



Avaya Solution & Interoperability Test Lab

Application Notes for Tiger Communications' 2020 Pro with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for call accounting and billing functionality of the Tiger Communications' Tiger 2020 Pro to successfully interoperate with Avaya IP Office.

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 compliance-tested configuration using a Tiger Communications' 2020 Pro and an Avaya IP Office 4.2.

DCMon (Data Collection Monitor) and Tiger 2020 Advanced Reporting are applications that are providing call accounting and billing functionality as part of the Tiger 2020 Pro package. DCMon is responsible for obtaining SMDR (Station Message Detail Reporting) records from Avaya IP Office and it is responsible for storing and processing of the records. Tiger 2020 Advanced Reporting is further processing the SMDR records obtained from DCMon in order to provide usage analysis, call costing and billing data reports.

There are four main areas of integration between the products that require validation. These are:

- SMDR details of intra-switch calls
- SMDR details of incoming trunk calls
- SMDR details of outgoing trunk calls
- Link Failure/Recovery

The majority of the tests were conducted to ensure the successful processing of the SMDR data. The last area concentrates on the connectivity between Tiger 2020 Pro and Avaya IP Office and the collection of SMDR data. Tests were conducted to validate that successful connection and recovery takes place during link failures.

The configuration in **Figure 1** was used to compliance test Tiger 2020 Pro with Avaya IP Office.

- IP412 Office was configured with analog and digital expansion modules
- TCP/IP link was established between Tiger 2020 Pro and Avaya IP Office. From Avaya IP Office, SMDR records were sent to agreed port number on the Tiger 2020 Pro for SMDR collection and processing by the Tiger's DCMon
- E1 PRI Trunk card was connecting Avaya IP Office to another PBX which was simulating a PSTN environment for testing inbound/outbound external calls.
- Avaya 2420 digital telephones and Avaya 4620SW and 4621SW IP Telephones were used to answer and/or place the calls.

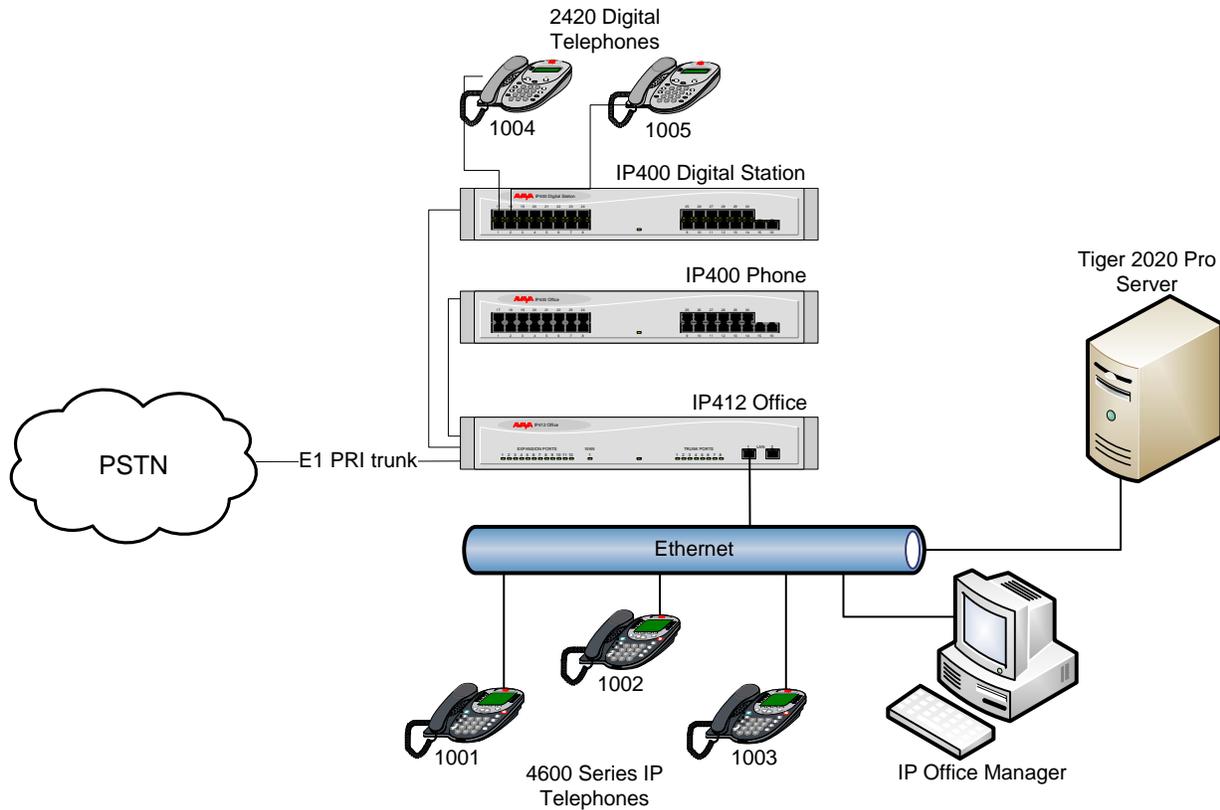


Figure 1 – Network Topology

2. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configuration:

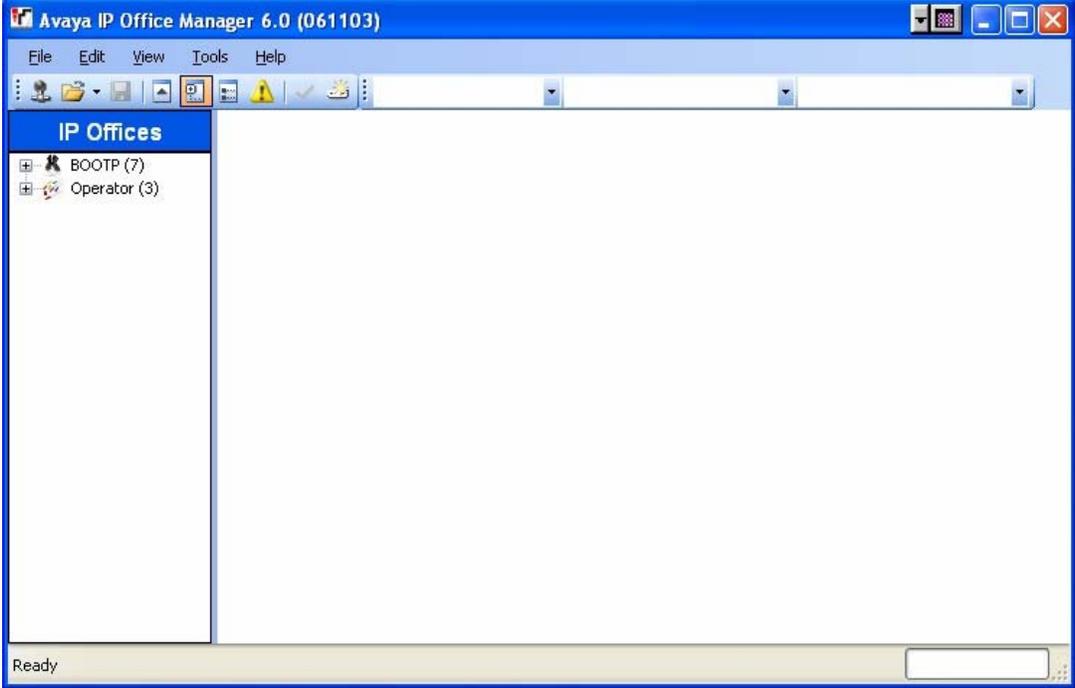
Equipment	Software /Firmware
Avaya IP412 Office	4.2(4)
Avaya IP400 Phone	6.2(4)
Avaya IP400 Digital Station	6.2(4)
Avaya IP Office Manager	6.2(4)
Avaya E1 PRI Trunk Card (PRI 30 E1)	-
Avaya 4600-Series IP Telephones (4620SW, 4621SW)	2.9
Avaya 2420 Digital Telephones	-
Tiger 2020 Pro	4.9.4.1
Tiger Data Collection Monitor	4.9.2.0
Tiger 2020 Advanced Reporting	4.9.5.0
Collection.exe (Used by DCMon)	7.8.1.0
IPOffice.exe (Used by DCMon)	7.11.1.0

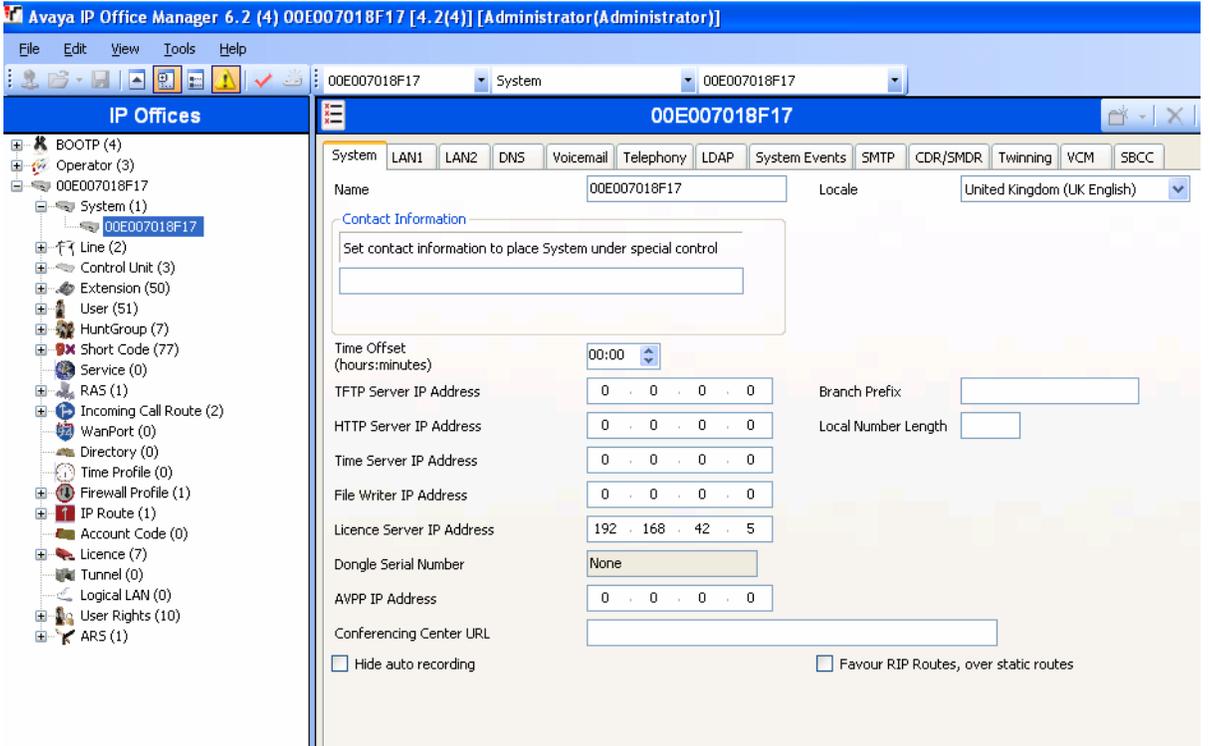
Table 2: Equipment and Software Validated

