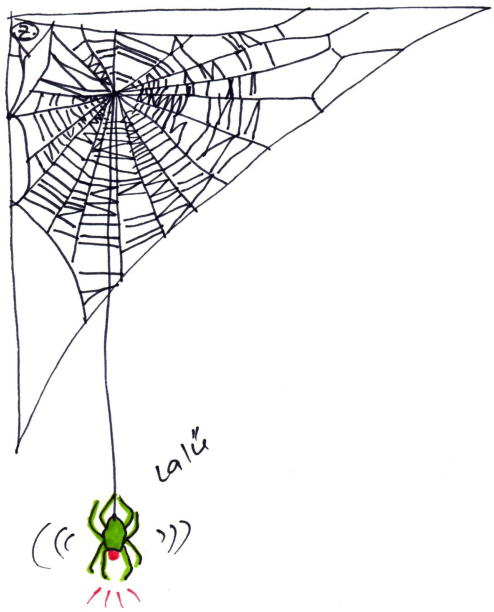

NET-Security - Sysadmin's Everyday Problems

In the IT-Milestones BLOG - http://www.it-milestones.de/ - we have highlighted some of the crucial administrative "problem zones".
We have also asked you to comment on these problems from your professional angle.
All this is aimed at creating a lively discussion in the BLOG.

To help you develop your ability to discuss these topics in English as a second language, here are some useful definitions and descriptions along with lots of exercises you can do if you like.

Availability - danger of data loss:

incremental / differential / full backup

A full backup, as the name implies, is a simple copy of the complete set of data.
In contrast, differential and incremental backups only store the files which have been changed.
For example, you could make monthly full backups and daily incremental backups. The advantage would be fast daily backups. But if on the 25th day of the month you needed to restore data, you would have to restore the last full backup and then 25 of the incremental backups.
To avoid this, you could additionally do weekly differential backups. Then you would only have to restore the last full backup, one differential and four incremental backups.
Needless to say, this would require some extra space and time.

RAID - Redundant Array of Independent Drives (or Disks)

There are three key concepts in RAID:
mirroring, i.e. the copying of data to more than one disk;
striping, i.e. the splitting of data across more than one disk; and
error correction, in which redundant data is stored to allow problems to be detected and possibly fixed (known as fault tolerance).
The main aims of using RAID are to improve reliability, important for protecting information that is critical to a business, for example a database of customer orders; or where speed is important, for example a system that delivers on-demand TV programs to many viewers.

NAS - Network-Attached Storage

The smallest possible NAS device is a hard disc located inside a case with two plugs – one for the power and one for the network.
NAS devices offer access to storage devices over file-oriented protocols. They are typically designed to fulfill just this single task, so they only consist of a case that can hold one or more hard discs, a power supply unit and a controller which manages the file system(s).
They offer access over the network and allow configurations via web interface.

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Access rights:

ACL - Access Control List
RBAC - Role-Based Access Control

Within an organization, roles are created for various job functions. The rights to perform certain operations ('permissions') are assigned to specific roles. Members of staff (or other system users) are assigned particular roles, and through these role assignments acquire the permissions to perform particular system functions.
Since users are not assigned permissions directly but only acquire them through their role (or roles), management of individual user rights becomes a matter of simply assigning the appropriate roles to the user. This simplifies common operations such as adding a user or changing a user's department.

RBAC differs from the access control lists (ACLs) used in traditional access control systems in that it assigns permissions to specific operations with meaning in the organization.
For example, an access control list could be used to grant or deny write access to a particular system file, but it would not say in what ways that file could be changed.
In an RBAC-based system an operation might be to create a 'credit account' transaction in a financial application or to populate a 'blood sugar level test' record in a medical application.

MAC - Mandatory Access Control
MAC's most important feature involves denying users full control over access to resources that they create. The system security policy determines the access rights granted, and a user is not allowed to grant less restrictive access to their resources than the administrator specifies.

Violation:

Firewall (Not to be confused with "Personal Firewall"!!!)

