



Avaya Solution & Interoperability Test Lab

Application Notes for configuring Enterprise Server 12.5 from RMG Networks with Avaya Call Management System R18.0.x – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for RMG Networks Enterprise Server to interoperate with Avaya Call Management System via `rt_socket` interfaces. The `rt_socket` interfaces, developed by the Avaya Professional Services organization, provide real-time data related to Agents, Skills, and Vector Directory Numbers.

Readers should pay attention to Section 2, in particular the scope of testing as outlined in Section 2.1 as well as the observations noted in Section 2.2, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required to integrate Enterprise Server R12.5 from RMG Networks with Avaya Call Management System R18.0.

As an Avaya contact center reporting product, Avaya Call Management System (CMS) collects and reports contact center data from the ACD feature (Automatic Call Distributor) of Avaya Aura® Communication Manager. Avaya Professional Services has developed a line of adapters called `rt_socket` to facilitate integration of CMS with third party products.

Enterprise Server is the engine that drives RMG Networks' content management system and is responsible for collecting content from various sources, repurposing it according to pre-defined business rules and then distributing the repurposed content to the visual solution endpoints. Enterprise Server uses internal TCP/IP Collectors to integrate with CMS via `rt_socket` adapters. With the integration, Enterprise Server can monitor a wide range of real time statistics that are available from CMS. The TCP/IP Collector is a part of Enterprise Server and is configured via Portal Administrator which runs either on Enterprise Server or as a remote client. Data received by Enterprise Server can be viewed using Portal Data Viewer, which is another element of Enterprise Server.

Various `rt_socket` adapters are built on CMS custom reports to provide real-time contact center data required by Enterprise Server. The `rt_socket` adapters, developed for RMG Networks, that were used in this compliance test included:

- Agent Performance Interface
- Skill Performance Interface
- VDN Performance Interface

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on verifying Enterprise Server's ability to receive real-time data from CMS using the CMS `rt_socket` adapters. A small call center was set up on Communication Manager and various tests were executed including:

- Agent in various states, e.g. Available, Aux Work, After Call Work, etc.
- Agent on ACD calls.
- Agent on non-ACD calls.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. On Communication Manager, relevant Skills and Vector Directory Number (VDN) objects are configured to be “measured” for CMS. When a call travels through a “measured” object on Communication Manager, the ACD related data is sent to CMS. CMS sends updates for agents, Skills, and VDNs to Enterprise Server. During compliance testing data was sent every 5 seconds.

The feature test cases were performed manually. Incoming calls were made to the measured VDNs, Skills, and Agents to generate data to the Enterprise Server. Manual call control functions such as answer, hold, resume, and disconnect, along with agent work mode changes including login, auto-in, manual-in, after call work, auxwork, and logout were exercised as necessary to populate specific fields in the reports. Additional call scenarios such as call waiting time longer than service level target, abandoned calls, inbound extension calls to an agent in auxwork or after call work mode, and outbound extension calls from an agent in auxwork or after call work mode were also exercised.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cable to Enterprise Server, rebooting Enterprise Server, and by restarting the CMS adapters.

For each data field in the tested interfaces, the corresponding CMS custom report was used to validate the accuracy of data generated by CMS and displayed by the Portal Data Viewer of Enterprise Server.

2.2. Test Results

The Enterprise Server successfully passed the compliance test. All the fields in the three rt_socket interfaces including Agent Performance Interface, Skill Performance Interface, and VDN Performance Interface were verified.

2.3. Support

Technical support from RMG Networks can be obtained through the following:

- **Phone:** +1 877-789-TECH (8324)
- **Email:** support@rmgnetworks.com

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya solution consists of an Avaya CMS, Communication Manager, System Manager, and a G430 Gateway. The `rt_sockets` developed by Avaya Professional Services are installed on Avaya Call Management System. The RMG Networks Enterprise Server runs a TCP “listener” process to accept data in real-time from Avaya Call Management System.

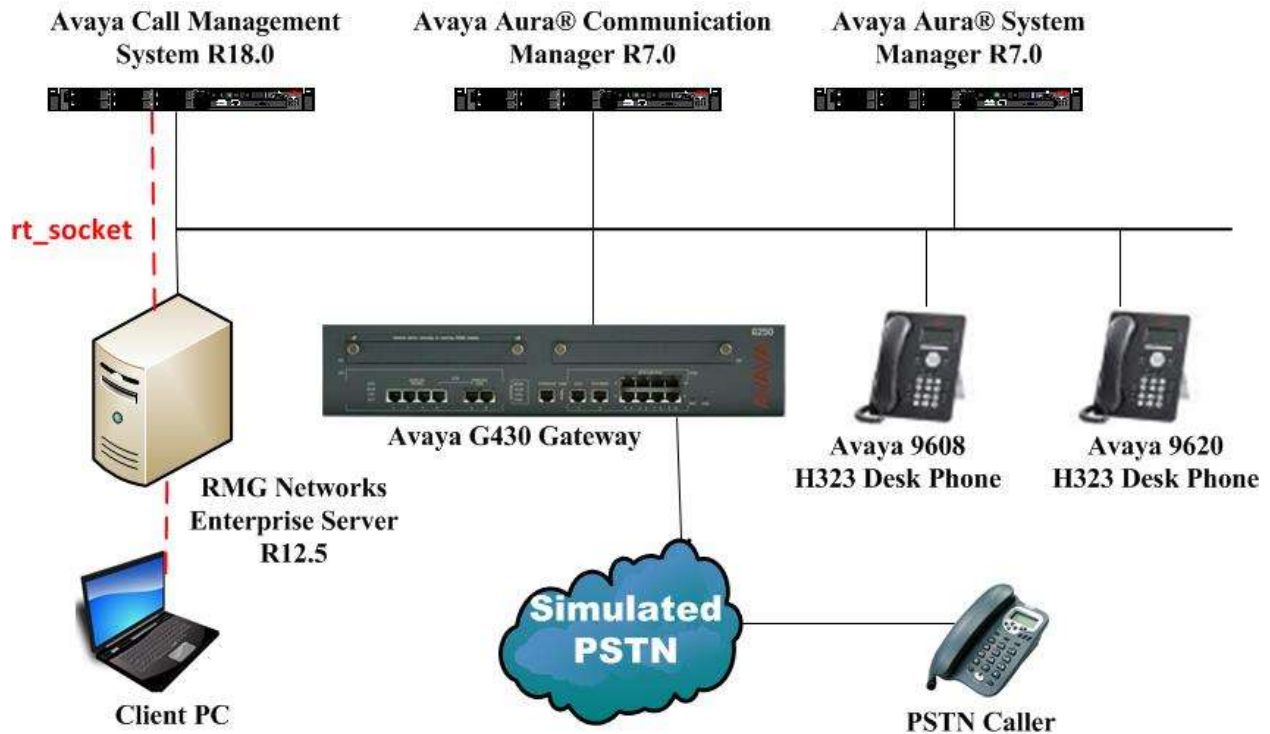


Figure 1: Enterprise Server with Avaya Call Management System

4. Equipment and Software Validated

The following equipment and software were used for the test configuration:

Equipment/Software	Release/Version
Avaya Aura® System Manager running on a virtual server	System Manager 7.0.0.1 Build No. – 7.0.0.0.16266-7.0.9.7001011 Software Update Revision No: 7.0.0.1.4212
Avaya Aura® Session Manager running on a virtual server	Session Manager R7.0 Build No. – 7.0.0.1.700102
Avaya Aura® Communication Manager running on a virtual server	R7.0 SP1 00.0.441.0-22684
Avaya Call Management Services running on a virtual server	R18.0.0.1
Avaya G450 Gateway	37.20.0 /1
Avaya 9608 one-X® Deskphone	96x1 H.323 Release 6.4014U
Avaya 9620 one-X® Deskphone	9600 H.323 Release 6.4014U
RMG Networks Enterprise Server running on Windows Server 2012 R2	12.5

5. Configure Avaya Aura® Communication Manager

The administration of contact center objects and connectivity between Communication Manager and CMS are not the focus of these Application Notes and are not described here. For the details, refer to the appropriate documentation listed in **Section 10**.

Configuration and verification operations on the Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. The information provided in this section describes the configuration of the Communication Manager for this solution. It is implied a working system is already in place, including Skills, Vectors, VDN's and Agents. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 10**.

This section provides the procedures for how to enable VDN, Skill, and Agent measurement data to be sent to CMS. The procedures include the following areas:

- Administer measured VDN
- Administer measured Skill and Agent

For the compliance testing, the following contact center devices were used.

