Nasdaq Fund Network Data Service (NFNDS) via Nasdaq Data Link Streaming API

Updated: May 3, 2024

Product Overview

Operated by Nasdaq Information, LLC, the Nasdaq Fund Network (NFN) facilitates the collection and dissemination of price and earnings information for U.S. investment companies. Nasdaq disseminates data from the NFN system on the Nasdaq Fund Network Data Service. Specifically, Nasdaq disseminates the following data for NFN securities via NFN Data Service:

- For Mutual Funds, Annuities, Structured Products, Alternative Investment Products, NextShares, Hedge Funds, Collective Investment Trusts (CITs), Managed Accounts, Separate Accounts and Demand deposit accounts, NFN Data Service carries daily net asset values (NAVs) and offer/market prices for those instruments registered with NFN. NFN Data Service also supports periodic reporting of dividend, stock dividends and capital gains data for NFN instruments.
- For Money Market Funds, NFN Data Service carries average maturity and 7-day yield data for those instruments registered with NFN.
- For Unit Investment Trusts (UITs), NFN Data Service provides offer price and NAV data as well as other valuation information for debt and equity instruments registered with NFN.

Publisher

Nasdaq Global Information Services equips investors with the tools to make informed decisions by providing innovative realtime and historical analytic products and intelligent solutions designed to tap new data sets and meet new industry challenges. Nasdaq Data Link via Quandl eliminates infrastructure and resource obstacles from collecting and storing large data sets, providing tools with industry adopted open standards to ingest and analyze market data and other financial information.

Delivery

Nasdaq Data Link provides a modern and efficient method of delivery for realtime exchange data and other financial information. Data is made available through a suite of APIs, allowing for effortless integration of data from disparate sources, and a dramatic reduction in time to market for customer-designed applications. The API is highly scalable, and robust enough to support the delivery of real-time exchange data.

This repository provides an SDK for developing applications to access the Nasdaq Data Link API. While the SDK is open source, connecting to the API does require credentials, which are provided by Nasdaq during an on-boarding process.

For more information please use the link- https://github.com/Nasdaq/CloudDataService

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Admin Daily Statistics

Nasdaq will use the following NFN Statistic message to relay the number of instruments reporting NAVs or other relevant valuation data points during the current session. The NFN statistics message will immediately follow the start of summary spin control event.

Category A – Type G

Field	Name	Туре	Description		
Message Category	MessageCategory	string	The message category for this table is Category "A"		
Message Type	MessageType	string	"G" Combined with Message Category "A" provides the messages in this table		
Session Identifier	SessionIdentifier	string	This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session		
Retransmission Requester	RetransmissionRequ ester	string	(8:00 a.m. – 8:00 p.m., ET)The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All 		
Message Sequence Number	MessageSequenceN umber	string	Vendor IDby-vendor basis.The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages:• The Start of Day (Category C – Type I) message is 		

			 This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 		
Originator Id	OriginatorId	string	incremented. The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows: Code Description E NFN Data Service Data Feed Handler F Nasdaq Fund Network (NFN) host system		
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"		
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>		
Mutual Fund News Media List	MutualFundMediaLi st	string	This field denotes the total number of open- and closed- end mutual funds currently registered with NFN for the news media list.		
Mutual Fund Supplemental List	MutualFundSupple mentalList	string	This field denotes the total number of open- and closed- end mutual funds currently registered with NFN for the supplemental list.		
Mutual Fund Reporting	MutualFundReportin g	string	This field denotes the total number of registered mutual funds that reported a NAV for the current entry day.		
Money Market Fund News Media List	MoneyMarketFund MediaList	string	This field denotes the total number of money market fund currently registered with NFN for the news media list.		
Money Market Fund Supplemental List	MoneyMarketFundS upplementalList	string	This field denotes the total number of money market func currently registered with NFN for the supplemental list.		
Money Market Fund Reporting	MoneyMarketFundR eporting	string	This field denotes the total number of registered money market funds that reported average maturity and 7-day yield for the current entry date.		
Debt UIT List	DebtUITList	string	This field denotes the total number of debt-focused UITs currently registered with NFN.		

Debt UIT Reporting	DebtUITReporting	string	This field denotes the total number of registered Debt UITs that reported redemption NAV for the current entry day.
Equity UIT Count	EquityUITList	string	This field denotes the total number of equity-focused UITs currently registered with NFN.
Equity UIT Reporting	EquityUITReporting	string	This field denotes the total number of registered Equity UITs that reported redemption NAV for the current entry day.
Structured Product List	StructuredProductLi st	string	This field denotes the total number of Structured Products currently registered with NFN.
Structured Product Reporting	StructuredProductR eporting	string	This field denotes the total number of Structured Products that reported a NAV for the current business day.
Annuity List	AnnuityList	string	This field denotes the total number of Annuities currently registered with NFN.
Annuity Reporting	AnnuityReporting	string	This field denotes the total number of registered Annuities that reported redemption NAV for the current entry day.
AIP List	AIPList	string	This field denotes the total number of Alternative Investment Products (AIPs) currently registered with NFN.
AIP Reporting	AIPReporting	string	This field denotes the total number of AIPs that reported a NAV for the current business day.
NextShares List	NextSharesList	string	This field denotes the total number of registered NextShares on the NFN system as of the start of the current business day.
NextShares Reporting	NextSharesReportin g	string	This field denotes the total number of registered NextShares that reported redemption NAV for the current entry day.
Collective Investment Trust List	CollectiveInvestmen tTrustList	string	This field denotes the total number of Collective Investment Trusts (CITs) currently registered with NFN.
Collective Investment Trust Reporting	CollectiveInvestmen tTrustReporting	string	This field denotes the total number of Collective Investment Trusts (CITs) that reported redemption NAV for the current entry day.
Managed Accounts List	ManagedAccountsLi st	string	This field denotes the total number of registered Managed Accounts on the NFN system as of the start of the current business day.
Managed Accounts Reporting	ManagedAccountsR eporting	string	This field denotes the total number of registered Managed Accounts that reported redemption NAV for the current entry day.

Separate Accounts List	SeparateAccountsLis t	string	This field denotes the total number of registered Separa Accounts on the NFN system as of the start of the curren business day.		
Separate Accounts Reporting	SeparateAccountsRe porting	string	This field denotes the total number of registered Separat Accounts that reported redemption NAV for the current entry day.		
Hedge Fund List	HedgeFundList	string	This field denotes the total number of registered Hedge Funds on the NFN system as of the start of the current business day.		
Hedge Fund Reporting	HedgeFundReportin g	string	This field denotes the total number of registered Hedge Funds that reported redemption NAV for the current entry day.		
Demand Deposit Account List	DemandDepositAcco untList	string	This field denotes the total number of Demand Deposit Accounts currently registered with NFN.		
Demand Deposit Account Reporting	DemandDepositAcco untReporting	string	This field denotes the total number of Demand Deposit Accounts that reported redemption NAV for the current entry day.		
Data Service Spin Count	DataServiceSpinCou nt	string	This field indicates the NFN Data Service spin instance associated with the NFN statistics message.		
				ort four NFN Data Service summary spins:	
			Code	Value	
			1	8:05 a.m., ET	
			2	6:05 p.m., ET	
			3	6:25 p.m., ET	
			4	6:45 p.m., ET	
			5	8:00 p.m., ET (Final)	

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        {
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         "type": "string"
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},
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},
{
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General Administrative Messages

The General Administrative Message (Category A – Type A) is a free form text message used to notify NFN Data Service subscribers of special situations, operational or regulatory conditions. The length of the Administrative Message is variable but cannot exceed a maximum of 300 characters. Nasdaq will generate the General Administrative Message format on an as-needed basis.

