KuppingerCole Report

EXECUTIVE VIEW

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Atos DirX Directory

Atos DirX Directory is one of the few enterprise-grade directory services in the market, delivering a high-performance, high-scalability, high-availability, and high-secure implementation that is required by many of today's large-scale use cases in the Digital Transformation. Atos DirX Directory builds on a purpose-built and optimized data layer and delivers comprehensive support for X.500 and LDAPv3 protocols and specifications.

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Content

1 Introduction

IAM (Identity & Access Management) today is at the core of enterprise IT infrastructures when it comes to protecting digital corporate assets. IAM, as the name states, is about managing identities and their access. This involves managing user accounts and their entitlements across the variety of systems and applications in use in organizations.

Directory Services are where IAM started, and directory services are ubiquitous today. However, many directory services are widely transparent, being an integral part of cloud services such as Access Management solutions delivered as IDaaS (Identity as a Service). On the other hand, some directories such as Microsoft Active Directory or Microsoft Azure Active Directory come as part of other services, with Microsoft Azure Active Directory also offering commercial options for certain large-scale use cases.

Amongst the various flavors of directory services, the traditional high-end, stand-alone directory servers have lost some of the attention they've gained in the past, where such directories were the foundation for both corporate directory services and the customer directories. However, there is still a need for directory services that can act as back-end, specifically around high-end use cases. Such scenarios aren't rare at all, despite the lack of a hype. They include, amongst others

- Customer directories for Telco services
- Citizen and patient directories in Healthcare services
- Customer directories in B2C use cases
- Digital services involving customers and IoT devices, such as around the connected car

As part of the Digital Transformation, creating digital services involving millions of users, devices, and things has become the new normal for many businesses. These digital services require a strong identity backend, including directory services that can scale, that are highly performant, and that are extremely robust. Factually, KuppingerCole expects seeing an uptake of strategic investments in high-end directory services in the context of new Digital Transformation use cases.

We expect seeing many of the digital service implementations of today struggling with limitations of the directory services – frequently as integral part of IDaaS offerings, where only some provide extreme scalability, performance, and reliability – and thus shifting to specialized directory backends in future.

Thus, while attention on this type of solutions is low in the market, there are use cases and indicators for an uptake of this market segment. From our perspective, there are various use cases, scenarios, and architectural approaches that make use of enterprise-grade directory services not only an option, but while significantly benefit from these.

One of the vendors in that space is Atos. Atos is the largest European IT service provider and amongst the global top 5 players for digital services. As part of their portfolio, Atos delivers various IAM services and

products. Amongst these, there are the DirX products, including DirX Directory as an enterprise-grade, high-end directory server, delivered by the Evidian business unit of Atos.

2 Product Description

Evidian, part of Atos, provides DirX Directory (currently in version 8.9) as a high-end directory server, delivering full LDAPv3 and X.500 functionality. It builds on a specialized database kernel, which is named DBAM (Directory Basic Access Method), that is optimized solely for the purpose of such directory service and provides extensive caching including in-memory database features. In contrast to various other specialized Directory Services, DirX Directory does not utilize a standard RDBMS (Relational Database Management System) or other standard components.

Being an LDAP/X.500 Directory Service, the data model, schema, and administration model as well as the protocols for interfacing with DirX Directory are targeted on this established concept for directory services. Access protocols include

- LDAP (Lightweight Directory Access Protocol)
- DAP (Directory Access Protocol, X.500)
- DSP (Directory System Protocol for communication between Directory Service Agents)
- DISP (Directory Information Shadowing Protocol for data replication)
- IDM (Internet Directly Mapped Protocol for mapping of X.500 protocols to TCP/IP)

While these protocols deliver a comprehensive implementation of both LDAPv3 and X.500, there are no out-of-the-box REST APIs or other modern protocols available, which would simplify utilizing DirX Directory by developers of modern digital services. Despite the performance loss by utilizing such protocols, Evidian would be well-advised in adding such a layer. However, Atos has already put a RESTful API for DirX Directory on the roadmap.

