



# EcoNet<sup>®</sup> Enabled Unit Coolers



## Troubleshooting Guide

#	Problem	Possible Cause	Remedy
1	EcoNet Controller does not turn on.	No power to controller	Ensure voltage selector switch is set to the proper setting (115V or 230V) and power harness is connected to controller board. Use a voltmeter to verify that proper voltage is present on terminal board (L1, L2) on evaporator.
		Controller board could be damaged.	Inspect controller board for visual signs of damage (discoloration, burn marks, broken components, etc.). If damaged, replace controller board. Make sure that new controller board has voltage selector switch to correct setting (115V or 230V) <b>before</b> applying power to the unit.
2	Controller turns on but display is missing lines or blank.	Controller board display is damaged.	Replace controller board.
3	One or more fans are not running.	No power to controller.	Ensure voltage selector switch is set to the proper setting (115V or 230V) and power harness is connected to controller board. Ensure power is connected to terminal board (L1, L2, GND) on evaporator.
		One or more fan wires are disconnected.	Verify fan wiring diagram on unit and ensure that fans are wired to controller: WHITE wire to L2, BLACK wire to Aux Relay 1 on controller board, RED wire to Aux Relay 2 on controller board. Verify wires from Aux Relays 1 and 2 are connected to L1 on terminal board. Verify each of the EC fan motors has all the wires connected (WHITE, BLACK & RED). Verify Aux Relay status: when Aux 1 Relay is ON, fans run at full speed; when Aux 1 and Aux 2 Relays are both ON, fans run at half speed. LED will turn ON next to each relay on controller board to indicate relay is active. User can also verify Aux Relay 1 and 2 status via display under <b>Status → Outputs → Aux Relay #1/Aux Relay #2</b> .
		Fan motor could be damaged.	Replace fan motor.
		Fan blades could be obstructed.	Verify fan blades and fan guards are free of obstruction.
4	None of the fans are running.	EcoNet controller could be manually disabled; System Enabled is set to NO in the controller settings.	On controller display, go to <b>Settings → System Enabled</b> and ensure it is set to YES.
		Evap Temp 1 temperature is not cold enough (on Single Coil units); Evap Temp 1 and Evap Temp 2 temperatures not cold enough (on Dual Coil units).	Controller is waiting on Evap Temp 1 (and Evap Temp 2 on Dual Coil units) to get cold enough before allowing fans to run. If unit is set to FREEZER, Evap Temp has to get below 35F for fans to run; if unit is set to COOLER, Evap Temp has to get below 55F for fans to run. Verify Aux Relay status: when Aux 1 Relay is ON, fans run at full speed; when Aux 1 and Aux 2 Relays are both ON, fans run at half speed. LED will turn ON next to each relay on controller board to indicate relay is active. User can also verify Aux Relay 1 and 2 status via display under <b>Status → Outputs → Aux Relay #1/Aux Relay #2</b> .
		If unit is set to Freezer, it could be defrosting.	Wait for defrost cycle to finish.
5	Fans run but never go to half speed.	Half speed fan wire (RED) could be disconnected/loose.	Verify fan wiring diagram on unit and ensure that RED wire is connected to Aux Relay 2 on controller, and connected to every fan motor. Verify wire from Aux Relay 2 is connected to L1 on terminal board. Fans should go to half speed when box temperature setpoint is satisfied, or when air defrost unit (set to COOLER) is defrosting. Verify Aux Relay 2 status via LED on controller, and via display under <b>Status → Outputs → Aux Relay #2</b> .
		Unit has PSC fan motors installed.	Verify if the unit installed has PSC fan motors. PSC fan motors operate at full speed only or OFF. There will not be a wire connected to Aux Relay #2.
6	Unit is not cooling.	No power to controller.	Ensure voltage selector switch is set to the proper setting (115V or 230V) and power harness is connected to controller board. Ensure power is connected to terminal board (L1, L2, GND) on evaporator.
		Controller could be manually disabled; System Enabled is set to NO in the controller settings.	On controller display, go to <b>Settings → System Enabled</b> and ensure it is set to YES.
