



WAN Selection Arrangements

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Table of Contents

1. Introduction.....	3
2. Overview of WAN interfaces on VWCH	3
2.1. Virtual WAN Communications Hub	3
2.2. WAN Route Priority Configuration	4
2.3. WAN interface link state assessments	4
2.3.1. SM WAN interface link state assessment	4
2.3.2. VWAN interface link state assessment.....	5
2.4. WAN interface selection.....	5
2.5. VWAN interface activation during install and commissioning (I&C)	7
2.6. Heartbeat functionality on VWCH.....	7
2.6.1. Heartbeat over the SM WAN interface	7
2.6.2. Heartbeat over the VWAN interface.....	7
Appendix A – VWCH parameters for WAN Selection Arrangements.....	9
Appendix B – WAN interface selection for No, Poor and Good 4G connectivity conditions	16
Appendix C – WAN interface switching algorithm overview...	19
Appendix D – Definitions.....	21

1. Introduction

This document is the Wide Area Network (WAN) Selection Arrangements established in accordance with one or more Versions of Smart Energy Code (SEC) Schedule 10 'Communications Hub Technical Specifications' (CHTS) to set out the conditions used by Virtual WAN Communications Hubs (VWCHs) to determine the WAN communications route to connect to the DCC.

This document sets out the WAN Selection Arrangements applicable to VWCHs. It sets out how VWCHs operate when equipped with two WAN interfaces (a 4G Smart Metering Wide Area Network (SM WAN) interface and a Virtual WAN (VWAN) interface via the Virtual WAN Device (VWD)), and the criteria used to select the active WAN interface.

From a DCC User perspective only one VWCH WAN interface is active at any point in time. The VWCH regularly assesses several SM WAN and VWAN signal quality parameters, regardless of which WAN interface is active. These operational signal quality parameters have associated configurable thresholds and monitoring windows to determine whether they are good or not good. These assessments are used as inputs into the VWCH switching logic, the output of which then determines whether each WAN interface is viable or not viable. This output is also subject to a WAN interface priority setting which determines which WAN interface to select in the event where both are viable.

In this document, italicised terms represent the parameters used for WAN interface selection as set out in Appendix A – VWCH parameters for WAN Selection Arrangements.

Other capitalised terms in this document shall have the meaning set out in Appendix D, or otherwise in the SEC.

2. Overview of WAN interfaces on VWCH

2.1. Virtual WAN Communications Hub

VWCHs are equipped with two WAN interfaces:

- **SM WAN interface:** a standard 4G cellular-based WAN interface.
- **VWAN interface:** a secure communication interface that uses a VWD and the consumer's internet connection.

At any point in time, only one of these WAN interfaces is active for WAN communication with DCC Users. The selection of the active WAN interface is based on:

- **WAN Route Priority configuration:** determined by the *WANRoutePriority* parameter – see section 2.2 for more details.
- **WAN interface link state assessment:** the viability (in terms of connectivity) of each WAN interface – see section 2.3 for more details.
- **WAN interface selection:** If the active WAN interface becomes not viable, the VWCH may initiate a switch to the other WAN interface - see section 2.4 for more details.

2.2. WAN Route Priority Configuration

A VWCH includes a configurable parameter, *WANRoutePriority*, which determines the WAN interface for operational use when both WAN interfaces are viable. The parameter takes one of the following values:

- 0: The SM WAN interface.
- 1: The VWAN interface.

2.3. WAN interface link state assessments

A VWCH performs several link state assessments of both of its WAN interfaces every minute to determine viability of the WAN interfaces.

2.3.1. SM WAN interface link state assessment

The VWCH applies a detection mechanism every minute across three operational parameters: cellular signal conditions; frequent disconnections; and data path activity. As set out in Appendix C, the SM WAN interface link state is classified as not viable if **any** of the following criteria are not good:

- **Criterion 1 – Signal quality degradation:**

The VWCH monitors RSRP and RSRQ over the preceding *CellularSignalStrengthMonitoringInterval*. If both RSRP and RSRQ remain below their configured *RSRPThreshold* and *RSRQThreshold* for the entire duration of this interval, the outcome is determined as not good, else it is determined as good.

