



The Map of Migration Tool for Huawei Cloud

C-POMC

Version 1.2

30 Nov 2023

What's New?

No.	Version	Description	Phase	Modified By	Audited By	Document Name
1	V1.0	<ul style="list-style-type: none">• Reorganize the document structure• Add the “Ecosystem Tool Framework”• Update the “Discovery Tools”• Update “Packer / RiverMeadow / Disk2VHD / qemu-img-hw / image-migrator / kclone / i2active / DMS / DRS / UGO ”• Update “OMS / Fastcopy / RCLONE / RSYNC / FPSYNC”• Add LLD2Terraform	27 Sep 2023	Liu Shaowei	lichang	The Map of Migration Tool for Huawei Cloud-v1.0
2	V1.1	<ul style="list-style-type: none">• Update “Inventory 1 - Huawei Cloud Migration Tools”	31 Oct 2023	Liu Shaowei	lichang	The Map of Migration Tool for Huawei Cloud-v1.1
3	V1.2	<ul style="list-style-type: none">• Update UGO• Update OMS• Add CDM• Add Pentaho Data Integration (Kettle)• Add CodeArts PerfTest• Add WRK• Add packer-terraform-demo• Remove Packer	30 Nov 2023	Liu Shaowei	lichang	The Map of Migration Tool for Huawei Cloud-v1.2

Preface

Currently, the public cloud is widely used, and HUAWEI CLOUD is also used by more and more users in Latin America. To help HUAWEI CLOUD users quickly migrate services to HUAWEI CLOUD, Huawei Latin America cloud team prepares this manual.

We hope to help you:

First, you can quickly find efficient and available tools, including open-source tools, Huawei tools, and third-party tools, based on migration scenarios.

Second, you can quickly master how to use the tool based on the tool introduction.

Third, share tool usage experience within your team, provide feedback, and help HUAWEI CLOUD optimize tool capabilities.

Disclaimer for Tool Use

No.	Topic	Description	Remark
1	To Which the Document Is Applicable	Huawei Cloud engineers HUAWEI CLOUD partner engineers and HUAWEI CLOUD customers	
2	Compliance Suggestion	The use of Open Source tools must comply with relevant open source license agreements. The use of Commercial tools must comply with relevant commercial software license requirements.	
3	Disclaimer	This document is for reference only. HUAWEI CLOUD is not responsible for data loss and service interruption caused by the use of the tool. Users must have basic technical capabilities. Before operating the production environment, fully evaluate and verify the tools to prevent service interruption caused by improper tool operations.	

Inventory 1 - Huawei Cloud Migration Tools

Domain	SN	Tool Name	Online or Offline?	Global or Region level?	Santiago Region	Sao Paulo1 Region	MexicoCity2 Region	Product Manager	Discovery	Assessment	Resource orchestration	Host Migration	K8S Migration	Docker image	File Migration	DB Migration	OS Upgrading	Performance Test	ETL	Others	Remarks
Migration Management	1	MgC	Online	Global	Available				Yes	Yes											
	2	Haydn	Online	Region	Available	TBD	TBD				Yes (Pending on RFS)									Soluton Design / Project Management	
Discovery & Assessment	3	RDA	Offline	NA	Available	Available	Available		Yes	Yes											
	4	KSPIDER	Offline	NA	Available	Available	Available		Yes	Yes											
Resource orchestration	5	RFS	Online	Region	2023/12/30	2023/12/15	2023/12/30				Yes										
Server Migration	6	SMS	Online	Global	Available	Available	Available					Yes									
	7	qemu-img-hw	Offline	NA	Available	Available	Available					Yes									
Container Migration	8	K8CLONE	Offline	NA	Available	Available	Available						Yes								
	9	image-migrator	Offline	NA	Available	Available	Available							Yes							
Database Migration	10	DRS	Online	Region	Available	Available	Available									Yes					
	11	UGO	Online	Region	Available	NA	NA									Yes					
			Offline	NA	Available	Available	Available									Yes					
Storage Migration	12	OMS	Offline	NA	Available	Available	Available								Yes						
			Online	Region	Available	Available	Available								Yes						
Test and verification	13	CodeArts PerfTest	Online	Region	Available	Available	TBD											Yes			
BigData Migration	14	CDM	Online	Region	Available	Available	Available												Yes		

Inventory 2 - 3rd party Migration Tools

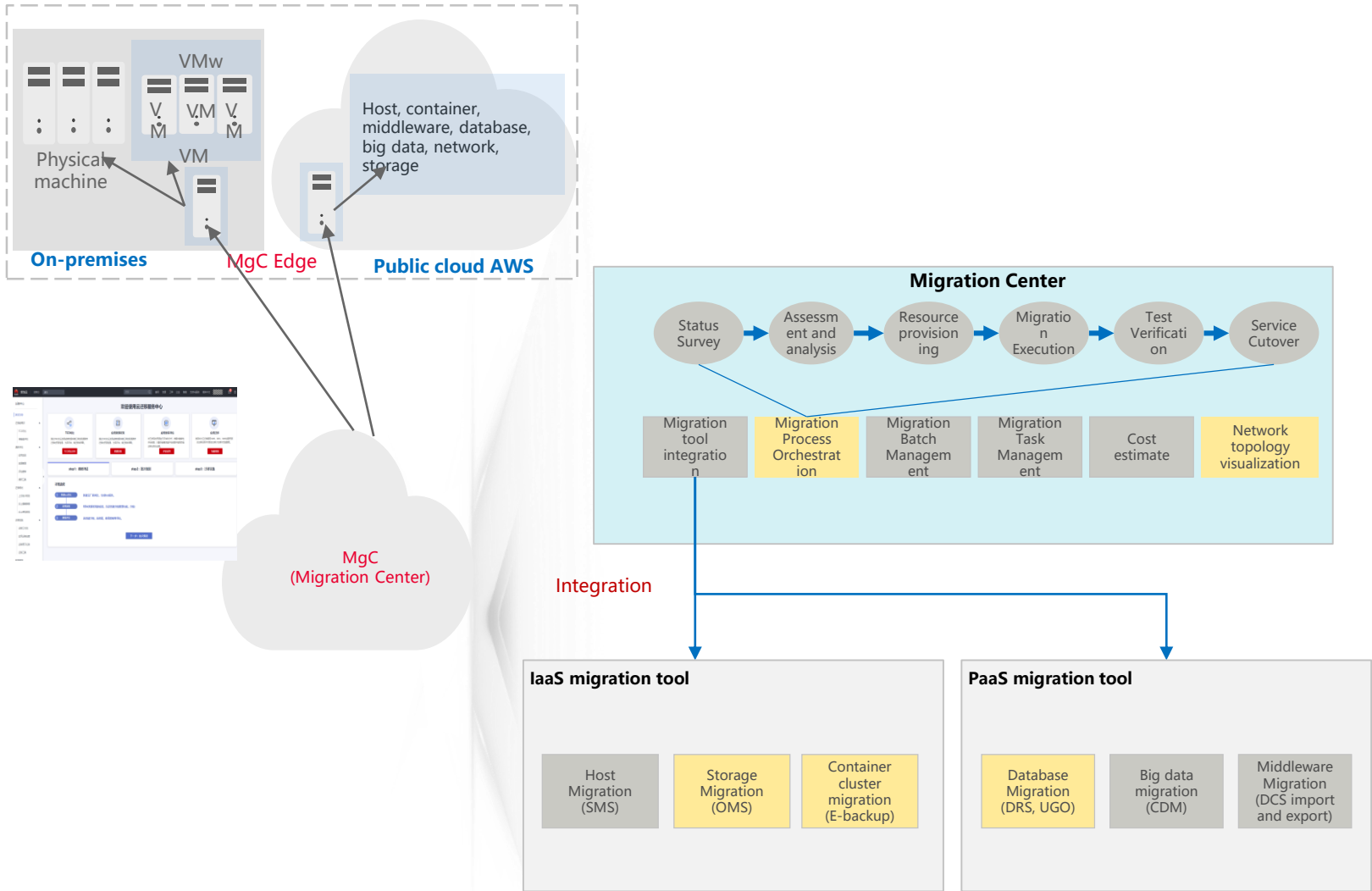
Domain	SN	Tool Name	Status	Provider	Business Type	Charged or not	Necessary to authorize?	Discovery	Assessment	Resource orchestration	Host Migration	K8S Migration	Docker image	File Migration	DB Migration	OS remodeling	Performance Test	ETL	Others	Remarks
Discovery & Assessment	1	RVTools	available	Rob de Veij	Closed source (free of charge)	No charge.	Unlimited	Yes												
	2	ARI (Azure Resource Inventory)	available	Azure	open source	No charge.	Unlimited (MIT)	Yes												
	3	ADE (aws-discovery-export)	available	GCP	open source	No charge.	Unlimited (Apache 2.0)	Yes												
	4	FADDOM	available	FADDOM	Commerce	Charged	N/A				Yes									
Server Migration	6	I2move	available	i2soft	Commerce	Charged	N/A				Yes									Win2003 / Centos 5.X
	7	disk2vhd	available	microsoft	Closed source (free of charge)	No charge.	Unlimited				Yes									Windows Image Migration
	8	RiverMeadow OSM	Adaptation	RiverMeadow	Commerce	Charged	N/A				Yes					Yes				Windows/Linux upgrade and reconstruction
Database Migration	9	DMS (Database Migration Service)	available	AWS	Cloud service	Charged	N/A								Yes					Migrating AWS RDS to HUAWEI CLOUD
	10	i2Active	available	i2soft	Commerce	Charged	N/A								Yes					
Storage Migration	11	fastcopy	available	FastCopy Lab	Commerce	Charged (Working)	N/A							Yes						Windows SMB File
	12	Rclone	available	N/A	open source	No charge.	Unlimited (MIT)							Yes						Linux
	13	Rsync	available	N/A	open source	No charge.	Unlimited (GPL 3.0)							Yes						Linux
	14	fpsync	available	N/A	open source	No charge.	Unlimited (BSD)							Yes						Linux
Test and verification	15	WRK	available	N/A	open source	No charge.	Unlimited (Apache 2.0)										Yes			
Data Migration & Integration	16	Pentaho Data Integration (Kettle)	available	N/A	open source	No charge.	Unlimited (Apache 2.0)											Yes		

Inventory 3 - Huawei Latin Cloud developed tools

Domain	SN	Tool Name	Online or Offline?	Global or Region level?	Santiago Region	Sao Paulo1 Region	MexicoCity2 Region	Product Manager	Discovery	Assessment	Resource orchestration	Host Migration	K8S Migration	Docker image	File Migration	DB Migration	OS Upgrading	Performance Test	ETL	Others	Remarks
Resource orchestration	1	LLD2Terraform	Offline	NA	Available	Available	Available				Yes										
	2	packer-terraform-demo	Offline	NA	Available	Available	Available				Yes										



Positioning: Integrates migration tools to cover the entire migration process and domain, and supports one-stop migration service, including Discovery & Assessment , orchestration of migration processes and management of migration tasks.