		Space Temp sensor is disconnected.	If the controller detects that the <b>Space Temp</b> sensor input is missing, it will attempt cooling operation in fixed intervals based on previously calculated runtime averages until the sensor is replaced. Also, while the sensor is disconnected, Space Temp will read "-60°F" and a " <b>A103 Space Temp Thermistor Failure</b> " alarm will be generated (viewed on the display under <b>Service → Current Alarms</b> ). Replace the Space Temp sensor as soon as possible to resume normal cooling operation based on the configured Setpoint. (Part no. 08219623)
		Controller could be enabled, but EXV is not opening.	Verify EXV is properly connected to wire harness and that none of the 4 prongs are bent or missing. Verify on wire harness connection at the controller that no wires have come loose from the connector. Verify that controller is commanding EXV to open by looking at the display under <b>Status → EXV → EXV Current Pos</b> . To do a quick verification if the valve is working, a) disconnect power to the controller and listen for movement of the EXV (controller will force valve to close completely when power is disconnected), OR b) go to <b>Settings → System Enable</b> and set it to NO. Reconnect power to the controller, or set <b>System Enable</b> back to YES, and wait a couple of minutes to listen for EXV movement (valve should open if Space Temp Setpoint is not satisfied).
7	EXV is operating, but unit is still not cooling.	Verify if compressor is running.	Verify Suction Pressure reading on the display under <b>Status → Sensors → Suction Pressure</b> . If the system is charged properly, the Suction Pressure reading should start increasing as soon as the valve opens. Verify at the condensing unit if the compressor is running. Verify that power to the condensing unit is turned ON. Verify that the cut-in/cut-out pressure switches at the compressor are set properly for the refrigerant being used (refer to condensing unit installation manual).
8	Unit is cooling but Space Temp never reaches setpoint.	Door is open.	Close door to the box. Make sure door remains closed unless/until access to box is needed.
		System could be undercharged/leak present in the system.	Verify at controller display the current superheat and valve position; go to <b>Status → Superheat/EXV Current Pos</b> . If superheat is consistently high and valve is consistently running at or close to 100%, the system could be low on refrigerant. Verify if sight glass at condensing unit is clear. Verify suction pressure with a set of gauges. Recharge system as needed, verify if any leaks are present and fix as needed.
		Compressor could be shutting down intermittently.	Verify at condensing unit if compressor is shutting down intermittently. Troubleshoot condensing unit and verify if high head pressure, phase loss, etc.

#	Problem	Possible Cause	Remedy
9	Suction line at compressor is icing up excessively.	Verify that the correct refrigerant is selected.	Verify under the controller settings that the correct refrigerant is selected. On the display, go to <b>Settings → Equipment → Refrigerant</b> . An incorrect refrigerant setting will cause incorrect superheat calculation and the system will not operate properly.
		Suction Temp sensor disconnected (controller will alarm; red LED on controller will be blinking), or sensor could be malfunctioning/reading erratic value.	Verify if Suction Temp Thermistor alarm is active: on controller display go to <b>Service → Current Alarms</b> . Also verify Suction Temperature reading under <b>Status → Sensors → Suction Temp</b> ; if it is reading "-60 °F", the sensor is not making good contact or is missing. If Suction Temp sensor input is missing, the EXV will remain at a fixed position until sensor is replaced, and alarm " <b>A100 Suction Temp Thermistor Failure</b> " will be active. If sensor is reading a value other than -60°F, verify that it is not an erratic value and that the reading reasonably corresponds to the conditions at the evaporator (for example, if sensor is reading 150°F when the suction line at the evaporator is near freezing conditions). Replace Suction Temp Thermistor (part no. 08219637).
