

# Configuration Management Database

White paper



# **Table of Contents**

| Background                                       | 1  |
|--|----|
| CMDB vital to IT operation in new era            | 1  |
| CMDB facing new challenges                       | 1  |
| Traditional CMDB VS New requirements             | 2  |
| Product description                              | 3  |
| Business-centered CMDB                           | 3  |
| Product architecture                             | 3  |
| Product functions                                | 3  |
| Model management                                 | 4  |
| CI management                                    | 6  |
| Business management                              | 6  |
| Topology management                              | 7  |
| Visual CI statistics and display                 | 7  |
| System management                                | 8  |
| Product features                                 | 11 |
| Dynamic modeling from a business view            | 11 |
| Visual configuration management in various views | 12 |
| Data maintenance based on auto-discovery         | 13 |
| OpenAPI in various scenarios                     | 13 |
| Interconnected with other Cloudwise solutions    | 14 |
| Professional CI management consultation          | 14 |
| Product values                                   | 15 |

# Background

# CMDB vital to IT operation in new era

In the digital time, IT and business are gradually being closer and even equal in some aspects. To ensure user experience and business development, the health of IT systems must be first guaranteed. The application of new technologies such as cloud computing in existed IT systems of enterprises has added complexity to business architectures. Meanwhile, the changes in the economic environment has urged business innovation-oriented enterprises to turn to management innovation-oriented ones with the application of new technologies. The management of the enterprises is also becoming finer-grained. The complex business needs and the tightening IT budget are making operations far more challenging than before.

Management strategies is the key of the solution to the preceding issues. Enterprises can manage, maintain, and optimize their IT environments only after they are able to manage and control objects in their IT environments efficiently. Amid this background, CMDB is as important as eyes and brain for IT operations in recording objects, object relationships, and how objects coordinate to support business development in the IT environments.



#### **CMDB** facing new challenges

Traditional CMDB service is faced with the following challenges amid the background of digital transformation and finer-grained management:

With the emerging of tools and technologies such as big data, cloud computing, and AIOps, enterprises are posing higher requirements on configuration item (CI) management.

- IT environments are becoming more and more complex with the emerging of concepts such as clouds, containers, and microservices as well as the evolving of bimodal data centers.
- The logical relationships between objects must be focused on under the fusion of IT and business.

# **Traditional CMDB VS New requirements**

Traditional CMDB service fails to meet the increasingly requirements of enterprises in the new era due to the following reasons:

# Low data quality

Operations data is of large scale, and therefore manual collection of data can lead to low accuracy and manual synchronization can hardly be in real time.

In this case, data maintenance is of low efficiency but with high costs.

# Limited data consumption scenarios

Application scenarios of traditional CMDB are limited and cannot meet the requirements of data consumption scenarios such as IT operations monitoring, automatic operations, and AIOps security auditing that require the application of new technologies and architectures.

#### Business view absence

Traditional CMDB manages resources from a view of resources types instead of business, making it difficult to evaluate CI values.

To sum up, CMDB service with business at the center is necessary for business and technology development and act as pillars for enterprise digital transformation and finergrained management.

# **Product description**

# **Business-centered CMDB**

Cloudwise Configuration Management Database (Cloudwise CMDB) provides a new kind of CMDB service driven by business and is the cornerstone for operations solutions provided by Cloudwise. Cloudwise CMDB allows users to manage metadata from the IaaS, PaaS, and SaaS layers and can provide metadata support for Cloudwise ITSM, Cloudwise Automation, and operations monitoring products provided by Cloudwise.

Cloudwise CMDB has the following benefits:

- Dynamic modeling from a business view
- Data maintenance based on auto-discovery
- Visual configuration and management from multiple views
- OpenAPI for various consumption scenarios
- Interconnection with other solutions provided by Cloudwise

# **Product architecture**

The following figure describes the product architecture of Cloudwise CMDB.



# **Product functions**

The following figure describes the main functions of Cloudwise CMDB.

みCloudwise



# Model management

Allow users to manage the attributes, relationships, templates, and topologies of models in a centralized way.

Model customization

Allow users to customize models by designing model attributes dynamically.



# Model relationships

Allow users to specify and manage model relationships in a centralized way, and group model relationships by types and show them in topologies. Models can be associated through the relationships to regulate the relationships between CIs within the models.



