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Blog

*What are you looking for today?*

9.11

Protect your sensitive data using SAP HANA's new dynamic data masking

**former_member231160**

Explorer



2017 Apr 12 10:19 PM



19 Kudos

25,348

SAP Managed Tags: SAP HANA, platform edition, Security

SAP HANA provides a comprehensive security framework to help keep your data secure. In addition to the authentication/single sign-on, user/role and authorization management, audit logging, and encryption capabilities that we already have in place, with SAP HANA 2.0 SPS 01 we have now added native dynamic data masking. If you would like to find out more about the SAP HANA security framework in general please visit the [SAP HANA security homepage](#). For more information on what's new in security in SAP HANA 2.0 SPS 01 check out the [Enhanced Data Protection in SAP HANA 2.0 SPS01](#) blog or the [SAP HANA 2.0 SPS 01 What's New: Security - by the SAP HANA Academy](#) blog.

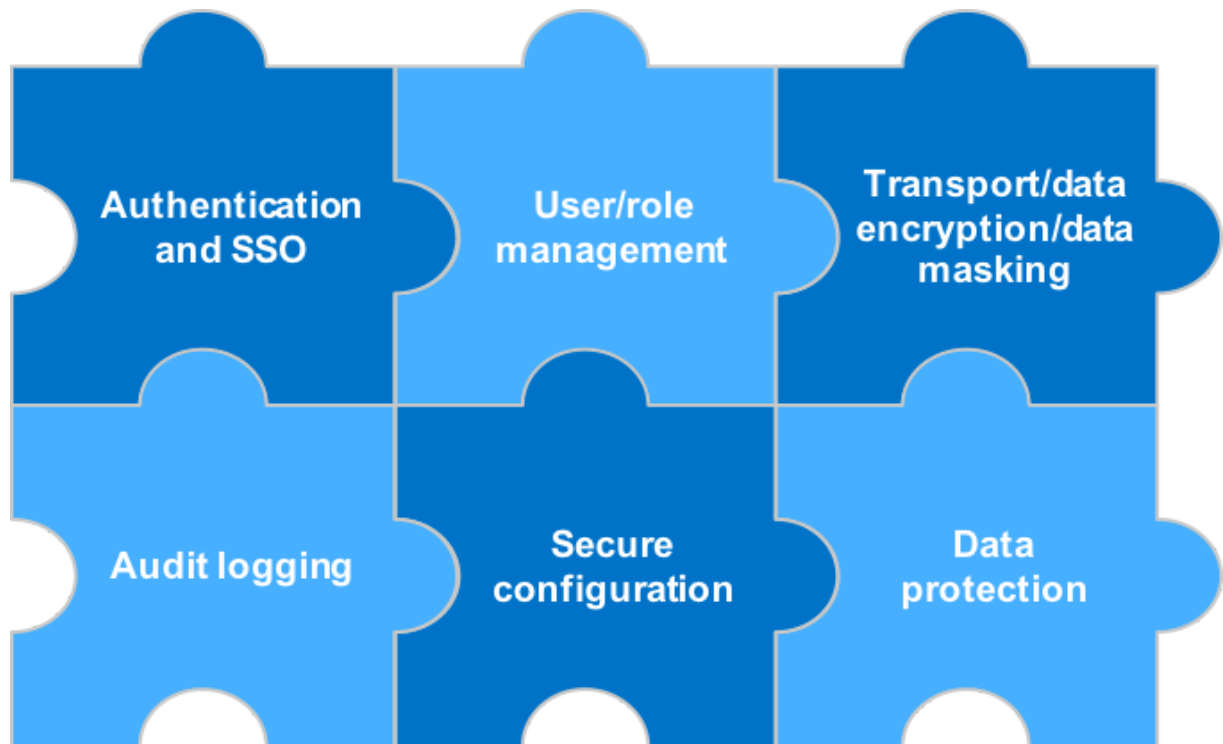


Image 1: SAP HANA security framework

Authorization is the primary means for access control. SAP HANA's privilege framework is based on standard SQL privileges that allow for fine-granular control, with extensions for specific use cases like dashboards or reporting. Roles allow for an effective separation of duties. For more information on SAP HANA roles and privileges visit the [authorization section of the SAP HANA security guide](#).