Category A – Type A

Field	Name	Туре	Description		
Message Category	MessageCategory	string	The message category for this table is Category "A"		
Message Type	MessageType	string	"A" Combined with Message Category "A" provides the messages in this table		
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)		
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All 		
Message Sequence Number	MessageSequenceN umber	string			

			 Message Sequence Number counter is to be reset. This number is either zero or a number greater that the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 		
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system		
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"		
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>		
System Alert	SystemAlert	string	Since the General Administrative Message is a flexible format message, it is up to the individual data feed subscriber to decide how to process these messages. Firms may wish to code their systems to generate a systems alert for data operations as manual processing of the General Administrative message may be required.		

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"type": "string"

},

{

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"type": "string"

},

{

"name": "SessionIdentifier",
```

```
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         },
         {
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                  "type": "string"
         },
         {
                  "name": "MessageSequenceNumber",
                  "type": "string"
         },
         {
                  "name": "OriginatorId",
                  "type": "string"
         },
         {
                  "name": "MessageDateTime",
                  "type": "string"
         },
         {
                  "name": "TestSymbolFlag",
                  "type": "string"
         },
         {
                  "name": "SystemAlert",
                  "type": "string"
         }
]
```

}

```
{
    "AdminGeneral": {
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        "MessageType": "A",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "0",
        "MessageSequenceNumber": "00000000",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.5874640-04:00",
        "TestSymbolFlag": " ",
        "SystemAlert": "Lorem ipsum dolor sit amet, consectetur adip
        plique. Tortor at rice withorra adipiecing at in. In currus turnis mace
        plique. Tortor at rice withorra.
```

```
"SystemAlert": "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna
aliqua. Tortor at risus viverra adipiscing at in. In cursus turpis massa tincidunt."
}
```

```
}
```

NFN Symbol Directory

Nasdaq will use the following message format to relay basic instrument information, such as the Symbol, Instrument Name, Instrument Code, Instrument Registration and Expected Pricing Frequency, for NFN instruments. For closed-end mutual funds and NextShares exchange traded funds, the NFN directory also relays the primary listing Market Identification Code (MIC) and trading symbol for the instrument if needed for market data mapping purposed. The NFN Directory messages are disseminated as part of the NFN Data Service pre-opening process.

Category A – Type K

Field	Name	Туре	Description		
Message Category	MessageCategory	string	The message category for this table is Category "A".		
Message Type	MessageType	string	"K" Combined with Message Category "A" provides the messages in this table.		
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow.		
			The current allowable values are as follows: Code Description		
			A Session Independent P NFN - U.S. Session		
Detrementioniem	Detrementionie n De su	atuin a	(8:00 a.m. – 8:00 p.m., ET)		
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.		
			All NFN Data Service recipients must code their systems		
			to process the following values:		
			Code Description		
			O (space) Original Transmission to All		
			R (space) Retransmission to All		
			SpecificTo be assigned on vendor-Vendor IDby-vendor basis.		
Message Sequence Number	MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle this number will be set to 0000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one will the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L message Sequence Number counter is to be reset This number is either zero or a number greater th the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 		

			 The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 		
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised or one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows The allowable values are as follows: Code Description E NFN Data Service Data Feed Handler F Nasdaq Fund Network (NFN) host system		
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"		
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Servicedata element to follow is related to a live or test symbol.The allowable values are:Code DescriptionTNFN Test Symbol< space>NFN Live / Production Symbol		
Instrument Type Tier	InstrumentTypeTier	string	This field indicates the level of participation of the instrument in NFN. The level of participation is based on minimum eligibility requirements established by NFN. The associated values are as follows:CodeValueMFMutual Fund – News Media ListMSMutual Fund – Supplemental List\$\$Money Market Fund – News Media List\$\$Money Market Fund – Supplemental ListUSUnit Investment Trust (UIT)SPStructured ProductANAnnuityAPAlternative Investment Product (AIP)EMNextShares Exchange Traded Managed FundCTCollective Investment TrustMAManaged AccountsSASeparate AccountsHFHedge FundDDDemand Deposit Accounts		
Instrument Code	InstrumentCode	string	This field indicates the general investment strategy of the NFN instrument. Please note that this field is impacted by the NFN field name / value standardization effort. <space> denotes one ASCII space character. The allowable values will be as follows: Code Value Mutual Funds O <space> <space> <space> Mutual Funds O <space> <space> Mutual Fund – Open End C <space> Mutual Fund – Closed <space> End</space></space></space></space></space></space></space></space>		

Y <space> <space> <space></space></space></space>	Interval Fund
Z <space> <space> <space></space></space></space>	Business Development Company (BDC)
Money Market Funds	
A <space> <space> <space></space></space></space>	Money Market Fund – General Purpose
G <space> <space> <space></space></space></space>	Money Market Fund – Government Securities
X <space> <space> <space></space></space></space>	Money Market Fund – Tax Exempt Securities
Unit Investment Trusts (U	ITs)
D <space> <space> <space></space></space></space>	UIT – Debt Securities
E <space> <space> <space></space></space></space>	UIT – Equity Securities
Annuities	
M <space> <space> <space></space></space></space>	Annuity – Variable
N <space> <space> <space></space></space></space>	Annuity – Equity Indexed
Alternative Investment P	oducts (AIPs)
F <space> <space> <space></space></space></space>	AIP - Fund of Hedge Funds
B <space> <space></space></space>	AIP - Managed Future Funds
<space> K <space> <space></space></space></space>	AIP - Commodity Pool
<space></space>	Funds
l <space> <space> <space></space></space></space>	AIP - Non-Traded REITs
J <space> <space> <space></space></space></space>	AIP - Non-Traditional Hedge Funds (Registered)
P <space> <space> <space></space></space></space>	AIP - Private Equity Offerings
Structured Products / Stru	ictured Notes
R <space> <space> <space></space></space></space>	Structured Product - Growth
S <space> <space> <space></space></space></space>	Structured Product – Income
T <space> <space> <space></space></space></space>	Structured Product – Digital
U <space> <space> <space></space></space></space>	Structured Product – Growth and Income
V <space> <space> <space></space></space></space>	Structured Product – Commodity / FX
W <space> <space> <space></space></space></space>	Structured Product – Rates
L <space> <space> <space></space></space></space>	Structured Product – Other
NextShares Exchange Tra	dad Managad Eunds

			Q <space> <sp <space></space></sp </space>	ace>	NextShares		
			Hedge Fund				
			H <space> <sp< td=""><td>ace></td><td>Hedge Fund</td><td></td></sp<></space>	ace>	Hedge Fund		
			Collective Investment Trust				
			1 <space> <sp <space></space></sp </space>	ace>	Collective Investmen Trust	it	
			Managed Acc	ounts			
			2 <space> <sp <space></space></sp </space>	ace>	Managed Accounts - Separately Managed Accounts (SMA)		
			3 <space> <sp <space></space></sp </space>	ace>	Managed Accounts - Unified Managed Accounts (UMA)		
			Separate Acco	ounts			
			4 <space> <sp <space></space></sp </space>	ace>	Separate Accounts		
			Demand Depo	osit Accounts			
			5 <space> <sp <space></space></sp </space>	ace>	Demand Deposit Acc	count	
Symbol	Symbol	string	This field indica NFN to instrum		cker symbol as assigned	l by	
Pricing Frequency	PricingFrequency	string		ed to report p		-	
			D	Daily (De			
			W	Weekly			
			В	Bi-weekl			
			М	Monthly			
			Q	Quarter			
			S	Semi-An			
Instrument Name	InstrumentName	string	A	Annually	/		
	instrumentivanie	string			of the NFN instrument a vestment company.	as	
Exchange Code For Listed Instruments	ExchangeCodeForLis tedInstruments	string	Codes (MICs) fo	or the listing n pplicable. For	0383 Market Identificat narket center for a NFN the U.S. equity markets		
			Code	Value			
			XASE		MKT (pka NYSE Amex)		
			XNYS		k Stock Exchange (NYSE)	
			XNAS	The N	ASDAQ Stock Market		
			ARCX		NYSE Arca		
			BATS		BATS Exchange		
			IEXG		stors' Exchange, LLC		
			XXXX		nt Not Listed on Exchange		
			<space></space>	No Excha	ange Code Not Available	5	

Exchange Symbol For Listed Instrument	ExchangeSymbolFor ListedInstrument	string	This field indicates the exchange ticker for the NFN instrument from the primary listing market (if available).			
Currency	Currency	string				ne <u>ISO currency code</u> associated with d fields. Default value will be: ue US Dollars
Instrument Registration (New value as of 4/2/2024)	InstrumentRegistrati on	string	This field will denote the regulatory oversight boo which the NFN instrument is registered. The allow values will be:			
				Code	Val	ue
				S	-	. Securities and Exchange_ nmission (SEC)
				М		nicipal Securities Rulemaking Board GRB)
				С		. Commodity Futures Trading nmission (CFTC)
				Х		mption
				N	Not Age	Registered with U.S. Regulatory
				A	-	adian Securities Administration
				U	UCI	TS
				0	Oth	er
Model Portfolio Flag	ModelPortfolioFlag	string				at the Instrument is a Model Portfolio. e as follows:
				Code		Value
				Y		Yes
				Ν		No