A firewall filters traffic between networks (e.g. the internet and your LAN). Current firewalls can "understand" the content of the packages and thus filter traffic based on rules like "allow http requests from internet to local webserver and block everything else".
Unlike personal firewalls, they are not used on client machines. They don't try to block traffic based on information like which software generated the given request.
They also don't blink and play sounds, which may be a nice marketing gimmick but is not of much value in terms of security standards.

VPN

A **Virtual Private Network** (**VPN**) is a communications network tunneled through another network and dedicated for a specific network. One common application is to secure communications through the public Internet.

TLS

Transport Layer Security (**TLS**) and its predecessor, **Secure Sockets Layer** (**SSL**), are cryptographic protocols that provide secure communications on the Internet for such things as web browsing, e-mail, Internet faxing, instant messaging and other forms of data transfer.

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Social Engineering

The term "social engineering" goes back to Kevin Mitnick, a reformed computer criminal and security consultant. He actually popularized the term, pointing out that it's much easier to trick someone into giving you his or her password for a system than to make the effort to hack in. He claims that it was the single most effective method in his arsenal.
One very popular and effective method of social engineering is pretexting.

Pretexting is the act of creating and using an invented scenario (the pretext) to persuade a person to release information or perform an action, and is usually done over the telephone. It's more than a simple lie as it most often involves some prior research or set-up and the use of pieces of known information (e.g.: date of birth, social security number, last bill amount) to establish legitimacy in the mind of the target person.

This technique is often used to trick a business into disclosing customer information. It is also used by private investigators to obtain telephone records, utility records, banking records and other information directly from junior company service representatives. The information can then be used to establish even greater legitimacy under tougher questioning in a conversation with a manager (e.g., to make account changes, get specific balances, etc).

All the pretexter has to do is prepare answers to questions that might be asked by the target. In some cases all that is needed is a voice of the right gender, a serious tone of voice and an ability to think on one's feet.

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Exercise 1:

Which of the following adjectives are used to describe a backup?
Choose the appropriate ones and explain them with the help of the text.

incidental	
incremental	
forensic	
full	
fat	
differential	
accidental	

Exercise 2:

Match the terms with their explanations by drawing lines between them.

error correction		Redundant Array of Independent Drives
		copying of data to more than one disk
		splitting of data across more than one disk
mirroring		redundant data is stored to allow problems to be detected and possibly fixed
RAID		
striping		

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Exercise 3

Put the letters in brackets into the right order and fill in the missing words.

NAS devices offer access to (g t r e o s a)_____ devices over file-oriented

(t l r c o o o s p)_____.

They consist of a case that can hold one or more hard (i c s s d)_____, a power

(u p y s p l)_____ unit and a (t o r l o r n c e l)_____ which manages the file system(s).

They offer access over the (e w r n o k t)_____ and allow

(g o r t o s f n u i a i c n)_____ via web (f n c e i r e a t)_____.

The smallest possible NAS device is a hard disc located inside a case with two

(l g p u s)_____. One for the (o e w p r)_____ and one for the

(w e r o k n t)_____.

Exercise 4

RBAC - Role-Based Access Control
Match the sentence halves by drawing lines between them.

Members of staff		roles are created for various job functions.
Since users are not assigned permissions directly		are assigned particular roles
The permissions to perform certain operations		are assigned to specific roles.
This simplifies common operations		management of individual user rights becomes a matter of simply assigning the appropriate roles to the user.
Within an organization		such as adding a user or changing a user's department.

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Exercise 5

Privacy / Access Control

Six words, terms or abbreviations are hidden in the word square.

