

# NFR-2007 Ariba Event Management Orchestration Framework

<b>ID</b>	NFR-2007
<b>Name</b>	Ariba Event Management Orchestration Framework
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<b>Status</b>	Approved

## Summary

The integration solution is designed to solve a coordination and rate-limit management problem between Ariba and Keelvar APIs used in Sourcing Processes.

During the implementation of interfaces (see below) that require orchestration of the APIs between the two systems, it was discovered that strictly imposed rate-limits in Ariba APIs primarily, and to a lesser extent Keelvar Intake and Export APIs, are reached, causing interfaces to fail.

To address this, an Integration Orchestration Solution is introduced using available tools in SAP CPI. The major aspects of the solution are:

1. Use of JMS Queues, where required, shared across interfaces using the mentioned APIs
2. Use of singleton processing via Router IFlows that process messages sequentially and synchronously from each JMS Queue
3. Use of dedicated "Connectors" to Ariba and Keelvar APIs that are rate-limit aware and pause if limits are reached.

Overall, this solution provides a robust, controlled, and extensible foundation for managing multiple API-based integrations between Ariba and Keelvar, ensuring operational stability and compliance with API usage policies in Ariba and Keelvar. Furthermore, this solution can be extended if and when further integrations need to be implemented that utilise Ariba and Keelvar APIs, in addition to the four interfaces that currently (as of 09 April 2026) utilise this:

ID	Description
<a href="#">ERP-108</a>	Synchronisation of Sourcing Events created and updated in Ariba to Keelvar
<a href="#">ERP-137</a>	Synchronisation of Award Bids and Bid Sheets from Keelvar to Ariba
<a href="#">ERP-138</a>	Notification of Keelvar Event Status changes to Ariba
<a href="#">ERP-224</a>	Synchronisation of Suppliers updated in Ariba to Keelvar

## Description

Ariba APIs contain both intake and export endpoints supporting the Ariba Strategic Sourcing Platform to read, create and update Sourcing events, Scenarios, Awards and Suppliers.

Three Ariba APIs are part of this solution - Event Management API, Master Data Retrieval API for Sourcing, and Surrogate Bidding API. There is no documented rate-limit for Surrogate Bidding API; however, Event Management API and Master Data Retrieval API for Sourcing requests are rate-limit controlled as shown below:

- Event Management API: Enables Sourcing synchronisation with Keelvar

Time limits	Number of Requests
Per second	5
Per minute	80
Per Hour	3500

- Master Data Retrieval API for Sourcing: Enables Supplier Data synchronisation with Keelvar

Time limits	Number of Requests
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Per second	10
Per minute	40
Per Hour	200
Per Day	1000

Three Keelvar APIs are also used in these integrations, each with its own rate-limits:

- Intake APIs: Enables reading, creation and updating of Sourcing Events in Keelvar. In addition, APIs also contain services to check the Event Processing background job status.

API	Burst	Sustained
Sourcing Events	120 per hour	500 per day
Process Job Status	30 per minute	600 per hour

- Export APIs: Enables reading of Sourcing Events, Bids and Awards.

API	Burst	Sustained
Awards	60 per minute	43,200 per day
Bids	60 per minute	43,200 per day
Events	60 per minute	43,200 per day

- Supplier Management APIs

API	Burst	Sustained
Suppliers	30 per minute	600 per hour
Supplier Changes ( Retrieve )	30 per minute	600 per hour
Supplier Changes ( Update )	60 per hour	500 per day

### Keelvar Webhook

In addition, Keelvar provides a Webhook management API which is utilised in the Event Management Orchestration between Ariba and Keelvar. However, this API does not have a published rate-limit control and is described in [NFR-2006](#).