VDN	Skill	Agent
7900	90	7700
7901	91	7701

5.1. Administer Measured VDN

Use the **change vdn x** command, where **x** is the extension of the VDN to be measured by CMS. Set the **Measured** field to **both** to enable measurement data on the VDN to be sent to CMS. Repeat this step for all VDNs that will be measured by CMS.

```
change vdn 7900                                     Page 1 of 3
                                                    VECTOR DIRECTORY NUMBER
                                                    Extension: 7900
                                                    Name*: Sales Voice
                                                    Destination: Vector Number          77
Attendant Vectoring? n
Meet-me Conferencing? n
Allow VDN Override? n
COR: 1
TN*: 1
Measured: both
Acceptable Service Level (sec): 20
VDN of Origin Annc. Extension*:
1st Skill*:90
2nd Skill*:
3rd Skill*:
```

5.2. Administer Measured Skill and Agent

Use the **change hunt-group x** command, where **x** is the number of the Skill group to be measured by CMS. Navigate to **Page 2**, and set the **Measured** field to **both** to enable measurement data on the Skill group and the associated Agents to be sent to CMS. Repeat this step for all Skill groups that will be measured by CMS.

```

change hunt-group 90                                     Page 2 of 4
                                                    HUNT GROUP
                Skill? y           Expected Call Handling Time (sec): 180
                AAS? n             Service Level Target (% in sec): 80 in 20
                Measured: both
Supervisor Extension:

Controlling Adjunct: none

VuStats Objective:

Multiple Call Handling: none

Timed ACW Interval (sec):           After Xfer or Held Call Drops? n

```

For the compliance testing, two Skill groups with group numbers **90** and **91** were configured to be measured. In addition, two agents with agent ID's **7700** and **7701** were used as available agents for the above Skill groups. Use the command **list agent LoginID** to show the agents configured and the Skills associated with these agents.

```

list agent-loginID
                AGENT LOGINID
Login ID      Name           Extension   Dir Agt  AAS/AUD      COR Ag Pr
SO
                Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv
Skil/Lv
7700        Sales Agent   7000
                90/01   10/01
7701        Support Agent 7001
                91/01   11/01

```

5.3. Save Avaya Aura® Communication Manager Configuration

From the Command Line enter **Save Translation**, in order to commit the changes that have been introduced to memory on Communication Manager.

6. Configure Avaya Call Management System

This section provides the CMS configuration required for supporting Enterprise Server integration, which includes the following:

- Configure real-time adapter parameters
- Activate the real-time adapter

6.1. Configure Real-Time Adapter Parameters

Three `rt_socket` real-time adapters are installed in CMS to support Enterprise Server integration. The parameters associated with the adapters are described below along with the values assigned shown in the screenshot. It is advised, however, that CMS adapter configuration should only be performed by the Avaya Professional Services organization. Questions about adapter configuration should be directed to Avaya Professional Services.

PuTTY can be used to open an SSH session to CMS. Enter the appropriate credentials and navigate to `/export/home/pserv/rt_socket`. Open the file called `rta.conf`. Sessions 1, 2, and 3 in the screenshot below specify the parameter values for the Agent, Skill, and VDN adapters respectively.

HOST:	hostname or IP address of the Enterprise Server. If a hostname is used, the name needs to be added to <code>/etc/hosts</code> file as well.
PORT:	TCP port
ACD:	ACD being monitored
OPTS:	list of options include <code>-E</code> for end of record string
REPORT:	custom report name for this adapter
MONITOR_LISTS:	objects ids to monitor
REFRESH:	refresh rate

```
#----- Session 1 -----
HOST1=WIN2012RMGNetworks      # the receiving server's host name in /etc/hosts
PORT1=7011                    # the receiving server's port
ACD1=1                        # ACD being monitored
OPTS1="-E ==EOD=="           # applicable command line options
REPORT1=agent_symon           # respective custom report name
MONITOR_LIST1="1-999"        # skills to monitor
REFRESH1=5                    # respective report refresh rate
DEST_APP1=""                  # destination app for rt_socket or Generic-RTA
#----- Session 2 -----
HOST2= WIN2012RMGNetworks
PORT2=7012
ACD2=1
OPTS2="-E ==EOD=="
REPORT2=skill_symon
MONITOR_LIST2="1-999"
REFRESH2=5
DEST_APP2=""                  # destination app for rt_socket or Generic-RTA
#----- Session 3 -----
HOST3= WIN2012RMGNetworks
PORT3=7013
ACD3=3
OPTS3="-E ==EOD=="
REPORT3=vdn_symon
```



```
MONITOR_LIST3="25900-25999"  
REFRESH3=5  
DEST_APP3="" # destination app for rt_socket or Generic-RTA
```

6.2. Activate Real-time Adapters

This section describes how to activate the `rt_socket` adapters. Log in to CMS using an SSH client such as PuTTY and enter the appropriate credentials. Change directory to `/export/home/pserv/rt_socket`. Run the `./menurta` command to access the **RT_Socket Menu**. From the menu, choose **2** to stop all sessions. Each session corresponds to one real-time interface for CMS.

```
----- RT_Socket Menu -----
1) Start RT_Socket Interface
2) Stop RT_Socket Interface
3) Check Status
4) Display License Info
5) View Maintenance Log
6) Show Version
7) Change Input Parameters
8) Display Configuration
0) Exit
=====
Choice ==> 2

Which rt_socket session do you want to stop? [1-32] [all]
stopping rt_socket session: all
Stopping rt_socket session 1, please wait...
Stopping rt_socket session 2, please wait...
Stopping rt_socket session 3, please wait...

Press Enter to return to menu:
```

Once all sessions are stopped, press **Enter** to return to the **RT_Socket menu** screen. Choose **1** from the menu to start all sessions.

```
----- RT_Socket Menu -----
1) Start RT_Socket Interface
2) Stop RT_Socket Interface
3) Check Status
4) Display License Info
5) View Maintenance Log
6) Show Version
7) Change Input Parameters
8) Display Configuration
0) Exit
=====
Choice ==> 1

Which RT_Socket session do you want to start? [1-32] [all]
Starting session 1, please wait...
Starting session 2, please wait...
Starting session 3, please wait...

Press Enter to return to menu:
```

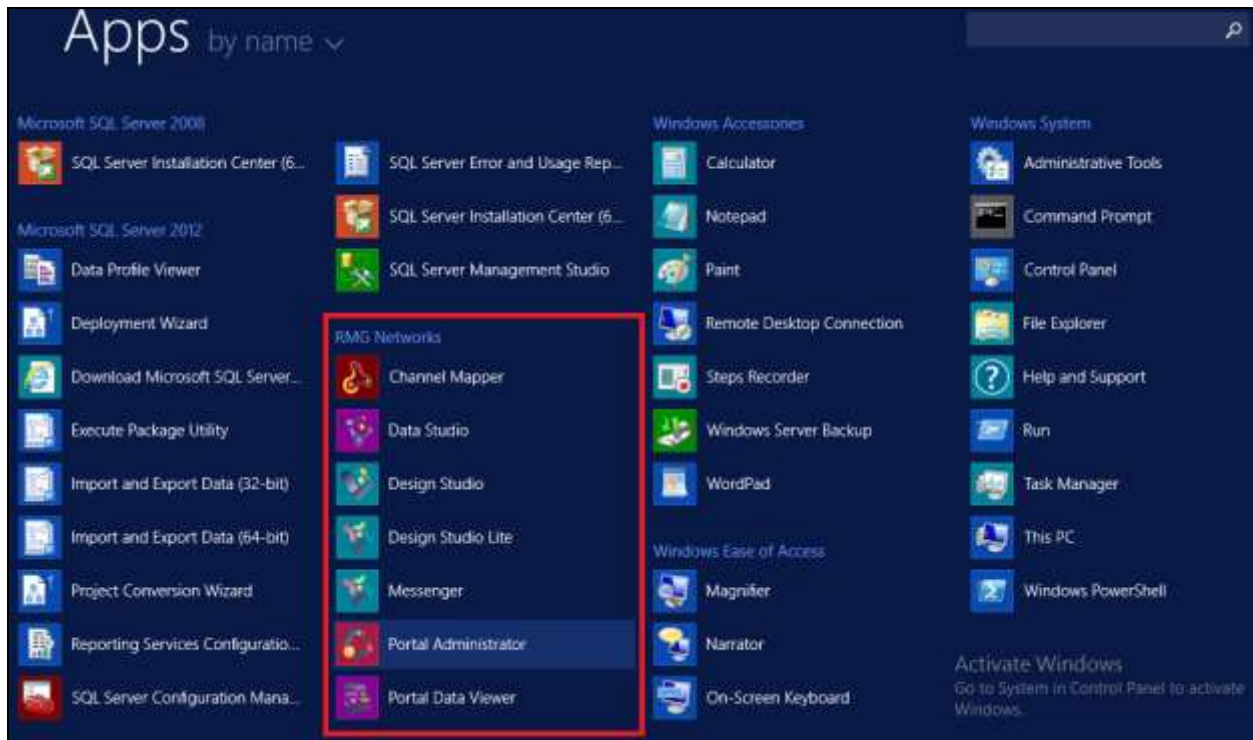
Once all sessions are started, press **Enter** to return to the **RT_Socket menu** screen and then **0** to exit.

7. Configure Enterprise Server

This section describes how to configure Enterprise Server.

