PAYMENTS CANADA

TSP-002

LYNX EMERGENCY PROCEDURES

2025 CANADIAN PAYMENTS ASSOCIATION

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IMPLEMENTED

August 29, 2021

AMENDMENTS

1. Updates to accommodate the introduction of Payment Messages in the Lynx MX Format. Approved by the Board June 23, 2022 and September 15, 2022, effective November 20, 2022.
2. Amendments to accommodate the repeal of LVTS and align terminology throughout the Rule. Approved by the Board June 23, 2022 and September 15, 2022, effective November 20, 2022.
3. Amendments throughout rule to accommodate Swift name rebranding. Approved by the Board May 12, 2023, effective July 11, 2023.
4. Amendments throughout rule to accommodate additional information related to procedures for the use of settling payments using Lynx Web Client. Approved by the Board May 12, 2023, effective July 11, 2023.
5. Amendments to remove SBE Full Day contingency layer as a result of the Third Site implementation. Approved by the Board September 14, 2023, effective on October 16, 2023.
6. Amendments to align Lynx Web Client payment processing procedures with current industry practices. Approved by the Board May 23, 2024, effective July 22, 2024.
7. Amendments to the rule to add pacs.008 message type to correct missing information in the current contingency procedures. Approved by the Board May 23, 2024, effective July 22, 2024.
8. Amendments to accommodate the decommission of the Lynx MT Format and the Lynx clean-up exercise. Approved by the Board September 18, 2025, effective November 24, 2025.

1.0 PREFACE

This document and the companion *Lynx Contingency Playbook* (the Playbook), together with Rule 12 (collectively, the *Lynx Emergency Procedures),* sets out the Association's contingency procedures to be followed in the event an emergency situation disrupts the operation of Lynx. Recognizing that each emergency situation is unique and must be evaluated based on its specific circumstances, the procedures in this document may be adjusted as appropriate, provided all responses are in accordance with Rule 12 and section 49 of the *Lynx By-law* (Emergency condition).

The focus of this document is the contingency options available in an emergency situation and the decision making process and considerations for invoking those options. Detailed procedures for putting the options into effect, once the decision to invoke has been made, are contained in the Playbook.

In an emergency situation, decisions on how to respond regarding Lynx as a whole[1] will be taken by the President in consultation with the Lynx Emergency Committee (EC), and with the prior agreement of the Bank. The EC, defined in Rule 1, is composed of representatives from the Association, the Bank, the Cash Management Committee representative from each Participant and, as appropriate, representative(s) from Canadian financial market infrastructures (e.g. CDS).

2.0 LYNX EMERGENCY COMMITTEE (EC)

Scope

The EC's primary task is to consider the course of action that should be recommended in the event of a Lynx emergency situation[2]. Committee members should have the authority to make decisions on behalf of their institution without the need for time consuming internal confirmation.

Emergency situations may include interrupted communications between the Lynx Data Centres and one or more Participants; the inability of the Lynx Data Centres to receive, transmit, send, Settle or otherwise process a Payment Message or administrative message; the safe and efficient operation of Lynx being placed into question; and any other emergency which is considered to affect Lynx operations.

Several factors will have to be considered by the EC. In addition to those specific to Lynx, external considerations such as the specific day (e.g. days with higher volumes of payments) and time of day (e.g. near external system settlement windows such as ACSS, CLS or CDS) will need to be considered when an emergency arises. A decision to extend the Finalization Window past 20:00 hours may affect many internal Participant system processes (demand deposit accounting runs, etc.), impact the ability of one or more Participants to be ready for the next day's Payments Processing Cycle, or impact a Participant's ability to make funds available to the Payee intra-cycle.

Depending on the nature of the emergency situation, the EC may consult or seek guidance from other industry forums while deliberating upon their recommendations to the President.

[1] Emergency situations which are specific to a given Participant are addressed in Rule 12.

[2] Unless a specific time or event in the Lynx Payments Processing Cycle is noted in the evaluation of a specific emergency situation, the analysis relates to events arising at any time.

Courses of Action

For greater clarity, the President may, in consultation with the EC and with the prior agreement of the Bank, take one or more courses of action in response to a given emergency. A non-exhaustive list of options for action is contained in Rule 12 and is reflected in this document.

Convening the EC

A meeting of the EC may be convened by the Association or at the request of any Participant. The Association will communicate the need for an EC meeting via email using a pre-established EC distribution list[3]. This email will indicate the:

- party requesting the meeting;
- time of the meeting; and
- reason for the meeting.

All meetings of the EC shall be by way of conference call. At the conclusion of any EC meeting, the Association shall provide EC members with a summary of the meeting including any actions or decisions taken.

See Rule 12 for additional information related to the EC.

3.0 Responding To CSN, Swift And Other Problems Affecting Lynx

Incidents directly affecting the Lynx application or its infrastructure are addressed in section 4.0. There are three categories of other incidents that can disrupt Lynx operations:

- **CSN Problems**: incidents in which the entire CSN is impacted (all Participants) are addressed in this document. Incidents impacting one or more, but not all, Participants, are addressed in Rule 12.
- **Swift Problems**: incidents impacting the Swift network in Canada or the SwiftNet Copy Service.
- **Problems in Other Systems**: incidents encountered by other systems not operated by the Association that are relied upon for normal Lynx operations.

3.1 CSN Problems

Description: The CPA Services Network (CSN) as defined in Rule 1 is the network managed by the Association that is used by Participants to access Lynx, and which may be used by some Lynx Participants to transmit proprietary files on a bilateral basis, as agreed to by both parties (these proprietary files are typically not related to the operations of Lynx however their content is determined by the Participants sending the files and may be used for a variety of reasons). The CSN is also used in relation to the ACSS. Details of the CSN architecture and resiliency aspects are outlined in the CSN Service Level Description.
Options:

[3] For significant issues related to the operations of Lynx that occur between 00:00 hours and 07:00 hours and that require the activation of the Emergency Committee, the Association will communicate via email, and on a best efforts basis, will contact EC representatives via telephone using the contact information included in the Lynx Summary Contact List in order to inform EC representatives of the activation of the EC.

- For **incidents involving one or more Participant Workstations**, refer to Rule 12.
- For **incidents related to a Participant's CSN connection**, refer to Rule 12. Participants may also invoke the Lynx Proxy Service (available to Participants that have previously subscribed to the Service) - refer to Rule 12.
- If an **incident** occurs **that impacts the Association's CSN connection** at the primary Data Centre, the Association may failover to the secondary Data Centre.
    - Note: the Association has multiple CSN connections within each Data Centre. If the primary link is impacted, the secondary link will be used. Failover to the secondary Data Centre will only be required if both CSN connections at the primary Data Centre are impacted.
- If an **incident** occurs **impacting the entire CSN** (all Participants), ORF Layers 2B, 2C, 2D or 3 (see section 4.0 for details) may be invoked, depending on the circumstances - see section 4.0.
    - Note: the Association has contracted two network service providers for the CSN. Should one network fail, there is an automated switchover to the other.