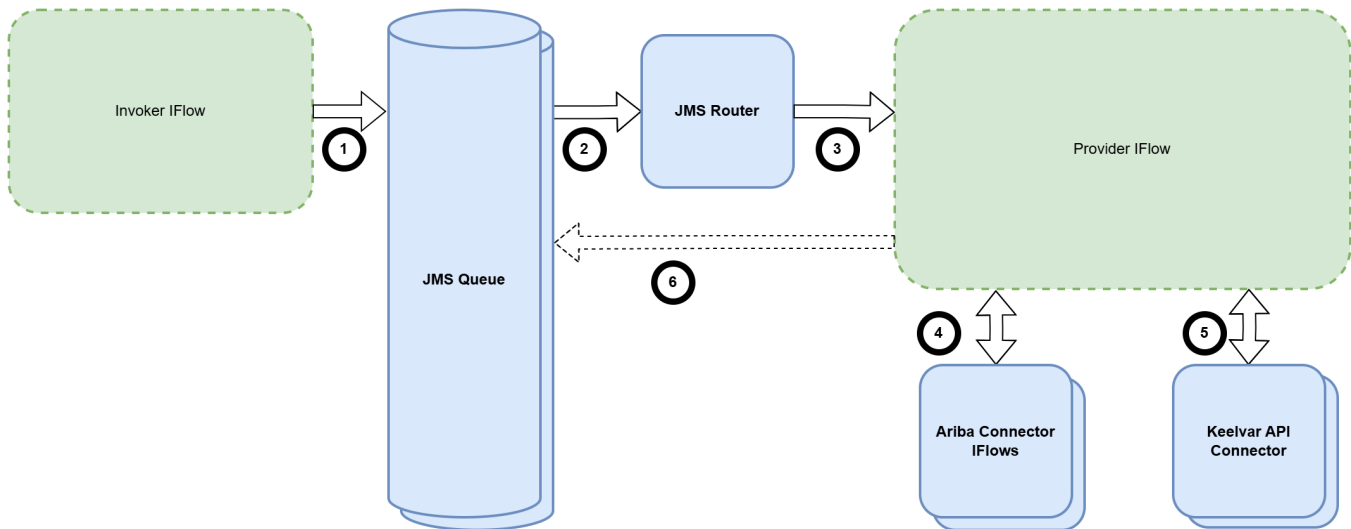
To manage the constraint enforced by the rate-limits, this framework enables the orchestration of the APIs between the two systems, avoiding and recovering from rate-limiting exceptions as well as handling exceptions such as data errors and service unavailability.

The following guiding principles need to be applied in the IFlows pertaining to the integration:

- All requests to APIs from IFlows will use Request-Reply objects - this enables the ability to handle Exceptions by logging the response message bodies, return codes etc.
- The process will be broken up into small, asynchronous calls executed sequentially. This allows the integration to re-process only failed API calls and, once successful, hands over to the next IFlow seamlessly
- The IFlows will be designed in such a way as to reduce the number of API calls, ideally to contain only one API call for each system. Multiple APIs will be orchestrated when strictly necessary, since this increases the chances of reaching the rate-limit during processing of subsequent messages from the JMS Queue.
- The IFlows will be designed so that re-processing via the JMS Queue will not affect the outcome expected.
- The IFlows will only use the Ariba and Keelvar Connector IFlows to access the APIs. This ensures that the API calls are sequential and each call is completed before the next occurs
- The IFlows will handle and log the exceptions and raise a new exception to push the message back to the JMS Queue. This ensures that error notification is captured in CPI.
- The sequence of the IFlows is managed via ProcessDirect endpoints to allow the Router to identify the Processing IFlow once it is pushed into the JMS Queue

## Solution Overview

### Process Flow



Step	Function
1	Invoker IFlow initiates the processing. After defining the parameters (headers) necessary, including the ProcessDirect path for processing at Provider IFlow, the message is passed to the JMS Queue. Ideally, this IFlow will not contain any calls to Ariba or Keelvar APIs.
2	The JMS Sender Adapter reads the messages and processes them synchronously.
3	Based on the ProcessDirect path defined in the message parameters, the Router IFlow forwards the message directly to the Provider IFlow.
4	The Provider IFlow executes calls to Ariba APIs as required, using a dedicated Connector IFlow. This Provider IFlow sets the parameters required by the Connector to call the API
5	The Provider IFlow executes any API calls to Keelvar, using the Keelvar Connector IFlow. This Provider IFlow sets the parameters required by the Connector to call the API.
6	Optionally, the Provider IFlow triggers additional messages to the JMS Queue.

