

# SITs for Table-based Data

## Proximity

With Sensitive Information Types in Purview, the supporting elements typically are set to be within 300 characters of the match. This works well for text documents and emails, but is less effective for table-based data like spreadsheets or csv files.

For example, let's take a fictitious Medical Record Number. This example is a variable length number with no other formatting, and no padding. This is fairly common, especially with mixed MRN systems.

127528819: 6-9 digits

The corresponding regex to find this MRN is this:

```
\b\d{6,9}\b
```

The custom SIT definition looks like this:

### Pattern #1

- Confidence: High
- Regular Expression: `\b\d{6,9}\b`
- Character proximity: 300 characters (default)
- Supporting elements: case insensitive keywords
  - MRN, Medical Record Number, Record Number

### Pattern #2

- Confidence: Low
- Regular Expression: `\b\d{6,9}\b`
- Character proximity: 300 characters (default)
- Supporting elements: none

### Test Data

Our test data is a simple, fake extract from a MRN system. Note that MRN is the first column, and the column name is one of our keywords (mrn).

"mrn","firstname","lastname","dob","address","city","state","zip","phone","email"  
"492338213","Kelly","Pratt","2001-09-28","80947 Nelson Estates Apt.  
763","Kathyfort","HI","66442","+1-578-586-3745x48021","wking@example.com"  
"789241276","John","Arnold","1955-10-28","03741 Sanchez Shore","South  
Anthonyview","MN","56561","+1-988-725-1788x1975","michael33@example.org"  
"719643833","Steven","Wilson","1948-06-19","341 Brooks Courts","Lake  
Candiceside","ND","92691","001-933-368-7396x72128","yclark@example.net"  
"913581370","Laura","Mitchell","1951-11-25","8421 Kelley Islands Suite  
633","Kramerfort","NM","30252","760.462.3509x7056","shawn66@example.org"  
"175729777","Sean","Lewis","1943-11-17","3140 Hunt Track Apt.  
116","Jamesview","CO","86702","001-964-653-  
2716x1838","aliciawilson@example.net"  
"76761344","Paul","Booth","1936-09-17","3297 Juan Field Apt.  
857","Tanyafurt","MT","80739","358.612.7934x4561","victoriawilson@example.com"  
"286086254","Samantha","Pham","2018-08-23","600 Kimberly Glen Suite 866","Lake  
Alexanderville","NE","64307","350-511-9743x968","michael35@example.net"  
"949601932","Ethan","Berry","1933-02-14","2593 Sandoval  
Pine","Traceyside","IA","79382","+1-682-236-0383x226","natasha45@example.org"  
"206072596","Sharon","Davis","2004-12-03","444 Mark Station Apt. 787","Lake  
Matthewville","GU","87599","482.353.2044x885","christine42@example.com"  
"586966326","Patricia","Roberts","1952-01-18","9939 Jones  
Flats","Sullivanbury","MT","41356","969-900-  
3288x749","silvaronald@example.com"

## Testing the SIT

Running this test data though the tester on the SIT definition, and you'll get something along the lines of this:

Low - 10 unique matches

Matches	Supporting Elements
206072596	-
286086254	-
492338213	"mrn"
789241276	"mrn"
76761344	-
949601932	-
719643833	-

Matches	Supporting Elements
175729777	-
913581370	-
586966326	-

High - 2 unique matches

Matches	Supporting Elements
492338213	"mrn"
789241276	"mrn"

