

TIER 2 - Troubleshooting Steps	Step 1	Step 2	Step 3 (Applicable to agreed upon support deal with reseller.)	Support Tool Feature
Raven Product Support Information:	https://klashwerks.zendesk.com/hc/en-us			
Important Connecting to Raven via mobile or web app is displaying a no response message. Unit not updating data or events. Raven will not boot up or power on when engine has been started. Raven display has lines, one display shows up. Raven shows no displays while driving (engine on) and live stream can see exterior/ interior cameras. Raven data use mismatches invoice.	All factory reset recommendations should be enabled to allow auto-provisioning from the Support Tool.	Validate if eligible for hardware warranty.	Contact L3 when troubleshooting steps taken result inadequate results or conflicting resolution.	Determine When the Raven was first online: Raven->Side Panel->Raven->Raven Unit Status->History Enable auto-provisioning: Raven->Side Panel->Account->Auto Provision
	Validate that the unit is receiving data and not just small data packets. Low packet numbers such as 100 or less indicate the device may require a network reset.	If Raven does not come back online afterwards, full factory reset combined with a network reset to re-register the device.	Escalate to L3 if device no longer registers. Typically failure would be indicated by boot up arrows continually circling and never stop. Full failure where unit is no longer booting up even after cool down from exposure to extreme heat.	Determine Last seen: Raven->Side Panel->Last Update Determine Data Usage: Raven->Side Panel->Databins (last icon) Log into Twilio or applicable carrier admin console.
	Validate Raven has LED lights seen through the vent holes by the power plug. If seen, advise holding the black reset button for 60 seconds to manually hard reboot Raven. Make sure OBD cable is not defective by having customer test in another vehicle. No LED lights in Raven could indicate a blown OBD port fuse in vehicle. If Raven works with another cable or in another vehicle, then determine if cable or fuse is the issue.	If the unit fails to fully restart, advise unplugging unit for 30 minutes before replugging into OBD port. This will either cool unit down and also discharge Raven as it sometimes requires a full reset. Check for any cable damage, crimps, knots or bent pins. Check for loose connections at the power connection end on Raven's side. If power port connection is loose or damaged it may require RMA if under warranty. Pictures will be required to ensure no user damage.	RMA cable or unit depending on what appears to be defective and/ or if under warranty.	Determine if EVENTS indicate sudden stoppage of logical event order. For example, look for LOW_BATTERY, SHUTDOWN, type events. Determine Raven Temperature: Raven->Side Panel->Sensors (first icon) select Raven Temperature/ Raven Battery behaviour and time range
	Request pictures from customer to validate what exactly they are seeing on the display itself. Make sure they have not set one display to blank, request customer factory reset unit.	If lines look like pixel display issue, start RMA process. If after factory reset display is still missing, RMA unit. Customer will know immediately if they cannot see the recovery menu.	Contact L3 if unsure of whether it is caused by customer misuse. Pictures will help validate.	
	Check to see if vehicle has VIN, make/ model to see if earlier than 2008. Find out if it is a hybrid or EV. If a heavy duty vehicle, most likely J1939.	If the display does not turn back on after driving forward or backward in drive mode, request the unit be factory reset to eliminate any operating system error. If they cannot get to recovery menu, possible hardware issue.	Contact L3 to perform remote factory reset if unit still has cellular connectivity.	Determine Reported Vehicle Type: Raven->Side Panel->Vehicle
	Verify live streaming and/ or hotspot data use. Record the data used per type of event and also check carrier data download/ upload to validate against our data.	Send information to customer with breakdown of a data use.	Contact L3 if data does not match events on their device.	Determine Data Usage: Raven->Side Panel->Databins (last icon) Log into Twilio or applicable carrier admin console.