## Key Components of the JMS Solution

Component	Artefact Name	Description
JMS Sourcing Queue	<b>aribaEventMgtQueue</b>	Central component for Event and Award Scenarios.
JMS Master Data Queue	<b>aribaMasterDataQueue</b>	Central component for Supplier Synchronisation Scenarios.
JMS Events Router IFlow	<b>JMS_Events_Router</b>	The singleton IFlow that directly reads from the JMS Sourcing Queue. This is single threaded, controlled via standard JMS Sender Configuration.
JMS Master Data Router IFlow	<b>JMS_MasterData_Router</b>	The singleton IFlow that directly reads from the JMS Master Data Queue. This is single threaded, controlled via standard JMS Sender Configuration.
Ariba Event Management API Connector	<b>Ariba_Event_Management_API_Connector</b>	Handles all API requests to Ariba Event Management API. Errors are logged but also returned to the calling IFlow.
Ariba Surrogate Bidding API Connector	<b>Ariba_Surrogate_Bidding_API_Connector</b>	Handles all API requests to Ariba Surrogate Bidding API. Errors are logged but also returned to the calling IFlow.
Ariba Master Data API Connector	<b>Ariba_Master_Data_API_Connector</b>	Handles all API requests to Ariba Master Data Retrieval API for Sourcing. Errors are logged but also returned to the calling IFlow
Keelvar Events API Connector	<b>Keelvar_Connector</b>	Handles all API requests to Keelvar Intake and Export APIs. Errors are logged but also returned to the calling IFlow
Keelvar Supplier API Connector	<b>Keelvar_Supplier_API_Connector</b>	Handles all API requests to Keelvar Supplier API. Errors are logged but also returned to the calling IFlow

# Technical Details

## Invoker IFlow Configurations

IFlows that write entries into the JMS Queues need to provide the following parameters

Object	Value	Description
Header Value	jmsProcessDirectPath	The ProcessDirect path of the Provider IFlow. Externalised field
Queue Name in JMS Receiver Adapter Configuration	aribaEventMgtQueue	Name of the JMS Events Queue. Externalisable field
	aribaMasterDataQueue	Name of the JMS Supplier Queue. Externalisable field

All IFlows that forward the processing to JMS Queue should have the following configuration settings in the JMS Receiver Adapter

Object	Value	Description
Access Type	Non-Exclusive	Each JMS Queue entry will process independently of each other due to the Design Principles applied
Retention Threshold for Alerting	2 days	The number of days to hold the message in the queue to raise a Stale message alert. Default value of 2 days. In this solution, this has no relevance as the messages are pushed to DLQ after the defined number of retries
Expiration Period	30 days	The period a message can be fetched and reprocessed from the queue. Default value of 30 days is used. In this solution, the parameter has no relevance as the messages are pushed to DLQ after the defined number of retries.

## JMS Routers

### Externalised Parameters

Object	Value JMS Event Router	Value JMS Master Data Router	Description
Sender Queue Name	aribaEventMgtQueue	aribaMasterDataQueue	The source JMS Queue to retrieve messages
Maximum Retries Allowed	5	5	The messages are gracefully pushed to a defined separate "Dead Letter Queue" (DLQ) used for error handling. No further processing will be done after the configured number of retries.
Dead Letter Queue for Error Handling	DLQ_aribaEventMgtQueue	DLQ_aribaMasterDataQueue	The name of the Dead Letter Queue that persists messages when the number of processing times reaches the maximum Retry Limit

### Sender Adapter JMS Configurations - Common to both JMS Routers

Object	Value	Description
Number of Concurrent Processes	1	Note: This value is important for singleton instance of the IFlow. This is vital for Serialised processing of the queue
Retry Interval	1 minute	The initial duration between the retry attempts
Exponential Backoff	Ticked (true)	The retry interval is doubled with each subsequent attempt
Maximum Retry Interval	60 minutes	The maximum allowed retry interval with exponential backoff. In this solution, this parameter is relevant if the number of allowed retries is increased to over 7

Dead Letter Queue	Ticked (true)	In case of out-of-memory issues by the worker node, the messages are moved to a separate queue. If needed, the messages can be unlocked for reprocessing.  Note: this Dead Letter Queue is the default JMS Sender behaviour.
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## Receiver Adapter JMS Configuration - For Dead Letter Queue