```
"type": "record",
         "name": "AdminSymbolDirectory",
         "namespace": "com.nasdaq.ncds.nfn",
         "fields": [
                 {
                           "name": "MessageCategory",
"type": "string"
                 },
                 {
                           "name": "MessageType",
                           "type": "string"
                 },
                 {
                           "name": "SessionIdentifier",
                           "type": "string"
                 },
                 {
                           "name": "RetransmissionRequester",
                           "type": "string"
                 },
                 {
Version: 2024-1
```

```
"name": "MessageSequenceNumber",
         "type": "string"
},
{
         "name": "OriginatorId",
         "type": "string"
},
{
         "name": "MessageDateTime",
         "type": "string"
},
{
         "name": "TestSymbolFlag",
         "type": "string"
},
{
         "name": "InstrumentTypeTier",
         "type": "string"
},
{
         "name": "InstrumentCode",
         "type": "string"
},
{
         "name": "Symbol",
         "type": "string"
},
{
         "name": "PricingFrequency",
         "type": "string"
},
{
         "name": "InstrumentName",
         "type": "string"
},
{
         "name": "ExchangeCodeForListedInstruments",
         "type": "string"
},
{
         "name": "ExchangeSymbolForListedInstruments",
         "type": "string"
},
{
         "name": "Currency",
         "type": "string"
},
{
         "name": "InstrumentRegistration",
         "type": "string"
},
{
         "name": "ModelPortfolioFlag",
         "type": "string"
}
```

]

{

```
"AdminSymbolDirectory": {
  "MessageCategory": "A",
  "MessageType": "K",
 "SessionIdentifier": "P",
  "RetransmissionRequester": "O ",
  "MessageSequenceNumber": "00000001",
  "OriginatorId": "F",
  "MessageDateTime": "2020-08-31T15:24:02.6317815-04:00",
  "TestSymbolFlag": " ",
  "InstrumentTypeTier": "MS",
  "InstrumentCode": "O ",
  "Symbol": "ZZZZX",
  "PricingFrequency": "D",
  "InstrumentName": "NFN Mutual Fund",
 "ExchangeCodeForListedInstruments": ",
  "ExchangeSymbolForListedInstruments": "NA",
 "Currency": "USD",
  "InstrumentRegistration": "S",
  "ModelPortfolioFlag": "N"
```

}

Control Message – End of Day

The End of Day control message signals the end of active message dissemination for the NFN Data Service operational cycle. The End of Day message shall follow the final summary spin on NFN. The system shall generate and disseminate the End of Day control message upon receipt of the appropriate inbound control messages from all inbound sources. The End of Day message will be sent three times, at one-minute intervals. The first End of Day control message will contain a Message Sequence Number one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Numbers of the subsequent two control messages, however, will not be incremented.

Category C – Type J

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "C"
Message Type	MessageType	string	"J" Combined with Message Category "C" provides the messages in this table
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte.This field indicates the market session of the message tofollow.The current allowable values are as follows:CodeDescriptionASession IndependentPNFN - U.S. Session(8:00 a.m 8:00 p.m., ET)
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All
Message Sequence Number	MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence

			 number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprisedof one, alphabetic byte. This field indicates the marketcenter or Nasdaq system that originated the messagethat follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Servicedata element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>

```
"type": "record",
"name": "ControlEndOfDay",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
```

```
"type": "string"
         },
         {
                  "name": "MessageSequenceNumber",
                  "type": "string"
         },
         {
                  "name": "OriginatorId",
                  "type": "string"
         },
         {
                  "name": "MessageDateTime",
                  "type": "string"
         },
         {
                  "name": "TestSymbolFlag",
                  "type": "string"
         }
]
```

}

```
{
    "ControlEndOfDay": {
        "MessageCategory": "C",
        "MessageType": "J",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6552460-04:00",
        "TestSymbolFlag": " "
    }
}
```

Control Message – End of Retransmission Requests

This message signals that no further retransmission requests will be honored. The End of Retransmission Requests message will be sent three times, at one-minute intervals. The first End of Retransmission Requests control message will contain a Message Sequence Number one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Numbers of the subsequent two control messages, however, will not be incremented. Although Nasdaq Operations may no longer accept retransmission requests after this control message is disseminated, it will disseminate retransmissions that are in the queue.

Category C – Type K

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "C"
Message Type	MessageType	string	"K" Combined with Message Category "C" provides the messages in this table
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows:

			Code Description
			A Session Independent
			P NFN - U.S. Session
			(8:00 a.m. – 8:00 p.m., ET)
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All
Message Sequence Number	MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycl this number will be set to 00000000 (for the Start of Day Throughout the day, the message sequence number for each original transmission will be incremented by one with exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message sequence number of zero. The Line Integrity (Category C – Type T) message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type message will contain the number to which the Message Sequence Number receipt. Only the first message in this sequence will be incremented. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised one, alphabetic byte. This field indicates the market cent or Nasdaq system that originated the message that follo The allowable values are as follows: Code Description E NFN Data Service Data Feed Handler F Nasdaq Fund Network (NFN) host system

Message Date Time	MessageDateTime	string		generated.	s the date and time that the messag	je
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are:			
				Code	Description	
				Т	NFN Test Symbol	
				<space></space>	NFN Live / Production Symbol	

```
{
        "type": "record",
        "name": "ControlEndOfRetransmissionRequests",
        "namespace": "com.nasdaq.ncds.nfn",
        "fields": [
                 {
                          "name": "MessageCategory",
                          "type": "string"
                 },
                 {
                          "name": "MessageType",
                          "type": "string"
                 },
                 {
                          "name": "SessionIdentifier",
                          "type": "string"
                 },
                 {
                          "name": "RetransmissionRequester",
                          "type": "string"
                 },
                 {
                          "name": "MessageSequenceNumber",
                          "type": "string"
                 },
                 {
                          "name": "OriginatorId",
                          "type": "string"
                 },
                 {
                          "name": "MessageDateTime",
                          "type": "string"
                 },
                 {
                          "name": "TestSymbolFlag",
                          "type": "string"
                 }
        ]
}
```

Sample

{
 "ControlEndOfRetransmissionRequests": {

