Triple Play Networking in a Cruise Ship Environment

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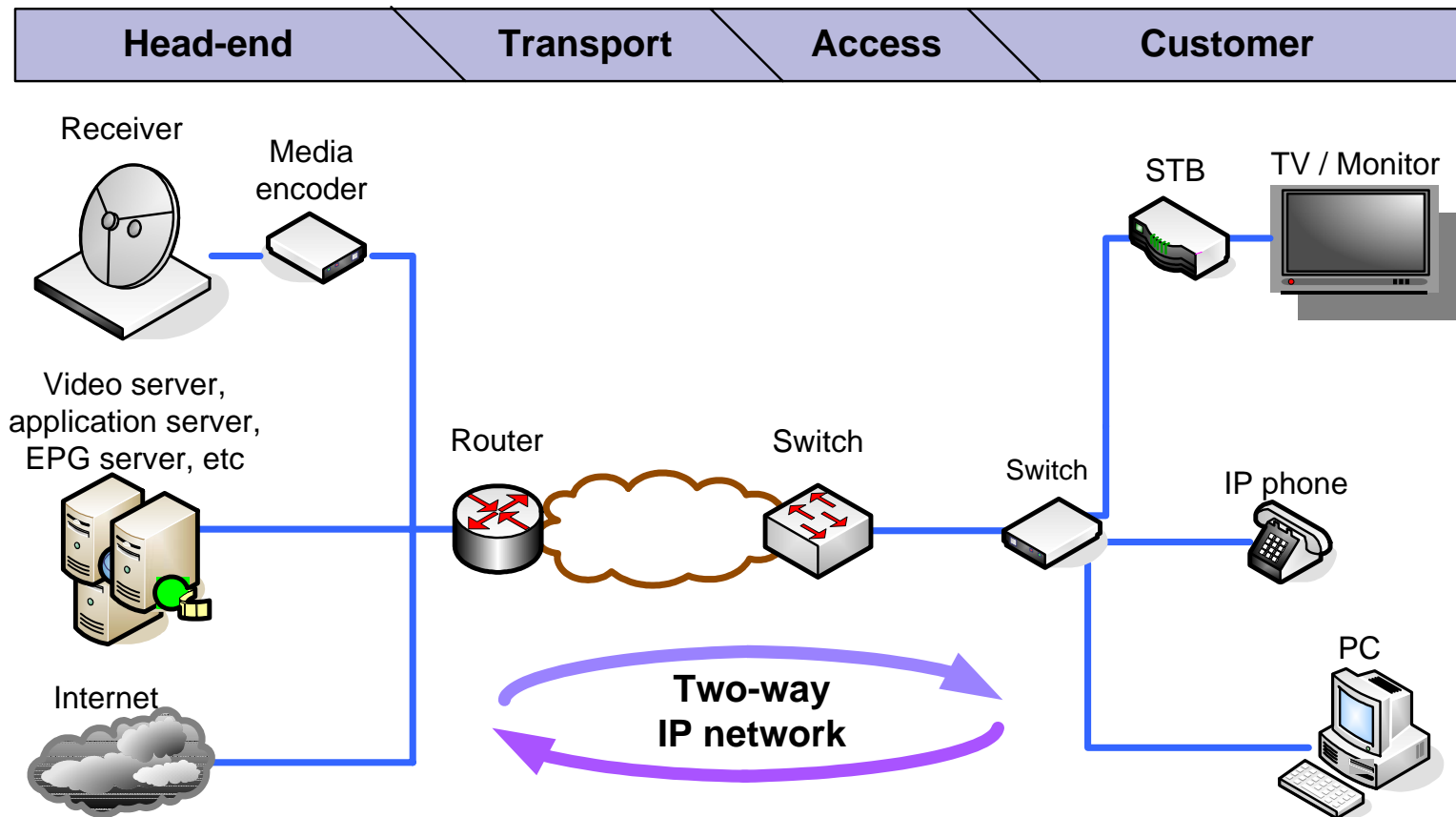Instructor: M.Sc. Sami Kuronen, IBM

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What is triple play?

- Triple play / IP triple play / IP3
  = Data, telephones and television over IP

- Single network infrastructure, IP
- Data = servers, desktops, etc.
- Telephony = VoIP telephone service
- Television = full quality IPTV (like DVB)

  + additional services

What is triple play?   (continued)

Head-end	Transport	Access	Customer

Receiver

Media encoder

STB

TV / Monitor

Video server,
application server,
EPG server, etc

Router

Switch

Switch

IP phone

Internet

**Two-way
IP network**

PC

Cruise ship networking background

- Cruise ships are today built with fully traditional network technology (cable-TV & POTS), or with cable-TV and VoIP phone technology.

- First ships with triple play networking will be ready during 2008.

- Using triple play would decrease the amount of cables, and enable new value-added services.

