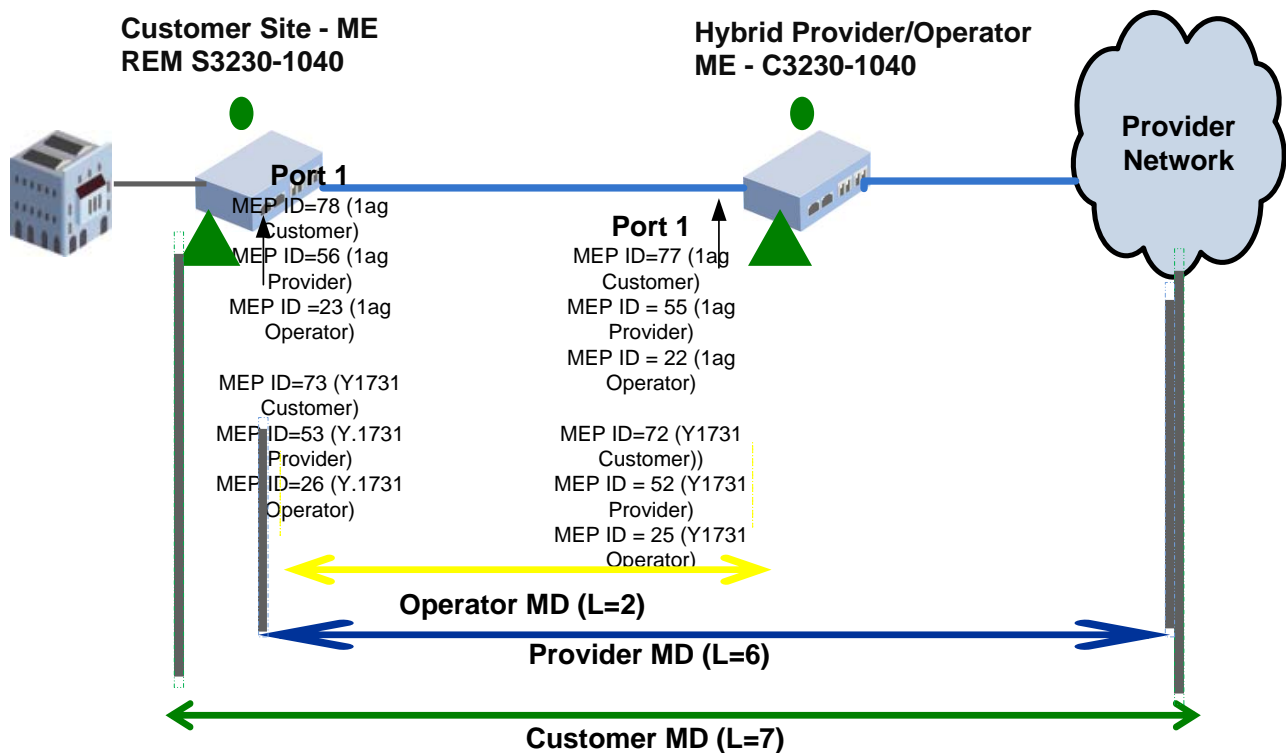


Provisioning SOAM

Application note:

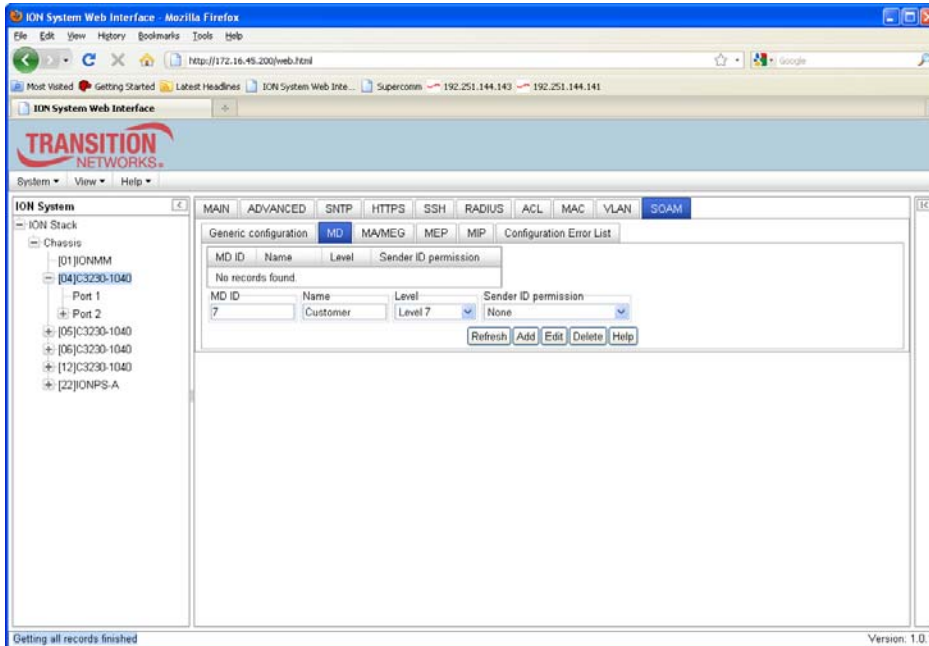
This application note describes how to provision SOAM (802.1ag/Y.1731) using the x3230 (SIC) and stand-alone S3231 NIDs. Using the WEB GUI agent, the customer ME will be provisioned for SOAM and a hybrid ME between the operator and provider networks will also be SOAM provisioned. The customer network will be assigned MD 7, Provider MD 5, and Operator MD 3.



802.1ag Setup Procedure:

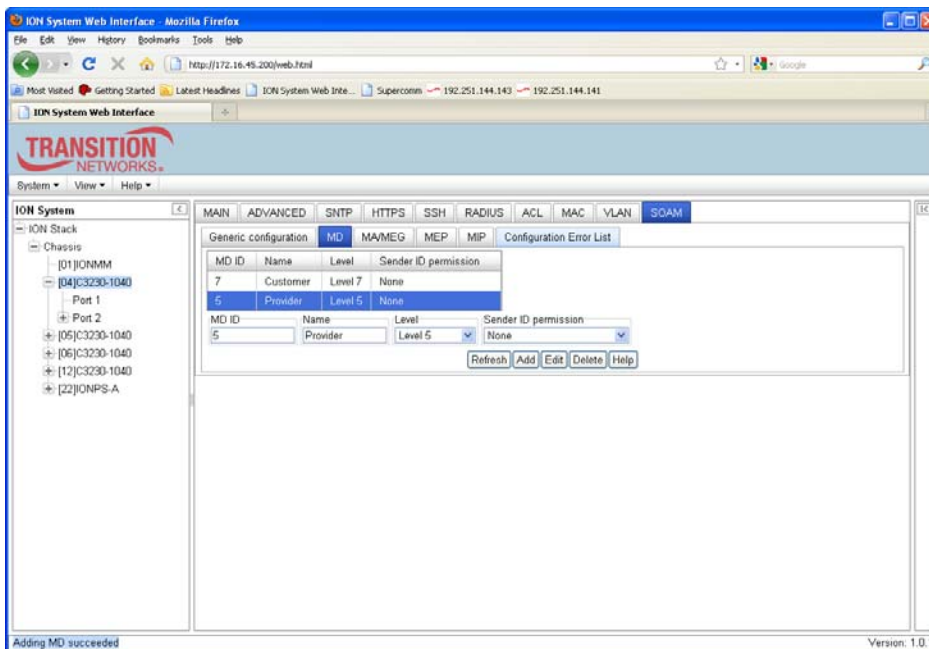
Step 1: Configure/Add the **Maintenance Domain** for the **Customer Network**. Select **SOAM, MD**, enter the **MD id 7**, enter the name **customer (i.e First Union)** , select **Level 7**, then **ADD**

Customer MD ID 7



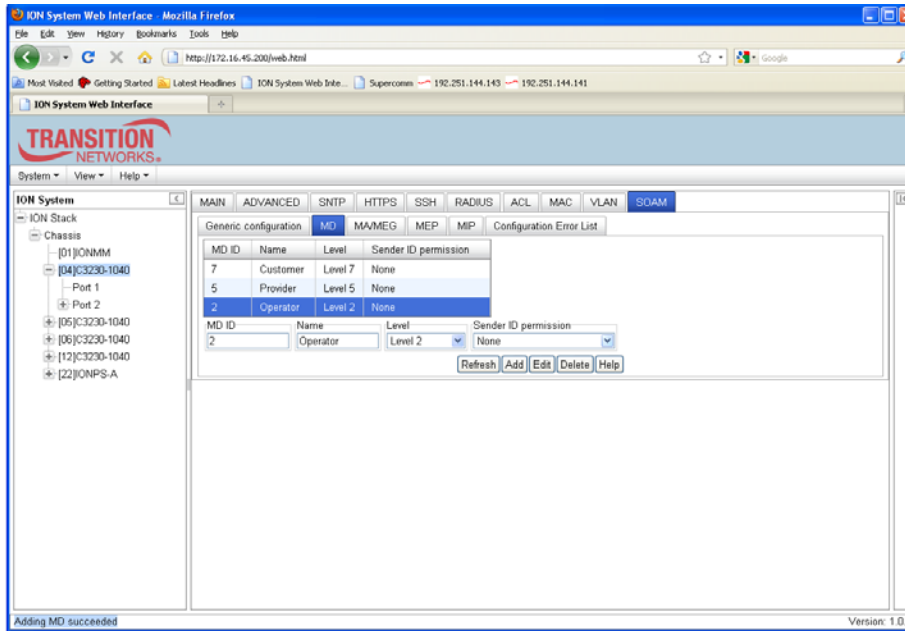
Step 2: Configure/Add the Maintenance Domain for the **Provider** Network. Select **SOAM**, **MD**, enter **MD id 5**, enter the name **provider** (i.e ATT), select **Level 5**, then **ADD**

Provider MID 5



Step 3: Configure/Add the Maintenance Domain for the **Operator** Network. Select **SOAM**, **MD**, enter the **MD id 2**, enter the name **operator (i.e. TW)**, select **Level 2**, then **ADD**

Operator MD 2



Step 4: Configure/Add in the **VLAN** system directory, a new **VLAN (i.e 700)**

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040
 - [22]IONPS-A

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB **VLAN** SOAM

VLANs

VLAN ID	FDB ID	Priority Override	Priority	Member Tag Port 1	Member Tag Port 2
1	0	Disabled	0	NoMod	NoMod
700	0	Disabled	0	NoMod	NoMod

VLAN ID: 700 FDB ID: 0 Priority Override: Disabled Priority: 0

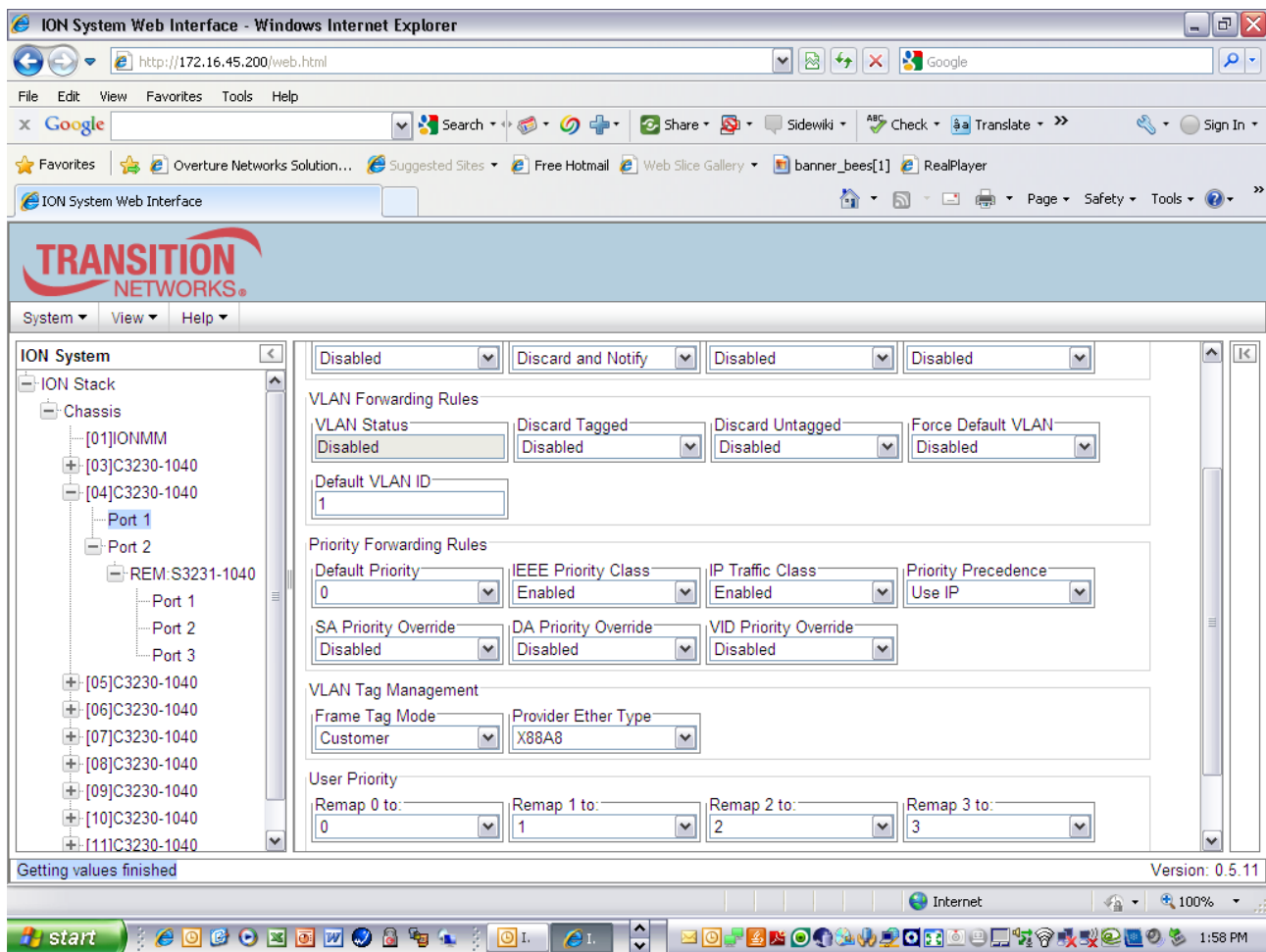
Member Tag Port 1: NoMod Member Tag Port 2: NoMod