Factors for Consideration:

- If an **incident occurs and one or more Participants have not changed their operational status to "online"**, Participants may invoke the Lynx Proxy Service (available to Participants that have previously subscribed to the Service - refer Rule 12). Settlement Instructions will not be processed until a Participant has an operational status of "online" and a LOM status of "active".
- If an **incident occurs that impacts a Participant's ability to access Lynx and they have already changed their operational status to "online" and are "active" in a LOM**, it is important to note that:
    - Payment Messages (and associated Settlement Instructions) will continue to be processed by Lynx;
    - Participants will not have visibility into Lynx (e.g. view dashboards and generate reports) and will not be able to manage Settlement Instructions within Lynx (e.g. resequence, reprioritize, manually diarize, move liquidity between LOMs); and
    - Participants will not be able to execute payments using the Lynx Web Client.

3.2 Swift Problems

Description:
The Swift network is used for the transmission of Payment Messages to and from Participants and the transmission of Settlement Instructions to the Association. The Swift network is owned and managed by Swift, with the points of connection from Participants into the network being managed by Participants. Points of connection between Swift and Lynx are managed by the Association.

Options:

- If an **incident impacts the Swift Secure IP Network Point of Presence (POP) or the Association's leased lines**, the Association may switch to its secondary POP or leased lines. During a POP switch, any Payment Messages delivered to Swift would be queued and delivered once the POP was re-established.
- If an **incident impacts the Swift network in Canada or the SwiftNet Copy service,**
    - the Association may wait for Swift to resolve the incident;
    - Participants may execute Settlement Instructions using the Lynx Web Client[4] in order to make single or multiple payments as per the procedures for executing Settlement Instructions using the Lynx Web Client, set out in section 2 of the *Lynx Contingency Playbook; or*

[4] For FMI and other Bank of Canada payments, this is the preferred contingency method.

- alternatively, the Association may invoke Lynx ORF Layer 2B or 2D, e.g., in order to make CLS payments if the incident occurs between 00:00 hours and 07:00 hours. For further details, see section 4.0 of this document and sections 5.0 and 7.0 of the Playbook.

Factors for Consideration:

- When sending Settlement Instructions using the Lynx Web Client, Participants may not be able to send their normal volume. Participants would likely send Settlement Instructions using the Lynx Web Client to send time-sensitive payments only. When the format and content of Settlement Instructions sent using the Lynx Web Client does not contain sufficient information to enable the Receiving Participant to process the payment to the correct Payee's account, the Sending Participant must provide the required information by other means (e.g. secure email). Settlement Instructions sent via the Lynx Web Client are still subject to risk controls within Lynx.
- Depending on the nature of the Swift incident, Swift may invoke their contingency procedures (including Swift Cold Start process). These procedures would be communicated and coordinated by Swift.

3.3 Problems in Other Systems

Description: There are incidents in other systems not operated by the Association that may have an impact on the operation of Lynx.

Source of incident:

CDSX (Operated by CDS):

- If an **incident impacts CDSX availability to one Participant**, refer to Rule 12.
- If an **incident impacts CDSX availability to all Participants**, and CDS offers any contingency options, those may be invoked. The Association may extend the Payments Processing Cycle.

HABS (Operated by the Bank of Canada):

- If an **incident impacts HABS availability to one or more Participants**, contingency procedures maintained by the Bank of Canada may be invoked.
- If **HABS** is **unavailable for all Participants**, including the Bank, contingency procedures maintained by the Bank may be invoked. The time of day and the status of Lynx will play an important role in the decision around which contingency options are used.
- If **connectivity between HABS and Lynx is impacted**, the Bank and the Association may invoke bilateral contingency procedures.

Single Participant:

- If an **incident impacts a single Participant's ability to send, receive or process Payment Messages**, refer to Rule 12.
- Depending on the nature of the incident affecting a single Participant, options outlined in the above sections and in section 4.0 should be considered.

Factors for Consideration:

CDSX

- An emergency in CDSX or the inability of a CDSX Participant to settle its obligations can affect Lynx in at least two different ways. First, a failure in CDSX could affect the ability of Participants to pledge Collateral for Lynx purposes. In this case the Association or the Bank would need to communicate with CDS to determine the expected time for CDSX to be back up and fully operational. At this point, a decision would have to be made by CDS whether to move to CDS's alternate site or invoke interim manual pledging. Any delay in the availability of the CDSX pledging function of more than 2 hours would require the move to CDS's alternate site or the interim pledging mechanism.
- Second, and of greater concern, is the inability of a Participant to settle its obligations in CDSX or

- a system wide failure in CDSX, which may not only affect the Pledging function but which may delay settlement of CDSX. Options for dealing with this emergency situation would be dealt with by making a request for an extension to the current Lynx Payments Processing Cycle.
- It should be noted that requests for extensions could be received from CDS through the Bank for CDSX system wide problems or from a Lynx (CDSX) Participant that is unable to provide payment to the Bank to settle its obligations. An extension request will be forthcoming from CDS through the Bank only if the end of the CSDX payment exchange will be delayed past 17:30 hours.

4.0 Responding To Lynx Problems

Problems with the Lynx application or Data Centre infrastructure are managed by applying the Lynx Operational Resilience Framework (ORF), which includes the various contingency options for responding to a Lynx problem.

4.1 Lynx Operational Resilience Framework

The Lynx Operational Resilience Framework (ORF) consists of three layers. Layers 1 and 2 focus on resuming settlement of payments and completion of necessary activities on the day of the incident (intraday). Layer 3 takes effect the following day (Day 2), working under the assumption that resuming operations in Lynx at either the primary or secondary Lynx Data Centre is not an option.

The following tables provide a high-level overview of the ORF and a comparison of the main characteristics of Layers 2C - 3. In the overview, lighter shaded areas indicate the layers which are the focus of this document (i.e. Layers 2 - 3). ORF Layers 2 - 3 are described in greater detail in Appendix 1.