The LDAP/X.500 focus of DirX Directory also involves a consequent implementation of the respective schema. DirX Directory supports all standards and specifics of these schemas, that are – again – constructed for high-performance/high-scalability implementations. However, there are limitations regarding the flexibility of such services when it comes to extensions beyond the traditional scope of users and their attributes, specifically for new use cases in building digital services. This can, as the variety of implementations of DirX Directory proves (e.g. including healthcare and public sector digitization and IoT-related use cases), be well-addressed within the capabilities of DirX Directory, but requires well-thought-out architectures and concepts. On the other hand, the balance between flexibility and optimization is always about making decisions – and DirX Directory is consequently optimized for large-scale use cases.

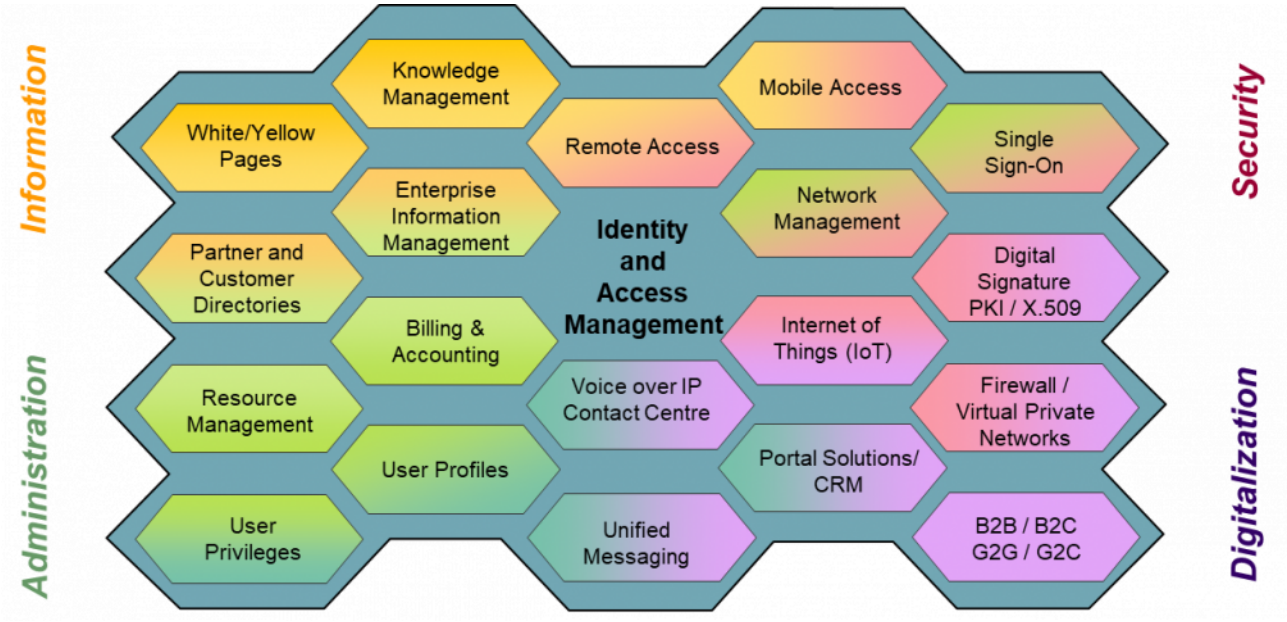

Figure 1: DirX Directory areas of application (Source: Atos, reproduced with permission by Atos).

Furthermore, DirX Directory comes with enhancements that e.g. support very large groups, nested groups, and dynamic groups, as well as optimizations for dealing with recurring attribute values.

DirX Directory works with DSAs (Directory Service Agents) as the components that interface to the database kernel. Commonly, there are multiple DSAs in an implementation, and very frequently, such DSAs run in a geographically dispersed environment.

