

# **UTP SIP** **ACCEPTANCE TEST PLAN**

**JUNE 13<sup>TH</sup>**



# UTP SIP

## ACCEPTANCE TEST PLAN

- Overview
- NTF Testing
- Weekend Production Test Plans
- Migration



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# ACCEPTANCE TEST PLAN

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# ACCEPTANCE TESTING

## OVERVIEW

### Early Customer Test Period 5/25-6/24

- NTF Testing during production hours

### Acceptance Test Period 6/24 - 9/22

- NTF Testing during production hours
- 6 weekend production tests: 7/9, 7/23, 8/6, 8/20, 9/10, 9/24
- Participant should start to legacy and INET SIP connections during weekend tests

### Migration Period 7/9-10/10

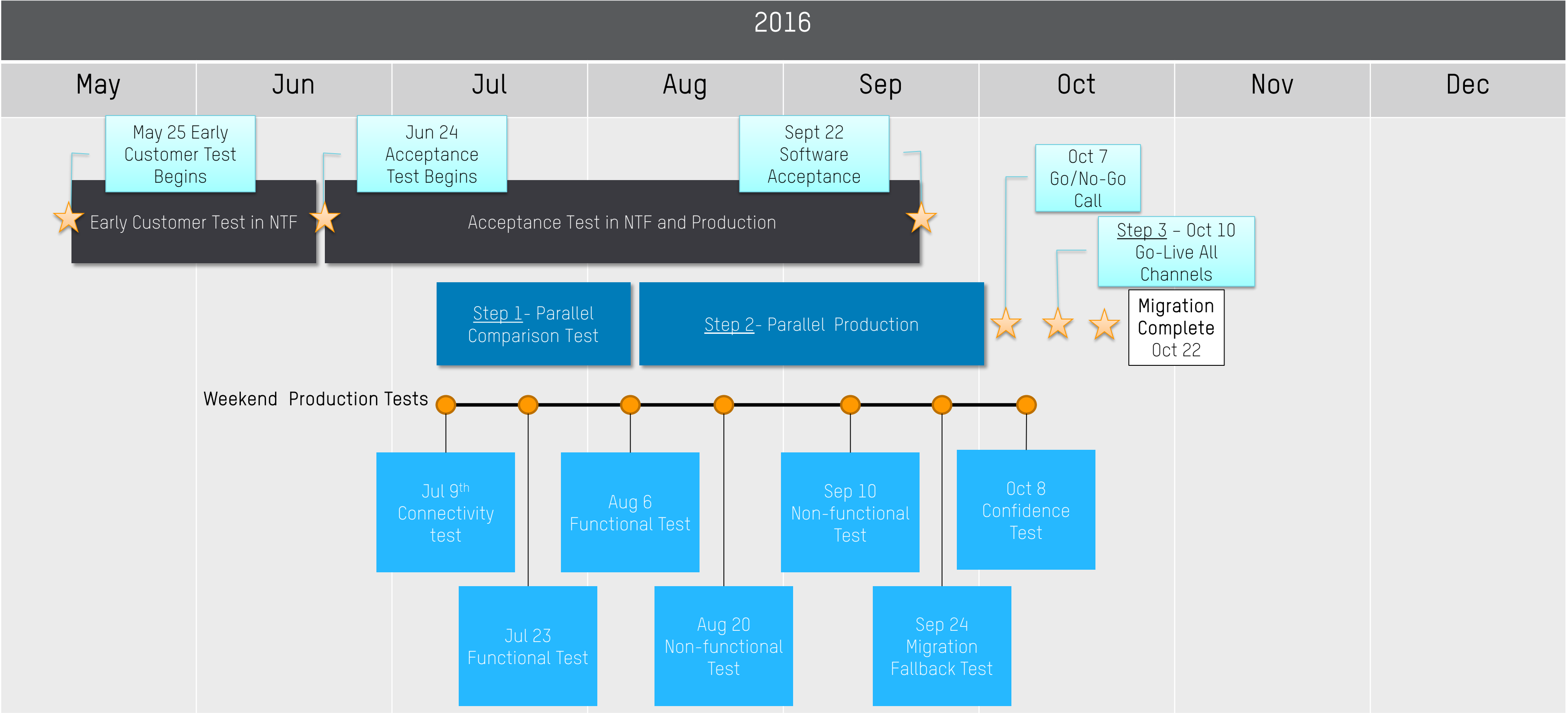
- Parallel Comparison 7/9-8/8
  - Live production data transferred sent from legacy to INET SIP
  - Internally comparing legacy feeds to INET SIP feeds
- Parallel Production 8/8-10/7
  - Participants dual disseminate to both legacy and INET SIPs
  - Legacy and INET SIP feeds available via multicast. Legacy SIP feeds are primary. INET SIP feeds are beta testing only.

### Go-Live 10/8-10/24

- Go/No-Go call on 10/7
- Final weekend confidence test 10/8
- Go-Live Monday 10/10.
- Legacy SIP available until 10/22.

