

Intelligent Transportation Systems

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CTMS/CTIS

UC CTMS 5.11 - Configure Communications Pool

Version 2.4

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Revision History

Date	Version	Description	Author
April 8, 2004	1.0	Initial Version	Raj Chaudhuri
April 22, 2004	1.1	Revised flow to meet new approach. Added Extension point to Configure Communications Port	Raj Chaudhuri
May 10, 2004	1.2	Added Logging	Raj Chaudhuri
June 30, 2004	1.3	Revised flows. Moved Delete to Edit screen. Added data validation rules. Added constraint to get to Communication Port (only admin can). Added Basic Flow. Updated Data Elements Section. Added Wire-frame (for Edit Comm Pool)	Raj Chaudhuri
July 13, 2004	1.4	Added Alarm tasks	Raj Chaudhuri
July 19, 2004	1.5	Clarified security requirement (only ITS admin can add/configure/delete this)	Raj Chaudhuri
July 21, 2004	1.5	Added Initialization String data element. Updated wire-frame	Raj Chaudhuri
August 17, 2004	1.6	Added logic for listing Ports based on Connection type. Changed values for connection type to Dialup, Fiber and IP	Raj Chaudhuri
August 23, 2004	1.7	Clarified validation rules. Fixed typos Signed version	Raj Chaudhuri
September 2, 2004	1.8	Removed default sort order (as sorts are provided. Removed status icon as it is redundant (status is shown already). Clarified validation steps. Changed Close to Cancel. Added entry points to Add/Modify Communications Port. Added new wire-frames. Removed validation for Pool Name	Raj Chaudhuri
September 13, 2004	1.9	Removed entry points to Comm Port for usability reasons. The UI needed to be simplified	Raj Chaudhuri
September 15, 2004	2.0	Moved Delete functionality out of Edit to View Pool. Added number of ports column to view. Updated flows as Delete is now listed in the basic flow itself	Raj Chaudhuri
September 29, 2004	2.1	Clarified available ports definition. Moved initialization string to Port. Updated wire-frames	Raj Chaudhuri
October 6, 2004	2.2	Added Check for DMSs when deleting Comm Pool and display DMSs that are affected	Raj Chaudhuri
November 24, 2004	2.3	Added error window handling. Changed any Yes/No's to OK and Cancel	Nancie Fay

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January 10, 2005	2.4	<p>Added system check to see if there is a communication port or device association to the pool before displaying the Edit window. If there is, the 'Connection Type' is disabled.</p> <p>Broke out the editable fields from the read-only fields.</p> <p>Removed references to the user being notified of errors with an error message window (2 occurrences under editing pool, 2 under adding pool, 2 under deleting pool.).</p> <p>Moved the 2nd half of the final step "Closing window" (In the event got to this point from Add DMS....) to be an alternate flow.</p> <p>Changed Save to OK thru out.</p> <p>Changed OK and Cancel to Yes and NO under pool deletion confirmation.</p>	Nancie Fay
January 17, 2005	2.4	<p>Added check for device under pool deletion and how to handle if any associations exist Added missing error display text (around 8.4)</p>	Nancie Fay

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1. Use Case

1.1 Abstract

Only an ITS Administrator can Add, Edit or Delete a Communications Pool. A Communications Pool is a collection of one or more Communication Ports for accessing devices

1.2 Actor(s)

Actor	Description
Administrator (ITS Admin only)	The System Administrator for the Colorado Transportation Management Center (CTMC)