		Suction Pressure transducer disconnected (controller will alarm; red LED on controller will be blinking), or transducer could be malfunctioning.	Verify if Suction Pressure alarm is active: on controller display go to <b>Service → Current Alarms</b> . Also verify Suction Pressure reading under <b>Status → Sensors → Suction Pressure</b> ; if it is reading "-14.7 PSIG", the sensor is malfunctioning or is disconnected. If the controller detects that the pressure input is missing, alarm " <b>A106 Suction Pressure Sensor Failure</b> " will be active and the controller will attempt to calculate approximate superheat by using Evap Temp 1 reading instead of Saturated Suction Temp and continue metering the EXV, but the calculated superheat will not be as accurate. Replace Suction Pressure Transducer (part no. 08219621).
		Verify EXV is functioning properly, closing completely for pumpdown.	Verify harness connection to the EXV and to the controller board is secure. Set System Enable to NO, under <b>Settings → System Enable</b> in order to close the EXV and force a pumpdown. Confirm that the EXV can be heard moving as it closes. Confirm EXV position under <b>Status → EXV → EXV Current Pos.</b> is 0%. Verify that compressor pumps down and shuts off after a couple of minutes; Suction Pressure reading under <b>Status → Sensors → Suction Pressure</b> should decrease as the system pumps down. If the compressor is still running and does not turn off, the EXV may be malfunctioning and allowing some refrigerant to pass through even after being commanded by the controller to close. Replace the EXV.
10	Evaporator coil is icing up (Low Profile FREEZER, electric defrost)	Door is being left open.	Make sure door to the freezer is kept closed unless/until access to freezer is needed.
		Verify that heaters are working when controller goes into defrost.	Verify that when controller starts a defrost, the heaters are energized and operating properly. A manual defrost can be started by going on the display to <b>Service → Defrost Control → Start a Defrost</b> . Verify at the controller board that the LED's for the defrost relays turn ON and their status is ON on the display ( <b>Status → Output → Defrost Relay #1/#2</b> ). <b>If the unit is a Low Profile evaporator, make sure that Coil Type is set to "Single"</b> (go to <b>Settings → Equipment</b> and scroll down to verify these parameters), and that Evap Temp 1 sensor is connected and having a valid reading. If Evap Temp 1 sensor is disconnected, the controller will alarm (" <b>A101 Evaporator Temp Sensor Failure</b> ") and the Defrost Relays will not turn ON. If Coil Type is mistakenly set to Dual, the controller will alarm (" <b>A102 Evap Temp 2 Thermistor Failure</b> ") and the missing Evap Temp 2 sensor will prevent Defrost Relay #2 from turning on; this would keep the bottom heater and drain pan heater from turning on during a defrost and will cause ice build up on the bottom part of the coil. If both Defrost Relays are turning ON, verify with a meter that the heaters are drawing amps and are warming up; if they are not, verify the heater wiring with the wiring diagram at the evaporator. If the heaters are wired properly but still not heating, they may need to be replaced.
		Verify duration of defrost cycle/runtime between defrosts.	If the heaters are verified to be working properly, proceed to verify defrost cycle duration: on the controller display, go to <b>Status → Defrost → Last Defr. Time</b> . Also, force a defrost and wait for it to finish to take note of the duration. Low Profile Evaporators typically need between 20 to 30 minutes defrost duration to clear the ice. If the defrost cycle is too short, the Defrost Termination Temperature ( <b>Def. Term. Temp</b> ) and Runtime Until Defrost ( <b>Def. Cmp. Run Time</b> ) can be adjusted as needed in <b>Settings → Equipment</b> . Also, the pulsing on Defrost Relay #1 (top heater) can be disabled by setting <b>Defrost Pulse Override</b> to YES if needed. If the unit already has some ice built up in the coil, it may take several defrost cycles to clear the ice after the parameters mentioned above are adjusted.
11	Evaporator coil is icing up (Center Mount FREEZER, electric defrost).	Door is being left open.	Make sure door to the freezer is kept closed unless/until access to freezer is needed.
