

Stuart Kendrick / Hands-on Seminars

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Overview

I have a day job – Sustaining Engineer at EMC Isilon – and that’s where I put most of my time and energy. However, I enjoy teaching. Since in the early ‘90s, I’ve facilitated classes internally at the office and, starting in 2012, at industry conferences. This document describes the coursework I’ve developed; I intend it as a reference for organizers who are considering a proposal from me to each at their conference.

The Categories

Root Cause Analysis

This is my signature class, which I’ve facilitated at Cascadia IT, Sharkfest, LISA, and internally for several Seattle-based companies. We review a stripped down version of the Rapid Problem Resolution (RPR) methodology and then split into small groups, chewing into two real-world case studies (one in the morning, the other in the afternoon), applying RPR to uncover the root cause of multi-faceted, cross-technology, intermittent service disruptions. Students practice hands-on skills – packet analysis, log grepping, correlating variables on charts. Successful groups also tend to incorporate the RPR model for roles & responsibilities, deploying a process leader¹, who applies the methodology, coordinates the efforts, brings the results together.

The appeal of these classes, I claim, stems from the following:

- Real-world. The material comes from actual RCA efforts, performed at the Fred Hutchinson Cancer Research Center, lead by yours truly, complete with diagrams, packet traces, log extracts, charts.
- Hands-on. This appeals to folks who like to actually do it – not just hear about the theory but who want to get their hands dirty poking through logs, etc. I review a number of tips & tricks & tools during the class, which folks then get to apply during their small-group time.
- Effective. The RPR methodology is an eye-opener – it packs three decades of experience² into a twenty-step process (I strip this down to nine steps for the purposes of the class) and offers a surprisingly effective way to tackle complex problems and to make progress in the midst of the ‘fog of war’ which typically plagues such efforts.

I want to be clear that this class is ‘heavy’ for you to support. It requires:

¹ Historically, attendees generally include enough resource managers, project managers, and other folks who have lighter hands-on roles and who volunteer to perform this coordination function

² RPR has been developed by a British-based outfit called Advance7 which does this for a living – governments and Fortune 500 companies hire this outfit as a firefighting team, parachuting them into particularly sticky problems. They typically reach Root Cause inside one or two weeks – not bad, when typically these problems have been on-going for months or years.

- Space on the conference USB stick. The course materials for each class typically consume .5 - 1.5GB each.³
- Color print-outs. Each class requires printed materials – typically two (2) tabloid-sized color diagrams per class. I generally ask you to print one (1) set of diagrams for every two students (i.e. no need for everyone to have their own copy – students can share).
- Power. To be effective, every student needs a laptop, running all day long, and that means power. Hotels often struggle to deliver this kind of power density: extension cords plus power strips.⁴
- Introductory email. I ask you to send registered students email at ~one month out and then again at ~one week out. In the email, I assign homework – reading and exercises⁵, which I post on my Web site. I also stress how important it is for students to arrive ~30+ minutes early to class, in order to set-up – dinking with laptops, writing their names on the cards I provide, introducing themselves to their new teammates. In addition, I post large-scale diagrams to the walls of the classroom, which the students only get to see that day, and reviewing those diagrams proves essential to successfully analyzing the case studies.
- WiFi & Internet access. We use Google Docs as a channel for each group to make requests of me and to present their final material. I have a fall-back strategy involving the flip-chart, in case network access crumps, but I greatly prefer the on-line approach.
- An hour of set-up and teardown, i.e. I need access to the room for at least an hour prior to class start and at least an hour after class end.
- Flip-chart and/or white board, for sketching ad hoc responses to student questions.

Frankly, each of the classes would be more properly taught in a two-day format – compressing them into one-day makes for a bit of a wild ride. Still, with all the excellent programming available at the typical conference, I claim that the one-day format makes sense: folks prefer to sample the rich range of material offered, rather than allocate two full days to a single topic.

Fun With Traces

Protocol analysis is a rich space – as we scale our IT environments, we scale client/server communication, and like all forms of communication, this one contains glitches. No matter how skilled you are in this space, there’s always more to learn – manufacturers are constantly dreaming up new bugs, and protocol analysis is a vendor-neutral way to acquire insights into those bugs. In this class, I review real-world traces collected over the years, using them to illustrate underlying implementation choices in applications running on hosts, practicing the use of various Wireshark features.

³ In a pinch, I can offer the materials compressed, which shrinks them to ~.75GB per class. I don’t like doing this, because students then waste class time at the beginning, uncompressing to their laptops.

⁴ The Marriott hosting LISA2013 was the first venue in which I’ve taught where I didn’t have to make emergency requests of event staff to acquire more power.

