Deployment Diagrams

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Deployment Diagrams

- What existing systems will system need to interact or integrate with?
- How robust does system need to be (e.g., redundant hardware in case of a system failure)?
- What and who will connect to or interact with system, and how will they do it?
- What middleware, including the operating system and communications approaches and protocols, will system use?
- What hardware and software will users directly interact with (PCs, network computers, browsers, etc.)?
- How will you monitor the system once deployed?
- How secure does the system need to be (needs a firewall, physically secure hardware, etc.)?

Slide 1: When to Use Deployment Diagrams

- They are very handy in showing what is deployed where, so any nontrivial deployment can make good use of them.

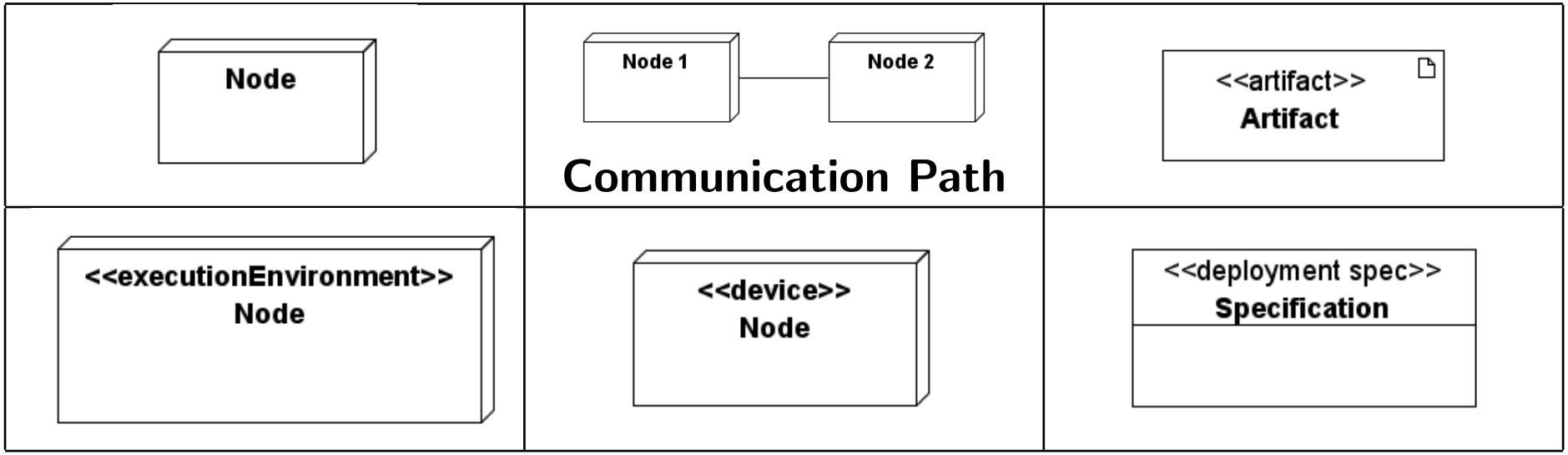
Deployment Diagrams

- Show the structure of the run-time system
- Capture the hardware that will be used to implement the system and the links between different items of hardware
- Model physical hardware elements and the communication paths between them
- Plan the architecture of a system
- Document the deployment of software components or nodes

Slide 2: Deployment Diagrams

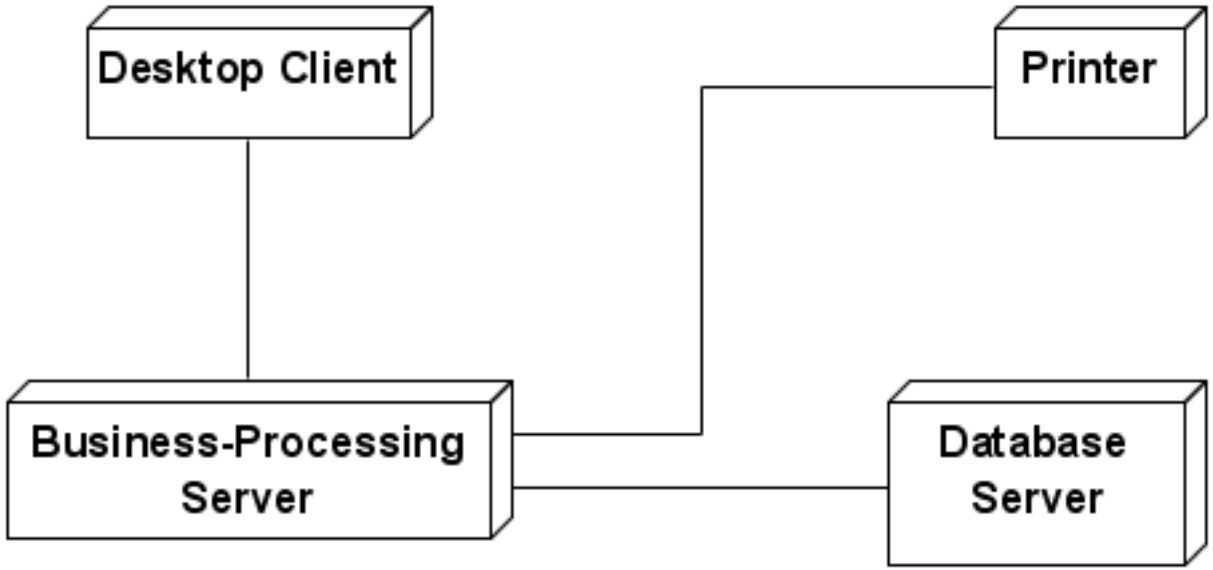
- A Deployment Diagram shows the configuration of run-time processing elements and the software components, processes, and objects
- Software component instances represent run-time manifestations of code units
- Deployment Diagrams capture only components that exist as run-time entities
- A deployment diagram shows the systems hardware, the software installed on that hardware, and the middleware that connects the disparate machines together
- A Deployment Diagram is a collection of one or more deployment diagrams with their associated documentation
- Deployment diagrams show the physical configurations of software and hardware