# INET SIP UPGRADE PROJECT PLAN

## PROJECT TIMELINE





# INET SIP UPGRADE PROJECT PLAN

## KEY DATES

- 1 Month Early Customer Test
- 3 Months Acceptance Testing & Parallel System Test
- Final Confidence test before Go/No-Go Call

Event	Expected Start Date	Expected End Date
Contract Sign		27-Oct-15
Early Customer Test	25-May-16	24-Jun-16
Acceptance Test Period	24-Jun-16	22-Sep-16
Parallel Comparison Test	9-Jul-16	8-Aug-16
Parallel Production	8-Aug-16	7-Oct-16
Software Acceptance		22-Sep-16
Go/No-Go Call		7-Oct-16
Saturday Confidence Test		8-Oct-16
Go-Live All Channels	10-Oct-16	22-Oct-16
Migration Complete		22-Oct-16

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# NTF TESTING

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# NTF TESTING PLAN

- Nasdaq Test Facility available for testing during production hours starting May 25<sup>th</sup> through go-live
- All inbound and outbound messaging will be supported
- Input IPs and Ports have been set up and sent out to each participant
- Dissemination channel groups, including automatic rewind service addresses, can be found here:  
<http://www.utpplan.com/DOC/IP%20Addresses%20for%20UTP%20Data%20Feed%20Services.pdf>
- Contact for help or to report any bugs: [products@utpplan.com](mailto:products@utpplan.com)



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# WEEKEND PRODUCTION TESTS

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# WEEKEND TEST SCHEDULE

## JUL 9 – CONNECTIVITY TEST

- Test Plan
  1. Participants will connect to primary ports
  2. SIP will confirm connection
  3. Participants will connect to backup and DR ports.
  4. Successful connectivity to primary and DR ports by each participant will end the test.
- Participants will also connect to their legacy SIP ports.

## Weekend Production Test Dates

Date	Test
7/9/16	UAT – Connectivity Only
7/23/16	UAT – Full Functionality
8/6/16	UAT – Full Functionality
8/20/16	UAT – Non-Functional Testing
9/10/16	UAT – Non-Functional Testing
9/24/16	UAT – Migration Fallback Test
10/8/16	Confidence Test

# WEEKEND TEST SCHEDULE

## JUL 23, AUG 6 – FUNCTIONAL TEST

- Test Plan
  1. UTDF and UQDF Test plans provided.
  2. Participants will run through the scripts and provide confirmation of successful test by sending back the completed scripts
  3. Open conference call during July 23<sup>rd</sup> and August 6<sup>th</sup>
  4. Participant may run through other tests that meets their own daily operational functionality.
- Participants will also connect to their legacy SIP ports.

### Weekend Production Test Dates

Date	Test
7/9/16	UAT – Connectivity Only
7/23/16	UAT – Full Functionality
8/6/16	UAT – Full Functionality
8/20/16	UAT – Non-Functional Testing
9/10/16	UAT – Non-Functional Testing
9/24/16	UAT – Migration Fallback Test
10/8/16	Confidence Test

# WEEKEND TEST SCHEDULE

## AUG 20, SEP 10 – NON FUNCTIONAL TEST

### Input Failover Test:

- 1. Participant will connect to primary port
- 2. SIP will simulate primary port failure
- 3. Participant will fail over to secondary port in primary site.
- 4. SIP will simulate secondary port failure
- 5. Participant will fail over to DR site.

### Output Failover Test:

- 1. Participant send quotes and trades
- 2. SIP will fail over primary site dissemination channels
- 3. Participant will continue to receive data

### Site Failover Test

- 1. Participant send quotes and trades
- 2. SIP will failover the primary engine to the DR engine.
- 3. Dissemination will continue in DR and participant will continue to receive data

