

# Ranger Demo on CDP DataCenter

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**Between January and September 2019 there were over 7.9 billion data records exposed — a 33% increase from the same time in 2018! : by [2020-data-breaches](#)**

Let's build secured data pipeline together

# Agenda

- CDP (Cloudera Data Platform) Overview
- CDP Data Center with Best of Security And Governance
- CDP Data Center Shared Data Xperience
- Bank Demo with Ranger
- Setting up EMR with Ranger
- Key Takeaways

# CLOUDERA DATA PLATFORM Overview

HYBRID &  
MULTI-CLOUD



DATA CENTER &  
PRIVATE CLOUD



HYBRID  
CLOUD



MULTI  
PUBLIC CLOUD

SECURITY &  
GOVERNANCE

CLOUDERA  
**SDX**

METADATA / SCHEMA / MIGRATION / SECURITY / GOVERNANCE

ANALYTICS  
EDGE TO AI



DATA  
HUB



DATA FLOW &  
STREAMING



DATA  
ENGINEERING



DATA  
WAREHOUSE



OPERATIONAL  
DATABASE



MACHINE  
LEARNING

OPEN  
DISTRIBUTION

CLOUDERA RUNTIME



CONTROL  
PLANE



DATA  
CATALOG



REPLICATION  
MANAGER



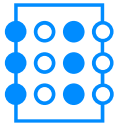
WORKLOAD  
MANAGER



MANAGEMENT  
CONSOLE

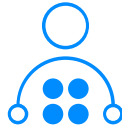
# Existing CHALLENGES With Current Model w/o SDX

## Security & Governance



Sharing data across workloads

- Requires multiple copies of data need to be created
- Each with its own set of data context



Burdensome admin effort

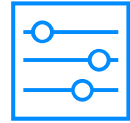
- Multiple clusters = multiple places to administer



One missing permission in one copy of the data can lead to significant financial and reputation risk