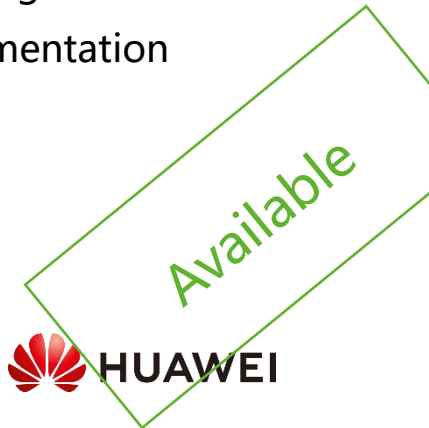


Application Scenarios

- VMware (Available)
- AWS (In development)
- Azure (In development)
- GCP (In development)
- OCI (In development)

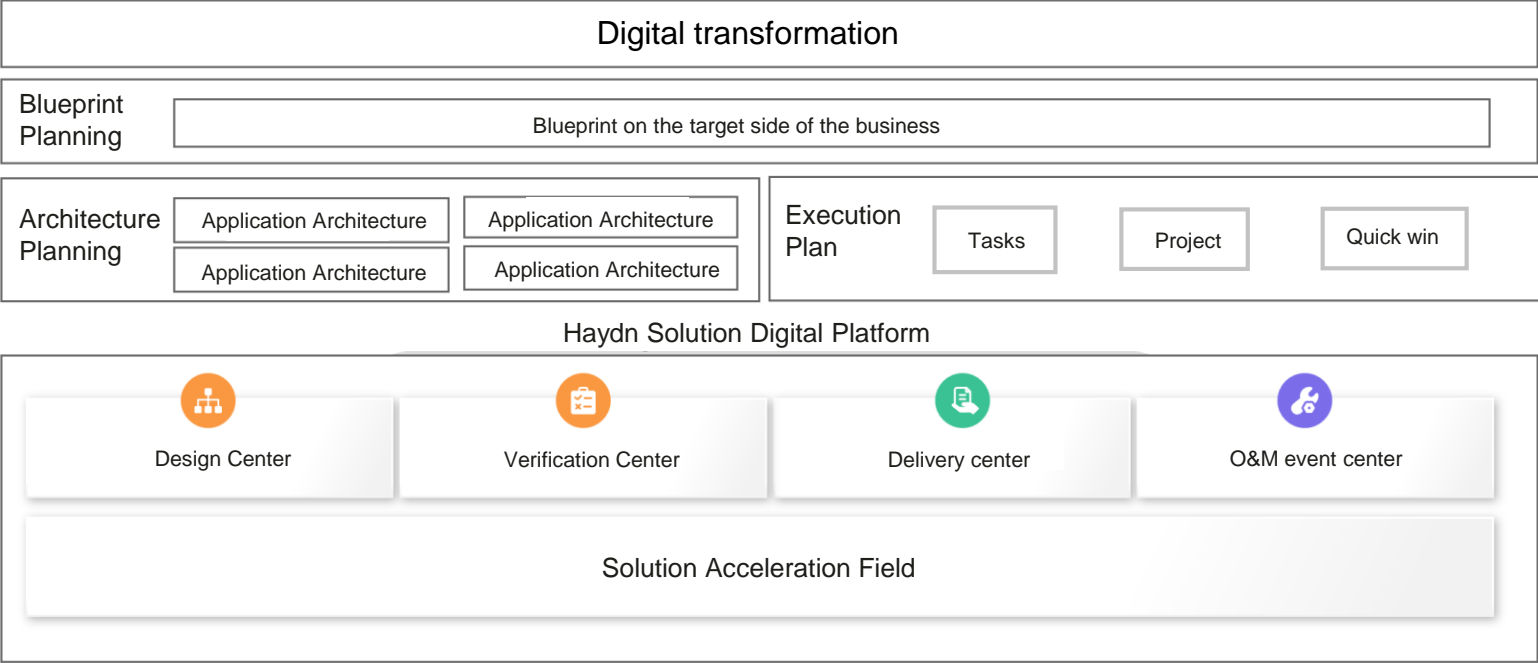
Major Features

- Survey and Assessment
- Migration Planning
- Migration implementation



Positioning: Haydn Cloud Solution Factory (HaydnCSF) is a one-stop digital platform for solution full lifecycle management. It digitalizes objects, workflows, and rules to help partners and end users design, deploy, verify, deliver, and manage solutions online in a collaborative manner, accelerating solution monetization.

Overall Diagram for Haydn Solution Digital Platform



Application Scenarios

- Solution Design
- Baseline Verification
- Certification Test
- Project PoC
- Solution Delivery
- O&M Event Management

[Haydn Document](#)

Limitation: Haydn is available in Santiago Region, partner could use the Solution Design function. (Delivery function will be available until the RFS is available in Santiago Region.)



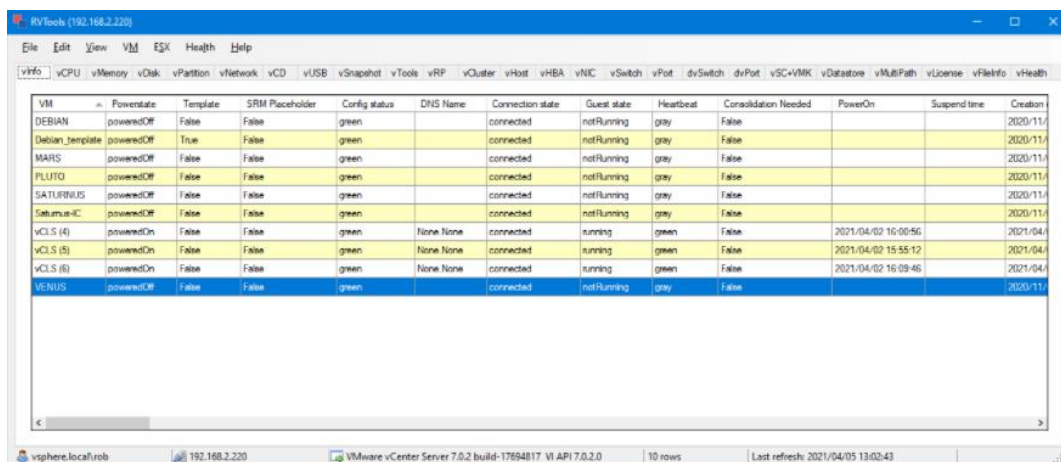
Positioning: RVTools is a discovery tool for VMware Platform, it can export the Virtual Machine List with one command

RVTools Introduction

RVTools is a Windows .NET 4.6.1 application which uses VMware vSphere Management SDK 7.0 and CIS REST API to display information about your virtual environments.

VirtualCenter 4.x, ESX Server 4.x, VirtualCenter 5.x, ESX Server 5.x, VirtualCenter 6.x, ESX Server 6.x, VirtualCenter 7.0 and ESX server 7.0.

<https://www.robware.net/rvtools/>



VM	Powerstate	Template	SRM Placeholder	Config status	DNS Name	Connection state	Guest state	Heartbeat	Consolidation Needed	PowerOn	Suspend time	Creation
DEBIAN	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/
Debian_template	poweredOff	True	False	green		connected	notRunning	gray	False			2020/11/
MARS	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/
PLUTO	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/
SATURJUS	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/
Saturnus-IC	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/
vCLS (4)	poweredOn	False	False	green	None None	connected	running	green	False	2021/04/02 16:00:50		2021/04/
vCLS (5)	poweredOn	False	False	green	None None	connected	running	green	False	2021/04/02 15:55:12		2021/04/
vCLS (6)	poweredOn	False	False	green	None None	connected	running	green	False	2021/04/02 16:09:46		2021/04/
VENUS	poweredOff	False	False	green		connected	notRunning	gray	False			2020/11/

Suggest to export all information to xlsx file, then you can import the xlsx file to RDA.

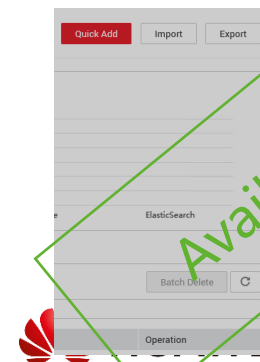
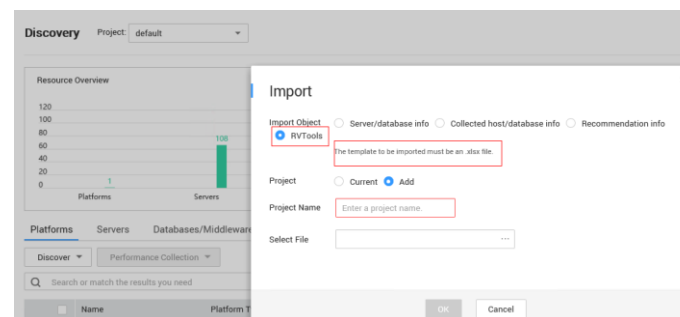
1. Export Guide: Start RVTools with userid password, and export all to xlsx

Start RVTools connect to a specific virtualcenter or ESX server, pass userid and password, start export all to xlsx and write the xlsx files to the given directory with the given filename.

- Command Format: `RVTools.exe -s virtualcenter.domain.local -u userid -p password -c ExportAll2xlsx -d directory -f filename`
- Command Example: `RVTools.exe -s 192.168.2.220 -u Administrator -p password -c ExportAll2xlsx -d c:\temp -f rvtools.xlsx`

2. Import Guide: Import xlsx file to RDA for further analysis and migration

RDA Console -> Discovery -> Import -> RVTools -> Select xlsx File -> OK



Available

Positioning: Resource Discovery Assessment (RDA) is a tool deployed on Windows hosts for resource discovery and migration assessment.

Scenario 1: Resource Discovery

With the cloud discovery and information collection functions of the RDA, resource information about the cloud platform, host, database, container, big data, and middleware can be collected and exported.

Scenario 2: Migration Evaluation

Analyze collected resource information before migration, identify migration risks, provide migration suggestions, and evaluate the driving force and readiness for cloud migration.

Support cloud platform

Supported the cloud platform VMware, AWS.

Support cloud services

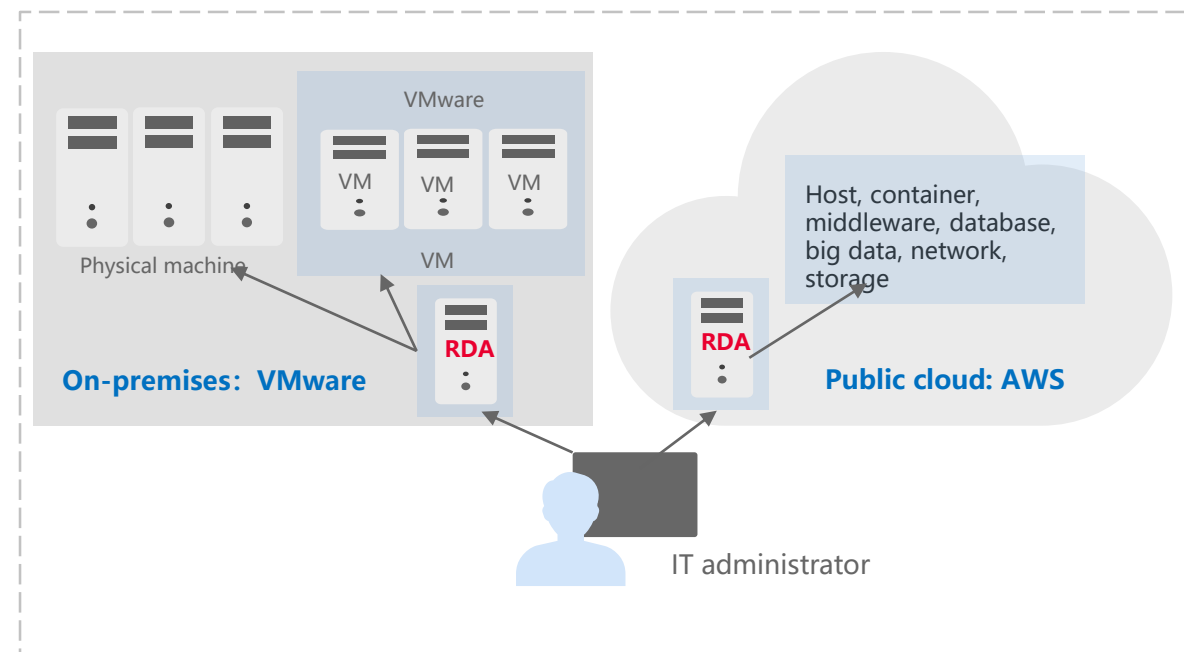
Host, container, middleware, database, big data, network, and storage (7 types)

Support Group and Team

Technical support

- Luo Junlin
- Xie Peicai
- Tang Fa

RDA用户交流群 (RDA Users Communication Gr...)



