DATANOMIQ
Applied Data Science

DATA SECURITY CHECKLIST

for Data Engineers / Data Scientists / Data Analysts

PASSWORD MANAGEMENT
Passwords should stay unique and secret, never share or reuse them!

- Choose strong passwords with at least 14 signs (containing letters, numbers & special characters).
- **Do not re-use passwords across several systems.**
- For web/cloud systems, change your password at least once all 12 months.
- **Consider using Multi-Factor Authentication!**
- Attention to valid SSL Encryption when you use your password to access external systems!
- **Do not store your password in online or offline notes. Consider using a password manager tool.**
- If you need to share passwords, use split passwords (e. g. TAN-lists or password tables) or use password manager for teams (e.g. 1Password).

BE AWARE OF HACKING BY SOCIAL ENGINEERING
Always stay skeptical if someone asks you for information or access!

- Do not trust any strange person who claims to be part of any team. Ask identifying questions before giving trust.
- **Never share passwords to people without cleared responsibility and purpose of usage.**
- Be aware of phishing e.g. via e-mail! Have a closer look on the sender of an e-mail.
- **Do not trust open WLAN and be aware of Wi-Fi phishing (evil twins).**

ENCRYPTION OF PERSISTENTLY STORED DATA
Personal and enterprise data should be encrypted per default!

- Have at least one partition of your hard disk encrypted with Bitlocker (Windows), FileVault (macOS) or VeraCrypt.
- **Store critical or private data on encrypted partitions and/or in encrypted Linux systems.**
- Use Virtual Mashines (VMs) as extra Encryption Level.
- **For very critical data create own encrypted partitions and use steganography** (e.g. hide partition or use OpenStego)!
- Use hardware encryption for external devices optionally additionally, but not as replacement of software encryption.

ENCRYPTION OF E-MAILS & FILE TRANSFERS
Be aware of how your E-mails are encrypted!

- **Use asymmetric encryption for e-mails to customers.**
- Client-based encryption preferred, avoid gateway-based systems.
- **SSH or SFTP instead of FTP!**
- Use symmetric encryption for file-transfers.
- **Attention to valid SSL-encryption for transfer of data!**

BACKUP STRATEGY
Backup your work but not data!

- **Store backups on hardware at different locations.**
- As Data Analyst / Engineer / Scientist you are not the administrator, backup your work, not the source data!
- **Do not backup confidential data!** If data is lost, request a new instance from the data source managers / admins.

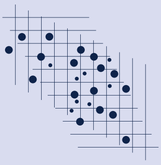
SERVER & CLOUD SYSTEMS
Do not trust external systems without a deeper look!

- **Do not store personal or customer data in the cloud or on public server without allowance by the owner.**
- For servers, disallow root user login.
- Reduce the allowed amount of login attempts.
- **Change standard ports (e.g., ssh port 22 to 31232).**
- Do not use public file converters (e.g., PDF to Word file transformer on the internet).

USER ACCESS MANAGEMENT
Access is key for security!

- Be aware to store passwords hashed in SHA-1/-2/-3.
- **Attention to clear user role definitions, e.g., super-admin vs admin vs owner vs user.**
- User roles and users should be documented by the systems itself, otherwise via separated documents.
- Monitor user access and data consumption by users.
- **Delete not needed users and user roles, especially root-users or super-users.**

DATA PRIVACY
Respect personal data!



- Read, understand and consider the GDPR and your regional laws!
- **Do not store personal data without allowance from each person.**
- **Do not analyze personal data without allowance from each person.**
- Use anonymization / pseudonymization of data with personal context.

PROTECTIVE SOFTWARE
Use professional tools for protection!

- **Activate the Anti-Virus-Protection of your operating system.**
- Consider using Firewall tools for critical servers / devices.
- **Use Proxy Server / SSH tunnels / Virtual Private Networks in between data providers (e. g. database servers) and clients.**

NON-DISCLOSURE AGREEMENT & COPYRIGHT
Respect data and their owners!

- Define, understand and sign a strict Non-Disclosure Agreement (NDA).
- Do not start accessing data before the NDA is signed by both parties.
- **Independent of the NDA, always handle data from clients with high priority regarding data security.**
- **Respect the ownership of data. Do not use data for purposes other than negotiated.**
- Respect the copyright of data stored in external data sources as well. **Do not use open data if the allowance for this is unclear.**

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