



# Modern Requirements 4 DevOps

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# **MR4DevOps Services**

## Technote

### Version 6.0.0



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Modern Requirements 4 DevOps

#### **MR AGENT/SERVICES**

Modern Requirements4DevOps Services (formerly called MR Agent) is one of the components of Modern Requirements4DevOps that is automatically installed with the main application. It's a framework that provides extensibility to Azure DevOps using triggers.

**Please note:** *MR Services are only accessible with AZURE DEVOPS Services using LIVE/PUBLIC IP to communicate with VSTS(Azure DevOps services). If any machine has no public access than VSTS Azure DevOps services could not be used (as they require public access to communicate with machine). Users are advised to contact their Network Administrators to change the value to the live IP address of their machines including the relevant port.* 

Currently, MR Services (MR Agent) has the following four sub components:

- 1. Custom ID
- 2. Suspect Links (formerly called Dirty Flag)
- 3. Email Monitor
- 4. MatCal

Proper user authentication is required before any of these components are configured. The config files of any of the components won't work unless the relevant organization (in Azure DevOps) or collection (in TFS) is registered using authentication.

#### **CONFIGURING APPSETTINGS CONFIG FILE**

For local Azure DevOps servers (TFS-OnPrem), MR Services (MR Agent) automatically adds the relevant location in the application settings file (**AppSettings.config**). However, if Azure DevOps Services are involved then the user's machine should have a live IP address that the Azure DevOps Services can use to access/communicate. This IP address should be added in the **AppSettings config** file. The process to do it is elaborated in the following steps:

1. Go to the installation folder of MR Services (MR Agent) (highlighted in the image) and open the **AppSettings** config file in a text editor.

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Desktop	Content		31/0	05/2018 4:29 PM	File folder				
🔮 Documents	fonts		31/0	05/2018 4:29 PM	File folder				
🖶 Downloads	Scripts		31/0	05/2018 4:29 PM	File folder				
h Music	Views		31/0	05/2018 4:29 PM	File folder				
Dictures	AppSettings	N.	31/0	05/2018 4:29 PM	CONFIG Fil	e i	2 KB		
Fictures	ြူ CID	7	03/0	01/2018 7:38 PM	XML Schen	na File	3 KB		
Videos	💭 DirtyFlag		10/0	01/2018 3:16 PM	XML Schen	na File	3 KB		
🏪 Local Disk (C:)	💭 EmailMonito	r	19/0	03/2018 4:28 PM	XML Schen	na File	3 KB		
🕳 Local Disk (E:)	📄 favicon		30/0	08/2017 2:41 PM	lcon	3	2 KB		
🕳 Local Disk (F:)	Global		25/0	09/2017 6:55 PM	ASAX File		1 KB		
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The **ApplicationURL** is automatically set toward the local machine.

🔚 App Se	ttings.config 🔀
1	<pre><?xml version="1.0" encoding="UTF-8" standalone="yes"?></pre>
2	<pre>cappSettings&gt;</pre>
3	<add key="eDev.MR.Agent.Enabled" value="true"></add>
4	<add key="eDev.MR.CustomId.HangfireLogIsEnabled" value="false"></add>
5	<add edev.mr.customid.cache.redis"="" key="eDev.MR.CustomId.MessageQueue.Redis" value="localhost:6379,DefaultDatabase=9,Password=,ssl=false,abortConnect=false"></add>
7	<add key="eDev.MR.Agent.CustomId.Folder" value="CustomId/"></add>
8	<add key="eDev.MR.Agent.DirtyFlag.Folder" value="DirtyFlag/"></add>
9	<add key="eDev.MR.Agent.EmailMonitor.Folder" value="EmailMonitor/"></add>
10	<add key="eDev.MR.Agent.ComponentFolder" value="~/bin/Component/"></add>
11	<add key="eDev.MR.Agent.ConfigurationRoot" value="//App_Data/"></add>
12	<pre><add ]="" key="eDev.MR.Agent.ApplicationUrl" value="http://STEVE:8029/"></add></pre>
13	<add key="eDev.MR.Agent.CacheStore" value="RedIs"></add>
14	<add key="eDev.MR.Agent.DirtyFlag.TagWithSource" value="true"></add>
15	<add key="eDev.MR.Agent.DirtyFlag.InsertComments" value="true"></add>
16	<add key="eDev.MR.Agent.Core.SubsoribeSchedule" value="30"></add>
17	<add key="ebev.MR.Agent.Customid.ApplyAllSchedule" value="30"></add>
18	<pre><dd key="eDev.Mk.Agent.EmailMonitor.EmailCheckSchedule" value="15"></dd></pre>
19	-
20	
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2. Change the value (for Azure DevOps Services only) to the live IP address of your machine including the relevant port. \*