Refresh Add Edit Delete Help

Getting all records finished Version: 0.5.11

Step 5: Configure/add the VLAN Tag Mode and Ethertype:

Select Port 1, Advanced tab, select Frame Tag Mode =Customer, Set Ethertype to X88A8, then Save



802.1ag Customer Network Set-up Procedure

Step 6: Configure/Add the **Maintenance Association ID's** for each Domain (Customer, Provider, Operator.) First, provision the **customer MA ID**. Select **SOAM, MA/MEG, MA Configuration**. Select **Parent MD ID 7** (corresponds to MD defined in Step 1), Enter **MA ID 701** (can be any ID starting with 7) enter **customer name** (Example First Union), Enable Remote MEP (REM) Auto-Detection, select a **VLAN type** (C-tag) and enter new Primary VID 700, if appropriate. Then **ADD**

Customer MA

The screenshot shows the ION System Web Interface in a Windows Internet Explorer browser. The interface is for configuring a Service Access Point (MA). The left sidebar shows a tree view of the ION Stack, with the configuration path expanded to [04]C3230-1040 > Port 2 > REM:S3231-1040. The main content area is titled 'MA Configuration' and includes a table of MA entries and a form for editing a specific MA.

MA ID	Name	CC interval	VLAN type	Primary VID	S-VID	RMEP auto detection	RMEP auto de
701	First Union	1 sec	ctype	700	0	Disabled	4000

Below the table, the configuration form for MA ID 701 is shown:

- Parent MD ID: 7
- MA ID: 701
- Name: First Union
- CC interval: 1 sec
- VLAN type: ctype
- Primary VID: 700
- S-VID: 0
- RMEP auto detection: Disabled
- RMEP auto detection timeout: 4000
- Sender ID permission: MD defined

Buttons for 'Refresh', 'Add', 'Edit', 'Delete', and 'Help' are visible. Below the form, there are tabs for 'VLAN ID list' and 'MEP ID list', with the latter showing 'No records found.'

Step 7: Next, configure MEPs for each MA by adding them in the “MEP list” tab in the “MA Page.”

Add MEP ID 77 (Any ID starting w/7) for the MEP ID assigned to the C3230, Add MEP 78 for the Remote peer MEP ID assigned to REM:S3231 corresponding to Parent MA/MEG ID 701.

The screenshot shows the ION System Web Interface in Internet Explorer. The browser address bar shows the URL `http://172.16.45.200/web.html`. The interface features the Transition Networks logo and navigation menus for System, View, and Help. On the left, a tree view shows the ION Stack configuration, including Chassis, IONMM, and various ports. The main area displays configuration for MA ID 701, including fields for Name, CC interval, VLAN type, Primary VID, S-VID, RMEP auto detection, and RMEP auto de. Below this, there is a 'MEP ID list' section with a table showing MEP ID 77 and 78. The status bar at the bottom indicates 'Getting all records finished' and 'Version: 0.5.11'.

MA ID	Name	CC interval	VLAN type	Primary VID	S-VID	RMEP auto detection	RMEP auto de
701	First Union	1 sec	ctype	700	0	Disabled	4000

MEP ID
77
78

Step 8: After defining the MA's and MEP ID's, configure/add MEP ID 77 in the SOAM MEP Tab. Select port 1, set direction for "UP", status "enable, CC "enable"

The screenshot displays the ION System Web Interface in Windows Internet Explorer. The browser address bar shows the URL `http://172.16.45.200/web.html`. The interface features a navigation menu with tabs for MAIN, ADVANCED, SNTP, HTTPS, SSH, RADIUS, ACL, FDB, VLAN, and SOAM. The SOAM tab is active, and the MEP configuration page is shown. The left sidebar displays the ION Stack hierarchy, with the REM:S3231-1040 remote peer selected. The main configuration area includes a table of MEPs, a configuration form for MA/MEG, and a MEP State section.

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG alarm time
55	Port 1	Up	0	Enabled	Enabled	Defect reported	5	250
77	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250

Configuration form for MA/MEG:

- Parent MA/MEG: MA ID: 701
- MEP ID: 77
- Port: Port 1
- Direction: Up
- Primary VID: 0
- Status: Enabled
- CC status: Enabled
- FNG alarm time: 250
- FNG reset time: 1000
- Lowest priority defect: macRemErrXcon
- LTM/CCM priority: Priority 7

MEP State:

- MAC address: 00-C0-F2-20-FF-D4
- Highest priority defect: MACstatus
- Defects: MACstatus

Step 9: Select the REM:S3231-1040 remote peer and configure the Maintenance Domains Repeating Steps 1-3 above

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD MA/MEG MEP MIP Configuration Error List

MD ID	Name	Level	Sender ID permission
7	First Union	Level 7	None
5	ATT	Level 5	None
2	TW	Level 2	None

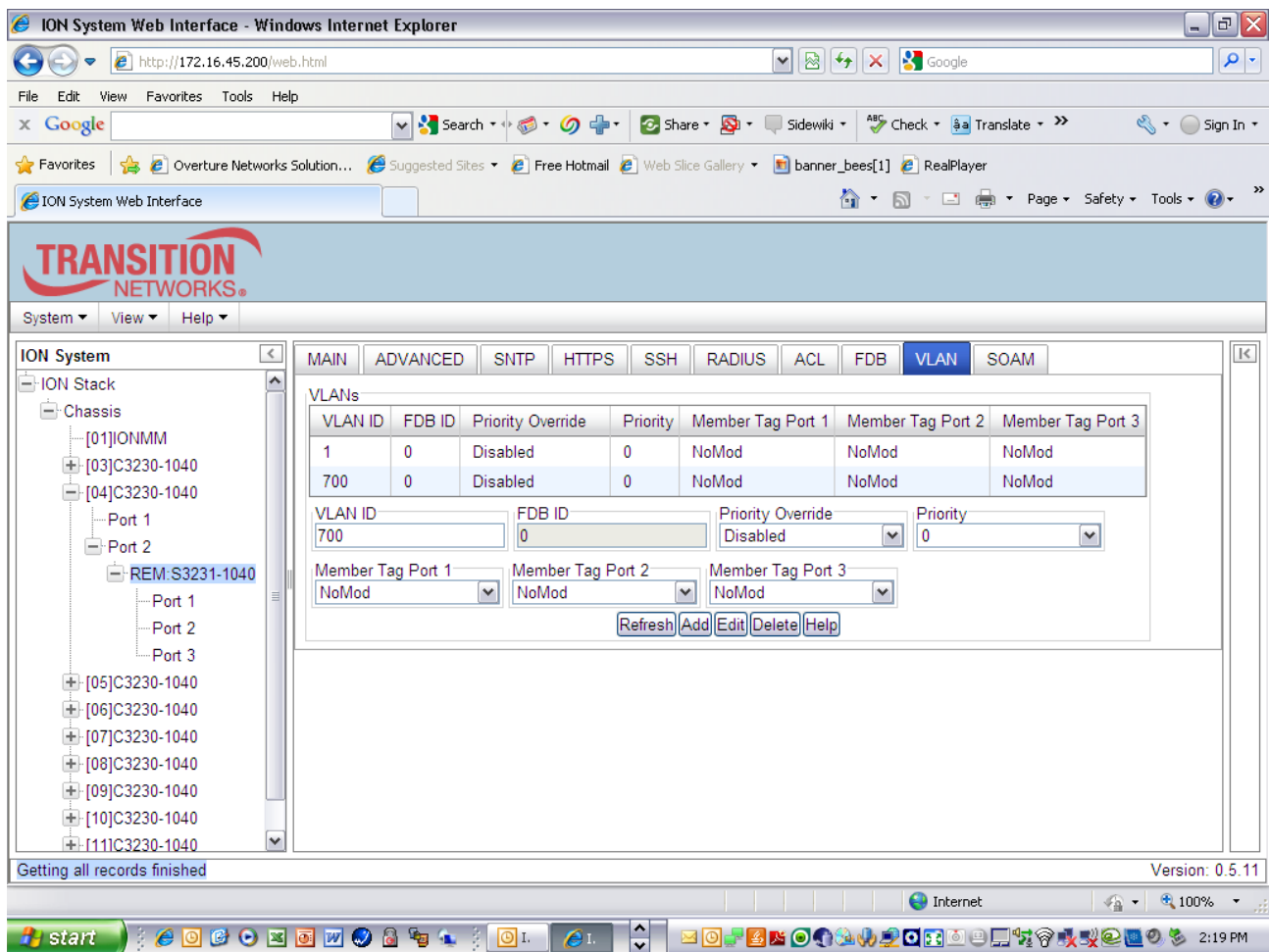
MD ID: Name: Level: Sender ID permission:

Refresh Add Edit Delete Help

Adding MD succeeded

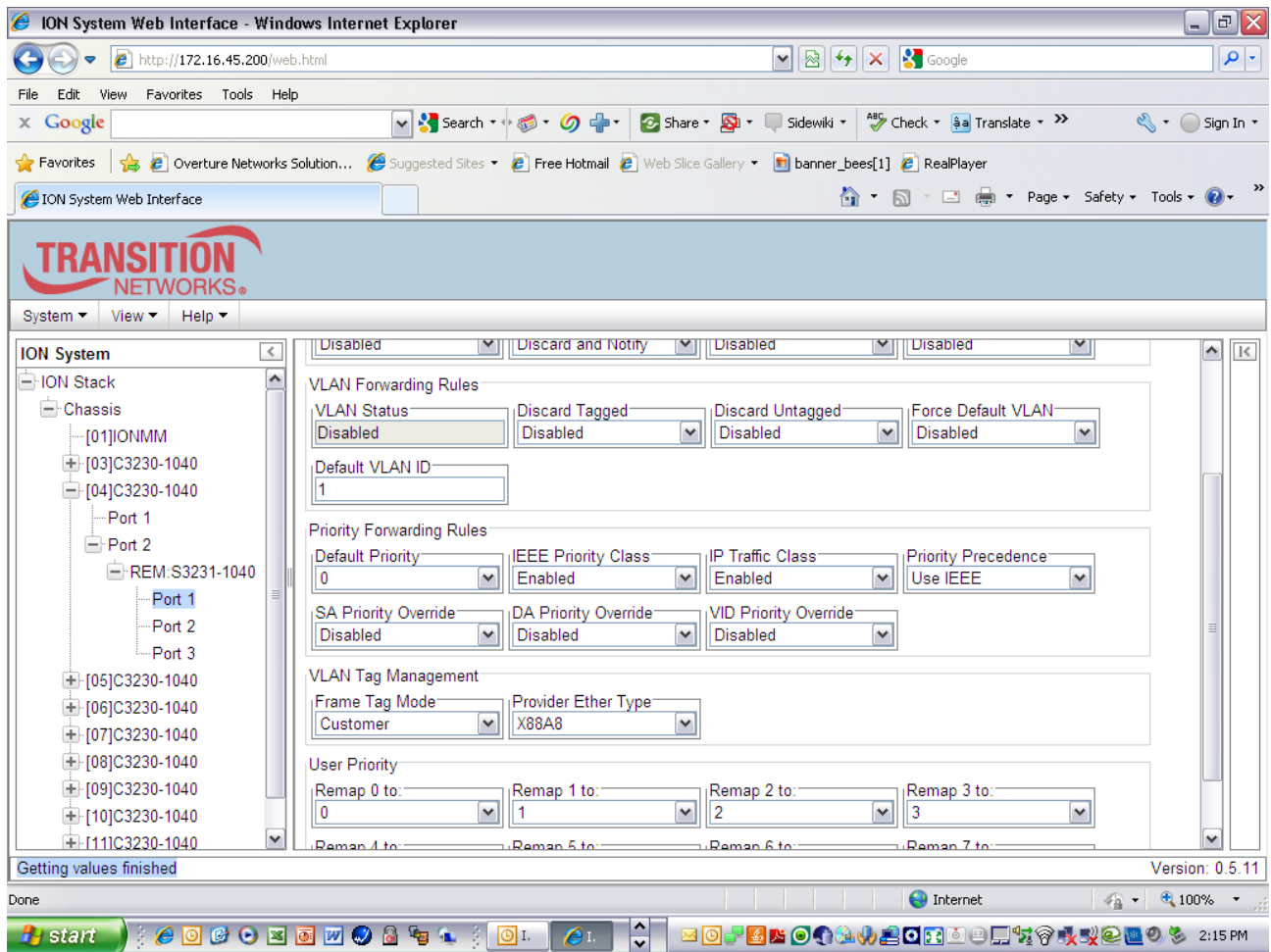
Version: 0.5.11

Step 10: Configure/Add in the VLAN system directory, a new VLAN (i.e 700)