HIGH LEVEL OVERVIEW OF THE LYNX OPERATIONAL RESILIENCE FRAMEWORK

	Resilience Layer	Contingency Solution
INTRADAY	**1. INTRA DATA CENTRE RESILIENCE**	Redundancy at primary Data Centre
	2. INTRADAY OPTIONS	**2A: Lynx BCP/DR** invoked - failover to the secondary Data Centre
		2B: Manual Procedures for FMI/Bank of Canada Payments
		2C: Settlement Before Exchange Option 1 (SBE-pacs.008/009/004) - contingency procedures for high priority commercial payments
		2D: Settlement Before Exchange Option 2 (SBE-EOD) - contingency procedures for high priority payments - near end of day events

NEXT DAY	**3. THIRD SITE**	**3: Lynx Third Site Invoked** - failover to the tertiary Data Centre[5]

HIGH LEVEL COMPARISON OF MAIN CHARACTERISTICS OF ORF LAYERS 2C/D & 3

	Intraday		Next Day
	Layer 2C: SBE-pacs.008/009/004	**Layer 2D: SBE-EOD**	**Layer 3: Third Site**
Overview	• Partial volume and value of payments • Bilateral agreement between Participants on Contingency Payment Messages to be exchanged. This creates a Contingency Lynx Payment Obligation, on the part of the Participant in a net debit position, for the net value of the Contingency Payment Messages to be exchanged • Settle the *net* value of agreed to bilateral Contingency Payment Messages (the Contingency Lynx Payment Obligation) through account Entries at the Bank prior to exchange • Exchange the Contingency Payment Messages (pacs.008/009 (core and cov) /004) with CUGs[6] in by-pass mode[7]), within settlement windows • Ideally, layer 2C would not	• Very small volume of payments • Bilateral agreement between Participants on Contingency Payment Messages to be exchanged. This creates a Contingency Lynx Payment Obligation, on the part of the Participant in a net debit position, for the net value of the Contingency Payment Messages to be exchanged • Settle the *net* value of agreed to bilateral Contingency Payment Messages (the Contingency Lynx Payment Obligation) through account Entries at the Bank prior to exchange • Exchange the Contingency Payment Messages as agreed [e.g., pacs.008, pacs.009 core, pacs.004 (using CBPR+ specifications) or secure email] within settlement window	• Layer 3 will provide continuity of operations and can support settlement of a full day's volume/value. • Layer 3 is integrated with SwiftNet Copy service.

[5] Extended use of Layer 2C is a tool available for consideration should Layer 3 not be available.
[6] Swift Closed User Group.
[7] The InterAct CUG ("MX CUG") is placed in by-pass mode.

	begin operation until reconciliation and closing of the interrupted Lynx Payments Processing Cycle has occurred; however, it is not required.	• CUGs not in by-pass mode	
Availability & Duration	• Available once CUGs have been moved into By-pass mode. • For use until the end of day.	• Available late afternoon following Lynx disruption. • For use until the end of day. • Interrupted Lynx Payments Processing Cycle to be reconciled and recorded in HABS prior to declaring end of day[8]	• This option will be available at the commencement of the Payments Processing Cycle on Day 2 (the day following the day the incident occurred).
Risk Model	• Cover all. • Net value of agreed to bilateral Contingency Payment Messages is settled at the Bank before they are exchanged.	• Cover all. • Net value of agreed to bilateral Contingency Payment Messages is settled at the Bank before they are exchanged.	
Funding/ **Advances**	• Funding of Participants' general accounts at the Bank by long balances from Lynx-HABS ACSS account, other available funds at the Bank or by intraday other advance (backed by collateral). • Net value of Contingency Payment Messages to be exchanged bilaterally is debited/credited between Participants' general accounts on the books of the Bank. • No Participant's general account balance may go below zero.	• Participants apply for intraday other advance (backed by collateral) to fund their general account at the Bank. Less likely other funds will be available at the Bank. • Net value of Contingency Payment Messages to be exchanged bilaterally is debited/credited between Participant general accounts on the books of the Bank. • No Participant's general account balance may go below zero.	

[8] If significant issues arise in reconciling cash and loan balances for the interrupted Payments Processing Cycle, a decision could be made to delay this process.

	• Application for any intraday or overnight advances will be a manual process.	• Application for any intraday or overnight advances will be a manual process.	

4.2 Selection of and Escalation Through ORF Layers

DECISION MAKING:

Throughout the resolution of an emergency incident, the President, in consultation with the EC and with prior agreement of the Bank, will determine which actions will be taken and their timing[9]. Response options and how they typically would be selected and escalated are summarized below. It is important to note that these are guidelines only (which are subject to any requirements in the *Lynx By-law* and Lynx rules); at the time of the incident the EC will make its recommendations to the President, who will decide how to proceed.

UPON THE OCCURRENCE OF A LYNX INCIDENT (DAY 1)

1. The EC will be convened and informed by the Association of the nature of the incident and the estimated time to recovery (if a sufficiently reliable estimate can be made). A decision then will be made as to whether to wait for Lynx to resume operation or take further action.

   Factors to consider in making this decision are:

   - *Estimated time to recovery of Lynx* - if it is less, or not significantly more, than the time required to execute a failover to the second Data Centre (ORF Layer 2A), then the decision may be to wait. The Service Level Agreement for executing failover once the instruction to do so has been given is 1 hour.
   - *Time of day* - if the incident occurs during a critical window in the Payments Processing Cycle (e.g., a window for making Financial Market Infrastructure (FMI) payments, such as CLS payments if the incident occurs early in the Payments Processing Cycle) then ORF Layer 2B *Manual Procedures for FMI/Bank of Canada (FMI/BoC) Payments may* be used for these payments until such time as Layer 2A or another contingency option may be put into operation.

IF A DECISION IS MADE TO INVOKE A CONTINGENCY OPTION

2. ORF Layer 2A - *Lynx Business Continuity Plan/Disaster Recovery (BCP/DR)* may be invoked if it is determined that this will resolve the incident. See section 4.0 of the *Lynx Contingency Playbook* Procedures for Moving to Secondary Lynx Data *Centre* for further details.
3. If not already done, Layer 2B can be invoked in order to process FMI and other payments to and from the Bank.

[9] For significant issues related to the operations of Lynx that occur between 00:00 hours and 07:00 hours and that require the activation of the Emergency Committee, the Association will communicate via email, and on a best efforts basis, will contact EC representatives via telephone using the contact information included in the Lynx Summary Contact List in order to inform EC representatives of the activation of the EC.

IF IT IS DETERMINED THAT FAILOVER TO THE SECOND LYNX DATA CENTRE (LAYER 2A) WILL NOT RESOLVE THE INCIDENT; OR FAILOVER IS ATTEMPTED AND DOES NOT RESOLVE THE SITUATION:

4. The process for reconciling and closing the interrupted Payments Processing Cycle (see section 3.0 of the Playbook) will be initiated.
5. ORF Layer 2C - SBE- pacs.008/009/004 or 2D - SBE-EOD can be invoked. Layer 2C is the preferred option if the incident occurs early enough in the day to make this option feasible and worthwhile[10]; otherwise, Layer 2D would be invoked.