\*Contact your Network Administrator to get the live IP address and port information

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Photos -	tungs.comg 🔼
1	<pre><?xml version="1.0" encoding="UTF-8" standalone="yes"?></pre>
2	<appsettings></appsettings>
3	<add key="eDev.MR.Agent.Enabled" value="true"></add>
4	<add key="eDev.MR.CustomId.HangfireLogIsEnabled" value="false"></add>
5	<pre><add edev.mr.customid.cache.redis"="" key="eDev.MR.CustomId.MessageQueue.Redis" value="localhost:6379,DefaultDatabase=9,Password=,ssl=false,abortConnect=false"></add></pre>
7	<add key="eDev.MR.Agent.CustomId.Folder" value="CustomId/"></add>
8	<add key="eDev.MR.Agent.DirtyFlag.Folder" value="DirtyFlag/"></add>
9	<add key="eDev.MR.Agent.EmailMonitor.Folder" value="EmailMonitor/"></add>
10	<add key="eDev.MR.Agent.ComponentFolder" value="~/bin/Component/"></add>
11	<add key="eDev.MR.Agent.ConfigurationRoot" value="#/App_Date/"></add>
12	<add <="" key="eDev.MR.Agent.ApplicationUrl" th="" value="http://202.88.202.88.8029/"></add>
13	<add key="eDev.MR.Agent.CacheStore" value="Redis"></add>
14	<add key="eDev.MR.Agent.DirtyFlag.TagWithSource" value="true"></add>
15	<add key="eDev.MR.Agent.DirtyFlag.InsertComments" value="true"></add>
16	<add key="eDev.MR.Agent.Core.SubscribeSchedule" value="30"></add>
17	<add key="eDev.MR.Agent.CustomId.ApplyAllSchedule" value="30"></add>
18	<add key="eDev.MR.Agent.EmailMonitor.EmailCheckSchedule" value="15"></add>
19	<pre>L</pre>
20	
<	>

3. Save and close the config file.



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#### TIMING CONFIGURATIONS IN APPSETTING FILE

At the bottom of the AppSettings config file, there are three timing configurations available for users.

```
<add key="eDev.MR.Agent.ApplicationUrl" value="http://202.88.202.88:8029/"/>
<add key="eDev.MR.Agent.CacheStore" value="Redis"/>
<add key="eDev.MR.Agent.DirtyFlag.TagWithSource" value="true"/>
<add key="eDev.MR.Agent.DirtyFlag.InsertComments" value="true"/>
<add key="eDev.MR.Agent.Core.SubscribeSchedule" value="30"/>
<add key="eDev.MR.Agent.CustomId.ApplyAllSchedule" value="30"/>
<add key="eDev.MR.Agent.EmailMonitor.EmailCheckSchedule" value="15"/></appSettings>
```

#### APPPLYALLSCHEDULE

- 1. Works only for Custom ID
- 2. Used to apply Custom ID on newly created work items
- 3. Default value "30" represents the number of minutes, after which MR Services (MR Agent) scans for new work items and apply Custom IDs on them. Users can configure the value (in minutes) as per their requirements.

#### EMAILCHECKSCHEDULE

- 1. Works only for Email Monitor
- 2. Used to check if a new email has arrived from which work items could be created/updated
- 3. Default value "15" represents the number of minutes, after which MR Services (MR Agent) scans for email. Users can configure the value (in minutes) as per their requirements.