2. Flow of Events

2.1 Basic Flow

1. The system has determined that the logged in user is the ITS Administrator (referred to as ITS admin for here on in this UC) and has enabled the Communications menu
2. The ITS admin clicks on Manage > Communications > Communications Pools
3. The system lists all the Communications Pools. For each Pool, the system lists the Pool ID, Pool Name, Number of Ports (that belong to that Pool) and Pool Status. There are 3 types of statuses: Ok, Degraded and Disabled (refer to Data elements for details). The system provides sort by links for each of the columns. It also provides the ability to add a new Communications Pool and as well as select an existing Pool (to edit or delete it). The system provides the following buttons: Cancel, Add Communications Pool, Edit Communications Pool, and Delete Communications Pool* (* disabled or hidden if a Pool is not selected and the selected Pool has ports in that Pool)
4. The ITS admin clicks the **Add** Communications Pool button
5. The system requests the following information: Communication Pool Name, Communication Pool Type (default to Dialup), and lists all the available Communication Ports (Port Name) of the same type as this Comm Pool (type). An available port is one that it is not being used by an existing Communications Pool. For each Port, the system provides the ability to add or remove it from the Communications Pool. The system provides the following buttons: OK, and Cancel
6. The ITS admin enters all the required information and presses the OK button
7. The system validates the data using the following rules. A Port may only belong to 1 Pool. In the event the Pool type is Fiber (Serial) the system verifies that only 1 port is selected in the Pool. In the event the Pool type is IP (Socket based) as well, only 1 port can be selected in the Pool. The system also verifies that all the Ports in the Pool are of the same Port Connection Type (i.e. it does not contains Ports for Fiber as well as Dialup in the same Pool). A Pool does not need to have any Ports selected (i.e. the system allows a Pool without any Communications Ports to be saved).
8. The system generates a unique ID for the Communications Pool and saves all the information. The system calculates the status for the Communication Pool (see Data Elements for rule).
9. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Add Communications Pool), Time (current time), Owner (logged in user), ID (Communications Pool ID), Device Type (Communications Pool), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details).

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10. The system displays same data elements as Step 3
11. The admin selects a Pool and clicks the **Delete** Communications Pool button.
12. The system checks to see if there are no Ports or Devices associated with this Communications Pool.
13. The system requests the ITS admin to confirm the delete. The system displays the following text: “Are you sure you want to delete this Pool? “ The system provides two buttons: Yes and NO.
14. The ITS admin clicks Yes.
15. The system checks to see if there are any DMSs associated with this Communications Pool. In the event it finds no DMSs, the system removes this Communications Pool.
16. The system removes the existing Communications Pool.
17. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Delete Communications Pool), Time (current time), Owner (logged in user), ID (Communications Pool ID), Device Type (Communications Pool), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details)
18. The system displays same data elements as Step 3
19. The ITS admin clicks on Cancel
20. The system closes this window and displays the pre-condition step.

2.2 Alternate Flow

1. The system has determined that the logged in user is the ITS Administrator (referred to as ITS admin for here on in this UC) and has enabled the Communications menu
 - 1.1. The ITS Administrator is in the Add Device UC and has clicked Configure Communications Pool
 - 1.2. Go to step 3
2. The ITS admin clicks on Manage > Communications > Communications Pools
3. The system lists all the Communications Pools. For each Pool, the system lists the Pool ID, Pool Name, Number of Ports (that belong to that Pool) and Pool Status. There are 3 types of statuses: Ok, Degraded and Disabled (refer to Data elements for details). The system provides sort by links for each of the columns. It also provides the ability to add a new Communications Pool and as well as select an existing Pool (to edit or delete it). The system provides the following buttons: Cancel, Add Communications Pool, Edit Communications Pool, and Delete Communications Pool* (* disabled or hidden if a Pool is not selected and the selected Pool has ports in that Pool)
4. The ITS admin clicks the **Add** Communications Pool button
 - 4.1. The ITS admin selects a Pool and clicks on **Edit** Communications Pool
 - 4.2. The system checks if the pool is associated with a communication port or device.
 - 4.3. The system displays the following information in read only format: Communication Pool ID, Communications Pool Status (calculated field).
The system displays the following information in editable mode: Communication Pool Name, Communication Pool Type, a list of all the ports that belong to the pool and a list of all the available Communication Ports (Port Name) of the same type as this Communications Pool (type). For each of the ports listed the system provides the ability to select it (multiple select) and either remove it from the pool or add it. The system provides buttons to save (OK), and Cancel.
 - 4.3.1. In the event the pool is associated with a communication port or device, the Connection Type will be displayed as Read Only. (see UC Configure DMS for information on Pool/Device associations).
 - 4.4. The ITS admin makes changes to information and presses the OK button

