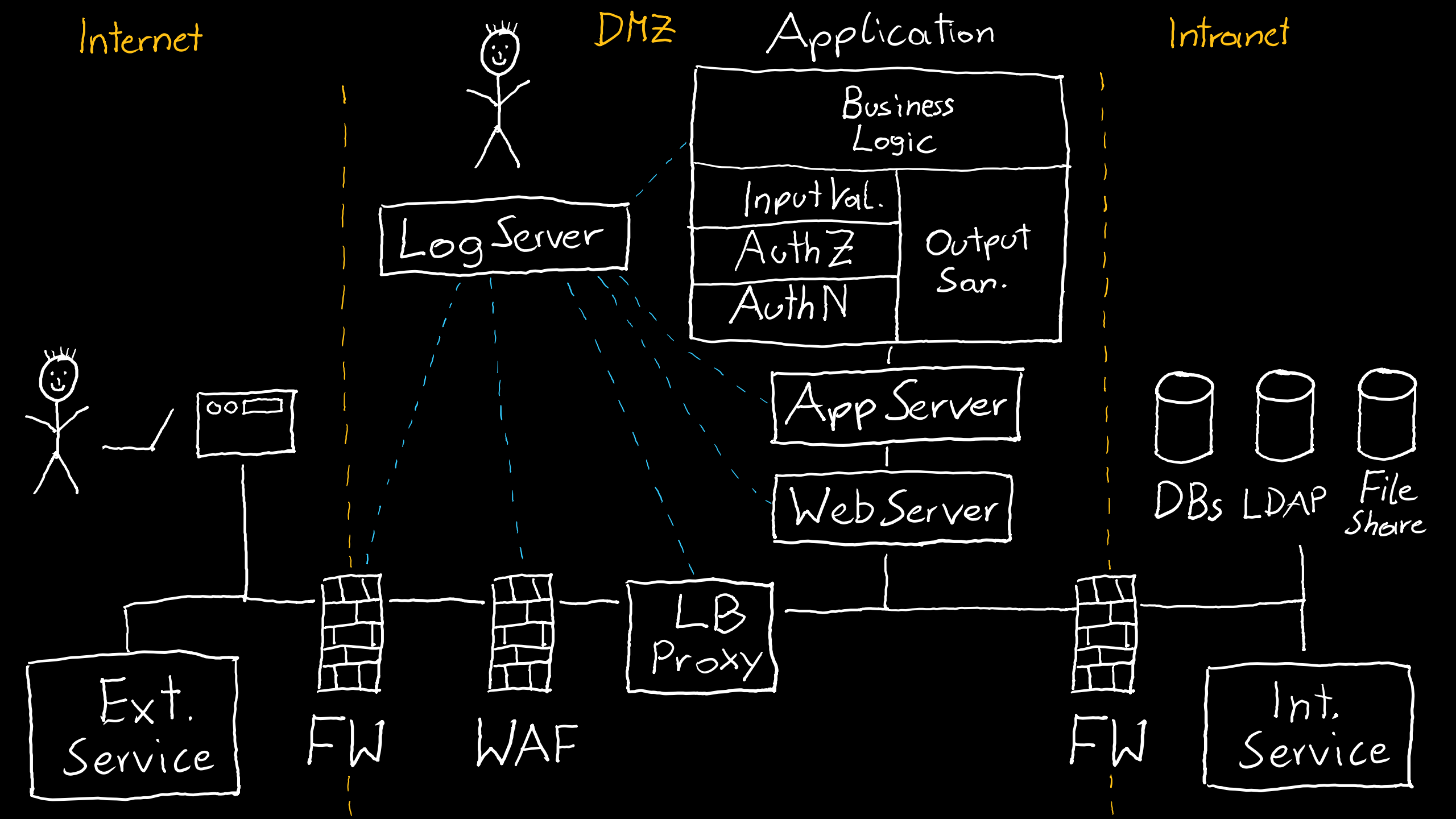
Conclusions

pretty tough place this web, huh…

Rough Overview

1. Introduction
2. Basic Principles and Resources
3. Architecture & Basic Web Procedure
4. Authentication and Session Management
5. Authorization
6. Server and Backend Attacks
7. Remaining Client Attacks
8. General Topics
9. >> Conclusions <<


Internet
DMZ
Application
Intranet
Business Logic
Input Val.
AuthZ
AuthN
Output San.
Log Server
App Server
Web Server
DBs
LDAP
File Share
LB Proxy
Ext. Service
FW
WAF
FW
Int. Service