Objective

- Evaluate the benefit factor of the triple play network compared to alternatives using the AHP decision process.

- Present a high-level network architecture using IP triple play.

- Scope is in the cruise ship & cruiseferry newbuildings.

Cruise ship network & services

- Network can be compared to a medium-to-large company network.

- Services: telephony, wireless telephony, television, radio, CCTV, LAN, etc.

- Separate critical components: general alarm system, UHF radios, sound powered phones, etc.

Cruise ship network & services (continued)

- Fire zones (vertical division): max length 40 m
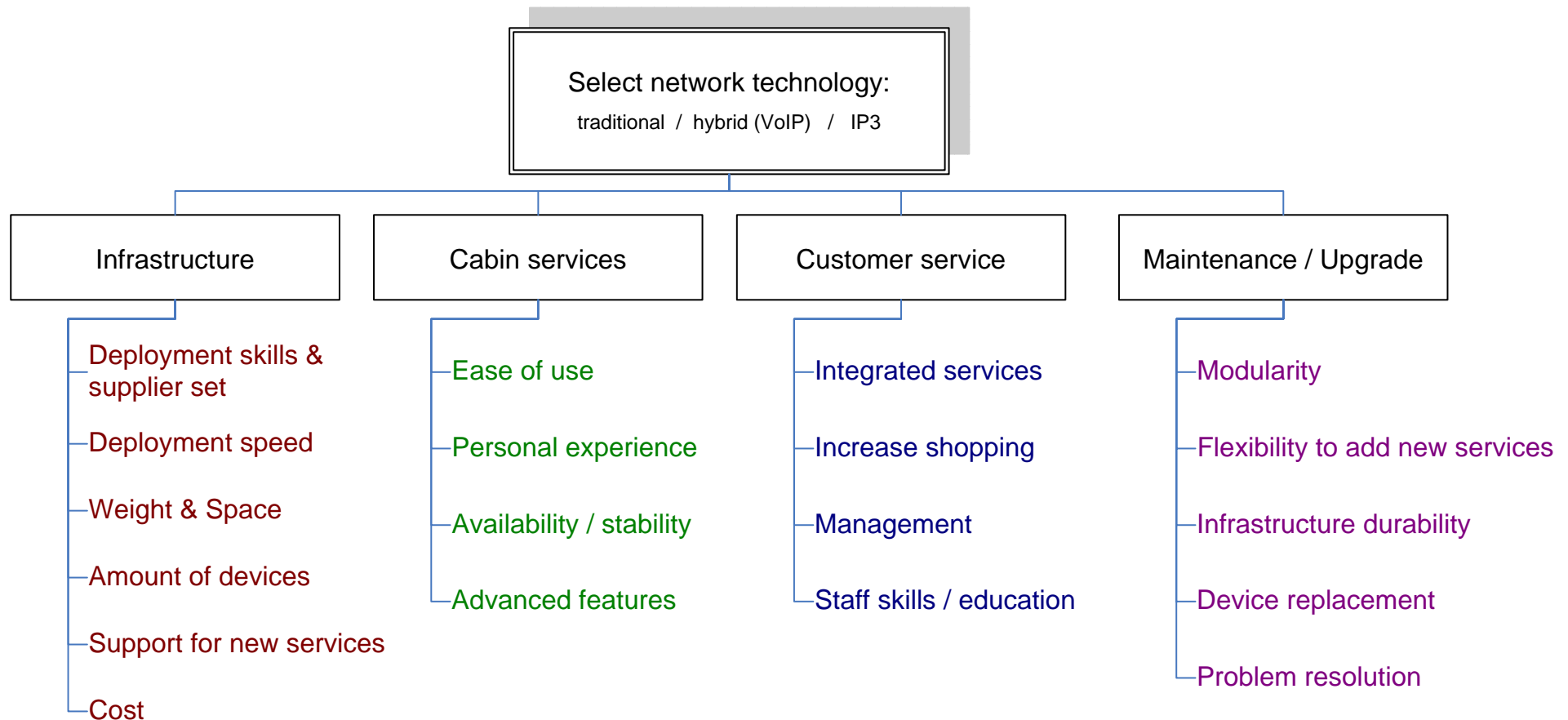- Decks (horizontal division): not all decks have cabins
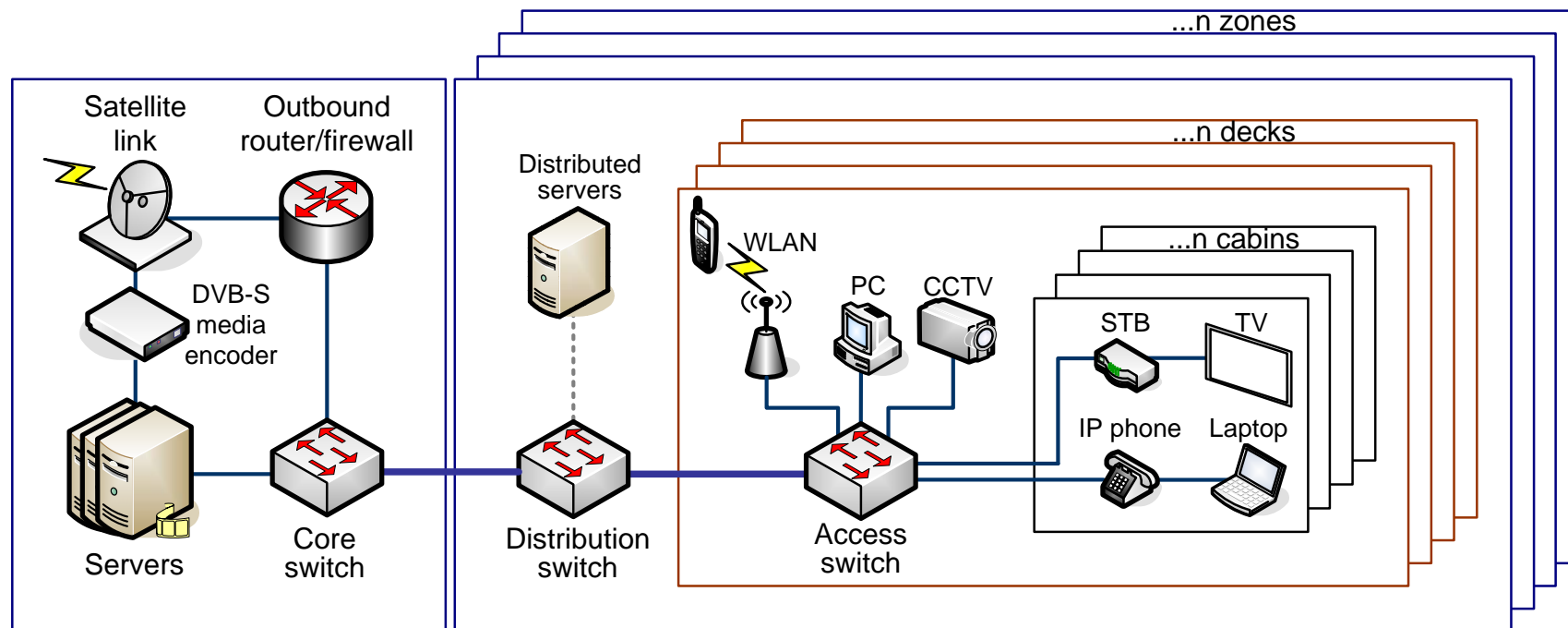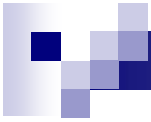
Networking technology selection problem