## Weekend Production Test Dates

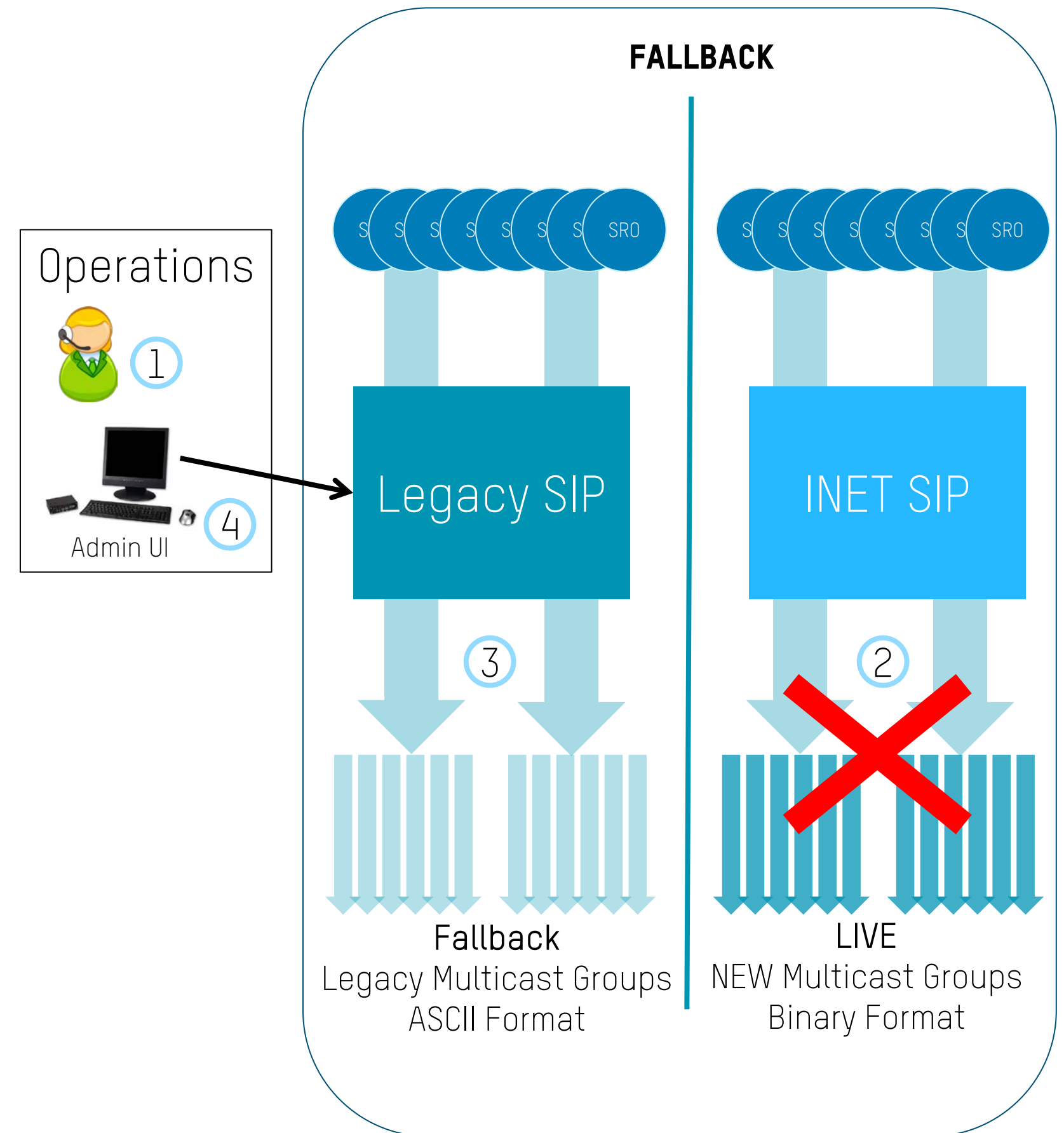
Date	Test
7/9/16	UAT – Connectivity Only
7/23/16	UAT – Full Functionality
8/6/16	UAT – Full Functionality
8/20/16	UAT – Non-Functional Testing
9/10/16	UAT – Non-Functional Testing
9/24/16	UAT – Migration Fallback Test
10/8/16	Confidence Test

# WEEKEND TEST SCHEDULE

## SEP 24 – MIGRATION Fallback TEST

### Fallback procedure:

1. Participants submit quotes and trades to both legacy and new SIP.
2. SIP will issue statement that it is falling back to legacy feeds. SIP will inform participants we will be performing quote wipeouts for each symbol on the legacy SIP.
3. SIP Operations will shutdown INET SIP dissemination
4. Legacy SIP will increment outbound sequence numbers +100k on quote and trade feeds, to avoid confusion.
5. Legacy SIP will perform quote wipeout using the Admin UI.
6. Participants should confirm they are sending to the legacy SIP, and processing the multicast feeds from the legacy SIP.



# WEEKEND TEST SCHEDULE

## OCT 8 – CONFIDENCE TEST

### Confidence Test Plan

- 1. Participants will connect to their primary and DR ports
- 2. Participants may run through final tests to ensure readiness for go-live.
- 3. Go/No-go call will be conducted

### Weekend Production Test Dates

Date	Test
7/9/16	UAT – Connectivity Only
7/23/16	UAT – Full Functionality
8/6/16	UAT – Full Functionality
8/20/16	UAT – Non-Functional Testing
9/10/16	UAT – Non-Functional Testing
9/24/16	UAT – Migration Fallback Test
10/8/16	Confidence Test

