



IBM Deutschland Research & Development GmbH

# Using x86 virtualization to centralize and rapidly deploy virtual firmware test environments

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# Agenda

- **Introduction**
- **Solution -> Virtualization**
- **Implementation**
- **Questions**

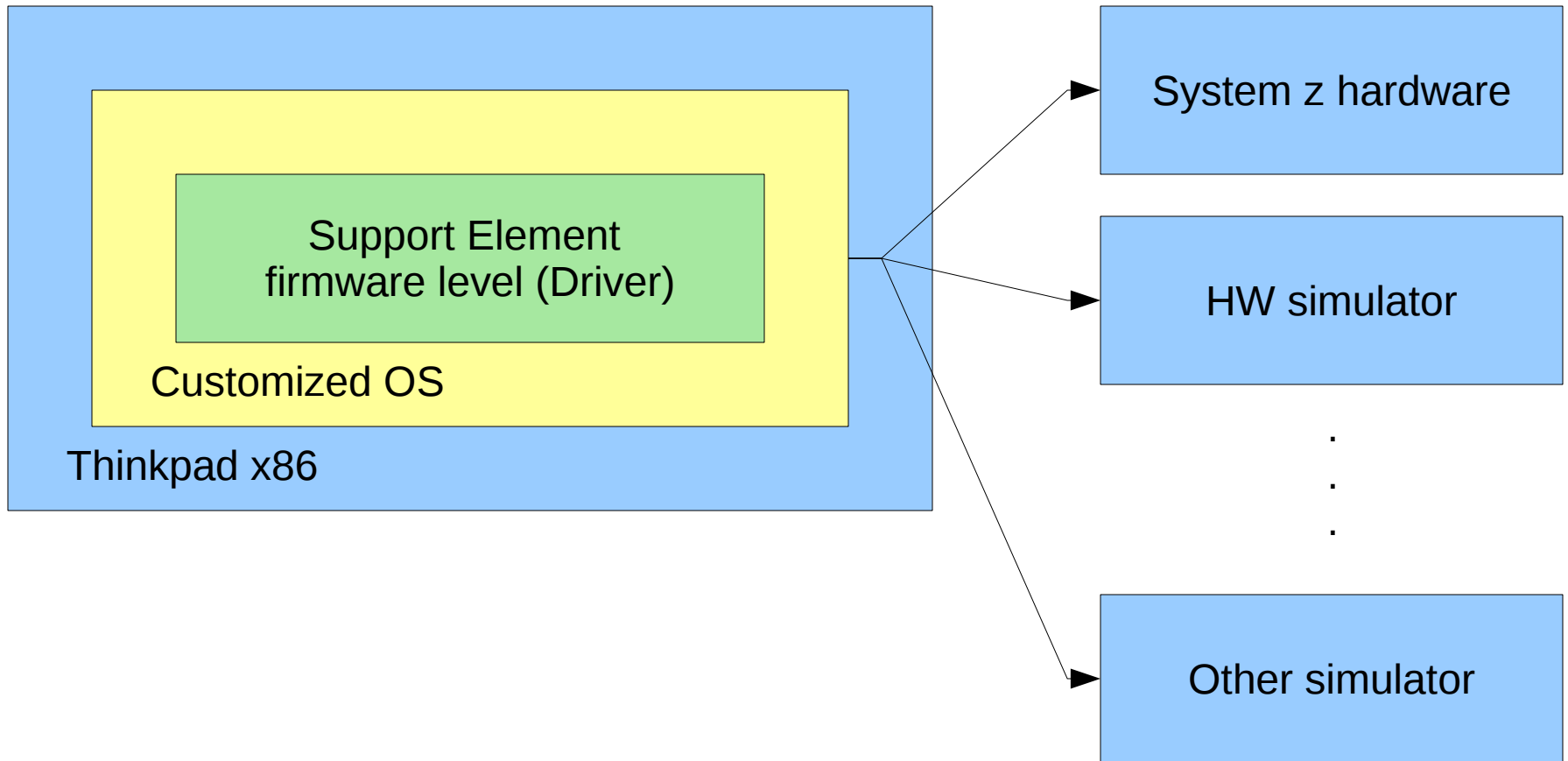
## Who we are

- **Martin Troester**
- **Thomas Pohl**
  
- **Project: System z\* Support Element (SE)**
  - System z firmware
  - Worldwide project, several labs in multiple countries