# Model topology

All model relationships can be displayed in the topology in a unified way. Allow users to view relationships between all models from a global view within a single topology.



# **CI** management

Allow users to define and manage CIs in a centralized way. The auto-discovery, manual upload, and batch upload of CIs are supported. Users can also specify CI relationships, view CI historical changes, and search for CIs.



# **Business management**

Allow users to specify the business hierarchy and manage business topologies.

Business hierarchy

Allow users to group CIs in a business view, customize business levels, and create models based on the corresponding business levels. This is applicable to heterogeneous business with a complex business hierarchy.

Business topologies:

Business units are applicable to business consumption scenarios and provide business



#### **Topology management**

Allow users to manage topologies of CI relationships in a centralized way and show CI relationships graphically from custom views. This can satisfy the requirements of viewing CI relationships in different scenarios.



# Visual CI statistics and display

Cls are grouped and displayed based on the business, platform, and infrastructure classifications. Cl drilling down is supported in this module.



| CMDB / Overview                          | Se           | arch for a Cl |                 | ٩     |                   |        |          |
|--|--------------|---------------|-----------------|-------|-------------------|--------|----------|
| Models<br>99                             | 6 Cis<br>942 |               | Topologies<br>9 |       | Business units 28 |        |          |
| Starred business units Starred CI groups |              |               |                 |       |                   |        | Unfold 🗸 |
| (A) A2                                   | c cvtghj     |               | (†) #           |       | 4 4444            |        |          |
| CI number changes within 7 days          |              |               |                 |       | Created           | Edited | Deleted  |
| 400                                      |              |               |                 |       |                   |        |          |
| 300                                      |              |               |                 |       |                   |        |          |
| 200                                      |              |               |                 |       |                   |        |          |
| 0  | 21           | 07.22 07      | .23             | 07.24 | 07.25             | 07.26  |          |
| All models                               |              |               |                 |       |                   |        |          |

# System management

Allow uses to manage labels, data dictionaries, and verification rules. The auto-collection of CIs is also supported in this module.

#### Labels

Allow users to attach labels to CIs, view CIs by labels, and manage labels by groups.

| 졓 Overview           | CMDB / System settings / Labels |                |                |         |              |
|----------------------|---------------------------------|----------------|----------------|---------|--------------|
| a Business units     | Enter label name Q              | serfgh         |                |         |              |
| 🗘 Cl groups          | +Create label group             | All dd1        | Window         |         |              |
| & CI repository      | ⊙ group-tag                     | Search by name | OK Reset       |         | Batch remove |
| X Topologies         | serfgh<br>sdfghnmnhg            | All Name       | CI type        | Actions |              |
| 😻 Model management 🖂 |                                 | 001            | dd1            | Remove  |              |
| System settings •    |                                 | 12             | Windows_server | Remove  |              |
| Data dictionaries    |                                 |                |                |         |              |
| Verification rules   |                                 |                |                |         |              |
| Labels               |                                 |                |                |         |              |
| Notifications        |                                 |                |                |         |              |
|                      |                                 |                |                |         |              |
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| =                    |                                 | 20 V Total: 2  |                |         | < 1 >        |

Data dictionaries

Allow uses to manage data dictionaries in a centralized way. This can provide standard data for user to create CI attributes easily and modify CI information based on business changes quickly.

| S Overview           | CMDB / System settings / Data dictionaries |   |                |
|----------------------|--|---|----------------|
| Business units       | Create                                     | Create data dictionary X                      |                |
| 🛟 CI groups          | Name                                       | * Name: Enter the name of the data dictionary | Actions        |
| & CI repository      | + 99992                                    | ID: Enter the ID of the data dictionary       | Edited Deleted |
| V Topologies         | + os_bit                                   | * Type:                                       | Edited Deleted |
| a inpulsynes         | •  | Content: O Enter the name of the option       | Edited Deleted |
| 🖗 Model management 👻 | •  | Enter the ID of the option                    | Edited Deleted |
| System settings A    | * XX                                       | + Add Description:                            | Edited Deleted |
| Data dictionaries    | + ff                                       |   | Edited Deleted |
| Verification rules   | + dd                                       | Cancel  | Edited Deleted |
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|                      | •  | 2   | Edited Deleted |
|                      | ٠  | protectionLevel                               | Edited         |
|                      |  | systemBit                                     | Edited         |
|                      |  | monitorType                                   | Edited         |
| -                    | Table 7                                    |   |                |