9.11 The new native data masking feature changes how data appears in views and does not modify the underlying data. Because the underlying data remains unchanged, the database can still perform calculations on the masked data. It provides an additional layer of access control that can be applied to views to protect sensitive or confidential data from power users with broad view access. For example, if you need to protect a column with employee social security numbers or credit card information from certain users who may have SELECT privileges on a view or schema, but should not be able to see sensitive data.

Image two below gives a high-level overview of how data masking works in SAP HANA. Imagine you have a view called "Employee Data" and you have two users who have access to this view which contains the fields: Name, FirstName, and SSN. Both users have SELECT privileges on the "Employee Data" view, this is a pre-requisite to accessing the data regardless of if it is masked or not. The field SSN is masked so that only the user with unmasked read access can see the plain text data. The user who does not have the unmask privilege will only see the masked values.

9.11

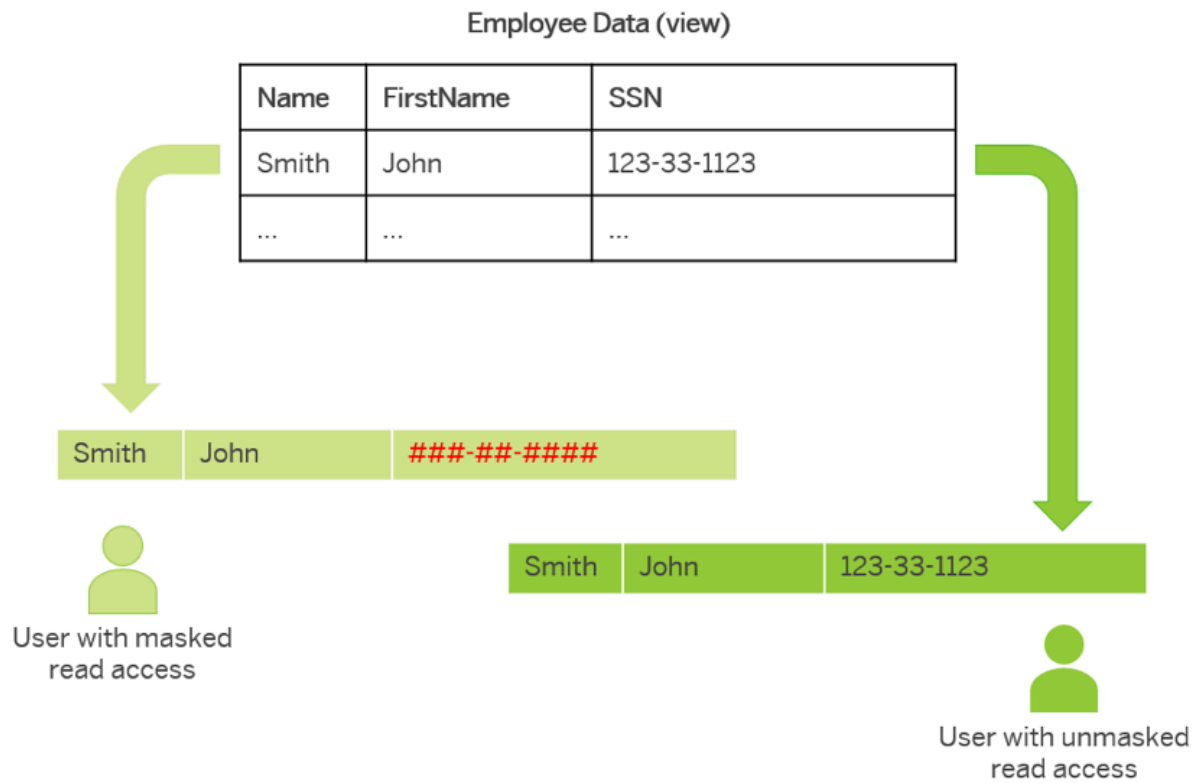


Image 2: Data masking example

Configuring masking – The basics

If you choose to leverage data masking in your SAP HANA system, configuration takes place directly in the view definition. What masked expression you use is up to you, you can choose a static value as we did with the above example, or you can leverage a built-in function or stored procedure of your choosing. It is key however that you do not change the data type or length of the original data.

```
CREATE VIEW <view_name> (<column_name_list>) AS <subquery> WITH MASK (<column_name> USING '<mask_expression>');
```

Once data is masked, only the owner of a particular schema or view can initially grant the **UNMASKED** privilege. If a view has dependencies on another view, the privileges of the owner of the dependent view are also taken into consideration – definer mode applies.