- **Criterion 2 – Frequent disconnections:**

The VWCH monitors the number of cellular link disconnections over the preceding *CellularDisconnectionEventMonitoringInterval*. If the disconnection count is greater than or equal to *CellularDisconnectionThreshold*, the outcome is determined as not good, else it is determined as good.

- **Criterion 3 – Insufficient connection availability and data path validation:**

Over the preceding *CellularConnectionMonitorInterval*, the VWCH assesses both cellular connection availability and cellular data path activity.

The VWCH calculates the percentage of time for which the cellular connection remains active over the preceding *CellularConnectionMonitorInterval*. If this connected-duration percentage falls below *CellularActiveConnectionPercentage*, the outcome is determined as not good, else it is determined as good.

Where heartbeat functionality over the SM WAN interface (see section 2.6.1) is enabled, data path validation is also performed as part of the same monitoring interval. In this case, if the 'connected duration' percentage is equal to or higher than *CellularActiveConnectionPercentage* over the preceding, the VWCH checks for receipt of incoming data packets over the SM WAN interface following activation of the cellular data session. If no incoming packets are received, the outcome is determined as not good, else it is determined as good.

If the SM WAN interface is currently viable, the SM WAN interface becomes not viable if any of the outcomes from the above link state assessments are not good.

If the SM WAN interface is currently not viable, the SM WAN interface becomes viable when all of the outcomes from the above link state assessments have been good for:

- the *CellularConnectionMonitorInterval* during install & commissioning (I&C); or
- the *CellularActiveConnectionPercentage* of the *CellularConnectionMonitorInterval* post I&C.

2.3.2. VWAN interface link state assessment

The VWAN interface link is established over two distinct network connections:

- A ZigBee connection between the VWCH and the VWD; and
- An Internet Protocol (IP) based connection using the internet between the VWD and the DCC.

The VWCH periodically exchanges heartbeat messages with the DCC systems at a configurable interval to ensure end-to-end connectivity over the VWAN interface. See section 2.6.2 for more details.

The VWAN interface link state is considered to be viable at the end of *VWANConnectionMonitorInterval*, if the VWCH receives at least *VWANHealthCheckMsgCount* number of authenticated message(s) in aggregate from the DCC (from any of the Data Service Provider (DSP), DCC Device Manager or Virtual WAN Provider (VWP)) throughout the configured monitoring period (*VWANConnectionMonitorInterval*), as set out in Appendix A, else it is not viable.

2.4. WAN interface selection

The VWCH evaluates the viability of both WAN interfaces every minute and determines which is the active WAN interface based on:

- The current *WANRoutePriority*; and
- The viability of each WAN interface as set out in section 2.3.

The decision logic is as follows:

WANRoutePriority	SM WAN interface link state	VWAN interface link state	Active WAN interface selected
SM WAN interface	Viable	Viable	SM WAN
	Viable	Not Viable	SM WAN

	Not Viable	Viable	VWAN
	Not Viable	Not Viable	Unchanged
VWAN interface	Viable	Viable	VWAN
	Viable	Not Viable	SM WAN
	Not Viable	Viable	VWAN
	Not Viable	Not Viable	Unchanged

Where a switch (change) in the active WAN interface link occurs:

- A WAN route switch Alert is sent by the VWCH to the DCC Device Manager using the new active WAN interface. This Alert is not visible to DCC Users.
- If any Response or Alert is pending in the VWCH's WAN outgoing queue at the time of the switch, the VWCH continues the remaining retry attempts using the new active WAN interface.
- Following the switch, incoming messages to the VWCH are accepted only via the new active WAN interface.
- If a firmware download is in progress at the time of switching, the VWCH aborts the download and sends a firmware download status Alert to the DCC Device Manager. The DCC Device Manager retries the firmware download in accordance with the existing retry policy. An N60 alert is not generated when a firmware download is aborted due to the WAN interface switch. If the firmware download subsequently fails and all retry attempts are exhausted, the Service User will receive an N60 alert in accordance with the existing DCC processes.

After the firmware has been successfully downloaded to the VWCH, subsequent WAN interface switching has no impact on the transfer of that firmware over the Home Area Network (HAN) to the target Device.

- Heartbeat monitoring: The VWCH sends periodic lightweight heartbeat messages to the DCC, which are acknowledged in return. This monitoring continues independently over both the SM WAN and VWAN interfaces, irrespective of the active WAN interface. See section 2.6 for more details.

