IDPro Body of Knowledge - Demo

Principal Editor: TBD

December 16, 2018

Contents

1	Intr	oduction	1
	1.1	Information security	1
		1.1.1 Trust (say more - what is this?)	1
	1.2	Privacy	1
	1.3	Identification and authentication	1
		1.3.1 Context and Identity	1
		1.3.2 Levels of Assurance	1
	1.4	The Business Case for IAM	1
		1.4.1 Workforce IAM	1
		1.4.2 Consumer/Citizen IAM	1
2	Digi	tal Identity	2
	2.1	Definition	2
		2.1.1 Reputation	2
		2.1.2 Laws of Identity - this sounds like jurisdictions and real laws - is that	
		the intent?	2
	2.2	Identifiers	2
	2.3	Digital Identity Lifecycle?	2
	2.4	Mapping to human or device	2
	2.5	Proofing, Binding or Registration?	2
		2.5.1 verification/validation	2
	2.6	Credentials	2
3	Acce	ess Control	3
	3.1	Authentication	3
		3.1.1 Dynamic Authentication (risk-based)	3
		3.1.2 Multi-Factor Authentication	3
		3.1.3 Single Sign-on within a domain	3
		3.1.4 Centralised authentication service	3
		3.1.5 Federated Authentication (between domains)	3

CONTENTS ii

	3.2	3.1.7 Fast Identity Online (FIDO) and its cousins	3 3 3 3 4
4	4.1 4.2	Privacy (generic)	5 5 5 5
5	Wor	kforce IAM / Internal IAM	6
	5.1	IAM processes	6 6 6 6 6
	5.2	Analytics and Intelligence	6
6	Con	,	7
	6.1 6.2 6.3	Social media	7777
	6.4	6.3.3 Digital legacy - handling deceased persons' digital ID	7 7 7
7	Non		8
	7.1	Operational Technology (OT)	8
	7.2		8 8
	7.3		8
	7.4		R

CONTENTS

8	IAM	Archite	ecture And Solutions	9
	8.1	Busine	ss System	10
		8.1.1	Business Processes	10
		8.1.2	Requirements	10
	8.2	Inform	ation	10
		8.2.1	Identifiers and Credentials	10
		8.2.2	Protection of secrets	10
		8.2.3	Schemas	10
		8.2.4	Segmentation	10
		8.2.5	Public Key Infrastructure	10
	8.3	Applica	ations	10
		8.3.1	Consoles	10
		8.3.2	Command Line	10
		8.3.3	Approval workflow	10
		8.3.4	Integration Styles	10
		8.3.5	DevOps Considerations	11
		8.3.6	Session Management	11
	8.4	Techni		11
		8.4.1	Repositories	11
		8.4.2	Identity Provider Services	12
		8.4.3	Protocols	12
		8.4.4	Enterpise control of "Cloud"	13
	8.5	Recom	mended Practices	13
		8.5.1	Design for security	13
	8.6	Govern	nance and Administration	13
		8.6.1	Audit	13
		8.6.2	Monitoring	13
9	0		1 Canaidamatiana	14
9	9.1		l Considerations nt recovery	14
	9.1		nters	14
	9.2			14
		~ ~	ement of user for their own security	14
	9.4	Securi	ty events and operations	14
10	•		nagement	15
			mplementations	15
	10.2	Migrat	ion scenario's	15

CONTENTS	iv
CONTLINIO	1 V

11 IAM Knowledge Sharing	16
11.1 IDpro	 16
11.2 Gartner	 16
11.3 KuppingerCole	 16
11.4 IIW	 16
11.5 Bibliography	 16

List of Figures

List of Tables

Introduction

- 1.1 Information security
- 1.1.1 Trust (say more what is this?)
- 1.2 Privacy
- 1.3 Identification and authentication
- 1.3.1 Context and Identity
- 1.3.2 Levels of Assurance
- 1.4 The Business Case for IAM
- 1.4.1 Workforce IAM
- 1.4.2 Consumer/Citizen IAM

Digital Identity

- 2.1 Definition
- 2.1.1 Reputation
- 2.1.2 Laws of Identity this sounds like jurisdictions and real laws is that the intent?
- 2.2 Identifiers
- 2.3 Digital Identity Lifecycle?
- 2.4 Mapping to human or device
- 2.5 Proofing, Binding or Registration?
- 2.5.1 verification/validation
- 2.6 Credentials

Access Control

3.1 Authentication

- 3.1.1 Dynamic Authentication (risk-based)
- 3.1.2 Multi-Factor Authentication
- 3.1.3 Single Sign-on within a domain
- 3.1.4 Centralised authentication service
- 3.1.5 Federated Authentication (between domains)
- 3.1.6 Device identity for corroboration
- 3.1.7 Fast Identity Online (FIDO) and its cousins
- 3.1.8 Session Management

3.2 Authorization

- 3.2.1 Resources to protect
- 3.2.2 Authorisation
- 3.2.2.1 ACL's
- 3.2.2.2 RBAC
- 3.2.2.3 ABAC / dynamic access management