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# MIGRATION

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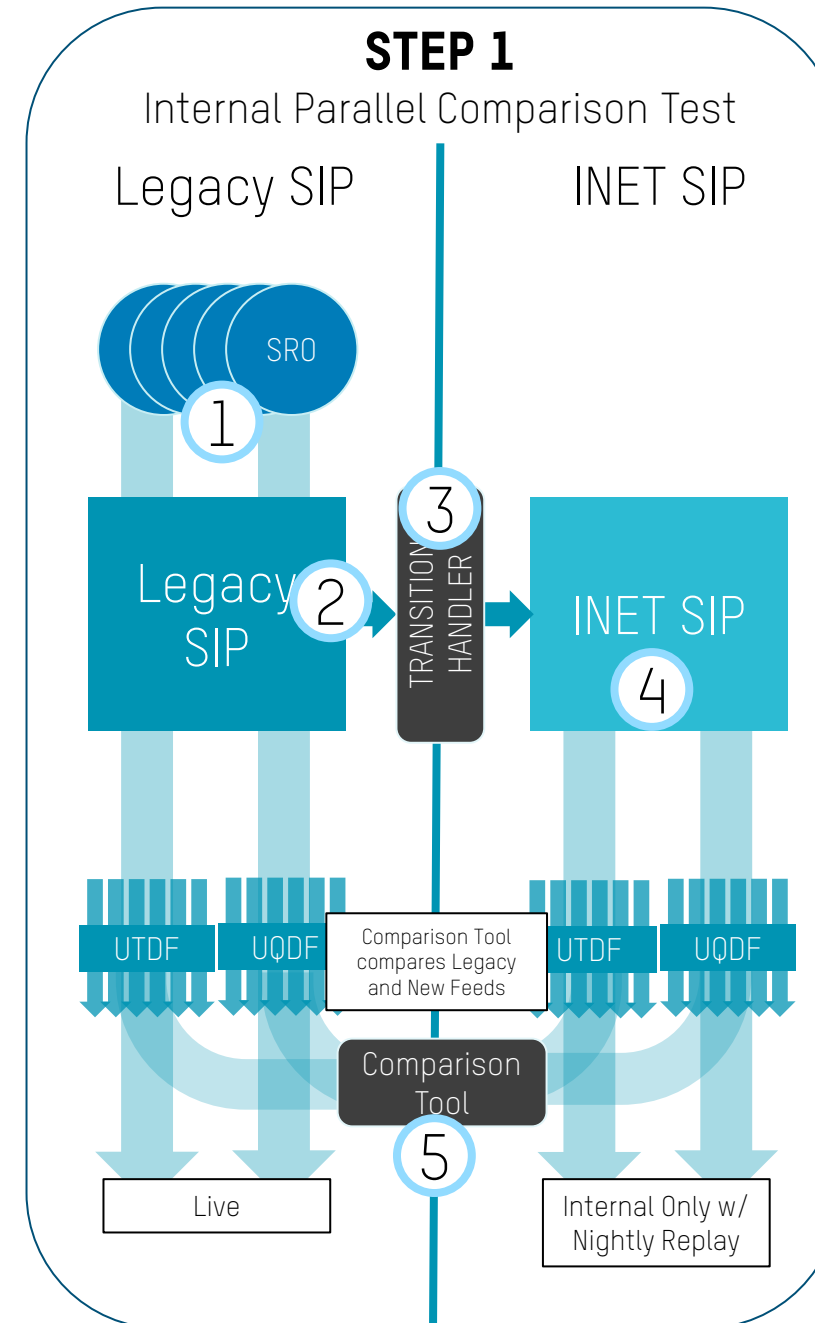




# MIGRATION STRATEGY

## JUL 9 – AUG 8: PARALLEL COMPARISON TEST

- Parallel comparison test with production data
- **No Production Impact** - No software or hardware changes to legacy SIP
- Transition Handler forwards production SRO input transactions to INET SIP
- SRO inputs will be processed by the new platform as if it were live
- Results of this processing will be compared at the end of each day to the outputs from the UTP SIP
- Nightly replay of old & new formats