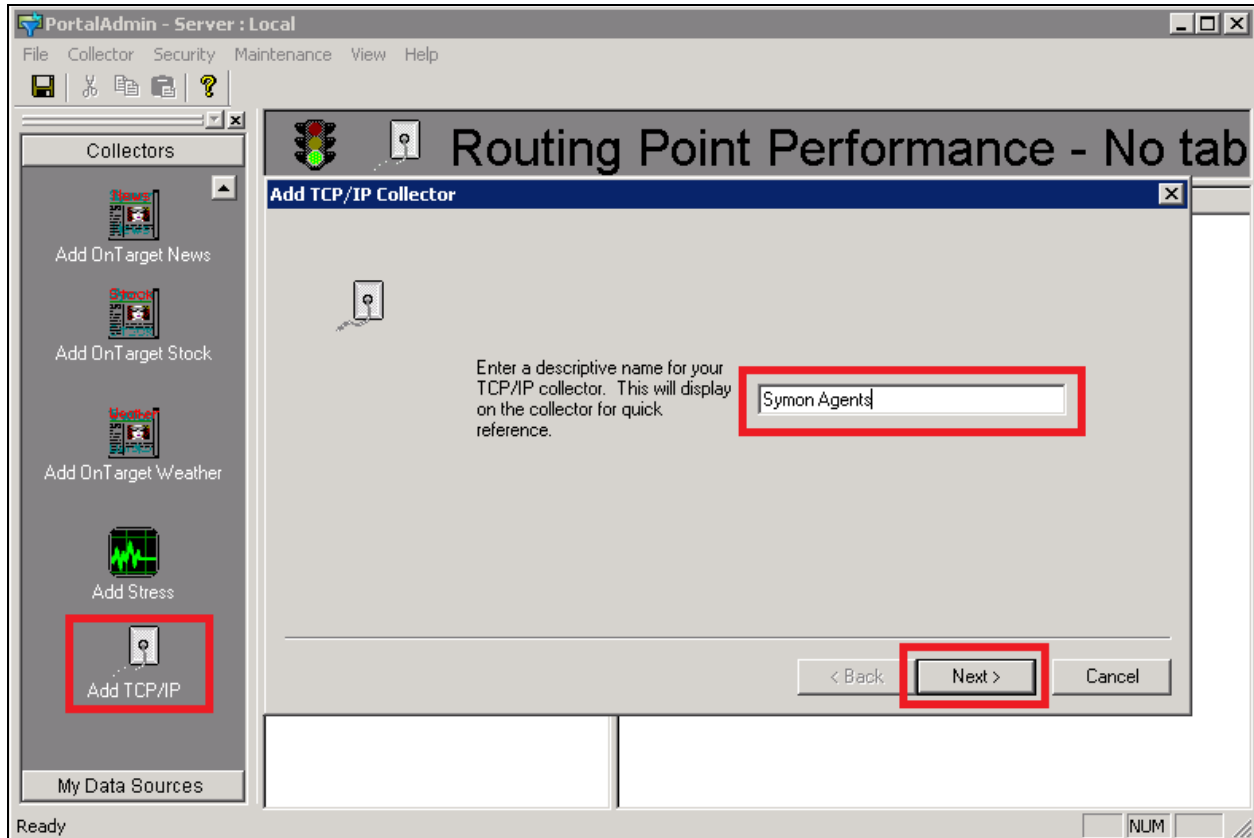
7.1. Launch Portal Administrator

Start **Portal Administrator** by clicking on the **Applications** on Windows 2012 Server. The screen below shows all the programs or **Apps** installed for RMG Networks, simply click on the **Portal Administrator** program.

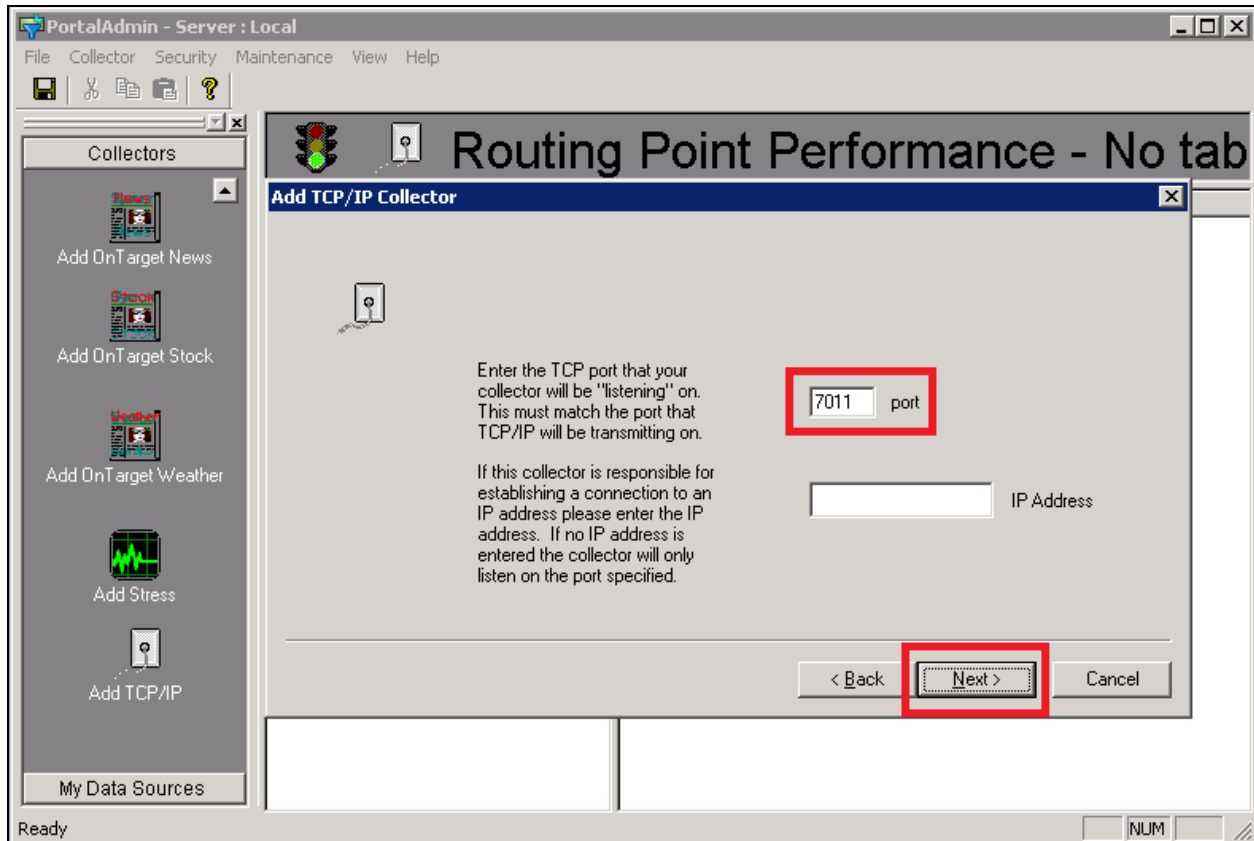


7.2. Configure TCP/IP Collector

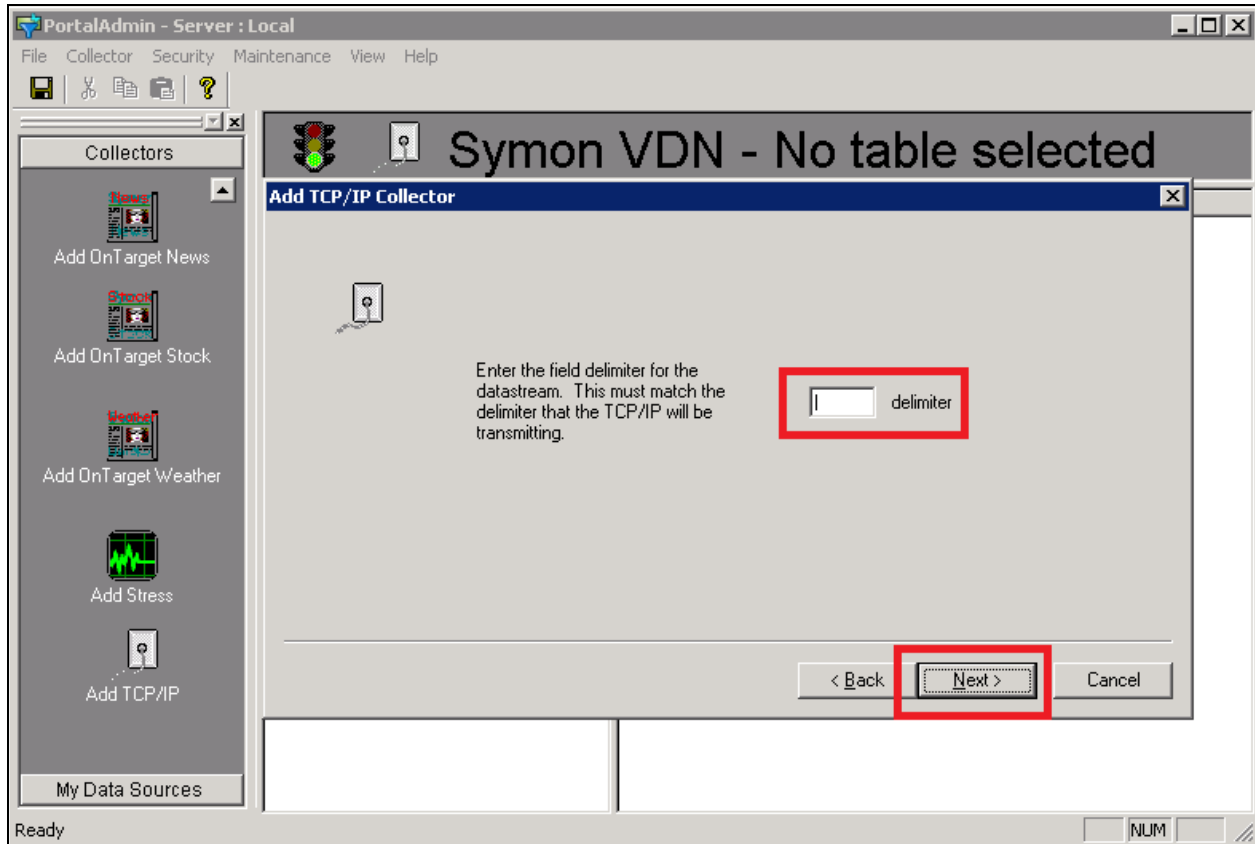
Enterprise Server uses three data feeds from CMS. Each data feed needs a TCP/IP Collector defined in Enterprise Server. To create a TCP/IP collector, click the **Add TCP/IP** icon in the **Collectors** section of the left pane. After the **Add TCP/IP Collector** screen pops up, enter the name of the collector, in this case **Symon Agents**, and click **Next**.