An exception to this decision logic applies when Inter-PAN is used, as set out in section 2.5.

2.5. VWAN interface activation during install and commissioning (I&C)

When VWAN is activated during I&C via the VWD Inter-PAN join (as set out in GBCS version 4.4 or later), the VWCH temporarily uses the VWAN interface as the active WAN interface, irrespective of SM WAN interface viability.

If the VWCH has already birthed (VWCH CHF is Commissioned) at a site with good or poor cellular signal using the SM WAN interface, it sends a WAN route switch Alert (not visible to DCC Users) indicating the change of the active WAN interface to the VWAN interface.

2.4Based on the VWCH parameters defined in Appendix A, the earliest a transition from the VWAN interface to the SM WAN interface can occur after the *CellularConnectionMonitorInterval*. This allows installation activities to be completed using VWAN prior to assessment of whether to switch to the SM WAN interface in accordance with the WAN interface link state assessment described in section 2.4.

2.6. Heartbeat functionality on VWCH

2.6.1. Heartbeat over the SM WAN interface

4G Communications Hubs (CH) that operate solely over the SM WAN interface include a configurable heartbeat capability. This enables the CH to periodically transmit lightweight messages to the DCC, for which acknowledgements are received. The receipt of such acknowledgements is used by the CH to confirm that the cellular data path is operational over the SM WAN interface.

The heartbeat functionality over the SM WAN interface is used as part of criterion 3 of the SM WAN interface link state assessment.

2.6.2. Heartbeat over the VWAN interface

The VWCH provides equivalent heartbeat functionality over the VWAN interface. The VWCH transmits lightweight heartbeat messages periodically to the DCC, with corresponding acknowledgements received in return. The receipt of these acknowledgements are used to confirm end-to-end data path is operational over the VWAN interface, comprising both the ZigBee connection and IP based internet connection.

Heartbeat monitoring over the VWAN interface continues independently of the active WAN interface, ensuring that the VWAN link is maintained and available for use when required.

The frequency of heartbeat messages over the VWAN interface is configurable using *CellularRouteVWPHealthCheckInterval* (when SM WAN is the active WAN interface) and *VWANRouteVWPHealthCheckInterval* (when VWAN is the active WAN interface), as defined in Appendix A.

The VWCH supports adaptive adjustment of heartbeat frequency based on sustained link stability, as follows:

- Where the SM WAN interface link state remains viable for *CellularConnectionMonitoringCycleForAdaptiveHealthCheck* consecutive monitoring cycles,

the VWCH increases (doubles) the *CellularRouteVWPHealthCheckInterval*, thereby reducing the heartbeat frequency. Where the SM WAN interface link state subsequently deteriorates (disconnected), the VWCH reverts the interval to the configured value defined in Appendix A.

- Where the VWAN interface link state remains viable for *VWANConnectionMonitoringCycleForAdaptiveHealthCheck* consecutive monitoring cycles, the VWCH increases (doubles) the *VWANRouteVWPHealthCheckInterval*, thereby reducing the heartbeat frequency. Where the VWAN interface link state subsequently deteriorates (no incoming packets or disconnected), the VWCH reverts the interval to the configured value defined in Appendix A.
- The adjusted heartbeat interval will not exceed *VWANConnectionMonitorInterval* **divided by** (*VWANHealthCheckMsgCount* + 1), ensuring that the minimum required number of authenticated messages are received within the monitoring interval.

The heartbeat functionality over the VWAN interface is used for VWAN interface link-state assessment.

Appendix A – VWCH parameters for WAN Selection Arrangements

The following VWCH parameters apply to VWCH and:

- will not be changed by VWCH firmware updates; and
- persist through power cycles.