```
"MessageCategory": "C",
"MessageType": "K",
"SessionIdentifier": "P",
"RetransmissionRequester": "O ",
"MessageSequenceNumber": "00000001",
"OriginatorId": "F",
"MessageDateTime": "2020-08-31T15:24:02.6593863-04:00",
"TestSymbolFlag": " "
```

Control Message – End of Summary Spin

The End of Summary Spin control message is disseminated immediately following the last record in the summary spin transmission. The Message Sequence Number field for the End of Summary Spin control message will contain a number one greater than the highest Original Message Sequence Number previously transmitted.

Category C – Type S

Name	Туре	Description				
MessageCategory	string	The message category for this table is Category "C"				
MessageType	string	"S" Combined with Message Category "C" provides the messages in this table				
SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte This field indicates the market session of the message to follow.				
			Description			
			Session Independent			
		P	NFN - U.S. Session			
			(8:00 a.m. – 8:00 p.m., ET)			
RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient. All NFN Data Service recipients must code their systems to process the following values:				
		Code	Description			
		O (space)	Original Transmission to All			
		R (space)	Retransmission to All			
		Specific	To be assigned on vendor-			
		Vendor ID	by-vendor basis.			
MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is 				
			times to ensure receipt. All three			
	MessageCategory MessageType SessionIdentifier RetransmissionRequ ester MessageSequenceN	MessageCategory string MessageType string SessionIdentifier string RetransmissionRequester string RetransmissionRequester string MessageSequenceN string	MessageCategorystringThe message cateMessageTypestring"S" Combined wit messages in this tSessionIdentifierstringThe session Ident This field indicate follow.SessionIdentifierstringThe session Ident This field indicate follow.RetransmissionRequ esterstringThe Retransmission alphanumeric byta an original transmission retransmission id All NFN Data Serv to process the follMessageSequenceN umberstringThe Message SequenceN is a retransmission retransmission the each original trans the exception of to o the start of is and the seception of to is an original transmission			

			 messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Servicedata element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>

```
"type": "record",

"name": "ControlEndOfSummarySpin",

"namespace": "com.nasdaq.ncds.nfn",

"fields": [

{

"name": "MessageCategory",

"type": "string"

},

{

"name": "MessageType",

"type": "string"

},

{
```

```
"name": "SessionIdentifier",
                  "type": "string"
         },
         {
                  "name": "RetransmissionRequester",
                  "type": "string"
         },
         {
                  "name": "MessageSequenceNumber",
                  "type": "string"
         },
         {
                  "name": "OriginatorId",
                  "type": "string"
         },
         {
                  "name": "MessageDateTime",
                  "type": "string"
         },
         {
                  "name": "TestSymbolFlag",
                  "type": "string"
         }
]
```

}

```
{
    "ControlEndOfSummarySpin": {
        "MessageCategory": "C",
        "MessageType": "S",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6710580-04:00",
        "TestSymbolFlag": " "
    }
}
```

Control Message – End of Transmission

The End of Transmissions control message is used to signal the end of the normal transmission schedule for NFN Data Service. Retransmission requests, however, may be accepted and disseminated if Operations so chooses. This message will be transmitted at the end of the day. The End of Transmissions message will be sent three times, at one-minute intervals. The End of Transmissions control message will contain a Message Sequence Number one greater than the highest Message Sequence Number previously transmitted. The Message Sequence Numbers in the subsequent two control messages, however, will not be incremented.

Category C – Type Z

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "C"
Message Type	MessageType	string	"Z" Combined with Message Category "C" provides the messages in this table

Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow.
			The current allowable values are as follows:
			Code Description
			A Session Independent
			P NFN - U.S. Session (8:00 a.m. – 8:00 p.m., ET)
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription
			O (space) Original Transmission to All
			R (space) Retransmission to All
			Specific To be assigned on vendor-
			Vendor ID by-vendor basis.
Message Sequence Number	MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure receipt. Only the first message is sent three times to ensure

Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised one, alphabetic byte. This field indicates the market cent or Nasdaq system that originated the message that follow The allowable values are as follows:		
			Code Description		
			E		N Data Service Data Feed Handler
			F	Na	sdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "vvvv'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"		
Test Symbol Flag	TestSymbolFlag	string	Nasdao	uses this	s field to denote if the NFN Data Service
		8			follow is related to a live or test symbol.
			The allowable values are:		
			C	ode	Description
			Т		NFN Test Symbol
			<5	pace>	NFN Live / Production Symbol

```
"type": "record",
        "name": "ControlEndOfTransmission",
        "namespace": "com.nasdaq.ncds.nfn",
        "fields": [
                 {
                          "name": "MessageCategory",
                          "type": "string"
                 },
                 {
                          "name": "MessageType",
                         "type": "string"
                 },
                 {
                         "name": "SessionIdentifier",
                          "type": "string"
                 },
                 {
                         "name": "RetransmissionRequester",
                          "type": "string"
                 },
                 {
                         "name": "MessageSequenceNumber",
                         "type": "string"
                 },
                 {
                          "name": "OriginatorId",
                          "type": "string"
                 },
                 {
                         "name": "MessageDateTime",
                          "type": "string"
                 },
                 {
                          "name": "TestSymbolFlag",
                          "type": "string"
                 }
Version: 2024-1
```

}

]

{
 "ControlEndOfTransmission": {
 "MessageCategory": "C",
 "MessageType": "Z",
 "SessionIdentifier": "P",
 "RetransmissionRequester": "O ",
 "MessageSequenceNumber": "00000001",
 "OriginatorId": "F",
 "MessageDateTime": "2020-08-31T15:24:02.6789518-04:00",
 "TestSymbolFlag": "
 }
}

Control Message – Line Integrity

The Line Integrity Control Message will be transmitted at approximately one-minute intervals to verify the operational integrity of the NFN Data Service message transmission, and will be intermixed with other messages. The Message Sequence Number will not be incremented for the Line Integrity Message. The Message Sequence Number will be equal to the message sequence number of the last message sent. Line Integrity Messages will not be retransmitted.

Category C – Type T

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "C"
Message Type	MessageType	string	"T" Combined with Message Category "C" provides the messages in this table
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All
Message Sequence Number	MessageSequenceN umber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the

			 Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescription
			ENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description T NFN Test Symbol <space> NFN Live / Production Symbol</space>

```
"type": "record",
"name": "ControlLineIntegrity",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
        {
                 "name": "MessageSequenceNumber",
```

```
"type": "string"

},

{

"name": "OriginatorId",

"type": "string"

},

{

"name": "MessageDateTime",

"type": "string"

},

{

"name": "TestSymbolFlag",

"type": "string"

}

]
```

```
{
    "ControlLineIntegrity": {
        "MessageCategory": "C",
        "MessageType": "T",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6748079-04:00",
        "TestSymbolFlag": "
    }
}
```

Control Message – Message Sequence Number Reset

The Message Sequence Number Reset control message forces downstream data recipients to reset their Message Sequence Number log to a new number. The Message Sequence Number may either be reset to zero or to a number greater than the last message previously transmitted. If the Message Sequence Number is reset, the system will not support retransmission requests for data sent prior to the time that the reset was disseminated. The Message Sequence Number Reset control message will be disseminated as needed between the Start of Day control message and the End of Day control message.

Category C – Type L

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "C"
Message Type	MessageType	string	"L" Combined with Message Category "C" provides the messages in this table
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two- character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription
Message Sequence Number	MessageSequenceNu mber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message.

			 The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 			
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market cente or Nasdaq system that originated the message that follow The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed Handler FFNasdaq Fund Network (NFN) host system			
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"			
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description T NFN Test Symbol <space> NFN Live / Production Symbol</space>			

```
"type": "record",
"name": "ControlMessageSequenceNumberReset",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
```

```
{
                         "name": "MessageSequenceNumber",
                         "type": "string"
                 },
                 {
                         "name": "OriginatorId",
                          "type": "string"
                 },
                 {
                         "name": "MessageDateTime",
                          "type": "string"
                 },
                 {
                          "name": "TestSymbolFlag",
                          "type": "string"
                 }
        ]
}
```

}