		Verify that heaters are working when controller goes into defrost.	Verify that when controller starts a defrost, the heaters are energized and operating properly. A manual defrost can be started by going on the display to <b>Service → Defrost Control → Start a Defrost</b> . Verify at the controller board that the LED's for the defrost relays turn ON and their status is ON on the display ( <b>Status → Output → Defrost Relay #1/#2</b> ). <b>If the unit is a Center Mount evaporator, make sure that Coil Type is set to "Dual" and Defrost Pulse Override set to "YES"</b> (go to <b>Settings → Equipment</b> and scroll down to verify these parameters), and that Evap Temp 1 and Evap Temp 2 sensors are connected and having a valid reading. If Evap Temp 1 sensor is disconnected, the controller will alarm (" <b>A101 Evaporator Temp Sensor Failure</b> ") and Defrost Relay #1 will not turn ON; if Evap Temp 2 sensor is disconnected, the controller will alarm (" <b>A102 Evap Temp 2 Thermistor Failure</b> ") and Defrost Relay #2 will not turn ON. If the Defrost Relays are turning ON, verify with a meter that the heaters are drawing amps and are warming up; if they are not, verify the heater wiring with the wiring diagram at the evaporator. If the heaters are wired properly but still not heating, they may need to be replaced.
		Verify Evap Temp 1 and Evap Temp 2 sensor locations.	On Center Mount evaporators ( <b>Coil Type = Dual</b> ), both Evap Temp 1 (white wires) and Evap Temp 2 (blue wires) are used for defrost termination. During a defrost cycle, when Evap Temp 1 sensor reaches Defrost Termination Temp, the Defrost Relay #1 will turn off. Same for Evap Temp 2 with Defrost Relay #2; each side will terminate defrost independently. Verify with the wiring diagram on the unit that Evap Temp 1 sensor is located on the coil whose heaters are wired to Defrost Relay #1. Same goes for Evap Temp 2, it should be located on the coil whose heaters are wired to Defrost Relay #2.
		Verify Defrost Pulse Override is set to YES.	On Center Mount evaporators ( <b>Coil Type = Dual</b> ), make sure that Defrost Pulse Override is set to YES so Defrost Relay #1 does not pulse during a defrost cycle (go to <b>Settings → Equipment → Def. Pulse Overr.</b> and make sure it is set to YES).
		Verify duration of defrost cycle/runtime between defrosts.	If the heaters are verified to be working properly, proceed to verify defrost cycle duration: on the controller display, go to <b>Status → Defrost → Last Defr. Time</b> . Also, force a defrost and wait for it to finish to take note of the duration. Center Mount Evaporators typically need between 20 to 30 minutes defrost duration to clear the ice. If the defrost cycle is too short, the Defrost Termination Temperature ( <b>Def. Term. Temp</b> ) and Runtime Until Defrost ( <b>Def. Cmp. Run Time</b> ) can be adjusted as needed in <b>Settings → Equipment</b> . If the unit already has some ice built up in the coil, it may take several defrost cycles to clear the ice after the parameters mentioned above are adjusted.

#	Problem	Possible Cause	Remedy
12	Evaporator Coil is steaming excessively during a defrost; water droplets accumulating on the ceiling (Low Profile and Center Mount FREEZER units).	Defrost cycle is running too long.	Verify last defrost cycle duration under <b>Status → Defrost → Last Defr. Time</b> , and/or force a defrost manually and time it to verify duration. Low Profile and Center Mount evaporators should not defrost for longer than 30-35 minutes. Adjust Defrost Termination Temperature ( <b>Def. Term. Temp</b> ) down as needed, and also adjust the Maximum Defrost Time ( <b>Def. Max Run Time</b> ) down from the 60 minute default setting if needed.
13	EcoNet Controller generates alarm " <b>A002 Drain Temp &lt; Defrost Termination Temp.</b> " (Low Profile FREEZER only).	There may be ice on the drain pan after a defrost cycle ended; drain line could be blocked.	The Drain Temp sensor may be used on Low Profile Freezers as an additional early warning that ice is building up on the drain pan. To enable this function set <b>Drain Sensor?</b> to YES on <b>Settings → Equipment</b> , and make sure that a Drain Temp Sensor (part no. 08219623) is connected to the controller (DRAIN) and secured to the drain pan (carefully securing the sensor wire from touching the heaters). When a defrost cycle ends, if the Drain Temp does not reach Termination Temp, the controller will generate the " <b>Drain Temp &lt; Defrost Termination Temp.</b> " alarm. Verify that the drain pan heater is connected and working properly, and/or that the sensor is properly placed flat on the drain pan secured with the same nut that is holding the heater bracket. Verify that drain line is free of obstruction and heat tape is working properly to keep the line warm.