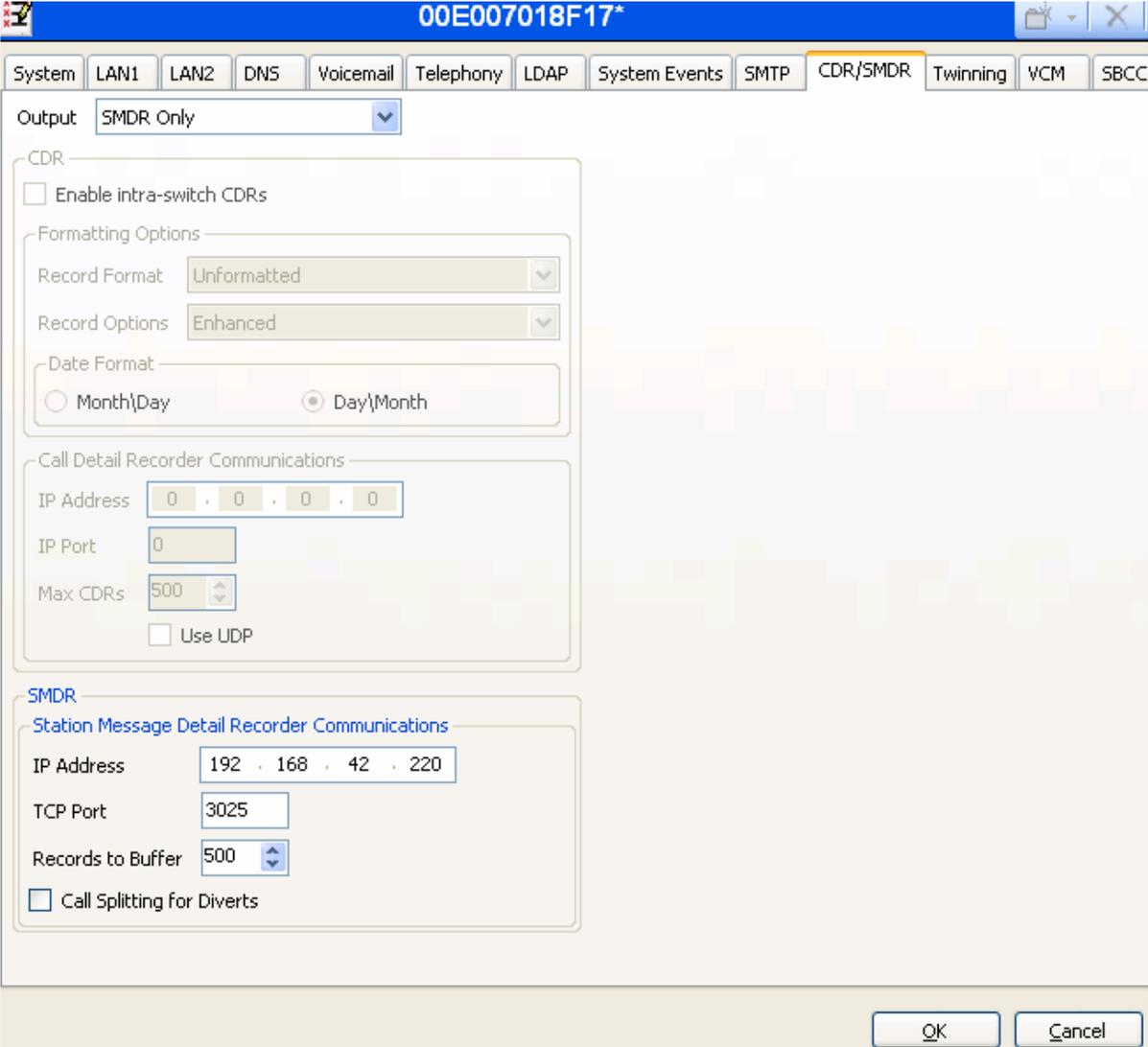
3. Configure Avaya IP Office

The configuration information provided in this section describes the steps required to set up Avaya IP Office for this solution.

For all other provisioning information, such as Avaya IP Office installation and configuration please refer to Avaya IP Office product documentation in reference [1].

Step	Description
1.	<p>Log into the Avaya IP Office Manager PC and go to Start → Programs → IP Office → Manager to launch the Manager application.</p> 
2.	In the Manager window, select File → Open to search for IP Office in the network.

Step	Description
3.	<p>Log into Avaya IP Office using the appropriate login credentials to receive its configuration.</p>  <p>The screenshot shows the Avaya IP Office Manager 6.2 (4) interface. The title bar indicates the system ID is 00E007018F17. The left-hand pane displays a configuration tree with categories like BOOTP, Operator, System, Line, Control Unit, Extension, User, HuntGroup, Short Code, Service, RAS, Incoming Call Route, WanPort, Directory, Time Profile, Firewall Profile, IP Route, Account Code, Licence, Tunnel, Logical LAN, User Rights, and ARS. The 'System (1)' category is expanded, and the '00E007018F17' system is selected. The main configuration area shows the 'System' tab active, with fields for Name (00E007018F17), Locale (United Kingdom (UK English)), Contact Information (a text area for special control), Time Offset (00:00), TFTP Server IP Address (0.0.0.0), HTTP Server IP Address (0.0.0.0), Time Server IP Address (0.0.0.0), File Writer IP Address (0.0.0.0), Licence Server IP Address (192.168.42.5), Dongle Serial Number (None), AVPP IP Address (0.0.0.0), and Conferencing Center URL. There are also checkboxes for 'Hide auto recording' and 'Favour RIP Routes, over static routes'.</p>
4.	<p>In the Manager window, expand the Configuration Tree and double-click System. Select the CDR/SMDR tab.</p>  <p>The screenshot shows the Avaya IP Office Manager 6.2 (4) interface with the 'CDR/SMDR' tab selected. The title bar shows the system ID 00E007018F17. The top navigation bar includes tabs for System, LAN1, LAN2, DNS, Voicemail, Telephony, LDAP, System Events, SMTP, CDR/SMDR, and Tw. The main configuration area shows the 'System' tab active, with fields for Name (00E007018F17), Locale (United K), Contact Information (a text area for special control), and Time Offset (00:00).</p>

