

GARNET | Ghanaian Academic and Research Network

DAY 4 · SESSION 1

09:00 — 10:00 · Lecture

Dashboard Design Principles

Building dashboards humans actually use

Network Monitoring & Management : From Metrics to Visibility with Prometheus & Grafana

Who is this dashboard for?



Executive

Wants a single up/down summary. Ten panels, big numbers, traffic-light colours.

STATUS AT A GLANCE



Operator

Working through an incident. Needs trends, drill-down, comparisons across hosts.

SPEED OF INVESTIGATION



Engineer

Capacity planning, post-mortem. Needs raw data, longer time ranges, custom queries.

DEPTH AND DETAIL

One dashboard cannot serve all three. Build separate ones — they share data, not screens.

Two frameworks: RED and USE

RED

For services and applications

Rate — requests per second

Errors — failed request count

Duration — how long requests take

Tom Wilkie / Weaveworks

USE

For resources (CPU, links, disks)

Utilisation — how busy

Saturation — queue depth, contention

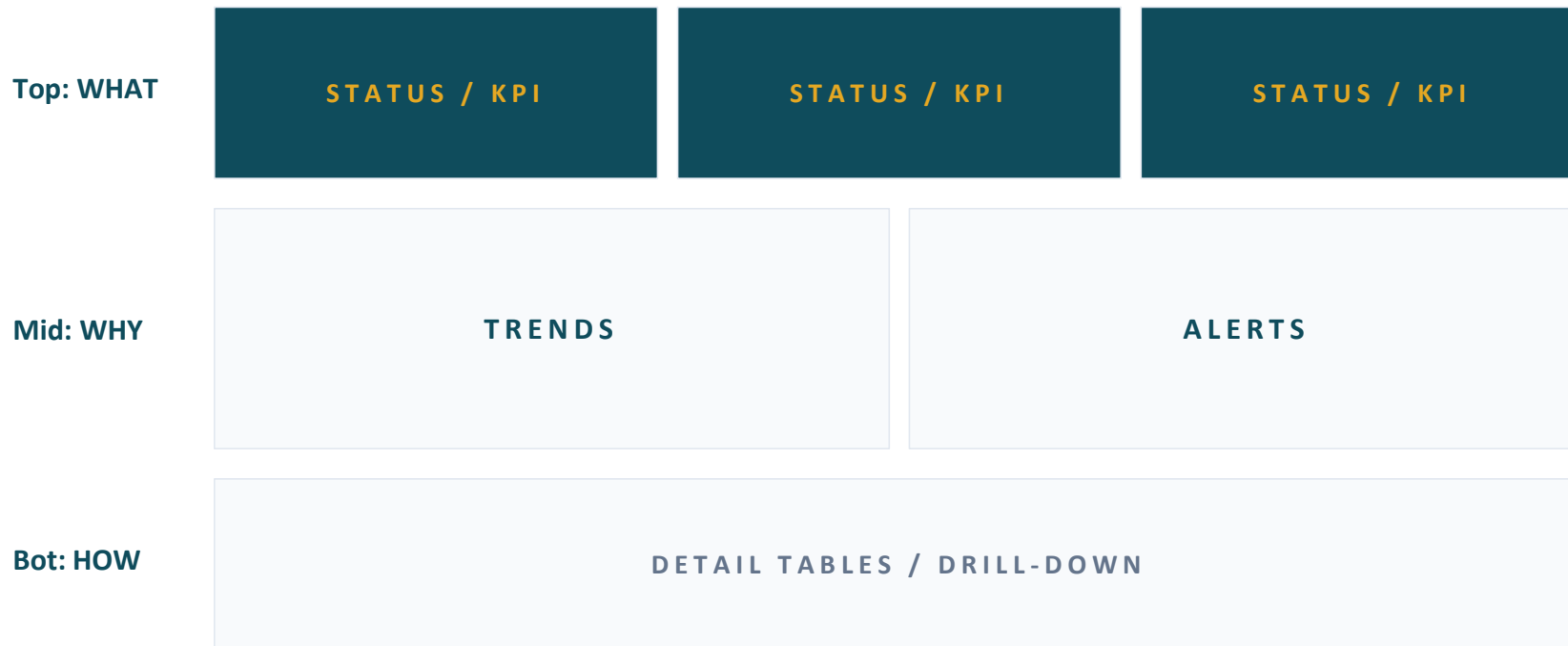
Errors — failures per resource

Brendan Gregg / Netflix

LAYOUT

Top-left to bottom-right

Eyes scan F-pattern. Most important info goes top-left. Detail flows down and right.



VISUAL CHOICES

Pick the right panel for the job

Time series	Trends, history, anything over time. Default for most metrics.
Stat / Big number	One headline number. Status, counts, current value.
Gauge	Bounded values with a target — capacity used, % healthy, SLA score.
Bar chart	Comparisons across categories at a single moment. Top-N.
Heatmap	Distributions over time. Latency histograms, traffic patterns by hour.
Table	Many rows, sortable. Per-device summaries, alert lists.
Status / Alert list	Current alerts firing. Use a real alert panel, not a recreated one.

Default to time series. Reach for others when you have a specific reason.

RESTRAINT

Most dashboards have too much on them

If a panel doesn't change a decision, it's decoration.

Every panel earns its place by changing what someone does or believes.

Three tests for every panel

1. Could you explain in one sentence what decision this panel supports?
2. If the panel disappeared, what specifically would you not be able to do?
3. Is this on the right dashboard, or does it really belong on the engineer-tier one?

THRESHOLDS

Color carries meaning



Green = OK

Reserve green for healthy state. Don't use for series colors (use blue/teal).



Amber = warning

Approaching a threshold but not yet broken. The 'pay attention' colour.



Red = problem

Threshold breached. Reserved for actual issues — never decorative.

Set explicit thresholds in panel options — don't rely on Grafana's defaults. They are guesses without context.

MAKEOVER

Before and after

BEFORE

"All Network Metrics"

- 30 panels on one screen
- Mixed audiences (CPU + business KPIs)
- Every series in red — meaningless
- No thresholds, no colour rules
- Panel titles like 'Graph 1'
- Loaded with all 50 hosts in one chart

AFTER

"NOC: Core Network Health"

- 8 panels with clear hierarchy
- Audience: NOC operators — focused
- Status row top, trends middle, table bottom
- Variables for site/device — one dashboard, many views
- Thresholds set on every stat panel
- Title and time range tell a story

BEFORE YOU BUILD

Audience first, panels second

Decide who · Decide what they decide · Then build the smallest dashboard that supports it