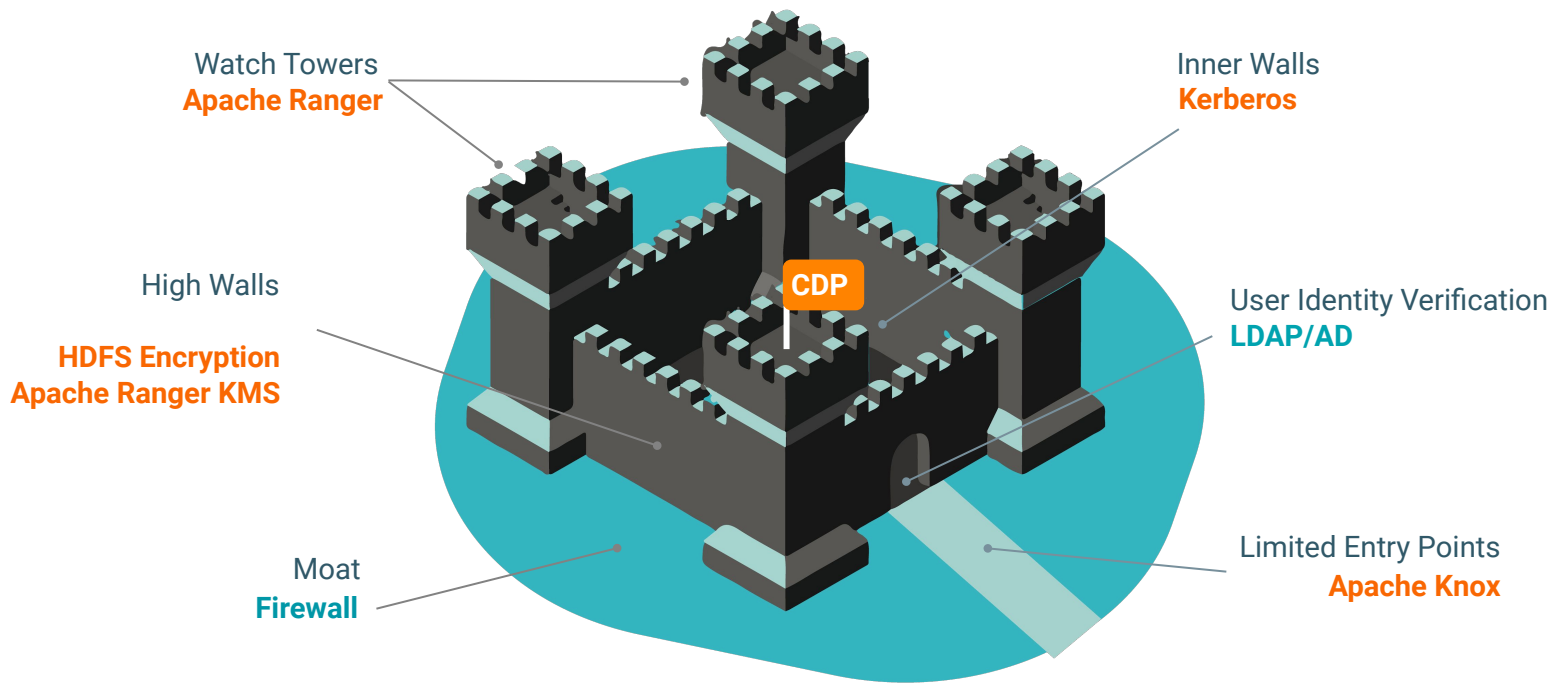


Difficult to share data safely for new analyses

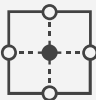


Heavy new regulation such as GDPR makes the challenges even greater

# CDP Security Landscape



# COMPREHENSIVE APPROACH TO SECURITY



## Identity & Perimeter

Validate users in enterprise directory

### Technical Concepts:

Authentication  
User/group mapping

Kerberos,  
Apache Knox



## Access

Defining what users and applications can do with data