⁵ An introduction to key packet analysis techniques: <http://www.skendric.com/seminar/homework/Basic-Workstation-Conversations.pdf>

This class follows my usual format – review the scenario, split into small groups, work on the case, come together as a full class to review the results. During small group time, I walk around offering coaching.

Frankly, these traces are all taken from potential RCA class case studies ... where I didn't have enough material to produce a full-fledged RPR-oriented case study.

Myth-Busting

These seminars promote an empirical approach to problem analysis and specialize in selecting popularly-believed-but-wrong models for explaining IT systems, guiding the student through disproving those inaccurate models. Students spend the first hour or two of the class building skills using several basic data gathering (*iperf*, *iometer*, *vmstat*, *iostat*, instructor-provided batch/shell scripts) and analysis tools (*gnuplot*, simple statistics crunchers). They then pick their own adventure to pursue, spending ~45 minutes on it, before coming together as a class to report their results and continuing in that fashion through the rest of the day.

Miscellaneous Topics

Effective Use of Tech Support

The point of this class is to help attendees better craft tech support requests. I have developed particular expertise in this space, working as I have on both sides of the fence: as a customer opening cases with manufacturers and as a support engineer for the manufacturer, responding to customer requests. Frankly, most sys admins are lousy at this – they have trouble defining the problem, don't even mention the business impact (critical to prioritization on the manufacturer side of the house), and rarely include the environmental / supporting information that we as manufacturer support techs need.

I envision collaborating with peers in the industry on this, ideally two or three others, who each bring their particular slant to the topic, informed by the particular pressures of whatever product their company builds and supports – we each present a chunk of the material.

The class structure includes reviewing templates (shipped on the USB stick), small group exercises, and full class discussion.

If you glance at the deck posted to my Web site ... you'll realize that this is a work-in-progress. I have never facilitated this class. I have enough material to produce a day-long version, although I could also shrink it as small as 90-120 minutes.

Diagramming IT Environments

This is one of my strong suites; see <http://www.skendric.com/map/> for examples of my work. I started diagramming in the late '80s and ... fell in love with it. In my experience, diagramming a proposed solution contributes key architectural insights into how to design it better, faster,

cheaper. And diagramming is a key component of trouble-shooting – this is one of the largest errors I see in the trouble-shooting business – folks who are trying to solve a problem with no idea how the components fit together. You’ll see that I emphasize diagramming in all my classes – *Draw The Diagram* is one of the salient RPR steps, for example, performed early in the methodology. I am, of course, a fan of Edward Tufte, and have attended his day-long seminar twice now.

We review a set of examples, then I point the students to the relevant templates on the USB stick and ask them to take a first stab at diagramming that aspect of their own environment (say, DNS hierarchy or Active Directory relationships or NFS mounts ...) We come back together as a class to review critique each other’s efforts and to discuss the challenges encountered. In its stripped down version – two to four hours – we skip the practice side and just discuss the diagrams themselves.

Problem Management: Communicating Risk to Business Leaders

How do you explain to non-technical business leaders what risks they are adopting by selecting product x or putting off upgrade y? Heck, when allocating resources to long-term work internally with tech-savvy management, how do you prioritize? The ITIL framework defines best practices for an operational IT environment -- Problem Management is the ITIL component which encompasses a lot of what many of us do for a living: mitigating the risks of future IT service disruption.

What is Problem Management and how might you employ it in your organization? In this class, we review the tools of Problem Management, including weekly reviews with line managers and monthly or quarterly reviews with business leadership. We split up into small groups, enter Problems into a Problem Queue Database and produce slides. Then, we come together as a class and present our efforts for review. The approach we cover scales from the two-person IT shop to the thousand-person IT shop.

As I occupy increasingly senior roles, I spend increasing amounts of time communicating risk up and down the chain. I spent several years designing, evolving, and running a Problem Management process for a ~100 person IT shop and currently contribute to a similar process for a ~1000 person shop. Part of my role has included introducing sys admins to the process, how to contribute to it, what they can get out of it. The key, as with all communication, involves understanding what your audience’s needs are, what problems they are facing, and then translating your material into a form which directly addresses those needs, skipping all the stuff that we as sys admins may find interesting! – and focusing instead on what your audience needs.

My Philosophy

Hands-On

All these classes reflect my personal experience that hearing someone talk about it and doing it myself are two very different things: I appreciate hearing someone tell me about their approach ... but I learn by doing. Once I'm doing it myself, then I realize that I wish I had listened more closely to the lecture portion of the class ... and I flag down the instructor with questions. I claim that this is an effective way to learn.