   Notes:

   1. If Layer 2B already has been invoked in order to meet deadlines for time sensitive FMI and other Bank payments, the Bank, in consultation with Participants through the EC, will decide whether to continue using that option for FMI and other Bank payments or migrate to the selected SBE option (2C or 2D). The conditions under which any migration would occur are set out in Appendix 2.
   2. Once the decision has been taken to move to by-pass mode (required for Layer 2C) it will not be possible to return to normal Lynx operations during that Payments Processing Cycle (Lynx cannot resume until the interrupted Cycle has been closed).

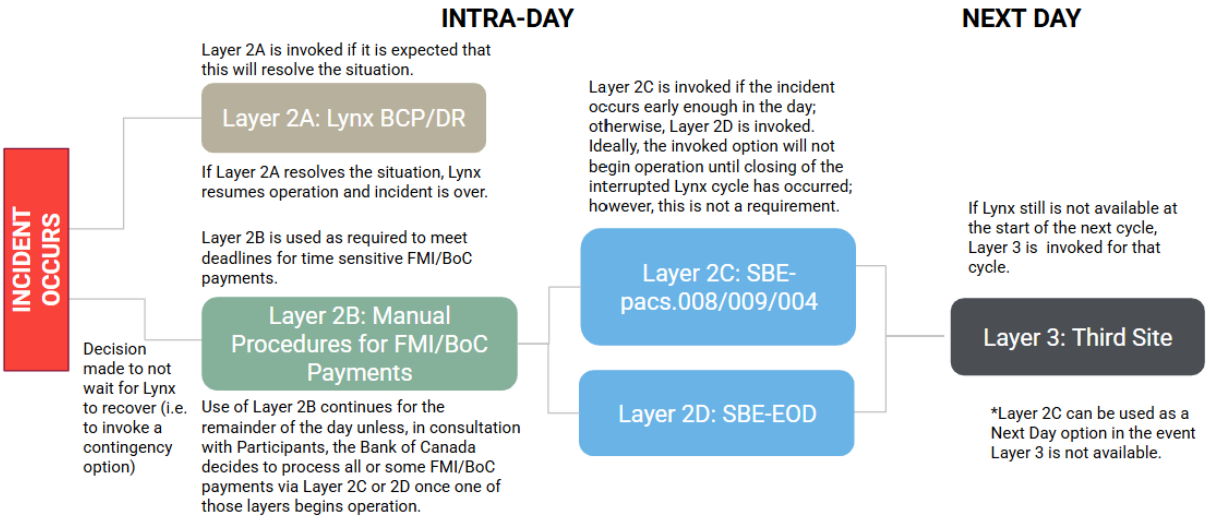
DAY 2 - IF IT IS ESTIMATED THAT LYNX WILL NOT HAVE RESUMED OPERATION FOR THE START OF THE NEXT PAYMENTS PROCESSING CYCLE (OR SHORTLY THEREAFTER):

6. Layer 3 - Third Site will be invoked for the start of the next day's Payments Processing Cycle or as soon as possible thereafter - see section 8.0 of the *Lynx Contingency Playbook*, Rules 2 and 12, section 49 of the *Lynx By-law*. If Layer 3 cannot be implemented for the start of the Cycle, Layer 2B can be used for FMI and other Bank payments until Layer 3 begins operation.
7. If Layer 3 – Third Site cannot be invoked, Layer 2C – SBE- pacs.008/009/004 can be invoked and used as a next day option – see section 6.0 of the *Lynx Contingency Playbook*, Rules 2 and 12, section 49 of the *Lynx By-law*. Layer 2C will begin operation at 08:00 hours on Day 2. Layer 2B will be used for FMI and other Bank payments until Layer 2C begins operation.

The diagram below provides a pictorial representation of the decision making process outlined above. Sample scenarios, based on time of day of the incident, showing how the process would be expected to unfold, are provided in Appendix 3.

[10] If this option can be brought into operation early enough in the day to process a meaningful number of Contingency Payment Messages.

Escalation Through Layers 2-3 of Operational Resilience Framework



Appendix 1: Lynx Operational Resilience Framework (ORF)

Layer 2A: Lynx BCP/DR

The following provides a high level overview of the business continuity and disaster recovery capabilities of Lynx. All of these would have to fail to address a disaster scenario before layers 2C – 3 would be invoked.

Business Continuity Plan

The Association maintains a Crisis Management Plan (CMP), which serves as the overarching business continuity plan to protect and ensure the resilience of personnel, assets and business operations in the event of a major disruption. Operational and tactical level documents sit underneath the CMP to address specific situations that require more detailed information and procedures. The following is a high level overview on how business continuity risk is addressed and mitigated for Lynx:

Disaster Recovery Plan (DRP)

Service Fault/Failure Response Capabilities

All Lynx RTGS and Swift services/components have redundancy and are configured to be fault tolerant using an Active/Active, Active/Passive or Active/Standby configuration.

All data required to operate and process settlement operations are synchronously replicated from the primary to the secondary Data Centre. In the event the primary Data Centre is no longer viable, no data will be lost and the secondary Data Centre is available to bring services back online.

A scripted Swift MX message reconciliation process will ensure no transaction is lost.

Activation of key services in the secondary Data Centre is automated and orchestrated to ensure an orderly and prompt recovery.

DRP

The DRP is scenario based and is supported by Playbooks that detail recovery steps, timings and roles/responsibilities to ensure the Association and its prime vendor IBM have the right level of direction to minimize downtime and that no data is lost. Procedures for failover to the secondary Lynx Data Centre are provided in the *Lynx Contingency Playbook*. Declaration of a disaster is the responsibility of the Association, in consultation with the EC.

For recovery at the primary and secondary Data Centre, the Recovery Time Objective (RTO) for Lynx (time to restore services to regular operations) is <60 minutes and the Recovery Point Objective (RPO) is 0 (zero data loss). For recovery at the tertiary Data Centre, the RTO for Lynx is <120 minutes and the RPO is 0 (zero data loss).

Layer 2B: Manual Procedures for FMI/Bank of Canada Payments

During all contingency situations, the Bank's first priority is to ensure the completion of FMI settlement obligations including those for: CLSB (CLS Settlement Service), LCH (London Clearing House), CDCC (Canadian Derivatives Clearing Corporation), CDS (Canadian Depository for Securities), the Association (ACSS), BoC Time Critical Payments for the Note Exchange System, Receiver General payments and other payments to and from the Bank deemed critical that day.

ORF Layer 2B, which consists of HABS book-based Entries supported by an advance from the Bank, has the following characteristics:

- All advances from the Bank to Participants must be fully collateralized.
- Any intraday advance granted by the Bank will need to be repaid by the Participant by the end of that day, potentially by taking an overnight advance.
- All FMI or time critical payments made between Participants and the Bank under ORF Layer 2B are effected via Entries made to the Participant's general account on the books of the Bank, and recorded on the books of the Bank, and are final and irrevocable.
- The Bank will only execute instructions where sufficient funds exist in the Participant's general account.
- Additional payment information is to be exchanged between the Participant and the Bank via secure email. The delivery method will be determined in consultation with the affected Participant and in consideration of the systems affected.