### Technical Concepts:

Permissions  
Authorization

Apache Ranger



## Visibility

Reporting on where data came from and how it's being used

### Technical Concepts:

Auditing  
Lineage

Apache Atlas



## Data Protection

Shielding data in the cluster from unauthorized visibility

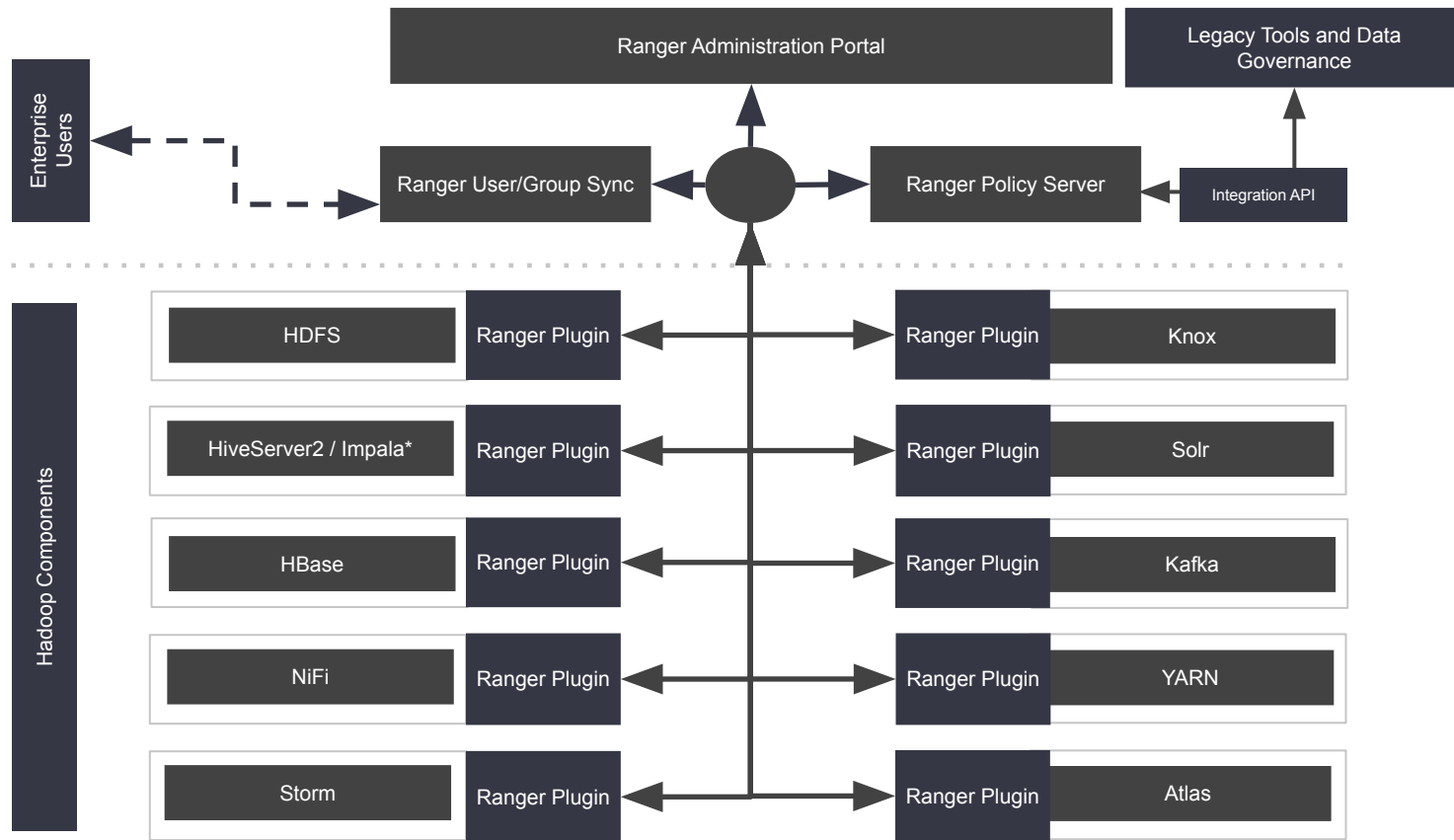
### Technical Concepts:

Encryption, Key Management

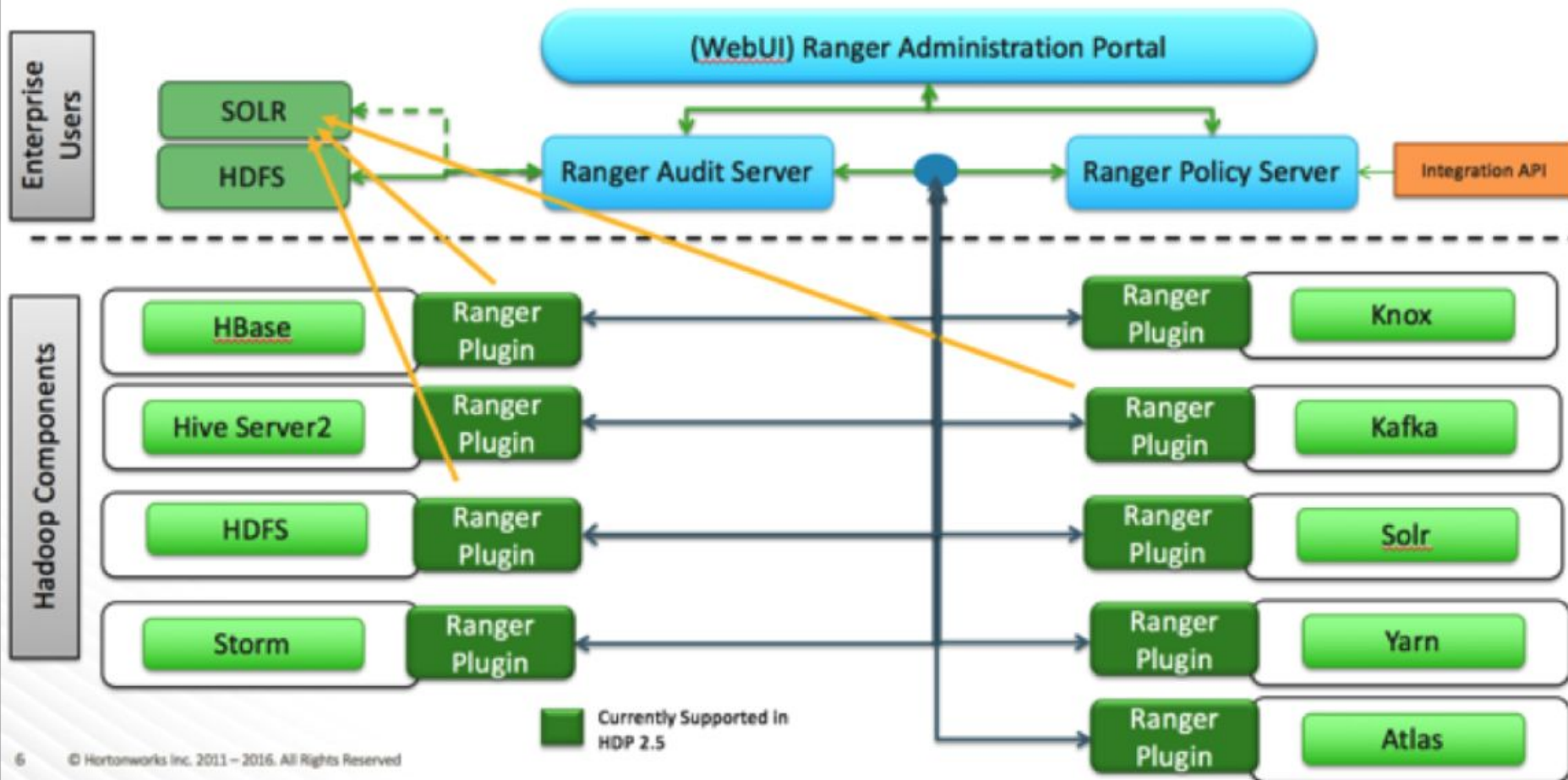
SSL/TLS, HDFS TDE, Ranger  
(KMS, Masking, Filtering)