Installation Procedure

Step 1 Download the RDA installation package to the Windows computer, double-click the RDA installation package, and click Next.

Step 2 On the License Agreement page, read the license agreement carefully, select I accept the terms in the license agreement, and click Next.

Step 3 Select an installation directory and click Next.

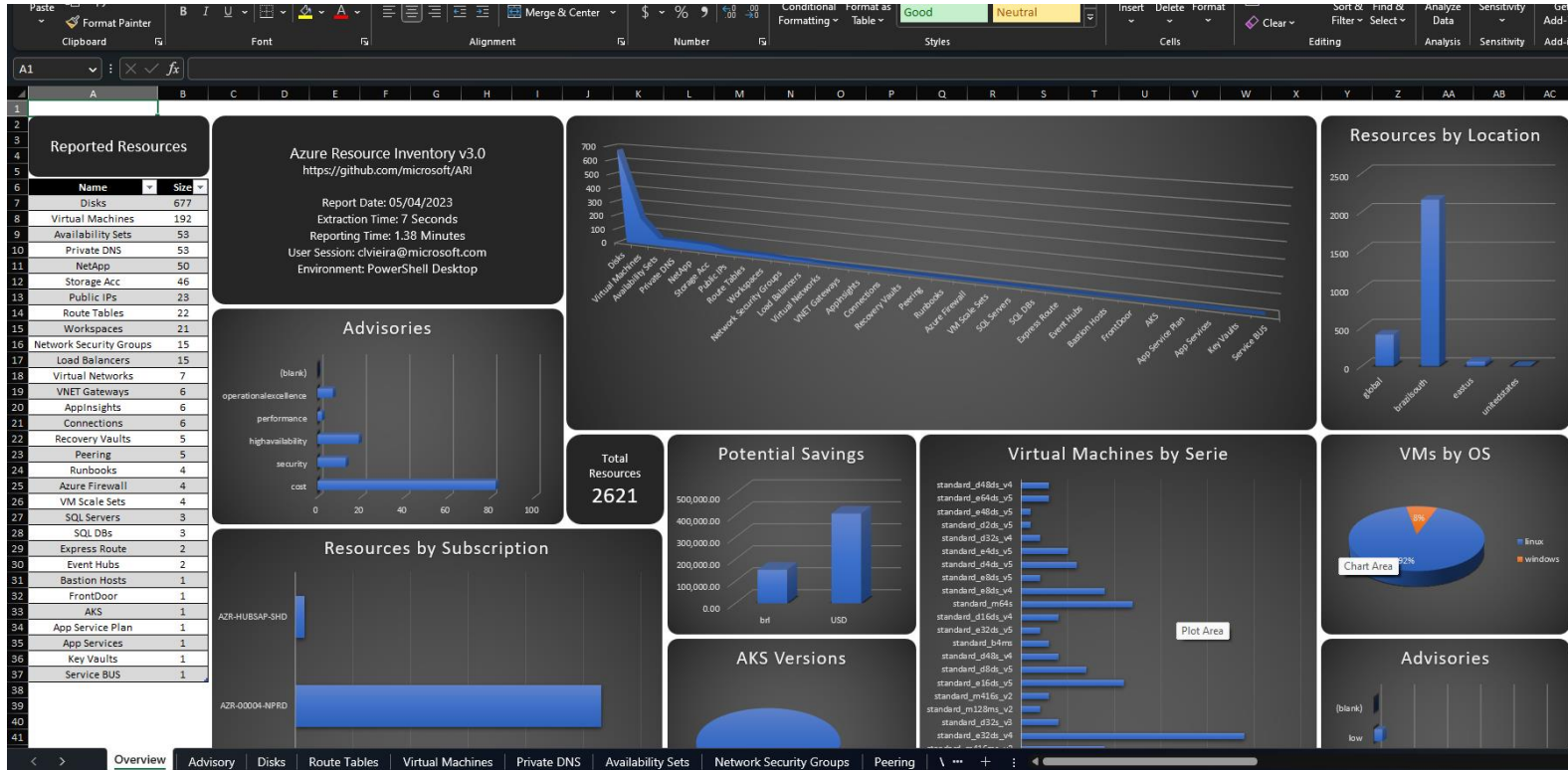
Step 4 After the installation is complete, click Finish to enter the RDA console.

Available



Positioning: Azure Resource Inventory - It's a Powerful tool to create EXCEL inventory from Azure Resources with low effort

<https://github.com/microsoft/ARI>



Application Scenarios

- Azure

Major Features

- Survey

Available

ADE (aws-discovery-export)

Positioning: aws-discovery-export is a discovery tool to create inventory from AWS Resources with low effort.

<https://github.com/GoogleCloudPlatform/aws-discovery-export>



Application Scenarios

- AWS 29 Cloud Services
- By default resources from following services are collected: ec2, s3, route53, apigatewayv2, appconfig, appstream, appconfigdata, application-autoscaling, autoscaling, eks, efs, ebs, lambda, rds, sns, cloudfront, elasticbeanstalk, iam, glacier, kinesis, dynamodb, elasticsearch, redshift, sagemaker, sqs, lightsail, cloudwatch, chime, clouddirectory

Features

- Discovery

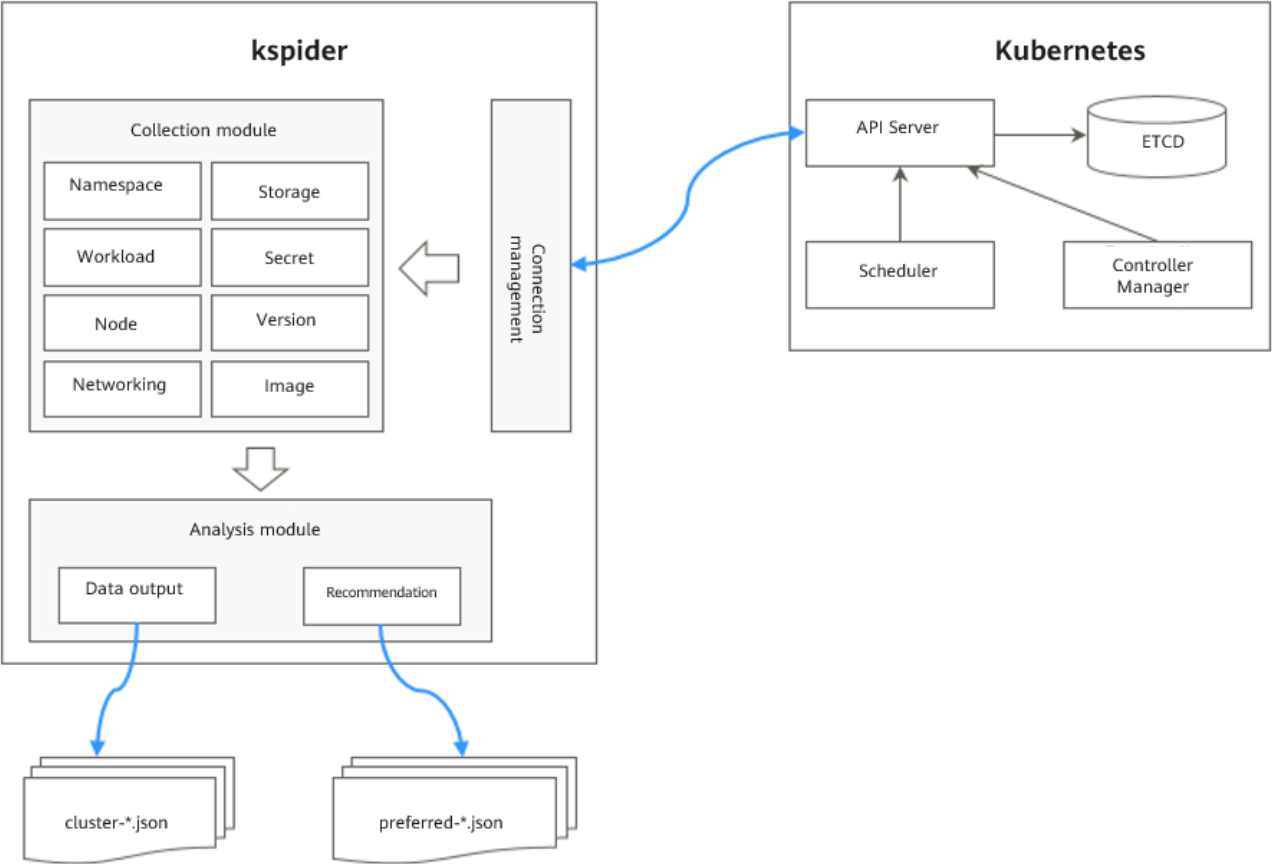
Remark

The EC2 Discovery has been validated successfully.

<https://github.com/huaweicloud-latam/migration-tool-map/tree/main/02-003-aws-discovery-export>



Positioning: kspider is a tool used to collect information about the source cluster. It provides cluster-related data such as the Kubernetes version, scale, workload quantity, storage, and in-use images. The data helps you understand the current status of the cluster and evaluate migration risks, and select a proper destination cluster version and scale.



Application Scenarios

- Kubernetes
- AWS EKS
- Azure AKS
- GCP GKS
- Huawei Cloud CCE

Major Features

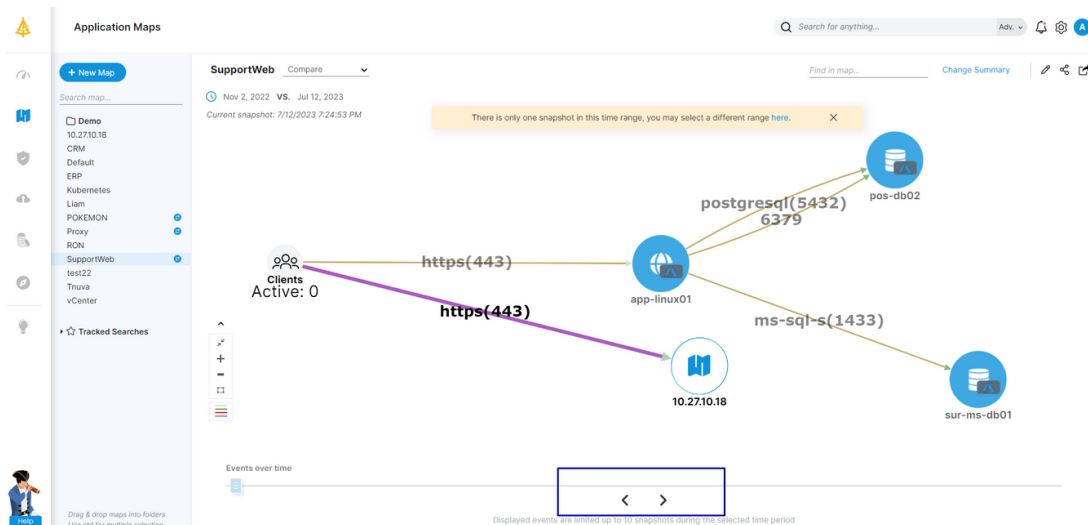
- Collect information from source cluster
- Evaluate the destination cluster

[KSPIDER Document](#)



FADDOM - Agentless Application Dependency Mapping

Positioning: FADDOM is a tool that Map all your on-prem servers and cloud instances, applications, and dependencies in under 60 minutes.