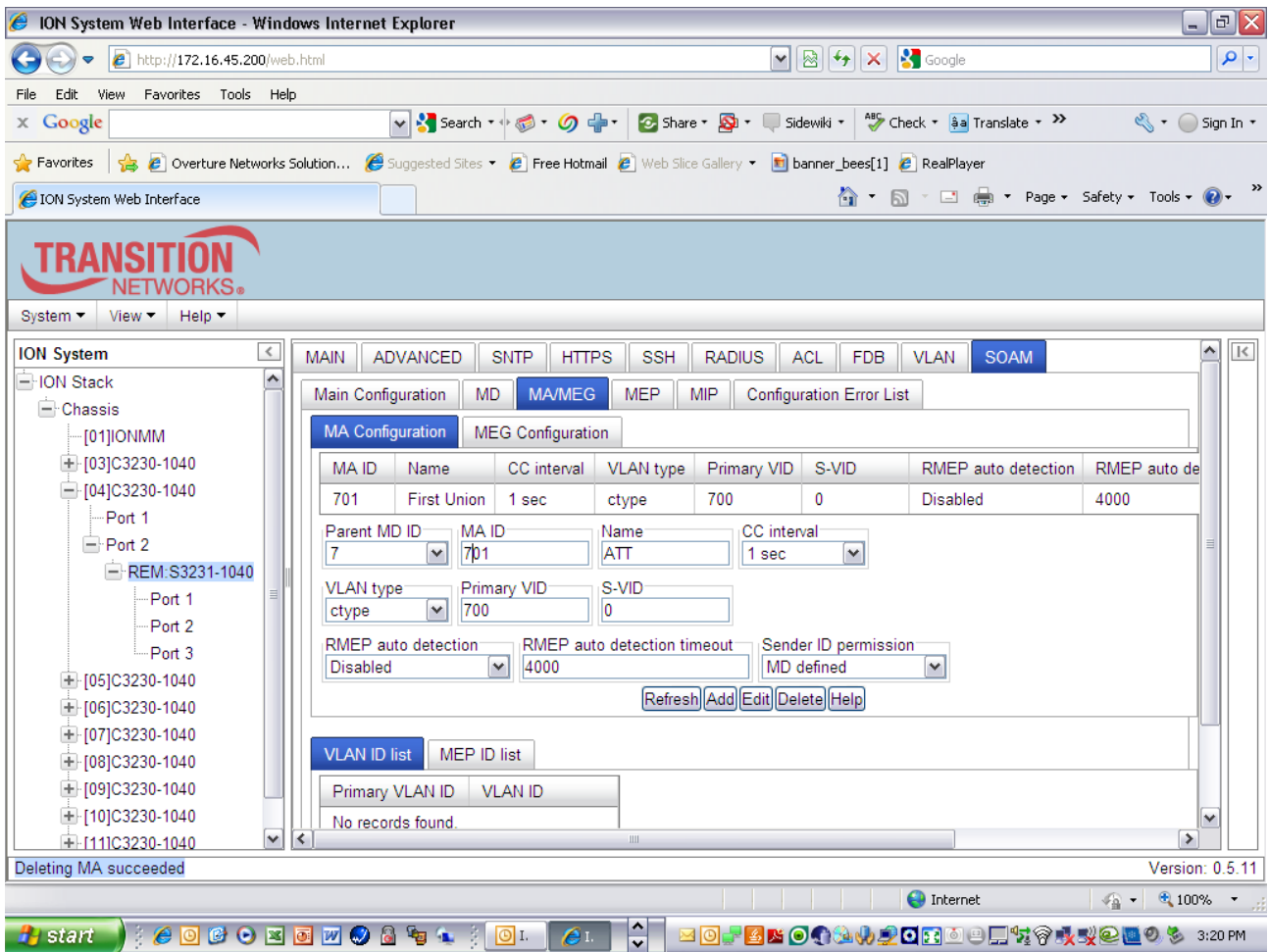


Step 11: Configure/add the VLAN Tag Mode and Ethertype:

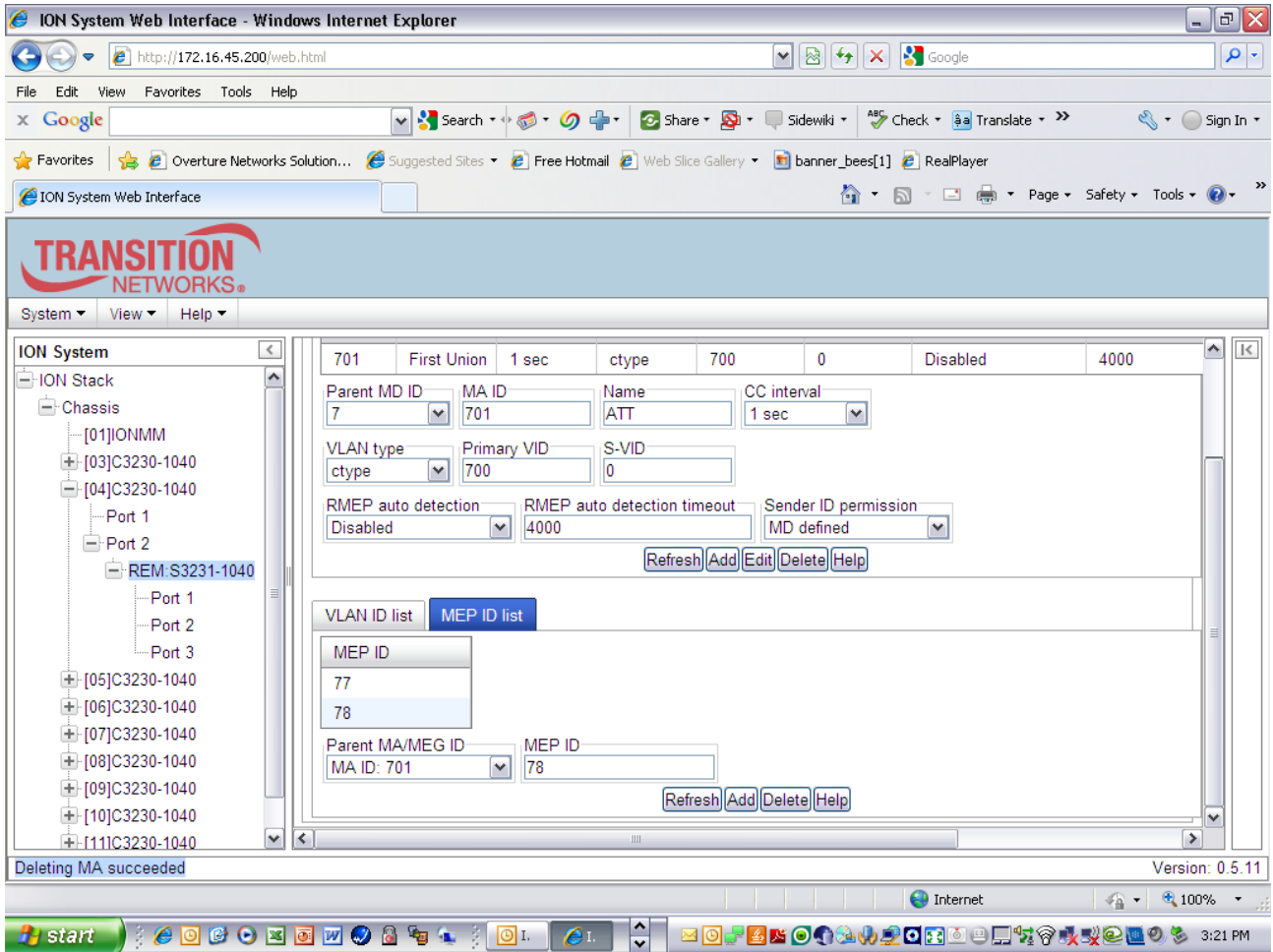
Select **Port 1**, **Advanced tab**, select **Frame Tag Mode**, Customer, Set Ethertype to **X88A8**, then **SAVE**



Step 12: Repeat Steps 6, 7, and 8 above for the REM:S3230. Assign MEP ID 78 to the remote peer
Configuring the Remote MA ID 701 with VID 700



Adding MEP ID's 77, 78 to the MEP ID List



Assigning MEP ID 78, Port 1 status "UP" and enabling status and CC

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

TRANSITION NETWORKS

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN SOAM

Main Configuration MD MA/MEG MEP MIP Configuration Error List

Configuration CC monitoring Loopback Linktrace ETH-MCC ETH-TEST DM FLM AIS

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG alarm time
56	Port 1	Up	0	Enabled	Enabled	Reset	5	250
78	Port 1	Up	0	Enabled	Enabled	Reset	7	250

Parent MA/MEG MA ID: 701 MEP ID: 78 Port: Port 1 Direction: Up Primary VID: 0 Status: Enabled

CC status: Enabled

FNG alarm time: 250 FNG reset time: 1000 Lowest priority defect: macRemErrXcon LTM/CCM priority: Priority 7

MEP State

MAC address: 00-C0-F2-21-0D-BC Highest priority defect: None Defects: RDICCM

Getting values finished Version: 0.5.11

Step 13: Verify CCMs are now being sent/received between MEPs 77 and 78

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

File Edit View Favorites Tools Help

Google Search Share Sidewiki Check Translate Sign In

ION System Web Interface

TRANSITION NETWORKS

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040**
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

Configuration | CC monitoring | Loopback | Linktrace | ETH-MCC | ETH-TEST | DM | FLM | AIS

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG alarm
78	Port 1	Up	0	Enabled	Enabled	Reset	7	250

Parent MA/MEG: MA ID: 701 | MEP ID: 78 | Port: Port 1 | Direction: Up | Primary VID: 0 | Status: Enabled

CC status: Enabled

FNG alarm time: 250 | FNG reset time: 1000 | Lowest priority defect: macRemErrXcon | LTM/CCM priority: Priority 7

Refresh Add Edit Delete Help

MEP State

MAC address: 00-C0-F2-21-0D-BC | Highest priority defect: None | Defects: RDICCM

Continuity Check Statistics

CCMs sent: 12207 | CCMs with RDI bit sent: 799 | CCMs received: 10681 | CCMs with RDI bit received: 10680

CCMs discarded due to SenderID TLV invalid: | CCMs discarded due to Port Status TLV invalid: |

Getting values finished

Version: 0.5.11

Internet 100%

start 2:56 PM

ION System

Configuration | CC monitoring | Loopback | Linktrace | ETH-MCC | ETH-TEST | DM | FLM | AIS

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG al
55	Port 1	Up	0	Enabled	Enabled	Defect reported	5	250
77	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250

Parent MA/MEG: MA ID: 701 | MEP ID: 77 | Port: Port 1 | Direction: Up | Primary VID: 0 | Status: Enabled

CC status: Enabled

FNG alarm time: 250 | FNG reset time: 1000 | Lowest priority defect: macRemErrXcon | LTM/CCM priority: Priority 7