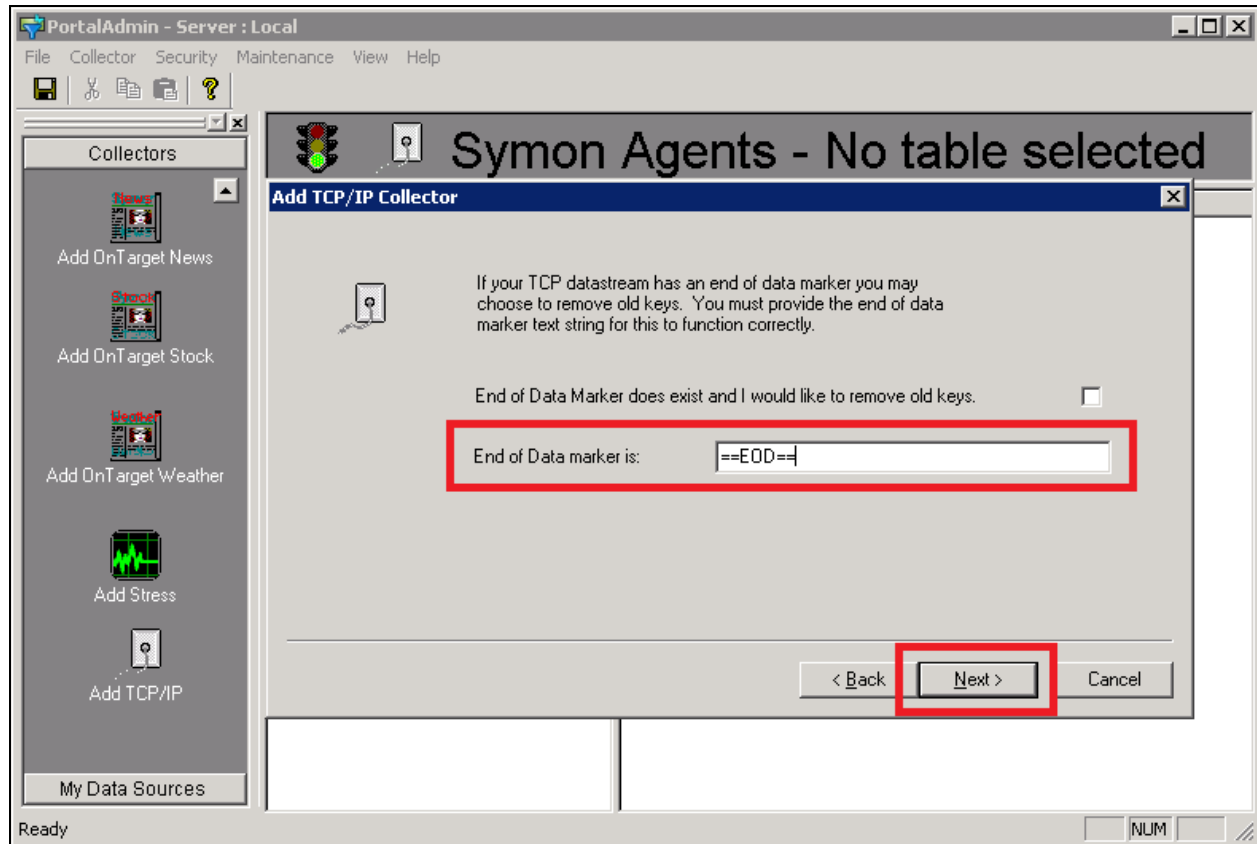
On the next screen enter the port number configured in **Section 6.1** for this adapter and click **Next**.



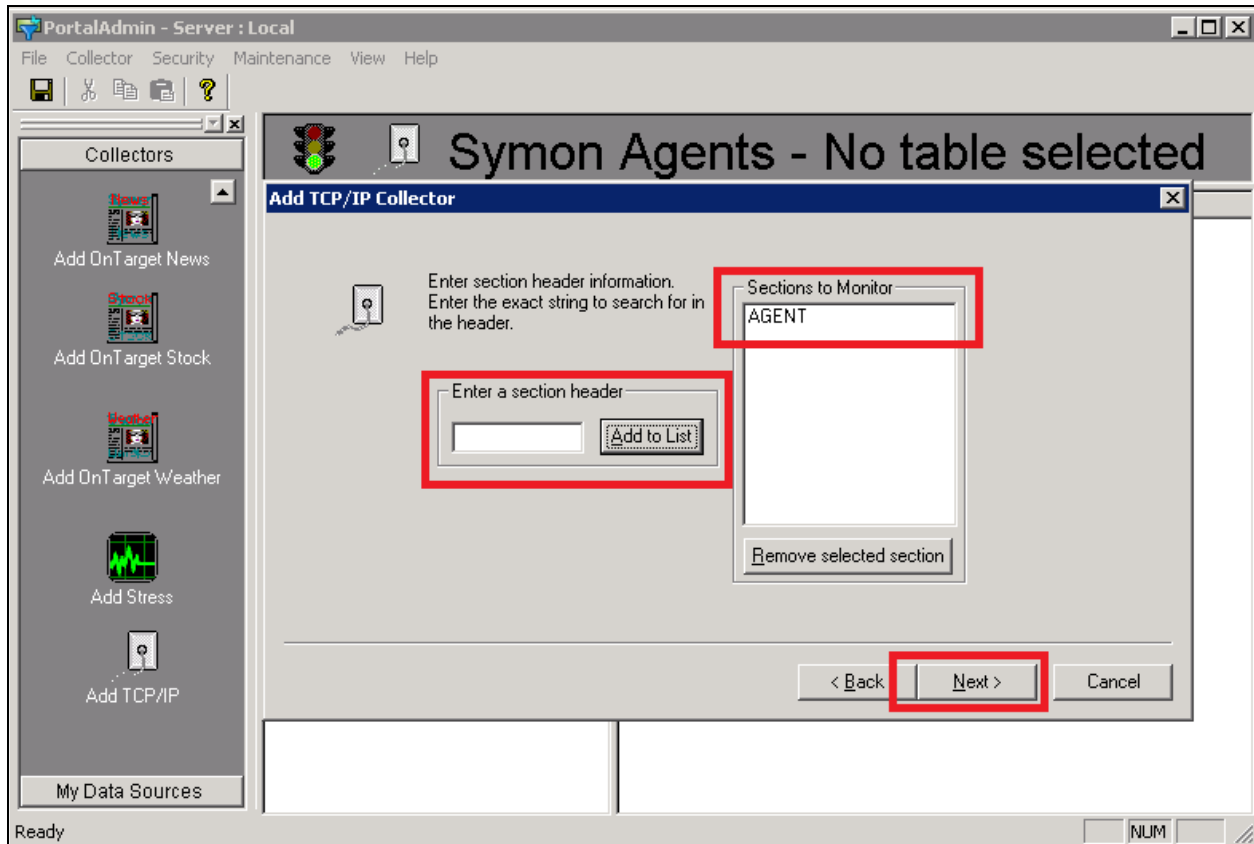
On the next screen enter the delimiter (“|”) and click **Next**.



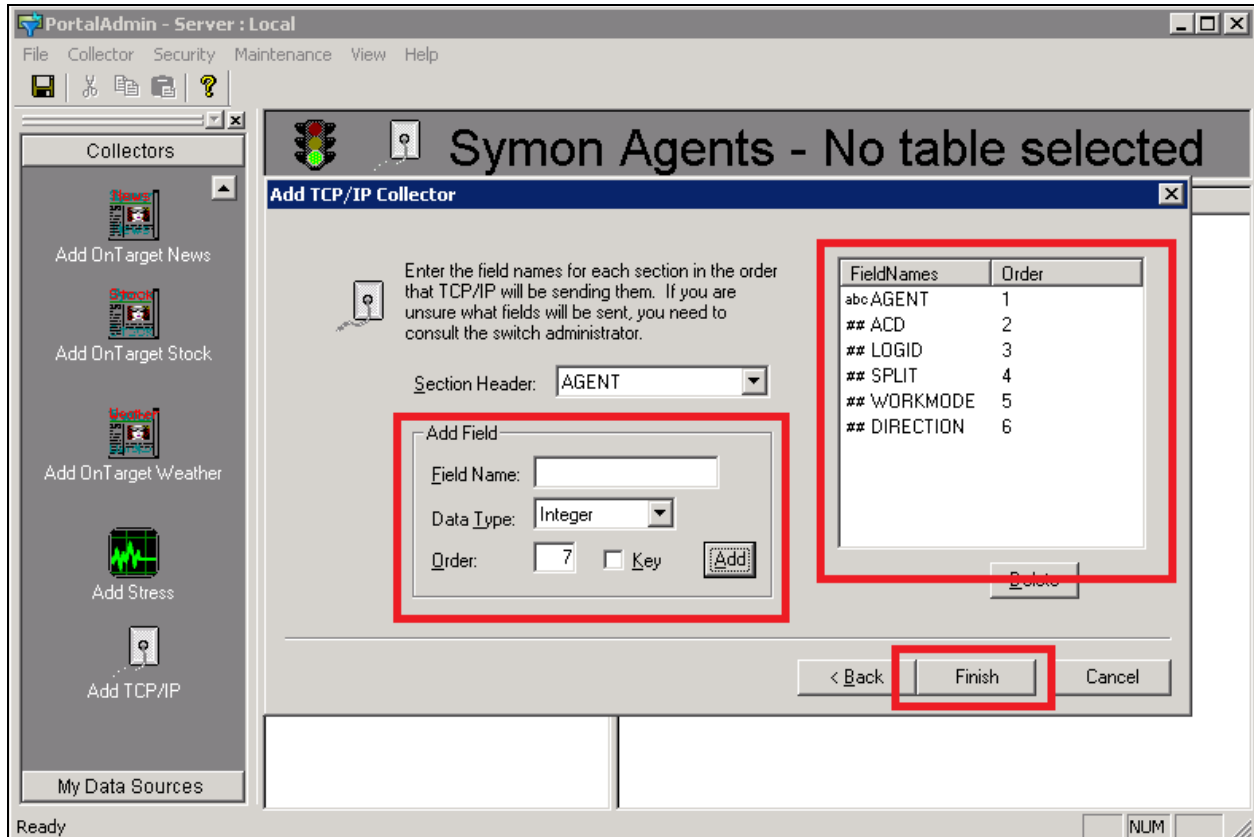
On the next screen enter the **End of Data marker** and click **Next**. In this compliance test **==EOD==** is sent as the **End of Data marker** by the rt_socket adapters.