# Introduction

# Simulation Environment



## Current setup

- **One dedicated Thinkpad per developer**
- **One SE firmware Driver per Thinkpad**
- **Manual OS and Driver installation procedure**

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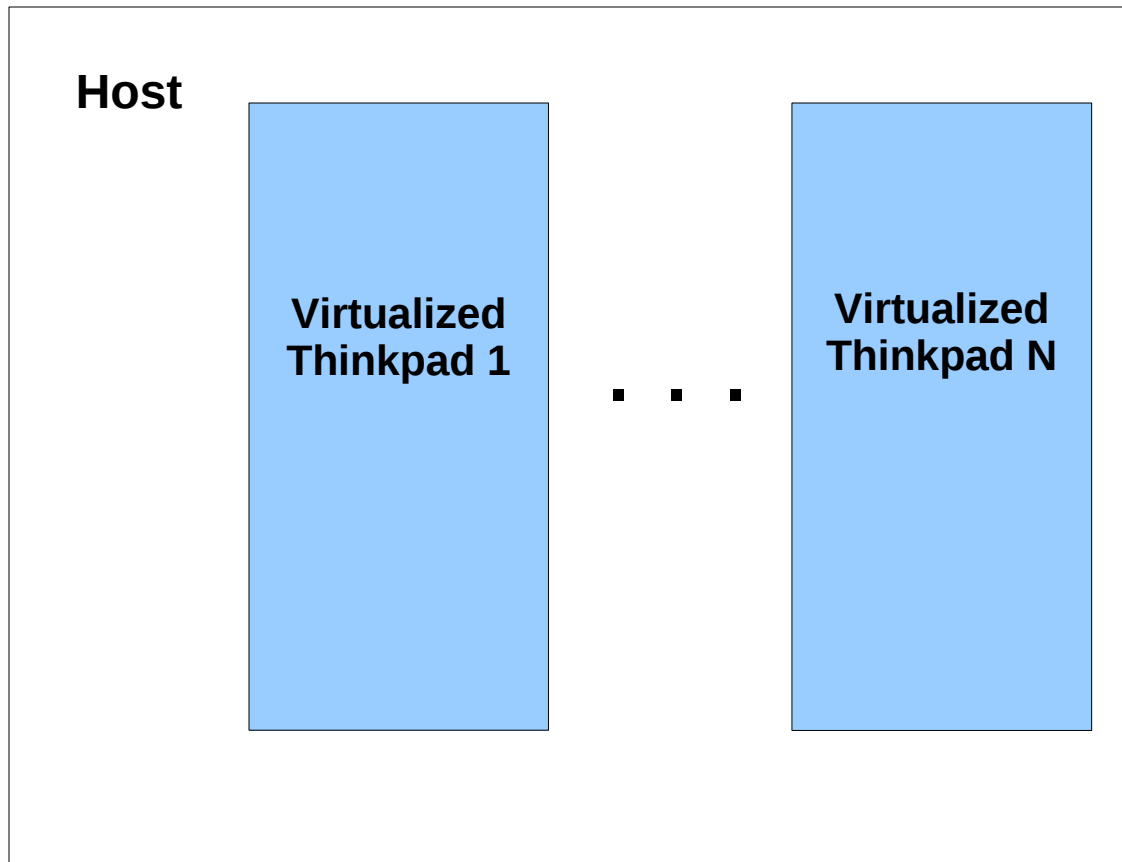
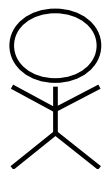
**Conclusion:  
Virtualization ?!**