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
<i>WANRoutePriority</i>	0	[0, 1]	Specifies the priority WAN interface. 0 : The SM WAN interface is the primary WAN interface. 1: The VWAN interface is the primary WAN interface.	SM WAN interface is the priority WAN interface for all VWCHs.	<i>WANRoutePriority</i> affects the selection of the active WAN interface, as outlined in Section 2.4
<i>CellularActiveConnectionPercentage</i>	70%	[10, 100] %	Specifies the minimum percentage of time within the <i>CellularConnectionMonitorInterval</i> for which the cellular data connection remains active for the link state to be evaluated as good in accordance with criterion 3 defined in section 2.3.1.	70% of 360 minutes of <i>CellularConnectionMonitorInterval</i> evaluates to 4 hours 12 minutes. This duration exceeds the SM WAN interface self-recovery period (up to 4 hours), thereby allowing sufficient time for recovery prior to the link-state assessment.	The evaluation time for criterion 3 is dependent on the configured values of <i>CellularActiveConnectionPercentage</i> and <i>CellularConnectionMonitorInterval</i>. Reducing these values may enable faster switching behaviour, provided that
<i>CellularConnectionMonitorInterval</i>	360 minutes	[1, 65535] minute(s)	Specifies the interval over which the VWCH monitors the cellular connection to determine the SM WAN		

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
			link state in accordance with criterion 3 defined in section 2.3.1. This <i>CellularConnectionMonitorInterval</i> must be greater than <i>CellularDisconnectionEventMonitoringInterval</i> and <i>CellularSignalStrengthMonitoringInterval</i>.	Note: The SM WAN interface self-recovery capability is an existing feature of 4G CHs implemented to support performance requirements for connectivity over the SM WAN interface. As part of this self-recovery mechanism, where no data packets are received over the SM WAN interface within a 2-hour period (heartbeat over SM WAN is used for this – see section 2.6.1), an additional recovery period of up to 2 hours (i.e. a maximum of 4 hours in total) is allowed to enable restoration of the cellular link, including re-attachment to the 4G network.	criteria 1 and 2 thresholds are also set appropriately.
<i>VWANConnectionMonitorInterval</i>	120 minutes	[1, 65535] minute(s)	The interval over which the VWAN connection is monitored to detect the VWAN link state.	As the minimum heartbeat interval for VWAN (<i>CellularRouteVWPHealthCheckI</i>	The VWAN link-state assessment relies on the <i>VWANConnectionMonitorInte</i>

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
VWANHealthCheckMsgCount	1	[1, 65535]	Specifies the minimum number of incoming authenticated messages that must be received during the VWANConnectionMonitorInterval for the VWAN interface link to be considered viable as set out in section 2.3.2.	interval or VWANRouteVWPHealthCheckInterval) is set to 30 minutes, at least 1 (VWANHealthCheckMsgCount) authenticated message is expected to be received within a 120-minute monitoring interval (VWANConnectionMonitorInterval).	rval and VWANHealthCheckMsgCount parameters. Increasing the VWANConnectionMonitorInterval facilitates adaptive heartbeat optimisation and does not impact the switching logic between WAN routes.
CellularRouteVWPHealthCheckInterval	30 minutes	[1, 65535] minute(s)	The interval between VWAN heartbeat messages, which applies when the SM WAN interface is the active WAN interface and no inbound messages have been received over VWAN during that period. Note: When SM WAN interface is active, VWAN heartbeat messages continue to be exchanged to maintain the VWAN link and enable timely change of WAN interface.	A default heartbeat interval of 30 minutes is considered an appropriate initial configuration. As part of the adaptive heartbeat mechanism, the VWCH adjusts the heartbeat interval based on sustained WAN link stability. Where the SM WAN interface link state remains viable for 3 (CellularConnectionMonitoringCycleForAdaptiveHealthCheck) consecutive monitoring cycles, the VWCH increases the CellularRouteVWPHealthCheckInterval.	These intervals will not exceed $VWANConnectionMonitorInterval \div (VWANHealthCheckMsgCount + 1)$. Where the interval duration is increased, the VWANConnectionMonitorInterval is increased accordingly to ensure that at least VWANHealthCheckMsgCount authenticated messages are received within the monitoring interval.
VWANRouteVWPHealthCheckInterval	30 minutes	[1, 65535] minute(s)	The interval between VWAN heartbeat messages, which applies when the VWAN interface is the active WAN interface and no inbound		

