

Cybersecurity Research Seminar Fall 2015

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#9: Graphics

Reminders

- Final project presentations will be Dec 4, 11, & 18
 - Please try to attend all of the presentations to support the other teams/speakers and ask questions if there's enough time

Class #9

Effective Graphics

Graphics

- Graphics and visuals can be key in a paper, presentation, poster, demo, etc.
- Figures are used for different purposes in different places
 - Showing results in a paper or presentation (which you often won't do in a poster or demo)
 - Illustrating problem in presentation, poster, demo (not always needed in a paper)
- Always: figures should provide value for audience

Graphics in Different Places

- Let's go through some examples of good and bad graphics for different presentation types
 - Poster
 - Demo
 - Presentation slides
 - Paper

Poster Graphics

- A poster should be mostly graphics, and the graphics should tell a reasonable, high-level story
- In some cases, you'll stand next to a poster to provide more details; other times not. Either way, the high-level story is key.

Graphic Elements of a Poster

- I usually recommend having figures/images to illustrate the following:
 - High level problem, model, or goal
 - Visualization of technical approach
 - Some sort of result (graph, table, etc.)
- All of these should be appropriately supported by minimal text to convey the basic idea without needing you to be present

Examples

- One
- Two
- Three
- Four

Demo Graphics

- Demos come in many flavors, some accompany a poster, others are standalone. Graphics have a different role here.
 - Live demo: usually, either a poster or no graphics, depending on what is being demoed
 - Video demo: can use elements of the poster or slides, then incorporate whatever IDE-based or physical demo video is required to convey meaning
 - Demos showing IDE views with code compiling and running are not very interesting...

Presentation Graphics

- Good graphics are extremely important in presentation slides
 - We talked earlier about some ways to evaluate graphics used in a presentation, but here are some more tips
 - Recall:
 - If it's easier or clearer with text, use text
 - If it's easier or clearer with a figure, use a figure

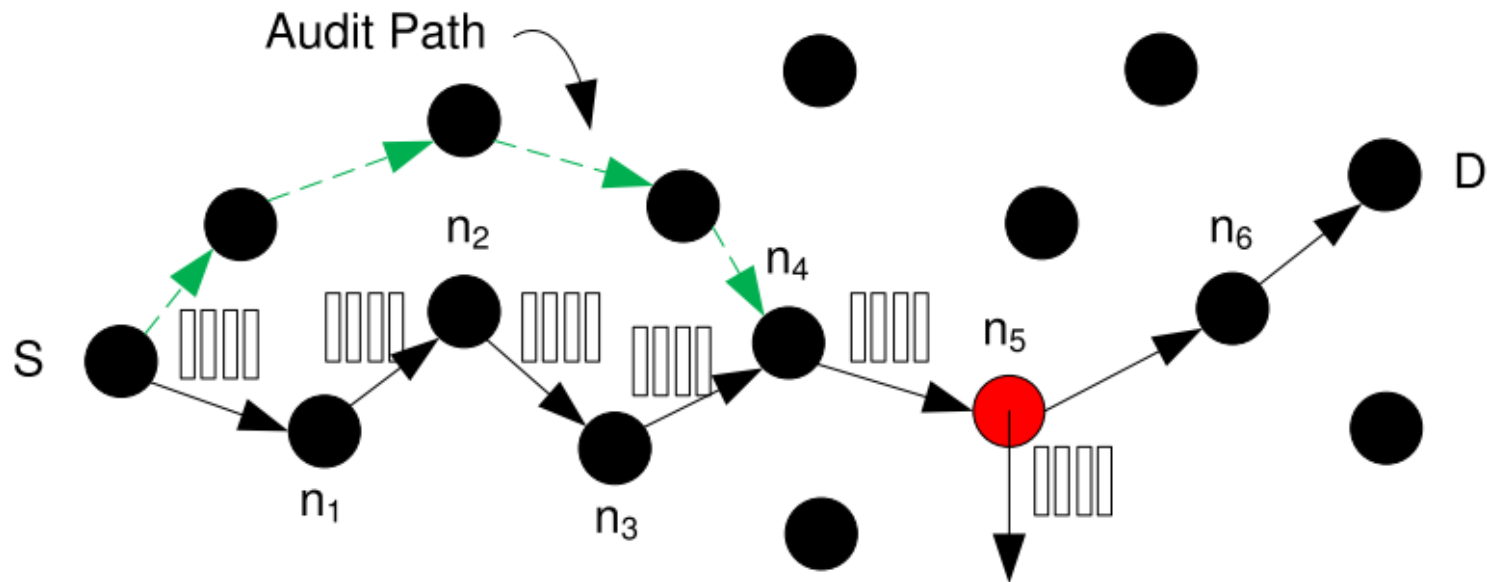
Illustrating Ideas / Concepts

- As with posters, one key graphic is to illustrate the main idea/concept of a problem/project
 - Many presenters use this main figure early in the presentation to set the stage, provide background, etc.
 - The figure should illustrate the main idea of the problem, not just a feature of the problem
 - Ex: showing a picture of a cell tower in a talk about LTE-A protocol research is not very helpful

Random Audits in MANETs

[Kozma & Lazos, WiSec 2009]

- Audit routing paths when E2E performance degrades
- S constructs a disjoint audit path to a path router and uses this path to request more information