80% of large customers leverage our capabilities across all 4 pillars, to address use cases that include sensitive and regulated data.

# RANGER ARCHITECTURE



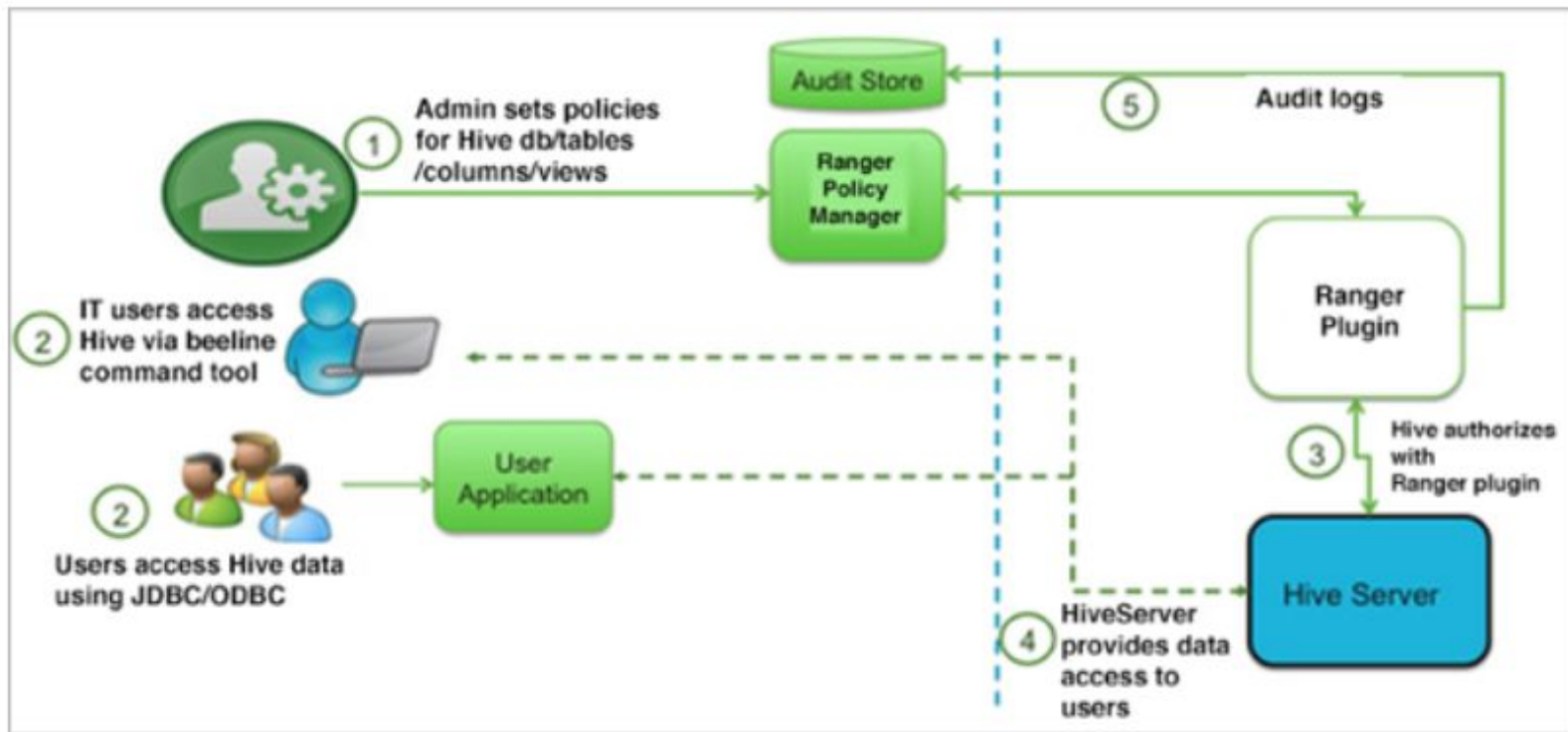
# Authorization and Auditing w/ Ranger



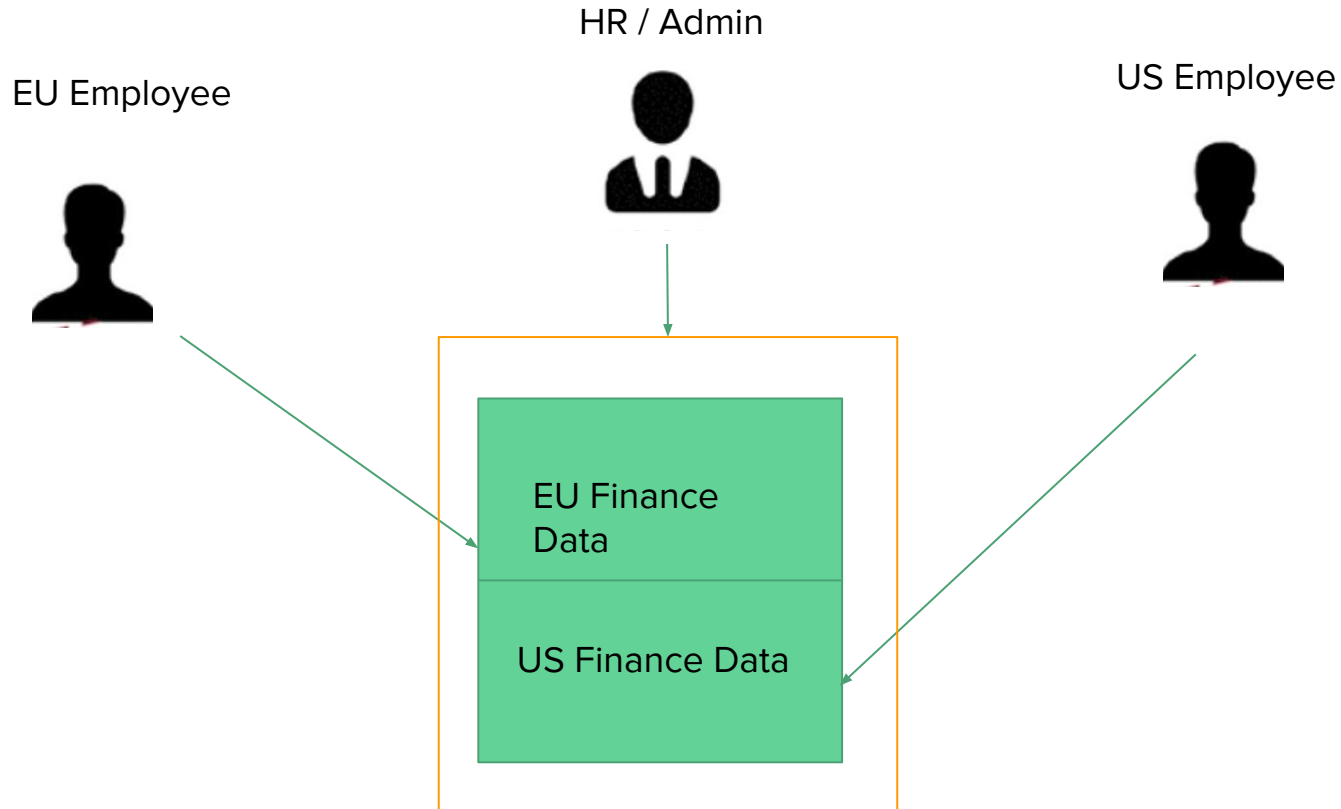


# Ranger Authorization for Hive

- 1 Column level masking
- 2 Row level filtering
- 3 Policy Audits



# Bank Demo Scenario



# Ranger Set up

User	Group	Access Privileges
joe_analyst	us_employee	US Data Only, non-sensitive data only, rest masked or forbidden depending on sensitivity
ivanna_eu_hr	eu_employee	EU Data Only (only customers who gave consent), All sensitive data
etl_user	eu_employee	EU Data (all customers), All sensitive data, Update consent/Delete

Data Column Type	Masking	Sample Output
Password	Hash	237672b21819462ff39fcea7d990c3e5
National ID	Last 4 Only	xx-xx-9324
Credit card	First 4 Only	4532xxxxxxxxxxxx
Street Address	Static	nnn Xxxxxx Xxxxx
MRN**	NULL	null
Birthdate	Custom	Hide birthday by showing it as 01/01/yyyy
Age	Custom	(Add a random number below 20 to actual age)

# DYNAMIC ROW FILTERING & COLUMN MASKING

User : Joe  
Location : US  
Group: Analyst

Users from US Analyst group see data for US persons with CC and National ID (SSN) as masked values and MRN is nullified

EU HR Policy Admins can see unmasked but are restricted by row filtering policies to see data for EU persons only

User 2: Ivanna  
Location : EU  
Group: HR

Country	National ID	CC No	MRN	Name
US	xxxxx3233	4539 xxxxx xxxx	null	John Doe
US	xxxxx7465	5391 xxxxx xxxx	null	Jane Doe

Country	National ID	Name	MRN
Germany	T22000129	Ernie Schwarz	876452830A



## Ranger Policy Enforcement

Query Rewritten based on Dynamic Ranger Policies: Filter rows by region & apply relevant column masking

## Original Query:

```
SELECT country,
nationalid, ccnumber, mrn,
name FROM
ww_customers
```

## Original Query:

```
SELECT country,
nationalid, name, mrn
FROM ww_customers
```

Country	National ID	CC No	DOB	MRN	Name	Policy ID
US	232323233	4539067047629850	9/12/1969	8233054331	John Doe	nj23j424
US	333287465	5391304868205600	8/13/1979	3736885376	Jane Doe	cadsd984
Germany	T22000129	4532786256545550	3/5/1963	876452830A	Ernie Schwarz	KK-2345909

# Access for US/EU customer in Notebook

## Accessing US Customers fails with an Access Control violation

ERROR

```
%jdbc(hive)
select * from hortoniabank.us_customers limit 10
```

```
org.apache.hive.service.cli.HiveSQLException: Error while compiling statement: FAILED: HiveAccessControlException Permission denied: user [ivanna_eu_hr] does not have [SELECT] privilege on [hortoniabank/us_customers/*]
    at org.apache.hive.jdbc.Utills.verifySuccess(Utills.java:277)
    at org.apache.hive.jdbc.Utills.verifySuccessWithInfo(Utills.java:263)
    at org.apache.hive.jdbc.HiveStatement.runAsyncOnServer(HiveStatement.java:303)
    at org.apache.hive.jdbc.HiveStatement.execute(HiveStatement.java:244)
    at org.apache.commons.dbcp2.DelegatingStatement.execute(DelegatingStatement.java:291)
    at org.apache.commons.dbcp2.DelegatingStatement.execute(DelegatingStatement.java:291)
    at org.apache.zepplin.jdbc.JDBCInterpreter.executeSql(JDBCInterpreter.java:682)
    at org.apache.zepplin.jdbc.JDBCInterpreter.interpret(JDBCInterpreter.java:763)
    at org.apache.zepplin.interpreter.LazyOpenInterpreter.interpret(LazyOpenInterpreter.java:101)
    at org.apache.zepplin.interpreter.RemoteInterpreterServer$InterpreterJob.jobRun(RemoteInterpreterServer.java:502)
    at org.apache.zepplin.scheduler.Job.run(Job.java:175)
    at org.apache.zepplin.scheduler.ParallelScheduler$JobRunner.run(ParallelScheduler.java:162)
    at java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:511)
    at java.util.concurrent.FutureTask.run(FutureTask.java:266)
    at java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.access$201(ScheduledThreadPoolExecutor.java:180)
    at java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(ScheduledThreadPoolExecutor.java:293)
```

Took 0 sec. Last updated by ivanna\_eu\_hr at November 29 2017, 7:35:32 PM.