#### Verification rules

Allow user to manage verification rules in a centralized way. Regular expressions and uniqueness verifications are applied to improve data accuracy and prevent faults caused by misoperations.

| S Overview           | CMDB / System settings / Verification rules | _                |                              |    |                |  |
|----------------------|---|------------------|------------------------------|----|----------------|--|
| Business units       | Create                                      | Create verificat | ion rule                     | ×  |                |  |
| 🛟 Cl groups          | Name  | t blome -        |                              |    | Actions        |  |
| & CI repository      | + 11  | * ID;            |                              |    | Edited Deleted |  |
| × Topologies         | + werf                                      | * Input field :  |                              |    | Edited Deleted |  |
| 🛱 Model management 🗴 | + ra  | * Regex :        | Enter the regular expression |    | Edited Deleted |  |
| 5 Sustem settings    | + sa  |                  |                              | e. | Edited Deleted |  |
| un System settings 🕆 | + helloworld                                | Description:     |                              |    | Edited Deleted |  |
| Data dictionaries    | + Ip.                                       |                  |                              | 6  | Edited Deleted |  |
| Verification rules   |   |                  | Cancel                       |    |                |  |
| Labels               |   |                  |                              |    |                |  |
| Notifications        |   |                  |                              |    |                |  |
|                      |   |                  |                              |    |                |  |
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Auto-collection

Support automatic collection of CIs from multiple sources, reconciliate the data based on the built-in rules, and update the data in Cloudwise CMDB automatically. This can accelerate data update of Cloudwise CMDB and avoid problems such as low efficiency, high workload, and errors, reducing costs as well as enhancing data accuracy.

| MDB                   |   |  |                          |                                    |  |
|-----------------------|---|--|--------------------------|------------------------------------|--|
| Configure data source | 2 Configure parse method  | 3 Configure Transformer                          | Configure sending method | 6) Confirm and add collection task | <ul> <li>6 Send collection task to target h</li> </ul> |
|                       | * Select operating system :   | Linux  |                          |                                    |  |
|                       | * CDC version :   | V9.9.9   |                          |                                    |  |
|                       | * Select data source type:  | CMDB   |                          |                                    |  |
|                       | Script excution interpreter<br>(cmdbscript_exec_interprepter);                    | /bin/bash  |                          |                                    |  |
|                       | Type of information collected<br>* (cmdbscript);                                  |  |                          |                                    |  |
|                       | Timed task<br>(cmdbscript_cron);  | The null value can be used as the default value. |                          |                                    |  |
| Script exe            | cution. Duplicate data mandatory report/<br>(cmdbscript_exec_force_return_count); | 10   |                          |                                    |  |
|                       |   |  |                          |                                    |  |
|                       |   |  |                          |                                    |  |
|                       |   |  |                          |                                    |  |
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|                       |   |  |                          |                                    | N  |

# Notification management

Cloudwise CMDB allows users to customize subscriptions. When data such as CI attributes, CI relationships, model attributes, and model relationships changes, Cloudwise CMDB will notify the changes to the specified channels so that the administrators can handle the changes in a timely basis.



| overview           | CMDB / System settings / Notifications |            |                     |                |
|--------------------|--|------------|---------------------|----------------|
| Business units     | Create                                 |            |                     |                |
| Cl groups          | Subscription name                      | Created by | Created at          | Actions        |
| & CI repository    | 232                                    | admin      | 2021-05-29 00:05:20 | Edited Deleted |
| × Topologies       | ra                                     | admin      | 2021-07-10 18:57:02 | Edited Deleted |
| Model management   | wef                                    | admin      | 2021-07-12 18:40:42 | Edited Deleted |
| E System settings  | sa                                     | admin      | 2021-07-07 18:50:52 | Edited Deleted |
| as oystem settings |  |            |                     |                |
| Data dictionaries  |  |            |                     |                |
| Verification rules |  |            |                     |                |
| Labels             |  |            |                     |                |
| Notifications      |  |            |                     |                |
|                    |  |            |                     |                |
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#### **Product features**

#### Dynamic modeling from a business view

Unlike traditional CMDB service, Cloudwise CMDB groups and manages software and hardware for enterprises from a business view. Hierarchical models based on business are used. Model relationships can be established across business levels to meet the needs of heterogeneous business. Cls can be managed based on the business hierarchy and displayed in topologies.