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- 4.5. The system verifies the changes and ensures that all the required information is present (refer to step 7 in flow for validation rules)
 - 4.5.1. The system is unable to validate the changes
 - 4.5.2. The system informs the ITS admin of the invalidate changes
 - 4.5.3. Go to step 4.3 (Edit Pool Screen)
- 4.6. The system saves the information
 - 4.6.1. In the event the system receives an error while attempting this task, the system logs this event with the additional data that this task was not successful.
 - 4.6.2. The database and statuses are updated appropriately (see above).
 - 4.6.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
 - 4.6.4. The user clicks OK.
 - 4.6.5. The system closes the window.
 - 4.6.6. Go to step 4.3.
 - 4.6.6.1. In the event the system logs this event with the additional data that this task was not successful.
 - 4.6.6.2. The database and statuses are updated appropriately (see above).
 - 4.6.6.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK).
 - 4.6.6.4. The user clicks OK.
 - 4.6.6.5. The system closes the window.
 - 4.6.6.6. Go to step 4.3
- 4.7. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Edit Communications Pool), Time (current time), Owner (logged in user), ID (Communications Pool ID), Device Type (Communications Pool), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details)
- 4.8. Go to step 3
 - 4.8.1. The ITS admin clicks Cancel
 - 4.8.2. Go to step 3
5. The system requests the following information: Communication Pool Name, Communication Pool Type (default to Dialup), and lists all the available Communication Ports (Port Name) of the same type as this Comm Pool (type). An available port is one that it is not being used by an existing Communications Pool. For each Port, the system provides the ability to add or remove it from the Communications Pool. The system provides the following buttons: OK, and Cancel
6. The ITS admin enters all the required information and presses the OK button
 - 6.1. The ITS admin does not enter all the required information and presses the OK button
 - 6.2. The system is unable to verify that all the information is present
 - 6.3. The system informs the ITS admin that required information is missing (the system highlights the missing fields)
 - 6.4. Go to step 5
 - 6.4.1. The ITS admin clicks the Cancel button
 - 6.4.2. Go to step 3
7. The system validates the data using the following rules. A Port may only belong to 1 Pool. In the event the Pool type is Fiber (Serial) the system verifies that only 1 port is selected in the Pool. In the event the Pool type is IP (Socket based) as well, only 1 port can be selected in the Pool. The system also verifies that all the Ports in the Pool are of

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the same Port Connection Type (i.e. it does not contains Ports for Fiber as well as Dialup in the same Pool). A Pool does not need to have any Ports selected (i.e. the system allows a Pool without any Communications Ports to be saved).

- 7.1. The system is unable to validate the data.
- 7.2. The system informs the ITS admin of the rules that were violated.
- 7.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
- 7.4. The user clicks OK
- 7.5. The system closes the window
- 7.6. Go to Step 5.
8. The system generates a unique ID for the Communications Pool and saves all the information. The system calculates the status for the Communication Pool (see Data Elements for rule).
 - 8.1. The system receives an error when trying to save the information.
 - 8.2. The system logs this event with the additional data that this task was not successful.
 - 8.3. The database and statuses are updated appropriately (see above).
 - 8.4. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
 - 8.5. The user clicks OK
 - 8.6. The system closes the window
 - 8.7. Go to step 5.
 - 8.7.1. In the event there is a timeout when attempting this task, the system logs this event with the additional data that this task was not successful (timed out).
 - 8.7.2. The database and statuses are updated appropriately (see above).
 - 8.7.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
 - 8.7.4. The user clicks OK
 - 8.7.5. The system closes the window
 - 8.7.6. Go to step 5.
9. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Add Communications Pool), Time (current time), Owner (logged in user), ID (Communications Pool ID), Device Type (Communications Pool), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details).
10. The system displays same data elements as Step 3
11. The admin selects a Pool and clicks the **Delete** Communications Pool button.
12. The system checks to see if there are no Ports or Devices associated with this Communications Pool.
13. The system requests the ITS admin to confirm the delete. The system displays the following text: "Are you sure you want to delete this Pool?" The system provides two buttons: Yes and NO.
14. The ITS admin clicks Yes.
 - 14.1. The ITS admin clicks No.
 - 14.2. Go to step 10.
15. The system checks to see if there are any DMSs associated with this Communications Pool. In the event it finds no DMSs, the system removes this Communications Pool.
 - 15.1. In the event the system determines that there are DMSs associated with the Communications Pool, the system displays the following message: "This