Policy Management solutions

- 3.2.3 Privileged Access Management
- 3.2.3.1 Alignment to Risk Management

Regulations And Laws

- 4.1 Privacy (generic)
- 4.2 Survey of Jurisdictions
- 4.2.1 SOX, HiPPA, GDPR, CBPR etc.
- 4.3 Consent management

Workforce IAM / Internal IAM

- 5.1 IAM processes
- 5.1.1 Joiner-Mover-Leaver
- 5.1.2 HR ownership
- 5.1.3 Provisioning (On-boarding and Off-boarding)
- 5.1.4 Handling Business partners' people
- 5.1.5 Re-certification
- 5.2 Analytics and Intelligence

Consumer/Citizen IAM

- 6.1 Public sector vs. private sector
- 6.2 Social media
- 6.3 Consumer journey (identification to loyal customer)
- 6.3.1 Registration of consumers
- 6.3.2 Authentication assurance (meeting LoA requiremetns)
- 6.3.3 Digital legacy handling deceased persons' digital ID
- 6.4 Self-Sovereign Identity
- 6.4.1 Blockchain ID

Non-Human Entity

- 7.1 Operational Technology (OT)
- 7.2 IoT devices
- 7.2.1 IoT Sectors
- 7.2.1.1 Home Automation
- 7.2.1.2 Personal (wearables)
- **7.2.1.3** Implants
- 7.2.1.4 Plant automation
- 7.2.1.5 Vehicle
- 7.2.1.6 Smart cities
- 7.2.1.7 Agricuture
- 7.2.1.8 Buildiing/Industrial
- **7.2.1.9** Utilities
- 7.3 RPA / robotics
- 7.4 Security requirements

IAM Architecture And Solutions

O. I Dubilicob Dybecli	8.1	Business	System
------------------------	-----	-----------------	--------

- 8.1.1 Business Processes
- 8.1.1.1 Provisioning accounts
- 8.1.1.2 Changes to accounts
- 8.1.1.3 Termination of accounts
- 8.1.1.4 Recertification of accounts
- 8.1.2 Requirements
- 8.1.2.1 High Availability Requirement
- 8.1.2.2 High Performance Requirement
- 8.1.2.3 Auditability
- 8.1.2.4 Recoverability
- 8.1.2.5 Access Control Requirement

8.2 Information

- 8.2.1 Identifiers and Credentials
- 8.2.2 Protection of secrets
- 8.2.2.1 Data Encoding
- 8.2.2.2 Hashing
- 8.2.2.3 Symetric Encryption
- 8.2.2.4 Asymetric Encryption
- 8.2.3 Schemas
- 8.2.3.1 Attributes
- **8.2.3.2** Data types
- 8.2.4 Segmentation
- 0044 0 1 1 177 1

8.3.4.3 Role based

8.3.4.4 Provisioning

Connectors

JIT Federation

8.3.5 DevOps Considerations

8.3.6 Session Management

8.3.6.1 Centralized

Memory or DB backed SSO Cookies/Tokens)

8.3.6.2 Externalized

JWT Tokens

8.3.6.3 None

Anonymous only

8.4 Technical

8.4.1 Repositories

8.4.1.1 Relational Database

Query optimization

Replication limitations

8.4.1.2 Directories

Historical note - X.500

SLAPD and its descendents

Partitioning

Replication Techniques

Recovery Local failures Disaster Recovery Failover

Audit and Forensics

Inheritance and structure

LDAPv3 Access Control Configuration for performance

Active Directory Multi-Trust Relationships Domain Controllers Change tracking (Timestamp)

- 8.4.1.3 NOSQL Databases
- 8.4.1.4 Distributed Ledger (Blockchain)
- 8.4.2 Identity Provider Services
- 8.4.3 Protocols
- **8.4.3.1** Kerberos
- 8.4.3.2 Lightweight Directory Access Protocol (LDAP)
- 8.4.3.3 SCIM
- 8.4.3.4 SAML

SP Initiated vs IDP Initiated

Bindings

8.4.3.5 OIDC

Authentications Flows

- 8.4.3.6 OAuth
- 8.4.3.7 WS-Fed
- 8.4.3.8 FIDO U2F and UAF
- 8.4.4 Enterpise control of "Cloud"
- 8.4.4.1 Public Cloud vs Private Cloud
- 8.4.4.2 Local Connectors and Gateways
- 8.4.4.3 IPSec VPN
- 8.5 Recommended Practices
- 8.5.1 Design for security
- 8.6 Governance and Administration
- 8.6.1 Audit
- 8.6.2 Monitoring

Operational Considerations

- 9.1 Account recovery
- 9.2 Call centers
- 9.3 Engagement of user for their own security
- 9.4 Security events and operations

Project Management

- 10.1 New implementations
- 10.2 Migration scenario's

IAM Knowledge Sharing

- 11.1 IDpro
- 11.2 Gartner
- 11.3 KuppingerCole
- 11.4 IIW
- 11.5 Bibliography