

checkmk Technology Preview: Capacity Management

CHECKMK CONFERENCE #5 – MUNICH, APRIL 30, 2019

Agenda

1. HOUSTON, DO WE HAVE A PROBLEM?
2. CAPACITY MANAGEMENT – WHAT IS IT?
3. DEMO
4. OUTLOOK





Houston, do we have a problem?

- As an admin, your key challenge to manage general system utilization
 - Too high = too many problems
 - Too low = too expensive
- check**mk** helps to meet this challenge
 - Business Intelligence helps with root analysis
 - Combined graphs can show interdependencies
- But we still feel we can do better!



Capacity Management: The first challenge

- ◆ Keep your resource utilization under control...
- ◆ ... and balanced accross your infrastructure

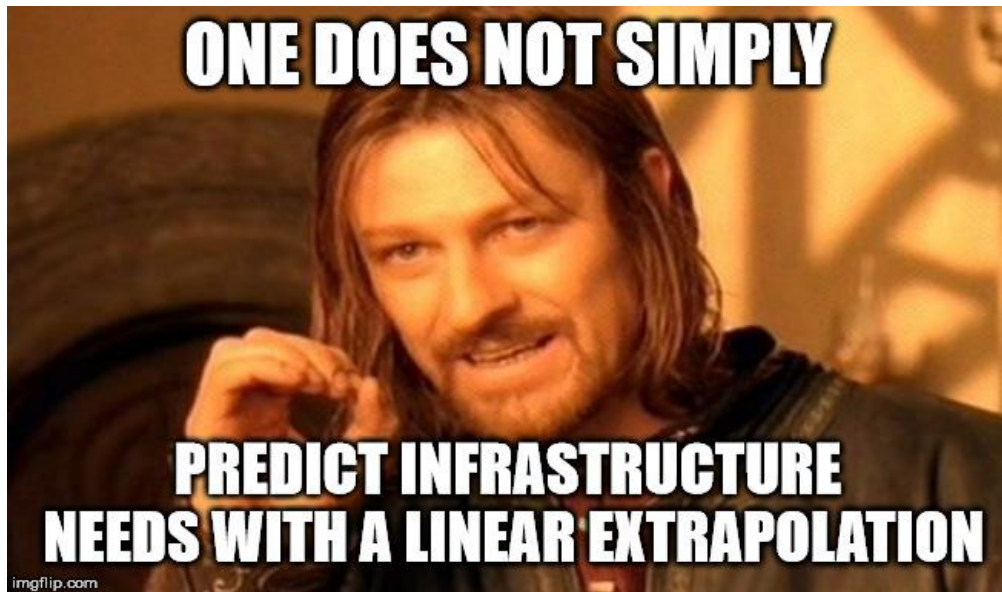
Let's take a look...



Capacity Management: Now add time

- ◆ Once we understand current capacity requirements we want to know how they change over time
- ◆ Ideally add resources BEFORE bottlenecks occur

Can't trend predictions help?



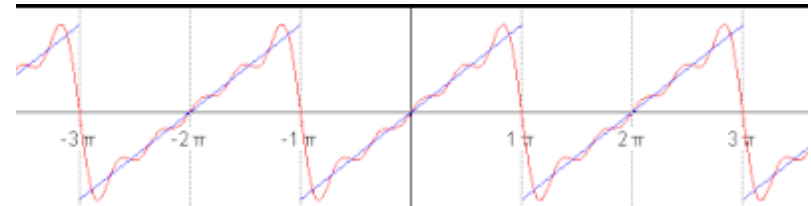
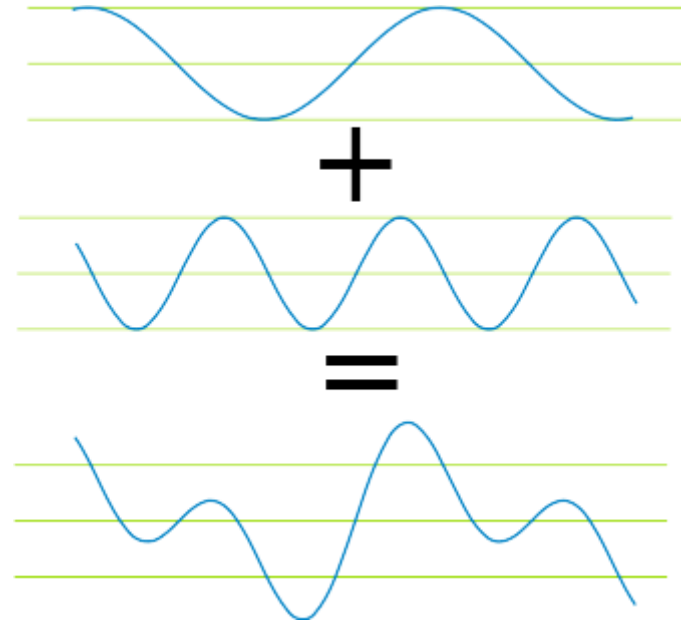
- Linear trend predictions are based on average resource utilization
- Do not capture cyclicality of usage
- Do not capture volatility
- **We need more math!**

