

ZENworks Mobile Workspace BRMS Developers Guide

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1 OVERVIEW

This configuration guide helps developers to create business rules that can be interpreted by the ZENworks Mobile Workspace rule engine. Therefore, access rights and security policies can be modified on the fly based on the mobile context and the user’s metadata.

2 INTRODUCTION

ZENworks Mobile Workspace security server embeds a Business Rules Management System (BRMS) called Drools (<https://www.drools.org/>). Modified to fit ZENworks Mobile Workspace requirements, it allows you to define security policies that cannot be defined directly with ZENworks Mobile Workspace. This is useful when:

- Security settings must change depending of the context
- Security settings must be set at a different level other than the ZENworks Mobile Workspace Security Group (e.g. user)
- Security settings must be applied depending on external parameters (e.g. user’s calendar)

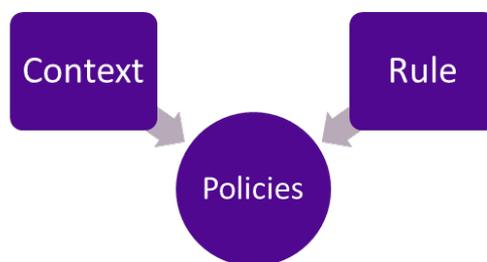
2.1 Overview

For ZENworks Mobile Workspace, the following concept has been developed: As an input, the application gathers all the information that it can retrieve from the device and the server configuration to create a request context. On the other hand, developers or business analysts create rules, based on this context, to modify, on the fly, security policies and access rights.



```
rule "Morning"
when
  session:SessionContextHolder(this != null)
  calendar:RulesCalendar(weekday == true)
  eval(calendar.isInInterval("07:00","11:50"))
then
  session.setAccessGranted(true);
end
```

Developer can define advanced rules



	A	C	D	E
9	Period	Week day	Between	Access granted
10	Morning	true	07:00,12:00	true
11	Lunch	true	12:00,13:30	false
12	Afternoon	true	13:30,17:30	true
13	Night	true	17:30,07:00	false
14	Weekend	false		false

Business analyst can work with Excel



3 MANAGING RULES

3.1 Upload rules

1. Connect to the security server and go to SETTINGS -> Contextual rules.
2. Click the add icon and enter the name and version.
3. Select the drl file and create the rule.

Settings tree	Security users	Security groups	Security settings	Contextual rules	Allowed URLs
Name ▲		Version ▲		+	
<input type="text"/>		<input type="text"/>			
Allow-CH-GPS		Allow-CH-GPS		✎ ✕	
Close-to-Yverdon-GPS		Close-to-Yverdon-GPS		✎ ✕	
Deny-CH-GPS		Deny-CH-GPS		✎ ✕	

3.2 Enable rules

1. Connect to the security server and go to SETTINGS -> Security settings.
2. Edit the security settings that must use contextual rule
3. In the Contextual tab, select the “Enable rules execution” checkbox and select the rule that should be executed.

Defaults Contextual

When contextual settings are enabled, you may select a rules package to apply in order to override the defaults

Rules package

Enable rules execution ?

Allow-CH-GPS - Allow-CH-GPS

Close-to-Yverdon-GPS - Close-to-Yverdon-GPS

Deny-CH-GPS - Deny-CH-GPS

4 RULES DEVELOPMENT

4.1 Available conditional elements

This section lists all objects and attributes that can be used to take decisions.

4.1.1 User information model

- **Username:** MobileUserLogin.name
- **Group name:** UserGroup.name
- **Domain name:** UserDomain.domainIdentifier
- **Password:** SecurityPassword.password

4.1.2 Mobile context model

Device information (DeviceInformation):

- **OS name:** DeviceInformation.Name.SystemName
- **OS version:** DeviceInformation.Name.SystemVersion
- **Device model:** DeviceInformation.Name.Model
- **Device Name:** DeviceInformation.Name.Name

4.1.3 Time context model

Calendar rules (RulesCalendar)

- **Current hour:** RulesCalendar.hour
- **Current day:** RulesCalendar.day
- **Check interval:** RulesCalendar.isInInterval
- **Check weekend:** RulesCalendar.isWeekend
- **Check weekday:** RulesCalendar.isWeekday

Client time

4.1.4 Location context model

IP based (RulesCountry)

- **ISO 3166 2-letter code:** RulesCountry.code
- **Full Country Name:** RulesCountry.name

GPS based (GeoLocation)

- **Latitude:** GeoLocation.coordA
- **Longitude:** GeoLocation.coordB
- **Altitude:** GeoLocation.coordC
- **Accuracy:** GeoLocation.uncertainty

- **Coordinate system:** GeoLocation.crs

4.1.5 Network context model

IP (IpAddress)

- Host address: IpAddress.hostAddress
- Check if public address: IpAddress.isPublicAddress
- Check if private address: IpAddress.isPrivateAddress
- Check if lookback address: IpAddress.isLoopbackAddress
- Check if link local address: IpAddress.isLinkLocalAddress
- Check if site local address: IpAddress.isSiteLocalAddress

4.2 Available action elements

This section lists all objects and attributes that can be modified depending on the condition.