I	P	F	Z	X	F	R	S
N	Z	I	L	G	T	B	N
T	C	R	A	Z	L	A	R
E	A	E	N	O	S	C	C
R	C	W	U	H	B	H	J
N	H	A	Y	Z	K	H	E
E	E	L	Q	V	P	N	K
T	K	L	S	I	Q	F	E

Here are their definitions:

1. Also called the World Wide Web.
2. Filters traffic between networks.
3. Members of staff are assigned particular roles, and through these role assignments acquire the permissions to perform particular system functions.
4. Computer network e.g. in an institution or firm.
5. Cryptographic protocols that provide secure communications on the Internet.
6. Communications network tunneled through another network.

Exercise 6
Social Engineering

Put the sentences into the right order.

	a) One very popular and effective method of social engineering is pretexting.
	b) The term “social engineering” was popularized by a former computer criminal.
	c) This is the act of creating and using an invented scenario to persuade a person to release information.
	d) In Mitnick's opinion, it is much easier to trick someone into giving you his or her password for a system than to make the effort to hack in.
	e) His name is Kevin Mitnick and he now works as a security consultant.

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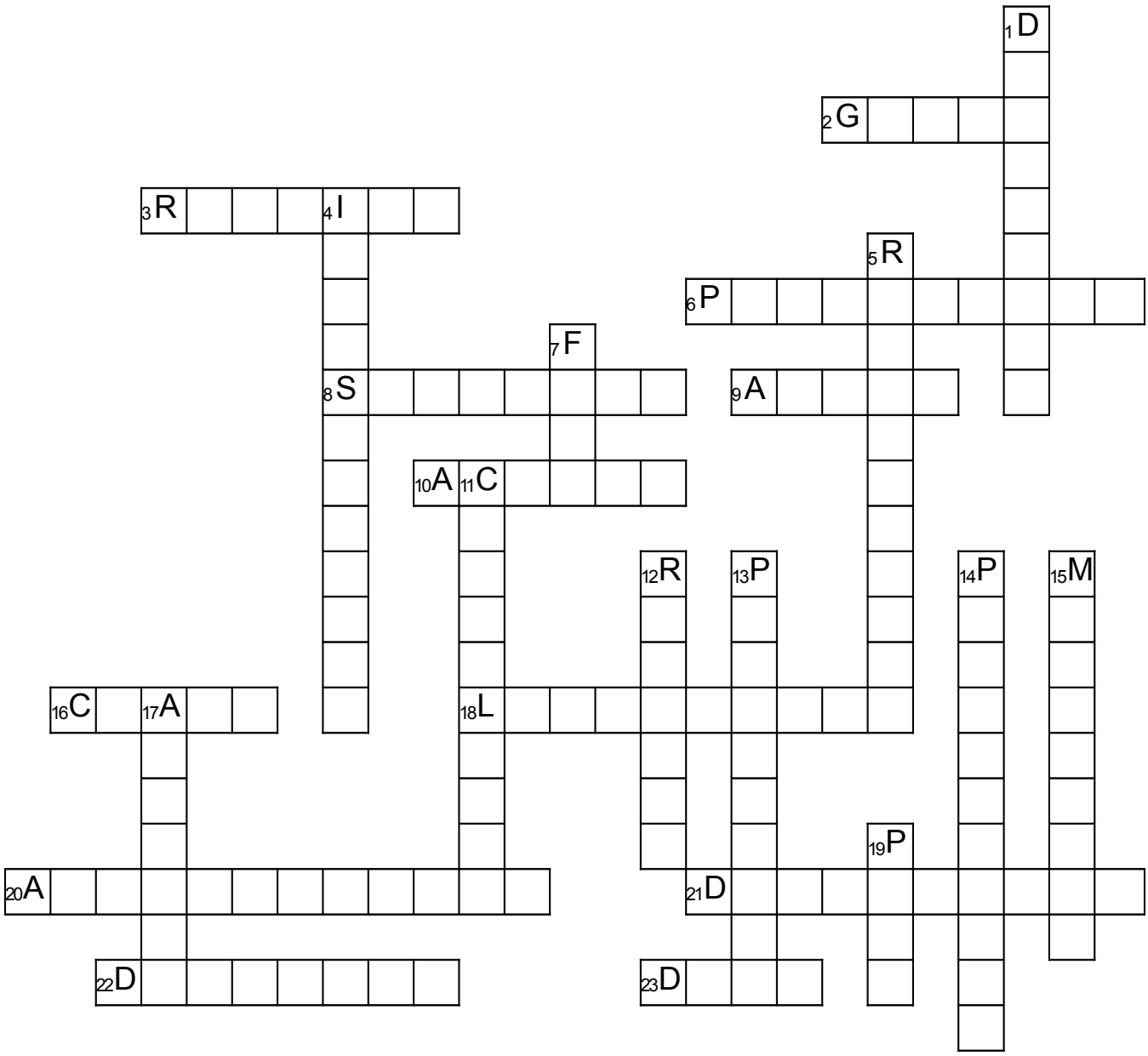
Exercise 7: **Crossword Puzzle:**