Layer 2C: Settlement Before Exchange (SBE)- pacs.008/009/004

Description:

Participants agree bilaterally on the Contingency Payment Messages to be exchanged, creating a Contingency Lynx Payment Obligation on the part of the Participant in a net debit position, for the net value of the Contingency Payment Messages to be exchanged. The net value of these Contingency Payment Messages (the Contingency Lynx Payment Obligation) is settled across the books of the Bank (bilaterally), then the Contingency Payment Messages are exchanged using pacs.008 and pacs.009 (core and cov) and pacs.004 messages in Swift By-pass mode. Despite the fact that the exchange of the applicable Contingency Payment Messages occurs following settlement of the Contingency Lynx Payment Obligation, settlement of these individual payment obligations contained in the Contingency Payment Messages that correspond to the Contingency Lynx Payments Obligation is final, as between the two Participants, when the Bank makes the account Entries in respect of the corresponding Lynx Payment Obligation to those Participants' general accounts.

Availability/Circumstances:

This option is available for use intraday, if the incident occurs early enough in the day[11], when Lynx is not expected to be available for the rest of the day.

Risk Model/Settlement:

- The risk model is "cover all".
- The net value of the Contingency Payment Messages to be exchanged will be settled prior to their exchange.
- Recording of debit/credit Entries across Participants' general accounts in HABS for purposes of settling Contingency Lynx Payment Obligations provides finality of settlement for those payment obligations contained in Contingency Payment Messages to be exchanged. Swift MT900/910 or camt.054 (using CBPR+ specifications) messages are used to advise the Participants of these debit/credit Entries.
- Settlement of Contingency Lynx Payment Obligations will occur across the books of the Bank for every pair of Participants, based on the net value of the Contingency Payment Messages to be exchanged by those Participants.

  Note: Contingency Payment Messages to and from the Bank may **not** be netted bilaterally. Settlement is to be for the total (gross) value of Contingency Payment Messages sent.
- There will potentially be multiple predetermined settlement windows in the Payments Processing Cycle. The number of windows and their timing will be determined by the EC at the time of the incident.[12]

Payment Processing:

- This option is intended for use in the exchange of critical commercial payments only and non-designated FMI payments, such as (the following is not an exhaustive list):

[11] There must be sufficient time to move the MX CUG into By-pass mode (a prerequisite which takes approximately 90 minutes) and exchange a meaningful number of Contingency Payment Messages within that Payments Processing Cycle.

[12] In an effort to respect the pay-in deadlines for FMI/BoC payments and due to the limited volume of Bank transactions to process, Contingency Payment Messages to/from the Bank may be exchanged outside of the settlement windows.

- Can-Act Payment Services
- Canada Pension Plan
- Computershare (which includes the CMBS disbursement)
- Fundserv
- M&A closings
- London Clearing House (LCH) SwapClear
- MasterCard
- New Issues
- Oil settlement day
- OMERS (Ontario Municipal Employees Retirement System), HOOPP (Healthcare of Ontario Pension Plan), OTPP (Ontario Teachers' Pension Plan)
- Visa
- Chicago Mercantile Exchange (CME)
- Interac e-transfer

- There is no limit on the number of underlying Contingency Payment Messages Participants can agree to exchange, though it is expected that the volume will be small.
- The option supports participation by all Lynx Participants.

Collateral Valuations/Advances:

- Collateral pledging is required prior to commencement of the Layer 2C process.
- Participant's general accounts at the Bank are funded by long balances from the Participant's Lynx-HABS account or ACSS account, any other funds that are held and available at the Bank or by intraday Other Advances (backed by collateral) using the existing procedures (through HABS).
- Application for any required advance is a manual process.

Participation:

- Acceptance of Contingency Payment Messages from all other Participants, in each settlement window, is mandatory.
- Participants will be expected to also send Contingency Payment Messages on a best efforts basis.

Scheduling of Settlement Windows

- Specific scheduling of settlement windows will be determined by the EC at the time of the incident, based on the time of day at which it occurred. As a guideline, scheduling will typically be based on the following principles:
  1. The first window will start no earlier than 08:00[13] hours.
  2. The first window will be three hours long and any other windows 2 hours long[14].
  3. There will be a 30 minute buffer between windows.
  4. A 30 minute period for end of day reconciliation will be provided after the last settlement window of the day.
  5. A 30 minute flattening/funding period will follow the end of day reconciliation period.
  6. A cut-off time for Contingency Payment Message exchange in each settlement window will be set by the EC.
  7. The end time of the reconciliation period will be 18:00 hours, unless an extension is

[13] This time of day has been chosen because (1) this is when the bulk of the day's payments begin to flow (the only earlier payments would be CLS pay-ins, which could be adequately processed using Layer 2B) and (2) it is when non-CLS Participants join the payment exchange.
[14] The first window is expected to be longer than subsequent windows in order to accommodate the ramping up of the required processes and changes.

approved by the President in consultation with the EC. The latest possible extension will have the flattening/funding period ending at 20:00 hours.

8. Participants could agree bilaterally to exchange Contingency Payment Messages more than once within a window. The maximum frequency of the settlement process will be one settlement per hour per pair of Participants.

- Once the window schedule has been determined by the EC, it will be provided to EC members by the Association, via email. At the EC's discretion, there could be checkpoints throughout the day to confirm readiness to start each window.
- Window timeframes are guidelines. Participants can agree bilaterally to interact outside of the proposed timeframes (e.g., windows could be extended).
- In an effort to respect the pay-in deadlines for FMI/BoC payments and due to the limited volume of Bank transactions to process, Contingency Payment Messages to/from the Bank may be exchanged outside of the settlement windows.

Sample Window Schedule

Scenario: Incident Soon After Payments Processing Cycle Start

Window	Timeframe (hours)	Estimated Exchange Payment Cut-off (hours)
Settlement Window 1	08:00 - 11:00	10:00
Settlement Window 2	11:30 - 13:30	13:00
Settlement Window 3	14:00 - 17:00	16:30
End of Day Reconciliation of Discrepancies Period	17:30 - 18:00	18:00
Flattening/Funding Period[15]	18:00 - 18:30	18:30
Finalization	18:30 - 19:30	N/A

Layer 2D: Settlement Before Exchange (SBE)-EOD

Description:

The process for this option is the same as the process for Layer 2C, with the following major exception: Contingency Payment Messages are not exchanged using pacs.008, pacs.009 (core and cov) and pacs.004 messages; instead, Participants send them using another format of exchange such as (but not limited to) via pacs.008, pacs.009 core, pacs.004 (using CBPR+ specifications) or secure email.

[15] Contingency Payment Messages exchanged during this time are intended to support funding between Participants prior to finalizing balances with the Bank.