Application Scenarios

- VMware / Hyper-V / Nutanix
- AWS / Azure / GCP

Major Features

- Discovery
- Recommendation (Sizing)
- Change Management
- Cybersecurity



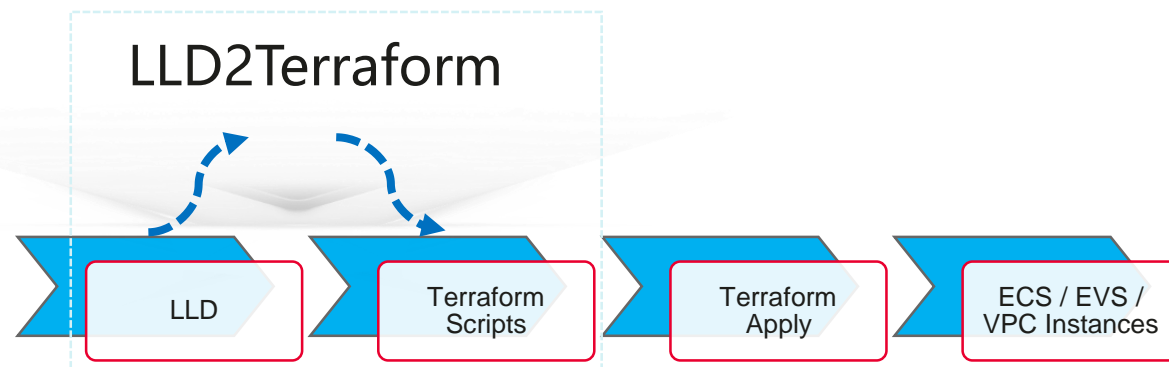
[FADDOM Help Center](#)



Available

Positioning: LLD2Terraform is a Python script tool to convert Low-Level Design (LLD) to Huawei Cloud Terraform code

LLD2Terraform Workflow



Python tool that reads LLD information and converts to Terraform code

Available at

<<https://github.com/huaweicloud-latam/lld-to-terraform>>

Application Scenarios

- Resource Provisioning on Huawei Cloud

Major Features

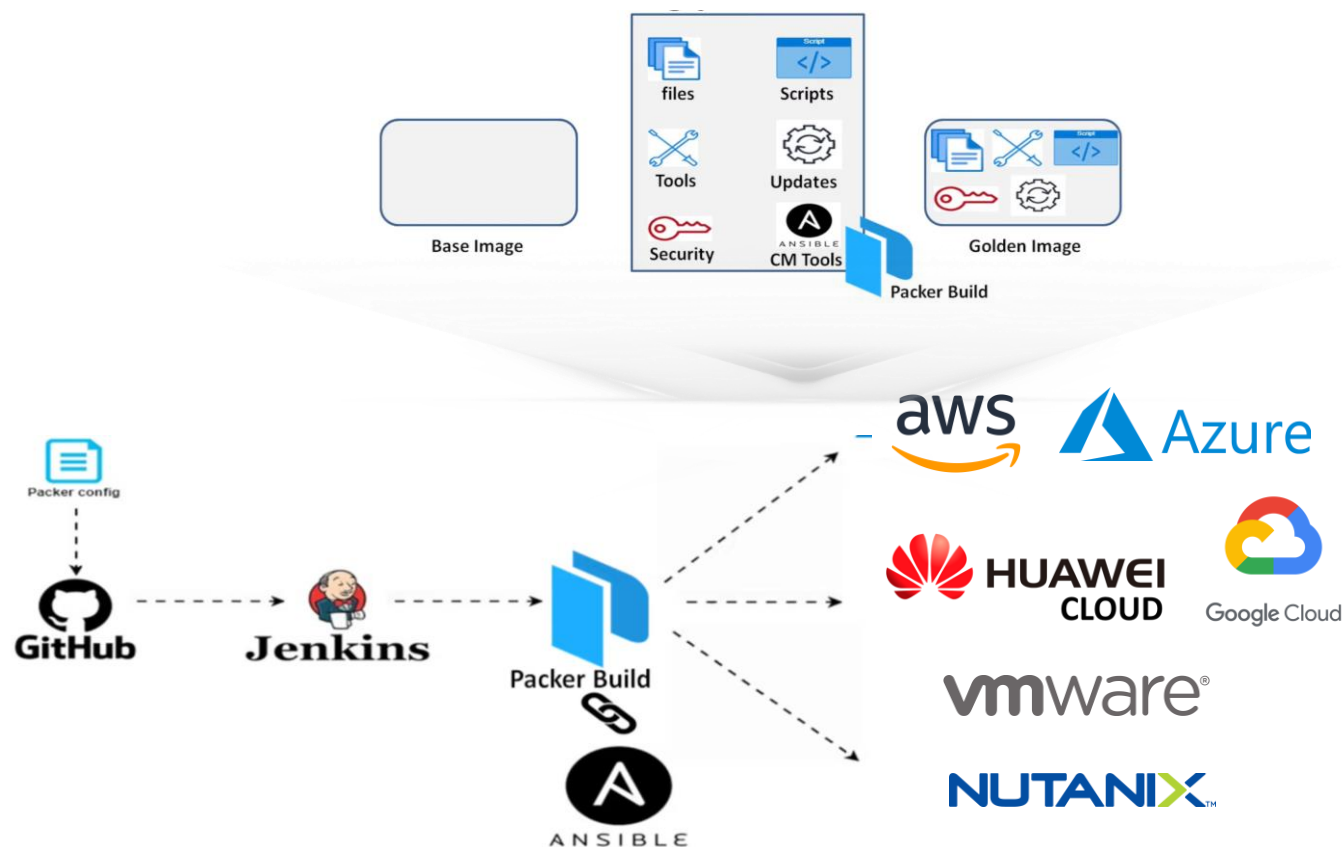
- Creating Resources in Batches Based on LLD Information



Available



Positioning: Packer is an open-source tool for creating custom images for multiple cloud platforms in parallel.



Application Scenarios

- Automatic image creation

Major Features

- Simplifies private image creation by using manageable code

[Packer-terraform-Demo](#)

[Packer Official](#)

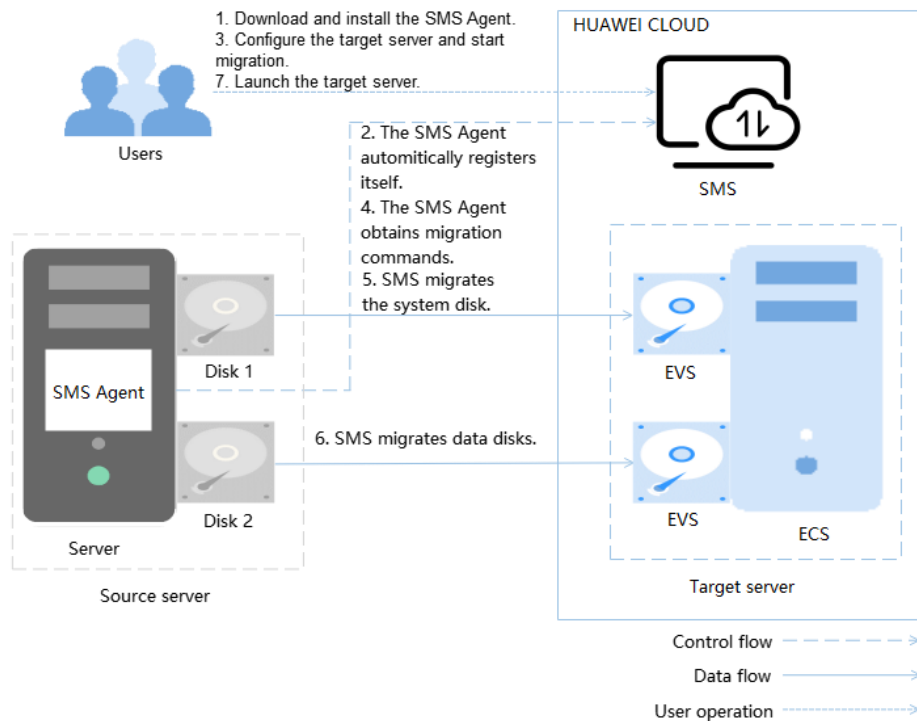
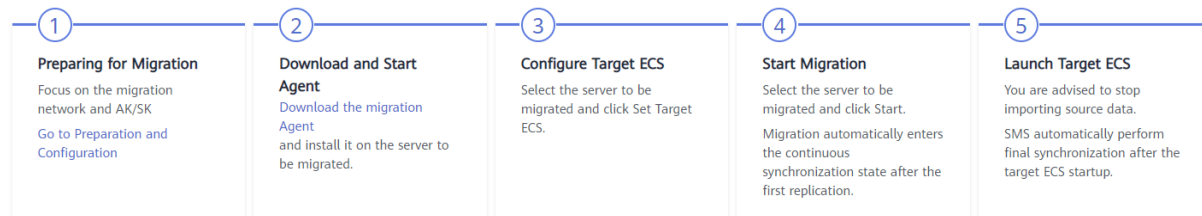
[Huawei Cloud Packer Provider Manual](#)

[Creating a Private Image Using Packer](#)

Available

Positioning: SMS (Server Migration Service) is a Cloud Service which is provided by Huawei for online server migration.

SMS Workflow



Application Scenarios

- P2V (physical machine to virtual machine)
- V2V (virtual machine to virtual machine)
- AWS EC2 / Azure Machine / GCP Compute Engine / Vmware VM / Hyper-V VM / Nutanix VM etc.

Major Features

- Windows: Windows Server 2008 and higher OS version
- CentOS / Redhat / Oracle Linux 6.0 or higher Version
- Debian 6 / Ubuntu 12 / Suse 11 or higher OS version

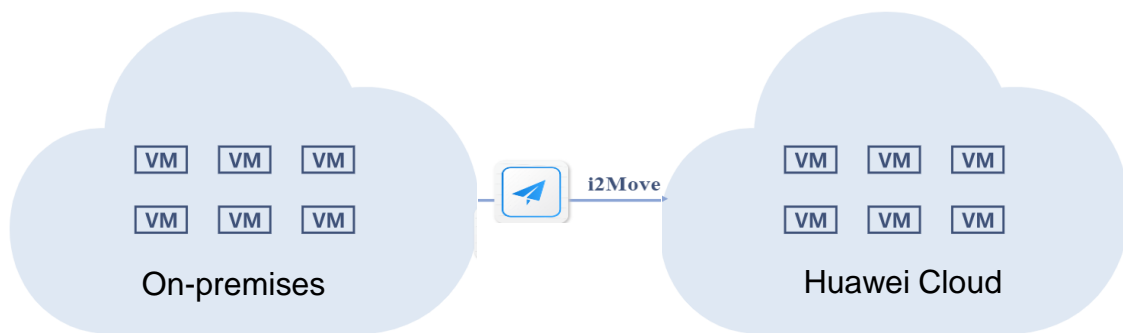
Refer to the [SMS Guide](#)

Available

I2MOVE for Windows 2003 / Centos 5.X migration

Positioning: I2MOVE is a commercial migration tool provided by I2Soft for online server migration.