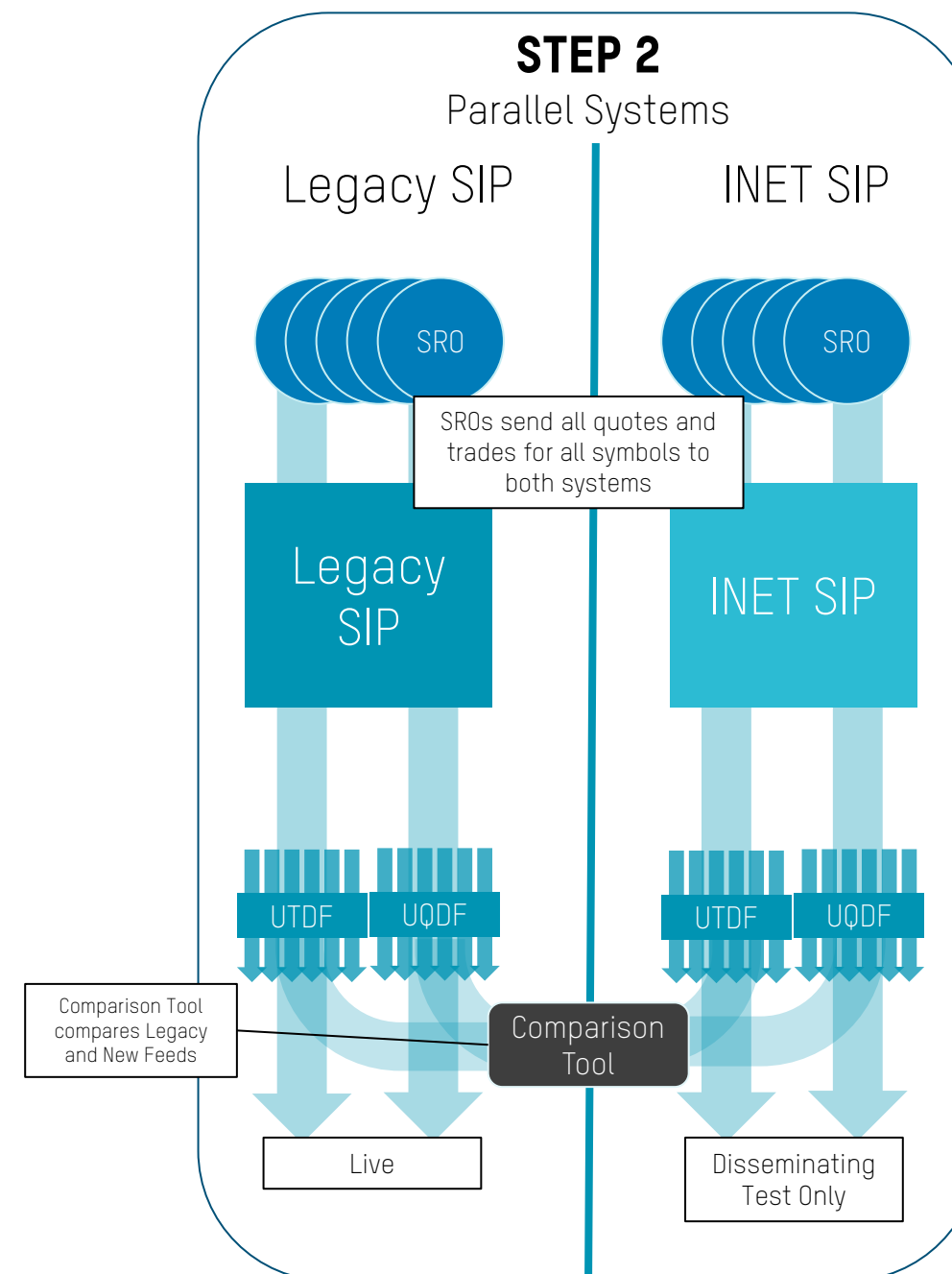
### Parallel Comparison Test Procedure

1. Participants continue to send to legacy SIP.
2. Legacy Business Logic Units (BLUs) process and provides a sequenced stream of quotes and trades
3. Transition Handler converts the sequenced stream of quotes and trades to input to the new system Customer Ports as regular input.
4. Customer Ports consume quote and trade data in the exact same order as Legacy system, allowing the new SIP to perform the exact same calculations.
5. Legacy and New output are recorded separately for comparison. A comparison tool will validate the output is logically equivalent.

# MIGRATION STRATEGY

## AUG 8 - OCT 7: PARALLEL SYSTEMS

- Active participants send quote and trade data to **both** Legacy and INET SIP
- Legacy SIP remains live
- New SIP uses new multicast groups and new binary format
- Participants and Datafeed clients should use new feeds for testing with production data
- No Fallback required



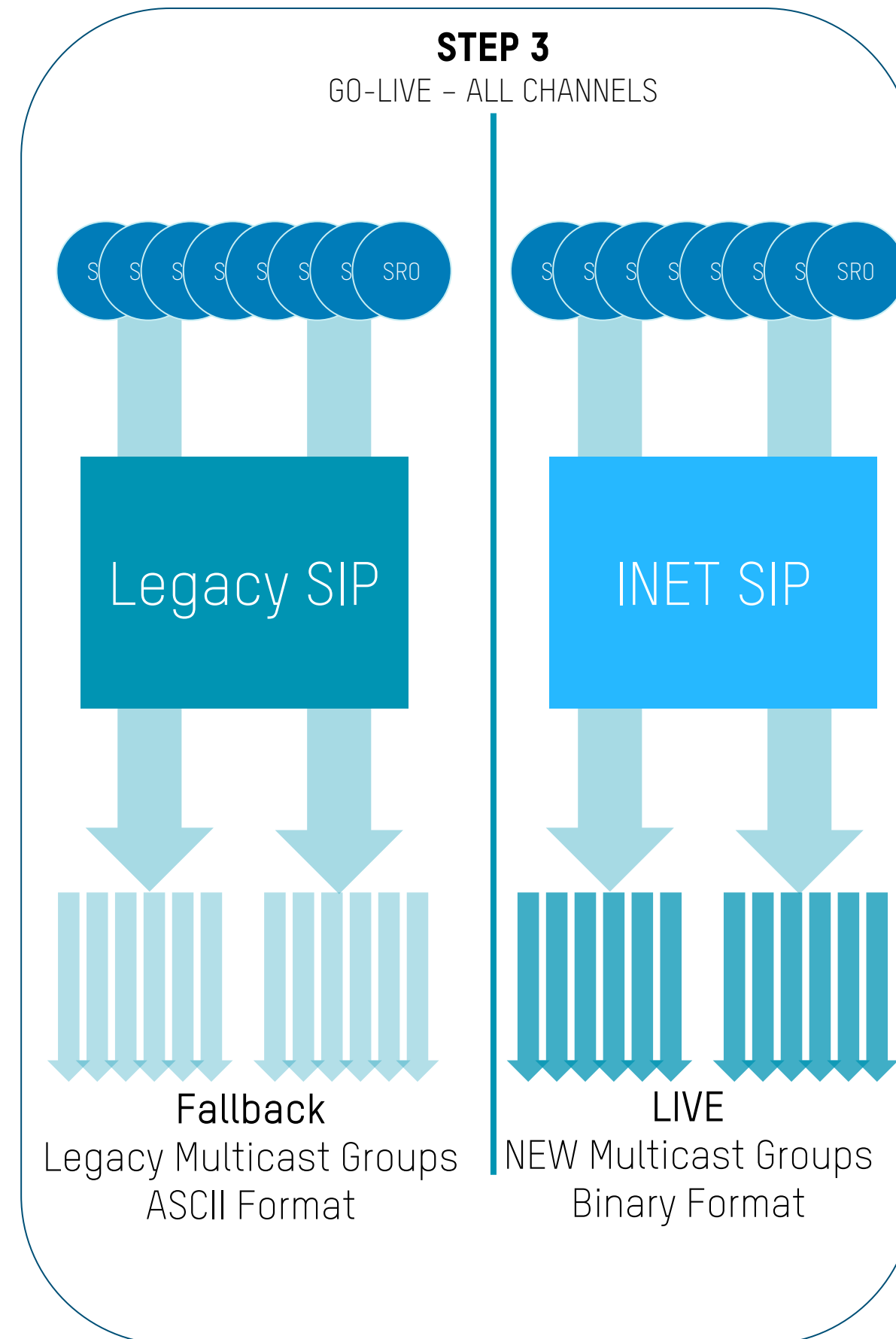
### Prerequisites:

- Successful parallel comparison test
- Successful connectivity and functional tests performed by participant testing in NTF and weekend prod tests

# MIGRATION STRATEGY

**OCT 10-22: GO-LIVE ALL CHANNELS**

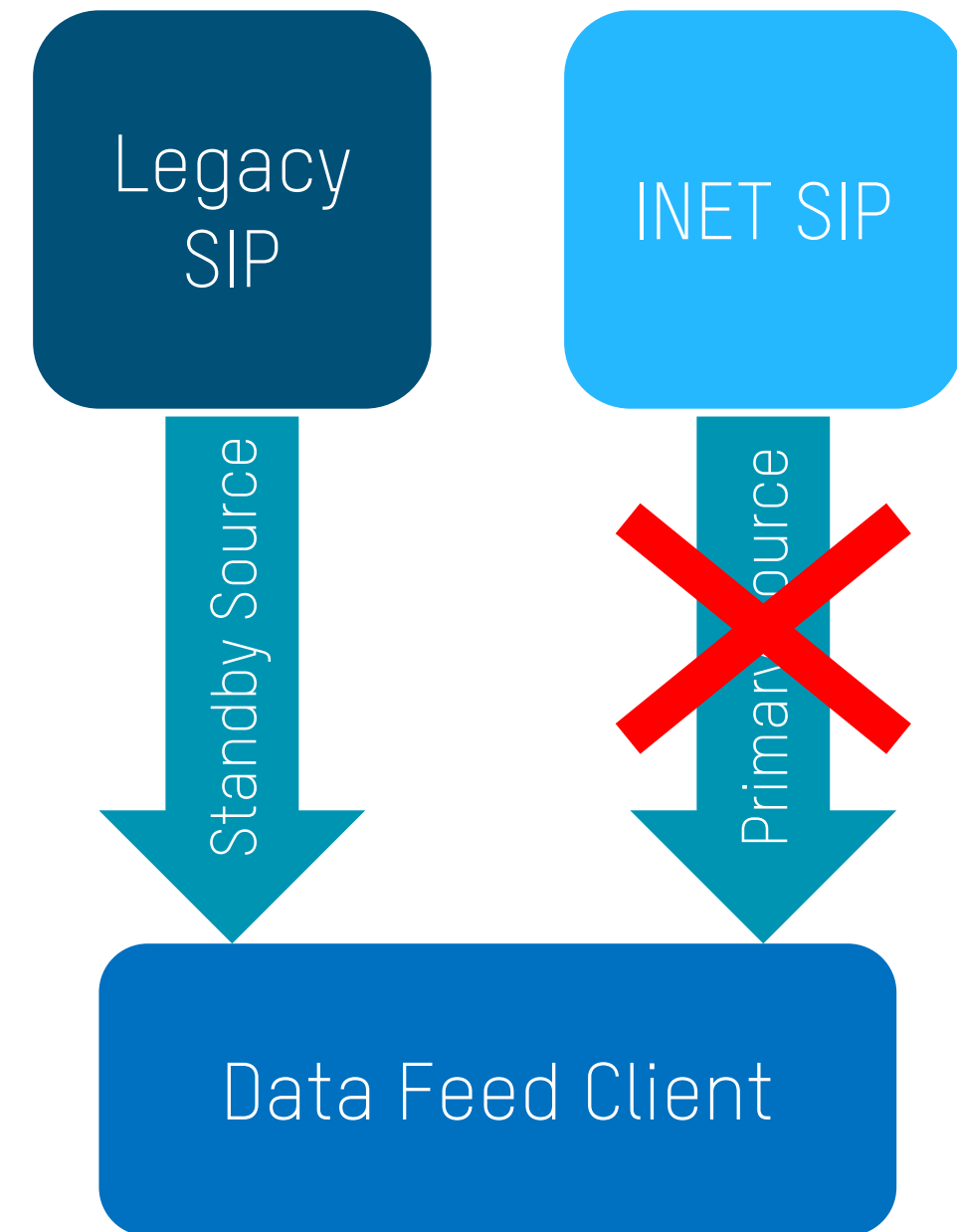
- All channels live on new multicast groups and binary format
- Legacy data feeds still disseminating for Fallback
- Completes migration