Differences from Layer 2C are indicated below.

Note: Contingency Payment Messages to the Bank are to be exchanged via secure email (not pacs.008, pacs.009 core or pacs.004).

Availability/Circumstances:

This intraday option is intended to be used for incidents occurring later in the day, when Lynx is not expected to be available for the remainder of the day and Layer 2C is not viable due to time constraints[16].

Risk Model/Settlement:

There will be no more than two settlement windows in the Payments Processing Cycle.

Payment Processing:

The focus for this option is on very few critical payments that need to be processed that day.

Note: If using pacs.008, pacs.009 core or pacs.004 messages for Layer 2D, they should be created using CBPR+ specifications. Pacs.008, pacs.009 core and pacs.004 messages should be exchanged between Participants using the FINPlus CUG and will not be copied to Lynx.

Collateral Valuations/Advances:

- Participants' general accounts at the Bank are funded by intraday Other Advances (backed by collateral) using the existing procedures (through HABS).

Settlement Windows:

- The start and end times for each window (note: there could be only one window) will be determined by the EC and then provided to Participants by the Association via email to EC members. If there are multiple windows, the EC can, at its discretion, establish checkpoints to confirm Participants' readiness to start each window.

Note: In an effort to respect the pay-in deadlines for FMI/BoC Time Critical Payments, and due to the limited volume of Bank transactions to process, Contingency Payment Messages to/from the Bank may be exchanged outside of the settlement windows.

[16] There is not sufficient time to move the MX CUG into by-pass mode (a prerequisite to using Layer 2C which takes approximately 90 minutes), or by the time this move was executed there would not be sufficient time to exchange a meaningful number of Contingency Payment Messages within that Payments Processing Cycle.

Layer 3: Third Site

Description:

- Layer 3 is the operation of Lynx from the tertiary Data Centre, the disaster recovery (DR) infrastructure available for operating Lynx in the event of a catastrophic failure causing both the primary and the secondary Lynx Data Centres to be unavailable to support Lynx operations.
- In Layer 3, Lynx Participants will have access to the same features and functionality as in regular Lynx operations.
- Upon activation of Layer 3, payment data from the last completed Payments Processing Cycle prior to the incident, while operating from the primary or secondary Data Centre, will be available through the Lynx Web Client. Payment data from the disrupted Payments Processing Cycle or those payments exchanged using Layer 2C or 2D from the day the incident occurred will not be available through the Lynx Web Client.
- All system data[17] required to operate and process Settlement Instructions are replicated from the primary and secondary Data Centre to the tertiary Data Centre. In the event the primary and secondary Data Centres are no longer available, the tertiary Data Centre will be available for Day 2 of the incident.
- Layer 3 is integrated with the SwiftNet Copy service.
- Invocation of Layer 3 is the responsibility of the Association, in consultation with the EC and with the prior agreement of the Bank, as outlined in Rule 12.

Availability/Circumstances:

- This option will be available starting on Day 2 (the day following the day the incident occurred).

  Note: Layer 2C may be invoked as a next day option in the event that Layer 3 is not available. When used as a next day option, it will allow for higher value/volume of payments to be exchanged and settled (compared to using intraday), through additional/longer settlement windows.

Payment Processing:

- The focus for this option will be processing a full day's volume/value over multiple days until either the primary or secondary Data Centre is restored.

[17] System data required refers to the data needed in order to resume Lynx payment processing on Day 2, including Minimum Liquidity Requirements, standing inter-account transfer instructions, bilateral limits, etc. This data will be from the last completed Payments Processing Cycle prior to the incident when Lynx was operating from the primary or secondary Data Centre.

Appendix 2: Conditions Under Which SBE Options May be Used for Processing FMI/BOC Payments

If the Manual Procedures for FMI/BoC payments are invoked before one of the SBE options is invoked, the Bank in consultation with Participants would decide whether to continue with Layer 2B or migrate to the selected SBE contingency option. Factors that would affect the decision: how many non FMI/time critical payments the Bank will process, time of day, and perceived effort in switching.

If an SBE option is invoked at start of day, the Bank will use the invoked option for all Bank payments with the following processing exceptions:

- Contingency Payment Messages to/from the Bank cannot be netted. The total (gross) value of Contingency Payment Messages sent is settled via pacs.009 core (using CBPR+ specifications).

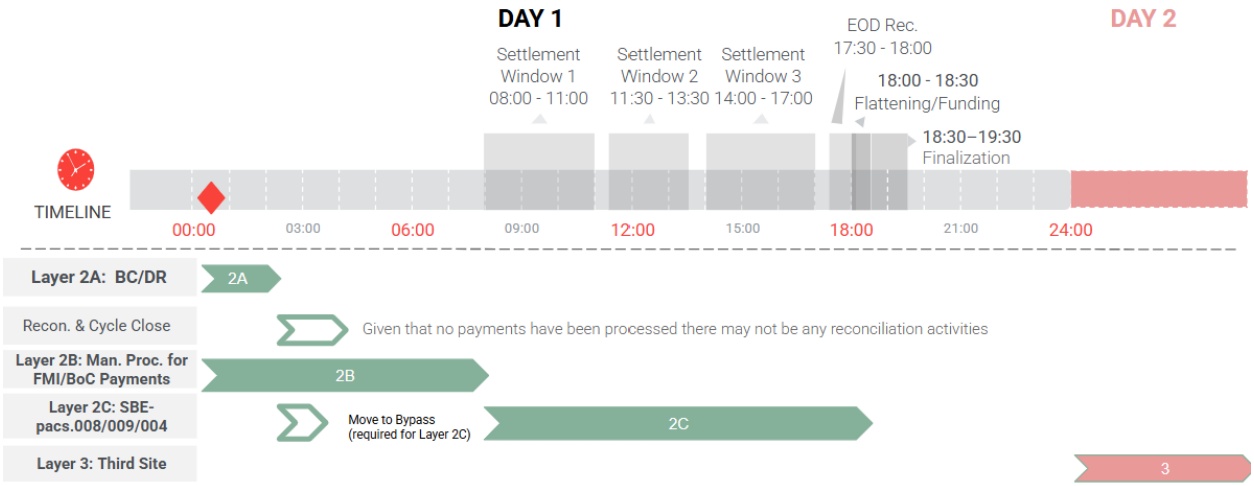
Because FMI/time critical payment amounts are generally not known until an hour before the processing deadline, the Bank

- will not require that Participants receive bilateral agreement from the Bank before they send Contingency Payment Messages to the Bank;
- will not seek bilateral agreement from Participants before sending;
- will not expect Participants to respect the SBE settlement window schedule;
- will not respect the SBE settlement window schedule;
- will expect Participants to respect the business as usual deadlines for FMI or Time Critical Payments, unless otherwise specified by the Bank or communicated by the FMI; and
- will effect all Entries to credit the Participant and Other Client Beneficiary accounts in as timely a manner as possible.