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#### MR SERVICES COLLECTION / ORGANIZATION REGISTRATION

#### FOR AZURE DEVOPS VERSION

1. Logon to the relevant Azure DevOps Organization and click the **Organization settings** option at bottom left.

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New organization	My pull requests My work items Projects		√ Filter projects
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	0 03-04-2020		P 🛛 🕵 🕹 📕
What's new	1 1		
With this update, we've enhanced the billing experience so you can pay for users once across multiple organizations under the same billing Azure subscription. Check out the	1 ReviewWIs		
release notes for more.	1 ***		





2. Scroll down the left side panel and click the **Modern Requirements4DevOps** option at the bottom.

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Global notifications	Overview Name							^
Extensions     Azure Active Directory	teama	Т						- 1
Security	Use the new URL: https://dev.azure.com/teama/ Learn more about URLs							
Policies	Privacy URL							
Boards	Learn more about the Privacy URL							
°⊳ Process	Description							
Pipelines	Add organization description							
品 Agent pools	Time zone							
Settings	UTC 🗸							
T Deployment pools	Region							
II Parallel jobs	East US 2							
OAuth configurations	Learn more about the Region							
Artifacts	Save ① Changes made will affect all projects and members	of the organization						
🔊 Storage								
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#### 3. Click the **Services** option in the Admin Panel.

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The options for **Services** Tab are displayed. Further steps are defined under <u>Configuring general settings in the</u> <u>Settings Tab</u> section

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O Se	rganization	Modern Requi Build version: 20.6.1.	rements4[	DevOps 2020	) Update 1		
0	Search Settings	Licensing Genera	l Review	Baseline So	ervices		
Ge	neral	Settings Em	ail Monitor	Custom ID	Suspect Links		
略	Overview		uto scan for	new projects(mir	J Auto Scan for new projects	()	
₽	Projects	!	èervice User r	ame	<enter username=""></enter>	()	
۶Å	Users	:	ervice Passw	ord	<enter password=""></enter>		
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#### FOR EMBEDDED VERSION

1. Launch the embedded version of the application and select the **Modern Requirements4DevOps** option under the **Settings** tab.

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The Admin panel is displayed.

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#### 2. Click the **Services** Tab.

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Modern Requirements4DevOps 2019 Update 1 Build version: 17.5.1				
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The options for **Services** Tab are displayed. Further steps are defined in the next section.

ensing	General	Review	Baseline Serv	ices	
Settings	Email	Monitor	Custom ID	Suspect Links	
	Aut	o scan for i	new projects(min)	30	()
	Ser	vice User n	ame	<enter username=""></enter>	()
	Ser	vice Passw	ord	<enter password=""></enter>	

#### CONFIGURING GENERAL SETTINGS IN THE SETTINGS TAB

The **Settings** sub-tab deals with two options:

- Setting time interval to Scan the Azure DevOps organization (or TFS Collection) for new projects
- Registration of the current organization (Admin user credentials are required for this option)

It is recommended to define both settings i.e. scan interval (as per requirements) along with collection/Organization registration.

1. Enter time interval for Auto Scan (should be between 1 and 60).

This value determines the interval in minutes after which the registered Azure DevOps Organization (or TFS Collection) would be scaned for new projects.

Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1							
Licensing	General Review Baseline Services						
Settings	Settings Email Monitor Custom ID Suspect Links						
	Auto scan for new projects(min) 30						
	Service User name			steve.andrews@hotmail.com	()		
	Service Password			<enter password=""></enter>			
Save Changes Undo Changes							

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2. Provide authorized login credentials. (with DevOps ID having Admin rights on Organization/TFS). In the case of Azure DevOps only **Personal Access Token (PAT)** is allowed to authenticate into Azure DevOps.

For Azure DevOps, the **'service username'** would be user's login email of Azure DevOps account that has admin rights, whereas, the **'service password'** will always be **PAT (Personal Access Token).** However, in the case of Azure DevOps server the user will be required to enter the username and password of Collection / Organization Administrator.

To know how to create, use, modify, and revoke PATs for Azure DevOps, visit this link.

Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1							
Licensing	General Review Baseline Services						
Settings	Settings Email Monitor Custom ID Suspect Links						
	Auto scan for new projects(min) 30						
Service User name				steve.andrews@hotmail.com	<b>i</b>		
	Ser	vice Passwo	ord				
Save Changes							

On successful authentication, current organization is registered and a confirmatory message is displayed.

Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1							
Licensing	General	Review	Baseline	Servi	ices		
Settings	Settings Email Monitor Custom ID Suspect Links						
	Auto scan for new projects(min) 30						
	Ser	vice User n	ame		steve.andrews@hotmail.com	(i)	
	Ser	vice Passwo	ord				
Save Changes Undo Changes Collection registered Successfully							

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#### CUSTOM ID CONFIGURAION

**Custom ID** is a component of MR Services (MR Agent) that is used to provide Customized IDs to work items in addition to their default work item IDs. The Custom IDs do not replace the original IDs, instead they complement them. The customized IDs can be used to keep track of the work item origins (i.e. which team created a particular work item).