The [SAP HANA security guide](#) has extensive documentation on configuring the new [data masking functionality](#). There you will find great examples of how to configure:

- [Masking using a built-in procedure](#)

- Masking in a view with structured privilege check
- Masking in a view hierarchy with structured privilege check

In addition to being able to configure masking directly via SQL commands as described in the SAP HANA security guide, we also offer tooling support to configure masking via the SAP HANA WebIDE.

Setting up data masking in the SAP HANA WebIDE

To set up data masking in the SAP HANA WebIDE, first you must navigate to the semantics node columns pane of the SAP HANA calculation view where you would like to mask data. There you must select the column you would like to mask and then choose to launch the data masking editor by clicking on the data masking icon. In the screen shot below, you will see that we are masking the PARTNERID column.

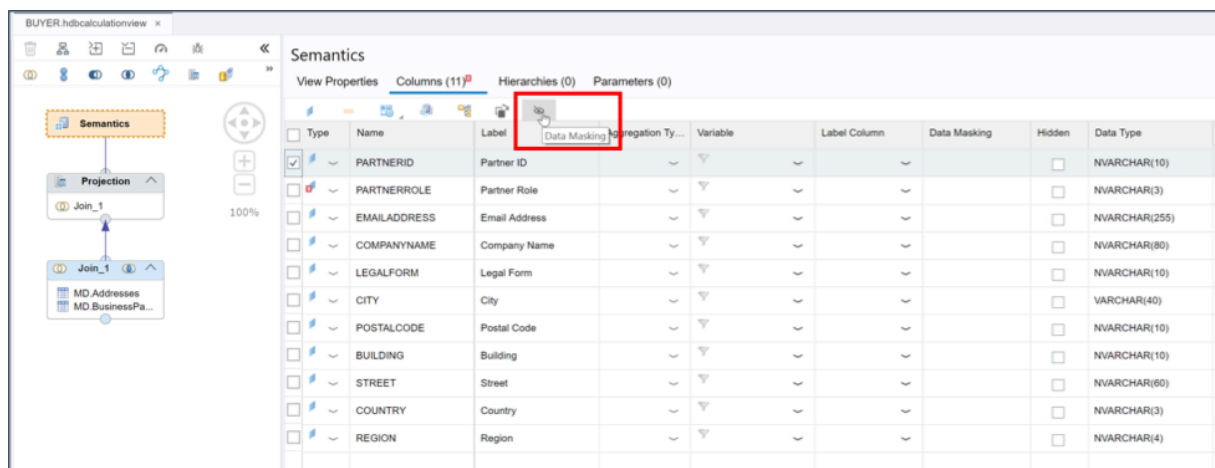


Image 3: Semantics node columns pane

Once you have selected the column that you would like to mask, you will be able to define the data masking expression for the column you selected. You have the option to define a simple static masking function as you can see in the screen shot below, or also to invoke built in functions. Once you have finished defining the masking expression validate the syntax and then click 'OK'.