If SBE-EoD (Layer 2D) contingency mode is invoked, all Contingency Payment Message details will be provided to/from the Bank via secure email.

Appendix 3: Sample Scenarios Based On Incident Time Of Day

SCENARIO 1: START OF DAY - 00:30



Chain of Events Upon Incident Occurring (00:30 hours)

1. The following occurs concurrently:
    a. Issue resolution & recovery - EC process is invoked, the Association and its vendors work to resolve the issue and, if deemed appropriate, Layer 2A: BCP/DR is invoked.
    b. Manual procedures (Layer 2B) are invoked.

Assumption: BCP/DR was invoked and did not resolve the situation. Once this becomes known:

2. Layer 2C SBE- pacs.008/009/004 is invoked by the President, in consultation with the EC, triggering the following concurrent activities:
    a. Reconciliation and completion of the interrupted Lynx Payments Processing Cycle
    b. Instruction from the Association to Swift to move the MX CUG to by-pass mode and execution of instruction
    c. Participants make internal changes to move to by-pass mode
3. Layer 2C SBE- pacs.008/009/004 begins operation at 08:00 hours and becomes the contingency option for the remainder of the day. Prerequisite: MX CUG has moved into by-pass mode.

    Note 1: The Bank, in consultation with Participants, will decide whether Layer 2C, once it is in operation, will be used for FMI/BoC Contingency Payment Messages (rather than continuing with Layer 2B).

    Note 2: Ideally, Layer 2C would not begin operation until reconciliation and closing of the interrupted Lynx cycle has occurred; however, this is not a requirement.
4. Contingency Payment Message exchange for the day ends at 17:00 hours, followed by:

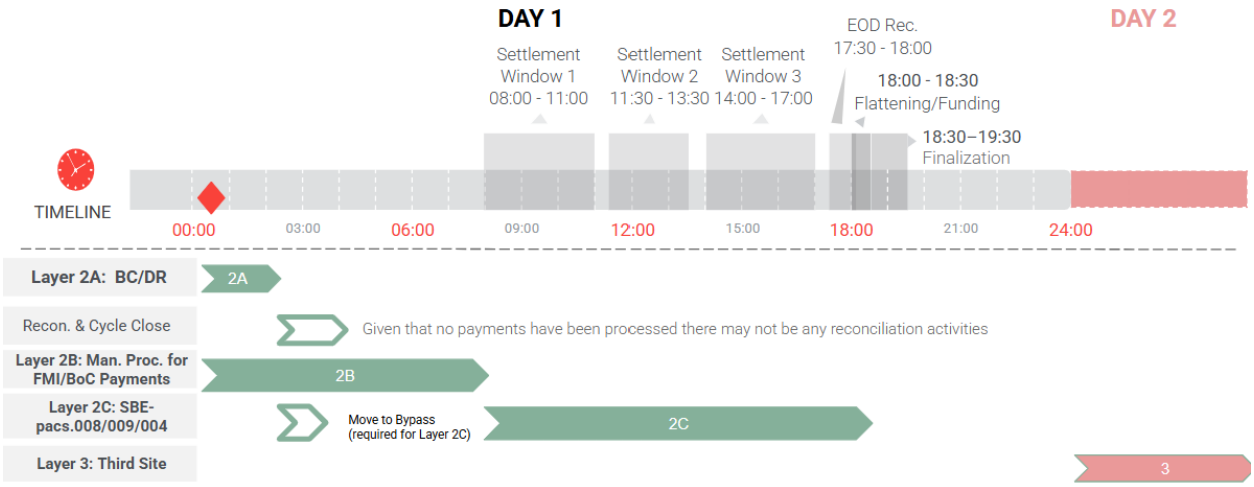
a. a 30 minute buffer;
b. at 17:30 hours, a 30 minute period for end of day reconciliation;
c. at 18:00 hours, a 30 minute period for flattening/funding of positions; and then
d. final Settlement (finalization).

If it does not appear that Lynx will be available for the commencement of the next day:

5. Layer 3 - Third Site is invoked by the President, in consultation with the EC and with the prior agreement of the Bank, and preparations for its implementation will begin (note: these steps could be taken in parallel to some of the steps above).
6. Next day:
    a. Day 2 Payments Processing Cycle opens for normal operations according to the Lynx Operating Schedule.

If it does not appear that Layer 3 will be available for the commencement of the next day, Layer 2C - SBE-pacs.008/009/004 can be invoked as a next day option and would follow the chain of events outlined above.

SCENARIO 2: EARLY MORNING - 07:00 HOURS



Chain of Events Upon Incident Occurring (07:00 hours)

1. The following occurs concurrently:
    a. Issue resolution & recovery - EC process is invoked, the Association and its vendors work to resolve the issue and, if deemed appropriate, Layer 2A: BCP/DR is invoked.
    b. Manual procedures (Layer 2B) are invoked.

Assumption: BCP/DR was invoked and did not resolve the situation. Once this becomes known:

2. Layer 2C SBE- pacs.008/009/004 is invoked by the President, in consultation with the EC, triggering the following concurrent activities:
    a. Reconciliation and settlement of the Lynx Payments Processing Cycle
    b. Instruction from the Association to Swift to move the MX CUG to by-pass and execution of instruction

c. Participants make internal changes to move to by-pass mode

3. Layer 2C SBE- pacs.008/009/004 begins operation at 14:00 hours and is available for one settlement window (there is insufficient time for a second window). Prerequisite: MX CUG has moved into by-pass mode.

   Note 1: the Bank, in consultation with Participants, will decide whether Layer 2C, once it is in operation, will be used for FMI/BoC Contingency Payment Messages (rather than continuing with Layer 2B).

   Note 2: Ideally, Layer 2C would not begin operation until reconciliation and closing of the interrupted Lynx cycle has occurred; however, this is not a requirement.

4. Contingency Payment Message exchange for the day is extended to 18:30 hours, followed by:
   a. a 30 minute buffer;
   b. at 19:00 hours, a 30 minute period for end of day reconciliation;
   c. at 19:30 hours, a 30 minute period for flattening/funding of positions; and then
   d. final settlement (finalization).