The implementation of the DSAs delivers the foundation for high-performance access, but also high-availability configurations. DirX Directory e.g. supports shadow DSAs that take over the role of a master DSA in case of failures of the previous master DSA. This is also called “floating master”. Failover can be configured and automated, and synchronization between DSAs can happen synchronous and asynchronous, but also media-based for setting up new DSAs with offline transport of the DSA data.

A relatively new capability is the integrated LDAP Proxy, which allows for routing LDAP requests to target LDAP servers, based on rules. These rules can be based on user attributes such as UPNs (User Principal Names), but also on operational aspects. Again, load-balancing and fail-over are supported for the LDAP proxy. Besides the routing feature the LDAP Proxy provides an extensive rewriting of schema and attribute information to provide e.g. schema compatibility.

Another important capability of DirX Directory is the full transaction support including rollback and consistency checks for all operations that modify data in the directory services.

Due to the maturity of DirX Directory and the variety of use cases supported, many of these in critical industries, it comes to no surprise that the product provides a range of specific security features. These include various protocols for authentication of users, a flexible and granular access control model, encrypted passwords, X.509 PKI support, password policies, and comprehensive auditing capabilities. Part of the security features are flexible backup services that allow for full and differential backup without service disruption.

Administration of DirX Directory lacks a modern, web-based UI. The standard graphical UI is Java-based, allowing for full control of the DirX Directory infrastructure. Beyond that, LDAP, RPC, and LDIF (LDAP Data Interchange Format) are supported as well, many of these protocols being common for automation of the management of an enterprise directory services infrastructure.

In sum, DirX Directory is one of the few enterprise-grade, stand-alone offerings in the market for Directory Services. While Evidian positions the solution for all levels, from workgroup to enterprise to service providers, we see the main use cases in enterprise solutions including support for new, large-scale digital services, and in service provider implementations.

3 Strengths and Challenges

DirX Directory counts amongst the leading-edge directory services in the market. It is a very mature product, benefiting from continuous enhancements and innovations. It is proven in very large scale implementations and comes with a wide range of capabilities around security, failover, high availability, and high performance.

The architecture and technical implementation are well-thought-out, based on the long-standing experience of Evidian in this market segment. However, some customers might miss more flexible schema management beyond the LDAP/X.500 focus and a set of REST APIs for interfacing to DirX Directory. On the other hand, with DirX Directory being the backend of digital services, such interfaces can be easily added in custom implementations, abstracting the directory from the application layer. That also allows – as proven in many implementations – for efficiently dealing with the schema specifics of LDAP/X.500.

The user interface is focused on enterprise-grade administration and automation, but may benefit from an additional, web-based UI as it is common today.

In sum, DirX Directory clearly counts amongst the leading-edge offerings in the market segment of enterprise-grade directory servers. Thus, it is an option that should be evaluated when businesses, governmental organizations, and service providers require highly performant, scalable and reliable directory services as backend for the digital services they are creating. While stand-alone directory servers aren't the common choice of today, there are clear benefits of utilizing such services in well-thought-out, advanced architectures.

Strengths

- Proven implementation of an enterprise-grade directory service.
- Full support for X.500 and LDAPv3 standards.
- Extremely high scalability and optimized for performance.
- Various approaches for failover and high availability supported.
- Integrates an LDAP Proxy services.
- Builds on a specialized database kernel, optimized for directory services.
- Strong security and auditing features.

Challenges

- Lack of a set of REST APIs.
- Reliance on LDAPv3/X.500 models might impose some limitations for flexible data models.
- Administrative UI not supporting modern web-based interfaces yet.

4 Related Research

Executive View: Atos DirX Access – 80167
Executive View: Atos DirX Identity - 80166
Executive View: Evidian Identity & Access Manager - 70871
Leadership Brief: 10 Top Trends in IAM – 80335

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