# Solution -> Virtualization

## Current setup

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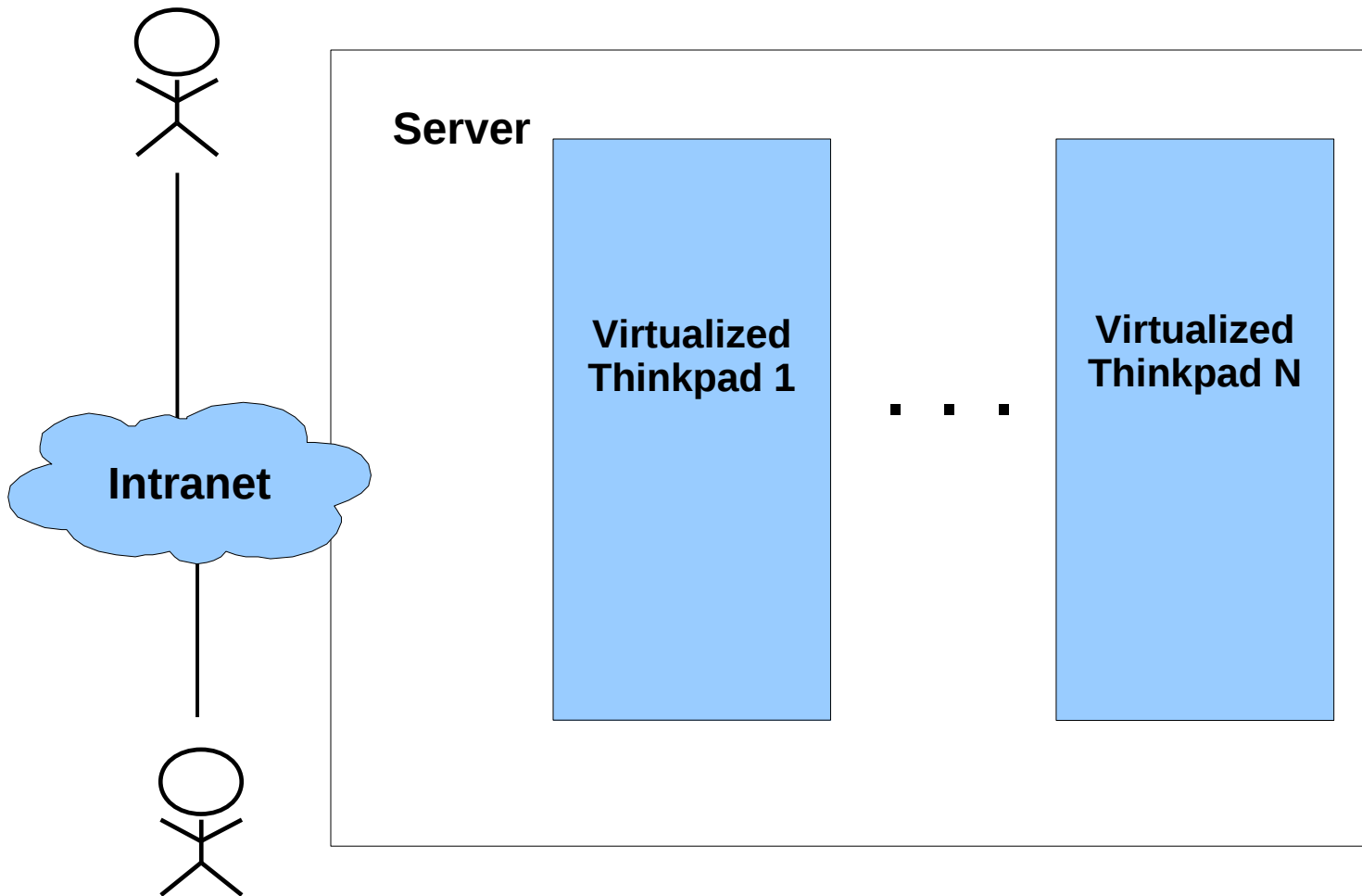
# 1. Step - Virtualization