- Analytic hierarchy process, AHP, is a popular decision method by professor Thomas Saaty (1977, 1980).

- Define the goal, the alternatives and the criteria.

- Decision criteria are formed as a tree, and the alternatives are placed as leaves for each sub-criterion.

- The tree (criteria and alternatives) is balanced with pairwise verbal comparisons.

Networking technology selection problem
(continued)

Select network technology:

traditional / hybrid (VoIP) / IP3

Infrastructure

- Deployment skills & supplier set
- Deployment speed
- Weight & Space
- Amount of devices
- Support for new services
- Cost

Cabin services

- Ease of use
- Personal experience
- Availability / stability
- Advanced features

Customer service

- Integrated services
- Increase shopping
- Management
- Staff skills / education

Maintenance / Upgrade

- Modularity
- Flexibility to add new services
- Infrastructure durability
- Device replacement
- Problem resolution

(alternatives left out for simplicity)

Networking technology selection problem (continued)

Verbal scale & comparison sample:

Comparison pair / Scale	Extremely more important 9	– 8	Very Strongly more important 7	– 6	Strongly more important 5	– 4	Slightly more important 3	– 2	Equally important 1	– 2	Slightly more important 3	– 4	Strongly more important 5	– 6	Very Strongly more important 7	– 8	Extremely more important 9	Scale / Comparison pair

Cabin services

Ease of use																			Personal experience
Ease of use																			Availability & stability
Ease of use																			Advanced features
Personal experience																			Availability & stability
Personal experience																			Advanced features
Availability & stability																			Advanced features

Networking technology selection problem
(continued)

- The comparisons were presented to ship company professionals and IBM networking technology professionals.

- The individual results are not presented in the work, but the AHP consistency check is analyzed.

- The results are averaged to obtain the overall scores for the networking technology selection problem.

Conclusions

- Results not yet ready, but it seems like the answers are biased based on the experiences.

- However, "hybrid" (VoIP) alternative is clearly beneficial compared to "traditional" with factor of around 3x. And "triple play" vs. "hybrid" has benefit of around 1,5x.

- Cost is not a significant factor, flexibility to add new services is!