4.2.1 Session configuration (in SessionContextHolder)

- **Grant access (boolean):** SessionContextHolder.accessGranted
- **Access denied reason (AccessDeniedReason):** SessionContextHolder.accessDeniedReason
 - **UNTRUSTED_DEVICE:** Set when the access is denied because of a forbidden device.
 - **UNTRUSTED_NETWORK:** Set when the access is denied because of the network from where the request is coming.
 - **DISALLOWED_APPLICATION:** Set when the access is denied because the application is not allowed for the user.
 - **LOCATION_REQUIRED:** Set when the access is denied because the location of the user is required.
 - **NO_REASON:** Set when the above reasons do not fit the situation.
- **Session context (SessionContext):** SessionContextHolder.sessionContext

4.2.2 Security policies configuration (in SessionContext)

- **User inactivity timeout (long):** SessionContext.userInactivityTimeout
- **Session inactivity timeout (long):** SessionContext.sessionInactivityTimeout
- **Background execution (boolean):** SessionContext.backgroundExecutionEnabled
- **Max. wrong credentials (int):** SessionContext.maximumAuthenticationAttempts
- **Offline access (boolean):** SessionContext.offlineAccessEnabled
- **Offline access timeout (long):** SessionContext.offlineAccessValidity
- **Location required (boolean):** SessionContext.locationRequired

- **Storage availability (boolean):** SessionContext.localStorageEnabled
- **Push notification (boolean):** SessionContext.pushNotificationsEnabled

4.2.3 Access control configuration (in SessionContext)

- **Workspace components (List):** SessionContext.authorizedApps
- **Proxy URL (List):** SessionContext.serviceEndpoints

4.3 Drools Rule Language (DRL)

Drools is the rule engine embedded in ZENworks Mobile Workspace which understands its own “native” rule language. This document does not aim at teaching developers how to write rules as a detailed document is available here: <https://docs.jboss.org/drools/release/5.2.0.Final/drools-expert-docs/html/ch05.html>.

Using the drools language is for experts that have knowledge in Java development and want to create complex rules that may require external libraries. Please refer to the existing samples for a quick start.

4.3.1 Drools workbench

Drool comes with a workbench allowing developers to create and edit rules with a developer friendly interface:

Allow-CH.rdr1 - Guided Rules

Save Delete Rename Copy Validate Latest Version

Editor Overview Source Data Objects

EXTENDS None selected

WHEN

1. There is a RulesCountry with:
country equal to RulesCountry.Country.CH

2. There is a SessionContextHolder [holder] with:
this is not null
[session] sessionContext is not null

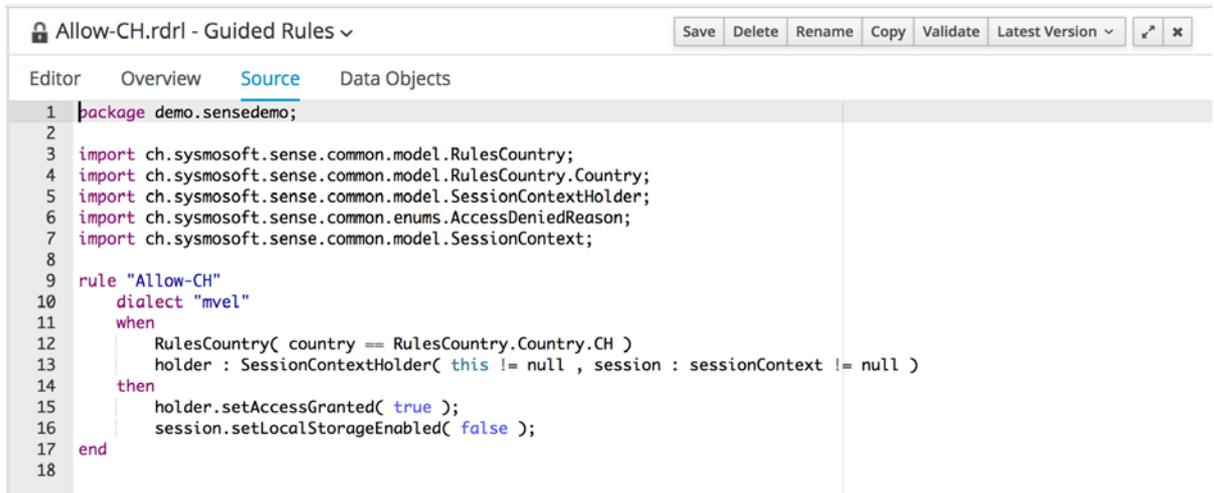
THEN

1. Set value of SessionContextHolder [holder] accessGranted true

2. Set value of SessionContext [session] localStorageEnabled false

(show options...)