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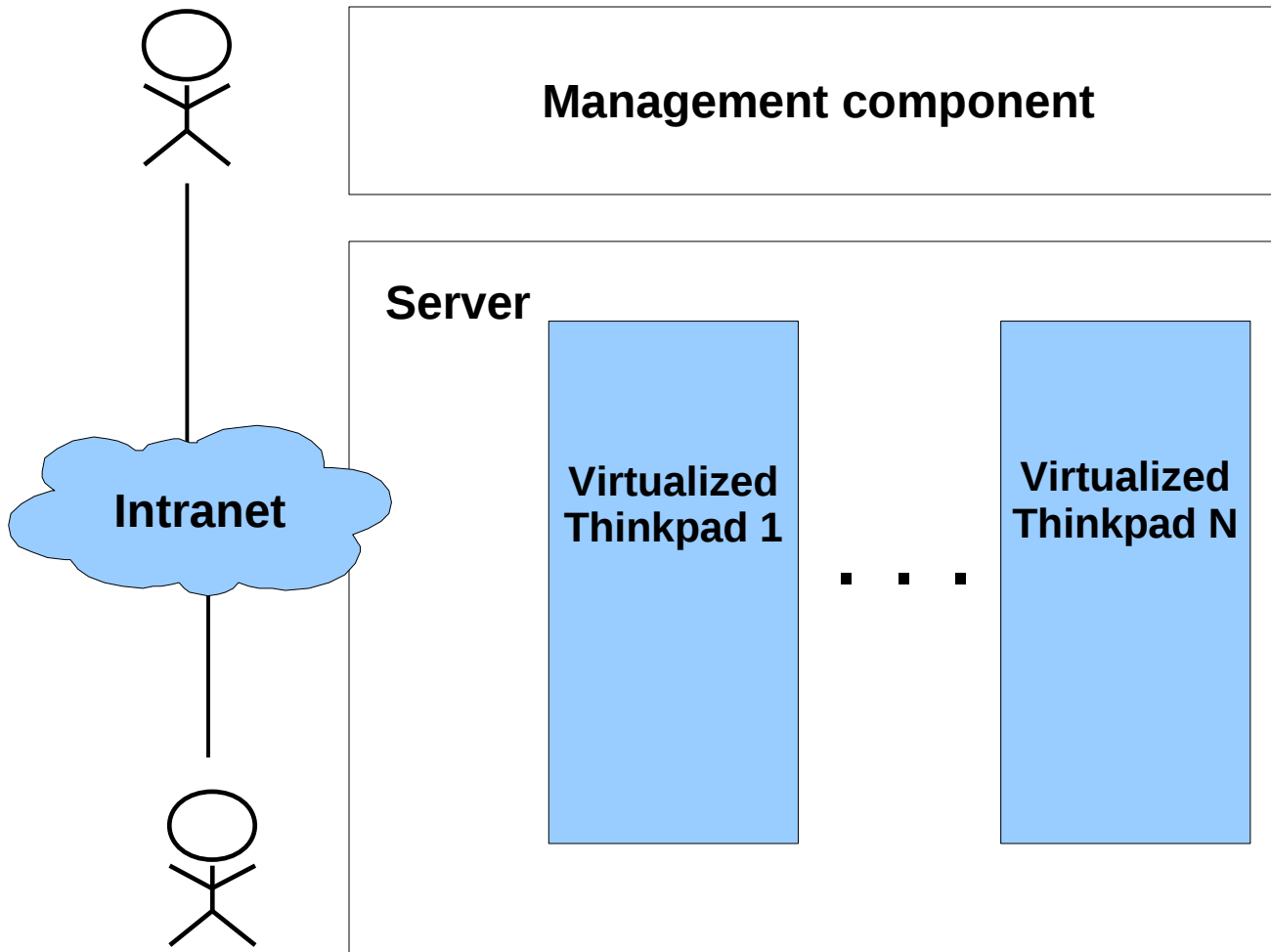
## 2. Step - Consolidation