I2MOVE Workflow



Official Website

<https://www.info2soft.com/en/product/i2move>

KooGallery

<https://marketplace.huaweicloud.com/intl/product/00301-173035-0--0>

Application Scenarios

- P2V (physical machine to virtual machine)
- V2V (virtual machine to virtual machine)
- V2P (virtual machine to physical machine)
- P2P (physical machine to physical machine)

Major Features

- Windows: Windows Server 2003 R2, Windows Server 2008 and above system, Windows XP, Windows 10, etc.
- Linux: CentOS 4.4(*) and above system, including CentOS 6.5, 7.0, 7.1, etc.
- Others: Redhat 4.8 (*) and above system, SUSE10sp1 and above system; NeoKylin 6.5, NeoKylin 7.2 and so on.
- Various virtualization platforms, Hyper-V, Citrix Xen Server, VMware, KVM.

Remark:

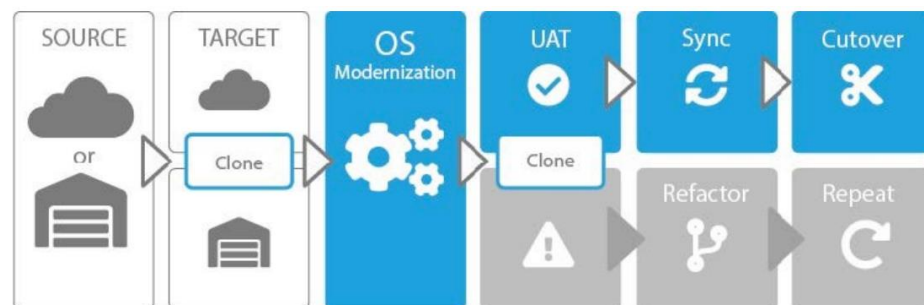
* Huawei Cloud ECS needs KVM driver, some old Operating Systems don't have

KVM (VirtIO) Driver, such as Centos 4.X – 5.0 / 5.1

Positioning: RiverMeadow's Multi-Cloud Migration Platform is quick to implement and will safely upgrade your source OS versions as part of the migration.



OS Modernization Workflow



OS Modernization Workflow

Items	MANUAL OS upgrade - Standard -	AUTOMATED OS Upgrade - RiverMeadow -
Time to Execution	4-5 hours per manual process	Minutes
Speed of Process	Slow & not sustainable eg 5 per week	Fully Automated and built for scale eg 75-100 per week
Downtime (Source Applications)	Excessive - Process must be done in a maintenance window	No downtime required on the source
Single-hop or multi-hop?	Single-hop only eg n-2 to n-1	Multi-hop - For example, choose to go from Windows Server 2003 (64bit) to Windows Server 2019 or any version in between
Pre-Flight Compatibility Scan?	None	Pre-flight scan identifies known compatibility issues before migration start
Certification by Microsoft?	No	Yes - Microsoft has certified the OSM process for Windows Server teams and Azure Product Owners

Application Scenarios

- AWS / Azure / GCP
- Huawei Cloud (Doesn't support*)

Major Features

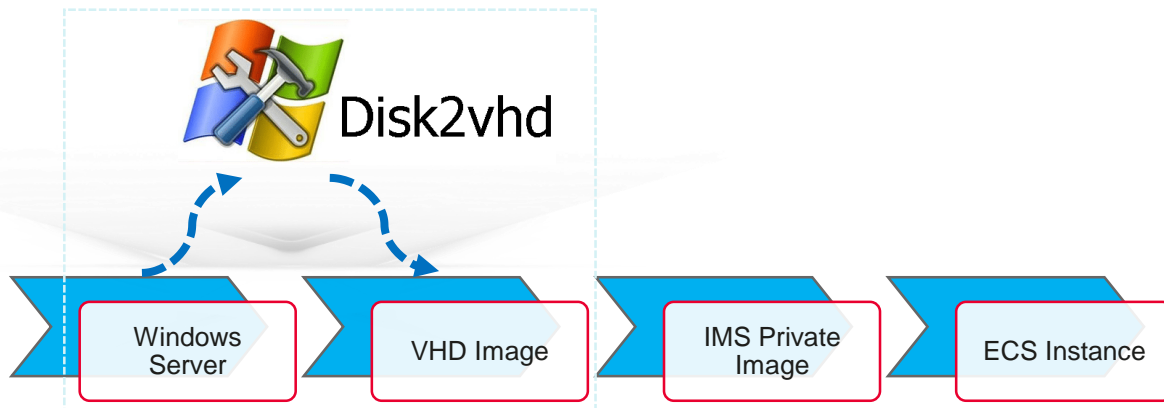
- Project Management
- Server Migration
- OS Modernization (Highly recommended)

* Remark: If you have Project requirement, please contact Huawei Cloud team.



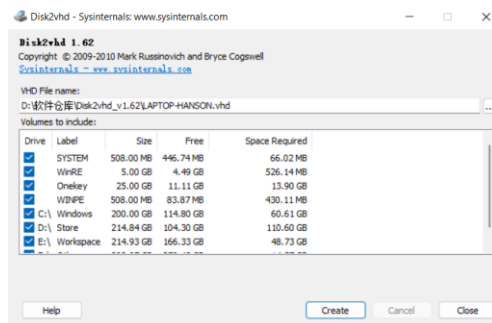
Positioning: Disk2vhd is a utility that creates VHD (Virtual Hard Disk)

Disk2vhd Workflow



Software Version and Console

Version	Compatible OS List	Download Link
V1.62	Windows XP SP2 Windows Server 2003 SP1, and higher, including x64 systems.	https://github.com/huaweicloud-latam/migration-tool-map/blob/main/02-007-disk2vhd/Disk2vhd_v1.62.zip
V2.02	Windows Vista, Windows Server 2008, and higher, including x64 systems.	https://learn.microsoft.com/en-us/sysinternals/downloads/disk2vhd



Application Scenarios

- Windows 2003 or later(*)

Major Features

- Server Migration (Offline mode)

REMARK

- Huawei Cloud doesn't support Windows XP, because Windows XP doesn't have KVM Driver
- ** V2.02 doesn't support Windows 2003, so please download the previous version V1.62.

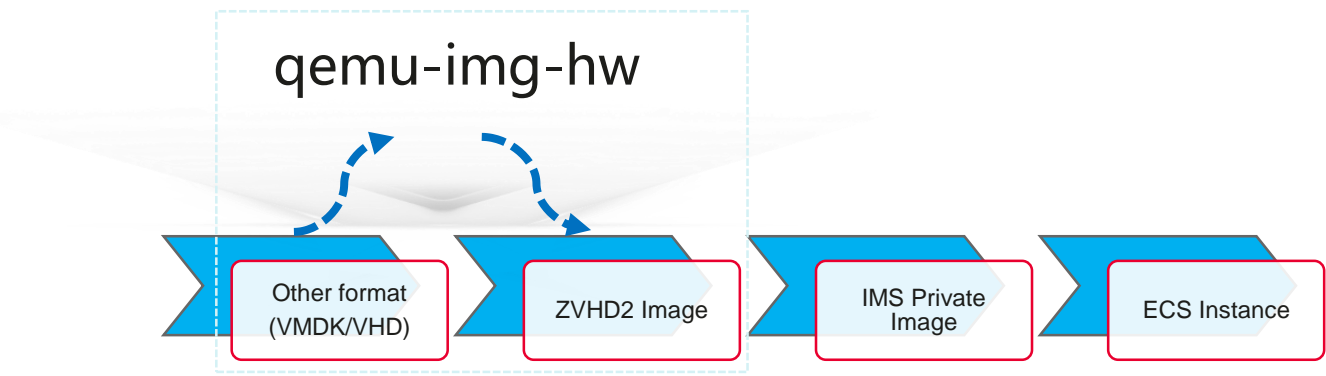
Disk2vhd Document

Available

qemu-img-hw - Converting the Image Format

Positioning: qemu-img-hw is developed by Huawei and is used for converting image formats from other formats to RAW or ZVHD2 format.

qemu-img-hw Workflow



Software Version and Console

Version	Compatiable List	Download Link
V2.3.0	VHD, VMDK, QCOW2, RAW, VHDX, QCOW, VDI, QED, ZVHD or ZVHD2	Converting the Image Format Using qemu-img-hw

Application Scenarios

- Server Image in formats: VHD, VMDK, QCOW2, RAW, VHDX, QCOW, VDI, QED, ZVHD or ZVHD2

Major Features

- Image Format Converting

REMARK

- The Image size of IMS Service has limitation, so it's mandatory to convert the image to RAW or ZVHD2 first, then import the image through fast import feature.

[Qemu-img-hw Document](#)



Positioning: image-migrator is an image migration tool that can automatically migrate images from the Docker image repository built on Docker Registry v2 to SWR.

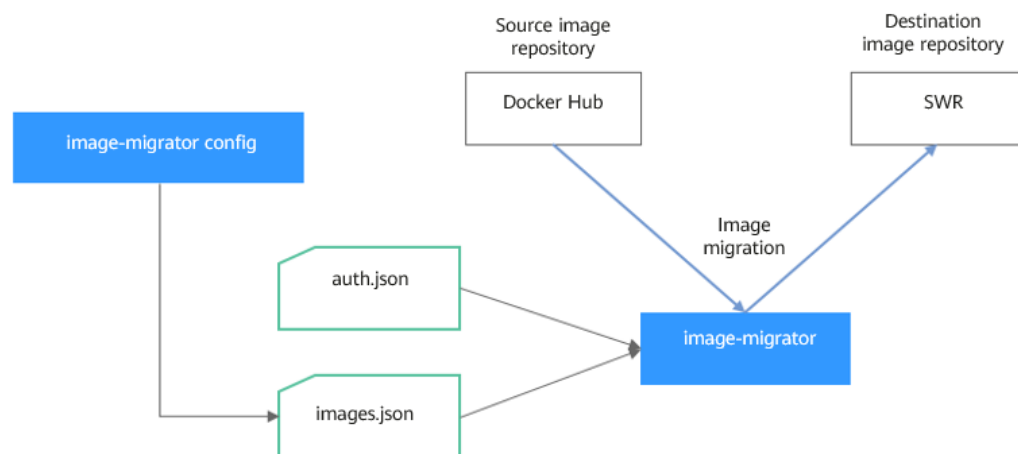
Application Scenarios

- AWS Elastic Container Registry (ECR)
- Azure Container Registry
- GCP Artifact Registry
- Huawei Cloud SWR