Azure DevOps	easyedsaad / Settings / Modern Requirements4Dev	
Organization Settings	Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1	
	Licensing General Review Baseline Services	
∠ Search Settings	Catiline Envil Maxime Contra ID Connect links	
General	Settings Email Monitor Custom ID Suspect Links	
B Overview	Scan/Apply Custom ID on new projects	
Projects	Custom ID Scope ()	
x <sup>R</sup> Users		
뉟 Billing		
Auditing	No. of characters for project name(s)	
Global notifications		
ቤቴ Usage		
③ Extensions	+ Add new project abbreviation	
Azure Active Directory		
Security		
Policies	+ Add new work item and its formatting	
A Permissions	Save changes Undo changes	

Azure DevOps	easyedsaad / Settings / Modern Requirements4Dev	𝒫 Search	1
Organization Settings easyedsaad	Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1		
Search Settings	Licensing General Review Baseline Services		
General	Settings Email Monitor Custom ID Suspect Links		
B Overview	Scan/Apply Custom ID on new projects		
Projects	Custom ID Scope ()	(i)	
R <sup>A</sup> Users	Custom ID Field	(j)	
`₩ Billing		0	
Auditing	No. of characters for project name(s)		
🗏 Global notifications			
ከቤ Usage			
C Extensions	Project Name () Project Abbreviation	(I)	
Azure Active Directory	+ Add new project abbreviation		
Security			
Policies	V Work item Type ()	Start with (1)	ിന
Permissions			
Boards	+ Add new work item and its formatting		
°o Process	Save changes Undo changes		





#### **UI FUNCTIONALITIES OF CUSTOM ID**

	UI Options	Functionality
1	Scan / Apply Custom ID on	Links to execute Scan and Apply command manually. Now a user can SCAN
	new projects	and Apply at the same time from this option. The option helps in scanning for
		any new project that has been created or registered on
		organization/collection, and on the same time it applies Custom ID
		configuration on configured work item type(s) on which Custom ID is not
		applied yet.
2	Custom ID Scope	This field defines boundary of Custom ID i.e. Collection applies counter
		scope to Collection level, Project applies counter scope to Project Level and
		Team applies counter scope to the Team Level.
3	Custom ID Field	Select reference name of the field on which Custom ID is required to apply in
		Work Item.
4	No. of Characters for Project	This field defines the by-default no. of characters to be taken from the
	name(s)	Project Name(s) in Organization to be used as Project Prefix (if not defined
		explicitly) in Custom ID formatting (Using a tag [PN])
5	Project Abbreviation	Defines prefix for the selected project name. The field defines prefix for the
		selected project (that will be used in Custom ID formatting by tag [PN])
6	Work item type	Denotes the type of work items with which the Suspect Links will work. This
		field defines list of work item types(s) to select on which Custom ID is
		required to apply. Multiple work item types could be selected (using "," as a
		separator) to create a group on which same formatting is required.
7	Format	Defines the format of the ID
8	Start with	Defines starting sequence of Custom ID counter



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#### SUSPECT LINKS CONFIGURATION

**'Suspect Links'** is a component of MR Services (MR Agent) that is used to mark particular work items as **suspect** (due to changed requirements) so that relevant stakeholders may review these work items once instead of proceeding with the outdated requirements.

Suspect Links option can be found under the Services tab.

Azure DevOps	easyedsaad / Settings / Modern Requirements4De					
Organization	<ul> <li>Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.1</li> </ul>					
easyedsaad	Licensing General Review Baseline Services					
♀ Search Settings	Setting Englisher Custom D. Custom H.L.L.					
General	Settings Email Monitor Custom ID Suspect Links					
B Overview	Scan for the new projects					
🗗 Projects						
بع <sup>م</sup> Users	Source work items(s)					
몇 Billing	+ Add new source work item					
🛃 Auditing						



1		<sup>IODERN</sup> Requirements	Modern Requirements4DevOps Services Modern Requirements4DevOps
		UI Options	Functionality
	1	Scan for the new projects	Applies Suspect Links configuration on new created projects in collection
	2	Add new source work item	This field defines source work item(s) which is / are if modified then their
			associated work item(s) would be marked dirty or flagged when the given
			conditions are met.
	3	Pre-state conditional fields	This section defines pre-state fields criteria of Source Work Item, which
			needs to be satisfied first in order to go and watch for suspected field(s)
	4	Add new property and value	Sets the pre-state condition of Source Work Item
	5	Suspected Field(s)	This section defines suspected fields to watch, after satisfying defined
			criteria for pre-conditional field(s) of source Work Items(s).
	6	Target Work Item(s)	It tells (MR Services) MR Agent which type of work items will be tagged as
			dirty or flagged in case of a trigger.