```
{
    "ControlMessageSequenceNumberReset": {
        "MessageCategory": "C",
        "MessageType": "L",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6633700-04:00",
        "TestSymbolFlag": " "
    }
}
```

Control Message – Session Close

The Session Close control message signals the official closing time of the NFN system for the reporting session indicated in the message header. The NFN session close message will go out at approximately 8:00 p.m., ET.

The Message Sequence Number field for the Reporting Session Close control message will contain a number one greater than the highest Original Message Sequence Number previously transmitted.

Category C – Type E

Field	Name	Туре	Description				
Message Category	MessageCategory	string	The message category for this table is Category "C"				
Message Type	MessageType	string	"E" Combined with Message Category "C" provides the messages in this table				
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte This field indicates the market session of the message to follow. The current allowable values are as follows:				
				Code	Description		
				А	Session Independent		
				Ρ	NFN - U.S. Session (8:00 a.m. – 8:00 p.m., ET)		
Retransmission Requester	RetransmissionReques ter	string	 The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient. All NFN Data Service recipients must code their systems 				
				ode	llowing values: Description		
				(space)	Original Transmission to All		
			R	(space)	Retransmission to All		
			S	pecific	To be assigned on vendor-		
			V	endor ID	by-vendor basis.		
Message Sequence Number	MessageSequenceNu mber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycl this number will be set to 00000000 (for the Start of Day Throughout the day, the message sequence number for each original transmission will be incremented by one w the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. 				

			 The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 			
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows: Code Description			
			E NFN Data Service Data Feed Handler			
		_	F Nasdaq Fund Network (NFN) host system			
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"			
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Servicedata element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>			

```
"type": "record",
"name": "ControlSessionClose",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
```

```
{
                         "name": "MessageSequenceNumber",
                         "type": "string"
                 },
                 {
                         "name": "OriginatorId",
                          "type": "string"
                 },
                 {
                         "name": "MessageDateTime",
                          "type": "string"
                 },
                 {
                          "name": "TestSymbolFlag",
                         "type": "string"
                 }
        ]
}
```

```
{
    "ControlSessionClose": {
        "MessageCategory": "C",
        "MessageType": "E",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6365914-04:00",
        "TestSymbolFlag": " "
}
```

}

Control Message – Session Open

The Session Open control message signifies the official opening time of the NFN system for the reporting session indicated in the message header. The Reporting Session Open message will be disseminated at approximately 8:00 a.m., ET.

The Message Sequence Number field for the Session Open control message will contain a number one greater than the highest Original Message Sequence Number previously transmitted.

Category C – Type F

Field	Name	Туре	Description				
Message Category	MessageCategory	string	The message category for this table is Category "C"				
Message Type	MessageType	string	"F" Combined with Message Category "C" provides the messages in this table				
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)				
Retransmission Requester	RetransmissionReques ter	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All 				
Message Sequence Number	MessageSequenceNu mber	string					

	Quicing to all		 The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 				
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows The allowable values are as follows:				
			Code Description				
			E NFN Data Service Data Feed Handler				
			F Nasdaq Fund Network (NFN) host system				
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"				
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description				
			T NFN Test Symbol				
			<space> NFN Live / Production Symbol</space>				

```
"type": "record",
"name": "ControlSessionOpen",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
```

```
{
                         "name": "MessageSequenceNumber",
                         "type": "string"
                 },
                 {
                         "name": "OriginatorId",
                         "type": "string"
                 },
                 {
                         "name": "MessageDateTime",
                          "type": "string"
                 },
                 {
                          "name": "TestSymbolFlag",
                         "type": "string"
                 }
        ]
}
```

```
{
    "ControlSessionOpen": {
        "MessageCategory": "C",
        "MessageType": "F",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6410635-04:00",
        "TestSymbolFlag": " "
}
```

```
}
```

Control Message – Start of Day

The Start of Day control message signifies the beginning of each operational cycle for NFN Data Service processing. Each day, the Start of Day control message will be sent to the vendor community upon receiving the associated event trigger from an inbound data source. The purpose of this message is to inform subscribers that all subsequent data transmitted will be real-time updates and should be treated accordingly. The message will be sent three times, at one-minute intervals, with the same Message Sequence Number (00000000) on each message.

Category C – Type I

Field	Name	Туре	Description				
Message Category	MessageCategory	string	The message category for this table is Category "C"				
Message Type	MessageType	string	"I" Combined with Message Category "C" provides the messages in this table				
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows: Code A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)				
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription O (space)O (space)Original Transmission to All 				
Message Sequence Number	MessageSequenceNu mber	string					

			 Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 			
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed Handler FFNasdaq Fund Network (NFN) host system			
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"			
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description T NFN Test Symbol <space> NFN Live / Production Symbol</space>			

```
"type": "record",
"name": "ControlStartOfDay",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                "name": "MessageCategory",
                "type": "string"
        },
        {
                "name": "MessageType",
                "type": "string"
        },
        {
                "name": "SessionIdentifier",
                "type": "string"
        },
        {
                "name": "RetransmissionRequester",
                "type": "string"
        },
        {
                "name": "MessageSequenceNumber",
```

```
"type": "string"

},

{

"name": "OriginatorId",

"type": "string"

},

{

"name": "MessageDateTime",

"type": "string"

},

{

"name": "TestSymbolFlag",

"type": "string"

}

]
```

}

```
{
    "ControlStartOfDay": {
        "MessageCategory": "C",
        "MessageType": "I",
        "SessionIdentifier": "P",
        "RetransmissionRequester": "O ",
        "MessageSequenceNumber": "00000001",
        "OriginatorId": "F",
        "MessageDateTime": "2020-08-31T15:24:02.6451143-04:00",
        "TestSymbolFlag": ""
    }
}
```

Control Message – Start of Summary Spin

The Start of Summary Spin control message shall immediately precede the summary spins. The NFN summary spin times will be:

- 8:05 a.m., ET
- 6:05 p.m., ET
- 6:25 p.m., ET
- 6:45 p.m., ET
- 8:00 p.m., ET

The Message Sequence Number field for the End-of-Summary Spin control message will contain a number one greater than the highest Original Message Sequence Number previously transmitted.

Category C – Type P

Field	Name	Туре	Description				
Message Category	MessageCategory	string	The message category for this table is Category "C"				
Message Type	MessageType	string	"P" Combined with Message Category "C" provides the messages in this table				
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)				
Retransmission Requester	RetransmissionRequ ester	string	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient.All NFN Data Service recipients must code their systems to process the following values:CodeDescription				
			O (space)Original Transmission to AllR (space)Retransmission to AllSpecificTo be assigned on vendor- by-vendor basis.				
Message Sequence Number	MessageSequenceNu mber	string	 The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. 				

			 The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Servicedata element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>

```
"type": "record",
"name": "ControlStartOfSummarySpin",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
        {
                 "name": "MessageSequenceNumber",
                 "type": "string"
        },
        {
                 "name": "OriginatorId",
                 "type": "string"
        },
```