Major Features

- Docker Image Migration in parallel

Image-migrator Workflow

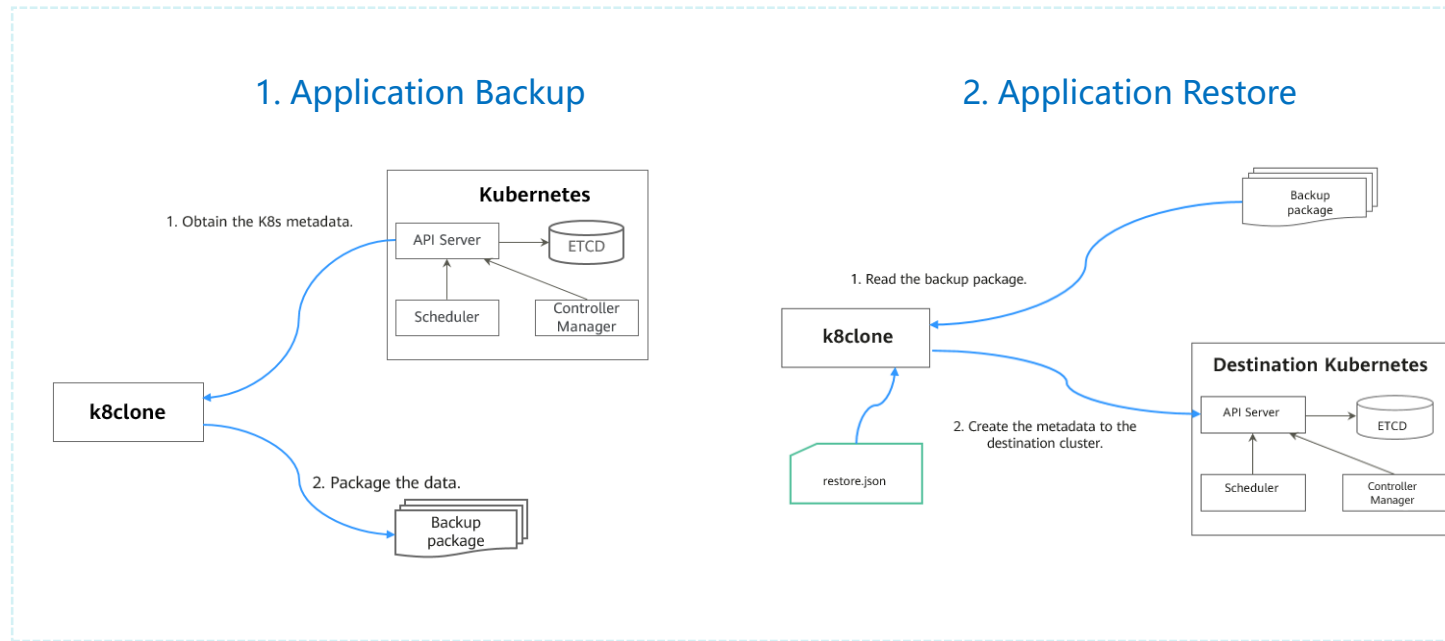


Docker Image Migration Guide

Available

Positioning: k8clone is a simple Kubernetes metadata cloning tool. It can save Kubernetes metadata (objects) as a local package and restore the metadata to the destination cluster.

K8CLONE Migration Workflow



Application Scenarios

- AWS EKS
- Azure AKS
- GCP GKS
- Huawei Cloud CCE

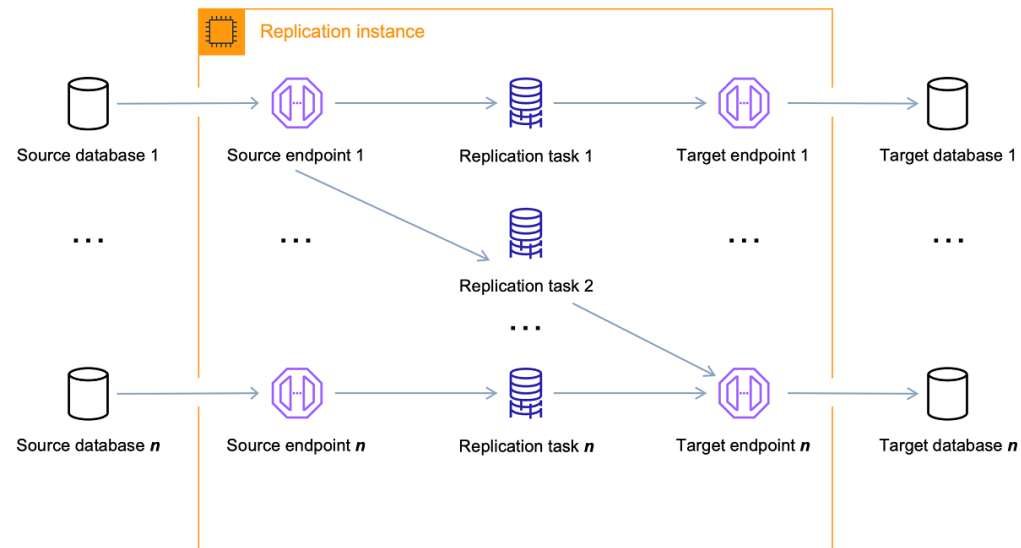
Major Features

- application migration

[k8clone Document](#)

Positioning: DMS is a Database Migration Service developed by AWS, supports the database migration from AWS RDS to Huawei Cloud RDS (MySQL / PGSQL / SQLSERVER engine).

DMS Migration Workflow



Application Scenarios

- AWS RDS to Other Clouds

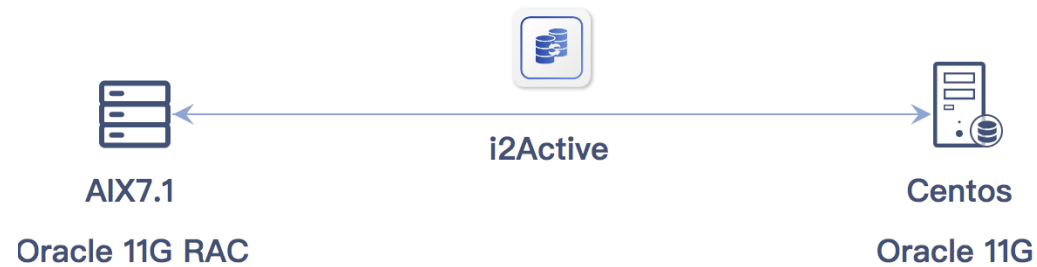
Major Features

- Database migration

[AWS DMS Document](#)

Positioning: i2Active is a database transaction-level real-time synchronization software. It supports Oracle Database online migration.

i2Active Oracle Migration Workflow



Application Scenarios

- Oracle on other Cloud to Huawei Cloud
- Oracle on AIX to Oracle on Huawei Cloud
- Single / Active-Standby / Oracle RAC



Major Features

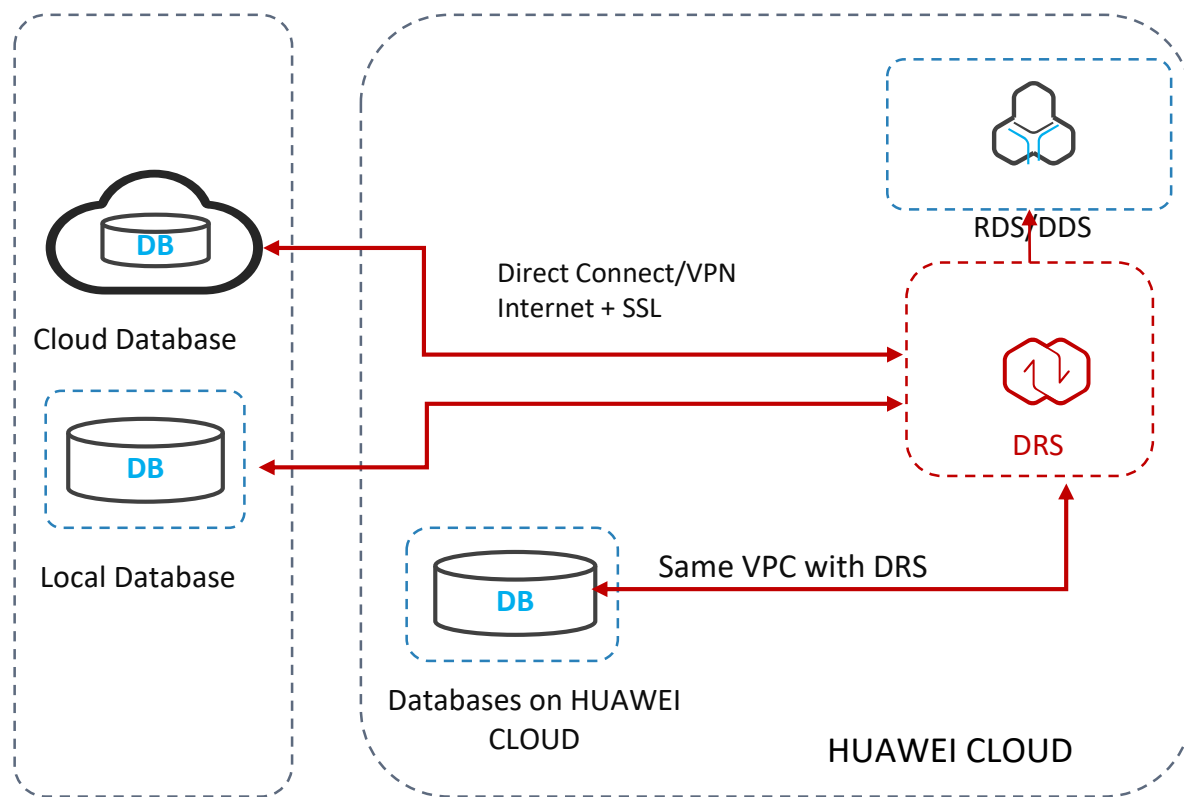
- Oracle Database Migration (Online)

Koogallery Product Link

[i2Active-HWY](#)

Positioning: Data Replication Service (DRS) is a stable, efficient, and easy-to-use cloud service for real-time database online migration and synchronization.

DRS Migration Workflow



Application Scenarios

- MySQL / PGSQL / SQLSERVER to RDS
- MongoDB to DDS
- AWS RDS / Azure SQL / GCP Cloud SQL

Major Features

- Database Migration

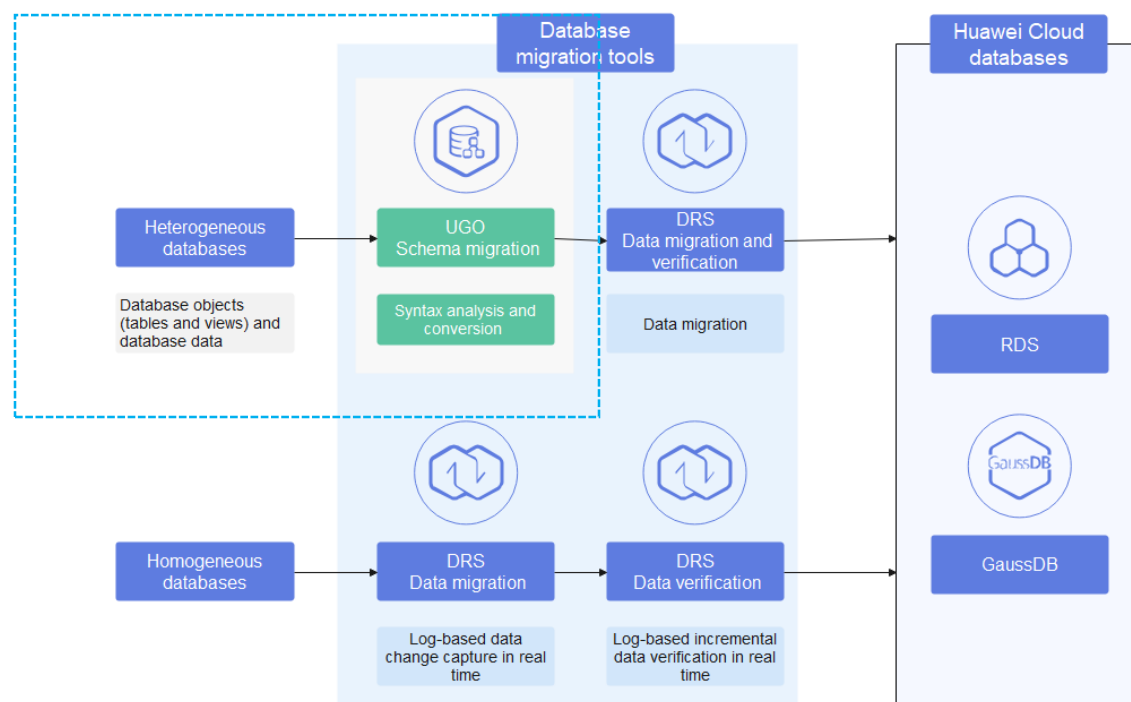
Product Link

- [DRS Document](#)

UGO for heterogeneous database schema migration

Positioning: Database and Application Migration UGO, referred to as UGO, is a professional cloud service focused on heterogeneous database schema migration.