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EMAIL MONITOR

**Email Monitor** is a component of MR Services (MR Agent) that is used to automatically create work items from emails. A particular email address is configured for this purpose and on successful completion of the configuration process, all emails sent to this email address result in creating/updating work items.

#### CONFIGURING EMAIL MONITOR

Make sure to carry out the steps defined in <u>MR Services User Authentication</u> section for registration of Azure DevOps organization (or TFS Collection). Once you are done with that, follow these steps to configure Email Monitor settings:

1. Click the Email Monitor option.

Modern Requirements4DevOps 2020 Update 1 Build version: 20.6.1.3					
Licensing	General	Review	Baseline Ser	vices	
Settings	Email	Monitor	Custom ID	Suspect Links	
	Aut	to scan for r	new projects(min)	30	()
	Ser	vice User n	steve.andrews@hotmail.com	()	
	Ser	vice Passwo	ord		
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The **Email Monitor settings** are divided into sections, where each section is used to configure a particular setting. However, all necessary settings are configured once. Users can not configure certain settings and leave other pending.

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Licensing	General	Review	Baseline	e Ser	vices						
Settings	Email M	lonitor	Custon	n ID	Suspect	Links					
				Admint	Email	-	Enter adm in's	emailaddress	, , ,		
				Team Pr	roject (Def	fault) Le	st Project				
				Email Re	gistration						
				Register	EmailAdd	ress					
				Monito	rEmail			`	<ul> <li>Edit</li> </ul>		
				Workite	em Type				WI Category	Bug Category	▼ (i)
				Workite	m formatti	ng Title	*Title wil	la ways be po	oulated from email sub	iject	
				Workite	em Field:	Descript	ion Selectin	equired attribu	ttes to add in Wilfrom №	eceived email	
							Z Add or	n Creation	🗌 Add on Update	1	
							🕕 🗹 Sender	rName	🗹 Sender Email	🗹 Email Body	
				Workite	em Field:	History	Select re	quired attribut	estoadd in Wifrom re	ceived email	
							Add o	n Creation	🗹 Add on Update		
							🗹 Sender	rName	🗹 Sender Email	🗹 Email Body	
				Save	Changes	Undo	Changes	Monitor Em	ails		





2. In the first section, configure the default project and the admin email address.

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Licensing	General Revie	w Baseline	Services			
Settings	Email Monitor	Custom ID	Suspect Lin	ks		
Adm Tean	in Email 1 Project (Default)	admin@steveand Test Project	drews.com	• i		
Emai <b>Reg</b> i	l Registration					
Mon	itor Email		~	(i) Edit		
Wor	kitem Type		•	WI Category	Bug Category	<b>~</b> (i)

	UI Options	Functionality
1	Admin Email	This email address is used as a mitigation; in case the desired functionality can't be achieved using the address defined in Email tag. In case some criteria do not match with the desired values, the warning email would be sent at the Admin Email.
2	Team Project (Default)	It defines the default team project for this collection





3. In the second section, configure the email address (that would be used for Email Monitoring) along with the relevant Work Item type and category. Relevant work item type which is required to be created against email in Azure DevOps along with its category, so that if a particular work item is not available, other work item from that category would be created against the email.

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tings <b>Ema</b>	il Monitor	Custom I	D Suspect	: Links	
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Admin Ema Team Projec Email Regist Register Ema	t (Default) ation il Address	admin@steve Test Project	andrews.com	· (i)	
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Clicking on **Register Email Address** would open a popup window where the network settings for the email (e.g. SSL, POP3, IMAP etc) can be configured.

ngs -	Email Monitor	Custom ID S	uspect Links	
Admin	n Email	admin@steveandrews.	com	
Team I	Proj Email Re	gistration		
	🗌 Use S	SL		<u>^</u>
	🗹 рора	B POP3 Mail Server	<pop3 mail="" server=""></pop3>	POP3 Port 110
Email F	Regi 🗌 IMAP	IMAP Mail Server	<imap mail="" server=""></imap>	IMAP Port 143
en an i		SMTP Mail Server	<smtp mail="" server=""></smtp>	SMTP Port 25
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Workli	tem			
Work II	tem		Register	Register & Add New Close
Workli	tem Field : Title	*Title will always	be populated from email subject	





4. The third and last section provides user options to define what information is required from the email to be added in work item fields and on what events.

