth

Now and in 6 months.

JIT?
FAILURE WILL HAPPEN.

- There are no 0 failure systems.
- “Give me the brain” documentation so that anyone can be the brain.
- Repeatable/Reliable failure handling.
- Run fire drills. Really.
SYSTEM ADMINISTRATION IS GARDENING.

- No guarantee of resources.
- Only guarantee is change.
SYSTEM ADMINISTRATION IS GARDENING.

- Nurture relationships.
  - Be authentic.
  - Be trusting and trustworthy.
  - Have integrity.
SUCCESS AT SCALE IS COLLABORATION & COOPERATION ACROSS TEAMS.
DECREASING VALUE
# Of Support Engineers

<table>
<thead>
<tr>
<th>Month</th>
<th># of Support Engineers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>0</td>
</tr>
<tr>
<td>Apr</td>
<td>4</td>
</tr>
<tr>
<td>Jul</td>
<td>6</td>
</tr>
<tr>
<td>Oct</td>
<td>8</td>
</tr>
</tbody>
</table>
# OF SUPPORT ENGINEERS

# OF SUPPORT ENGINEERS

JAN  APR  JUL  OCT
FAILURE HIDDEN IN SUCCESS
Documentation is not the cure.

- Documentation doesn’t guarantee understanding.
  - Operations Sandbox Environment
- Don’t spend time at the end documenting.
SUMMARY
BE EXPENDABLE. FEED YOUR BRAIN.
ACKNOWLEDGEMENTS

• http://www.flickr.com/photos/levork
• http://www.flickr.com/photos/puggles
• http://www.flickr.com/photos/byteorder
• http://www.flickr.com/photos/egoant
• http://www.flickr.com/photos/happymonkey
• Kyle Latino
• Greg Connor
THANKS!

sigje@yahoo.com

HTTP://WWW.SLIDESHARE.NET/SIGJE/
PRESENTATION-LISA