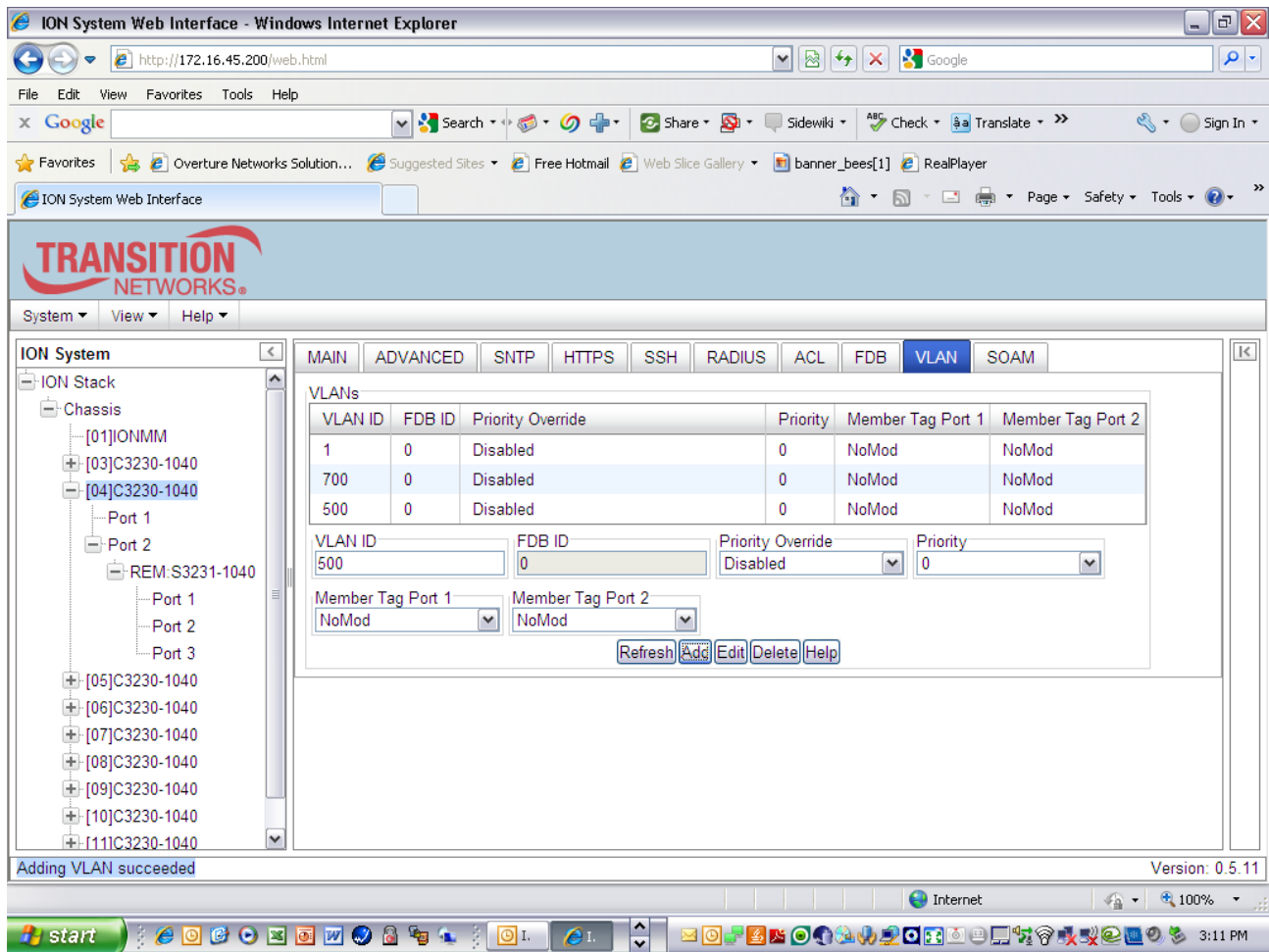
MEP State: MAC address: 00-C0-F2-20-FF-D4 | Highest priority defect: MACstatus | Defects: MACstatus

Continuity Check Statistics: CCMs sent: 82530 | CCMs with RDI bit sent: 82529 | CCMs received: 88119 | CCMs with RDI bit received: 0

Getting values finished | Version: 0.5.11

802.1ag Provider Network Set-up:

Step 14: Configure/Add in the VLAN system directory, a new VLAN (i.e 500)



Step 15: Configure/Add the **Maintenance Association ID** for the **provider** network. **Select SOAM, MA/MEG, MA Configuration.** Select **Parent MD ID 5** (corresponds to MD defined in Step 2), Enter **MA ID 501** (can be any ID starting with 5) enter **provider** name (Example ATT), Enable Remote MEP (REM) Auto-Detection, add a **VLAN** type (S-tag) and Primary VID (500) if appropriate. Then **Add**

Provider MA

The screenshot displays the ION System Web Interface in a Windows Internet Explorer browser. The interface is for configuring MA (Media Access) settings. The left sidebar shows a tree view of the ION Stack, including Chassis, [01]IONMM, and several C3230-1040 ports. The main content area is titled "MA Configuration" and includes a table of MA entries and a form for adding a new MA.

MA ID	Name	CC interval	VLAN type	Primary VID	S-VID	RMEP auto detection	RMEP auto de
701	First Union	1 sec	ctype	700	0	Disabled	4000
501	ATT	1 sec	stype	500	0	Disabled	4000

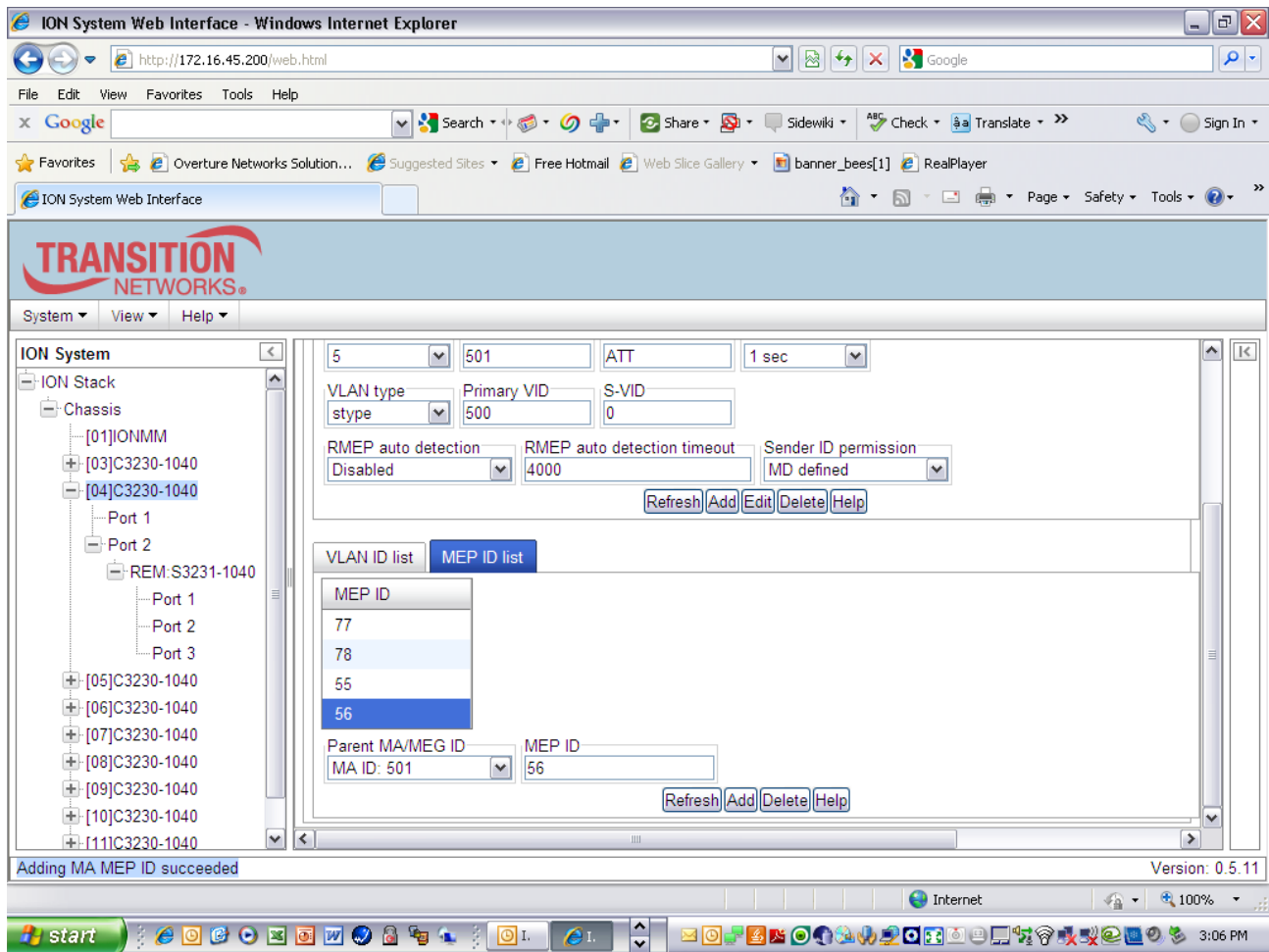
Below the table, there is a form for adding a new MA with the following fields:

- Parent MD ID: 5
- MA ID: 501
- Name: ATT
- CC interval: 1 sec
- VLAN type: stype
- Primary VID: 500
- S-VID: 0
- RMEP auto detection: Disabled
- RMEP auto detection timeout: 4000
- Sender ID permission: MD defined

Buttons for "Refresh", "Add", "Edit", "Delete", and "Help" are visible below the form. A status message at the bottom left of the interface reads "Adding MA succeeded". The version number "Version: 0.5.11" is shown at the bottom right.

Step 16: After defining the MA's, configure MEPs for each MA by adding them in the "MEP list" tab in the "MA Page".

Add MEP ID 55 (Any ID starting w/5) for the MEP ID assigned to the C3230, Add MEP 56 for the Remote peer MEP ID assigned to REM:S3231 corresponding to Parent MA/MEG ID 501.



Step 17: After defining the MA's and MEP ID's, configure/add MEP ID 55 in the SOAM MEP Tab. Select port 1, set direction for "UP", status "enable, CC "enable"

The screenshot shows the ION System Web Interface in Windows Internet Explorer. The browser address bar shows `http://172.16.45.200/web.html`. The interface features a navigation menu with tabs for MAIN, ADVANCED, SNTP, HTTPS, SSH, RADIUS, ACL, FDB, VLAN, and SOAM. The SOAM tab is active, and the MEP configuration page is displayed.

The left sidebar shows the ION Stack structure:

- ION Stack
 - Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040 (Selected)
 - Port 1
 - Port 2
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040
 - [22]IONPS-A

The main configuration area shows the following table:

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG al...
55	Port 1	Up	0	Enabled	Enabled	Defect reported	5	250
77	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250

Below the table, there are configuration fields for a new MEP entry:

- Parent MA/MEG: MA ID: 501
- MEP ID: 55
- Port: Port 1
- Direction: Up
- Primary VID: 0
- Status: Enabled
- CC status: Enabled
- FNG alarm time: 250
- FNG reset time: 1000
- Lowest priority defect: macRemErrXcon
- LTM/CCM priority: Priority 5

Buttons: Refresh, Add, Edit, Delete, Help

MEP State:

- MAC address: 00-C0-F2-20-FF-D4
- Highest priority defect: MACstatus
- Defects: MACstatus

Version: 0.5.11

Step 18: Repeat Steps 14 -17 above for the REM:S3240. Assign MEP ID 56 in the final MEP configuration step

Add VLAN 500 in the VLAN database (Remote S3231)

ION System

System View Help

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB **VLAN** SOAM

VLANs

VLAN ID	FDB ID	Priority Override	Priority	Member Tag Port 1	Member Tag Port 2	Member Tag Port 3
1	0	Disabled	0	NoMod	NoMod	NoMod
700	0	Disabled	0	NoMod	NoMod	NoMod
500	0	Disabled	0	NoMod	NoMod	NoMod

VLAN ID: 500 FDB ID: 0 Priority Override: Disabled Priority: 0

Member Tag Port 1: NoMod Member Tag Port 2: NoMod Member Tag Port 3: NoMod

Refresh Add Edit Delete Help

Adding VLAN succeeded

Version: 0.5.11

Provisioning the remote for **MA Configuration**. Select **Parent MD ID 5** (corresponds to MD defined in Step 2), Enter **MA ID 501** (can be any ID starting with 5) enter **provider** name (Example ATT), Enable Remote MEP (REM) Auto-Detection, add a **VLAN** type (C-tag) and VID (500) if appropriate. Then **Add**

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM:S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD **MA/MEG** MEP MIP Configuration Error List

MA Configuration MEG Configuration

MA ID	Name	CC interval	VLAN type	Primary VID	S-VID	RMEP auto detection	RMEP auto de
701	First Union	1 sec	ctype	700	0	Disabled	4000
501	ATT	1 sec	stype	500	0	Enabled	4000