Across:	Down:
2. (Zugang) gewähren	1. festlegen, feststellen
3. benötigen, erfordern	4. (Privat) Detektiv
6. mit einem Vorwand versuchen, Information zu bekommen	5. Verlässlichkeit, Zuverlässigkeit
8. vereinfachen	7. Datei, Akte
9. vermeiden	11. Berater
10. Zugang	12. wiederherstellen
16. behaupten	13. (Zugangs)erlaubnis
18. Rechtmäßigkeit ((sonst ist es zu einfach, vielleicht?))	14. Vorgänger
20. Verfügbarkeit	15. (Daten) spiegeln
21. preisgeben, offenbaren	17. erhalten, bekommen
22. widmen, reservieren	19. Stecker, Stöpsel
23. verleugnen, (Zugang) verbieten	

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Lösungen

Exercise 1
Lösung: Backup

~~incidental~~	
incremental	An incremental backup only stores the changes which have been made since the last backup
~~forensic~~	
full	A full backup is a simple copy of the complete set of data.
~~fat~~	
differential	A differential backup stores the changes made since a previous backup executed at a defined interval (week, month, …).
~~accidental~~	

Exercise 2
Lösung: Match the correct pairs

RAID		Redundant Array of Independent Drives
mirroring		copying of data to more than one disk
striping		splitting of data across more than one disk
error correction		redundant data is stored to allow problems to be detected and possibly fixed

Exercise 3:
Lösung: Buchstabenpuzzle

NAS devices offer access to **storage** devices over file-oriented **protocols**.
They consist of a case that can hold one or more hard **discs**, a power **supply** unit and a **controller** which manages the file system(s).
They offer access over the **network** and allow **configurations** via web **interface**.
The smallest possible NAS device is a hard disc located inside a case with two **plugs**. One for the **power** and one for the **network**.

Exercise 4:
Lösung: RBAC – Match

Within an organization		roles are created for various job functions.
Members of staff		are assigned particular roles
The permissions to perform certain operations		are assigned to specific roles.
Since users are not assigned permissions directly		management of individual user rights becomes a matter of simply assigning the appropriate roles to the user.
This simplifies common operations		such as adding a user or changing a user's department.

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Exercise 5:
Lösung: Wortsuchrätsel

I		**F**				**R**	
N		**I**	**L**		**T**	**B**	
T		**R**	**A**		**L**	**A**	
E		**E**	**N**		**S**	**C**	
R		**W**					
N		**A**					
E		**L**		**V**	**P**	**N**	
T		**L**					

Exercise 6:
Lösung: Social Engineering

Kurzform: 1b); 2e); 3d); 4a); 5c)

Vollständig ausgefüllte Version:

4	a) One very popular and effective method of social engineering is pretexting.
1	b) The term “social engineering” was popularized by a former computer criminal.
5	c) This is the act of creating and using an invented scenario to persuade a person to release information.
3	d) In Mitnick's opinion, it is much easier to trick someone into giving you his or her password for a system than to make the effort to hack in.
2	e) His name is Kevin Mitnick and he now works as a security consultant.