Step	Description
<p>5.</p>	<p>In the CDR/SMDR tab that appears, for Output select “SMDR only” from the dropdown list. In the SMDR Communications area configure IP Address with the IP Address of the Tiger 2020 Pro server, “192.168.42.220” and for TCP Port set the Port number to match the configuration on the Tiger 2020 Pro server, “3025”. Leave the default configuration for other parameters and click OK.</p> 
<p>6.</p>	<p>In the Manager window, select File → Save to push the configuration to Avaya IP Office and wait for the system to update. This completes configuration of Avaya IP Office.</p>

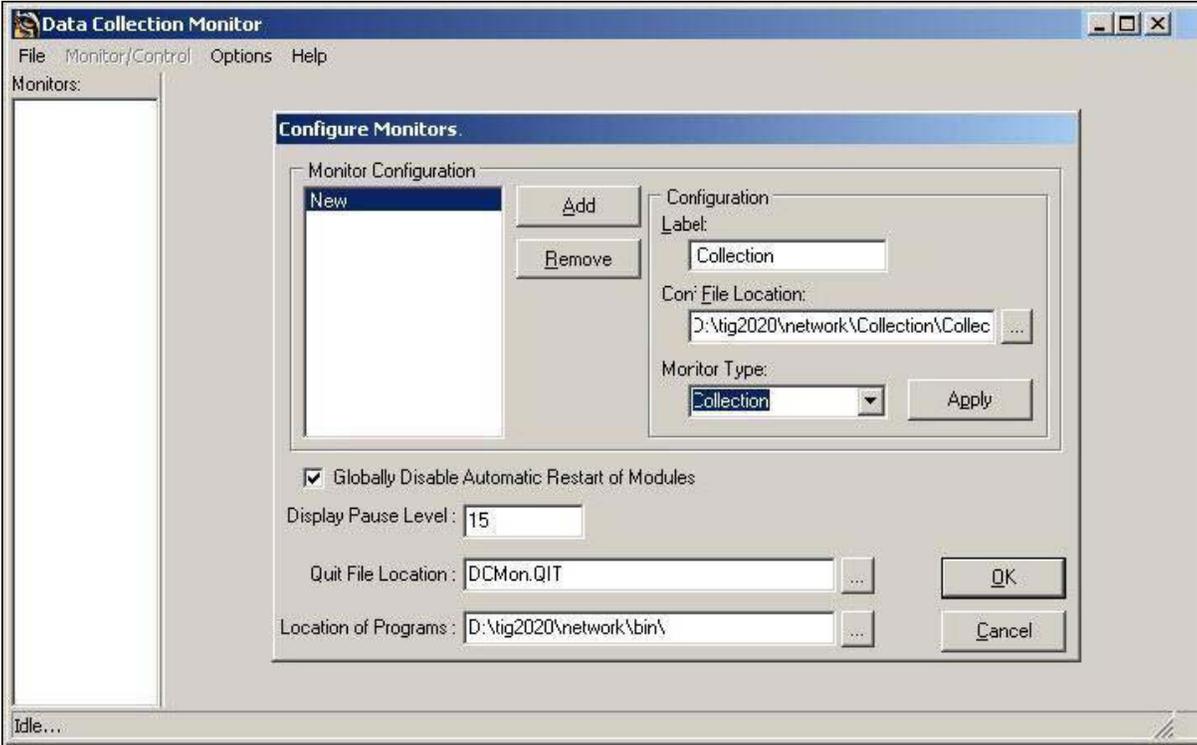
4. Configure Tiger Communications Server

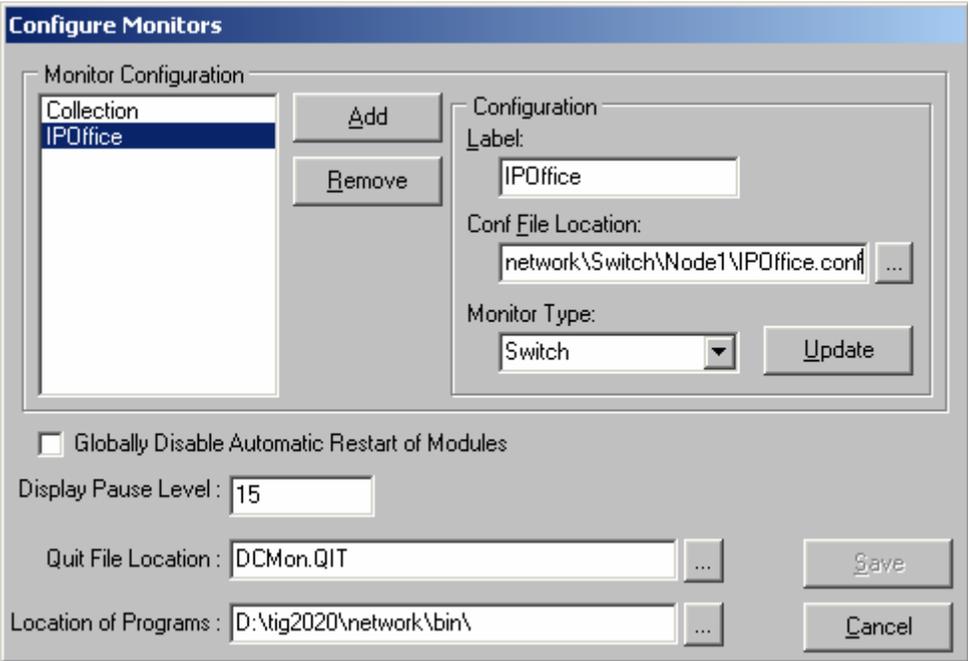
The configuration information provided in this section describes the steps required to configure Tiger Communications' 2020 Pro to interoperate with Avaya IP Office 4.2. Tiger's Data Collection Monitor collects SMDR records generated by Avaya IP Office over a TCP/IP link and it is responsible for storing and processing of the records.