Security Principles

Earn or give, but never assume, trust.	DNS Hijacking Plaintext Transmission Client-side Manipulation (of cookies) CSRF Forceful Browsing XML External Entitiy (XXE) SSRF Clickjacking Security Logging and Monitoring Failures Insecure Design
Use an authentication mechanism that cannot be bypassed or tampered with.	Authentication Automation Attacks
Authorize after you authenticate	Forceful Browsing Insec. Direct Object References TOCTOU (Race Condition)
Strictly separate data and control instructions, and never process control instructions received from untrusted sources.	SQL Injection XPath Injection OS Command Injection Cross-Site Scripting (XSS)
Define an approach that ensures all data are explicitly validated.	Path Traversal Insecure File Upload Unverified/Open Redirects/Forwards Software and Data Integrity Failures
Use cryptography correctly.	Insecure Password Storage Passwords in Source Code
Identify sensitive data and how they should be handled.	Information Disclosure Session Hijacking Session Fixation
Always consider the user.	
Understand how integrating external components changes your attack surface.	Vulnerabilities in 3rd Party Components
Be flexible when considering future changes to objects and actors.	

OWASP Top 10 2017

A1:2017-Injection	SQL Injection XPath Injection OS Command Injection
A2:2017-Broken Authentication	Authentication Automation Attacks Session Hijacking Session Fixation
A3:2017-Sensitive Data Exposure	Information Disclosure Plaintext Transmission Insecure Password Storage Passwords in Source Code
A4:2017-XML-External Entities (XXE)	XML External Entitiy (XXE)
A5:2017-Broken Access Control	Client-side Manipulation (of cookies) Forceful Browsing Insec. Direct Object References Path Traversal TOCTOU (Race Condition)
A6:2017-Security Misconfiguration	Information Disclosure
A7:2017-Cross-Site Scripting (XSS)	Cross-Site Scripting (XSS)
A8:2017-Insecure Deserialization	Software and Data Integrity Failures
A9:2017-Using Components with Known Vulnerabilities	Vulnerabilities in 3rd Party Components
A10:2017-Insufficient Logging&Monitoring	Security Logging and Monitoring Failures
Not in OWASP Top 10 2017	DNS Hijacking CSRF Insecure File Upload Unverified/Open Redirects/Forwards Clickjacking SSRF Insecure Design

OWASP Top 10 2021

A01:2021-Broken Access Control	Client-side Manipulation (of cookies) Forceful Browsing Insec. Direct Object References Path Traversal TOCTOU
A02:2021-Cryptographic Failures	Plaintext Transmission Insecure Password Storage Passwords in Source Code
A03:2021-Injection	SQL Injection XPath Injection OS Command Injection Cross-Site Scripting (XSS)
A04:2021-Insecure Design	Insecure Design
A05:2021-Security Misconfiguration	Information Disclosure XML External Entity (XXE)
A06:2021-Vulnerable and Outdated Components	Vulnerabilities in 3rd Party Components
A07:2021-Identification and Authentication Failures	Authentication Automation Attacks Session Hijacking Session Fixation
A08:2021-Software and Data Integrity Failures	Software and Data Integrity Failures
A09:2021-Security Logging and Monitoring Failures	Security Logging and Monitoring Failures
A10:2021-Server-Side Request Forgery	Server-Side Request Forgery (SSRF)
Not in OWASP Top 10 2021	DNS Hijacking CSRF Insecure File Upload Unverified/Open Redirects/Forwards Clickjacking

Most important security techniques

Most vulnerabilities can be avoided by a combination of

- strong authentication and session management

SQL Injection	Client-side Manipulation (of cookies)
XPath Injection	Forceful Browsing
OS Command Injection	Insec. Direct Object References
XML External Entitiy (XXE)	Path Traversal
Authentication Automation Attacks	TOCTOU (Race Condition)
Session Hijacking	Cross-Site Scripting (XSS)
Session Fixation	Software and Integrity Failures
Information Disclosure	Vulnerabilities in 3rd Party Components
Plaintext Transmission	Security Logging and Monitoring Failures
Insecure Password Storage	DNS Hijacking
Passwords in Source Code	CSRF
Insecure File Upload	Unverified/Open Redirects/Forwards
Clickjacking	Server-Side Request Forgery
Insecure Design	

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Clickjacking	Server-Side Request Forgery
Insecure Design	

Most important security techniques

Most vulnerabilities can be avoided by a combination of

- strong authentication and session management
- consistent authorization checks

SQL Injection	**Client-side Manipulation (of cookies)**
XPath Injection	**Forceful Browsing**
OS Command Injection	**Insec. Direct Object References**
XML External Entitiy (XXE)	**Path Traversal**
Authentication Automation Attacks	**TOCTOU (Race Condition)**
Session Hijacking	Cross-Site Scripting (XSS)
Session Fixation	Software and Integrity Failures
Information Disclosure	Vulnerabilities in 3rd Party Components
Plaintext Transmission	Security Logging and Monitoring Failures
Insecure Password Storage	DNS Hijacking
Passwords in Source Code	CSRF
Insecure File Upload	Unverified/Open Redirects/Forwards
Clickjacking	Server-Side Request Forgery
Insecure Design	