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
			messages have been received over VWAN during that period Note: VWAN heartbeat messages continue to be exchanged to maintain the VWAN link.	terval (by doubling the interval), thereby reducing the frequency of heartbeat messages. A similar approach applies when the VWAN interface is the active WAN interface. Where the VWAN interface link state remains viable for 3 (VWANConnectionMonitoringCycleForAdaptiveHealthCheck) consecutive monitoring cycles, the VWCH increases the VWANRouteVWPHealthCheckInterval (by doubling the interval), thereby reducing the heartbeat frequency. See section 2.6.2 for detail.	
<i>CellularSignalStrengthMonitoringInterval</i>	300 minutes	[1, 65535] minute(s)	The interval over which the VWCH monitors cellular signal strength (both RSRP and RSRQ) to evaluate the cellular link state in accordance with criterion 1 defined in section 2.3.1. Lower cellular signal strength may still support a good data path. This monitoring interval ensures that the	Cellular signal strength and quality at a site may be affected by temporary environmental factors or obstructions. Monitoring sustained low signal conditions over a period of 300 minutes (5 hours) is considered an appropriate initial	The evaluation time for criterion 1 is dependent on the configured values of <i>CellularSignalStrengthMonitoringInterval</i>. Reducing these values may enable faster switching behaviour but may result to

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
			VWCH does not consistently operate below the configured signal threshold. Hence, <i>CellularSignalStrengthMonitoringInterval</i> is set little longer to avoid any temporary environmental conditions that may lower the signal strength.	configuration to avoid transient fluctuations influencing the SM WAN interface link state assessment.	false positive due to temporary obstruction causing the signal strength.
<i>RSRPThreshold</i>	-118 dBm	[-119, -44] dBm	The threshold value used by the VWCH to compare measured RSRP for cellular link-state evaluation.	The RSRP and RSRQ threshold values defined for the 4G CH cell-selection and reselection process have been adopted in VWCH as the baseline configuration for criterion 1.	If these values are too high (lower negative number), VWCH may switch to VWAN even though steady SM WAN connection is available.
<i>RSRQThreshold</i>	-18 dB	[-20, 0] dB	The threshold value used by the VWCH to compare measured RSRQ for cellular link-state evaluation.		If these values are too low (higher negative number), VWCH may wait longer to switch.
<i>CellularDisconnectionEventMonitoringInterval</i>	60 minutes	[1, 65535] minute(s)	The interval over which VWCH monitors and counts cellular link disconnection events for the purpose of evaluating link stability as set out in criterion 2 in section 2.3.1.	A value of 5 disconnections (<i>CellularDisconnectionThreshold</i>) within a 60-minute <i>CellularDisconnectionEventMonitoringInterval</i>	The evaluation time for criterion 2 is dependent on the configured values of <i>CellularDisconnectionEventMonitoringInterval</i> and

VWCH parameter	Value	Allowed range	Significance	Justification for chosen value	Impact on WAN interface switching behaviour
<i>CellularDisconnectionThreshold</i>	5	[1, 65535]	Specifies the maximum number of cellular disconnection events permitted within the <i>CellularDisconnectionEventMonitoringInterval</i> as set out in criterion 2 in section 2.3.1	<i>oringInterval</i> is considered an appropriate initial configuration. These values may be subject to revision based on operational data observed in poor WAN sites, in accordance with agreed WAN Selection Arrangements governance.	<i>CellularDisconnectionThreshold</i> . These values are informed by expected frequent disconnections at poor WAN sites.
<i>CellularConnectionMonitoringCycleForAdaptiveHealthCheck</i>	3	[1, 65535]	Specifies the number of consecutive monitoring cycles for which the cellular interface link state must remain good before the <i>CellularRouteVWPHealthCheckInterval</i> is adjusted to support adaptive heartbeat logic over the VWAN interface.	A value of 3 consecutive monitoring cycles for reducing the heartbeat frequency considered an appropriate initial configuration.	This parameter does not impact switching behaviour.
<i>VWANConnectionMonitoringCycleForAdaptiveHealthCheck</i>	3	[1, 65535]	Specifies the number of consecutive monitoring cycles for which the VWAN interface link state must remain good before the <i>VWANRouteVWPHealthCheckInterval</i> is adjusted to support adaptive heartbeat logic over the VWAN interface.	Where a higher value is configured, the VWCH requires a longer duration before adjusting the heartbeat interval.	This parameter does not impact switching behaviour.

Once the WAN Selection Arrangements have demonstrated sufficient evidence of reliability, the DCC may update these parameters for commissioned VWCHs, to improve operational efficiency, in accordance with WAN Selection Arrangements governance. Updates are delivered using DCC-generated commands to the VWCH over the active WAN interface.