Work Item formatti	ng				
Workltem Field :	Title	*Title will always be pop	ulated from email subje	ct	
Workltem Field :	Description	Select required attribut	tes to add in WI from re	ceived email	
		🗸 Add on Creation 🕕	🗌 Add on Update 🕕	)	
		🗸 Sender Name	✔ Sender Email	🗹 Email Body	
Workltem Field :	History	Select required attribute	s to add in WI from rece	eived email	
		Add on Creation	🗹 Add on Update		
		🗹 Sender Name	🗹 Sender Email	🗹 Email Body	
Save Changes	Undo Cha	nges Monitor Ema	ils		

	UI Options	Functionality
1	Add on Creation	These are the events for the user to define on which event they would like below information to be added.
	Add on Update	
2	Sender Name	These are the options provided to the user to define what information is
	Sender Email	required from Email to be added in work item.
	Email Body	





5. Click the **Save Changes** option to complete the Email Monitor configuration process.

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Licensing General Review	Raseline Services
Settings Email Monitor	Custom ID Suspect Links
	Admin Email     admin@steveandrews.com       Team Project (Default)     Test Project
	Email Registration Register Email Address Monitor Email stave.andrews@hotmail.com V () Edit
	WorkItem Type Requirement • WI Category Requirement Category •
	Work Item formatting WorkItem Field: Title *Title will always be populated from email subject
	WorkItem Field: Description Select required attributes to add in WI from received email
	Add on Creation 🛛 Add on Update 🕕
	🗹 Sender Name 🛛 Sender Email 🔽 Email Body
	WorkItem Field: History Select required attributes to add in WI from received email
	Add on Creation 🗹 Add on Update
	🗹 Sender Name 🛛 Sender Email 🔽 Email Body
	Save Changes Undo Changes Monitor Emails

Once the configuration process is completed, users can click on the **Monitor Emails** button to initiate the process of monitoring the emails, as per settings done.



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#### **MR MATCAL**

**MR MatCal** is a component of MR Agent that is used to perform/execute mathematical expressions on work item(s) field(s) and reflect its output on defined field(s) of same work item. The MatCal allows user to define nested expressions for calculation as well in which output of one expression could be input for another.

In order to make the MatCal work properly, users must manually create the following two items:

- 1. Azure DevOps server name on which the MatCal is required to apply.
- 2. Azure DevOps Collection / Organization name (the Collection / Organization on which the Custom ID is required) under the TFS folder name.
- 1. The relevant Collection / Organization folder should contain the **config.xml** file containing all configuration. The file and folder hierarchy should appear as shown below using the text pattern and relevant image:



2. As shown in the image below, a sample **config.xml** file is placed in the **MatCal** folder.

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File Home Share	View					~ 🕐
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🕳 Local Disk (G:)						
👝 Local Disk (H:)						
i Network						
2 items 1 item selected 5	52 bytes					

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3. Create a folder named after the Azure DevOps (TFS) Server name (on which component is required to apply) at this location.

📙   🛃 📕 🖛   MatCal					_	×
File Home Share	View					~ 🕐
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🗊 3D Objects 🔷	Name	Date modified	Туре	Size		
Desktop	dev.azure.com	02/04/2020 4:36 pm	File folder			
Documents	📄 config.xml	12/12/2019 8:44 pm	XML Document	1 KB		
🖶 Downloads						
b Music						
E Pictures						
Videos						
🏪 Windows10Pro (						
SSD (D:)						
Local Disk (E:)						
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4. Enter the newly created folder and again create another folder here with the name of Azure DevOps Organization (or TFS Collection) (on which component is required to apply).