On the next screen set the **Section Header**. The **Section Header** is the first field in each data record. It will be used to identify a group of fields to be monitored. The three collectors, “Symon Agents”, “Symon Skills”, and “Symon VDN” use “AGENT”, “SKILL”, and “VDN” as the section headers respectively. Enter the section header value. Click **Add to List**, and then click **Next**.



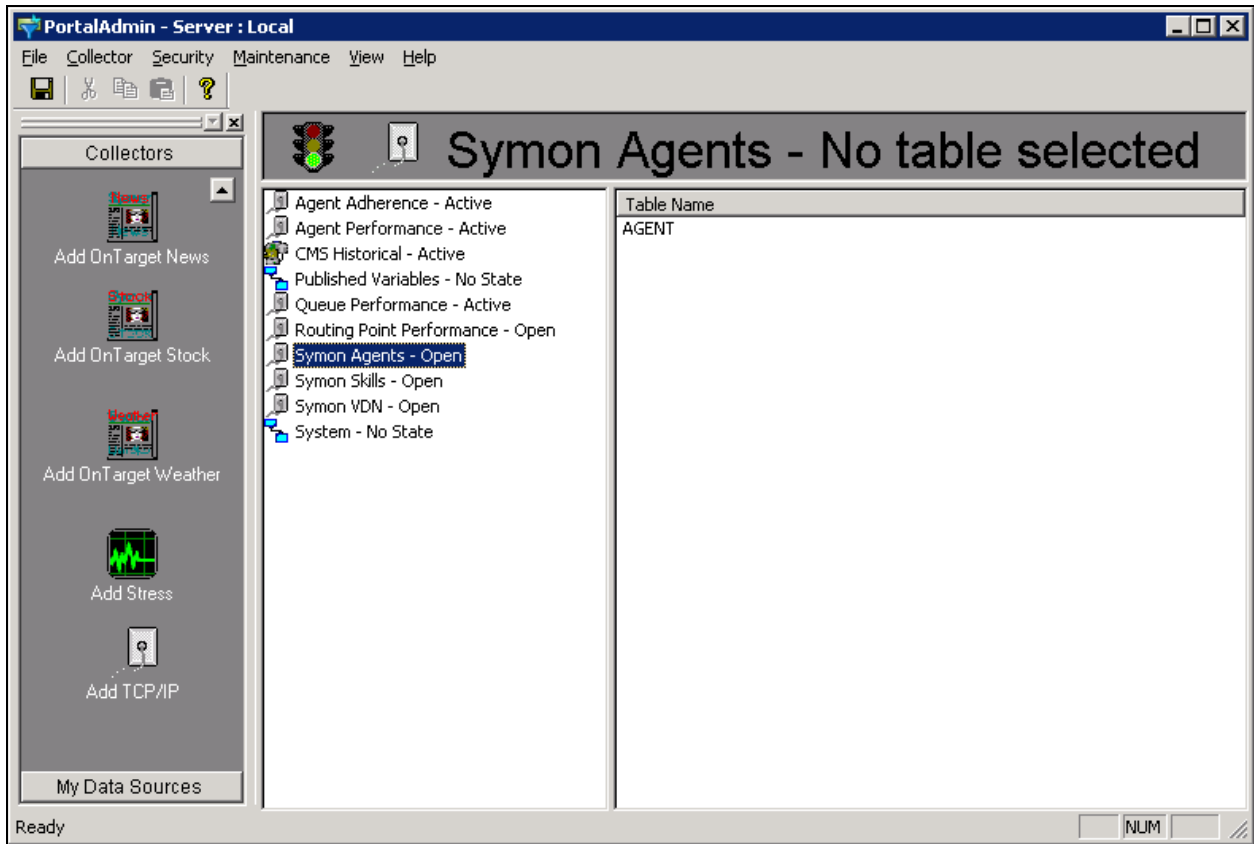
On the next screen add the fields that will be monitored within the section, the example below shows the Section **AGENT** that was selected on the previous page. Select the **Section Header** for this field, enter a **Field Name**, select a **Data Type**, define the **order**, and click **Add**. Repeat this process on the same page until all the fields have been added. The screen below shows a partial list of the fields for “Symon Agents”. Please note that the section header is also defined as the first field in the Section.



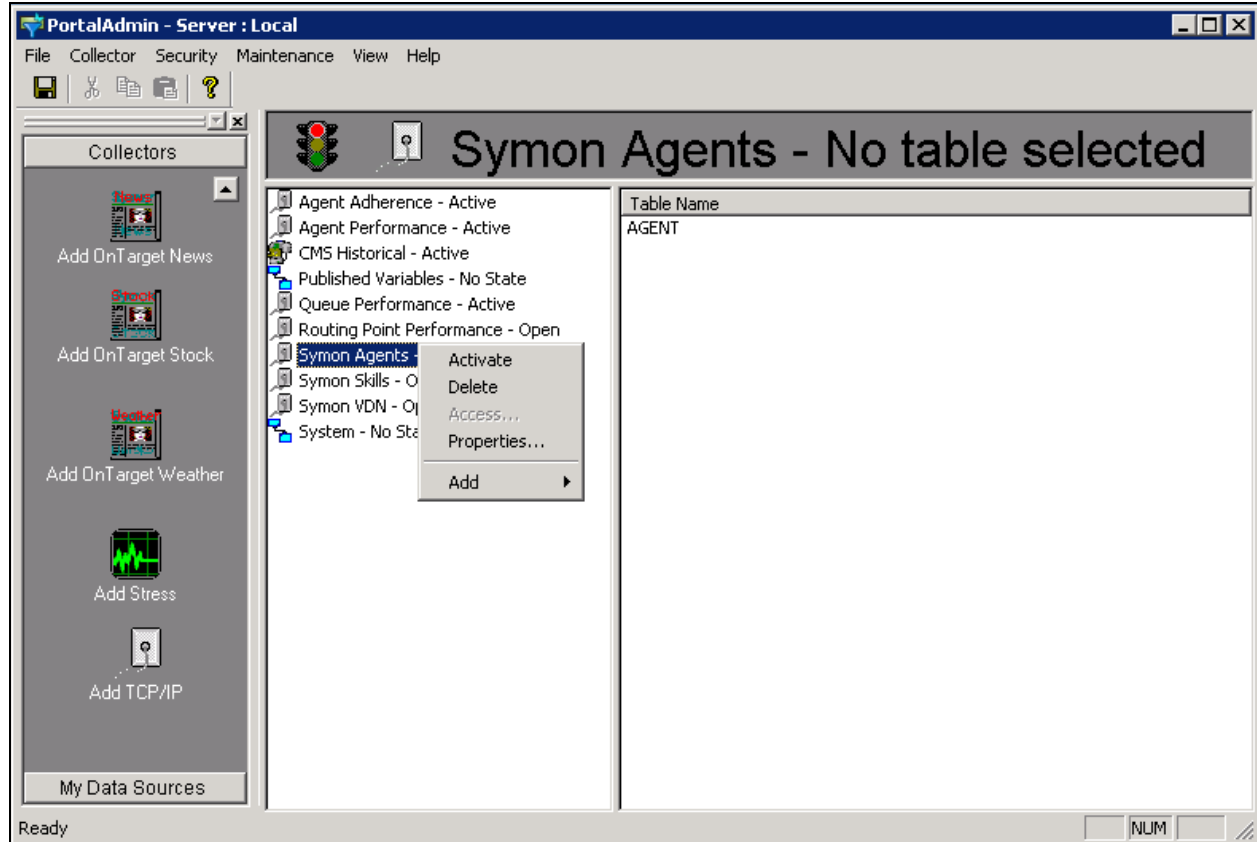
Note: Check the **Key** box if this field will be used by the collector to associate incoming data with this report. At least one key is required for each section. In this case, the **LOGID** field is configured as a key.

Click **Finish**. The newly configured collector will show up in the middle pane with the state being “Inactive” (not shown).

Repeat the process for all the data feeds. The screenshot below shows that three TCP/IP Collectors, “Symon Agents”, “Symon Skills”, and “Symon VDN”, have been added to the system.