```
{
                         "name": "MessageDateTime",
                         "type": "string"
                 },
                 {
                         "name": "TestSymbolFlag",
                         "type": "string"
                 }
        ]
}
 Sample
 {
    "ControlStartOfSummarySpin": {
      "MessageCategory": "C",
      "MessageType": "P",
      "SessionIdentifier": "P",
      "RetransmissionRequester": "O ",
      "MessageSequenceNumber": "00000001",
      "OriginatorId": "F",
      "MessageDateTime": "2020-08-31T15:24:02.6670749-04:00",
      "TestSymbolFlag": " "
   }
 }
```

NFN Valuation Message Format - Mutual Funds, UITs, Annuities, Structured Products, AIPs, NextShares, Collective Investment Trusts, Managed Accounts, Separate Accounts, Hedge Funds, Demand Deposit Accounts

This Nasdaq will use the following NFN valuation message to support the daily price reporting from Mutual Funds, Unit Investment Trusts (UITs), Annuities, Structured Products, Alternative Investment Products (AIPs), NextShares Exchange Traded Mutual Funds, Collective Investment Trust (CITs), Managed Accounts, Separate Accounts, Hedge Funds, and Demand Deposit Accounts.

This NFN Valuation message will support valuation data for the life of the instrument.

Category F – Type G

Field	Name	Туре	Description				
Message Category	MessageCategory	string	The m	essage cate	egory for this table is Category "F"		
Message Type	MessageType	string	"G" Combined with Message Category "F" provides the messages in this table				
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow.				
			The cu	rrent allow	vable values are as follows:		
			Code Description				
			A Session Independent				
				Р	NFN - U.S. Session		
					(8:00 a.m. – 8:00 p.m., ET)		

Retransmission Requester Message Sequence Number	RetransmissionRequ ester	string	 The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient. All NFN Data Service recipients must code their systems to process the following values: Code Description O (space) Original Transmission to All R (space) Retransmission to All Specific To be assigned on vendor-Vendor ID by-vendor basis. The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero. The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number will contain the same value as the prior original transmission message. The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"

Test Symbol Flag	TestSymbolFlag	string	data	element	ses this field to denote if the NFN Data Service nent to follow is related to a live or test symbol. vable values are:		
			i ne a	Code			
			-		Description		
			-	T	NFN Test Symbol	ation Compleal	
				<space></space>	NFN Live / Produ	ction Symbol	
Instrument Type Tier	InstrumentTypeTier	string	instru minin	ument in num elig iated val de Va Mu Mu Mu Mu Mu Str An Alt Ne Co Ma Se	cates the level of particip NFN. The level of particip ibility requirements esta- lues are as follows: Iue utual Fund – News Medi- utual Fund – News Medi- utual Fund – Supplement oney Market Fund – New oney Market Fund – New oney Market Fund – Supplement to Investment Trust (UIT cuctured Product nuity cernative Investment Pro- extShares Exchange Trad llective Investment Trus anaged Accounts parate Accounts odge Fund	ipation is based on ablished by NFN. The a List cal List vs Media List olemental List) oduct (AIP) ed Managed Fund	
			DD		mand Deposit Accounts		
Symbol	Symbol	string	This field indicates the NFN ticker symbol as assigned by NFN to instrument. To download the current <u>NFN symbol directory</u> without CUSIPs, please visit the Nasdaq Trader web site.			directory without	
Reporting Type	ReportingType	string			cates the dissemination nstrument. The allowabl		
				Code	Value	e values will be.	
						a correction	
			С		Previous day fund pric		
			1		Current day's price for instrument that subm updates		
			R		Current day's price for instrument that subm weekly updates		
			E		NFN Summary Spin		
					Previous day's fund pr	rice update	
			P		entered on current bu		
Footnotes	Footnotes	string	This f The c Code	field may current a e Fc	note field is a floating-p contain up to ten differ llowable values are: potnote Value	osition value field. ent footnote codes. Instrument Type	
			А		ctual return to	Money Market	
					areholders may differ	Fund	
					ue to capital gains or		
					sses	Manay Mariliat	
			В		ccount size varies, yield ue to fixed charges	Money Market Fund	

			C	Revaluation of assets	AIP, Structured Product, and	
			D	Ex-distribution	Hedge Fund All, excluding Demand Deposit Account	
			F	Fund always prices using a previous day's quotation	All	
			н		UIT	
			G	Deferred sales charge		
			G	Redemption gate in effect	Money Market Fund	
				Repurchase offer period for Interval Fund	Mutual Fund	
			L	Liquidity fee in effect	Money Market Fund	
			N	No front-end load or contingent deferred sales load	Mutual Fund	
			0	Primary offering. Portfolio that is currently available to investors	UIT	
			Р	12(b)(1) plan – fund assets are used to pay for distribution costs	Mutual Fund	
			R	Redemption fee or contingent deferred sales load may apply	Mutual Fund	
			S	Stock split/dividend	All, excluding Demand Deposit Account	
			W	NRO or "Brown-out" indicator. Trust will not re-offer	UIT	
			X	Ex-dividend	All, excluding Demand Deposit Account	
			Y	Secondary offering; past portfolio that is in the secondary offering period	UIT	
			the data processed to the NF broadcas	e position of a footnote(s) in t will be consistent with the Na d from the front-end host fun N Data Service journal file to t. For example, if only one va hay be disseminated in any of	sdaq information ds data entry system the NFN Data Service lue is apparent in the	
Net Asset Value (NAV)	NAV	string	 This field indicates the net asset value for a NFN instrument. The field format is as follows: If a NAV is entered, the field will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as needed. If no NAV is entered, the field will contain the value "NA" (right justified, space filled). 			
Offer Price	OfferPrice	string	This field	reflects the price at which a N n be purchased from the issue	IFN instrument's	

			 offer price includes the current net asset value per share plus any sales charges. The field format is as follows: If an offer price is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. If an offer price is not entered, the field will contain the value "NA" (right justified, space filled).
Market Price	MarketPrice	string	 This field represents the closing price from the primary market for a NFN instrument that trades on an exchange. The field format is as follows: If market price is entered, the value will be stated in the following numeric format: \$\$\$\$.dddddd. The field will be zero filled as necessary. If no market price is entered, the field will contain the value "NA" (right justified, space filled).
Redemption Price	RedemptionPrice	string	 This field denotes the price that an investor would receive if he were to redeem units with the NFN instrument's issuer or distributor. The field format is as follows: If Redemption NAV is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no Redemption NAV is entered, the field will contain the value "NA" (right justified, space filled).
Wrap Price	WrapPrice	string	 Note: Only UITs currently use the Redemption Price field. This field denotes the price that an investor would pay to purchase units if the NFN instrument is held in an account that is managed by a financial representative for a fee. The field format is as follows: If wrap price is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no wrap price is entered, the field will contain the value "NA" (right justified, space filled).
Total Net Assets	TotalNetAssets	string	 This field indicates the total net assets, in actual dollars) for the NFN instrument. The field format is as follows: If assets are entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$\$\$\$\$\$. The asset amount will be zero filled as necessary. Example: If a fund holds \$25,500,000 in assets, the field value would be "00000025500000". If no asset amount is entered, the field will contain the value "NA" (right justified, space filled).
Current Yield	CurrentYield	string	 This field indicates the current yield (annual rate of return on investment) for a NFN instrument. If current yield is entered, the amount will be stated in the following numeric format: \$\$\$\$.dddd format. The yield will be zero filled as necessary. This field is expressed as a percentage. [Example, a 5.75% effective annualized yield would be stated as "0005.7500".] If no current yield is entered, the field will contain the value "NA" (right justified, space filled).

Current Yield Direction	CurrentYieldDirection	string	positive or n Allowable va	
			Code - <dash></dash>	ValueNegative yield; Current yield is less than0.00% so it should be displayed withnegative sign.
			<space></space>	Positive or zero yield (Default)
Estimated Long Term Return (ELTR)	EstimatedLongTermRe turn	string	UIT or other • If ELT follow ELTR expre woul • If no	eturn (yield) over the life of the portfolio of a NFN instrument. IR is entered, the amount will be stated in the wing numeric format: \$\$\$\$.dddd format. The will be zero filled as necessary. This field is essed as a percentage. [Example, a 5.75% ELTR d be stated as "0005.7500".] ELTR is entered, the field will contain the value ' (right justified, space filled).
ELTR Direction	EstimatedLongTermRe turnDirection	string	should be sta	licates if the estimated long term return (ELTR) ated as a positive or negative number for the nent. Allowable values will be: Value Negative yield or return; ELTR is less than
			<space></space>	0.00% so it should be displayed with negative sign. Positive or zero ELTR (Default)