## Customers by country - can only see EU customer data

FINISHED

```
%jdbc(hive)
select * from
(select countryfull, count(*) num_customers from hortoniabank.wv_customers
group by countryfull) s
order by num_customers desc
limit 5
```



Took 7 sec. Last updated by ivanna\_eu\_hr at November 29 2017, 7:35:51 PM.

## Row Level Security - Customer data filtered to EU persons only based on location

FINISHED

```
%jdbc(hive)
select distinct(country) from hortoniabank.wv_customers
```



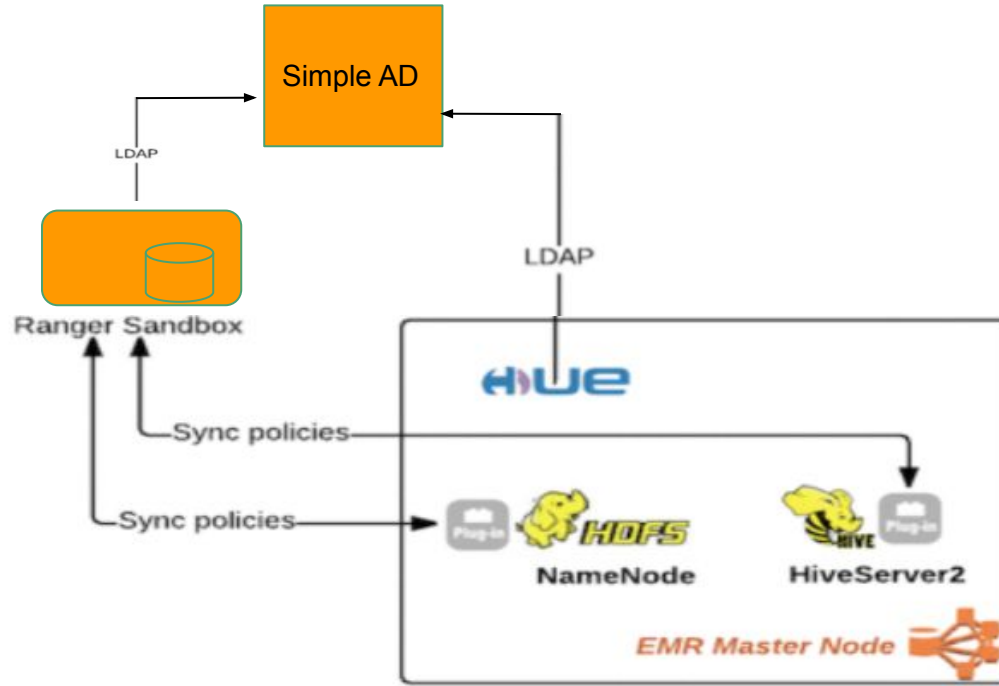
country

FR  
HU  
IT  
NL  
PL

# US employee Audit

Access Admin Login Sessions Plugins Plugin Status User Sync																
Q USER: joe_analyst																
Exclude Service Users : Entries : 1 to 25 of 26 Last Updated Time : 01/08/2020 01:57:19 PM																
Policy ID	Policy Version	Event Time ~	Application	User	Service Name / Type	Resource Name / Type	Access Type	Result	Access Enforcer	Agent Host Name	Client IP	Cluster Name	Zone Name	Event Count	Tags	
100	1	01/07/2020 07:15:21 PM	hdfs	joe_analyst	cm_hdfs hdfs	/sensitive/private.csv path	EXECUTE	Denied	ranger-acl	cdp.cloudera.com	172.31.1.131	SingleNodeCluster		1	SENSITIVE	
100	1	01/07/2020 07:15:10 PM	kafka	joe_analyst	cm_kafka kafka	PRIVATE topic	describe	Denied	ranger-acl	cdp.cloudera.com	172.31.1.131	SingleNodeCluster		1	SENSITIVE	
40	1	01/07/2020 07:14:15 PM	hbaseRegional	joe_analyst	cm_hbase hbase	t_forex/cf2 column-family	scannerOpen	Allowed	ranger-acl	cdp.cloudera.com	172.31.1.131	SingleNodeCluster		2	-	
40	1	01/07/2020 07:14:15 PM	hbaseRegional	joe_analyst	cm_hbase hbase	t_forex/cf1 column-family	scannerOpen	Allowed	ranger-acl	cdp.cloudera.com	172.31.1.131	SingleNodeCluster		2	-	
95	1	01/07/2020 07:12:27 PM	hiveServer2	joe_analyst	cm_hive hive	cost_savings/claim_savin... @column	SELECT	Denied	ranger-acl	cdp.cloudera.com	172.31.1.131	SingleNodeCluster		1	DATA_QUALITY	

# EMR with Ranger





# EMR Ranger Demo

1

User	Group	Access Privileges
Analyst1	analyst	Select Privilege on table tblanalyst1
Analyst2	admin	Superuser ( ALL ) on table tblanalyst1 tblanalyst1

2

Permissions

Select Group	Select User	Permissions
Select Group	× analyst2	All 
Select Group	× analyst1	select 

3

You should see the following error:

Error while compiling statement: FAILED: HiveAccessControlException Permission denied: user [analyst1] does not have [SELECT] privilege on [default/tblanalyst2/ad\_id,clicked,day,hour,impression\_id,ip\_address,page,request\_begin\_time,user\_agent,user\_cookie]

4

```
1 select * from default.tblanalyst2
```

Query History

Saved Queries

Query Builder

Results

	tblanalyst2.day	tblanalyst2.hour	tblanalyst2.request_begin_time
1	2009-04-12	13	2009-04-12 13:59:53
2	2009-04-12	13	2009-04-12 13:43:19



## Ranger Audits

User	Service	Resource Name	Access Type	Result	Access Enforcer
	Name / Type				
analyst1	hadoopdev hdfs	/user/hive/warehouse/tblanalyst...	READ	Allowed	hadoop-acl
analyst1	hivedev hive	default/tblanalyst2/code,descrip...	SELECT	Allowed	ranger-acl

# Key Takeaways

CDP brings best of both worlds ( HWX and CLDR combined)

Unified Security and Governance using SDX on CDP

Ease of Deployment

Ranger for Data Protection and Audits

Designed to be adopted on Public cloud or Private cloud with ease.