# Visual configuration management in various views

Cloudwise CMDB **supports both business authorization and Cl authorization**. Business authorization supports a fine-grained authorization by business level, satisfying the needs of different permission-control granularities. The combination of the two authorization methods is flexible and convenient, and can meet the complex and fine-grained requirements on permission control.

Cl groups

The traditional view where CIs are managed and maintained based on classifications.

| Overview                         | CMDB / CI groups          |     |            |                   |
|----------------------------------|---------------------------|-----|------------|-------------------|
| a Business units                 | Search by CI group name Q |     |            | + Create CI group |
| CI croups                        | Name                      | Cis | Created by | Actions           |
| <ul> <li>CLeonaritany</li> </ul> | <b>\$</b>                 | 0   | Oscar      | Edited Deleted    |
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|                                  | \$111                     | 0   | admin      | Edited Deleted    |
|                                  | test1                     | 0   | admin      | Edited Deleted    |
|                                  | ☆test                     | 0   | admin      | Edited Deleted    |
|                                  | ☆001                      | 6   | admin      | Edited Deleted    |
| Ξ                                | 20 V Total: 93            |     |            | < 1 2 3 4 5 >     |

#### Business units

The new business view where CIs such as software and hardware, network, and services are managed and maintained based on business and applications to support different business operations scenarios.



| 👺 Overview                       | CMDB / Business units          |     |            |                        |
|----------------------------------|--------------------------------|-----|------------|------------------------|
| Business units                   | Search by business unit name Q |     |            | + Create business unit |
| Cl groups                        | Name                           | Cls | Created by | Actions                |
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#### Data maintenance based on auto-discovery

Cls from the IaaS, PaaS, and SaaS layers are automatically collected through channels such as agents and APIs. Data is collected from multiple resources in a federation way and reconciled to ensure data comprehensiveness and accuracy in the Cloudwise CMDB.



#### **OpenAPI** in various scenarios

The API interfaces provided in Cloudwise CMDB are standard, general, and full-featured, which can connect to other Cloudwise products as well as third-party products. This can not only provide support for data consumption scenarios such as IT structure management and alerting, but also synchronize data from other platforms to Cloudwise CMDB for centralized management.





#### Interconnected with other Cloudwise solutions

As the cornerstone of solutions for AlOps provided by Cloudwise, Cloudwise CMDB can be interconnected with other products provided by Cloudwise such as DOSM, Automation, DOMA, and DOEM.



# **Professional CI management consultation**

Cloudwise CMDB provides methodologies on collection, modeling, and management of CIs and empowers enterprises with the closed-loop ability of "Consultation + implementation + products + empowerment + best practices", helping enterprises planning IT and service ecosystems, promoting the integration of IT and business objectives, and providing data support for AIOps.



| Business planning              | Data consumption<br>scenarios          | Project objective               | Project scope                          |  |  |  |
|--------------------------------|--|---------------------------------|--|--|--|--|
|                                |  |                                 |  |  |  |  |
|                                | CI mo                                  | deling                          |  |  |  |  |
| CI template design             | Data collection and<br>standardization | Relationship configuration      | Data federation and reconciliation     |  |  |  |
|                                |  |                                 |  |  |  |  |
| Implementation and integration |  |                                 |  |  |  |  |
| Data initialization            | Integrated business scenarios          | Integrated interface definition | System debugging and data verification |  |  |  |
|                                |  |                                 |  |  |  |  |

# **Product values**

Cloudwise CMDB can provide the following values for users:

- Cloudwise CMDB focuses on objects in the IT environments and integrate isolated data from different systems, allowing users to view and analyze data globally from a business view. This lays the foundation for IT systems in monitoring, automation, ITSM, and AIOps of the enterprises.
- Cloudwise CMDB can provide unified CI data for enterprises and allow users to manage CIs in a centralized way. This can reduce the data management cost as well as promote internal coordination.
- Cloudwise CMDB can decrease the repetitive work of junior operations staff, reduce communication costs, and improve the efficiency of routine work such as ticket handling and fault troubleshooting to enhance the overall efficiency and value of operation.
- Cloudwise CMDB can provide comprehensive and accurate information of all objects in the IT environment and therefore help managers to make business decisions.