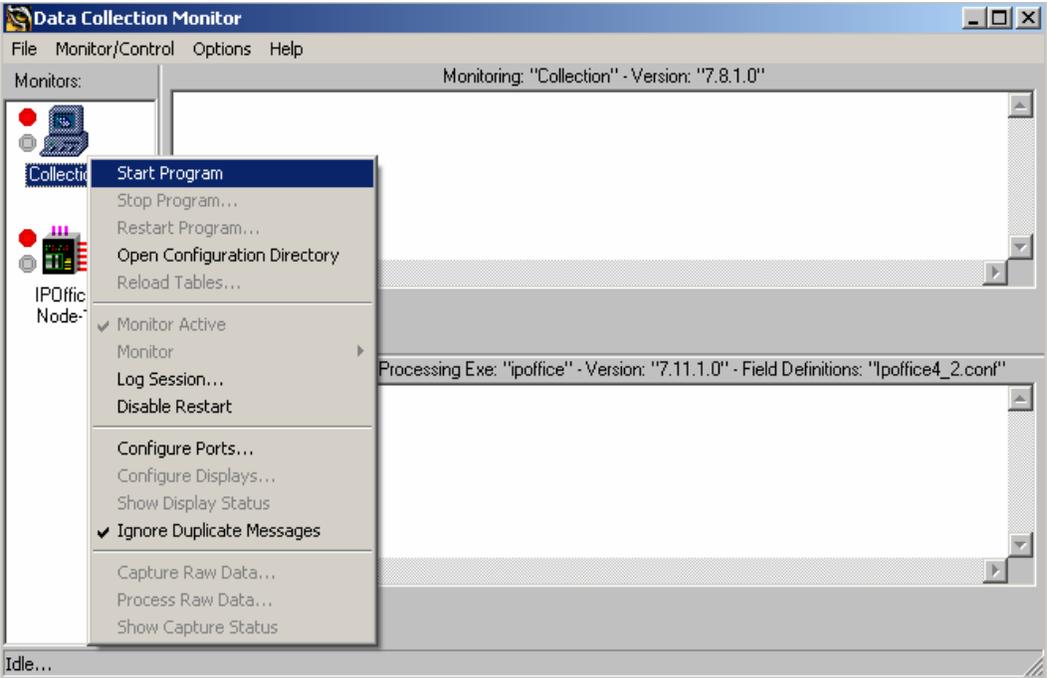
For all other provisioning information, such as software installation, installations of optional components, and configuration of Tiger 2020 Pro, please refer to the Tiger Communications' product documentation in reference [2].

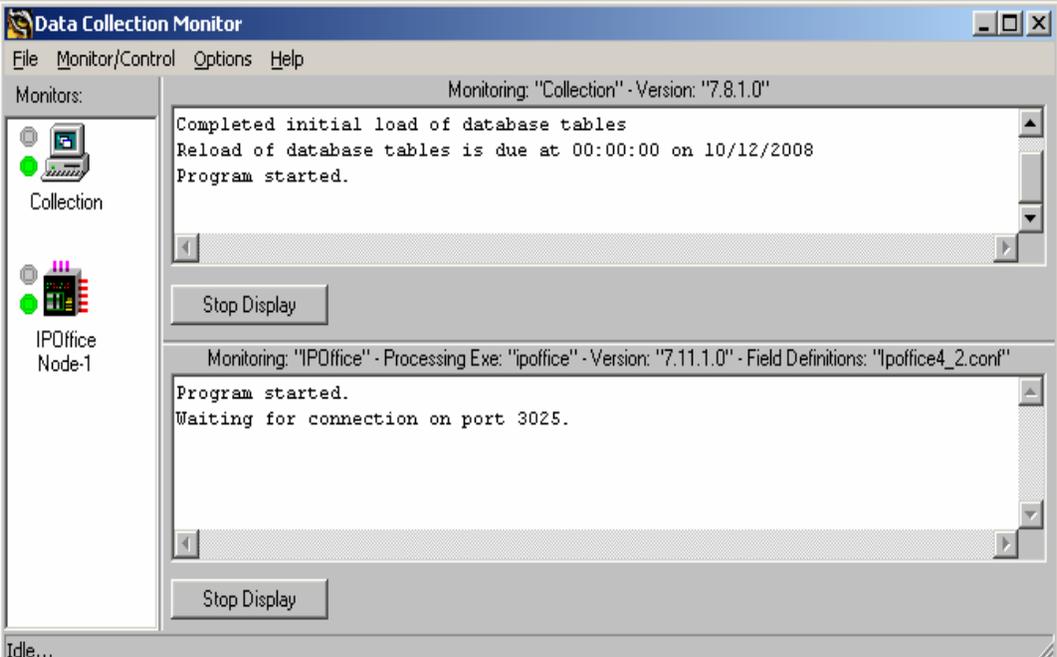
Step	Description
1.	<p>On the Tiger 2020 Pro server, navigate to d:\tig2020\network\bin and verify that programs with correct versions are installed for integration with Avaya IP Office:</p> <p style="padding-left: 40px;">IPOffice.exe version 7.11.1.0 Collection.exe version 7.8.1.0 DCMon.exe version 4.9.2.0</p>
2.	<p>On the Tiger 2020 Pro server, modify the IPOffice.conf file in the directory d:\tig2020\network\Switch\Node1. In the [Switch] section set the Type field to "ipoffice" to ensure that IPOffice.exe program is used by the DCMon.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Contents of IPOffice.conf file</p> <p>[Switch] Type=ipoffice Revision=1.0 MaxCallHoldTime=120000 MaxTandemHoldOn=30000 MaxSectionHoldOn=7200000 RecordDiscardBlacklistHoldOn=3600000 MaxLineLength=2000 BreakYear=1980 NodeId=1 DiscardDuplicateRecords=1 DiscardOutgoingWithNoCalledDigits=0 CallTimeType=0 SequenceNumbersHeld=28 DefaultLatency=0 DiversionChargedPartyRule=0 TransferChargedParty=0</p> </div>