EMR can be set with Ranger Policies to obtain same security audits.

# EMR Key Benefits

- Cost Savings ( on demand set up)
- AWS Integration ( S3,Cloudwatch VPC)
- Deployment ( easy deployment)
- Scalability and Flexibility ( scale up or down , flexible to use fs HDFS,S3, EMRFS)
- Reliability ( auto terminate option)
- Security ( IAM Security, VPC, NACL settings)
- Monitoring ( Cloudwatch )
- Management Interfaces

# Hive on Amazon EMR

Amazon EMR supports Hive Authorization for HDFS but not for EMRFS and Amazon S3.

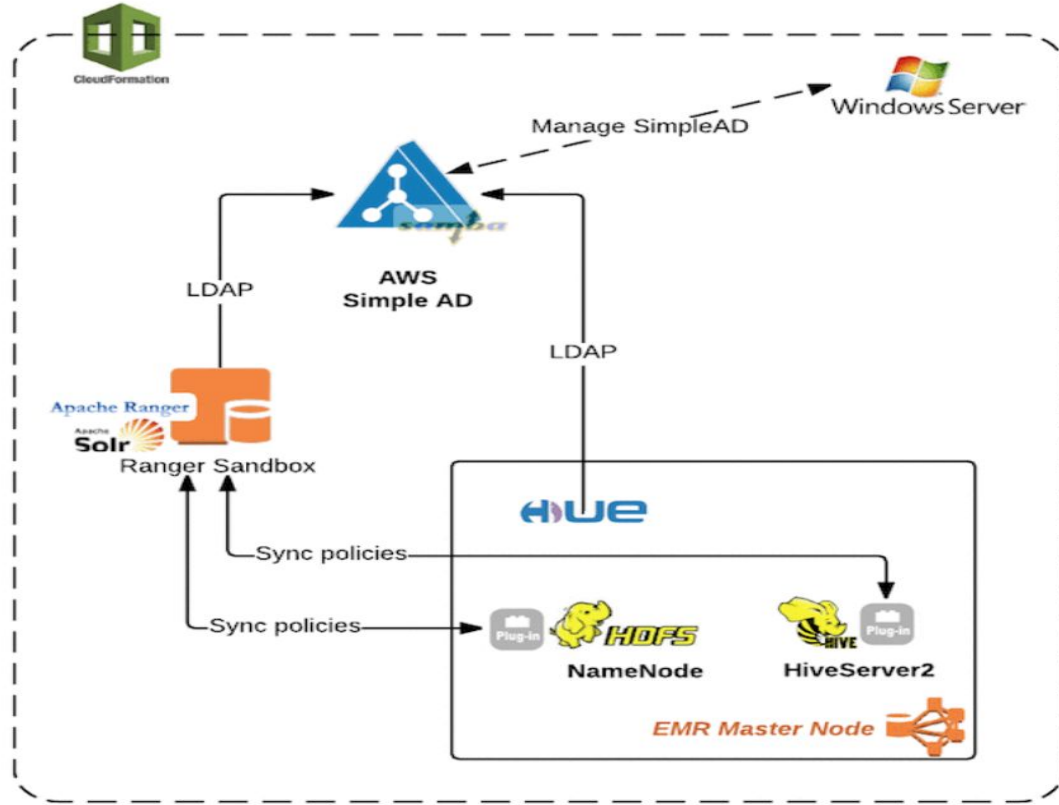
ACID (Atomicity, Consistency, Isolation, Durability) transactions are not supported with Hive data stored in Amazon S3.

Queries that generate a large number of dynamic partitions may fail, and queries that select from tables with many partitions may take longer than expected to execute. For example, a select from 100,000 partitions may take 10 minutes or more.

Amazon EMR 6.0.0 supports the Live Long and Process (LLAP) functionality for Hive. LLAP uses persistent daemons with intelligent in-memory caching to improve query performance compared to the previous default Tez container execution mode.

If you need the metastore to persist, you must create an *external metastore* that exists outside the cluster. ( with RDS or AWS Glue Data Catalog)

# Setting up Ranger on EMR with Windows AD



## Column Masking

- Under the same “hivedev Policies” choose the tab “Masking”
- Choose “Add New Policy”
- Create new policy with the following values:
  - Policy Name: analyst1mask
  - Hive Database: default
  - Hive Table: tblanalyst1
  - Hive Column: request\_begin\_time

Policy Type **Masking**

Policy ID **10**

Policy Name \* analyst1mask

**enabled**

Hive Database \* **x default**

Hive Table \* **x tblanalyst1**

Hive Column \* **x request\_begin\_time**

Audit Logging **YES**

# Resources

<https://aws.amazon.com/blogs/big-data/using-ldap-via-aws-directory-service-to-access-and-administer-your-hadoop-environment/>

<https://aws.amazon.com/blogs/big-data/implementing-authorization-and-auditing-using-apache-ranger-on-amazon-emr/>

[https://docs.cloudera.com/HDPDocuments/HDP3/HDP-3.1.5/securing-hive/content/hive\\_hive\\_authorization\\_models.html](https://docs.cloudera.com/HDPDocuments/HDP3/HDP-3.1.5/securing-hive/content/hive_hive_authorization_models.html)