UGO Migration Workflow



Application Scenarios

- On-premises Oracle Database
- AWS Oracle Database

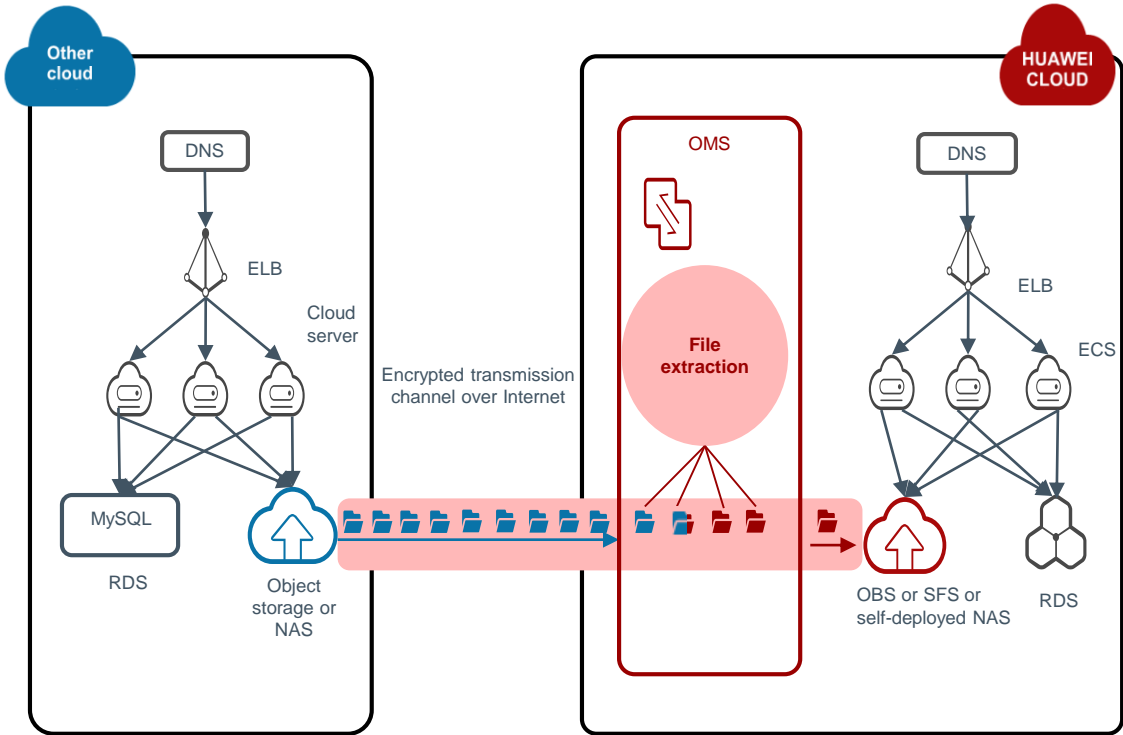
Major Features

- Oracle to PGSQL Schema Migration
- Oracle to GaussDB Schema Migration

Deployment Mode	UGO (Deployment Version)	UGO (Cloud Service Version)
Application Scenario	Database can not be accessed from Internet.	Database can be accessed from Internet.
Limitation	Should prepare installation server and apply License	N/A
User Guide	https://support.huawei.com/enterprise/en/cloud-computing/ugo-pid-251711929	https://support.huaweicloud.com/intl/en-us/productdesc-ugo/ugo_01_0002.html
Software Package	https://support.huawei.com/enterprise/zh/cloud-computing/ugo-pid-251711929/software	Huawei Cloud

Positioning: Object Storage Migration Service (OMS) migrates object storage data and file storage data from AWS, Azure, or GCP to HUAWEI CLOUD.

OMS Migration Workflow



Scenario 1: OBS File Migration

1. Migrating AWS S3 to OBS on HUAWEI CLOUD
2. Migrating AWS S3 to HUAWEI CLOUD SFS Turbo

Scenario 2: NAS File Storage Migration

1. Migrating AWS EFS to HUAWEI CLOUD OBS
2. Migrating AWS EFS to HUAWEI CLOUD SFS Turbo
3. Migrating 3rd NAS to Self-Deployed NAS

Supported storage types

Deployment Mode	RDA + OMS plug-in (offline deployment version)	OMS (cloud service edition)
Object Storage Support	AWS S3 / Azure Blob / GCP Cloud Storage	AWS S3 / Azure Blob
File storage support	NFS V3/V4 and SMB (CIFS) protocol (AWS / Azure / GCP)	Not supported

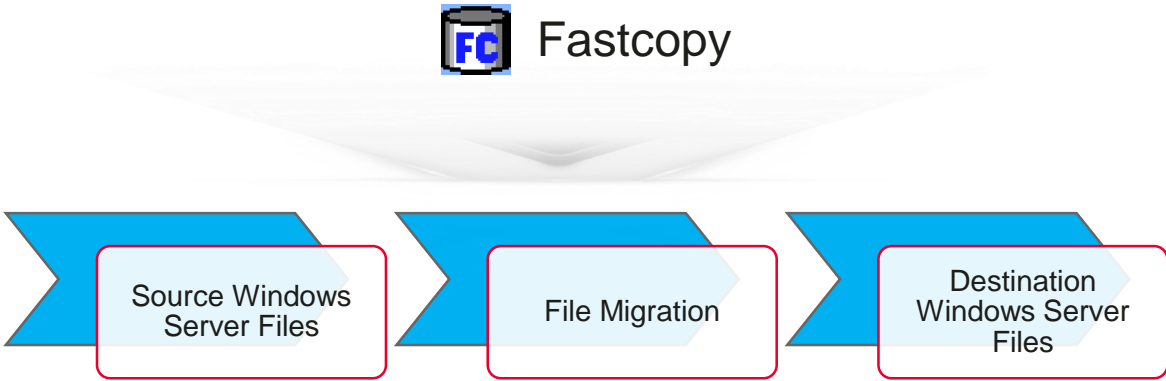
Typical Unsupported Scenarios

1. FTP file storage. Recommended solution: Use the SMS or WinSCP for host migration.



Fastcopy for Windows File copy

Positioning: FastCopy is a Fast Copy/Backup Software on Windows.



Application Scenarios

- SMB File Copy in Windows
- CIFS File Copy in Windows

Major Features

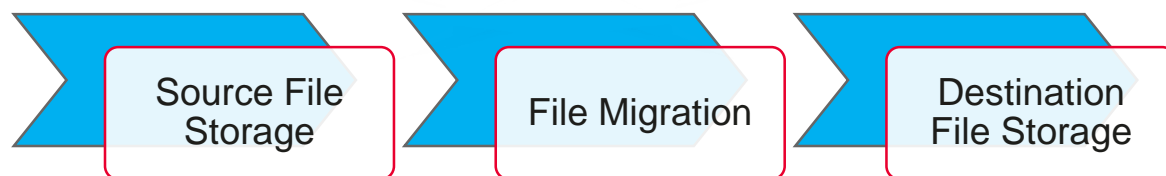
- Windows file copy

Version	License Mode	Compatiable OS List	Download Link
V5.x.x	Business Software	Windows 7/8/8.1/10/11 Windows Server 2012(&R2)/2016/2019/2022	https://fastcopy.jp/
V3.x.x-V4.x.x	Freeware	Windows Vista/7/8/8.1/10 Windows Server 2008(&R2)/2012(&R2)/2016/2019	https://github.com/huaweicloud-latam/migration-tool-map/tree/main/02-011-fastcopy



Rclone for Cloud Storage File Migration

Positioning: Rclone is a command-line program to manage files on cloud storage.



Does rclone preserve file permissions?

Currently when copying or syncing files with Rclone, it **DOES NOT PRESERVE** the permissions of those files.

Rclone is multi threaded with a user definable number of simultaneous transfers.

Application Scenarios

Windows / Linux / macOS / BSD

- Backup (and encrypt) files to cloud storage
- Restore (and decrypt) files from cloud storage
- Mirror cloud data to other cloud services or locally
- Migrate data to the cloud, or between cloud storage vendors

Major Features

- Transfers
 1. MD5, SHA1 hashes are checked at all times for file integrity
 2. Timestamps are preserved on files
 3. Operations can be restarted at any time
 4. Can be to and from network, e.g. two different cloud providers
 5. Can use multi-threaded downloads to local disk
- Copy new or changed files to cloud storage
- Sync (one way) to make a directory identical
- Move files to cloud storage deleting the local after verification

Product Link

RCLONE

Available



Positioning: RSYNC is a fast, versatile, remote (and local) file-copying tool. It can copy locally, to/from another host over any remote shell, or to/from a remote rsync daemon.



One Command:

```
# rsync -avHPX --sparse --one-file-system --numeric-ids --stats /data/  
root@<DESTINATION_IP>:/data
```

Application Scenarios

Synchronize Files / Folders from one Linux Server to another Linux Server

Major Features

1. Rsync supports incremental synchronization.
2. Rsync preserves file attributes and permissions (owners, groups, and permissions)

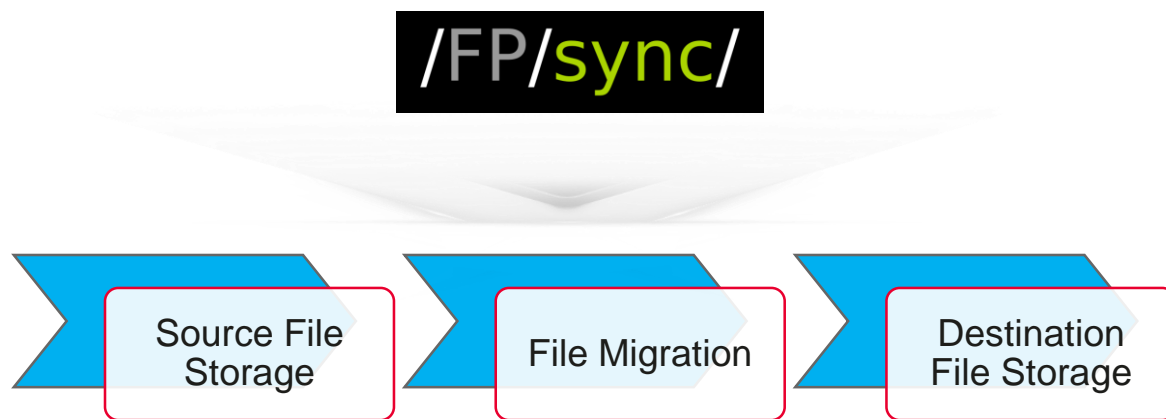
Limitation

- Rsync is single threaded, doesn't support multiple threads.
- The RSYNC synchronization efficiency is lower than FPsyc for multi-level directories with a large number of small files.

Product Link

[RSYNC Website](#)

Positioning: FPSYNC is a shell script that wraps FPART and RSYNC, CPIO or TAR to launch several synchronization jobs in parallel



One Command:

```
# fpsync -n 4 -f 1000 -s $((100 * 1024)) /data/src/ root@XXX:/data/dest/
```

Application Scenarios

Synchronize Files / Folders from one Linux Server to another Linux Server

Major Features

1. FPSYNC supports incremental synchronization.
2. FPSYNC preserves file attributes and permissions (owners, groups, and permissions)
3. FPSYNC supports concurrent tasks.