So why did the high only match two? Proximity. Think of CSVs as long run-on sentences. In our test data data above, 300 characters from "mrn" in the first line is around the middle of the third line. In our test data, MRNs that would match are highlighted in green, and those that are 300+ characters away from `mrn` in the first row won't match because of the distance between the actual MRN and the keyword `mrn`.

```
"mrn","firstname","lastname","dob","address","city","state","zip","phone","email"
"492338213","Kelly","Pratt","2001-09-28","80947 Nelson Estates Apt. 763","Kathyfor
"789241276","John","Arnold","1955-10-28","03741 Sanchez Shore","South Anthonyview"
"719643833","Steven","Wilson","1948-06-19","341 Brooks Courts","Lake Candiceside",
"913581370","Laura","Mitchell","1951-11-25","8421 Kelley Islands Suite 633","Krame
"175729777","Sean","Lewis","1943-11-17","3140 Hunt Track Apt. 116","Jamesview","CO
"76761344","Paul","Booth","1936-09-17","3297 Juan Field Apt. 857","Tanyafurt","MT"
"286086254","Samantha","Pham","2018-08-23","600 Kimberly Glen Suite 866","Lake Ale
"949601932","Ethan","Berry","1933-02-14","2593 Sandoval Pine","Traceyside","IA","7
"206072596","Sharon","Davis","2004-12-03","444 Mark Station Apt. 787","Lake Matthe
"586966326","Patricia","Roberts","1952-01-18","9939 Jones Flats","Sullivanbury","M
```

## Techniques

There are multiple ways to deal with this issue.

### Keyword removal

Creating a custom SIT based on a existing SIT, then removing the keyword requirements is one way to address the proximity requirements. The downside to this is an increase in false

positives, especially in something like our MRN, where it's just nine digit number.

## Increasing proximity

You can increase the proximity value, or select anywhere in the document. This can work, however, this does increase the false positive rate, and also increases the chance of the DCS scan timing out in larger documents.

**Character proximity** ⓘ

Detect primary AND supporting elements within  characters

☒ Anywhere in the document

## Adding a lookahead

Instead of the regex matching just one instance, incorporate positive lookahead into the MRN regex that looks for another instance of a MRN on the next line.

```
"\d{6,9}"(?=.*\n.*"\d{6,9}"))
```

This will, however, miss the last MRN, as it doesn't have a MRN following it on the next line.

```
/"\d{6,9}"(?=.*\n.*"\d{6,9}"))/gm
```

Text Tests **NEW**

```
"mrn","firstname","lastname","dob","address","city","state","zip","phone","email","  
"157133549","Aaron","Williams","1993-11-06","6278 White Branch Apt. 821","West Jen  
"760258619","Richard","Wagner","2008-08-04","20459 Brooks Run Apt. 374","North Ste  
"747543485","David","Garner","1912-01-25","822 Garcia Vista Apt. 914","Cuevasview"  
"203748881","Heather","Wheeler","2003-12-30","28233 Brian Roads","Davisborough","Gl
```

## Relaxing proximity

This technique, featured on the [Compliance CxE site](#), creates a custom SIT with settings that will increase matches by assuming that if there are 9 or more low confidence matches without keywords then those will be counted as high confidence as long as there are high confidence matches as well of the same type. This works well for table based data, where it's generally safe to assume that the column contains data that matches.

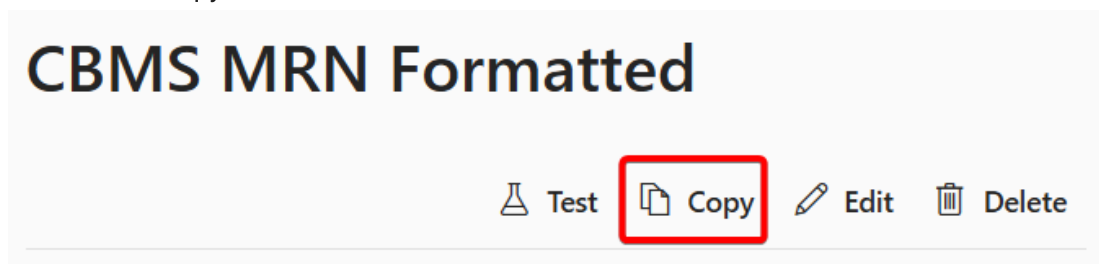
In our example from above, our green MRNs are high, and the red MRNs will also be assumed to be high.