Parent MD ID: 5 MA ID: 501 Name: ATT CC interval: 1 sec

VLAN type: stype Primary VID: 500 S-VID: 0

RMEP auto detection: Enabled RMEP auto detection timeout: 4000 Sender ID permission: MD defined

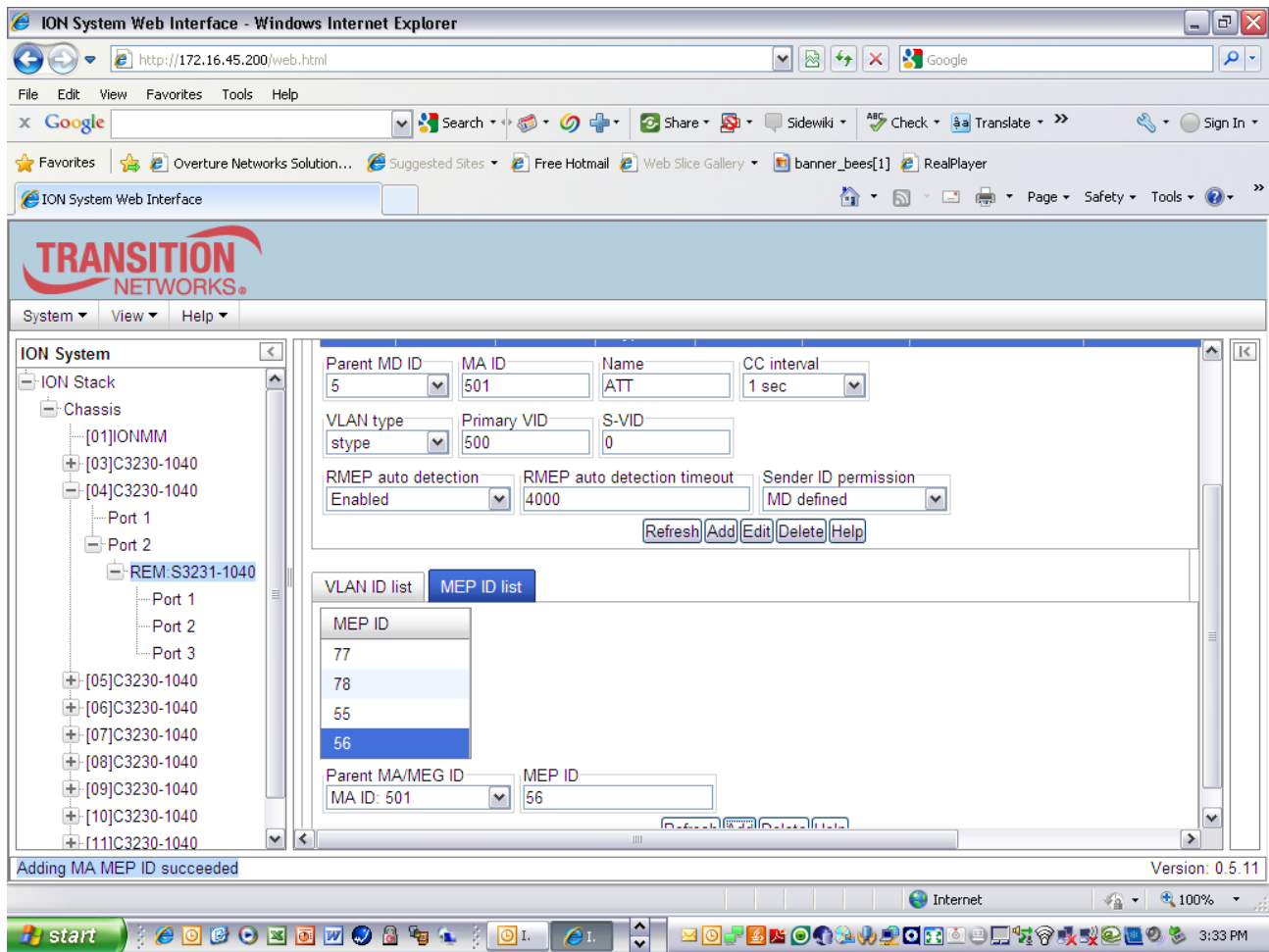
Refresh Add Edit Delete Help

VLAN ID list MEP ID list

MEP ID

Adding MA succeeded Version: 0.5.11

Using the MEP ID List, Add MEP ID 55 (Any ID starting w/5) for the MEP ID assigned to the C3230, Add MEP 56 for the Remote peer MEP ID assigned to REM:S3231 corresponding to Parent MA/MEG ID 501



Step 19: After defining the MA's, configure/add MEP ID 56, select port 1, set direction for "UP", status "enabled," CC "enabled."

ION System

System View Help

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD MA/MEG **MEP** MIP Configuration Error List

Configuration CC monitoring Loopback Linktrace ETH-MCC ETH-TEST DM FLM AIS

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG alarm time
56	Port 1	Up	0	Enabled	Enabled	Reset	5	250
78	Port 1	Up	0	Enabled	Enabled	Reset	7	250

Parent MA/MEG MA ID: 501 MEP ID: 56 Port: Port 1 Direction: Up Primary VID: 0 Status: Enabled

CC status: Enabled

FNG alarm time: 250 FNG reset time: 1000 Lowest priority defect: macRemErrXcon LTM/CCM priority: Priority 5

MEP State

MAC address: 00-C0-F2-21-0D-BC Highest priority defect: None Defects: RDICCM

Getting values finished Version: 0.5.11

Step 20: Verify CCMs are now being sent/received between MEPs 55 and 56.

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

File Edit View Favorites Tools Help

Google Search Share Sidewiki Check Translate Sign In

ION System Web Interface

TRANSITION NETWORKS

System View Help

ION System

- ION Stack
 - Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040
 - [22]IONPS-A

55	Port 1	Up	0	Enabled	Enabled	Defect reported	5	250
77	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250

Parent MA/MEG: MA ID: 501, MEP ID: 55, Port: Port 1, Direction: Up, Primary VID: 0, Status: Enabled

CC status: Enabled

FNG alarm time: 250, FNG reset time: 1000, Lowest priority defect: macRemErrXcon, LTM/CCM priority: Priority 5

MEP State: MAC address: 00-C0-F2-20-FF-D4, Highest priority defect: MACstatus, Defects: MACstatus

Continuity Check Statistics: CCMs sent: 66926, CCMs with RDI bit sent: 66925, CCMs received: 71458, CCMs with RDI bit received: 0

CCMs discarded due to SenderID TLV invalid: 0, CCMs discarded due to Port Status TLV invalid: 0

Buttons: Refresh, Add, Edit, Delete, Help

Getting values finished

Version: 0.5.11

Internet 100%

start 12:37 PM

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

TRANSITION NETWORKS

System View Help

ION System

- ION Stack
 - Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG al
56	Port 1	Up	0	Enabled	Enabled	Reset	5	250
78	Port 1	Up	0	Enabled	Enabled	Reset	7	250

Parent MA/MEG: MA ID: 501 MEP ID: 56 Port: Port 1 Direction: Up Primary VID: 0 Status: Enabled

CC status: Enabled

FNG alarm time: 250 FNG reset time: 1000 Lowest priority defect: macRemErrXcon LTM/CCM priority: Priority 5

Refresh Add Edit Delete Help

MEP State

MAC address: 00-C0-F2-21-0D-BC Highest priority defect: None Defects: RDICCM

Continuity Check Statistics

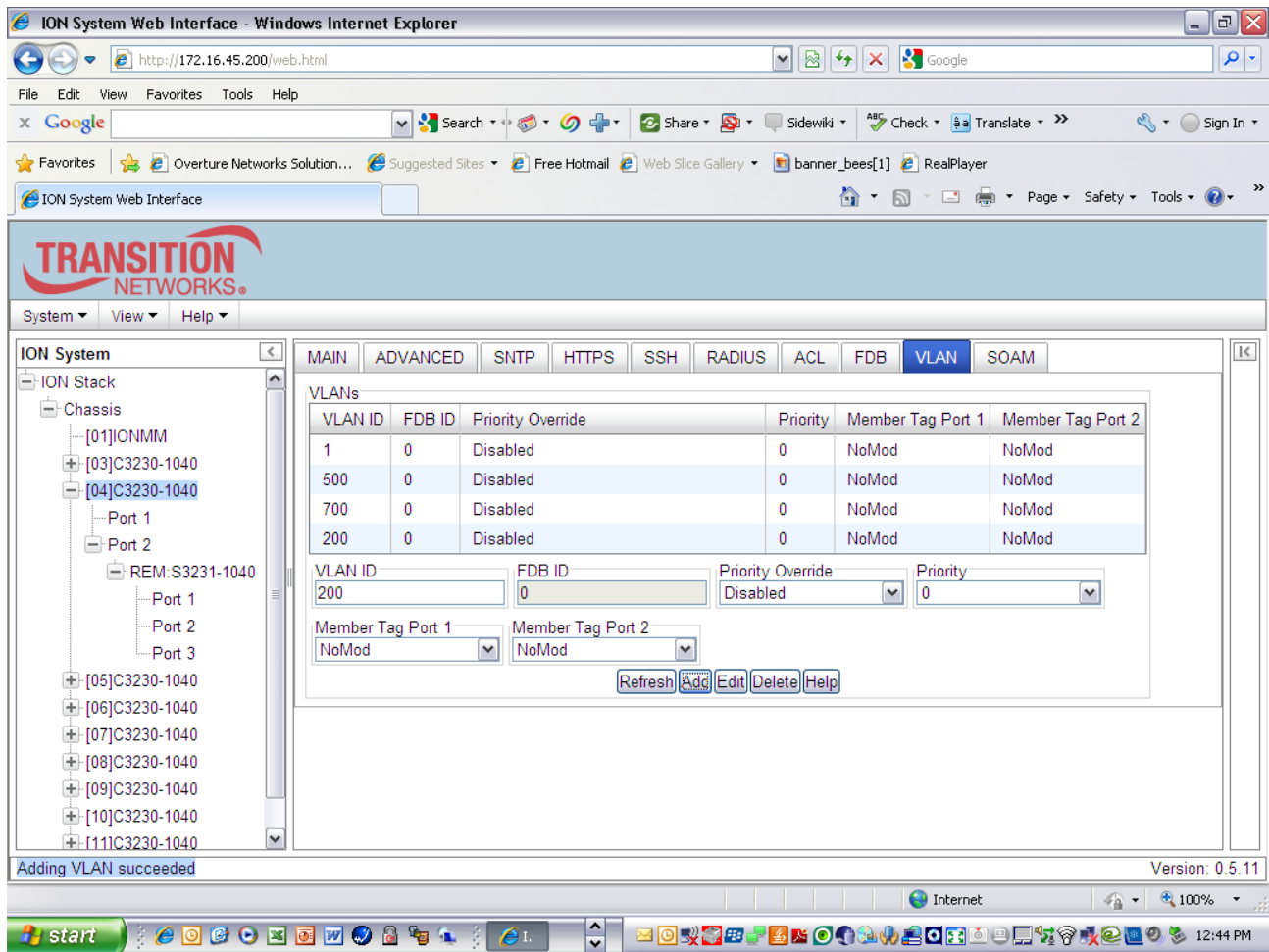
CCMs sent: 72555 CCMs with RDI bit sent: 11 CCMs received: 67940 CCMs with RDI bit received: 67939

CCMs discarded due to SenderID TLV invalid: CCMs discarded due to Port Status TLV invalid

Getting values finished Version: 0.5.11

802.1aq Operator Network Set-up Procedure

Step 21: Add in the VLAN system directory, a new VLAN (i.e 200)



Step 22: Configure/Add the **Maintenance Association ID** for the **operator** network. Select **SOAM, MA/MEG, MA Configuration**. Select **Parent MD ID 2** (corresponds to MD defined in Step 3), Enter **MA ID 201** (can be any ID starting with 2) enter **operator name** (Example Time Warner), Enable Remote MEP (REM) Auto-Detection, add a **VLAN** type (C-tag,S-Tag) and Primary VID (200) if appropriate, then **Add**

Operator MA

ION System

System View Help

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM:S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

MAIN ADVANCED Sntp HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD **MA/MEG** MEP MIP Configuration Error List

MA Configuration MEG Configuration

MA ID	Name	CC interval	VLAN type	Primary VID	S-VID	RMEP auto detection	RMEP auto de
501	ATT	1 sec	ctype	500	0	Disabled	4000
701	First Union	1 sec	ctype	700	0	Disabled	4000
201	TW	1 sec	ctype	200	0	Enabled	4000

Parent MD ID: 2 MA ID: 201 Name: TW CC interval: 1 sec

VLAN type: ctype Primary VID: 200 S-VID: 0

RMEP auto detection: Enabled RMEP auto detection timeout: 4000 Sender ID permission: MD defined