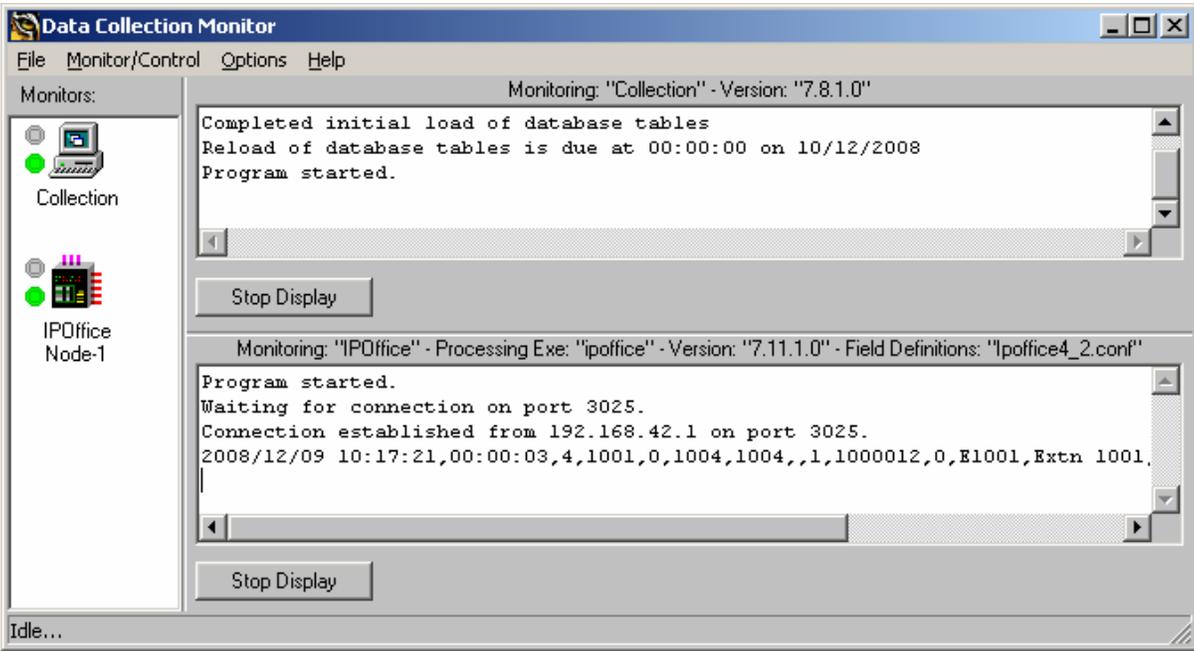
Step	Description
3.	<p>Continue updating the IPOffice.conf file and in the [Input] section set the Port number to “3025” i.e. the same Port that is set in SMDR configuration on Avaya IP Office Section 3, Step 6. Ensure that Address field is commented out. Set the CreateAs field to “Server” to ensure that the Tiger 2020 Pro server waits for a connection from Avaya IP Office.</p> <div data-bbox="316 415 1507 1024" style="border: 1px solid black; padding: 5px;"> <p>Contents of IPOffice.conf file</p> <pre> [Input] Name=Node 25 Socket Input Type=Socket Direction=Bidirectional BufferSize=1024 TimeOut=200 Sharing=none Protocol=TCP ##Address= Port=3025 CreateAs=Server Mode=Stream Blocking=0 NormalReadResetInterval=1200000 InitialReadResetInterval=3600000 </pre> </div>
4.	<p>Continue updating the IPOffice.conf file and in the [FieldDefsFile] section, configure the Name parameter with “d:\tig2020\Network\SwitchConf\Ipoffice4_2.conf” file. This file holds the field definitions that match the SMDR output from Avaya IP Office.</p> <div data-bbox="316 1249 1477 1386" style="border: 1px solid black; padding: 5px;"> <p>Contents of IPOffice.conf file</p> <pre> [FieldDefsFile] Name=D:\tig2020\Network\SwitchConf\Ipoffice4_2.conf </pre> </div>