High Confidence  
Low Confidence  
Assumed to be high

```
"mrn","firstname","lastname","dob","address","city","state","zip","phone","email"
"492338213","Kevin","Hart","1967-03-14","10001 Wilson Estates Apt. 763","Kathyfor
"789241276","John","Arnold","1955-10-28","03741 Sanchez Shore","South Anthonyview"
"719643833","Steven","Wilson","1948-06-19","341 Brooks Courts","Lake Candiceside",
"913581370","Laura","Mitchell","1951-11-25","8421 Kelley Islands Suite 633","Krame
"175729777","Sean","Davis","1987-03-11","2140 West Track Apt. 116","Jamesview","CO
"76761344","Paul","Booth","1956-09-17","5297 Juan Field Apt. 857","Tanyafurt","MT"
"286086254","Samantha","Parker","2003-18-23","600 Lakeside Glen Suite 866","Lake Ale
"949601932","Ethan","Berry","1955-02-14","2393 Sunset Lane","Traceyside","IA","7
"206072596","Sharon","Davis","2004-12-03","444 Mark Station Apt. 787","Lake Matthe
"586966326","Patricia","Roberts","1952-01-18","9939 Jones Flats","Sullivanbury","M
```

## Creating a Relaxed Proximity SIT

1. We'll make a copy of our MRN sit in the UI.



2. Edit the copied sit. Duplicate the high confidence pattern (with keywords), remove the keywords and lower the confidence.

Name	Confidence level	
<sup>^</sup> Pattern #1 Primary element <b>Regular expression:</b> MRN Formatted  Character proximity Detect primary AND supporting elements within 300 characters  Supporting elements <b>Keyword list:</b> MRN Keywords	High	
<sup>^</sup> Pattern #2 Primary element <b>Regular expression:</b> MRN Formatted  Character proximity Detect primary AND supporting elements within 300 characters	Medium	

3. Connect to the Compliance PowerShell.

```
Connect-IPPSession
```

4. Export the Custom Rule Pack to xml. The rule pack containing any duplicated base SITs is always called Microsoft.SCCManaged.CustomRulePack, so the export command would be this:

```
$rulepack = Get-DlpSensitiveInformationTypeRulePackage -Identity
"Microsoft.SCCManaged.CustomRulePack"
```

```
[System.IO.File]::WriteAllBytes('purview_custom_rulepack.xml',
$rulepack.SerializedClassificationRuleCollection)
```

5. Edit the XML in an editor such as VS Code
6. Locate the rules element for the SIT you created earlier. Actual definitions are abstracted from the local-specific descriptions, so look in the `<LocalizedStrings>` find the names for the SITs and their matching guid.

```
<Rules>
  <Version minEngineVersion="15.20.1207.000">
    <Entity id="f15a78fd-0cfe-4d19-a227-77eb3aa14ae6" patternsProximity="300" recommendedConfidence="75" relaxProximity="true">
      <Pattern confidenceLevel="75">
        <IdMatch idRef="Func_ssn" />
        <Match idRef="Keyword_ssn" />
      </Pattern>
      <Pattern confidenceLevel="75">
        <IdMatch idRef="Func_unformatted_ssn" />
        <Match idRef="Keyword_ssn" />
      </Pattern>
      <Pattern confidenceLevel="65">
        <IdMatch idRef="Func_randomized_formatted_ssn" />
        <Match idRef="Keyword_ssn" />
      </Pattern>
      <Pattern confidenceLevel="65">
        <IdMatch idRef="Func_randomized_unformatted_ssn" />
        <Match idRef="Keyword_ssn" />
      </Pattern>
    </Entity>
  </Version>
  <LocalizedStrings>
    <Resource idRef="f15a78fd-0cfe-4d19-a227-77eb3aa14ae6">
      <Name default="true" langcode="en-us">CBMS - U.S. Social Security Number (SSN)</Name>
      <Description default="true" langcode="en-us">Detects formatted and unformatted US social security number.</Description>
    </Resource>
  </LocalizedStrings>
</Rules>
```

7. Change relaxProximity from false to true and save.

```
<Entity id="f15a78fd-0cfe-4d19-a227-77eb3aa14ae6" patternsProximity="300"
recommendedConfidence="75" relaxProximity="true">
```

8. Upload the rulepack:

```
Set-DlpSensitiveInformationTypeRulePackage -FileData
([System.IO.File]::ReadAllBytes(".\purview_custom_rulepack.xml"))
```

Answer Yes when prompted.

After uploading, go back to the portal and test the SIT again with the same data as before. You'll notice that the matches that previously were lower confidence are included in the high, even though they do not have the `mrn` keyword within 300 characters.