## Current setup

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### 3. Step - Automation



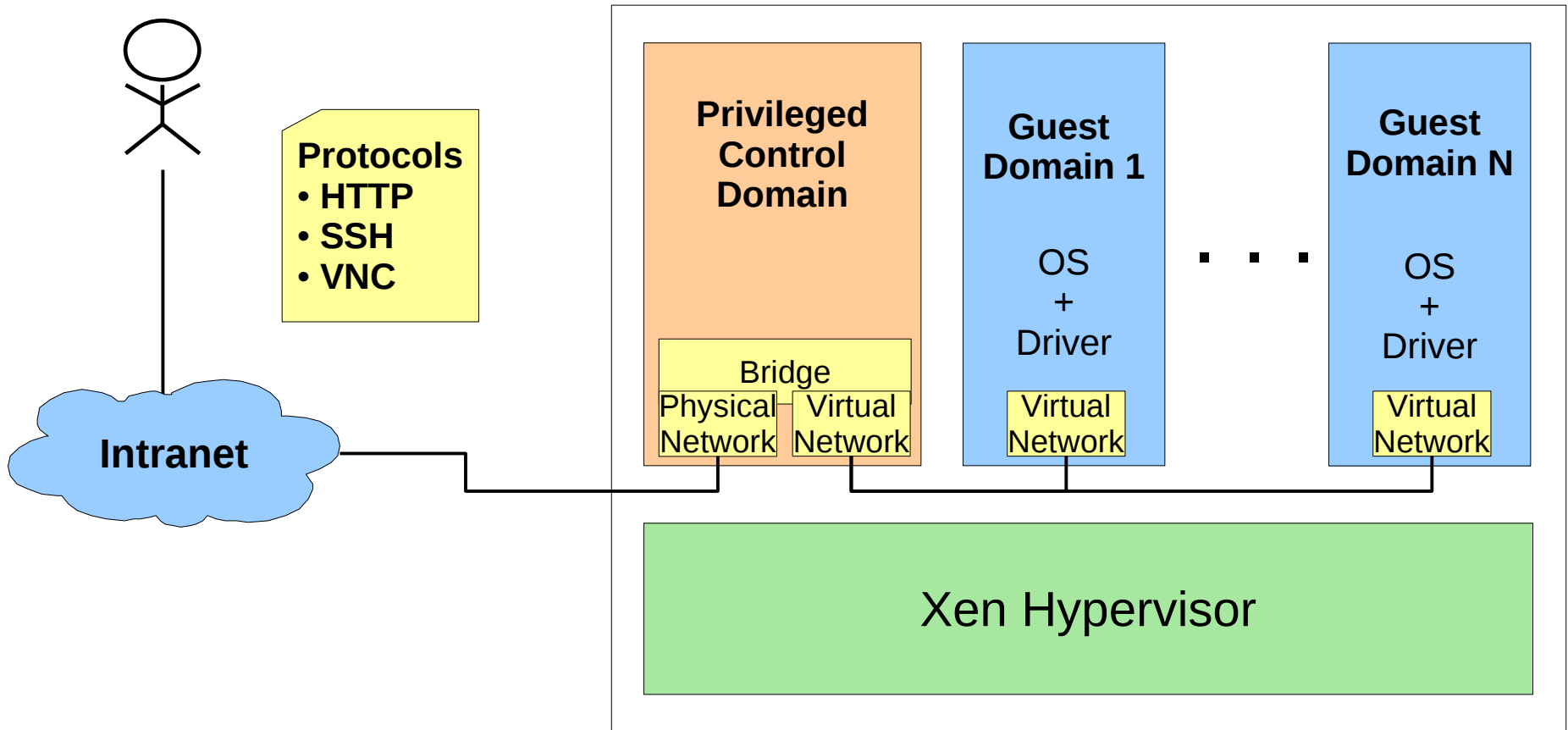
# Conclusion

**These are the basics but what about**

- **Space consumption**
- **Creation time**
- **Reliability**

# Implementation

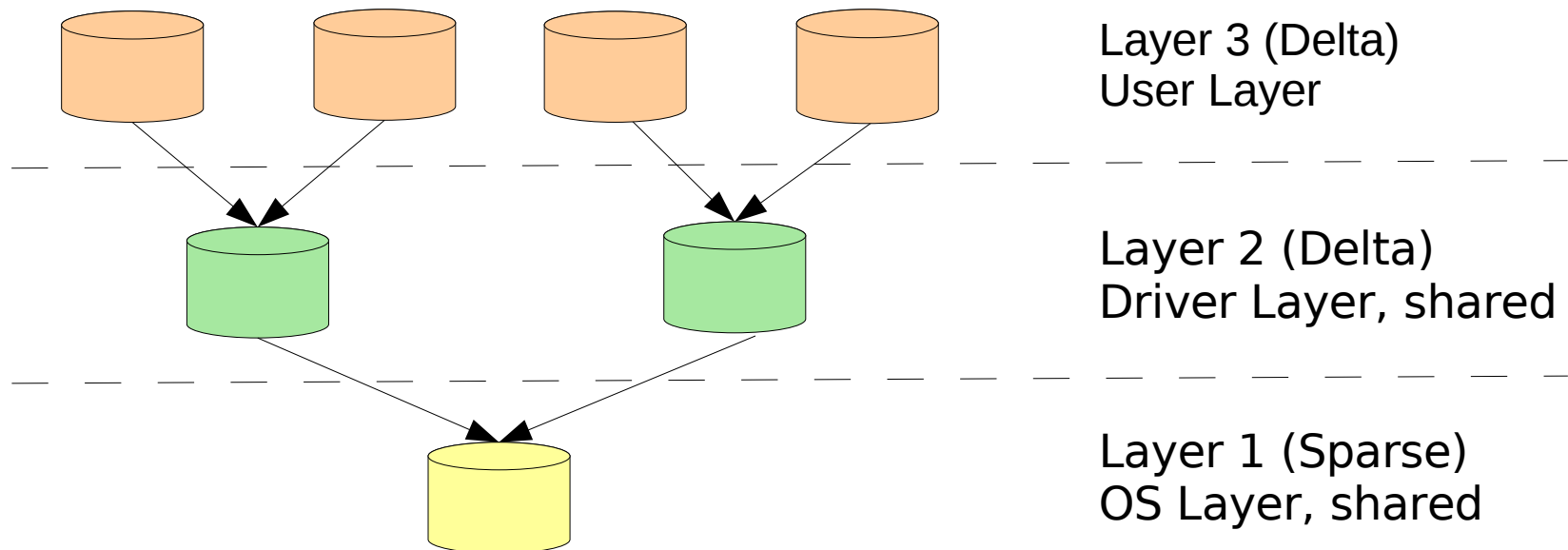
# Base architecture of Xen-based prototype