Remarks

- FPSync supports multiple threads.
- The FPSync synchronization efficiency is higher than RSYNC for multi-level directories with a large number of small files.

Product Link

[FPSYNC Website](#)

Available

CodeArts PerfTest (CPTS) is a service that provides performance testing for cloud applications built based on protocols such as HTTP/HTTPS/TCP/UDP/HLS/RTMP/WEBSOCKET/HTTP-FLV. After tests are complete, PerfTest provides professional test reports to evaluate your service quality.

Performance test procedure



Performance Test Best Practices

SN	Topic	Guide Name	Remark
1	PerfTest + Jmeter	<u>Native Performance Pressure Test of JMeter Test Projects</u>	

Application Scenarios

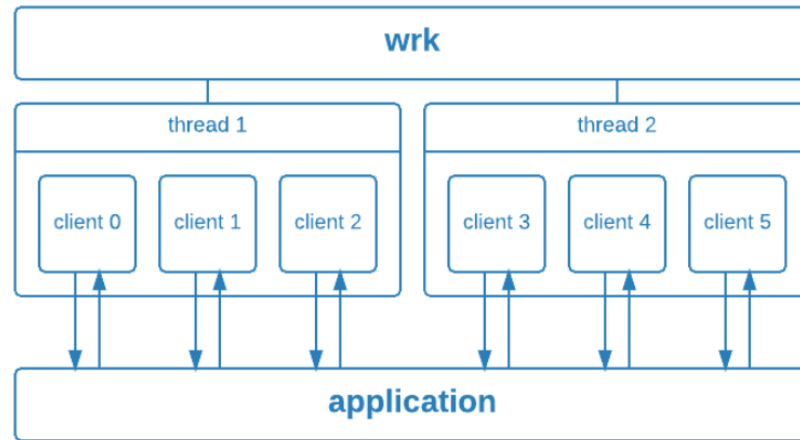
- E-Commerce Flash Sale Tests
- Game Peak Tests
- Complex Scenarios Support
- Application Performance Optimization

Major Features

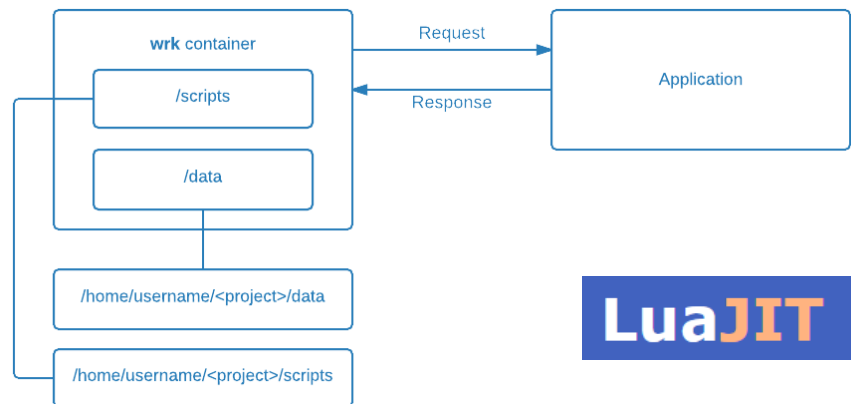
- Test Resource Management
- PerfTest Project Management
- PerfTest Case Management
- PerfTest Task Management
- PerfTest Report Management
- Transaction Management
- Jmeter Test Project Management

wrk is a modern HTTP benchmarking tool capable of generating significant load when run on a single multi-core CPU.

General Working Principles



WRK + LUA Script Working Principles



Application Scenarios

- HTTP Request (Such as Get / POST etc.)

Major Features

- Multithreaded design with scalable event notification systems
- Integration with LuaJIT script to generate HTTP requests / process responses and customize reports.

Limitation

- WRK only supports Single Node
- The official document does not specify the limit on the number of WRK connections.

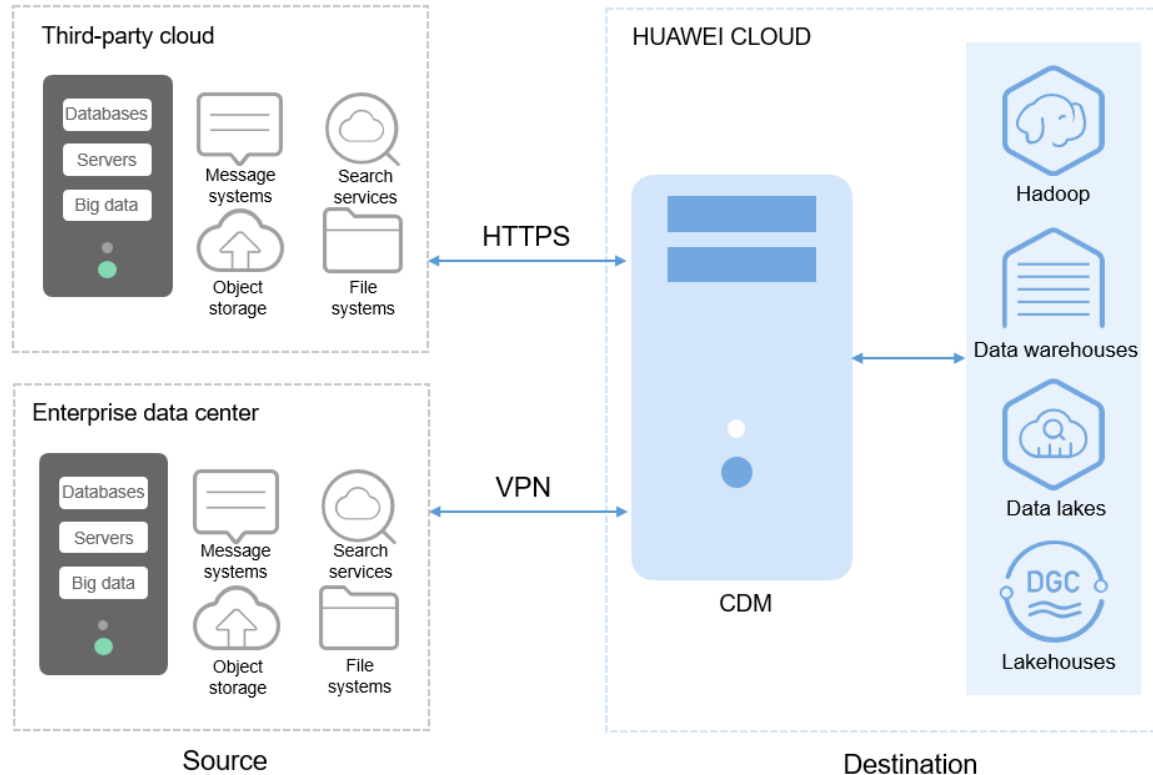
Performance Test Guide

<https://github.com/wg/wrk/tree/master>

```
# wrk -t4 -c1000 -d10s --latency -s wrk.lua https://xx.xx.xx.xx/xx
```

- Suggest to control the number of threads, first use single then use larger.
- The number of Connections should be divisible by the number of Threads
- Lua script is a mandatory skill for the WRK performance test.

Cloud Data Migration (CDM) is an efficient and easy-to-use batch data integration service



Application Scenarios

- Migrating Big Data to the Cloud
- Batch Importing Data to a Data Lake

Major Features

- Table/file/entire DB migration
- Incremental data migration
- Migration in transaction mode
- Field conversion
- File encryption
- MD5 verification
- Dirty data archiving

Limitation

- Does not support real-time incremental migration, suggest use DRS to migrate DB to RDS

Performance Test Guide

https://support.huaweicloud.com/intl/en-us/bestpractice-cdm/cdm_01_0334.html

Pentaho Data Integration (Previous Name: Kettle) - a set of tools and applications which allows data manipulations across multiple sources including Hadoop, Hive, HBase, Cassandra, MongoDB, and others.

Application Scenarios

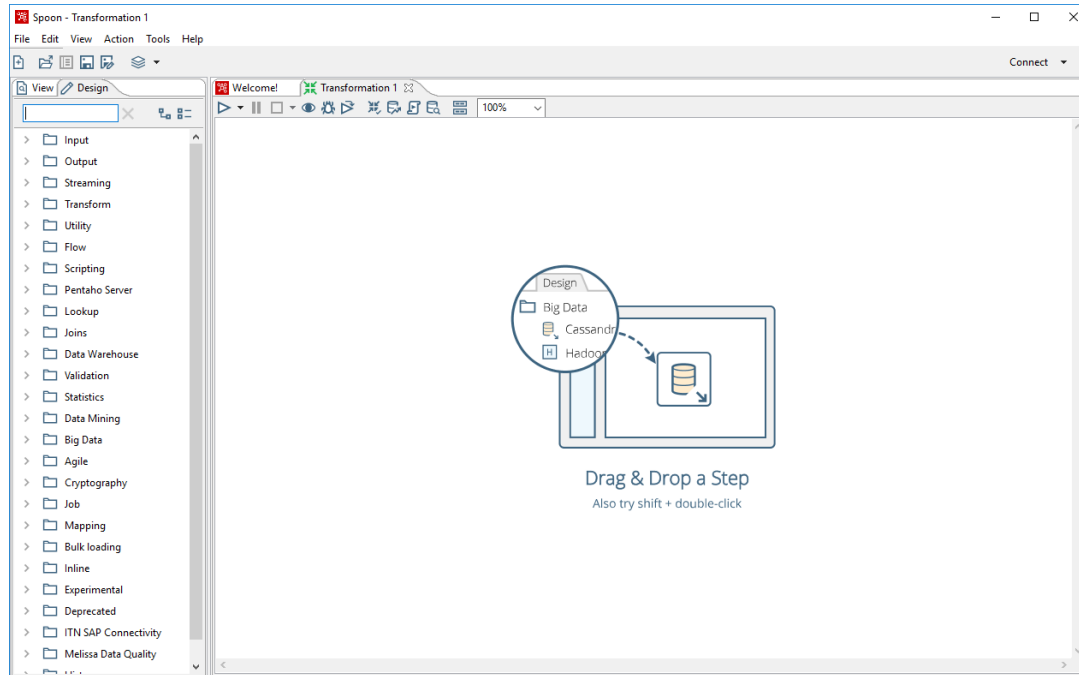
- AWS RedShift to Huawei Cloud DWS

Major Features

- Data extraction from source databases
- Transport of the data
- Data transformation
- Loading of data into a data warehouse

Resources

- Open Source Project
<https://github.com/pentaho/pentaho-kettle>
- Pentaho Community Edition can now be downloaded from:
[Pentaho Community Edition Download | Hitachi Vantara](https://www.hitachivantara.com/en-us/products/dataops-software/data-integrationanalytics/download-pentaho.html)
- Pentaho Enterprise Edition, trialware can be obtained from:
<https://www.hitachivantara.com/en-us/products/dataops-software/data-integrationanalytics/download-pentaho.html>



How to obtain the support from LATAM Cloud Regional Team?

Huawei Internal Support Channel

Please Huawei staff use WeLink to scan and join the group

LATAM Migration Tool Support Group



1. After you join the group, the Latin America Cloud Regional Work Team will provide support.
2. Tool contact person:
 - lichang /
 - liushaowei /
 - Nestor Joel /
3. If your partner has requirements on migration tools, you can contact the Latin America cloud team for tool training and support.

External Support Channel

If you (Huawei Cloud Customers or Partners) have any questions or suggestions, please feel free to contact us:

1. Send email to public mailbox:

 latamhwcloud@huawei.com

2. Create Issue on Github:

<https://github.com/huaweicloud-latam/migration-tool-map/issues>

Thank you.