Accrued Interest	AccruedInterest	string	instrument s investors. Th If acc will b \$\$\$\$ zero If no	notes the interest accrued for a NFN since the last interest payment was made to he field format is: crued interest is entered into NFN, the amount be stated in the following numeric format: # \$\$.dddddd . The accrued interest value will be filled as necessary. accrued interest is entered, the field will ain the value "NA" (right justified, space filled).
Daily Dividend Factor	DailyDividendFactor	string	instrument f the Daily Di the NFN pri and holidays • If Da state form • If Da	ily Dividend is entered, the amount will be d in the following numeric format: \$\$.dddddd
Daily Dividend Adjustment Indicator	DailyDividendAdjustm entIndicator	string	was fattened	licates if the Daily Dividend Adjustment Factor d to reflect weekend, holiday or other non- riod. Allowable values are: Value Fat adjustment reflected in Daily Dividend Factor No fat adjustment for Daily Dividend Factor

			<	space>	Not applicable; no Daily Dividend Factor provided
Currency	Currency	string			tes the <u>ISO currency code</u> associated with elated fields. Default value will be: Value US Dollars
Entry Date	EntryDate	string		rmation in t If an ent in the fo this valu (01-12), the mon represer For curre should b If the da date, the historica If no ent space fill the inter	es the date associated with the price the NFN Valuation message. ry date is entered, the value will be stated llowing numeric format: MMDDYYYY . In e, the first two bytes represent the month the next two bytes represent the day of th (01-31), and the last four bytes nt the year of the date. ent day's valuation data, the entry date be equal to the current day's date. te is earlier than the current business e message should be used to correct the al database record for the fund. ry date is entered, the field will either be led. When this field is populated this way nt is for the transaction to represent data urrent trading day.

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Version: 2024-1
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NFN Valuation Message – Money Market Funds

Category F – Type I

Nasdaq will use the following NFN valuation message to support the intraday, daily and weekly price reporting from Money Market Funds.

This NFN Valuation message will support valuation data for the life of the fund.

Field	Name	Туре	Description		
Message Category	MessageCategory	string	The message category for this table is Category "F"		
Message Type	MessageType	string	"I" Combined with Message Category "F" provides the messages in this table		
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic by This field indicates the market session of the message to follow. The current allowable values are as follows:		s the market session of the message to
				A	Session Independent
				Р	NFN - U.S. Session (8:00 a.m. – 8:00 p.m., ET)
Retransmission Requester	RetransmissionReques ter	string	alphar an orig messa charac recipie All NFI	umeric byt ginal transm ge is a retra ter retrans ent. N Data Serv	on Requester is comprised of two, tes. This field indicates if the message is hission or retransmission. If the ansmission, this field indicates the two- mission identifier of the intended data vice recipients must code their systems lowing values:
				ode	Description
				(space)	Original Transmission to All
			R	(space)	Retransmission to All
			-	ecific	To be assigned on vendor-
			Ve	endor ID	by-vendor basis.
Message Sequence Number	MessageSequenceNu mber	string	numer this nu Throug each c	ic bytes. At imber will b ghout the d riginal tran ception of t The Start of sent three messages sequence The Line In sent at on sequence not be inc number w	uence Number is comprised of eight, t the beginning of each operational cycle, be set to 00000000 (for the Start of Day). lay, the message sequence number for smission will be incremented by one with the following control messages: of Day (Category C – Type I) message is a times to ensure receipt. All three in this series will contain a message number of zero. ntegrity (Category C – Type T) message is e-minute intervals. The message number for these control messages will remented. The message sequence vill contain the same value as the prior ansmission message.

			 The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset. This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented.
Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol.The allowable values are:CodeDescriptionTNFN Test Symbol <space>NFN Live / Production Symbol</space>
Instrument Type Tier	InstrumentTypeTier	string	This field indicates the level of participation of the instrument in NFN. The level of participation is based on minimum eligibility requirements established by NFN. The associated values are as follows:CodeValueMFMutual Fund – News Media ListMSMutual Fund –Supplemental List\$\$Money Market Fund – News Media List\$\$Money Market Fund – Supplemental List\$\$Woney Market Fund – Supplemental ListUSUnit Investment Trust (UIT)SPStructured ProductANAnnuityAPAlternative Investment Product (AIP)EMNextShares Exchange Traded Managed FundCTCollective Investment TrustMAManaged AccountsSASeparate AccountsHFHedge Fund
Symbol	Symbol	string	DD Demand Deposit Accounts This field indicates the NFN ticker symbol as assigned by NFN to instrument.

Footnotes Footnotes Footnotes String The fund footnote value Instrument. The allowable values will be value values. Footnotes C Previous day fund price correction. Current day's price for a NFN I instrument that submits intraday updates Footnotes Footnotes E NFN Summary Spin P Previous day's fund price update, entered on current business day. Previous day's fund price update, entered on current business day. Footnotes Footnotes String The fund footnote field is a floating-position value fir This field may contain up to ten different footnote correct allowable values are: Code Footnote value Instrument T A Actual return to Shareholders may differ due to capital gains or losses Money Mark fund B Account size varies, yield due to fixed charges Fund C Revaluation of assets Fund Hedge Fund D Ex-distribution All, excluding previous day's quotation I Deferred sales charge UIT G Redemption gate in effect Money Mark fund I Repurchase offer period Mutual Fund for Interval Fund						the current <u>NFN symbol</u> e visit the Nasdaq Trader	
C Previous day fund price correction Current day's price for a NFN I Instrument that submits intraday updates Current day's price for a NFN R Instrument that submits daily or weekly updates E NFN Summary Spin P Previous day's fund price update, entered on current business day. Footnotes Footnotes String The fund footnote field is a floating-position value fit This field may contain up to ten different footnote cort. Actual return to Money Mark shareholders may differ due to capital gains or losses B Account size varies, yield Money Mark due to fixed charges B Account size varies, yield Money Mark due to fixed charges C Revaluation of assets AIP, Structure Product, and Hedge Fund D Ex-distribution All, excluding previous day's quotation H Deferred sales charge UIT G Redemption gate in effect Money Mark fund I Repurchase offer previod day's quotation Mutual Fund for Interval Fund I Repurchase offer previod fund Mutual Fund for Interval Fund	Reporting Type Reporting Type s		string	This field indicates the dissemination type and frequence for the NFN instrument. The allowable values will be:			
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that is currently available to investors			0	th	nat is currently available	UIT	
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distribution costs							
				R			Mutual Fund
contingent deferred sales						•	
load may apply						-	
				c			All, excluding
						Sock Sping dividend	Demand Deposit
Account							=

			W NRO or "Brown-out" UIT indicator. Trust will not re-offer X Ex-dividend All, excluding Demand Deposit
			Secondary offering; past UIT Y portfolio that is in the
			Secondary offering period Note: The position of a footnote(s) in the dissemination of the data will be consistent with the Nasdaq information
			processed from the front-end host funds data entry system to the NFN Data Service journal file to the NFN Data Service broadcast. For example, if only one value is apparent in the field, it may be disseminated in any of the ten positions of the field.
Average Maturity	AverageMaturity	string	 This field indicates the average time to maturity (stated in days) of the securities held by the fund. The field format is as follows: If average maturity is entered, the amount will be stated in numeric format (right justified, zero filled). If no average maturity is entered, the field will contain the value "NA" (right justified, space filled).
Average Life	AverageLife	string	 This field reflects the weighted average life (in days) of a money market fund as calculated in accordance with the SEC Money Market Reform Act. The field format is as follows: If average life is entered, the amount will be stated in numeric format (right justified, zero filled). If no average life is entered, the field will contain the value "NA" (right justified, space filled).
NAV	NAV	string	 This field indicates the net asset value for a NFN instrument. The field format is as follows: If a NAV is entered, the field will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as needed. If no NAV is entered, the field will contain the value "NA" (right justified, space filled).
Gross 7 Day Yield	YieldGross7Day	string	 This field indicates the gross 7 day yield for a money market fund. This yield is based on average net income earned by the securities in the fund's portfolio during the past 7 days. In accordance with the <u>SEC definition</u>, gross 7 day yield should exclude capital changes and income other than investment income. In addition, the gross 7 day yield should not reflect a deduction of shareholders fees and fund operating expenses. If gross 7 day yield is entered, the amount will be stated in the following numeric format: \$\$\$\$.dddd. This field is expressed as a percentage. [Example, a 5.75% gross 7 day yield would be stated as "0005.7500".]