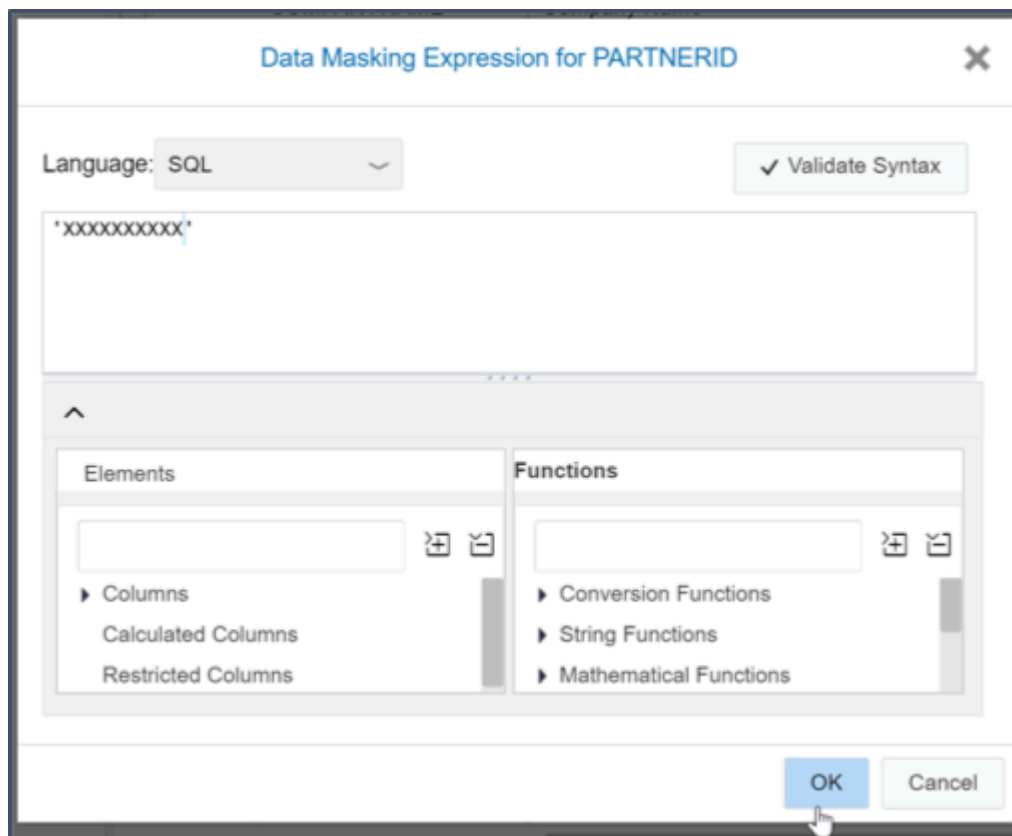


Image 4: Data masking expression definition

Now when you view the data you will see that it has been masked based on the expression that you defined. In the screen shot below, you can see that the PARTNERID column has been masked according to the masking expression which we defined.

	PARTNERID	PARTNERROLE	EMAILADDRESS	COMPANYNAME	LEGALFORM	CITY	POSTALCODE	BUILDING	STREET	COUNTRY
1	XXXXXXXXXX	1	karl.mueller@sap.com	SAP	AG	Waldorf	69190	15	Dietmar-Hopp-Allee	DE
2	XXXXXXXXXX	2	dagmar.schulze@becker	Becker Berlin	GmbH	Berlin	13467	36	Calvinstraße	DE
3	XXXXXXXXXX	1	maria.brown@delbont.co	DelBont Industries	Ltd.	Wilmington Delaware	10899	01	1 2345 King Street	US
4	XXXXXXXXXX	1	saskia.sommer@talpa-hi	Talpa	GmbH	Hannover	30625	422	An der Breiten Wiese	DE
5	XXXXXXXXXX	1	bob.buyer@panorama-st	Panorama Studios	Inc.	Hollywood California	91602	178	Morning Drive	US
6	XXXXXXXXXX	1	bart.koenig@tecum-ag.d	TECUM	AG	Muenster	48155	24	Albersloher Weg	DE
7	XXXXXXXXXX	1	yoko.nakamura@asia-ht	Asia High tech	Inc.	Tokyo	1000004	1	1-7-2 Ohtemachi	JP
8	XXXXXXXXXX	1	sophie.ribery@laurent-pe	Laurent	S.A.	Paris	75015	1	Rue de la Republique 86	FR
9	XXXXXXXXXX	1	victor.sanchez@avantel.i	AVANTEL	S.A.	Mexico City	17000	24	Bosque de Duraznos	MX
10	XXXXXXXXXX	1	jorge.velez@telecomunic	Telecomunicaciones Star	S.A.	Buenos Aires	1511	12221	Av. Libertador	AR
11	XXXXXXXXXX	2	franklin.jones@pear-com	Pear Computing Services	Inc.	Atlanta Georgia	30338	3000	Dunwoody Xing	US
12	XXXXXXXXXX	1	joseph_gachwandtner@e	Alpine Systems	AG	Salzburg	5010	54	Arnold Schwarzenegger	AT
13	XXXXXXXXXX	1	george_d_grant@newlin	New Line Design	Ltd.	Manchester	M4 8RE	97	Kelley Street	GB
14	XXXXXXXXXX	1	sarah.schwind@hepa-tec	HEPA Tec	GmbH	Bremen	28213	43	Theodor Heuss Allee	DE

Image 5: View masked data

One final reminder, you will need to assign the object privilege UNMASKED to any user who needs to view the plain text data.

