

“Standard Deviations” of the “Average” System Administrator

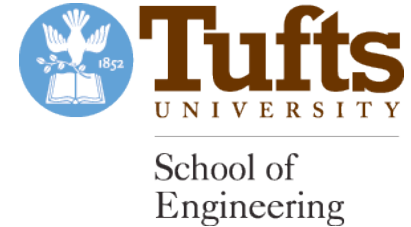
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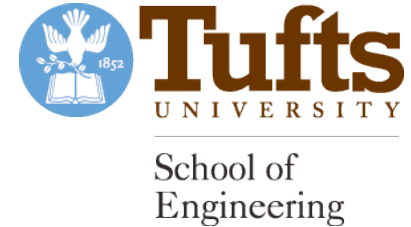
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Goals of this talk



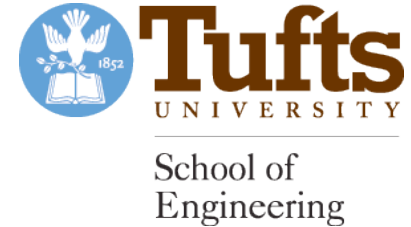
- Challenge “**mores**” of the profession.
- Make established sysadmins **angry**.
- Make beginning sysadmins **happier**.
- Ask some **tough questions**.
- Take a **controversial stance** on how to improve the practice and profession.

In the last episode,



- The Microsoft Certified Engineer (MSCE) exams:
 - Do not measure system administration capability.
 - Do not accept some “correct” answers.
 - Were not trusted by potential employers in the audience.

In this episode,

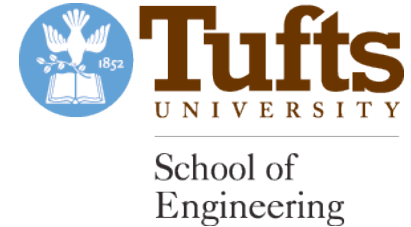


- The MSCE program is **fantastic!**
 - ...from a certain point of view...
 - ...and Darth Vader isn't Luke's father...

Some definitions

- **Conformity:** attempting to do things the same way as others (an ad-hoc **process**).
- **Consistency:** result of doing things the same way (an ad-hoc **result**).
- **Standards:** specific goals for conformity (a structured **result**).
- **Compliance:** obeying standards (a structured **process**).

We are a culture of non-conformists



- I **can make** my systems work better than that.
- I **value** being creative and trying new things.
- It's **more efficient** for me to manage a network molded in my own image.
- I **don't care** if others don't understand it.
- I **feel more secure** if others cannot do my job.
- I **can't afford** to conform and also fight fires.
- All of these are **value judgments**.

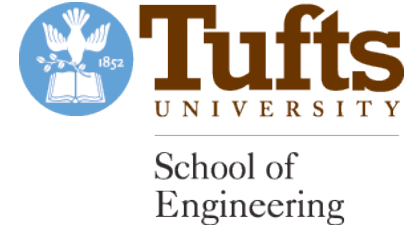
Cost of non-conformity

How many of you:

- can **delegate** any job to another administrator?
- can **quit and be replaced** by an outsider in a reasonable time?
- have **documentation** that describes and explains your choices?

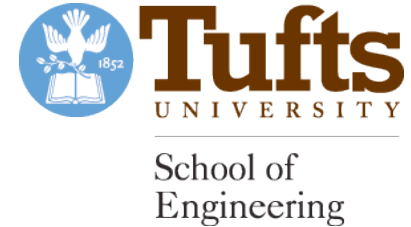
Non-conformity costs money!

Uses of System Administration Standards



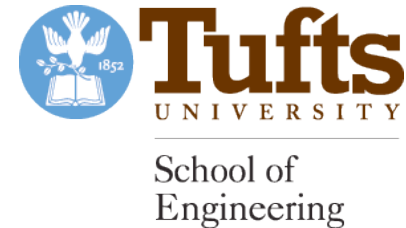
- Reduce need for **documentation**.
- Reinforce **best practices** to management.
- Exploit **social footprint** of software.
- Promote **interchangeability** of staff.
- Reduce **learning curve** for new staff.

Key to using SA standards



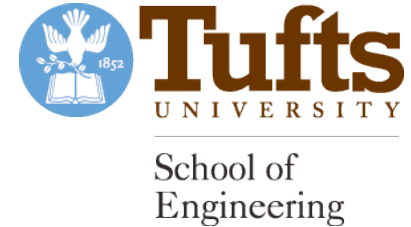
- Adopt a **global view** and **risk model**.
- Analyze **lifecycle cost** of decisions.
- Consider the health of the **profession**.

MSCE Revisited



- What's the value of memorizing “**the right way**” to do something?
- Answer: if **everyone** does it that way, you know **how it was done**.
- The MSCE approach defines a **de-facto standard**.
- So if you **assume management** of a system previously managed by an MSCE-certified admin, there's a good chance you'll **understand** what was done!
- Makes no sense for the **individual**.
- Makes a lot of sense for the **organization**.