Object	Value	Description
Access Type	Non-Exclusive	Since messages are not automatically reprocessed from this queue, this value is not relevant for the solution
Retention Threshold for Alerting	2 days	The number of days to hold the message in the queue to raise a Stale message alert. Default value of 2 days. An alert will be raised if the message is not removed within this period.
Expiration Period	30 days	The period a message can be fetched and reprocessed from the queue. Default value of 30 days is used.
Compress Stored Messages	Ticked (true)	Messages are compressed to reduce memory usage, although the messages are atomic in nature.
Encrypt Stored Messages	Ticked (true)	Messages are encrypted in Datastore.
Transfer Exchange Properties	Ticked	The message properties are kept for error handling processes

## Provider IFlows Configuration Requirements

- Provider IFlows Sender ProcessDirect Adapter path must be defined as the header parameter **jmsProcessDirectPath** in the Invoker IFlow.
- Header and Property definitions required for Ariba and Keelvar APIs must be defined as described below
- If the Provider IFlow injects any messages to the JMSQueue, then the parameters defined in the Invoker IFlow must also be defined

## Ariba Event Management API Connector IFlow

The Ariba Connector constructs the URL and the Authentication Parameters based on values passed from the calling IFlow and configurable parameters in the Connector. The construct is shown below:

### Ariba Event Management URL

Construction of the URL with an example:

METHOD	https://	<Ariba Base URL>	<Ariba URL Path>	?	<Connector Defined Query Parameters>	&	<Received Query Parameters>
GET	https://	<a href="https://eu.openapi.ariba.com/api/sourcing-events/v2/prod">eu.openapi.ariba.com/api/sourcing-events/v2/prod</a>	/events/identifiers	?	realm=7452####-SS-T&user=R_XXXXXXXX&passwordAdapter=XXX XXXXXX	&	\$filter=(createDateFrom gt 1761418273 and createDateTo=1761464729)

An IFlow calling the Adapter must provide the following Header Parameters to construct the API endpoint to Ariba

Object	Header Name	Description
HTTP Method	aribaMethod	The HTTP Method for the API
Ariba Url Path	aribaUrlPath	The Path (i.e. the endpoint) that is combined with the Base URL to construct the API endpoint
Query Parameters	aribaUrlQuery	The additional Query Parameters that must be combined with the the common query parameters defined in the Adapter

## Additional Parameters

Object	Description	Value Dev	Value Test	Value Prod
Ariba Base URL	Base URL to Ariba Event Management APIs.	<a href="https://eu.openapi.ariba.com/api/sourcing-event/v2/prod">eu.openapi.ariba.com/api/sourcing-event/v2/prod</a>		
Credential Name	OAuth Credential Name for Ariba Endpoint in SAP CPI	OAuth_Ariba_Sourcing_EventMgmtAPI	OAuth_Ariba_Sourcing_EventMgmtAPI	OAuth_Ariba_Sourcing_EventMgmtAPI

Ariba API Delay	The Delay to be implemented when the remaining API count is zero	2 seconds	2 seconds	2 seconds
Ariba Password Adapter	Password Adapter defined for Technical Users in Ariba	ThirdPartyUser	ThirdPartyUser	ThirdPartyUser
Ariba Realm	Ariba tenant ID	745255310-SS-T	744368466-T	744368466
Ariba User	Technical User for SAP CPI to extract events	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN
Ariba API Key	Security Credential Name containing the API Key for Ariba Event Management	APIKEY_AribaEventManager_CPI_Dev	APIKEY_AribaEventManager_CPI_QA	APIKEY_AribaEventManager_CPI_Prod

## Ariba Surrogate Bidding API Connector IFlow

Similar to Event Management API Connector, the Ariba Surrogate Bidding API Connector also constructs the URL and the Authentication Parameters based on values passed from the calling IFlow and configurable parameters in the Connector. The construct is shown below:

### Ariba Surrogate Bidding URL

Construction of the URL with an example:

METHOD	https://	<Ariba Base URL>	<Ariba URL Path>	?	<Connector Defined Query Parameters>
POST	https://	<a href="https://eu.openapi.ariba.com/api/sourcing-event-bid/v1/prod">eu.openapi.ariba.com/api/sourcing-event-bid/v1/prod</a>	/jobs	?	realm=7452####-SS-T&user=R_XXXXXXX&passwordAdapter=XXXXXXXX

An IFlow calling the Adapter must provide the following Header Parameters to construct the API endpoint to Ariba

