



### Prova orale – Domande serie 1

- 1) Si considerino 4 host che debbano comunicare a coppie (prefissate staticamente). Si vuole mantenere segregato il traffico di ciascuna coppia rispetto a quello dell'altra. Descrivere i meccanismi ed i passi da attuare per raggiungere l'obiettivo, utilizzando architetture di rete a livello 2.
- 2) Il candidato descriva i passi per l'installazione di una distribuzione Linux in un server. A seguito dell'installazione descriva i passaggi per configurare multipli indirizzi di livello 3 sulla stessa interfaccia di rete.
- 3) Dato un generico server Linux, descrivere l'installazione e la configurazione del servizio "web server".

### Testo in Inglese – Traccia 1

It is now time to turn our attention from the applications and social aspects of networking (the dessert) to the technical issues involved in network design (the spinach). There is no generally accepted taxonomy into which all computer networks fit, but two dimensions stand out as important: transmission technology and scale. We will now examine each of these in turn.

Broadly speaking, there are two types of transmission technology that are in widespread use: broadcast links and point-to-point links.

Point-to-point links connect individual pairs of machines. To go from the source to the destination on a network made up of point-to-point links, short messages, called packets in certain contexts, may have to first visit one or more intermediate machines. Often multiple routes, of different lengths, are possible, so finding good ones is important in point-to-point networks. Point-to-point transmission with exactly one sender and exactly one receiver is sometimes called unicasting



### Prova orale – Domande serie 2

- 1) Si consideri una rete WAN (L3) adeguatamente magliata e dotata di due distinti gateway verso Internet. Descrivere meccanismi e possibili logiche di configurazione degli apparati di rete per conseguire resilienza in caso di guasti, nell'ipotesi che si utilizzi routing di tipo statico.
- 2) Il candidato descriva i passi per l'installazione di una distribuzione Linux in un server. A seguito dell'installazione descriva i passaggi per configurare il firewall locale per bloccare uno specifico indirizzo IP
- 3) Dato un generico server Linux, descrivere l'installazione e configurazione del servizio "secure shell".

### Testo in Inglese – Traccia 2

To reduce their design complexity, most networks are organized as a stack of layers or levels, each one built upon the one below it. The number of layers, the name of each layer, the contents of each layer, and the function of each layer differ from network to network. The purpose of each layer is to offer certain services to the higher layers while shielding those layers from the details of how the offered services are actually implemented. In a sense, each layer is a kind of virtual machine, offering certain services to the layer above it. This concept is actually a familiar one and is used throughout computer science, where it is variously known as information hiding, abstract data types, data encapsulation, and object-oriented programming. The fundamental idea is that a particular piece of software (or hardware) provides a service to its users but keeps the details of its internal state and algorithms hidden from them.



### Prova orale – Domande serie 3

- 1) Si consideri una rete WAN (L3) adeguatamente magliata e dotata di due distinti gateway verso Internet. Descrivere meccanismi e possibili logiche di configurazione degli apparati di rete per conseguire resilienza in caso di guasti, nell'ipotesi che si utilizzi routing di tipo dinamico.
- 2) Il candidato descriva i passi per l'installazione di una distribuzione Linux in un server. A seguito dell'installazione descriva i passaggi per aggiungere una seconda interfaccia di rete con routing statico.
- 3) Dato un generico server Linux, descrivere l'installazione e configurazione del servizio "server SQL".

### Testo in Inglese – Traccia 3

Layers can offer two different types of service to the layers above them: connection-oriented and connectionless. In this section we will look at these two types and examine the differences between them.

Connection-oriented service is modeled after the telephone system. To talk to someone, you pick up the phone, dial the number, talk, and then hang up. Similarly, to use a connection-oriented network service, the service user first establishes a connection, uses the connection, and then releases the connection. The essential aspect of a connection is that it acts like a tube: the sender pushes objects (bits) in at one end, and the receiver takes them out at the other end. In most cases the order is preserved so that the bits arrive in the order they were sent.

In some cases when a connection is established, the sender, receiver, and subnet conduct a negotiation about the parameters to be used, such as maximum message size, quality of service required, and other issues. Typically, one side makes a proposal and the other side can accept it, reject it, or make a counterproposal.

A circuit is another name for a connection with associated resources, such as a fixed bandwidth. This dates from the telephone network in which a circuit was a path over copper wire that carried a phone conversation