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- Communications Pool cannot be deleted. [n (number here)] DMSs currently use this Communications Pool. After the DMSs are re-assigned by re-configuring them, execute this command again.. There are up to 5 DMSs listed here – [Device ID – Device Common Name, ...]
- 15.2. The system presents a button 'OK' to acknowledge this message
 - 15.3. The user clicks on OK
 - 15.4. Go to step 3.
 16. The system removes the existing Communications Pool
 - 16.1. In the event the system receives an error while attempting this task, the system logs this event with the additional data that this task was not successful.
 - 16.2. The database and statuses are updated appropriately (see above).
 - 16.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
 - 16.4. The user clicks OK
 - 16.5. The system closes the window
 - 16.6. Go to step 10.
 - 16.6.1. In the event the system does not receive a response within the specified time, the system logs this event with the additional data that this task was not successful (timed out).
 - 16.6.2. The database and statuses are updated appropriately (see above).
 - 16.6.3. In the event the Configure Communications Pool window is still open, the system will display an error message. The system provides a button to acknowledge the error (OK)
 - 16.6.4. The user clicks OK
 - 16.6.5. The system closes the window
 - 16.6.6. Go to step 10.
 17. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Delete Communications Pool), Time (current time), Owner (logged in user), ID (Communications Pool ID), Device Type (Communications Pool), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details)
 18. The system displays same data elements as Step 3
 19. The ITS admin clicks on Cancel
 20. The system closes this window and displays the pre-condition step.
 - 20.1. In the event the ITS admin has arrived to this UC from Add Device, the system returns the ITS admin to the Add Device screen

3. Special Requirements

1. An available Port is one that is not being used by a Communications Pool and is of any status
2. A Port can only belong to one Communications Pool

4. Assumptions

5. Pre-Conditions

UC CTMS 2.00 – Navigate Desktop
 UC CTMS 5.00 – Manage DMS
 UC CTMS 5.10 – Add DMS
 UC CTMS 8.10 – Log User Activity

6. Post-Conditions

A new Communications Pool is created. Or an existing Communications Type is modified or deleted

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7. Extension Points

8. Issues / Constraints / Questions

9. Data Elements

Name	Description	Validation	Example
Pool ID	Unique ID for the Communications Pool	Not null. Integer. Unique. Size=10	1
Pool Name	Name of the Communications Pool	Not null. String. Size=32	DMS dialup pool
Pool Type	The type of Communications Pool. This is an enumerated type. The values include: Dialup, Fiber and IP (used to be Modem, Serial, TCP Socket, UDP Socket)	Not null. Enumerated List	Modem
Ports	List of Communications Port Objects The ports that belong to this Communication Pool. A port can only belong to 1 Communication Pool 0 to many relationship	Separate table. See UC Configure Communications Port	
Pool Status	This is a calculated value (and may not be represented in the DB). The values include: Ok, Degraded, Disabled If the Ports in the Pool are all enabled, the status is Ok If at least 1 Port in the Pool is disabled, the status is Degraded If the Pool contains only Ports that are disabled, the status is Disabled If the Pool contains no Ports, the status is set to Disabled (only Disabled Pool can be deleted)	Not a field in the DB – instead this is a calculated field	

10. Wire-frame

Manage Pools [X]

Pools

Pool ID	Pool Name	Status	Ports
1	Dialup 1	Degraded	3
2	Dialup 2	Degraded	3
3	Dialup 3	Degraded	3
4	Fiber 1	Ok	1
5	Fiber 2	Ok	1
6	Fiber 3	Disabled	1
7	IP Pool 1	Ok	1
8	IP Pool 2	Ok	1
9	IP Pool 3	Disabled	1

Add Pool [X]

Pool Information

* Pool Name:

* Connection Type:

Select Ports

Available		Selected
Port 1		sample 1
Port 2		
Port 3		
Port 4		
Port 5		
Port 6		
Port 7		

* Indicates required field

Edit Pool

Pool Information

Pool ID:

Status:

* Pool Name:

* Connection Type:

Select Ports

Available

- Port 1
- Port 2
- Port 3
- Port 4
- Port 5
- Port 6
- Port 7

Selected

- sample 1

* Indicates required field

OK Cancel