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E. Desktop	steveandrews	31/03/2020 1:51 pm	File folder			
Documents						
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b Music						
Pictures						
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SSD (D:)						
👝 Local Disk (E:)						
Local Disk (F:)						
Local Disk (G:)						
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1 item 1 item selected						:
ritem ritem selected						• •





5. Copy the config.xml file (discussed earlier) into the newly created folder i.e. Folder with TFS collection name.

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File Home Share	View					~ 🕐
$\leftarrow \rightarrow \star \uparrow$ users	> Public > Public Documents > MR-Agent	→ MatCal → dev.azure.c	om → steveandrews	~ Ū	Search steveandrews	Q
3D Objects 🔷 I	Name	Date modified	Туре	Size		
Desktop	🔮 config.xml	01/04/2020 10:01 pm	XML Document	1 KB		
🔮 Documents						
🖶 Downloads						
b Music						
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SSD (D:)						
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This file contains the blueprint for the desired configuration.

#### CONFIGURING THE MATCAL XML FILE

1. Open the **config.xml** file in Notepad or any text editor.

🥮 config.xml - Notepad				_		×
File Edit Format View Help						
<pre>kRoot&gt;     <collectionurl>http://tfsservername:port/tfs/Collection         <projectname>Risk</projectname>          <mathexpression oncreate<="" outputfield="Color" td="" witype="Risk"><th>ollectionUrl&gt; ="true" OnUpdate=" &lt; 200, "Yellow", " OnCreate="true" On bility<th>'true"&gt; Red")) Update</th><th> ="true"&gt;</th><td></td><td></td><td>~</td></th></mathexpression></collectionurl></pre>	ollectionUrl> ="true" OnUpdate=" < 200, "Yellow", " OnCreate="true" On bility <th>'true"&gt; Red")) Update</th> <th> ="true"&gt;</th> <td></td> <td></td> <td>~</td>	'true"> Red")) Update	 ="true">			~
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- 2. Define the tags with their required values:
- 3. **"CollectionUrl**" tag requires the URL for the Azure DevOps Organization (or TFS Collection) on which the MatCal is required to apply. (Note: Please make sure that the URL should not end on '\')
- 4. "TeamProjects" tag helps to define list of Team Projects on which user want to apply MatCal, Team Project names could be added using tags "ProjectName".
- 5. Within tag **"Math Expression**" define work item type in value of **"WIType**" tag, name of the field OR reference name of the field of the same work item on which output is required to add and events on which



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user wanted MatCal to perform work (by setting value of tags "OnCreate" and "OnUpdate" to "true" or "false")

- 6. **OnCreate**: It is the attribute at work item level, which allows user to configure whether MatCal calculation should be applied at the time of work item creation only. If it is set as "false" then it will not apply MatCal configuration to a work item at the time of creation.
- 7. **OnUpdate**: Similarly, it is the second attribute which allows user to configure if they want MatCal configuration to be applied every time when work item is updated. So it is set as "false" then MatCal calculation/configuration would be applied at the time of any update on a work item.
- 8. **"Expression**" tag contains mathematical expression required to perform and calculate required functions.
- 9. Following the successful completion of the configuration file, save and close the file.

#### MATCAL EXPRESSION CALCULATION EXAMPLES

Following are the examples of expressions that could be configured in MatCal:

**Please Note:** Copy pasting the configuration from the Word/PDF document might create issues. It may change content like "-"and it doesn't match with the values that apparently seem same on the UI. Therefore, it is recommended that the **user add field values by himself again**. This applies to all the examples below.

#### EXAMPLE 1 (FOR APPLYING CALCULATION)

For Risk WI: Original Estimate = (Priority + Severity) \* Probability

MatCal configuration for the above expression would be:

<MathExpression WIType="Risk" OutputField="Microsoft.VSTS.Scheduling.OriginalEstimate"

#### OnCreate="true" OnUpdate="true">

<Expression> (Priority + severityVal) \* Probability </Expression>

<MathExpression OutputField="severityVal">

<Expression>If (Severity = "1 - Critical", 1, If (Severity = "2 - High", 2,

If (Severity = "3 - Medium", 3, 4))) </Expression>

</MathExpression>

</MathExpression>



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#### EXAMPLE 2 (FOR APPLYING MULTIPLE CONDITIONS)

For Risk WI:If Probability > 10 than Severity = '4 - Low'If Probability > 40 & <= 10 than Severity = '3 - Medium'</td>If Probability > 80 & <= 40 than Severity = '2 - High'</td>Otherwise Severity = '1 - Critical'