14	EcoNet Controller generates alarm " <b>A104 Drain Temp Thermistor Failure</b> "	Drain Temp Sensor configured to YES under Settings and sensor is not connected.	If no Drain Temp sensor is installed, make sure Drain Temp sensor is configured to NO under <b>Settings → Equipment → Drain Temp?</b> . If a Drain Temp sensor is meant to be installed, make sure the sensor is reconnected or replaced (part no. 08219623)
15	EcoNet Controller generates alarm " <b>A105 Aux Temp Thermistor Failure</b> "	Aux Temp Sensor is configured to YES under Settings and sensor is not connected.	Go to <b>Settings → Equipment → Aux Temp?</b> and make sure it is configured to NO. The Aux Temp sensor input is not used in the current software version.
16	EcoNet Controller generates notification " <b>T001 Defrost Failure: Max Time Expired</b> "	Evaporator works on Air Defrost	Air Defrost units (set to <b>Cooler</b> ) typically end defrost on maximum time, so in this scenario this notification would be normal. If a shorter or longer defrost cycle is desired, the Max Defrost Time can be adjusted under <b>Settings → Equipment → Def. Max Run Time</b> (default is 60 minutes).
		Evaporator works on Electric Defrost	Electric Defrost units (set to <b>Freezer</b> ) typically end defrost when the Evap Temp reading reaches Defrost Termination Temperature. If an Electric Defrost evaporator is ending defrost on maximum time instead, verify under <b>Settings → Equipment → Def. Max Run Time</b> is set to no less than 30 minutes (or is already at the default 60 minutes). If it is still terminating on max time, verify the Evap Temp sensor and electric heaters by referring to items 10 and 11 in this guide.
17	I have multiple evaporators in the same box working as a group, but one or more of them are not cooling/operating in sync.	EcoNet controller may not be addressed properly to work as part of the group.	Verify that each controller that is intended to work in the group is addressed properly. On each controller display, go to <b>Settings → Equipment → Group-Member Cfg.</b> to set the address. Group 1 Leader will be G1-L, Group 1 Follower #2 will be G1-2, Group 1 Follower #3 will be G1-3, etc. Same for Groups 2, 3 and 4. Each group will support a maximum of 6 evaporators (1 Leader + 5 Followers). Make sure that there are no conflicting addresses set between two or more controllers.
		EcoNet controller may not be wired properly to the rest of the group.	Verify that the communication wire used is at least <b>22 gauge, shielded</b> . Verify each of the 3 conductors are terminated at each board on E1, E2 and RT terminals and that polarity is maintained from board terminal to board terminal (a wire landed at E1 on the first board has to go to E1 on every other board on the daisy chain; same for E2 and RT). Verify that the shielding strands are connected at every splice and terminated at a ground point on one end of the daisy chain only.
		One or more controllers in the group may be manually disabled.	Verify on each controller in the group that <b>System Enable</b> is set to YES. Go to <b>Settings → System Enable</b> and verify that all the controllers in the group are set to YES.
		One controller may have a different software version from the other controllers in the group.	Verify software version at each controller on the display by navigating to <b>Service → Software Version</b> . Every controller in one Group must be running the same software version for the group function to operate properly. If you are having group sync issues and have one or more boards where the software version does not match the others, please call Customer Support.
18	Time stamp on the Alarm History is not accurate.	Time clock on controller may not have been set.	Go to <b>Settings → Date and Time</b> on each controller board display to set the controller time clock. If you have a Command Center Display wired to one or more controller boards, the time clock can be set there and it will be simultaneously broadcast to every controller connected.