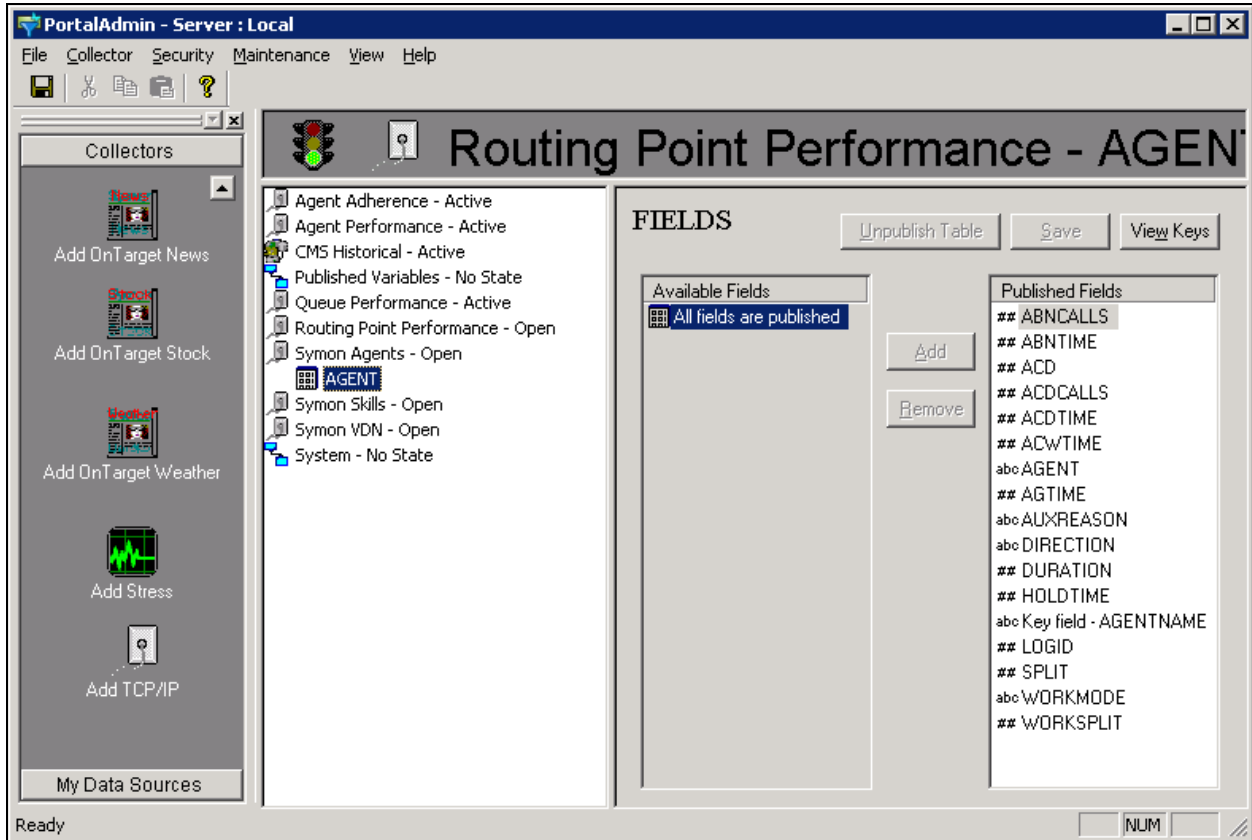
Right-click on the newly added collector and then select **Activate**.



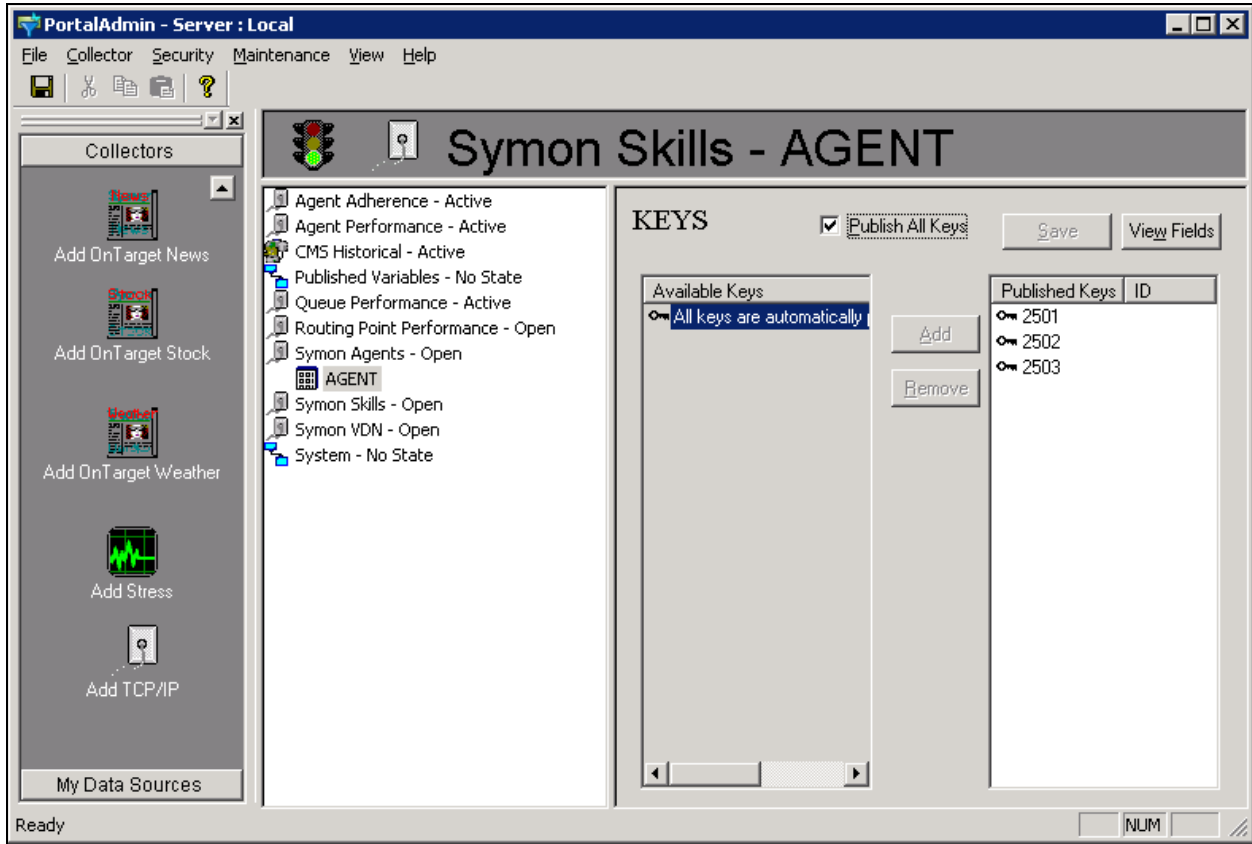
The state will change to **Open** then to **Active** (not shown).

7.3. Publish Keys for TCP/IP Collector

From the list of collectors double click "Symon Agents" collector to show the section header "AGENT". Click the section header. The **FIELDS** window is displayed.



From the **FIELD** window click the **View Keys** button. The **KEYS** window shown below is displayed. Check the **Publish All Keys** box, and click **Save**.

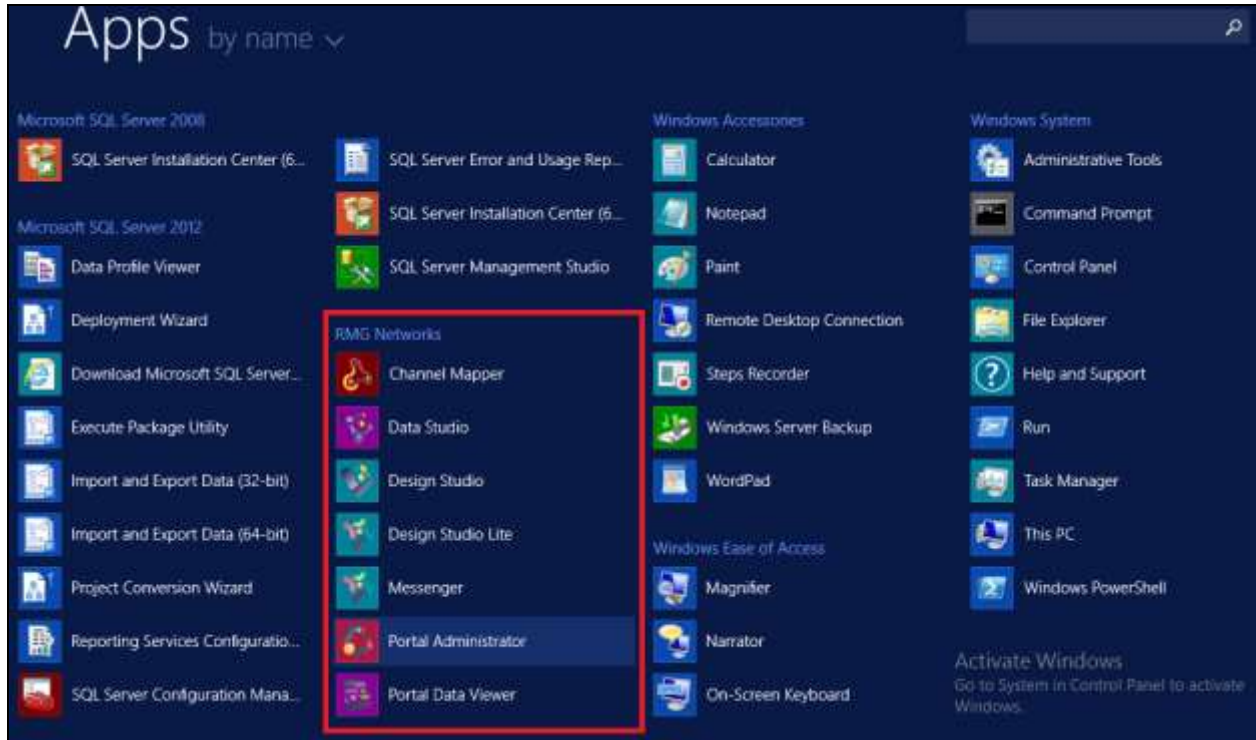


Repeat the steps for "Symon Skills" and "Symon VDN" collectors.