Be Your Best – Expect the Best

These classes are not for folks looking to chill out – they require severe brain work. I design the material to be accessible to professionals who are willing to sweat in order to improve their skills. The real-world nature of the material means that the material is messy, complicated, contradictory ... just like the real world is. I play to a broad range of experience – I make time to coach folks who are struggling – but folks who want the answer handed to them won't do well here. In my experience, the vast majority of students, after getting over the initial shock, rise to the occasion and excel, contributing their own little bit to their group's success, and taking pride in the presentations at the end, in which each group offers what they have discovered. In the RCA seminars, friendly rivalry develops, with each group competing to get to the answer first ... although by the afternoon, groups cooperate with each other – the classroom against the case study, as it were.

Practice Working in Teams

Most of us are hard-core introverts, with introverted cognitive styles, doing our best work solo. That's the way I am, and I like it this way! And much of the class is spent heads-down analyzing the problem. But in most of my classes, there is also a team component, coordinating your efforts with your colleagues in your group of 3-5 (or 5-7 in larger classes), kicking ideas around, and I claim that in the modern sys admin world, getting good at collaborating with ad hoc groups of peers is becoming increasingly useful. These classes give attendees a chance to practice the range of skills involved in doing this.

Speaker Bios

I have designed each of these classes and built their content. However, starting with LISA 2014, I'm pushing my own skill set in teaching by collaborating with a peer in the business – Chris and I met in 2013 at an industry event and will co-teach a Myth Busting course there.

Chris Shaiman is the Lead Network Engineer and Security Analyst for WatchGuard Technologies. Graduating from Lewis and Clark College, he has worked at Cingular Wireless, Xerox, and for the past 6 years WatchGuard Technologies. Specializing in Networking and Security he recently acquired his Certified Information Systems Security Professional Certificate, and has been enjoying building a more robust security program at his current

employment. When not focusing on his love for networking and security related sciences, he is working on completing his hot yoga teacher training, and bioponic research.

Stuart Kendrick works as a Sustaining Engineer for EMC Isilon, with a particular focus on trouble-shooting and Total Customer Experience in support of the OneFS NAS product. He started his career in 1984, writing in FORTRAN on Crays for Science Applications International Corporation; he worked in help desk, desktop support, system administration, and network support for Cornell University in Ithaca and later Manhattan. He spent two decades at the Fred Hutchinson Cancer Research Center in Seattle in a multi-disciplinary role covering transport, network management, root cause analysis, and Problem Management. He is happiest when correlating packet traces with syslog extracts, writing scripts to query device MIBs, and facilitating hands-on classes LISA, Cascadia, and Sharkfest. When he pulls his hands away from the keyboard, he spends time with his family, practices yoga, and reads science aimed at the layperson.

The Seminars

1. Root Cause Analysis Beginner

Proposal Type	Tutorial
Title	Root Cause Analysis Beginner
Topic	DevOps
Duration	Full-day
Instructor(s)	Stuart Kendrick
Description	http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Beginner-LISA-2013-Description.pdf
Deck	http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Beginner-LISA-2013.pdf
Support	One 8.5x14 diagram and two 8.5x11 diagrams (double-sided printing fine, color required). 1.5GB on the USB stick. One power outlet for every student.
Notes	My most popular class

2. Root Cause Analysis Intermediate

Proposal Type	Tutorial
Title	Root Cause Analysis Advanced
Topic	DevOps
Duration	Full-day
Instructor(s)	Stuart Kendrick
Description	http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Intermediate-LISA-2013-Description.pdf

Deck	http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Intermediate-LISA-2013.pdf
Support	Three 8.5x11 diagrams (double-sided printing fine, color required), two 6-12 page printouts of text (double-sided printing fine, color not required), 600MB on the USB stick, one power outlet per student.
Notes	Same structure as the Beginner class, but the case studies are substantially harder.

3. Root Cause Analysis Process

Proposal Type	Tutorial
Title	Root Cause Analysis Process
Topic	DevOps
Duration	Full-day
Instructor(s)	Stuart Kendrick
Description	I aim this class at lead engineers, resource managers, ops managers, escalation managers, ITIL Problem Managers, and other process-oriented people. While the previous Beginner/Intermediate/Advanced RCA classes dive quickly into logs and charts and packets, this class never does – it stays at the process layer, reviewing all twenty of the Rapid Problem Resolution methodology’s steps plus the tools used to track progress through the methodology, developing an understanding for when to shift from one step to another, identifying common potholes and ways to drive around them. We still split into small groups to analyze the case studies – but we focus on working the process, not on the content. http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Process-Description.pdf
Deck	http://www.skendric.com/seminar/rca/Root-Cause-Analysis-Process-Deck.pdf
Support	Four (4) 8.5x11 diagrams (double-sided printing fine, color required), one (1) 11x17 diagram (black & white). 200MB on the USB stick. Laptops not required.
Notes	This is my interpretation of Advance7’s <i>RPR Foundations</i> class, except that Advance7 spends two days on this, whereas I create a wild ride and jam it into a single day. Frankly, if you are attracted to this class, I recommend first trying to collar Paul Offord of Advance7 to teach it – I’m a novice at RPR, while Paul is its progenitor. Use me only if you cannot land Paul.