Bring out the big guns: Generalized Additive Model

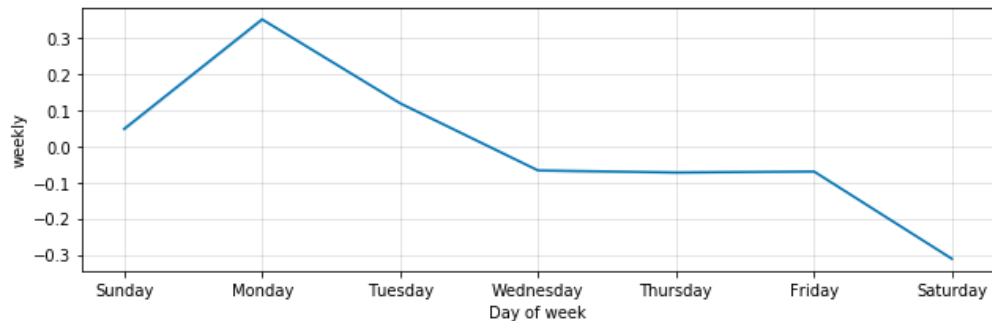
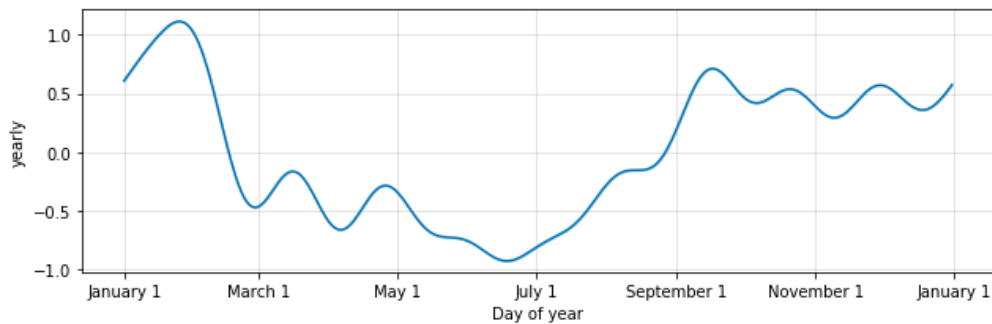
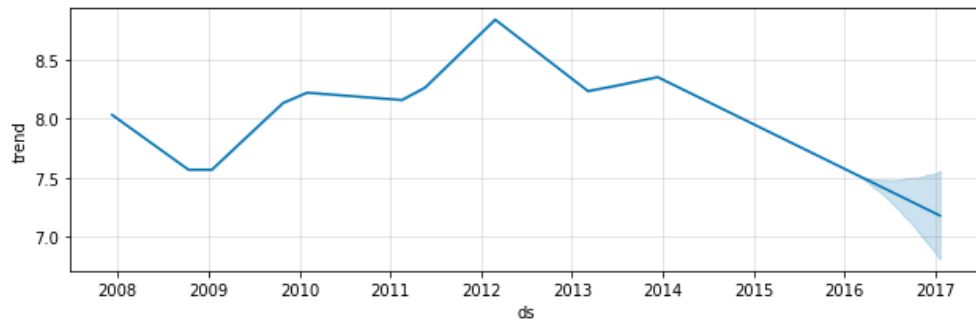
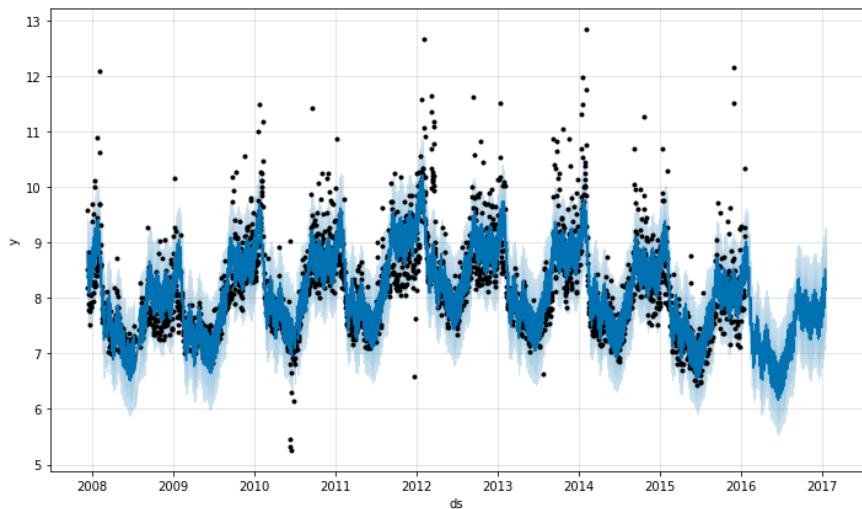
Goal: Decompose Time Series into
comprehensible parts

$$M = \text{Trend} + \text{oscillations}$$

- Calculate Trend by piece wise linear regression
- Periodic oscillations are described by a Fourier Series
- A Fourier Series decomposes a signal into its constituent frequencies. We identify cyclical patterns in resource utilization.



What does it look like?



Let's take a look again...

Result: Better predictions!



So what's next?

- We've got some ideas...
 - Predict SLA adherence based on time series data
 - Use correlations between metrics for root cause analysis
 - Automatically identify anomalies
- **...but we really want to hear yours!**