# Efficient Image Provisioning

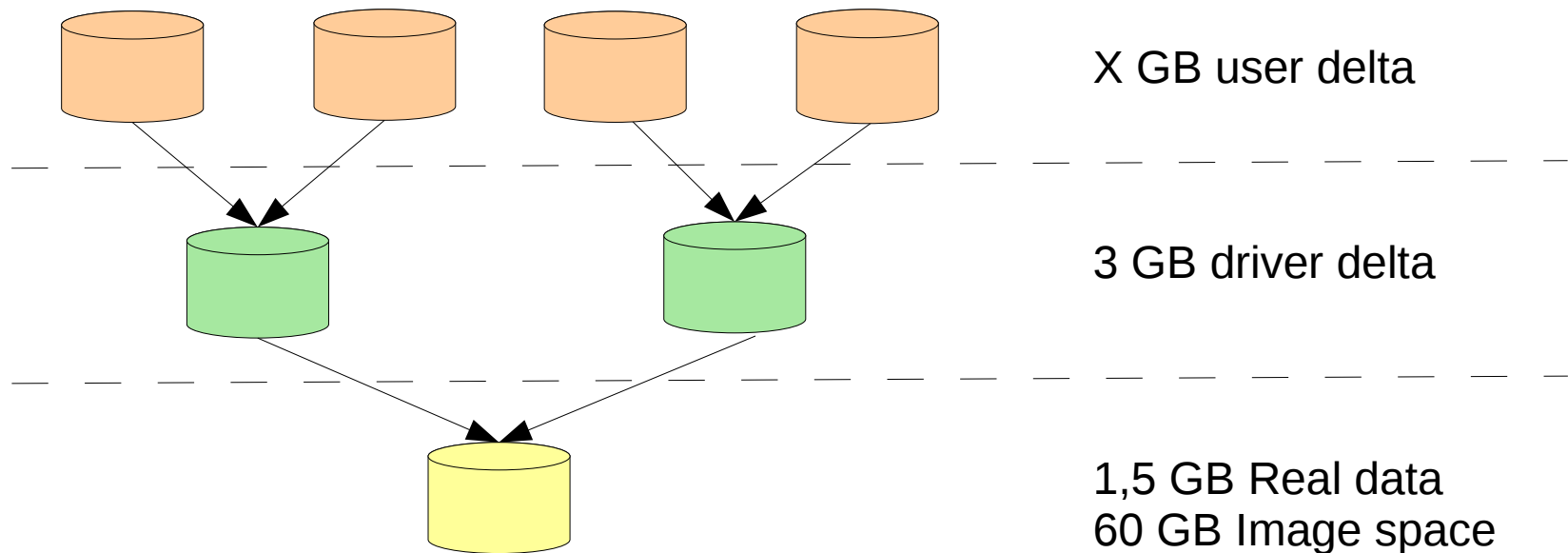
## ■ Extreme reduction of turn-around time

- User VM creation time: ~5 sec (OS + Driver Level)  
vs OS installation 60 min + driver installation 20 min
- User VM boot time: ~30 seconds