Note: All keys are now automatically published by the collector.

8. Verification Steps

This section describes the steps to verify proper configuration of CMS and Enterprise Server. As per **Section 7.1** the RMG Network programs can all be found by clicking on the Applications page on the Windows 2012 Server.



8.1. Verify CMS Adapters

Log in to CMS using an SSH client such as PuTTY and enter the appropriate credentials. Change directory to `/export/home/pserv/rt_socket`. Run the `“./menurta”` command to access the **RT_Socket Menu**.

```
----- RT_Socket Menu -----  
1) Start RT_Socket Interface  
2) Stop RT_Socket Interface  
3) Check Status  
4) Display License Info  
5) View Maintenance Log  
6) Show Version  
7) Change Input Parameters  
8) Display Configuration  
0) Exit  
=====  
Choice ==> 3
```

From the **RT_Socket Menu** screen, choose **3** to check the status of the sessions. Each session corresponds to a `rt_socket` interface to Enterprise Server. Ensure that all three sessions defined for Enterprise Server are running.

```
Checking status of all configured sessions...

RT_Socket session 1 is running and is connected
RT_Socket session 2 is running and is connected
RT_Socket session 3 is running and is connected

Press Enter to return to menu:
```

8.2. Verify Enterprise Server

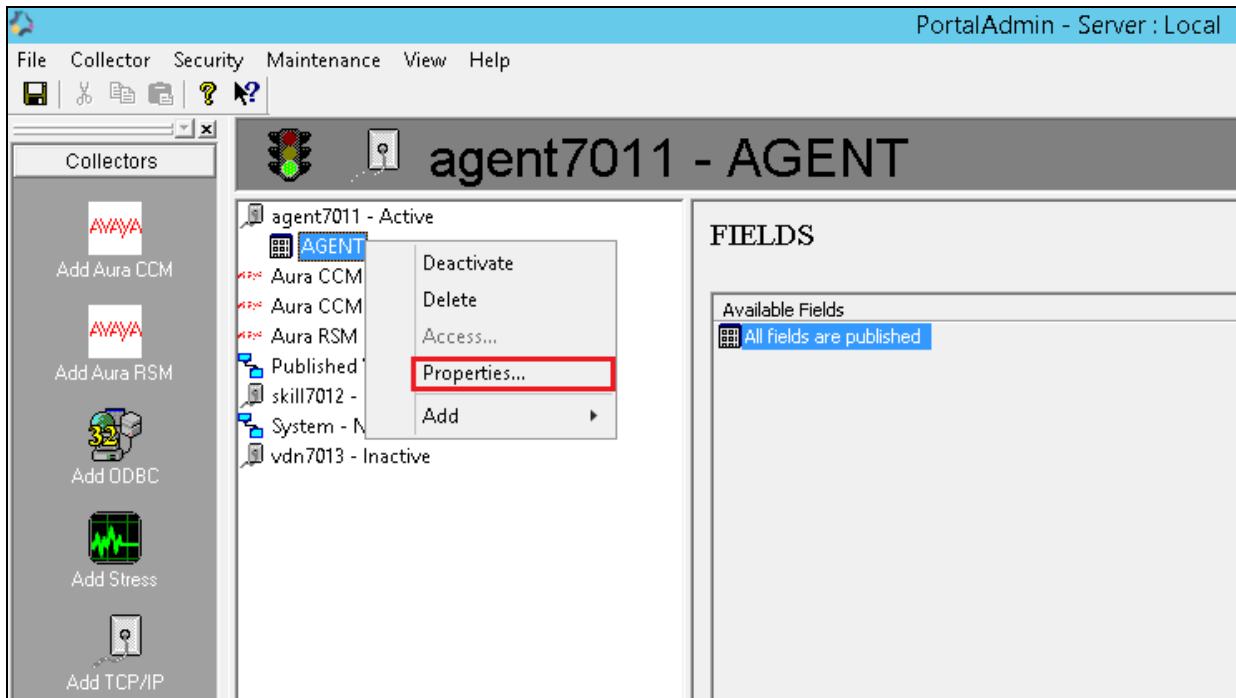
This section describes how to verify proper functionality of Enterprise Server. Open the **Portal Administrator** from the list of RMG Networks programs, listed on the Windows 2012 server.

8.2.1. Verify Collector State

The Collectors can have the following states:

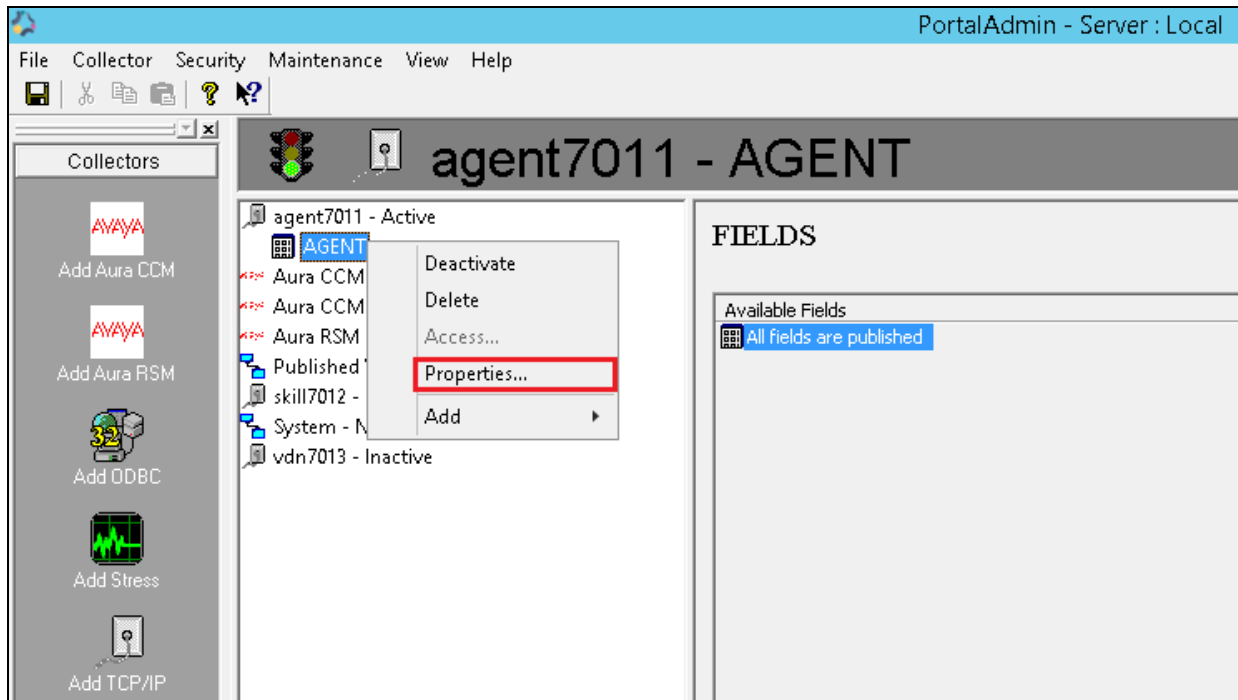
- Inactive – Collector is administratively inactive.
- Open – Collector is administratively active but not receiving data.
- Active - Collector is administratively active and receiving data.
- No State – Collector has no state.

In the middle pane make sure that the three collectors used by this test are in “Active” state.

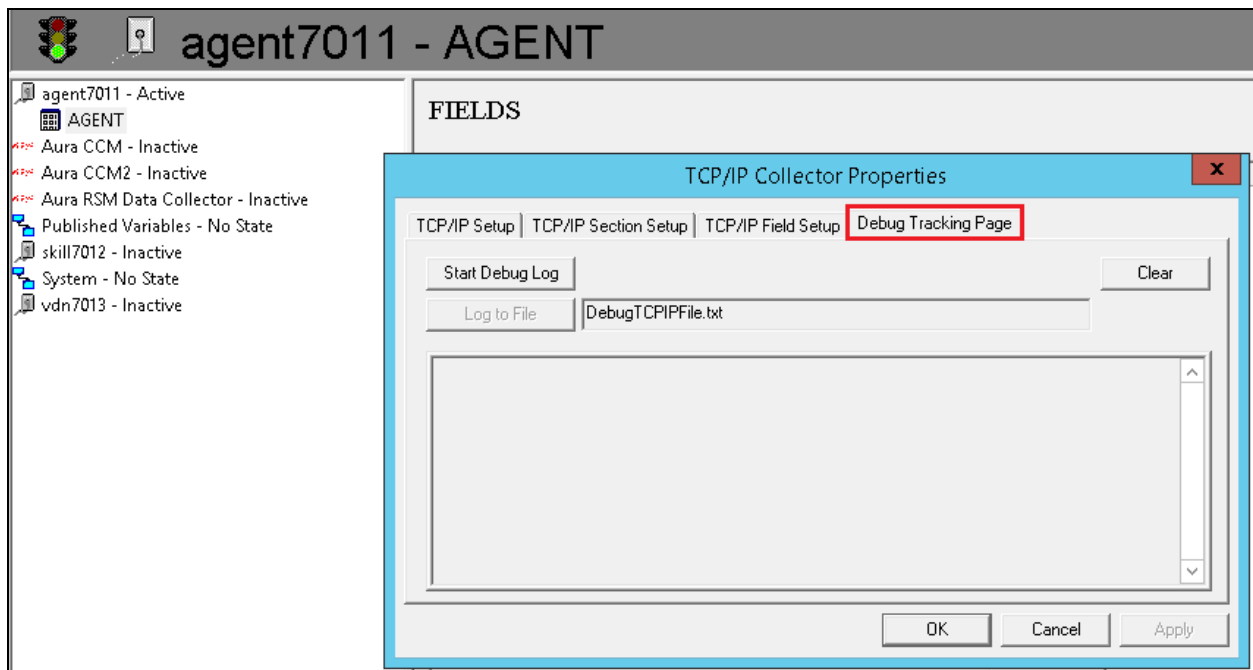


8.2.2. Verify Collector Data Using Debug

Right-click on a collector used for this test with an “Active” state and select **Properties**.