As per the structure of MatCal config file, following are the details required:

- WIType= Work Item Type on which expression is required to perform/execute. = Risk
- **OutputField**= Field reference name or Field name on which resultant of expression calculation is required to added. = **Severity**

So, the complete configuration of MatCal for the above expression would be:

<MathExpression WIType="Risk" OutputField="Severity" OnCreate="true" OnUpdate="true"> <Expression> If (Probability &It; 10, "4 – Low", If (Probability &It; 40 AND Probability &gt;= 10, "3 – Medium", If (Probability &It; 80 AND Probability >= 40, "2 – High", "1 – Critical")))</Expression>

</MathExpression>

#### EXAMPLE 3 (FOR APPLYING CALCULATION AND CONDITION)

For Risk WI: If Blocked = NO than Probability = Priority \* Severity If Blocked = YES than Probability = 50

As per the structure of MatCal config file, following are the details required:

- WIType= Work Item Type on which expression is required to perform/execute. = Risk
- **OutputField**= Field reference name or Field name on which resultant of expression calculation is required to added. = **Probability**
- **Expression**= mathematical Expression and condition required for calculation. i.e.

If Blocked = NO than Probability = Priority \* Severity <this is part of our mathematical expression> If (Blocked.ToLower() = "no", (Priority \* severityVal), 50) <this is the line of code used to implement the mathematical expression>

Now to convert values of Severity to numeric values,

If Severity value is set to "1-Critical" then set value =1 in "severityVal", Else if Severity value is set to "2-High" then set value =2 in "severityVal", Else if Severity value is set to "3-Medium" then set value =3 in "severityVal", Else set value= 4 in "severityVal".



```
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```

OutputField="severityVal"

If (Severity = "1 - Critical", 1, If (Severity = "2 - High", 2, If (Severity = "3 - Medium", 3, 4))

So, the complete configuration of MatCal for the above expression would be:

<MathExpression WIType="Risk" OutputField="Probability" OnCreate="true" OnUpdate="true"> <Expression> If (Blocked.ToLower() = "no", (Priority \* severityVal), 50) </Expression> <MathExpression OutputField="severityVal"> <Expression> If (Severity = "1 - Critical", 1, If (Severity = "2 - High", 2, If(Severity = "3 -Medium", 3, 4)))</Expression>

</MathExpression>

</MathExpression>

#### **EXAMPLE 4 (FOR APPLYING CONCATENATION)**

For Risk WI: Description = concatenation ('priority'=Priority, 'Severity'=severity)

MatCal configuration for the above expression would be:

```
<MathExpression WIType="Risk" OutputField="Description" OnCreate="true"
OnUpdate="true">
```

<Expression>"Priority: " + Priority + " Severity: " + Severity </Expression> </MathExpression>

#### EXAMPLE 5 (FOR APPLYING SAME RULE ON MULTIPLE WORK ITEMS)

For Risk & Task WI: if Priority = 1, 2, or 3 than Blocked = Yes if Priority = 4 than Blocked = No

MatCal configuration for the above expression would be:

<MathExpression WIType="Risk,Task" OutputField="Blocked" OnCreate="true" OnUpdate="true">

<Expression> If (Priority = 1 OR Priority = 2 OR Priority = 3, "Yes", "No") </Expression> </MathExpression>

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EXAMPLE 6 (FOR APPLYING SEPARATE RULES ON SEPARATE WORK ITEMS)

For Feature:	If Effort > 50 Mark Priority = 1
	Else If Effort < 50 Mark Priority = 4
For Bug:	If Size > 10 Mark Blocked = Yes
	Else If Effort <10 Mark Blocked = No

As per the structure of MatCal config file, following are the details required:

- WIType= Work Item Types on which expression is required to perform/execute in above scenario are = Feature & Bug
- **OutputField**= Field reference name or Field name on which resultant of expression calculation required to added = In Feature its **Priority** & In Bug its **Blocked**

So, the complete configuration of MatCal for the above expression would be:

<MathExpression WIType="Feature" OutputField="Priority" OnCreate="true" OnUpdate="true">

<Expression> if (Effort &gt; 50, 1, 4) </Expression>

</MathExpression>

<MathExpression WIType="Bug" OutputField="Blocked" OnCreate="true" OnUpdate="true">

<Expression> if ( Size &gt; 10 , "Yes" , "No" )</Expression>

</MathExpression>