Refresh Add Edit Delete Help

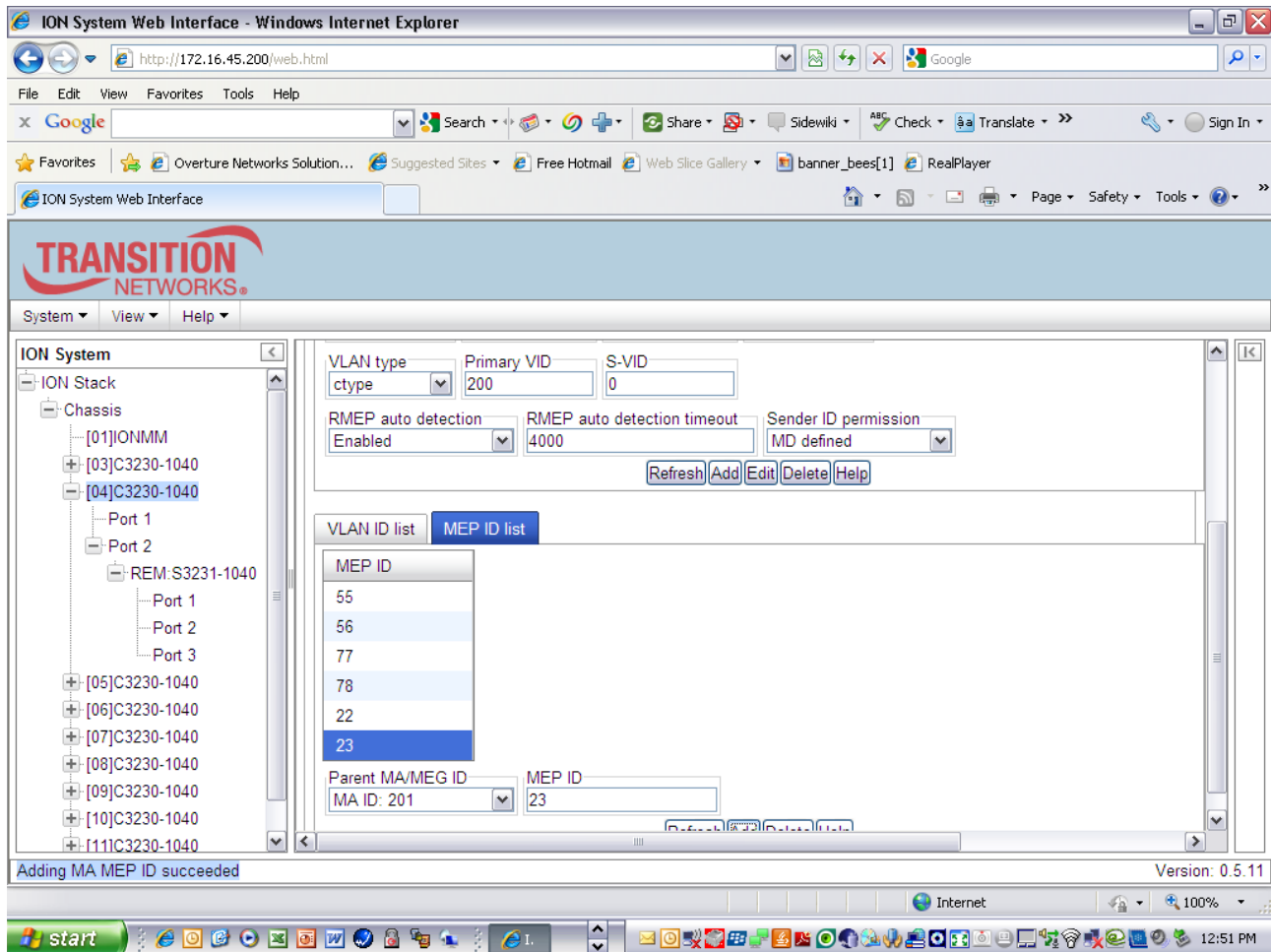
VLAN ID list MEP ID list

Adding MA succeeded

Version: 0.5.11

12:47 PM

Step 23: Using the MEP ID List, Add MEP ID 22 (Any ID starting w/2) for the MEP ID assigned to the C3230, Add MEP 23 for the Remote peer MEP ID assigned to REM:S3230 corresponding to Parent MA/MEG ID 201



Step 24: After defining the MA's, configure/add MEP ID 22, select port 1, set direction for "UP", status enabled, CC enabled

ION System

System View Help

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD MA/MEG **MEP** MIP Configuration Error List

Configuration CC monitoring Loopback Linktrace ETH-MCC ETH-TEST DM FLM AIS

MEP ID	Port	Direction	Primary VID	Status	CC status	FNG state	LTM/CCM priority	FNG alarm time
55	Port 1	Up	0	Enabled	Enabled	Defect reported	5	250
77	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250
22	Port 1	Up	0	Enabled	Enabled	Defect reported	7	250

Parent MA/MEG: MA ID: 201 MEP ID: 22 Port: Port 1 Direction: Up Primary VID: 0 Status: Enabled

CC status: Enabled

FNG alarm time: 250 FNG reset time: 1000 Lowest priority defect: macRemErrXcon LTM/CCM priority: Priority 7

MEP State: MAC address: Highest priority defect: Defects

Adding MEP succeeded Version: 0.5.11

Step 25: Repeat Steps 21 -24 above for the REM:S3240. Assign MEP ID 23 to the remote S3230 in the final MEP configuration step

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

TRANSITION NETWORKS

System View Help

ION System

- ION Stack
 - Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - Port 1
 - Port 2
 - Port 3
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040

| MEP ID | Port | Direction | Primary VID | Status | CC status | FNG state | ETH/CCM priority | FNG act |
|--------|--------|-----------|-------------|---------|-----------|-----------|------------------|---------|
| 23 | Port 1 | Up | 0 | Enabled | Enabled | Reset | 7 | 250 |
| 56 | Port 1 | Up | 0 | Enabled | Enabled | Reset | 5 | 250 |
| 78 | Port 1 | Up | 0 | Enabled | Enabled | Reset | 7 | 250 |

Parent MA/MEG: MA ID: 201, MEP ID: 23, Port: Port 1, Direction: Up, Primary VID: 0, Status: Enabled

CC status: Enabled

FNG alarm time: 250, FNG reset time: 1000, Lowest priority defect: macRemErrXcon, LTM/CCM priority: Priority 7

MEP State: MAC address: 00-C0-F2-21-0D-BC, Highest priority defect: None, Defects: RDICCM

Continuity Check Statistics: CCMs sent: 32, CCMs with RDI bit sent: 0, CCMs received: 30, CCMs with RDI bit received: 30

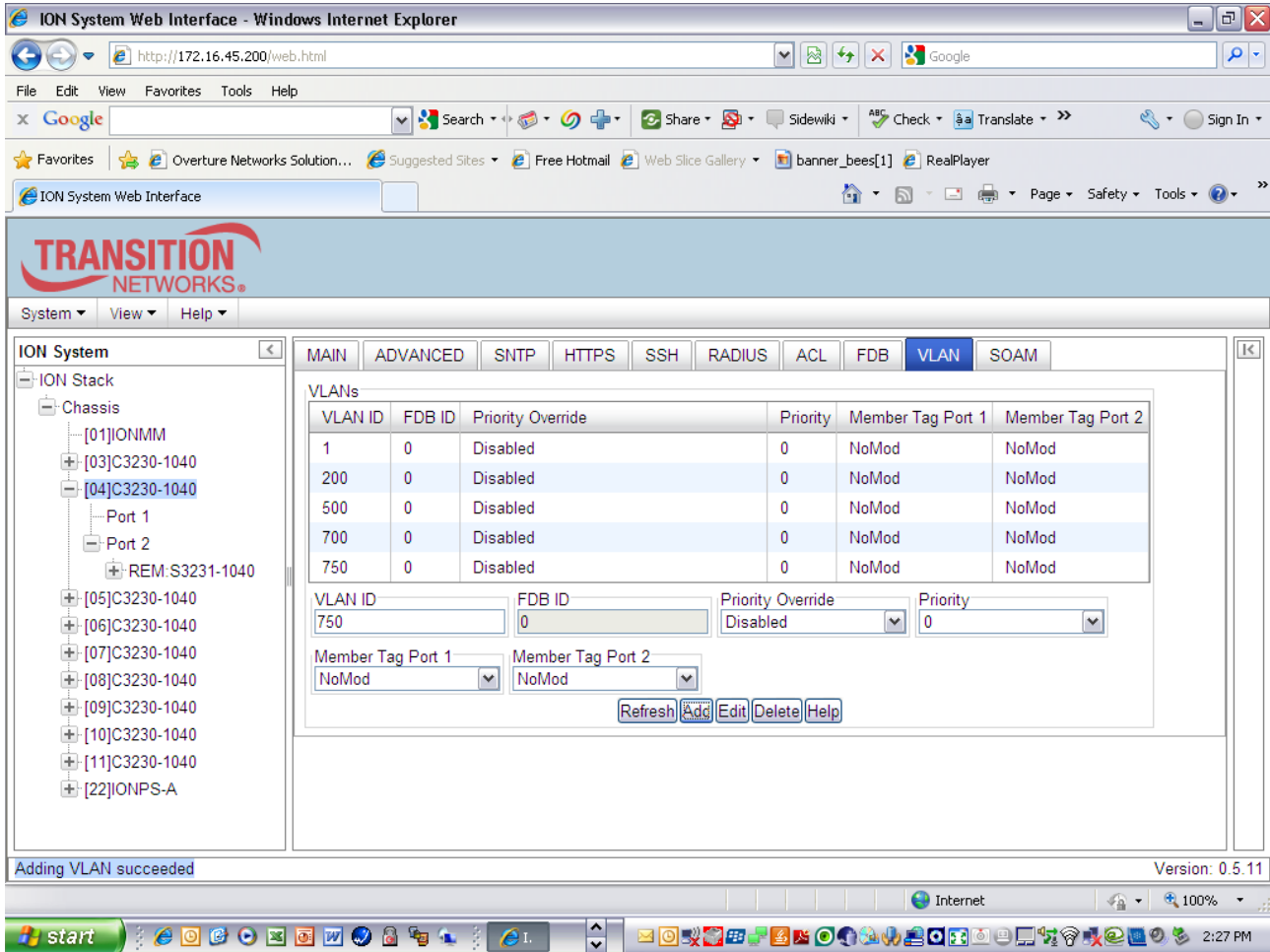
Getting values finished

Version: 0.5.11

Verify CCMs are being sent/received from MEP 22 and 23

Y.1731 Set-up Procedure - Customer Network

Step 26: Add VLAN ID (i.e 750) in the VLAN directory of C3230 for associating Y.1731 with customer network



The screenshot displays the ION System Web Interface in a Windows Internet Explorer browser. The page title is "ION System Web Interface - Windows Internet Explorer" and the address bar shows "http://172.16.45.200/web.html". The interface features a navigation menu with options like "System", "View", and "Help". The main content area is titled "ION System" and includes a tree view on the left showing the "ION Stack" structure, including "Chassis" and various ports. The "VLANs" tab is selected, displaying a table of VLAN configurations. The table has columns for "VLAN ID", "FDB ID", "Priority Override", "Priority", "Member Tag Port 1", and "Member Tag Port 2". The VLAN ID 750 is highlighted in blue. Below the table, there is a configuration form for adding or editing a VLAN. The form fields are: "VLAN ID" (750), "FDB ID" (0), "Priority Override" (Disabled), "Priority" (0), "Member Tag Port 1" (NoMod), and "Member Tag Port 2" (NoMod). Buttons for "Refresh", "Add", "Edit", "Delete", and "Help" are visible at the bottom of the form. A status message at the bottom left of the interface reads "Adding VLAN succeeded". The version number "Version: 0.5.11" is displayed at the bottom right. The Windows taskbar at the bottom shows the start button, several application icons, and the system tray with the time "2:27 PM".

| VLAN ID | FDB ID | Priority Override | Priority | Member Tag Port 1 | Member Tag Port 2 |
|---------|--------|-------------------|----------|-------------------|-------------------|
| 1 | 0 | Disabled | 0 | NoMod | NoMod |
| 200 | 0 | Disabled | 0 | NoMod | NoMod |
| 500 | 0 | Disabled | 0 | NoMod | NoMod |
| 700 | 0 | Disabled | 0 | NoMod | NoMod |
| 750 | 0 | Disabled | 0 | NoMod | NoMod |

VLAN ID: 750, FDB ID: 0, Priority Override: Disabled, Priority: 0, Member Tag Port 1: NoMod, Member Tag Port 2: NoMod

Step 27: Configure Y.1731 MEG for the Customer, Provider, and Operator Network. First configure Y.1731 MEG for the **customer** network. Select **SOAM, MA/MEG, MEG Configuration**, enter **MEG ID 702**, customer name (Example First Union) select **Level 7** from pull-down, **Enable CC Interworking, Enable REM Auto-Detect, Enter VLAN type (C/S Tag)**, enter **PVID (i.e. 750)** then Add.