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Video is not recording on Raven	Video service may not be running properly on Raven. Manually reboot unit or request they perform factory reset. If they are using a non-standard SD card they need to remove and use without. If internal video recording exhibits same issue, then factory reset unit.	Update firmware if unit has not received latest version.	Contact L3 if video is still not recording after reboot or factory reset.	Determine SD Card Type: Raven->Side Panel->Raven->SD Card
Network reset does not fix connectivity issue.	Request customer perform factory reset plus network reset. Check data use to ensure they have not exceeded their limit. Check for possible location issue. Last known coordinates could indicate poor cellular location. Makes sure no cellular inactive icon or No SIM warnig is not dsplayed on unit.	If the unit does not come back online, unit may have a hardware issue. For example, arrows continue to rotate or unit stays on check mark. Ensure customer is in a cellular accessible location. Make sure that Raven is set to the correct customer to allow provisioning under account.	RMA unit if arrows will not stop rotating. Contact L3 to double check unit is registered correctly. If unit is set correctly yo user and after two factory/ network reset combinations the unit stays on the check mark, RMA unit.	Determine Data Usage: Raven->Side Panel->Databins (last icon) Log into Twilio or applicable carrier admin console. Determine Reception Quality: Raven->Side Panel->Sensors (first icon) select Cell RSSI and time range
Exterior and/ or interior camera is blurry.	Make sure there is nothing covering the camera lens. Request pictures of the camera (front/back) to validate. Request pictures of the blurry image/ videos from a live stream or preview images.	Have them perform a factory reset to eliminate software errors.	RMA unit if evidence requested validates blurry images.	Determine Raven Temperature: Raven->Side Panel->Sensors (first icon) select Raven Temperature and time range and make notes of prolonged exposure to extreme temperatures.
Raven GPS is not working.	Check support tool to see if GPS was ever seen after set up. Request customer reboot unit manually.	If customer is unable to reboot manually, initiate remote reboot. Recommend factory reset to eliminate software issue.	Contact L3 if unable to remote reboot to see if they can do so. If unit has never received a GPS location even after factory reset, RMA unit.	Determine Last GPS message: Raven->Side Panel->Show Details->Vehicle->Last GPS Update
Trip history is not correct or missing.	Request the time/ date of missing trip history from specific unit.	Request their credentials if required to see exactly what they are reporting.	Contact L3 to investigate cloud account.	Determine if EVENTS are actually reported from vehicle in question.
Gesture feature not working or creating invalid gestures.	Ensure they do not have a hidden film on display or anything in front of the unit. Very unit is not angled in odd manner that would trigger gesture sensor.	If still creating gesture issue. Request picture of the gesture sensor to see if manufacturer left debris or tape inside unit.	Send pictures of gesture sensor window to L3 to investigate and recommend whether to RMA unit.	Determine Gesture Events: Raven->Side Panel->Events (middle icon). Determine if EVENT_INVALID_GESTURE event is prevelant under EVENTS.
New Raven appears used or covered in dust.	Request photos of unit, the box and any visible damages.	If there are no damages to the box or unit, ensure customer it was caused by the box drying and unit will function 100% without issue.	RMA unit if customer is not content with answer that unit is not refurbished or damaged.	Determine if unit was provisioned. Side panel Raven Unit Status: HISTORY
Power port on Raven is detached broken off.	Request pictures from customer. If it looks to have been caused but user error then do not RMA unit.	If customer denies damaging unit, have the unit sent in for inspection. If it appears to be manufacturing issue, document and record for Raven.	Contact L3 with pictures and any other evidence to support RMA.	Determine history of EVENTS to identify how Raven behaviour to see if UNPLUGGING events correlate to user unplugging or is random.
Hotspot data use discrepancy with invoice.	Validate hotspot use from carrier data and support tool data.	Send data breakdown to customer if there is no discrepancy.	Contact L3 if there is a data discrepancy.	Determine Data Usage: Raven->Side Panel->Databins (last icon) Log into Twilio or applicable carrier admin console.

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Harsh braking/ possible impact detection clip unavailable in the cloud.	Video may have never uploaded to cloud due to video overwritten or issue with SD card or internal video processing.	Check Raven temperature of when the event requested failed. Recommend larger capacity SD card if data overwritten with a day of reported issue. Ensure SD card is Raven issued.	Contact L3 if issue persists.	Determine Raven Temperature: Raven->Side Panel->Sensors (first icon) select Raven Temperature and time range Determine SD Card Type: Raven->Side Panel->Raven->SD Card
Event video clip cannot be uploaded.	Check to see if the SD card is still there. Data may have been overwritten if requested too far in the past.	Check Raven temperature of when the event requested failed. Recommend larger capacity SD card if data overwritten with a day of reported issue. Ensure SD card is Raven issued.	Contact L3 if issue persists.	Determine Raven Temperature: Raven->Side Panel->Sensors (first icon) select Raven Temperature and time range Determine SD Card Type: Raven->Side Panel->Raven->SD Card
Error occurred. Please try again later (#82)	Have customer try video request again. This error applies to when video request from cloud is unavailable. Sometimes Raven is too hot or there were too many processes happening at the same time.	If error persists, have them manually reboot Raven or remote reboot for them.	Contact L3 if reboot does not fix issue.	Determine Raven Temperature: Raven->Side Panel->Sensors (first icon) select Raven Temperature and time range
SD card video unusable or missing video.	Ensure customer is using Raven supported SD card. Request videos if possible. Free SD card test software available for free. (H2testw). If test fails, RMA Raven issued SD card. If not Raven issued, recommend customer use Raven issued SD card.	Request time/ date of videos that they are seeking to see if there are any recorded events to decipher where issue may lay. Failed SD cards may indicate a counterfeit SD card from customers using ones not issued by Raven. If video file is available, try using VLC Player to view video and/ or recover file.	Contact L3 if unable to recover videos using third party software decoders.	Determine SD Card Events: Raven->Side Panel->Events (middle icon) Determine SD Card Type: Raven->Side Panel->Raven->SD Card
SD card appears to be stuck and cannot be removed.	Request pictures of the unit to ensure no damage to Raven. Verify if Raven issued SD card was used in unit.	If unit appears in proper shape, request the customer take their thumb and swipe to the right over the SD card to help eject the SD card. Some SD cards are not perfect so there can be a possibility of heat warpage. Raven should be display side up when advising the tip mentioned above.	Contact L3 if SD card is still stuck. RMA recommended if walking customer through process to remove fails.	Determine SD Card Events: Raven->Side Panel->Events (middle icon) Determine SD Card Type: Raven->Side Panel->Raven->SD Card
Raven battery will not longer hold a charge.	Ensure there is no damage to OBD cable. Test in another vehicle with another cable or use micro USB 2.0 to see if unit charges under a Windows based computer.	If unit can be seen on computer it is possible OBD cable is issue. If Raven works with different OBD cable and remains charged the cable or OBD fuse in vehicle may be the issue. Check Raven and vehicle battery levels to see if there are signs of rapid charge/ discharge.	Contact L3 to validate charge levels.	Determine Raven Battery Voltage: Raven->Side Panel->Sensors (first icon) select Battery Voltage (Raven) and time range
Fan appears to be making strange noise.	Request video/ audio recording. If noise sounds like rubbing of fan blades or erratic whirring noise confirm with other staff that audio sounds irregular.	RMA unit if inconsistent with normal fan operating noise. Validate if under warranty.	Contact L3 if unable to determine if fan is defective.	Determine Fan Goodness: Raven->Side Panel->Sensors (first icon) select Fan Goodness and time range