Most important security techniques

Most vulnerabilities can be avoided by a combination of

- strong authentication and session management
- consistent authorization checks
- strict input validation
- context-sensitive output encoding/sanitization

SQL Injection	**Client-side Manipulation (of cookies)**
XPath Injection	**Forceful Browsing**
OS Command Injection	**Insec. Direct Object References**
XML External Entitiy (XXE)	**Path Traversal**
Authentication Automation Attacks	**TOCTOU (Race Condition)**
Session Hijacking	**Cross-Site Scripting (XSS)**
Session Fixation	**Software and Integrity Failures**
Information Disclosure	Vulnerabilities in 3rd Party Components
Plaintext Transmission	Security Logging and Monitoring Failures
Insecure Password Storage	DNS Hijacking
Passwords in Source Code	CSRF
Insecure File Upload	**Unverified/Open Redirects/Forwards**
Clickjacking	**Server-Side Request Forgery**
Insecure Design	

Most important security techniques

Most vulnerabilities can be avoided by a combination of

- strong authentication and session management
- consistent authorization checks
- strict input validation
- context-sensitive output encoding/sanitization
- constant TLS usage

SQL Injection	**Client-side Manipulation (of cookies)**
XPath Injection	**Forceful Browsing**
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XML External Entitiy (XXE)	**Path Traversal**
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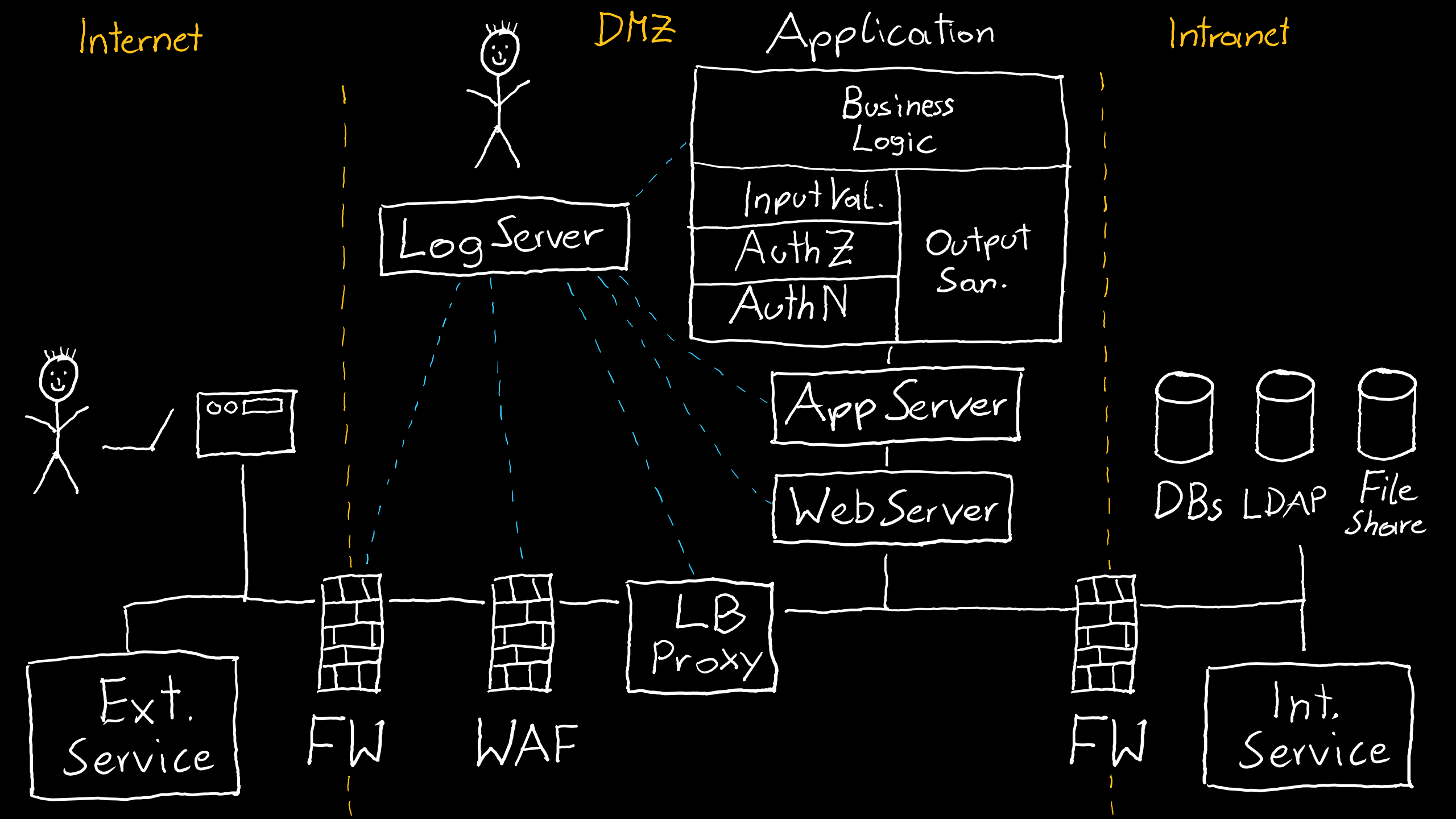
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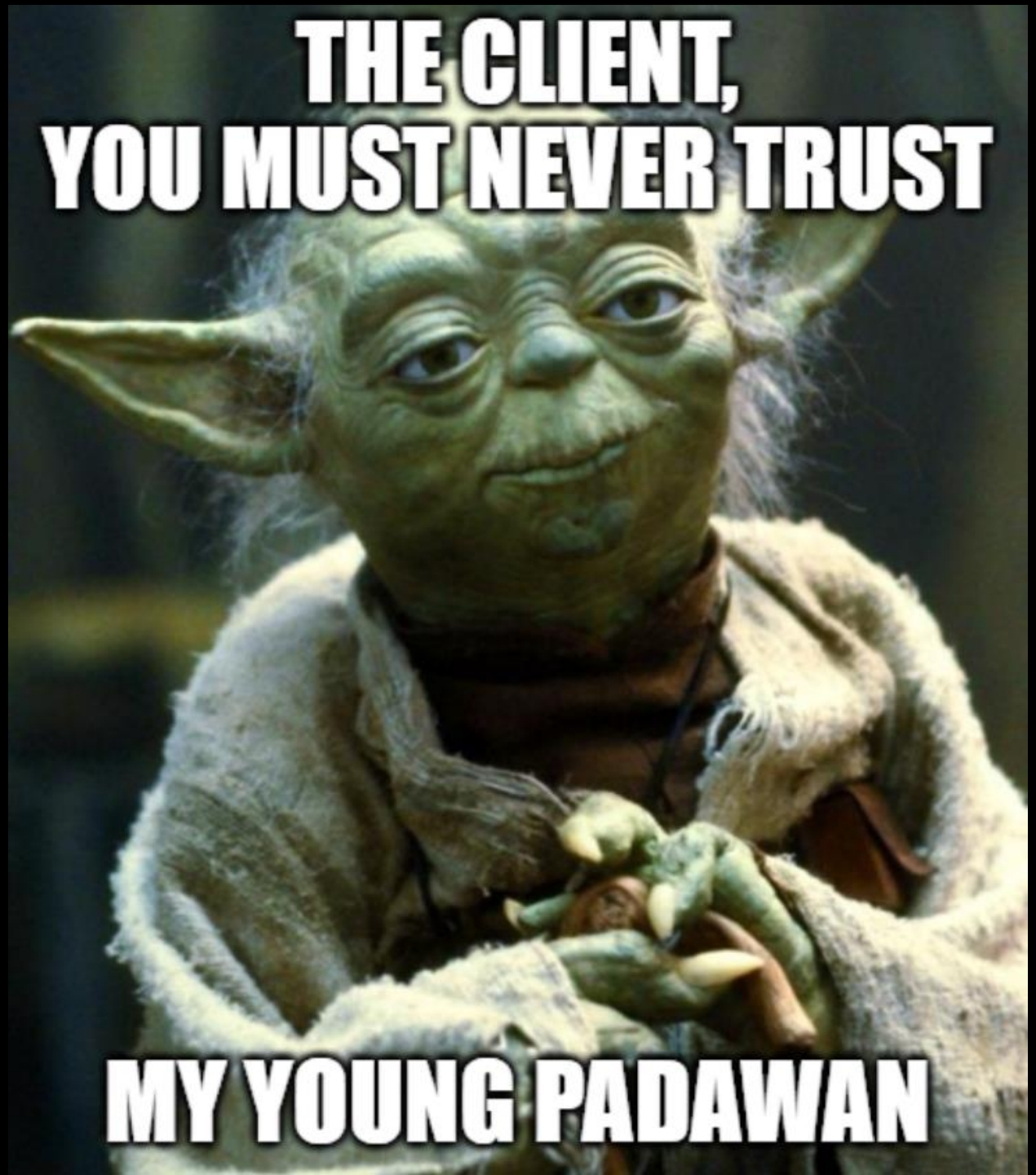
and of course…


THE CLIENT,
YOU MUST NEVER TRUST
MY YOUNG PADAWAN