Customer MEG Y1731

The screenshot shows the ION System Web Interface in a Windows Internet Explorer browser. The interface is for configuring the SOAM (Service-Oriented Active Monitoring) section. The left sidebar shows the ION Stack hierarchy, including Chassis, [01]IONMM, and various ports and interfaces like [03]C3230-1040, [04]C3230-1040, and [22]IONPS-A.

The main configuration area is titled "SOAM" and includes tabs for "Main Configuration", "MD", "MA/MEG", "MEP", "MIP", and "Configuration Error List". The "MA/MEG" tab is active, and the "MEG Configuration" sub-tab is selected. A table displays the configuration for MEG ID 702:

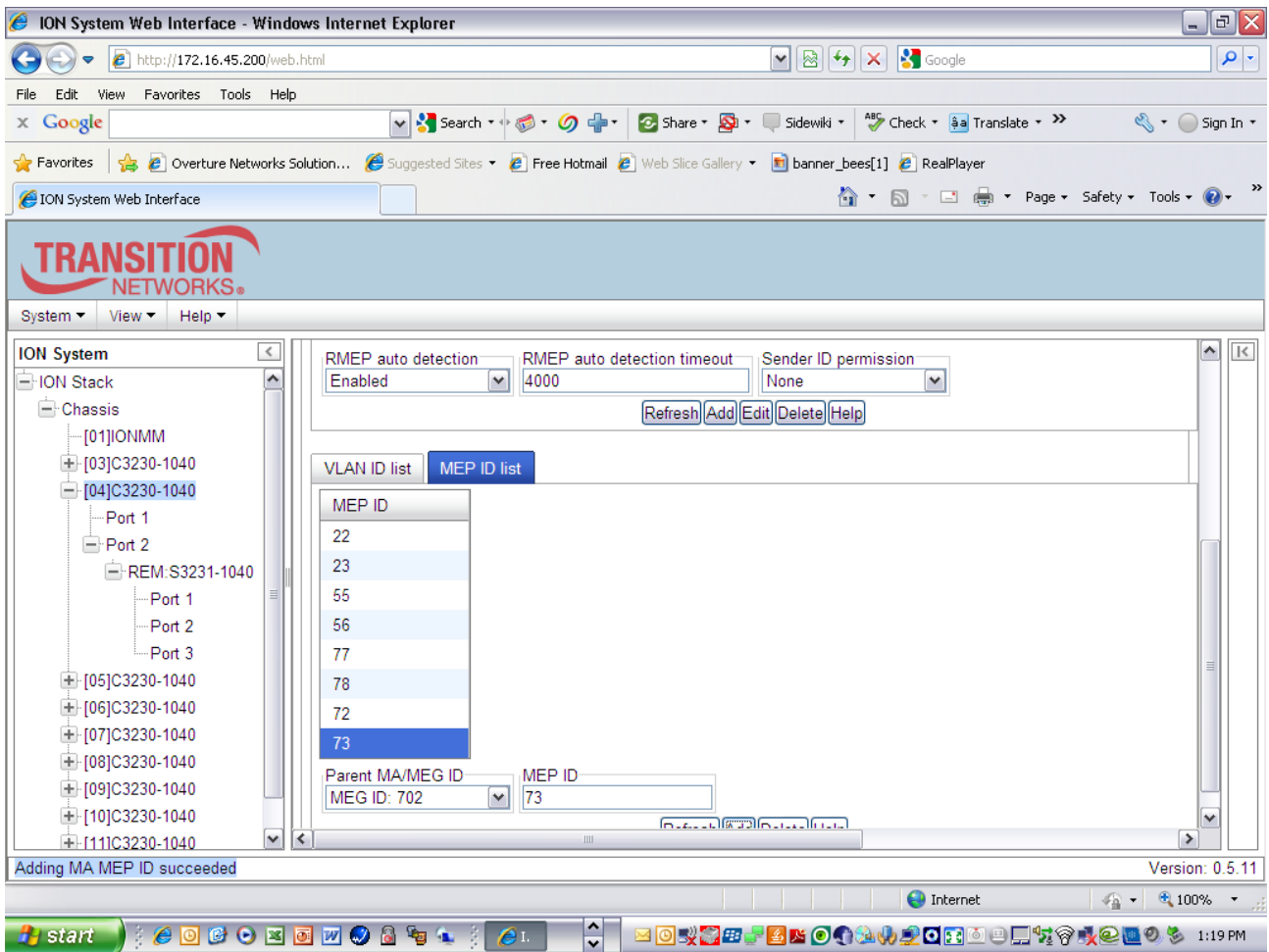
| MEG ID | Name | Level | CC interval | VLAN type | Primary VID | S-VID | RMEP auto detection | RMEP auto detection timeout | Sender ID permission |
|--------|-------------|---------|-------------|-----------|-------------|-------|---------------------|-----------------------------|----------------------|
| 702 | First Union | Level 7 | 1 sec | ctype | 750 | 0 | Enabled | 4000 | None |

Below the table, there are input fields for editing the configuration: MEG ID (702), Name (First Union), Level (Level 7), CC interval (1 sec), CC interworking (Enabled), VLAN type (ctype), Primary VID (750), and S-VID (0). There are also fields for RMEP auto detection (Enabled), RMEP auto detection timeout (4000), and Sender ID permission (None). Buttons for "Refresh", "Add", "Edit", "Delete", and "Help" are provided.

At the bottom of the configuration area, there are sections for "VLAN ID list" and "MEP ID list". The "MEP ID list" section shows a single entry: MEP ID 22.

A status message at the bottom left of the interface reads "Adding MEP succeeded". The version number "Version: 0.5.11" is displayed at the bottom right. The Windows taskbar at the bottom shows the system time as 2:59 PM.

Step 28: Configure/Add MEP ID's 72 (C3230) and 73 (REM) for MEG ID 702



Step 28: Add MEP ID 72 (C3230) to MG ID 702 in the MEP Configuration, set Port 1 “UP”, and enable status and CC

The screenshot displays the ION System Web Interface in Internet Explorer. The browser address bar shows the URL `http://172.16.45.200/web.html`. The interface features the Transition Networks logo and a navigation menu with options like System, View, and Help. The main content area is titled 'ION System' and includes a tree view on the left showing the network hierarchy (ION Stack, Chassis, [01]IONMM, [03]C3230-1040, [04]C3230-1040, Port 1, Port 2, REM.S3231-1040, [05]C3230-1040, [06]C3230-1040, [07]C3230-1040, [08]C3230-1040, [09]C3230-1040, [10]C3230-1040, [11]C3230-1040, [22]IONPS-A). The right pane shows the 'MEP' configuration page with a table of MEP configurations.

| MEP ID | Port | Direction | Primary VID | Status | CC status | FNG state | LTM/CCM priority | FNG alarm time |
|--------|--------|-----------|-------------|---------|-----------|-----------------|------------------|----------------|
| 72 | Port 1 | Up | 750 | Enabled | Enabled | Defect reported | 7 | 250 |
| 22 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |
| 55 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 5 | 250 |
| 77 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |

Below the table, there are configuration fields for the selected MEP (MEP ID 72):

- Parent MA/MEG: MEG ID: 702
- MEP ID: 72
- Port: Port 1
- Direction: Up
- Primary VID: 750
- Status: Enabled
- CC status: Enabled
- FNG alarm time: 250
- FNG reset time: 1000
- Lowest priority defect: macRemErrXcon
- LTM/CCM priority: Priority 7

Buttons for 'Refresh', 'Add', 'Edit', 'Delete', and 'Help' are visible at the bottom of the configuration section. The status bar at the bottom of the browser shows 'Getting values finished' and 'Version: 0.5.11'.

Y.1731 Set-up Procedure - Provider Network

Add VLAN ID (i.e 550) in the VLAN directory of C3230 for associating Y.1731 with provider network

ION System

System View Help

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040
 - [22]IONPS-A

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB **VLAN** SOAM

VLANs

| VLAN ID | FDB ID | Priority Override | Priority | Member Tag Port 1 | Member Tag Port 2 |
|---------|--------|-------------------|----------|-------------------|-------------------|
| 1 | 0 | Disabled | 0 | NoMod | NoMod |
| 200 | 0 | Disabled | 0 | NoMod | NoMod |
| 500 | 0 | Disabled | 0 | NoMod | NoMod |
| 700 | 0 | Disabled | 0 | NoMod | NoMod |
| 750 | 0 | Disabled | 0 | NoMod | NoMod |
| 550 | 0 | Disabled | 0 | NoMod | NoMod |

VLAN ID: 550 FDB ID: 0 Priority Override: Disabled Priority: 0

Member Tag Port 1: NoMod Member Tag Port 2: NoMod

Refresh Add Edit Delete Help

Adding VLAN succeeded Version: 0.5.11

Step 29: Configure Y.1731 MEG for provider network. Select **SOAM, MA/MEG, MEG Configuration**, enter **MEG ID 502**, customer name (Example AT&T) select **Level 5** from pull-down, **Enable CC Interworking**, **Enable REM Auto-Detect**, Enter **VLAN type (C/S Tag)**, **PVID (e.g 550)** then **Add**.

Provider MEG Y1731

The screenshot shows the ION System Web Interface in a Windows Internet Explorer browser. The interface is for configuring the SOAM (Service-Oriented Active Monitoring) section. The left sidebar shows the ION Stack hierarchy, including Chassis, [01]IONMM, and various ports and VLANs. The main content area is titled 'MA Configuration' and 'MEG Configuration'. A table lists existing MEG configurations:

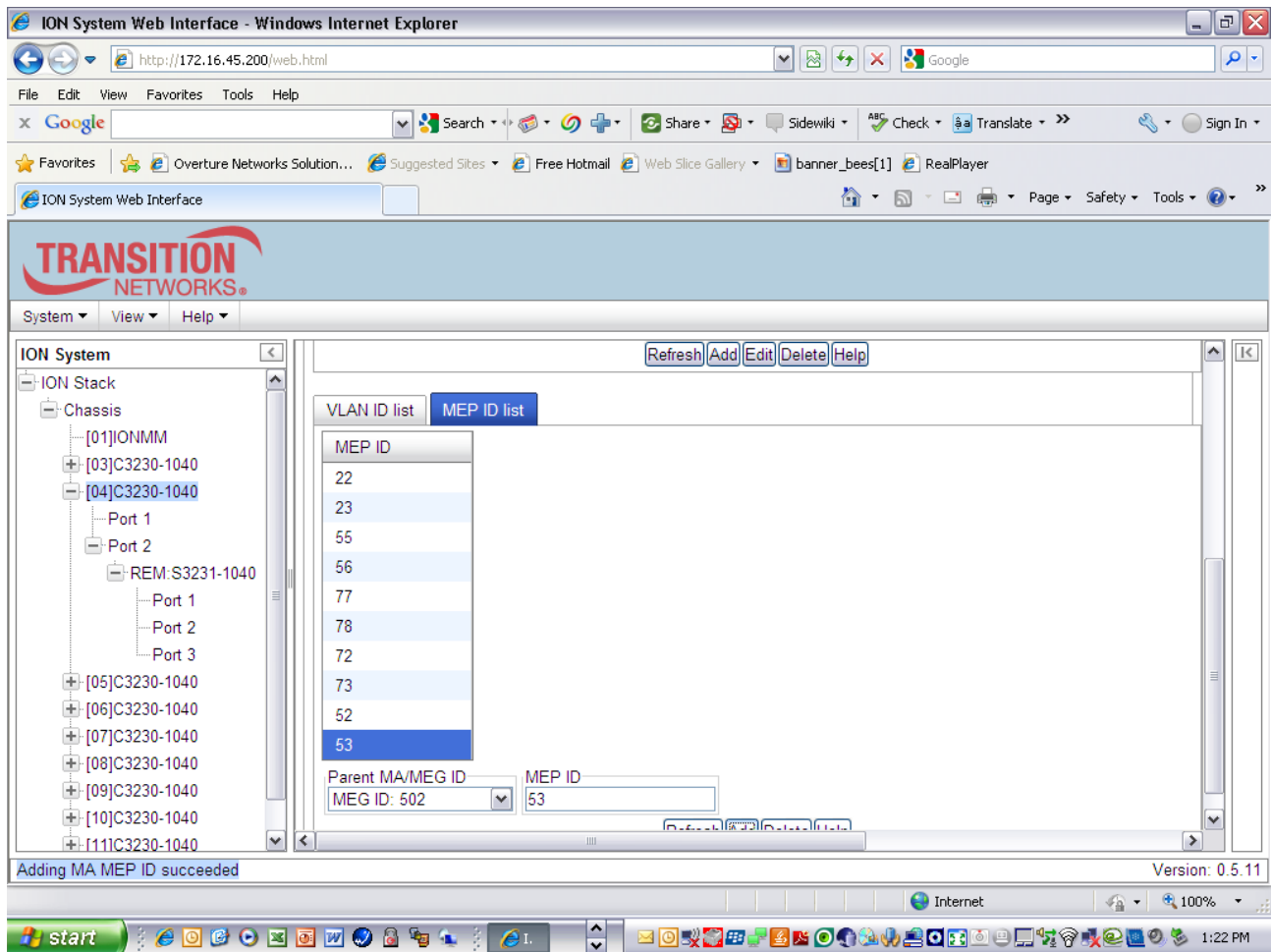
| MEG ID | Name | Level | CC interval | VLAN type | Primary VID | S-VID | RMEP auto detection | RMEP auto detection timeout |
|--------|-------------|---------|-------------|-----------|-------------|-------|---------------------|-----------------------------|
| 702 | First Union | Level 7 | 1 sec | ctype | 750 | 0 | Enabled | 4000 |
| 502 | ATT | Level 5 | 1 sec | ctype | 550 | 0 | Enabled | 4000 |

Below the table, the configuration fields for MEG ID 502 are shown:

- MEG ID: 502
- Name: ATT
- Level: Level 5
- CC interval: 1 sec
- CC interworking: Enabled
- VLAN type: ctype
- Primary VID: 550
- S-VID: 0
- RMEP auto detection: Enabled
- RMEP auto detection timeout: 4000
- Sender ID permission: None

Buttons for 'Refresh', 'Add', 'Edit', 'Delete', and 'Help' are visible. A status message at the bottom left says 'Adding MEG succeeded'. The version number 'Version: 0.5.11' is shown at the bottom right.