Step	Description
5.	<p>On the Tiger 2020 Pro server, navigate to d:\tig2020\network\bin and click on the dcmon.exe file to launch the Tiger 2020 Pro data collection configuration. On the main Data Collection Monitor screen toolbar, click on Options → Configure.</p> <p>There are two monitor types to be configured - one for the collection which interfaces with the Tiger 2020 Pro database and one for the switch which interfaces with Avaya IP Office.</p> <p>In the Configure Monitors dialog box click the Add button. In the Label field enter a descriptive name for the collection monitor type. In the Conf File Location field enter or browse to the location of the “collection.conf” file. The collection.conf file during this compliance testing was located at D:\tig2020\network\collection. For the Monitor Type select “Collection” from the drop down list. The rest of the parameters can be left with their default values. Click Apply.</p> 

Step	Description
6.	<p>In the Configure Monitors dialog box click the Add button. In the Label field enter a descriptive name for the switch monitor type, "IPOffice". In the Conf File Location field enter or browse to the location of the IPOffice.conf file modified in Step 2. The IPOffice.conf file for this compliance testing was located at d:\tig2020\network\Switch\Node1. For the Monitor Type select "Switch" from the drop down list. The rest of the parameters can be left with their default values. Click Apply</p> 

Step	Description
7.	<p>In the main Data Collection Monitor screen, right click on the collection monitor icon labeled Collection and select Start Program. Do the same for the switch monitor icon labeled IPOffice.</p> 

Step	Description
8.	<p>After both monitors have been started the correct versions for Collection.exe - 7.8.1.0 and for IPOffice.exe 7.11.1.0 can be observed. The message “Waiting for connection on port 3025” can also be observed, which means that DCMon is ready to receive records from Avaya IP Office.</p> 

Step	Description
9.	<p>Since the Tiger 2020 Pro server is listening on port 3025, the connection is established with Avaya IP Office only after the first record is received from Avaya IP Office. In DCMon the message: "Connection established from 192.168.42.1 on port 3025" can be observed.</p> 

5. Interoperability Compliance Testing

The interoperability compliance testing included feature and serviceability testing. The feature testing evaluated processing of the SMDR data obtained from Avaya IP Office via secure port on TCP-IP link. The serviceability testing introduced failure scenarios to see if Tiger 2020 Pro could resume after a link failure with Avaya IP Office.

5.1. General Test Approach

The general test approach was to validate processing of the SMDR data for the following call types:

- intra-switch calls
- incoming trunk calls
- outgoing trunk calls
- calls answered by voicemail
- transferred calls
- calls to extensions which have forward unconditional
- link failure/recovery

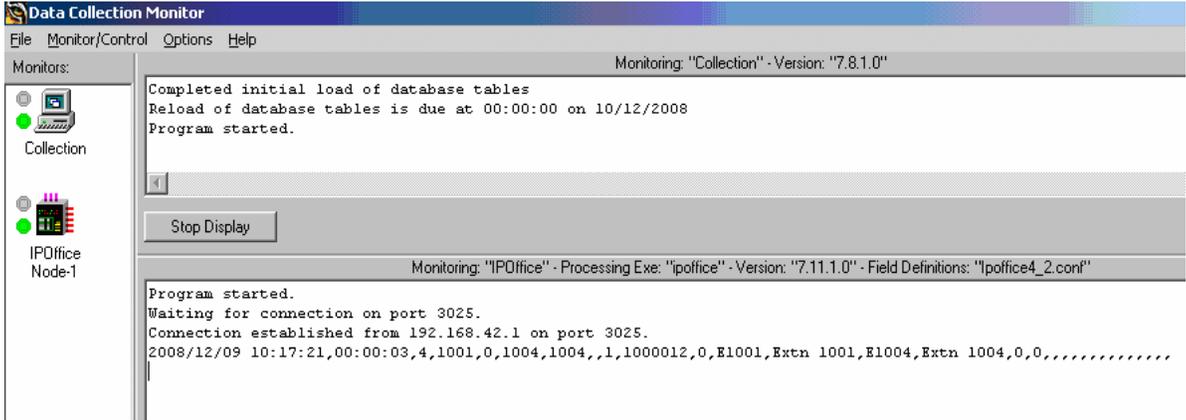
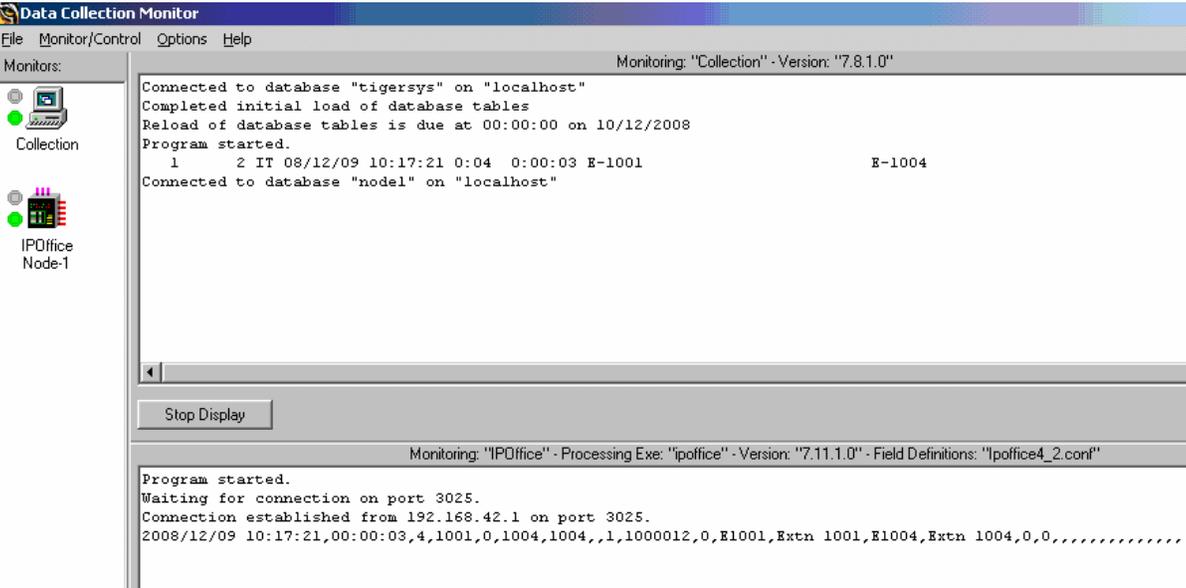
Feature functionality testing was performed manually. The DCMon application was used for obtaining and processing SMDR records from Avaya IP Office. Tiger 2020 Advanced Reporting application was used to validate the processed data. Internal and external calls were made by using Digital and IP Telephones, and external inbound and outbound calls were made through an E1/PRI trunk.