[https://docs.cloudera.com/HDPDocuments/HDP3/HDP-3.1.5/configuring-ranger-auth-with-unix-ldap-ad/content/ad\\_authentication\\_settings.html](https://docs.cloudera.com/HDPDocuments/HDP3/HDP-3.1.5/configuring-ranger-auth-with-unix-ldap-ad/content/ad_authentication_settings.html)

Back Slides with Use-cases screenshots



# Step 1 : Set up Active Directory

	Directory ID ▼	Directory name ▼	Type ▼	Size ▼	Status ▼
	d-906778ac93	corp.emr.local	Simple AD	Small	Active
<div><div>DomainPassword</div><div>DomainPassword</div><div>Sunita_ad</div></div> <div><div>DomainShortName</div><div>DomainShortName</div><div>EmrSimpleAD</div></div> <div><div>Subnet1SimpleAD</div><div>Subnet ID1 for creating the SimpleAD</div><div>subnet-9c00ccbd (172.31.80.0/20) ▼</div></div> <div><div>Subnet2SimpleAD</div><div>Subnet ID2 for creating the SimpleAD</div><div>subnet-73dd1f2c (172.31.32.0/20) ▼</div></div> <div><div>VPC</div><div>VPC ID for creating the EMR cluster</div><div>vpc-bfb3a1c5 (172.31.0.0/16) ▼</div></div>					

# Setting up the Ranger server

Now that SimpleAD has been created and the users loaded, you are ready to set up the security policy server (Ranger). This runs on a standard Amazon Linux instance and Ranger is installed and configured on startup.

Using the [create-ranger-server template](#), set up this instance. To launch the stack directly through the console, use

[Launch Stack](#) . It takes the following parameters:

InstanceType	<Instance type of the Ranger server >
KeyName	< EC2 key pair name >
myDirectoryBaseDN	dc=corp,dc=emr,dc=local
myDirectoryBindUser	binduser@corp.emr.local
myDirectoryBindPassword	<user input>
myDirectoryIPAddress	<One of the IP address of SimpleAD server>
Subnet	<Subnet to place Ranger server>
rangerVersion	<Version of Ranger> – Choose between 0.6, 0.7 and 1.0 and 2.0
VPC	<VPC>

CloudFormation output:

IPAddress	<IP address of the Ranger server>
-----------	-----------------------------------

The screenshot shows the Ranger web interface at the URL 184.73.64.34:6080/index.html#/reports/audit/admin. The 'Audit' tab is selected, displaying a table of operations. A search bar is at the top with the text 'Search for your access logs...'. The table has columns for Operation, Audit Type, User, Date (Pacific Daylight Time), Actions, and Session ID. The data shows various operations like 'Service updated hive\_dev', 'Policy created EXPIRES\_ON', 'Service created hive\_tag', 'Policy created kms-audit-path', 'Policy created all - path', and 'Service created hive\_dev' performed by 'Ranger Service' and 'Ranger User' on 05/25/2020.

Operation	Audit Type	User	Date ( Pacific Daylight Time )	Actions	Session ID
Service updated hive_dev	Ranger Service		05/25/2020 06:20:30 PM	<a href="#">Update</a>	
Policy created EXPIRES_ON	Ranger Policy		05/25/2020 06:20:30 PM	<a href="#">Create</a>	
Service created hive_tag	Ranger Service		05/25/2020 06:20:30 PM	<a href="#">Create</a>	
Policy created kms-audit-path	Ranger Policy	admin	05/25/2020 06:20:30 PM	<a href="#">Create</a>	2
Policy created all - path	Ranger Policy	admin	05/25/2020 06:20:30 PM	<a href="#">Create</a>	2
Service created hive_dev	Ranger Service	admin	05/25/2020 06:20:29 PM	<a href="#">Create</a>	2
	Ranger User	admin	05/25/2020 06:20:29 PM	<a href="#">Create</a>	2

Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
-0b359eb4fd531730d	t2.micro	us-east-1c	running	Initializing	None

# EMR Instance

Summary

Application history

Monitoring

Hardware

Configurations

Events

Steps

Bootstrap actions

Connections:

[Hue](#), [Spark History Server](#), [HBase](#), [Resource Manager](#) ... (View All)

Master public DNS:

ec2-3-83-137-96.compute-1.amazonaws.com [SSH](#)

Tags:

MD = Fremont01, Name = EMR Sample Cluster [View All / Edit](#)

Summary

**ID:** j-O0VESMLDN1T3

**Creation date:** 2020-05-25 17:46 (UTC-7)

**Elapsed time:** 1 hour, 26 minutes

**After last step completes:** Cluster waits

**Termination protection:** Off [Change](#)

Configuration details

**Release label:** emr-5.17.0




**Hadoop distribution:** Amazon

**Applications:** Hive 2.3.3, Spark 2.3.1, Hue 4.2.0, Hbase 1.4.6, Presto 0.206

**Log URI:** s3://sunita2020/ 

**EMRFS consistent view:** Disabled

# EMR set up on EC2


<input type="checkbox"/>	Name	aws:elasticm:	Instance ID	Instance Type	Availability Zone	Instance State
<input type="checkbox"/>	EMR Sample Cluster	MASTER	i-02f5de2ead8f1719d	m4.2xlarge	us-east-1c	 running
<input type="checkbox"/>	EMR Sample Cluster	CORE	i-047ae5981aa2ebd...	m5.2xlarge	us-east-1c	 running
<input type="checkbox"/>	RangerServer		i-04d43ab7f7acfd12c	m4.xlarge	us-east-1c	 running

```
[[root@ip-172-31-95-194 hadoop]# hadoop fs -ls /user
Found 11 items
drwxr-xr-x   - analyst1 analyst1      0 2020-05-26 00:59 /user/analyst1
drwxr-xr-x   - analyst2 analyst2      0 2020-05-26 00:59 /user/analyst2
drwxrwxrwx   - hadoop   hadoop        0 2020-05-26 00:59 /user/hadoop
```

# Login details Audit from Ranger

AccessAdminLogin SessionsPluginsPlugin StatusUser Sync

Q Search for your login sessions...