Step 30: Configure/Add MEP ID's 52 (C3230) and 53 (REM) for MEG ID 502



Step 31: Add MEP ID 52 (C3230) to MG ID 502 in the MEP Configuration, enter PVID (e.g. 550) set port 1 "UP" and enable status and CC

The screenshot displays the ION System Web Interface in a Windows Internet Explorer browser window. The address bar shows the URL `http://172.16.45.200/web.html`. The interface features a navigation menu with tabs for MAIN, ADVANCED, SNTP, HTTPS, SSH, RADIUS, ACL, FDB, VLAN, and SOAM. The SOAM tab is active, and the configuration page for a MA/MEG (MEP) is shown. The configuration page includes a table of MEPs and a form for editing a selected MEP (ID 52).

| MEP ID | Port | Direction | Primary VID | Status | CC status | FNG state | LTM/CCM priority | FNG alarm time |
|--------|--------|-----------|-------------|---------|-----------|-----------------|------------------|----------------|
| 22 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |
| 55 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 5 | 250 |
| 77 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |
| 72 | Port 1 | Up | 750 | Enabled | Enabled | | 7 | 250 |
| 52 | Port 1 | Up | 550 | Enabled | Enabled | | 7 | 250 |

Configuration options for the selected MEP (ID 52):

- Parent MA/MEG: MEG ID: 502
- MEP ID: 52
- Port: Port 1
- Direction: Up
- Primary VID: 550
- Status: Enabled
- CC status: Enabled
- FNG alarm time: 250
- FNG reset time: 1000
- Lowest priority defect: macRemErrXcon
- LTM/CCM priority: Priority 7

Buttons: Refresh, Add, Edit, Delete, Help

Message: Adding MEP succeeded

Version: 0.5.11

Y.1731 Set-up Procedure - Operator Network

Step 32: Add VLAN ID (i.e 250) in the VLAN directory of C3230 for associating Y.1731 with operator network

ION System Web Interface - Windows Internet Explorer

http://172.16.45.200/web.html

System View Help

ION System

ION Stack

- Chassis
 - [01]IONMM
 - [03]C3230-1040
 - [04]C3230-1040
 - Port 1
 - Port 2
 - REM.S3231-1040
 - [05]C3230-1040
 - [06]C3230-1040
 - [07]C3230-1040
 - [08]C3230-1040
 - [09]C3230-1040
 - [10]C3230-1040
 - [11]C3230-1040
 - [22]IONPS-A

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB **VLAN** SOAM

VLANs

| VLAN ID | FDB ID | Priority Override | Priority | Member Tag Port 1 | Member Tag Port 2 |
|---------|--------|-------------------|----------|-------------------|-------------------|
| 1 | 0 | Disabled | 0 | NoMod | NoMod |
| 200 | 0 | Disabled | 0 | NoMod | NoMod |
| 500 | 0 | Disabled | 0 | NoMod | NoMod |
| 550 | 0 | Disabled | 0 | NoMod | NoMod |
| 700 | 0 | Disabled | 0 | NoMod | NoMod |
| 750 | 0 | Disabled | 0 | NoMod | NoMod |
| 250 | 0 | Disabled | 0 | NoMod | NoMod |

VLAN ID: 250 FDB ID: 0 Priority Override: Disabled Priority: 0

Member Tag Port 1: NoMod Member Tag Port 2: NoMod

Refresh Add Edit Delete Help

Adding VLAN succeeded

Version: 0.5.11

Step 33: Configure Y.1731 MEG for operator network. Select SOAM, MA/MEG, MEG Configuration, enter MEG ID 202, customer name (Example TW) select Level 2 from pull-down, Enable CC Interworking, Enable REM Auto-Detect, Enter VLAN type (C/S Tag), PVID (e.g 250) then Add.

ION System

System View Help

MAIN ADVANCED SNTP HTTPS SSH RADIUS ACL FDB VLAN **SOAM**

Main Configuration MD **MA/MEG** MEP MIP Configuration Error List

MA Configuration **MEG Configuration**

| MEG ID | Name | Level | CC interval | VLAN type | Primary VID | S-VID | RMEP auto detection | RMEP auto detection timeout | Sender ID permission |
|--------|-------------|---------|-------------|-----------|-------------|-------|---------------------|-----------------------------|----------------------|
| 502 | ATT | Level 5 | 1 sec | ctype | 550 | 0 | Enabled | 4000 | None |
| 702 | First Union | Level 7 | 1 sec | ctype | 750 | 0 | Enabled | 4000 | None |
| 202 | TW | Level 2 | 1 sec | ctype | 250 | 0 | Enabled | 4000 | None |

MEG ID: 202 Name: TW Level: Level 2 CC interval: 1 sec CC interworking: Enabled

VLAN type: ctype Primary VID: 250 S-VID: 0

RMEP auto detection: Enabled RMEP auto detection timeout: 4000 Sender ID permission: None

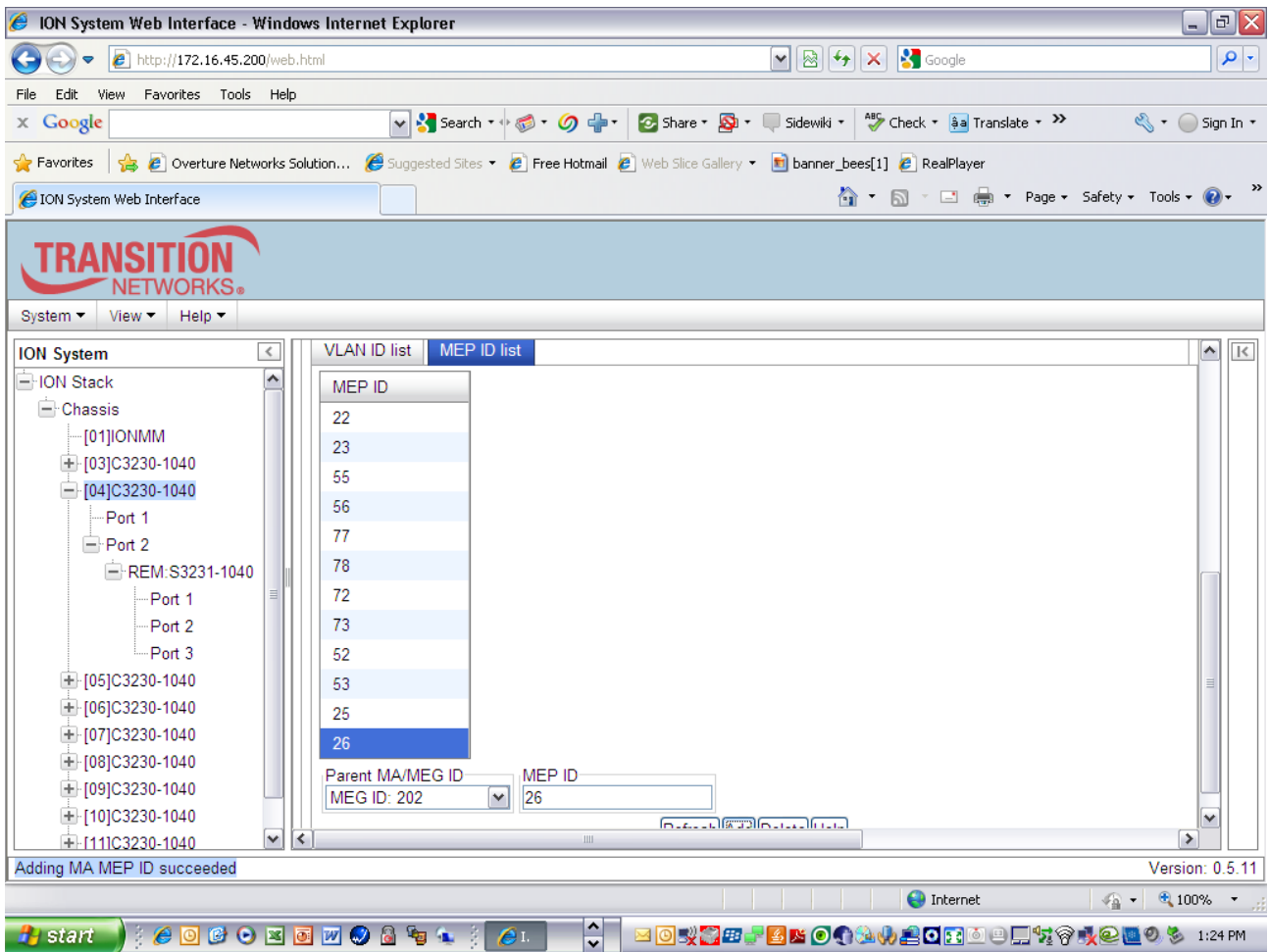
Refresh Add Edit Delete Help

VLAN ID list MEP ID list

Adding MEG succeeded Version: 0.5.11

Operator MEG Y1731

Step 34: Configure/Add MEP ID's 25 (C3230) and 26 (REM) for MEG ID 202



Step 35: Add MEP ID 25 (C3230) to MG ID 202 in the MEP Configuration, set Port 1 “UP”, enter VLAN PVID (e.g. 250), enable status and CC

The screenshot displays the ION System Web Interface. The left sidebar shows the 'ION Stack' tree with 'Chassis' expanded to show various ports and MACs, including 'REM:S3231-1040'. The main area shows the 'MEP' configuration page with a table of MEPs and a configuration form.

| MEP ID | Port | Direction | Primary VID | Status | CC status | FNG state | LTM/CCM priority | FNG alarm time |
|--------|--------|-----------|-------------|---------|-----------|-----------------|------------------|----------------|
| 52 | Port 1 | Up | 550 | Enabled | Enabled | Defect reported | 7 | 250 |
| 72 | Port 1 | Up | 750 | Enabled | Enabled | Defect reported | 7 | 250 |
| 22 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |
| 55 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 5 | 250 |
| 77 | Port 1 | Up | 0 | Enabled | Enabled | Defect reported | 7 | 250 |
| 25 | Port 1 | Up | 250 | Enabled | Enabled | | 7 | 250 |

The configuration form below the table shows the following values:

- Parent MA/MEG: MEG ID: 202
- MEP ID: 25
- Port: Port 1
- Direction: Up
- Primary VID: 250
- Status: Enabled
- CC status: Enabled
- FNG alarm time: 250
- FNG reset time: 1000
- Lowest priority defect: macRemErrXcon
- LTM/CCM priority: Priority 7

Buttons: Refresh, Add, Edit, Delete, Help

Status message: Adding MEP succeeded

Version: 0.5.11

Y.1731 Set-up Procedure (Customer, Provider, Operator) – Remote Device (S3231)

Step 36: Repeat Steps 26-35 for the Remote (REM:S3230) assigning MEP ID 73 (MEG ID 702) MEP ID 53 (MEG ID 502) MEP ID 26 (MEG 202)

Test

Verify CCM's are being sent/received properly between MEG Y.1731 MEPs (72,73,52,53,25,26)

Run Linktraces and Loopbacks between MEPs to verify complete operation