# MIGRATION STRATEGY

## FALLBACK OVERVIEW

- In the event that a failure can not be resolved on the new system we have a plan for fallback to the legacy system.
  - Fallback not required for steps 1 & 2.
  - In Step 3, fallback all Quote and Trade channels

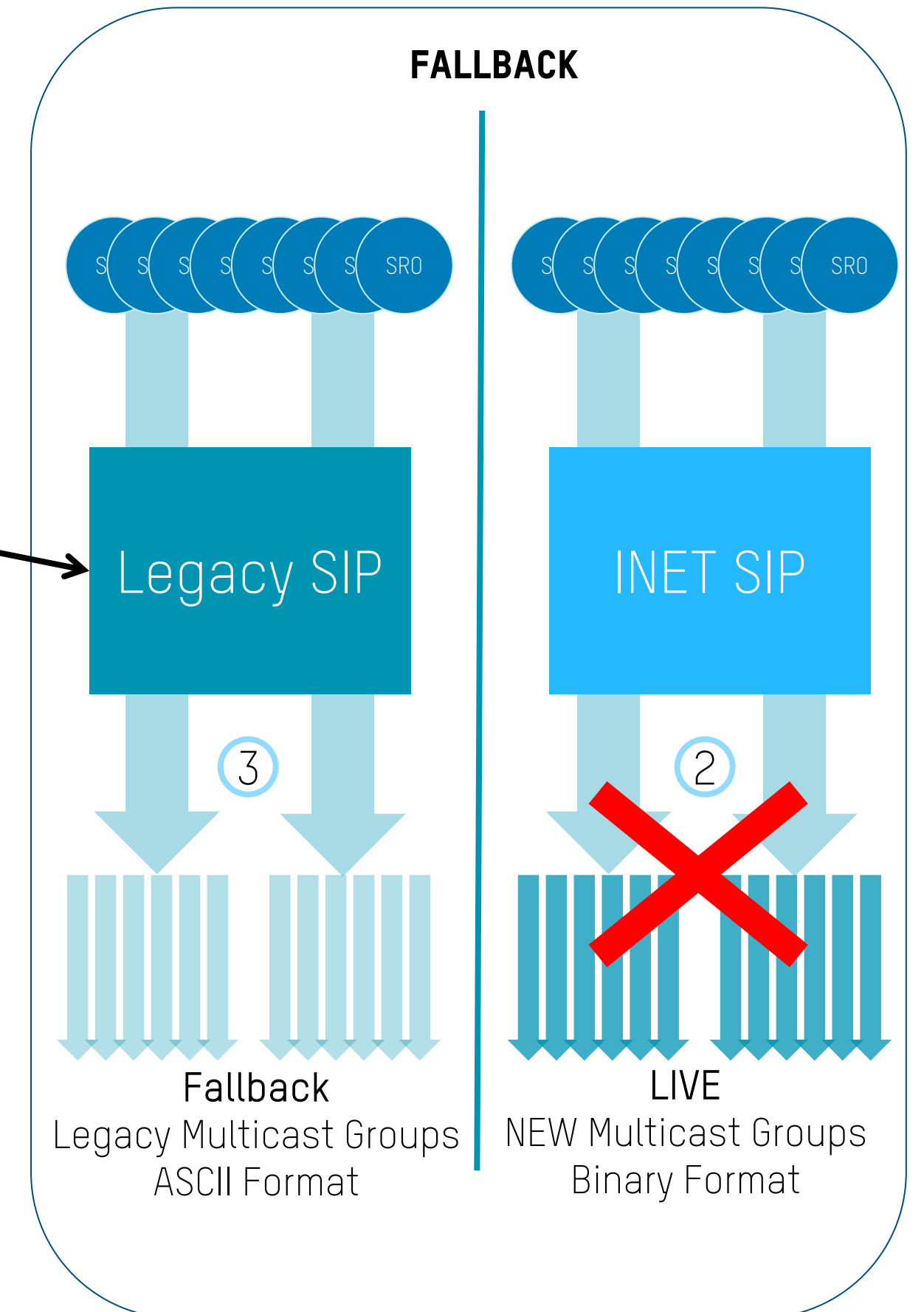
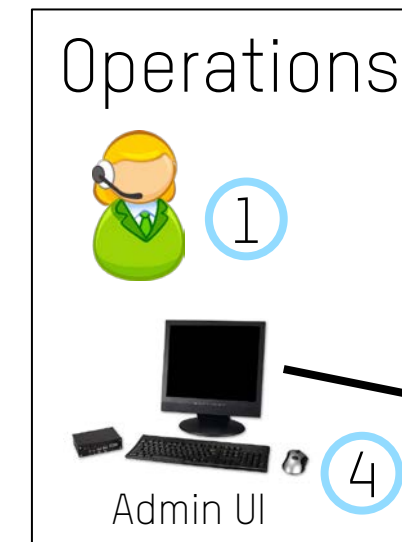