Object	Header Name	Description
HTTP Method	aribaMethod	The HTTP Method for the API
Ariba Url Path	aribaUrlPath	The Path (i.e. the endpoint) that is combined with the Base URL to construct the API endpoint

### Additional Parameters

Object	Description	Value Dev & Test	Value Test	Value Prod
Ariba Base URL	Base URL to Ariba Event Management APIs.	<a href="https://eu.openapi.ariba.com/api/sourcing-event/v2/prod">eu.openapi.ariba.com/api/sourcing-event/v2/prod</a>		
Credential Name	OAuth Credential Name for Ariba Endpoint in SAP CPI	OAuth_Ariba_Sourcing_SurrogateBiddingAPI	OAuth_Ariba_Sourcing_SurrogateBiddingAPI	OAuth_Ariba_Sourcing_SurrogateBiddingAPI
Ariba API Delay	The Delay to be implemented when the remaining API count is zero	2 seconds	2 seconds	2 seconds
Ariba Password Adapter	Password Adapter defined for Technical Users in Ariba	ThirdPartyUser	ThirdPartyUser	ThirdPartyUser
Ariba Realm	Ariba tenant ID	745255310-SS-T	744368466-T	744368466
Ariba User	Technical User for SAP CPI to extract events	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN
Ariba API Key	Security Credential Name containing the API Key for Ariba Event Management	APIKEY_AribaSurrogateBidding_CPI_Dev	APIKEY_AribaSurrogateBidding_CPI_QA	APIKEY_AribaSurrogateBidding_CPI_Prod

## Ariba Master Data API Connector IFlow

Similar to Event Management API Connector, the Ariba Master Data API Connector also constructs the URL and the Authentication Parameters based on values passed from the calling IFlow and configurable parameters in the Connector. The construct is shown below:

### Ariba Master Data API for Sourcing URL

Construction of the URL with an example:

METHOD	https://	<Ariba Base URL>	<Ariba URL Path>	?	<Connector Defined Query Parameters>	&	<Received Query Parameters>
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GET	https://	<a href="https://eu.openapi.ariba.com/api/sourcing-mds-search/v1/prod">eu.openapi.ariba.com/api/sourcing-mds-search/v1/prod</a>	/entities/organizations	?	realm=7452####-SS-T&user=R_XXXXXXXXX&passwordAdapter=XXXXXXXXX	\$top=500&\$filter=(TimeUpdated gt '2026-04-15 17:12:25.000')&\$includeInactive=true
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An IFlow calling the Adapter must provide the following Header Parameters to construct the API endpoint to Ariba

Object	Header Name	Description
HTTP Method	aribaMethod	The HTTP Method for the API
Ariba Url Path	aribaUrlPath	The Path (i.e. the endpoint) that is combined with the Base URL to construct the API endpoint
Query Parameters	aribaUrlQuery	The additional Query Parameters that must be combined with the the Common Query parameters defined in the Adapter

### Additional Parameters

Object	Description	Value Dev & Test	Value Test	Value Prod
Ariba Base URL	Base URL to Ariba Event Management APIs.	<a href="https://eu.openapi.ariba.com/api/sourcing-event/v2/prod">eu.openapi.ariba.com/api/sourcing-event/v2/prod</a>		
Credential Name	OAuth Credential Name for Ariba Endpoint in SAP CPI	OAuth_Ariba_Sourcing_MasterDataAPI	OAuth_Ariba_Sourcing_MasterDataAPI	OAuth_Ariba_Sourcing_MasterDataAPI
Ariba API Delay	The Delay to be implemented when the remaining API count is zero	2 seconds	2 seconds	2 seconds
Ariba Password Adapter	Password Adapter defined for Technical Users in Ariba	ThirdPartyUser	ThirdPartyUser	ThirdPartyUser
Ariba Realm	Ariba tenant ID	745255310-SS-T	744368466-T	744368466
Ariba User	Technical User for SAP CPI to extract events	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN	R_BTP_ARB_ADMIN
Ariba API Key	Security Credential Name containing the API Key for Ariba Event Management	APIKEY_AribaMasterData_CPI_Dev	APIKEY_AribaMasterData_CPI_QA	APIKEY_AribaMasterData_CPI_Prod

## Keelvar Event API Connector IFlow

### Keelvar URL

Similarly, the Keelvar Connector constructs the URL based on the values passed from the calling IFlow and configurable parameters in the Connector.