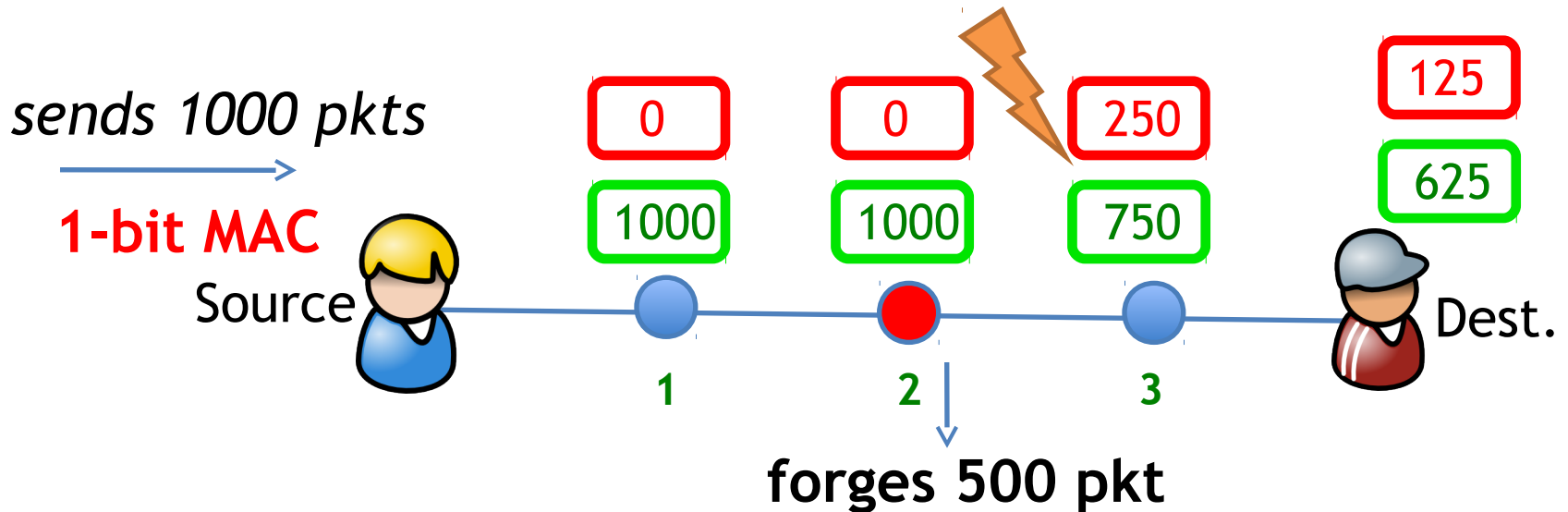
Providing Insight

- Figures can also help address the presentation challenge of conveying depth or insight
 - Explaining an algorithm or technical approach can be very time consuming, often making it infeasible for a short presentation. Instead, use a figure (or animation or sequence of figures) to give the insight into the approach.

Detection using Counters

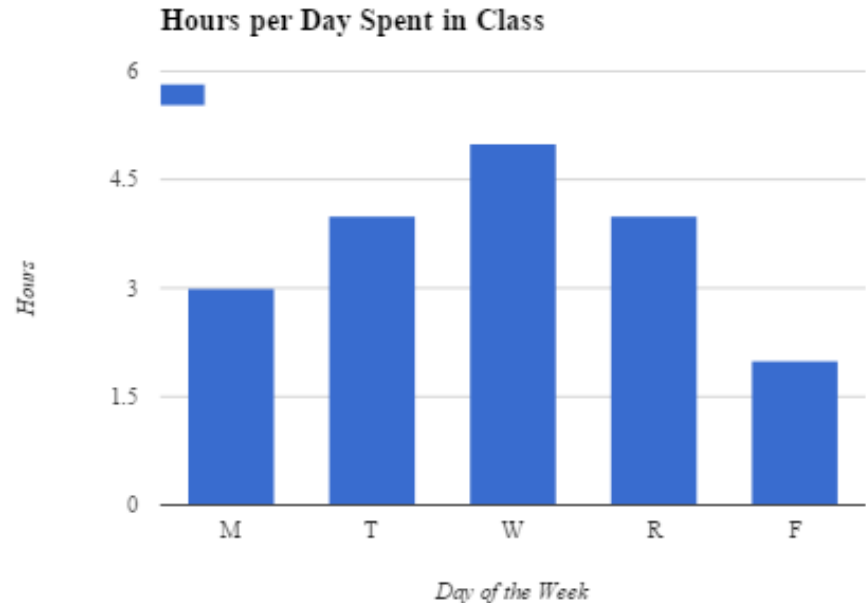
[Zhang et al., NDSS 2012]

- Detecting forwarding faults with a 1-bit MAC
 - Each node maintains two counters
 - *Secure* reporting and threshold-based detection are used (details in paper)



Describing Data / Results

- Graphs and tables are effective ways to convey data and results
 - In general, tables are for simpler data while graphs are for more complex data or to visualize trends / features



Hours per Day in Class					
<i>Day of the Week</i>	Monday	Tuesday	Wednesday	Thursday	Friday
<i>Hours</i>	3	4	5	4	2

Paper Graphics

- Graphics in a paper are used for almost all of the things described above, and more
 - Not including animations, video, etc. (obviously)

Deeper Details

- Primary difference in a paper is the depth of coverage of your topic
- Figures can go into far more detail than what should be covered in a presentation, poster, or demo
 - This applies mostly to approach, data/results, etc.

Design for Intelligibility

- The most important aspect of any graphic is conveying meaning to the viewer
 - Visual components must be simple yet meaningful
 - Color, texture, pattern, etc. should be used sparingly, mainly just for emphasis or distinction
 - All non-obvious (to them, not you) aspects of a figure need to be labeled
 - Axes need labels and units
- If you have the option to include a caption, take advantage of it.

Questions?