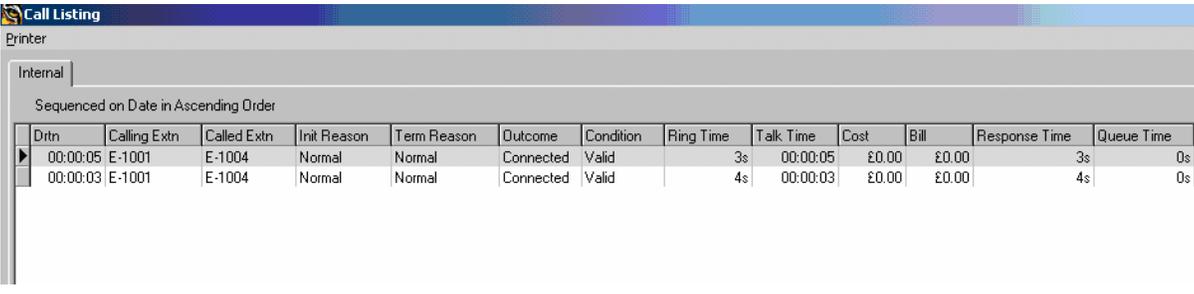
The last area concentrated on the connectivity between Tiger 2020 Pro and Avaya IP Office. Tests were conducted to verify that SMDR records were successfully obtained and processed by the DCMon after connection to Avaya IP Office was lost and re-established.

5.2. Test Results

All executed test cases were completed successfully.

6. Verification Steps

Step	Description
1.	<p>Make calls and verify that DCMon receives the raw SMDR records and they can be seen in the Monitoring “IPOffice” window.</p> 
2.	<p>Verify that DCMon correctly processes the raw SDMDR data and that processed records appear in the Monitoring “Collection” window.</p> 

Step	Description																																							
3.	<p>Generate a Call Listing report using Tiger 2020 Advanced Reporting and verify that SMDR records were correctly processed.</p>  <table border="1"> <thead> <tr> <th>Drtn</th> <th>Calling Extn</th> <th>Called Extn</th> <th>Init Reason</th> <th>Term Reason</th> <th>Outcome</th> <th>Condition</th> <th>Ring Time</th> <th>Talk Time</th> <th>Cost</th> <th>Bill</th> <th>Response Time</th> <th>Queue Time</th> </tr> </thead> <tbody> <tr> <td>00:00:05</td> <td>E-1001</td> <td>E-1004</td> <td>Normal</td> <td>Normal</td> <td>Connected</td> <td>Valid</td> <td>3s</td> <td>00:00:05</td> <td>£0.00</td> <td>£0.00</td> <td>3s</td> <td>0s</td> </tr> <tr> <td>00:00:03</td> <td>E-1001</td> <td>E-1004</td> <td>Normal</td> <td>Normal</td> <td>Connected</td> <td>Valid</td> <td>4s</td> <td>00:00:03</td> <td>£0.00</td> <td>£0.00</td> <td>4s</td> <td>0s</td> </tr> </tbody> </table>	Drtn	Calling Extn	Called Extn	Init Reason	Term Reason	Outcome	Condition	Ring Time	Talk Time	Cost	Bill	Response Time	Queue Time	00:00:05	E-1001	E-1004	Normal	Normal	Connected	Valid	3s	00:00:05	£0.00	£0.00	3s	0s	00:00:03	E-1001	E-1004	Normal	Normal	Connected	Valid	4s	00:00:03	£0.00	£0.00	4s	0s
Drtn	Calling Extn	Called Extn	Init Reason	Term Reason	Outcome	Condition	Ring Time	Talk Time	Cost	Bill	Response Time	Queue Time																												
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00:00:03	E-1001	E-1004	Normal	Normal	Connected	Valid	4s	00:00:03	£0.00	£0.00	4s	0s																												

7. Support

If technical support is required for the Tiger Communications' 2020 Pro, contact the Technical Support Department.

Email: support@tigercomms.com

Phone: +44 1425 891 000

8. Conclusion

These Application Notes describe the steps for configuring Tiger 2020 Pro to work with Avaya IP Office. All test cases that were executed have successfully passed.

Tiger 2020 Pro version 4.9.4.1 was successfully compliance tested with Avaya IP Office version 4.2(4)

9. Additional References

[1] Product documentation for Avaya products may be found at <http://support.avaya.com>
Avaya IP Office 4.2 Manager 6.2, Issue 22d, 14th July 2008

[2] Product documentation for Tiger Communication's products may be found at:
www.tigercomms.com

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