Analogous to the MSCE: National Electrical Code

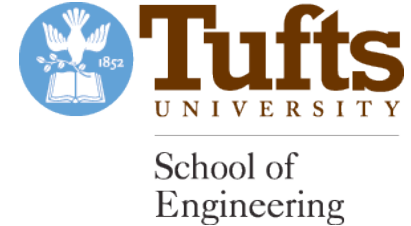


- There are many ways an electrician **could** wire a house.
- But there are only a small number of **approved** ways.
- These are listed in the **National Electrical Code** (NEC).
- (local codes provide amendments)

What the NEC does

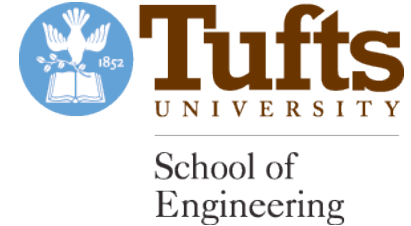
- Provides **documentation** of best practices.
- Concentrates on **externally observable and verifiable results of practice.**
- Supports a **guild system** that trains people in the code.
- Defines what it means to certify **results.**
- Compliance is **required by law.**

Non-technical tenets of the NEC



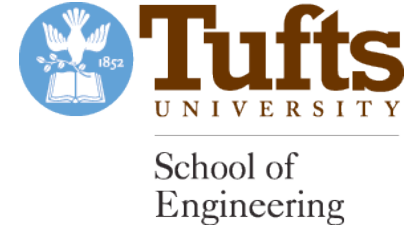
- Wiring is **forever**.
- If you **touch** it, you make it **comply**.
- Standards are:
 - **unambiguous,**
 - **externally verifiable,**
 - and based upon a **shared risk model.**

Learning From Electricians



- Can test **knowledge**, but not **skills**.
- Must **observe results** of skills in the **work environment**.
- This requires **apprenticeship** and **inspection**.
- Goal of inspection is checking for **compliance** with **standards**.

A good system administration standard:

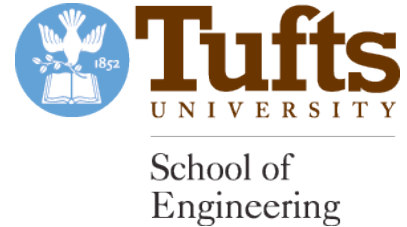


- Codifies and documents **best practices**.
- Utilizes **global knowledge** of the effects of decisions.
- **Informs management** about **vital parts of the job** that they might otherwise ignore.
- Reduces the need for **local documentation** of site practices.
- Supports **interchangeability** of staff and **site maturity**.
- Provides a meaningful **metric** with which **sites** can be checked for **compliance**.

Low-hanging fruit

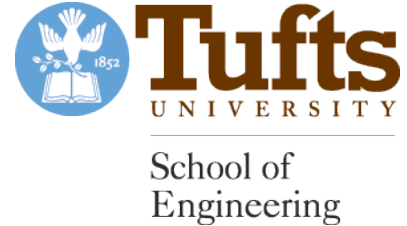
- Many choices we make as system administrators have **nothing to do with behavior.**
- I have called these “**incidental**” choices.
- Schwartzberg and Couch (2004): most of a web server’s configuration is **incidental.**
- Examples: names of servers, mount points for file servers, locations of home directories, locations of web content, etc.

High-hanging fruit



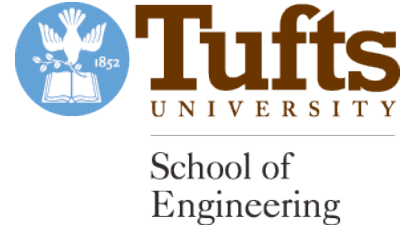
- Other standards concern **quality of practice**.
 - Electrician Example: use electrical tape to prevent shorts.
 - Sysadmin Example: monitor behavior of services to prevent undetected outages.
- Purpose of these standards: **inform management**.

Downsides of Standards



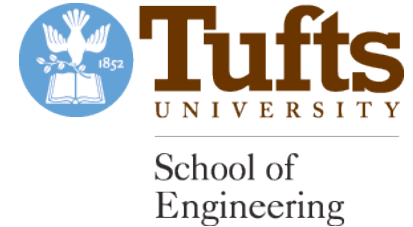
- Can give hackers more information about **site weaknesses**.
- Can make networks more vulnerable by enforcing a **systems monoculture**.
- Can mandate lower-performance solutions.

Discussion Questions

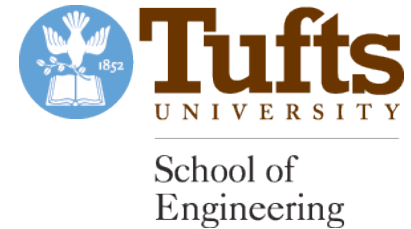


- Do you think your organization has standards for system administration?
- Do advantages outweigh disadvantages in adopting standards?
- Should we foster health of the individual over health of the profession?

See also



- My ;login: articles in August and October 2008 issues.



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