Deployment Diagrams



Communication Association

A communication associations between nodes indicates a communication path between the nodes that allows components on the nodes to communicate with one another



Deployment Planning

- How will your system be installed?
- If different versions of the system will be in production at the same time, how will you resolve differences?
- What physical sites do you need to deploy to and in what order?
- How will you train your users?

Slide 5: Deployment Planning

- How will your system be installed?
  - Who will install it? How long should it take to install?
  - Where the installation possibly fail? How do you back out if the installation fails? How long does it take to back out?
  - What is your installation window (during what time period can you install your system)?
  - What backups do you need before installation? Do you need to do a data conversion?
  - How do you know that the installation was successful?

- If different versions of the system will be in production at the same time, how will you resolve differences?

Slide 5: Deployment Planning

- What physical sites do you need to deploy to and in what order?
  - How will you train your support and operations staff?
  - Do you need to deploy a production support system so that the support staff uses their own environment to simulate problems?

- How will you train your users?
  - What documentation, and in what formats and languages, do your users, and support and operation staff need?
  - How will updates to documentation be deployed?

How to Produce Deployment Diagrams

1. Decide on the purpose of the diagram
2. Add nodes to the diagram
3. Add communication associations to the diagram
4. Add other elements to the diagram, such as components or active objects, if required
5. Add dependencies between components and objects, if required

Slide 6: Allocating Artifacts to Nodes

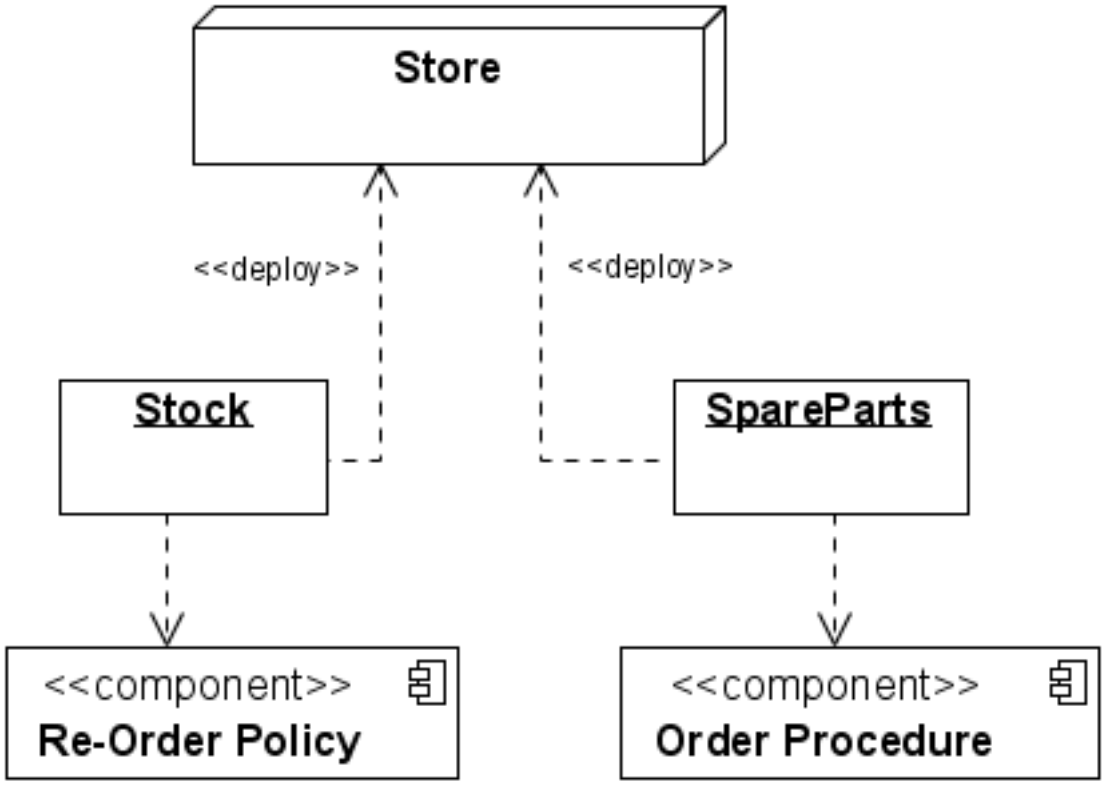
Consider a number of aspects when allocating components to nodes, e.g.:

- Resource usage
- Geographical location
- Access to devices
- Security
- Performance
- Extensibility and portability

Modelling Business Process

- Business modelling using nodes and components is an effective means of capturing non-computer based processes and entities
- This can be done very early in development, to complement the use case model and other business modelling
- Components are the business procedures and documents; the nodes ("run-time structure") are the organisation units and resources (human and other) of the business

Modelling Business Process



Readings

Required Readings

- UML course textbook, Chapter 14 on Deployment Diagrams

Summary

- Deployment Diagrams
  - Rationale
  - Notation
- How to produce Deployment Diagrams