Appendix B – WAN interface selection for No, Poor and Good 4G connectivity conditions

This section is for information only.

Scenario	4G connectivity condition	Notes
1 – Install & Commission	Any (No, Poor or Good)	The Inter-PAN VWAN activation (section 2.5) can be performed without utilisation of the SM WAN interface. As a result, VWAN may be activated at any site irrespective of 4G signal quality or cellular connectivity issues. Where VWAN is activated via the Inter-PAN method following issues encountered during I&C due to poor cellular conditions, the VWCH ensures that any messages pending transmission over the SM WAN interface are transmitted via the VWAN interface following the WAN interface switch. This enables the remaining I&C activities to continue while the VWCH is operating over the VWAN interface. The VWCH remains on the VWAN interface for a minimum duration of the <i>CellularConnectionMonitorInterval</i> as per the parameters in Appendix A, after which WAN link assessment as per section 2.3 determines which WAN interface is active.
2 – Post Commissioning	Good 4G	When switching from the VWAN interface back to the SM WAN interface, the VWCH evaluates all three SM WAN link-state criteria as illustrated in Figure 1. As a result, once the VWAN interface becomes active, the VWCH will not switch to SM WAN interface earlier than <i>CellularActiveConnectionPercentage</i> of the <i>CellularConnectionMonitorInterval</i> (which equates to 4 hours and 12 minutes based on 70% and 360 minutes) as per the parameters in Appendix A, provided that criterion 1 (signal degradation) and criterion 2 (frequent disconnection) remain good in that duration, as defined in Section 2.3.1.

Scenario	4G connectivity condition	Notes
		In good 4G situations, the SM WAN interface will become active after this duration.
	Poor 4G	Lower or fluctuating 4G signals may still support a viable data connection over cellular, and the cellular modem is designed to establish and re-establish connectivity wherever possible. Hence, the combined assessment of • sustained low signal strength; • frequency of cellular disconnections; and • connection duration with validation of data packet receipt (a measure of the ability to send and receive messages) ensures cellular link quality is comprehensively evaluated to determine whether it is suitable for smart metering communications. As set out in section 2.3.1, if any one of the following criteria: • Criterion 1: cellular signal degradation • Criterion 2: frequent disconnections • Criterion 3: Insufficient connection availability and data path validation are not good and the VWAN link is good, the VWCH will switch to the VWAN interface as shown in Figure 2 in Appendix C. In poor WAN scenarios, at least one of these criteria will be not good. Once the VWAN interface becomes active the VWCH will not switch to the SM WAN interface earlier than <i>CellularActiveConnectionPercentage</i> of the

Scenario	4G connectivity condition	Notes
		<i>CellularConnectionMonitorInterval</i> (which equates to 4 hours and 12 minutes based on 70% and 360 minutes), provided that criterion 1 (signal degradation) and criterion 2 (frequent disconnection) remain good in that duration, as defined in section 2.3.1. In poor 4G scenarios, it is unlikely that these criteria remain good for such durations and as such the VWAN interface will remain active for longer durations.
	No 4G	Once the VWAN interface becomes active the VWCH will not switch to SM WAN interface (if available) earlier than <i>CellularActiveConnectionPercentage</i> of the <i>CellularConnectionMonitorInterval</i> (which equates to 4 hours and 12 minutes based on 70% and 360 minutes), provided that criterion 1 (signal degradation) and criterion 2 (frequent disconnection) remain good in that duration, as defined in section 2.3.1. In no 4G situations, the SM WAN interface link state assessment (criterion 1, 2 or 3) cannot be evaluated as good. As a result, the VWAN interface remains the active WAN route.

Appendix C – WAN interface switching algorithm overview

Figure 1: SM WAN link assessment steps while VWAN interface is active (and SM WAN is the priority route)