METHOD	https://	<Keelvar Base URL>	<Keelvar URL Path>	?	<Query Parameters>
GET	https://	<a href="https://test.keelvar.dev/api">test.keelvar.dev/api</a>	/feeds/awards	?	sourcing_event=\$event_uuid

An IFlow calling the Keelvar Connector must provide the following Header Parameters to construct the API endpoint to Keelvar

Object	Header Name	Description
HTTP Method	keelvarVerb	The HTTP Method for the API
Keelvar Url Path	keelvarPath	The Path (i.e. the endpoint) that is combined with the Base URL to construct the API endpoint
Query Parameters	keelvarQuery	The Query Parameters

### Additional Parameters

Object	Description	Value Dev & Test	Value Prod
Keelvar Host	Base URL for Keelvar API	test.keelvar.dev/api	my.keelvar.app/api
Keelvar API Key	Security Material in CPI containing the Keelvar API Key	KeelvarToken_Dev	KeelvarToken_Prod

## Keelvar Supplier API Connector IFlow

## Keelvar URL

Similarly, the Keelvar Connector constructs the URL based on the values passed from the calling IFlow and configurable parameters in the Connector.

METHOD	https://	<Keelvar Base URL>	<Keelvar URL Path>
GET	https://	<a href="https://test.keelvar.dev/api">test.keelvar.dev/api</a>	/manage/suppliers

An IFlow calling the Keelvar Connector must provide the following Header Parameters to construct the API endpoint to Keelvar

Object	Header Name	Description
HTTP Method	keelvarVerb	The HTTP Method for the API
Keelvar Url Path	keelvarPath	The Path (i.e. the endpoint) that is combined with the Base URL to construct the API endpoint
Query Parameters	keelvarQuery	The Query Parameters

## Additional Parameters

Object	Description	Value Dev & Test	Value Prod
Keelvar Host	Base URL for Keelvar API	test.keelvar.dev/api	my.keelvar.app/api
Keelvar API Key	Security Material in CPI containing the Keelvar API Key	KeelvarToken_Dev	KeelvarToken_Prod

## Error Handling & Retry Strategy

Scenario	Action
Retry Limit Reached	Pause for the configured duration until the rate-limits are reset
Permanent API Error (HTTP 400/401/404)	Provider IFlow logs the error in MPL and push back to the JMS Queue
JMS Retry Exhausted	Gracefully push the message to DLQ for analysis.

## Monitoring & Observability

Tool	Usage
<b>CPI Message Monitoring</b>	Track message status, errors, and retries.
<b>JMS Queue Monitor</b>	Check pending, in-flight, and DLQ messages.
<b>MPL Logs</b>	Track API call results and pause events.

## Future Enhancements

### Use API Header driven pause

For the current solution, based on the number of calls and the schedule, the configurable pause time limit provides adequate support for re-processing of messages. However, if further integrations are added to the package, further design analysis may be required to control the length of the pause

### Reprocessing from Dead Letter Queue (DLQ)

At the moment, the DLQ is only used as a placeholder for any messages that have failed the number of retries configured. Currently, no retry from DLQ is enabled, and this solution may be enhanced to provide the ability to reprocess the messages in the DLQ back to the JMS Queue.

## Change Log

Version	Published	Changed By	Comment
<b>CURRENT (v. 30)</b>	<b>Apr 21, 2026 04:10</b>	<b>EPASINGHE-ext, Kapila</b>	Added Status as Approved
v. 29	Apr 20, 2026 08:09	WENNINGER-ext, Sascha	
v. 28	Apr 15, 2026 13:21	EPASINGHE-ext, Kapila	
v. 27	Apr 15, 2026 13:16	EPASINGHE-ext, Kapila	
v. 26	Apr 15, 2026 12:30	EPASINGHE-ext, Kapila	
v. 25	Apr 15, 2026 11:32	EPASINGHE-ext, Kapila	
v. 24	Apr 15, 2026 11:14	EPASINGHE-ext, Kapila	
v. 23	Apr 15, 2026 07:59	EPASINGHE-ext, Kapila	
v. 22	Apr 10, 2026 09:15	EPASINGHE-ext, Kapila	
v. 21	Apr 09, 2026 09:16	EPASINGHE-ext, Kapila	

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