Thanks for reading the introduction to data masking blog. Please leave any questions or comments below.

Tags:

data masking

sap hana security

14 Comments



former_member196565

Participant



2017 Apr 13 5:27 AM



1 Kudo

Dear Aleksic,

Very informative blog. Thank you.

Looking forward for more insights like this.



Former Member



2017 Apr 13 8:39 AM



0 Kudos

Hello Aleksic,

If masking done at view level -

1. Does same masking get leverages if it exposes to BW extraction if view is used as DataSource.
2. If same view is then consumed in BO reporting tool - does masking get leverages there too ?.

Thanks,

Prashant Shah.



frank_vanoverloop2

Explorer



2017 May 03 11:06 AM



Hello Aleksic,

The examples in the blog all relate to "native HANA". Will this capability also become available in Business Suite?

Regards

Frank



former_member185354

Explorer



2017 May 04 11:09 AM



0 Kudos

Hi Frank

We have something similar for the Business Suite world. The "field masking" suite of products help you achieve data protection for the different UI channels SAP has - GUI, Fiori, WDA and WebClient UI (CRM). You can find out more at https://help.sap.com/viewer/p/FIELD_MASKING_FOR_SAP_GUI or you can contact me for further information.

Regards,

Deepak

**frank_vanoverloop2**

Explorer



2017 May 05 3:54 PM



0 Kudos

Hello Deepak,

Thanks for the hint. I'll have a look and inform our solution architects on these solutions.

Regards

Frank

**Former Member**

2017 Aug 23 9:53 AM



0 Kudos

Hello Aleks,

Could you please let me know if Data Masking can be supported on my HANA system with version HANA1.0 SP12.

Thanks!
Kenneth

**upamanyu_mukherjee**

Participant



2017 Oct 11 8:37 PM



0 Kudos

Hi Aleks,

I am currently on HANA 2.0 SP01 , however when I launch a calculation view from Web IDE I do not see the Data Masking option. Let me know if we need any role/privilege to be assigned in order to use this feature.

Thanks!

Upamanyu

**former_member519075**

Explorer



2018 Mar 23 4:23 AM



0 Kudos

Hi Upamanyu,

I am also facing similar issue, please let me know if this issue is resolved.

Thanks

Arun



upamanyu_mukherjee

Participant



2018 Mar 23 6:50 PM



0 Kudos

Hi Arun,

You have to use the Web IDE for SAP HANA and not the old web development work bench! Also if you have followed an XS classic architecture like I did , you will not see your objects in the Web IDE. Repository objects are not accesible there!

Hope this helps!



former_member519075

Explorer



2018 Mar 31 7:15 PM



0 Kudos

Thanks Upamanyu



former_member210969

Discoverer



2018 Dec 04 6:58 PM



0 Kudos

Hi Aleksic,

Can you please help me to understand if data masking can be achieved in HANA 1.0 SP12?

**dvankempen**

Product and Topic Expert



2019 Jan 14 9:43 AM



1 Kudo

Hi,

As a built-in feature, you will need SAP HANA 2.0 SPS 01 or later.

You can achieve the same objective using functions/procedures but this you will have to maintain, will have a bit more overhead, might be easier to circumvent, etc.

**dvankempen**

Product and Topic Expert



2019 Jan 14 9:44 AM



0 Kudos

Hi,

As a built-in feature, you will need SAP HANA 2.0 SPS 01 or later.

You can achieve the same objective using functions/procedures but this you will have to maintain, will have a bit more overhead, might be easier to circumvent, etc.

**former_member699297**

Explorer



2020 Nov 12 3:51 PM

**0 Kudos**

Thank you for your feedback. The diagrams are more up at a conceptual level to show the aspects to consider. Of course are ways to represent such content. What specially made you feel uneasy?

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