		Time clock on controller may have been set at install, but a prolonged power loss may have reset it.	If the controller board remains powered off for more than a couple of days, the time clock will have to be reset. Go to <b>Settings → Date and Time</b> on each controller board display to set the controller time clock. If you have a Command Center Display wired to one or more controller boards, the time clock can be set there and it will be simultaneously broadcast to every controller connected.
19	Command Center Display screen is blank.	Make sure that Command Center Display is connected to a power supply.	If installing Command Center within 150 feet of the nearest EcoNet controller, make sure that the wires from the R and C terminals at the Command Center mounting bracket are securely connected to the 0V and 16V terminals at the controller. Make sure the controller is powered on. If Command Center is installed more than 150 feet away from nearest controller, make sure it is connected to a separate 24VAC or 24VDC power supply. Please refer to the Command Center wiring diagram on Page 13 of the EcoNet Installation Manual.
		Command Center Display could be damaged.	Inspect the Command Center Display for signs of damage (cracked screen, burn marks on the circuit board/mounting bracket, broken components). If damaged, replace the Command Center Display. Make sure that the Command Center is installed indoors, outside of the walk-in cooler/freezer, and that it does not get wet or dropped.

#	Problem	Possible Cause	Remedy
20	Command Center Display turns on but is not communicating with any controllers.	Make sure that communication wires between Command Center Display and EcoNet controller are properly connected.	Make sure that communication wires from E1 and E2 terminals at the Command Center mounting bracket are securely connected at the E1 and E2 terminals respectively on the first controller board in the daisy chain. Make sure all controllers on the daisy chain network are powered on and properly addressed so the Command Center can find them. For Group Leaders and Followers, the address is set at each controller under <b>Settings → Equipment → Group-Member Cfg.</b> For standalone units on the daisy chain, the address is set at each controller under <b>Settings → Equipment → Network Instance</b> . Make sure that at least 22 gauge, shielded wire is used. Please refer to wiring diagram on page 13 of the EcoNet Installation Manual for how to daisy chain multiple controllers together with a Command Center Display.
21	Command Center Display turns on and is able to communicate with some controllers, but not with others on the daisy chain network.	Some Evaporator Controllers in the network bus may not be powered on.	Make sure that every evaporator controller in the daisy chain network is powered on.
		Possible conflict of addresses on the network.	Make sure all controllers on the daisy chain network are powered on and properly addressed so the Command Center can find them. Every EcoNet board on the daisy chain must have a unique address set. For Group Leaders and Followers, the address is set at each controller under <b>Settings → Equipment → Group-Member Cfg.</b> For standalone units on the daisy chain, the address is set at each controller under <b>Settings → Equipment → Network Instance</b> .
		Make sure that communication wires between Command Center Display and EcoNet controller are properly connected.	Make sure that communication wires from E1 and E2 terminals at the Command Center mounting bracket are securely connected at the E1 and E2 terminals respectively on the first controller board in the daisy chain. Make sure that the communication wire is securely connected to the E1, E2 and RT terminals between every controller board, and that the wires are not crossed from terminal to terminal. Make sure that at least <b>22 gauge, shielded wire</b> is used. Make sure that the shielding strands are tied together at every splice and tied to a ground point at one end of the daisy chain only. Make sure all controllers on the daisy chain network are powered on and properly addressed so the Command Center can find them. Please refer to wiring diagram on page 13 of the EcoNet Installation Manual for how to daisy chain multiple controllers together with a Command Center Display.



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<b>EcoNet® Alarms &amp; Notifications List</b>
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T001 Defrost Failure: Max Time Expired
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A100 Suction Temp Thermistor Failure
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A101 Evaporator Temp Sensor Failure
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A102 Evap Temp 2 Thermistor Failure
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A103 Space Temp Thermistor Failure
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A104 Drain Temp Thermistor Failure
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A105 Aux Temp Thermistor Failure
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A106 Suction Pressure Sensor Failure
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A107 Compressor not Pumping Down
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A108 Cooler/Freezer not Satisfying Setpnt. Alert
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A109 Power Switch Mismatch Alarm
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A500 Configuration Data Restore Failure
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A502 Time Clock needs to be programmed
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A503 Time Clock not advancing time properly
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