Entries : 1 to 1 of 1 | Last Updated Time : 05/23/2020 04:00:36 PM 

Session ID ▾	Login ID	Result	Login Type	IP	User Agent	Login Time ( Pacific Daylight Time )
1	admin	Success	Username/Password	71.198.164.229	Mozilla/5.0 (Macintosh; Intel Mac OS X 10...	05/23/2020 03:58:52 PM

User Name	Sync Source	Number Of New		Number Of Modified		Event Time ▾
		Users	Groups	Users	Groups	
rangerusersync	LDAP/AD	8	0	0	0	05/25/2020 06:04:56 PM

# Execute query with Analyst 1

```
SELECT * FROM default.tblanalyst1
```

This should return the results as expected. Now, run the following query:

```
SELECT * FROM default.tblanalyst2
```

You should see the following error:

```
Error while compiling statement: FAILED: HiveAccessControlException Permission denied: user [analyst1] does not have [SELECT]
privilege on [default/tblanalyst2/ad_id,clicked,day,hour,impression_id,ip_address,page,request_begin_time,user_agent,user_cookie]
```

## Users/ Group in Ranger

<input type="checkbox"/>	User Name	Email Address	Role	User Source	Groups	Visibility
<input type="checkbox"/>	admin		Admin	Internal	--	Visible
<input type="checkbox"/>	rangerusersync		Admin	Internal	--	Visible
<input type="checkbox"/>	rangertagsync		Admin	Internal	--	Visible
<input type="checkbox"/>	awsadmind-9067787ab1		User	External	enterprise admins	Visible
<input type="checkbox"/>	analyst1		User	External	hadoop_analyst	Visible
<input type="checkbox"/>	analyst2		User	External	hadoop_analyst	Visible
<input type="checkbox"/>	administrator		User	External	administrators domain admins group policy creator owners schema admins	Visible
<input type="checkbox"/>	admin1		User	External	hadoop_admin	Visible
<input type="checkbox"/>	binduser		User	External	--	Visible
<input type="checkbox"/>	krbtgt		User	External	denied rodcc password replication group	Visible
<input type="checkbox"/>	guest		User	External	guests	Visible
<input type="checkbox"/>	analyst		User	External	--	Visible

# Ranger policies for User: Analyst

Service Manager > hivedev Policies

## List of Policies : hivedev

Search for your policy...



Policy ID	Policy Name	Status	Audit Logging	Groups	Users
2	hivedev-1-20160728150355	Enabled	Enabled	--	polycmgr_hive
3	hivedev-2-20160728150355	Enabled	Enabled	--	polycmgr_hive
12	Analyst1Policy	Enabled	Enabled	--	analyst1
13	Analyst2Policy	Enabled	Enabled	--	analyst2 analyst1
14	Admin1Policy	Enabled	Enabled	--	admin1

Select the policy named "Analyst2Policy"



# Test Scenario to update the existing policy

Permissions

Select Group	Select User	Permissions
Select Group	× analyst2	All 
Select Group	× analyst1	select 

# Test Scenario : Retry query with Analyst1

```
1 select * from default.tblanalyst2
```

Query History



Saved Queries



Query Builder

Results



		<b>tblanalyst2.day</b>	<b>tblanalyst2.hour</b>	<b>tblanalyst2.request_begin_time</b>
	1	2009-04-12	13	2009-04-12 13:59:53
	2	2009-04-12	13	2009-04-12 13:43:19

# Admin Ranger Policies

Access

Admin

Login Sessions

Plugins

Plugin Status

User Sync

Search for your access logs...

Entries : 1 to 7 of 7 | Last Updated Time : 05/25/2020 06:54:07 PM

Operation	Audit Type	User	Date ( Pacific Daylight Time ) ▾	Actions	Session ID
Service updated <b>hive_dev</b>	Ranger Service		05/25/2020 06:20:30 PM	<a href="#">Update</a>	
Policy created <b>EXPIRES_ON</b>	Ranger Policy		05/25/2020 06:20:30 PM	<a href="#">Create</a>	
Service created <b>hive_tag</b>	Ranger Service		05/25/2020 06:20:30 PM	<a href="#">Create</a>	
Policy created <b>kms-audit-path</b>	Ranger Policy	admin	05/25/2020 06:20:30 PM	<a href="#">Create</a>	2
Policy created <b>all - path</b>	Ranger Policy	admin	05/25/2020 06:20:30 PM	<a href="#">Create</a>	2
Service created <b>hive_dev</b>	Ranger Service	admin	05/25/2020 06:20:29 PM	<a href="#">Create</a>	2
User created <b>analyst</b>	Ranger User	admin	05/25/2020 06:20:29 PM	<a href="#">Create</a>	2

# Ranger : Users and Permissions

Modules	Groups	Users	Action
Resource Based Policies		<div>admin rangerusersync keyadmin rangertagsync</div> <div>awsadmind-9067787ab1 analyst1 analyst2 administrator admin1</div> <div>binduser krbtgt guest analyst - Less..</div>	
Users/Groups		<div>admin rangerusersync rangertagsync keyadmin</div>	
Reports		<div>admin rangerusersync keyadmin rangertagsync</div> <div>awsadmind-9067787ab1 analyst1 analyst2 administrator admin1</div> <div>binduser krbtgt guest analyst - Less..</div>	
Audit		<div>admin rangerusersync rangertagsync keyadmin</div>	
Key Manager		<div>keyadmin</div>	
Tag Based Policies		<div>admin rangerusersync rangertagsync</div>	
Security Zone		<div>admin rangerusersync rangertagsync awsadmind-9067787ab1</div>	

# Scenario Test case :Hadoop user can't move files

```
[[root@ip-172-31-95-194 ~]$ exit;
exit
[[hadoop@ip-172-31-95-194 ~]$ hadoop fs -ls /user/analyst1
Found 1 items
-rw-r--r--    1 analyst1 analyst1      87065 2020-05-26 00:59 /user/analyst1/football_coach.tsv
[[hadoop@ip-172-31-95-194 ~]$ hadoop fs -ls /user/analyst2
Found 1 items
-rw-r--r--    1 analyst2 analyst2       4045 2020-05-26 00:59 /user/analyst2/football_coach_position.tsv
[[hadoop@ip-172-31-95-194 ~]$ hadoop fs -cp /user/analyst1/football_coach.tsv /user/analyst2/football_coach.tsv
cp: Permission denied: user=hadoop, access=WRITE, inode="/user/analyst2":analyst2:analyst2:drwxr-xr-x
[[hadoop@ip-172-31-95-194 ~]$ █
```