Automatically generating drool rule file:



```
1 package demo.sensedemo;
2
3 import ch.sysmosoft.sense.common.model.RulesCountry;
4 import ch.sysmosoft.sense.common.model.RulesCountry.Country;
5 import ch.sysmosoft.sense.common.model.SessionContextHolder;
6 import ch.sysmosoft.sense.common.enums.AccessDeniedReason;
7 import ch.sysmosoft.sense.common.model.SessionContext;
8
9 rule "Allow-CH"
10     dialect "mvel"
11     when
12         RulesCountry( country == RulesCountry.Country.CH )
13         holder : SessionContextHolder( this != null , session : sessionContext != null )
14     then
15         holder.setAccessGranted( true );
16         session.setLocalStorageEnabled( false );
17     end
18
```

To quickly install the workbench, the best option is to install Docker (<https://www.docker.com/>) and install the drools workbench showcase image: <https://hub.docker.com/r/jboss/drools-workbench/>

4.4 Excel spreadsheet (XLS, XSLX)

As we have seen in the previous chapter, the drool language must be created by developers. However, most of the time, they are not those who will match business needs and rules. A Business Analyst for example, knows the business needs but is unlikely to develop a rule. Therefore, developers need to provide them with an easy way to create rules.

Here again, this document does not aim to teach developers how to write rules in Excel as a detailed document is available here: <https://docs.jboss.org/drools/release/5.2.0.Final/drools-expert-docs/html/ch06.html>

Setup of these files must still be done by a Java developer but when it is ready, the Excel file can be provided to the business analyst. Please refer to existing samples for a quick start.

4.4.1 Setup of the decision table

	A	C	D	E
1	RuleSet	ch.sysmosoft.drool		
2	Import	ch.sysmosoft.sense.common.model.RulesCalendar, ch.sysmosoft.sense.common.model.SessionContextHolder, ch.sysmosoft.sense.common.enums.AccessDeniedReason		
3	Notes	Working hours		
4				
5	RuleTable Access during working hours			
6	NAME	CONDITION	CONDITION	ACTION
7		calendar:RulesCalendar		
8		weekday == \$param	eval(calendar.isInInterval("\$1","\$2"))	session.setAccessGranted(\$param); session.setAccessDeniedReason(AccessDeniedReason.NO_REASON);
9	Period	Week day	Between	Access granted
10	Morning	true	07:00,12:00	true
11	Lunch	true	12:00,13:30	false
12	Afternoon	true	13:30,17:30	true
13	Night	true	17:30,07:00	false
14	Weekend	false		false

4.4.2 Hide complexity for business analysts

	A	C	D	E
9	Period	Week day	Between	Access granted
10	Morning	true	07:00,12:00	true
11	Lunch	true	12:00,13:30	false
12	Afternoon	true	13:30,17:30	true
13	Night	true	17:30,07:00	false
14	Weekend	false		false

4.4.3 Generated rules

The current version of ZENworks Mobile Workspace is not able to upload the Excel spreadsheet directly. It must be converted with the drools workbench into a DRL file.

```

working hours.xlsx - XLSX Decision Tables
Delete Rename Copy Validate Convert Latest Version

Editor Overview Source
1 package ch.sysmosoft.drool;
2 //generated from Decision Table
3 import ch.sysmosoft.sense.common.model.RulesCalendar;
4 import ch.sysmosoft.sense.common.model.SessionContextHolder;
5 import ch.sysmosoft.sense.common.enums.AccessDeniedReason;
6 // rule values at A10, header at A5
7 rule "Morning"
8     when
9         session:SessionContextHolder(this != null)
10        calendar:RulesCalendar(weekday == true)
11        eval(calendar.isInInterval("07:00","12:00"))
12    then
13        session.setAccessGranted(true);
14    session.setAccessDeniedReason(AccessDeniedReason.NO_REASON);
15    end
16
17 // rule values at A11, header at A5
18 rule "Lunch"
19     when
20        session:SessionContextHolder(this != null)
21        calendar:RulesCalendar(weekday == true)
22        eval(calendar.isInInterval("12:00","13:30"))

```