4. Fun With Traces - Beginner

Proposal Type	Tutorial
Title	Fun With Traces
Topic	DevOps
Duration	Full-day

Instructor(s) Stuart Kendrick
Description <http://www.skendric.com/seminar/packet/Fun-With-Traces-Beginner-Description.pdf>
Deck <http://www.skendric.com/seminar/packet/Fun-With-Traces-Beginner-Deck.pdf>
Support Six diagrams of varying sizes (color required, double-sided printing fine), 100MB of space on USB stick.
Notes

5. Fun With Traces - Intermediate

Proposal Type Tutorial
Title Fun With Traces
Topic DevOps
Duration Full-day
Instructor(s) Stuart Kendrick
Description <http://www.skendric.com/seminar/packet/Fun-With-Traces-Intermediate-Description.pdf>
Deck <http://www.skendric.com/seminar/packet/Fun-With-Traces-Intermediate-Deck.pdf>
Support Six diagrams of varying sizes (color required, double-sided printing fine), 100MB of space on USB stick.
Notes

6. Myth Busting: The Network Layer -- Beginner

Proposal Type Tutorial
Title Myth Busting: The Network Layer
Topic DevOps
Duration Full-day
Instructors Chris Shaiman / Stuart Kendrick
Description <http://www.skendric.com/seminar/myth/Myth-Busting-The-Network-Layer-Beginner-Description.pdf>
Deck <http://www.skendric.com/seminar/myth/Myth-Busting-The-Network-Layer-Beginner-Deck.pdf>
Support Students must bring one mini-switch (~\$100), one power strip, five Ethernet cables of varying sizes, and a laptop. No printed or electronic materials.
Notes This class is instructor-intensive – we circulate constantly, helping students get past glitches, answering questions, coaching.

7. Myth Busting: The Network Layer -- Intermediate

Proposal Type	Tutorial
Title	Myth Busting: The Network Layer
Topic	DevOps
Duration	Full-day
Instructors	Chris Shaiman / Stuart Kendrick
Description	http://www.skendric.com/seminar/myth/Myth-Busting-The-Network-Layer-Intermediate-Description.pdf
Deck	http://www.skendric.com/seminar/myth/Myth-Busting-The-Network-Layer-Intermediate-Deck.pdf
Support	Students must bring one mini-switch (~\$100), one power strip, five Ethernet cables of varying sizes, and a laptop. No printed or electronic materials.
Notes	This class is instructor-intensive – we circulate constantly, helping students get past glitches, answering questions, coaching.

8. Effective Use of Tech Support

Proposal Type	Tutorial
Title	Effective Use of Tech Support
Topic	DevOps
Duration	Half-day
Instructors	Chris Shaiman / Stuart Kendrick
Description	http://www.skendric.com/seminar/tech-support/Effective-Use-of-Tech-Support-Description.pdf
Deck	http://www.skendric.com/seminar/tech-support/Effective-Use-of-Tech-Support-Deck.pdf
Support	Two (2) 8.5x11 diagrams (double-sided fine, color not needed), 50MB on the USB stick
Notes	

9. Diagramming IT Environments

Proposal Type	Tutorial
Title	Diagramming IT Environments
Topic	DevOps
Duration	Full-day or Half-day
Instructor(s)	Stuart Kendrick
Description	http://www.skendric.com/seminar/diagram/Diagramming-IT-Environments-Description.pdf

Deck	http://www.skendric.com/seminar/diagram/Diagramming-IT-Environments-Deck.pdf
Support	Twelve (12) diagrams of varying sizes (double-sided printing fine, colored required), 200MB of USB stick space. In the Full-Day version, a networked color printer capable of both 8.5x11 and 11x17 printing.
Notes	In the Full-Day version, students bring a laptop equipped with a drawing package and print their drafts on a conference-provided printer – 11x17 format ideally – this makes the class heavy for the conference to support. [11x17 printers are physically heavy, not to mention expensive – add to that the cost of toner & paper, plus conference-provided tech support to deliver WiFi connectivity.] The Half-Day version skips the hands-on component and thus doesn't require either. In both versions, the USB stick contains templates which the student can use to begin diagramming their own environments.

10. Problem Management: Communicating Risk to Business Leaders

Proposal Type	Tutorial
Title	Problem Management: Communicating Risk to Business Leaders
Topic	Culture
Duration	Full-day
Description	TBD
Deck	TBD (you can see some of my raw material under the Process section of http://www.skendric.com/problem/)
Support	Six (6) 8.5x11 printouts (double-sided fine, color not necessary), 50MB of space on the USB stick
Notes	I have never taught a seminar in this – if you pick it, I will be scrambling to organize my material into class format.