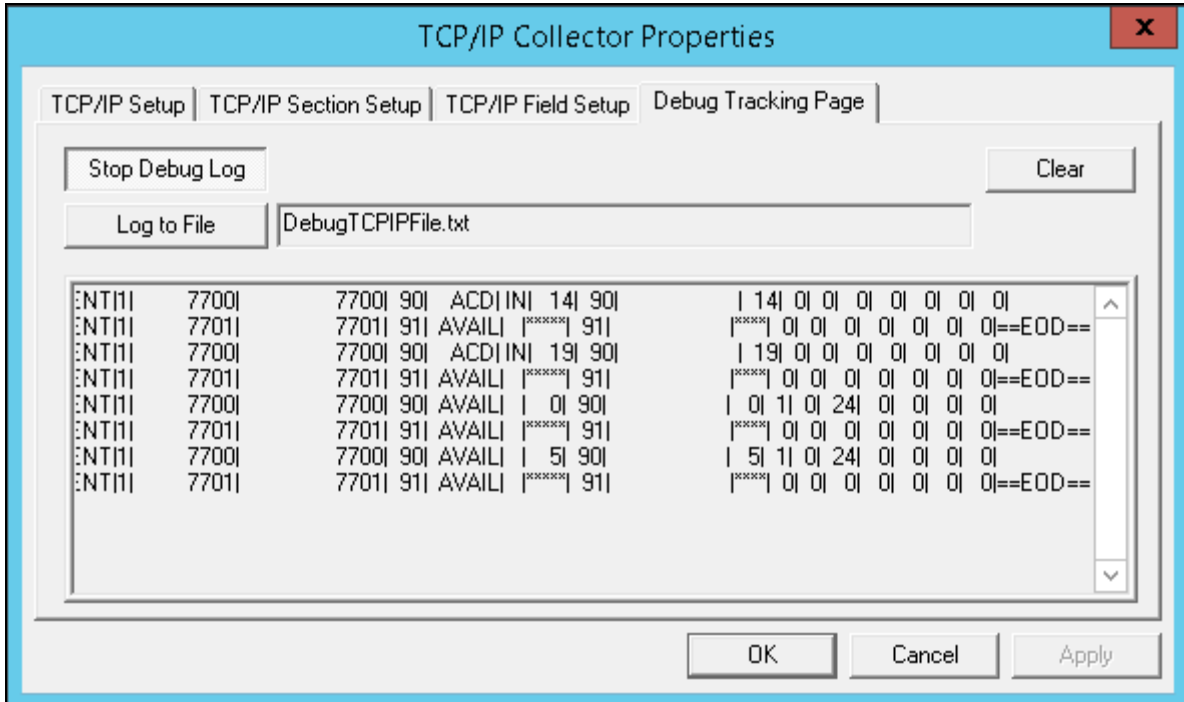


A window will pop up to ask the user to deactivate the collector if a change is to be made to the collector. Click **OK** to move forward. The **TCP/IP Properties** screen will be displayed. Select the **Debug Tracking Page** tab.



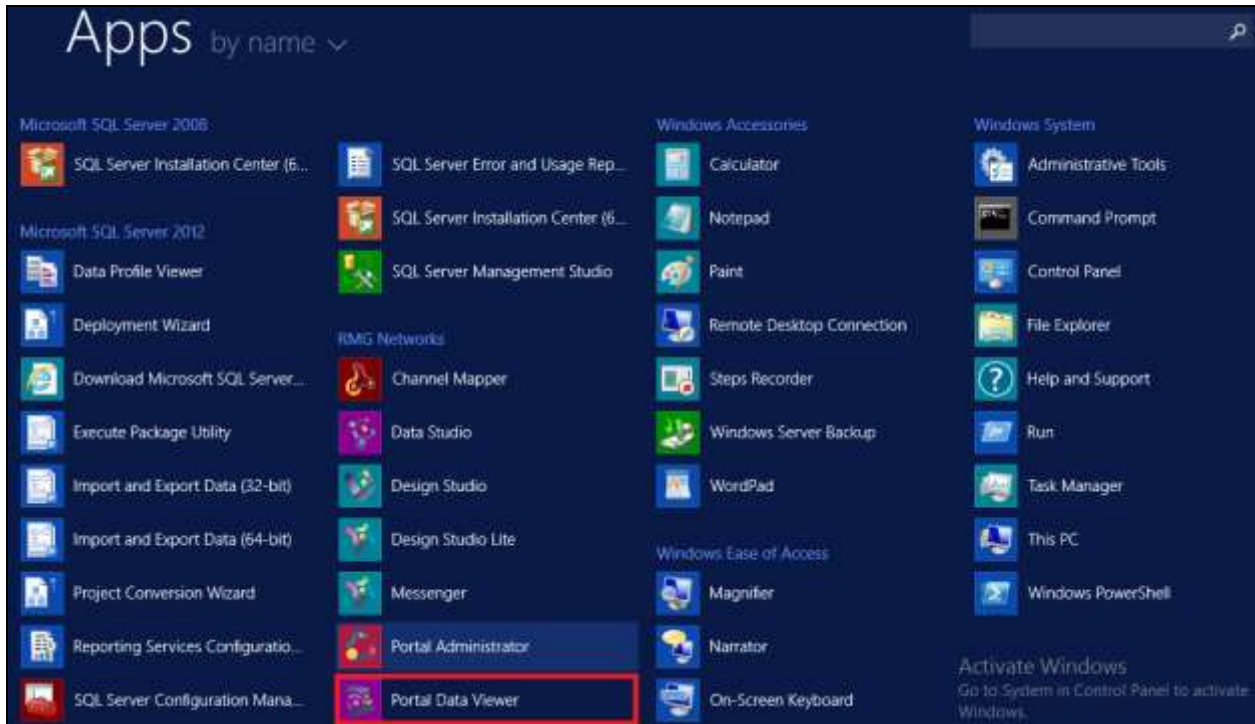
Click the **Start Debug Log** button to show the data this collector is receiving. Verify that the data is exactly the same as the output of the corresponding CMS custom report.

The following example is a snapshot of the **Agent** data. Repeat the process for all three collectors.

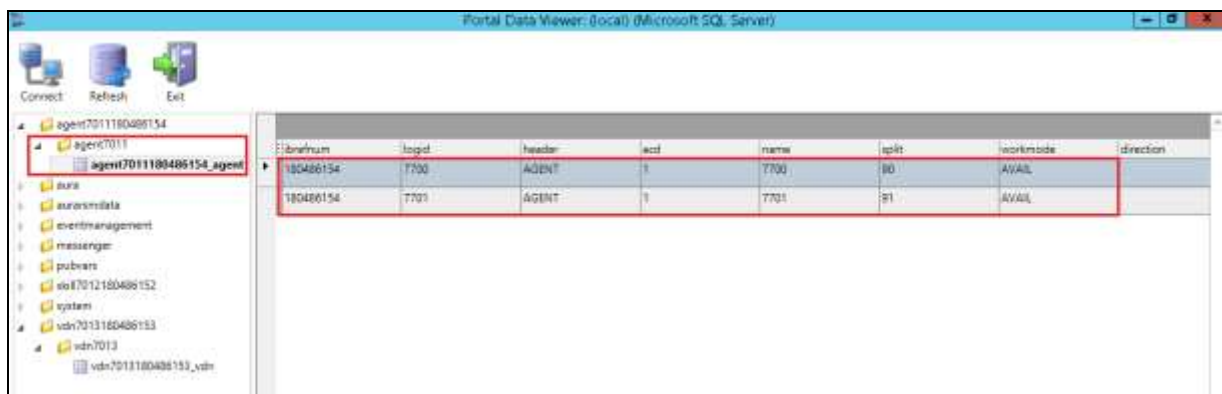


8.2.3. Verify Collector Data Using Portal Data Viewer

Start the **Portal Data Viewer** by clicking **Start** → **All Programs** → **RMG Networks** → **Portal Data Viewer**.



Select a particular collector to view the real-time update of data. Verify that the data is the same as the output of the corresponding CMS custom report. The following example is a snapshot of the **Agent** data. The status of both agents **7700** and **7701** can be clearly observed. Repeat the process for all the three collectors.



9. Conclusion

These Application Notes describe the configuration steps required for Enterprise Server R12.5 to interoperate with CMS R18.0.x via custom developed real-time rt_socket interfaces. Compliance testing based upon the specified configuration has been completed successfully.

10. Additional References

This section references the product documentation relevant to these Application Notes.

- [1] *Administering Avaya Aura® Communication Manager*, Release 7.0, June 2015, Document Number 03-300509, available at <http://support.avaya.com>.
- [2] *Avaya Call Management System Administration*, Release 18, October 2015, available at <http://support.avaya.com>

Documentation related to Enterprise Server may be directly obtained from RMG Networks.

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