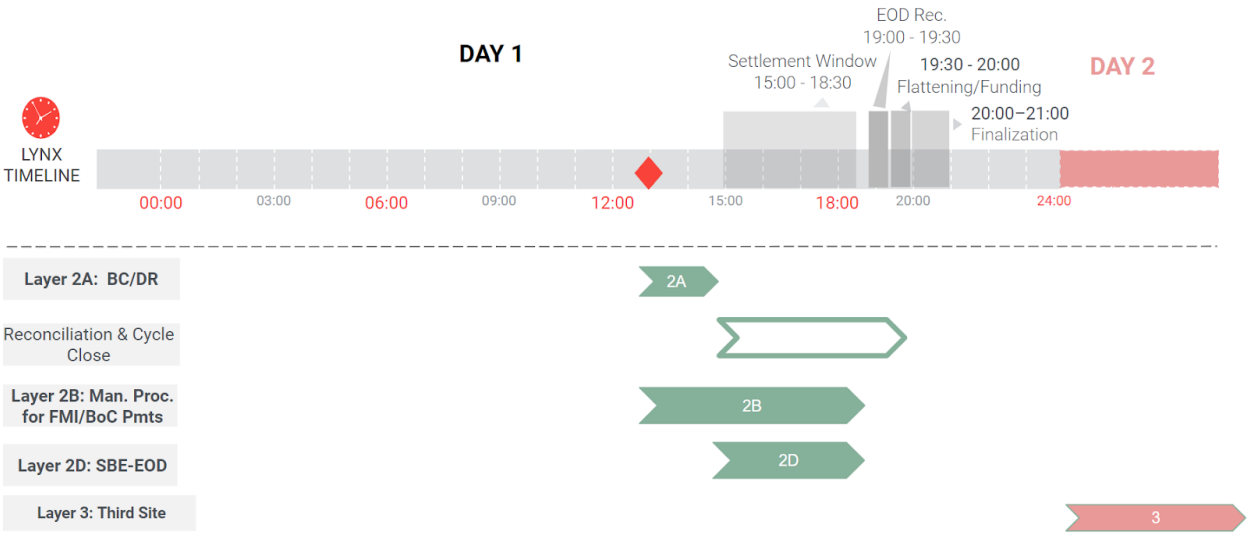
If it does not appear that Lynx will be available for the commencement of the next day:

5. Layer 3 - Third Site is invoked by the President, in consultation with the EC and with the prior agreement of the Bank, and preparations for its implementation begin (note: these steps could be taken in parallel to some of the steps above).

6. Next day:
   a. Day 2 Payments Processing Cycle opens for normal operations according to the Lynx Operating Schedule.

If it does not appear that Layer 3 will be available for the commencement of the next day, Layer 2C - SBE-pacs.008/009/004 can be invoked as a next day option and would follow the chain of events outlined above.

SCENARIO 3: MID AFTERNOON - 13:00 HOURS



Chain of Events Upon Incident Occurring (13:00 hours)

1. The following occurs concurrently:
    a. Issue resolution & recovery - EC process is invoked, the Association and its vendors work to resolve the issue and, if deemed appropriate, Layer 2A: BCP/DR is invoked.
    b. Manual procedures (Layer 2B) and option SBE-EOD (Layer 2D) are invoked and used for the remainder of the Payments Processing Cycle.

        Note: in this scenario the Bank is likely to process FMI/BoC payments using Layer 2B.

Assumption: BCP/DR was invoked and did not resolve the situation. Once this becomes known:

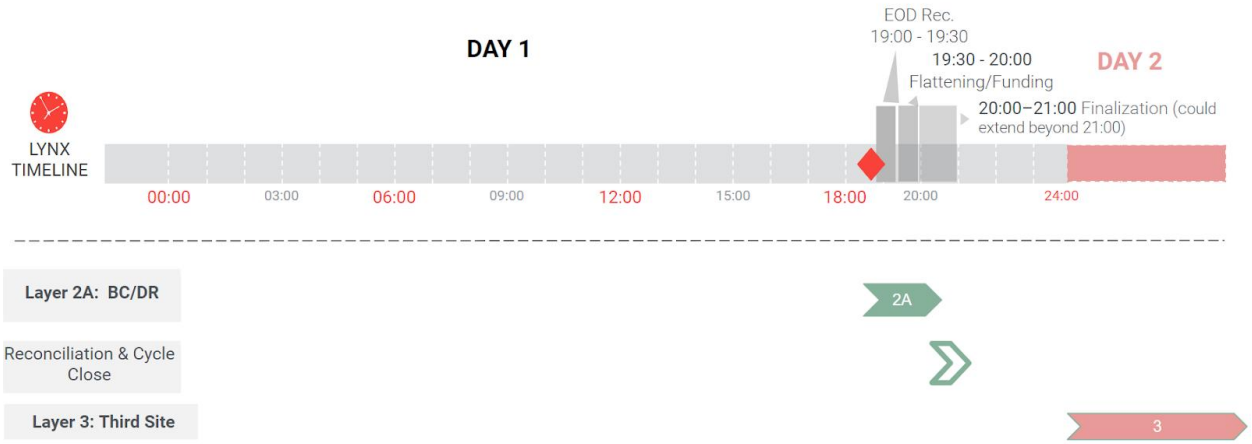
2. *Contingency Payment Message* exchange for the day is extended to 18:30 hours, followed by:
    a. a 30 minute buffer;
    b. at 19:00 hours, a 30 minute period for end of day reconciliation;
    c. at 19:30 hours, a 30 minute period for flattening/funding of positions; and then
    d. final settlement (finalization).

If it does not appear that Lynx will be available for the commencement of the next day:

3. Layer 3 - Third Site is invoked by the President, in consultation with the EC and with the prior agreement of the Bank, and preparations for its implementation begin (note: these steps could be taken in parallel to some of the steps above).
4. Next day:
    a. Day 2 Payments Processing Cycle opens for normal operations according to the Lynx Operating Schedule.

If it does not appear that Layer 3 will be available for the commencement of the next day, Layer 2C - SBE-pacs.008/009/004 can be invoked as a next day option and would follow the chain of events outlined above.

SCENARIO 4: END OF DAY - 18:30 HOURS



Chain of Events Upon Incident Occurring (18:30 hours)

1. The following occurs concurrently:
    a. Issue resolution & recovery - EC process is invoked, the Association and its vendors work to resolve the issue and, if deemed appropriate, Layer 2A: BCP/DR is invoked.
    b. The Association, Bank and Participants will confirm final balances in Lynx and the Bank will reflect balances in Lynx-HABS accounts.
    c. Participants must apply for any required overnight advance manually and the Association notifies Participants when settlement is complete (via email).

Assumption: BCP/DR was invoked and did not resolve the situation and it does not appear that Lynx will be available for the commencement of the next day. Once this becomes known:

2. Layer 3 - Third Site is invoked by the President, in consultation with the EC and with the prior agreement of the Bank, and preparations for its implementation begin (note: these steps could be taken in parallel to some of the steps above). Preparations will continue into Day 2.
3. Next day:
    a. Day 2 Payments Processing Cycle opens for normal operations according to the Lynx Operating Schedule.

If it does not appear that Layer 3 will be available for the commencement of the next day, Layer 2C - SBE-pacs.008/009/004 can be invoked as a next day option and would follow the chain of events outlined above.