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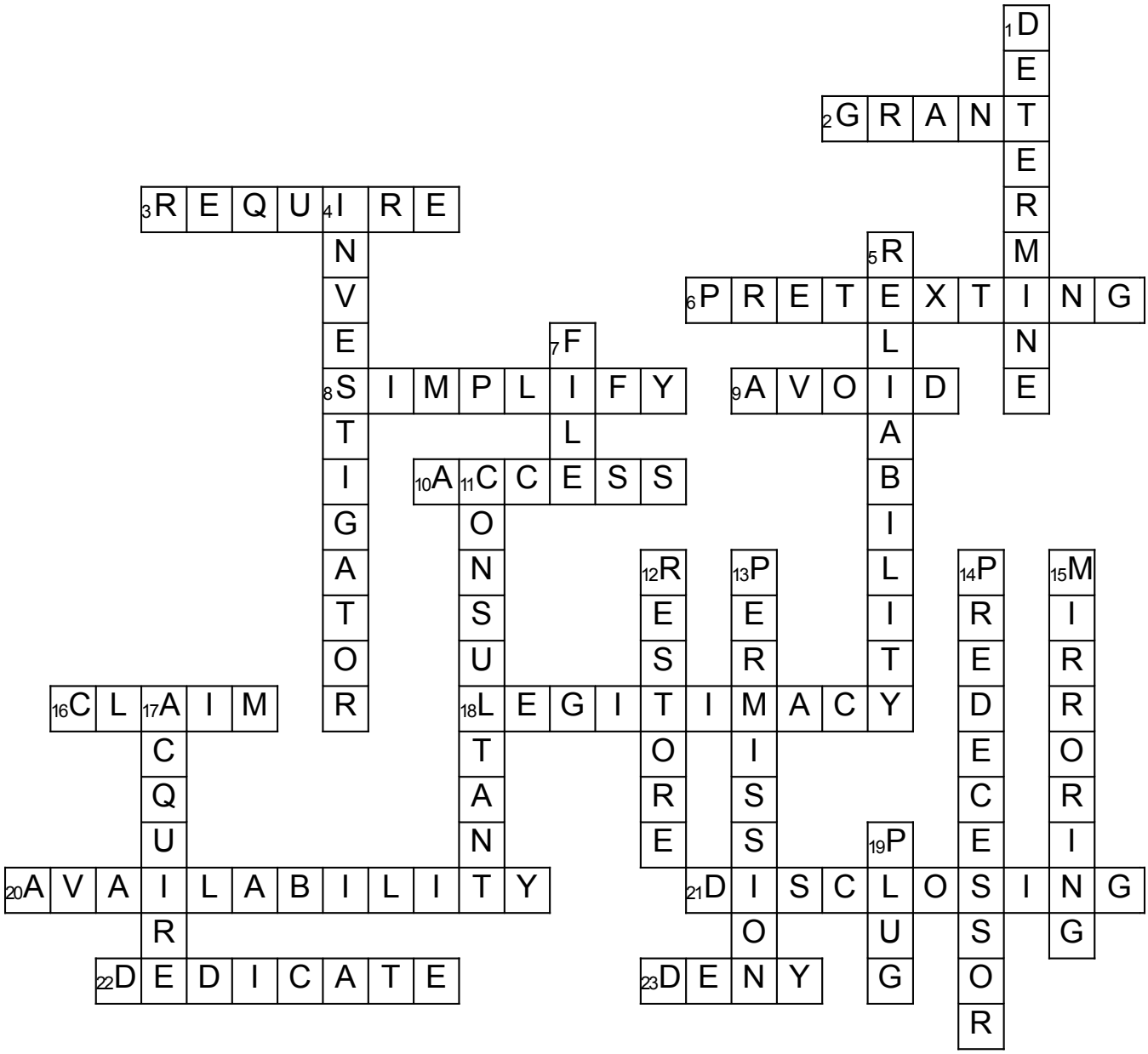
Exercise 7:
Lösung: Kreuzworträtsel



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