# MIGRATION STRATEGY

## FALLBACK PROCEDURE

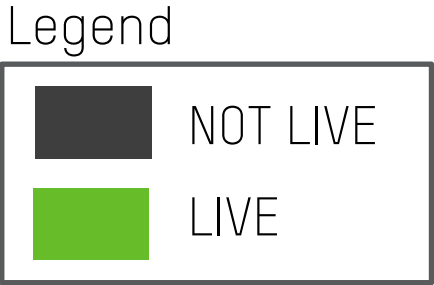
### Fallback procedure:

1. Issue statement to Fallback to legacy feeds. Inform participants we will be performing quote wipeouts for each symbol within the channel(s) being failed back. This will ensure fresh quotes will be disseminated, even for thinly traded stocks.
  2. Shutdown INET SIP dissemination
  3. Increment outbound sequence numbers +100k on quote and trade feeds, to avoid confusion.
  4. Perform quote wipeout using the Admin UI.
- Participants continue submitting quotes and trades throughout. No Fallback is required, as connections have already been made.
  - Trades which were not disseminated will be retransmitted after 4PM. In addition, a flat file of all trades will be provided EOD.
  - If any trades data was disseminated incorrectly or corrupt, AS-OF corrections will be sent.
  - LULD bands are published every 30 seconds, correcting the case where any LULD bands were not disseminated, or were corrupt.



# MIGRATION STRATEGY

## DR SITE AVAILABILITY



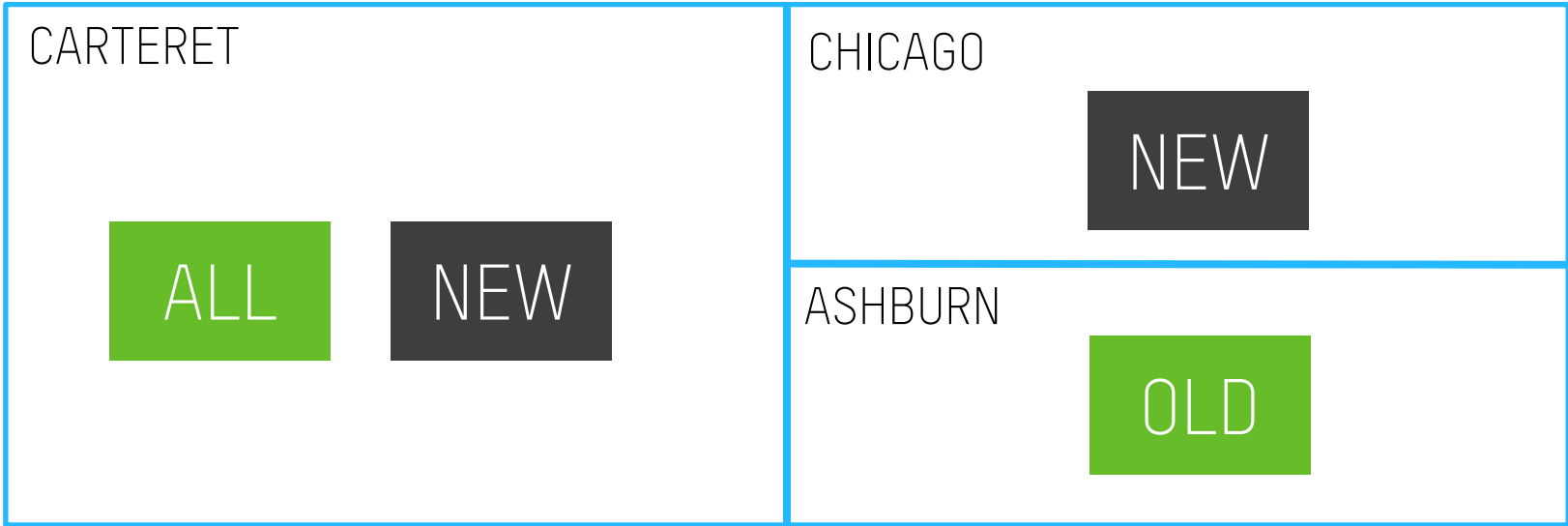
### STEP 1&2 PARALLEL SYSTEMS

- DR and Failover will remain as they today with no changes.
- Legacy SIP system will only be used for production purposes

### STEP 3 Go-Live: All Channels

- DR and Failover will now be on the NEW system.
- The NEW system will only be used for production purposes

### STEP 1&2 PARALLEL SYSTEMS



### STEP 3 Go-Live: All Channels