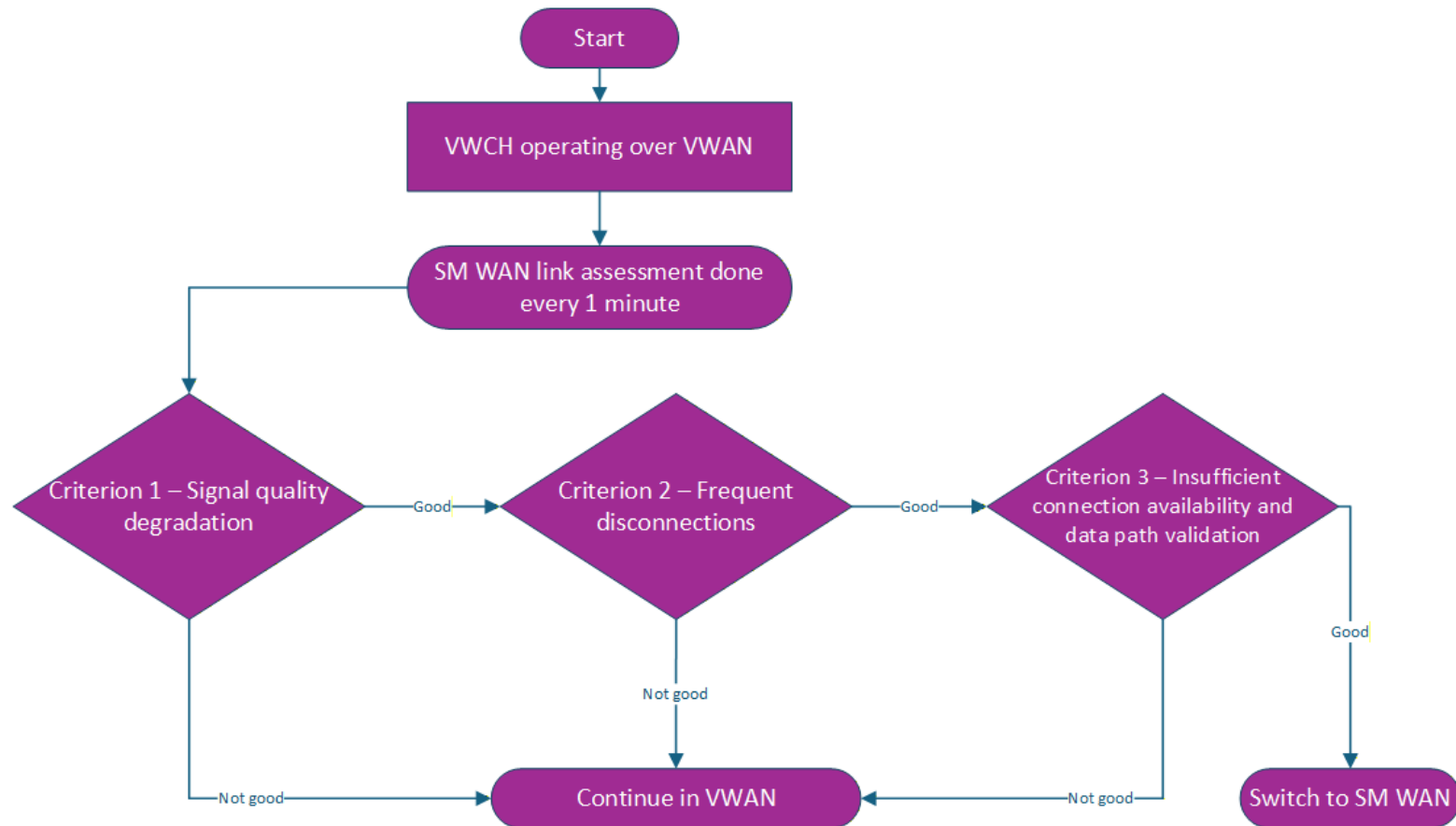
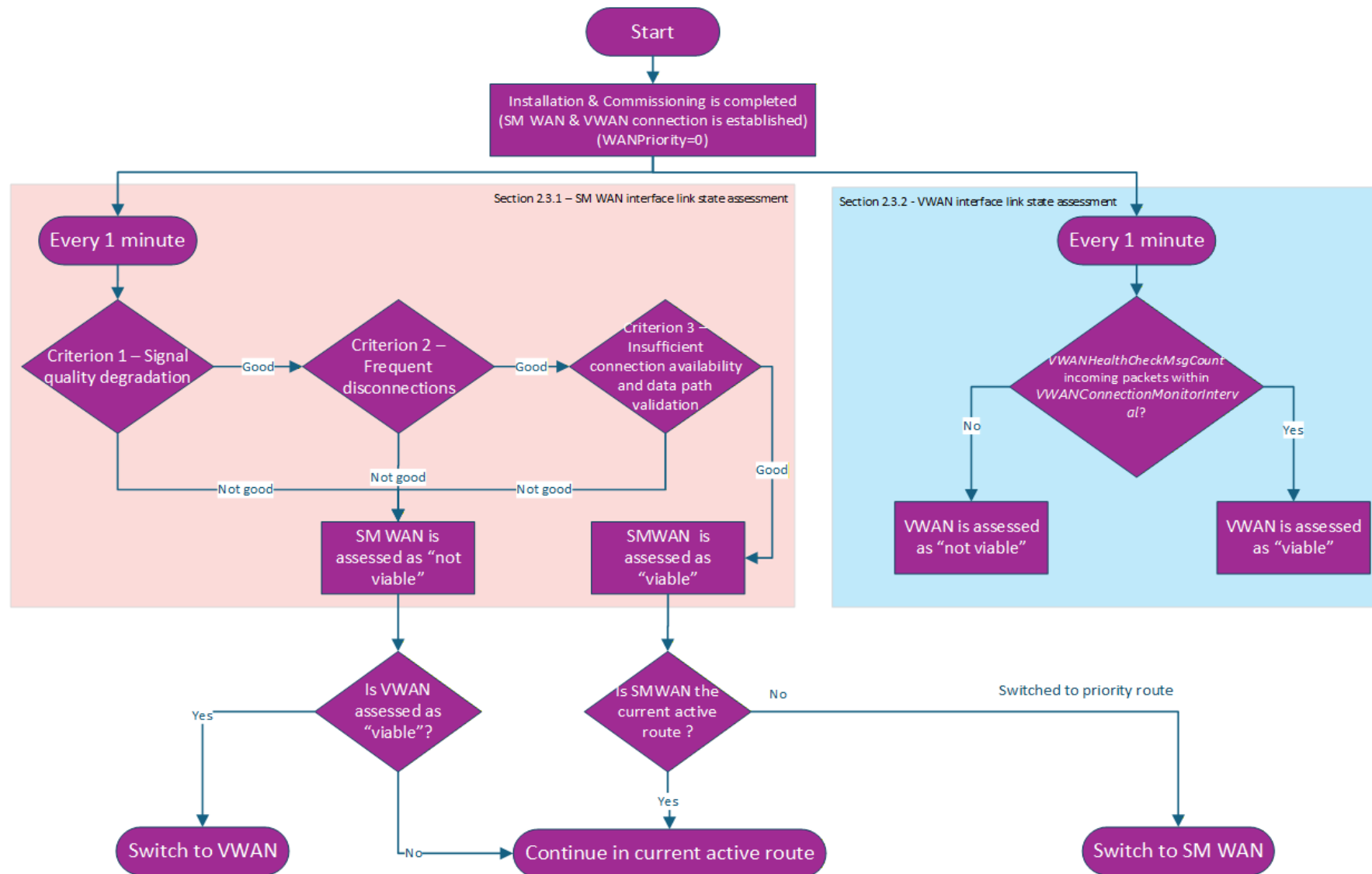


Figure 2: SM WAN and VWAN interface assessment steps (and SM WAN is the priority route)



NB The SM WAN interface is viable only where criteria 1, 2 and 3 have been good during the most recent *CellularConnectionMonitorInterval* during I&C or during the most recent *CellularActiveConnectionPercentage* of the *CellularConnectionMonitorInterval* post I&C.

Appendix D – Definitions

Term	Meaning
Received Signal Strength Indicator (RSSI)	means, in relation to a VWCH at a specific time, the measured power level of the radio signal received by the VWCH at that time, expressed in decibel-milliwatts (dBm).
Reference Signal Received Power (RSRP)	means, in relation to a VWCH at a specific time, the average power of the cellular signal received by the VWCH at that time, expressed in decibel-milliwatts (dBm).
Reference Signal Received Quality (RSRQ)	means, in relation to a VWCH at a specific time, the ratio between (i) the product of RSRP and the number of Resource Blocks allocated to the VWCH and (ii) RSSI at that time, expressed in decibel (dB).
Resource Block	means, a unit of radio resource allocated to the VWCH. Defined in the 3GPP TS 36.211 specification.
WAN Interface	has the meaning given to that term in the Communications Hub Technical Specification