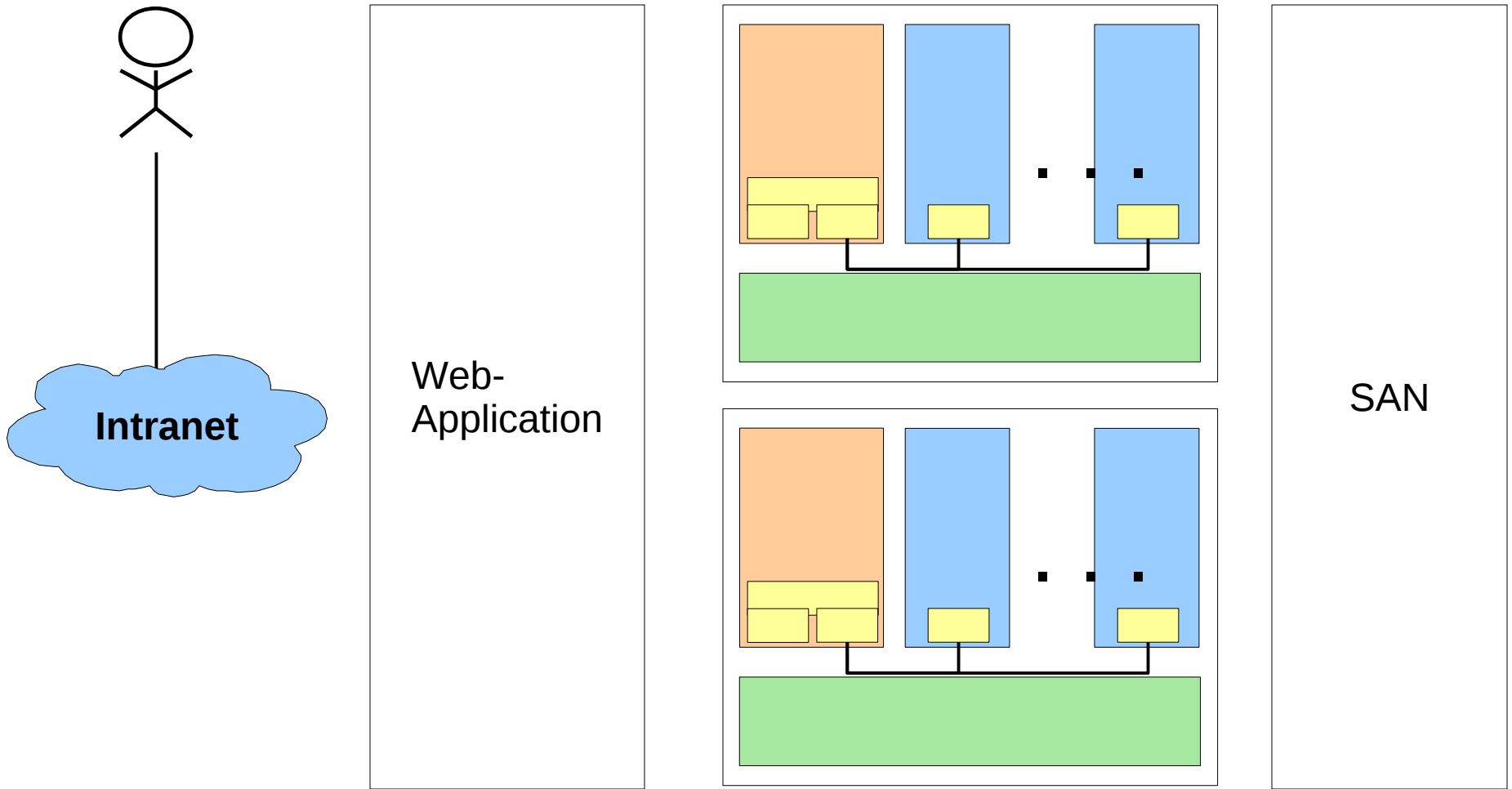


# Efficient Image Provisioning

- **Extreme reduction of required space**
  - Uses copy on write technology



# Cloud architecture



# Advantages

## ■ Server-sided implementation

- run any SE driver from anywhere in the world
- excellent turn-around time to run tests on specific driver levels
- run tests on different driver levels in parallel
- no local development desktops or Thinkpads needed
- image and driver installation process hidden from user
- base for extended test automation

## ■ Xen based implementation

- scalability on server
- easy to extend to support other environments

# Questions



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