			 If no gross 7 day yield is entered, the field will contain the value "NA" (right justified, space filled).

			dete	se see the following yield direction field to ermine if the gross 7 day yield should be stated positive or negative number.
Gross 7 Day Yield Direction	Yield Gross 7 Day Directi on	string	stated as a	dicates if the gross 7 day yield should be positive or negative number for the NFN . Allowable values will be:
			Code - <dash></dash>	Value Negative yield; gross 7 day yield is less than 0.00% so it should be displayed with negative sign.
			<space></space>	Positive or zero yield (Default)
Subsidized 7 Day Yield	YieldSubsidized7Day	string	the yield cal effect.	zed yield (also known as simple yield) reflects Iculation with expense limitation currently in bsidized 7 day yield is entered, the amount will
			\$\$\$\$ [Exa as "0	tated in the following numeric format: 5.dddd . This field is expressed as a percentage. mple, a 5.75% gross 7 day yield would be stated 0005.7500".] o subsidized 7 day yield is entered, the field will
			cont • Plea dete	cain the value "NA" (right justified, space filled). se see the following yield direction field to ermine if the subsidized 7 day yield should be ed as a positive or negative number.
Subsidized 7 Day Yield Direction	YieldSubsidized7DayDi rection	string	stated as a	dicates if the subsidized 7 day yield should be positive or negative number for the NFN . Allowable values will be:
			Code	Value
			- <dash></dash>	Negative yield; subsidized 7 day yield is less than 0.00% so it should be displayed with negative sign.
			<space></space>	Positive or zero yield (Default)
Effective Annualized 7 Day Yield	YieldEffectiveAnnualiz ed7Day	string	fund. In cale money mar reinvested. If eff will \$\$\$\$ [Exa be s • If no	dicates the effective yield for a money market culating the effective annualized yield, most kets assume that any income earned is The field format is as follows: fective annualized yield is entered, the amount be stated in the following numeric format: 5.dddd . This field is expressed as a percentage. mple, a 5.75% effective annualized yield would tated as "0005.7500".] effective annualized yield is entered, the field contain the value "NA" (right justified, space
			Plea dete	se see the following yield direction field to ermine if the effective annualized 7 day yield and be stated as a positive or negative number.
Effective Annualized 7 Day Yield Direction	YieldEffectiveAnnualiz ed7DayDirection	string	Plea dete shou This field in should be s NFN instrum	se see the following yield direction field to ermine if the effective annualized 7 day yield ald be stated as a positive or negative number. dicates if the effective annualized 7 day yield tated as a positive or negative number for the ment. Allowable values will be:
		string	Plea dete shou This field in should be s	se see the following yield direction field to ermine if the effective annualized 7 day yield and be stated as a positive or negative number. dicates if the effective annualized 7 day yield tated as a positive or negative number for the

30 Day Yield	Yield30Day	string	 Indicates the 30 day yield value based on the SEC calculation methodology with expense limitation currently in effect. If 30 day yield is entered, the amount will be stated in the following numeric format: \$\$\$\$.dddd. This field is expressed as a percentage. [Example, a 5.75% 30 day yield would be stated as "0005.7500".] If no 30 day yield is entered, the field will contain the value "NA" (right justified, space filled). Please see the following yield direction field to determine if the 30 day yield should be stated as a positive or negative number. Please see the following date field to determine the end date for the 30 day yield calculation.
30 Day Yield Direction	Yield30DayDirection	string	This field indicates if the 30 day yield should be stated as a positive or negative number for the NFN instrument. Allowable values will be: Code Value - <dash> Negative yield; 30 day yield is less than 0.00% so it should be displayed with negative sign. <space> Positive or zero yield (Default)</space></dash>
30 Day Yield Date	Yield30DayDate	string	 This field indicates the period end date for which the 30 day yield was calculated. If a 30 day yield date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. If NFN pricing agent enters "NA" in the date field, firms should show the date field as blank. If no 30 day yield date is entered, the value will be "NA".
Total Net Assets	TotalNetAssets	string	 This field indicates the total net assets, (in actual dollars) for the NFN instrument. The field format is as follows: If assets are entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$\$\$\$\$. The asset amount will be zero filled as necessary. Example: If a fund holds \$25,500,000 in assets, the field value would be "00000025500000". If no asset amount is entered, the field will contain the value "NA" (right justified, space filled).
Daily Dividend Factor	DailyDividendFactor	string	 This field indicates the dividend factor for a NFN instrument that declares a daily dividend. Please refer to the Daily Dividend Adjustment Indicator to determine if the NFN pricing agent made adjustments for weekends and holidays. If Daily Dividend is entered, the amount will be stated in the following numeric format: \$\$.dddddd format. If Daily Dividend is entered, the field will contain the value "NA" (right justified, space filled).

Daily Dividend Adjustment Indicator	DailyDividendAdjustm entIndicator	string	This field indicates if the Daily Dividend Adjustment Factor was fattened to reflect weekend, holiday or other non- reported period. Allowable values are:CodeValueYFat adjustment reflected in Daily Dividend FactorNNo fat adjustment for Daily Dividend Factor <spa< td="">Not applicable; no Daily Dividend Factor ce>ce>provided</spa<>
Currency	Currency	string	This field indicates the ISO currency code associated with the NFN price-related fields. Default value will be:CodeValueUSDUS Dollars
Entry Date	EntryDate	string	 This field denotes the date associated with the price information in the NFN Valuation message. If an entry date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. For current day's valuation data, the entry date should be equal to the current day's date. If the date is earlier than the current business date, the message should be used to correct the historical database record for the fund. If no entry date is entered, the field will either be space filled. When this field is populated this way the intent is for the transaction to represent data for the current trading day.
Calculation Time	CalculationTime	string	Denotes the NFN pricing agent calculation time from the inbound money market message format. Field will be populated in HHMMSS (military time) format for the U.S. Eastern Time (ET) zone. Examples: • 110000 => 11:00 a.m., ET • 160000 => 4:00 p.m., ET
			If no time is provided in the inbound NFN message format, the field will be populated as "NA".

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}

]

Version: 2024-1

{

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NFN Dividends / Income Distributions

Nasdaq will use the following message format will be used to report cash dividends, stock dividends and interest payment information for NFN instruments. Nasdaq disseminates the NFN Corporate Actions - Dividends and Interest message format at the time of data entry as well as part of a pre-opening spin on ex-date.

Category F – Type W

Field	Name	Туре	Description
Message Category	MessageCategory	string	The message category for this table is Category "F"
Message Type	MessageType	string	"W" Combined with Message Category "F" provides the messages in this table

Session Identifier SessionIdentifier		string	The session Identifier is comprised of one alphabetic byte. This field indicates the market session of the message to follow.		
			The cu		vable values are as follows:
				Code	Description
				A	Session Independent
				Р	NFN - U.S. Session (8:00 a.m. – 8:00 p.m., ET)
Retransmission Requester	RetransmissionReques ter	string	alphai an ori is a re retran All NFI to pro	The Retransmission Requester is comprised of two, alphanumeric bytes. This field indicates if the message is an original transmission or retransmission. If the message is a retransmission, this field indicates the two-character retransmission identifier of the intended data recipient. All NFN Data Service recipients must code their systems to process the following values:	
				ode	Description
				(space)	Original Transmission to All
				(space)	Retransmission to All
		1		ecific endor ID	To be assigned on vendor- by-vendor basis.
Message Sequence Number	MessageSequenceNu mber	string	numer this nu Throug each c	ic bytes. A umber will ghout the o original tran ception of The Start sent three messages sequence The Line I sent at or sequence not be inc number v original tr The Sequ message This num the highe The End o sent three message The End o type K) m receipt. C be increm The End o message	of Transmissions (Category C – Type Z) is sent three times to ensure receipt. Only nessage in this sequence will be

Originator Id	OriginatorId	string	The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows:CodeDescriptionENFN Data Service Data Feed HandlerFNasdaq Fund Network (NFN) host system	
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. • "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK"	
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description T NFN Test Symbol <space> NFN Live / Production Symbol</space>	
Instrument Type Tier	InstrumentTypeTier	string	<td colspace<<="" td=""></td>	
Symbol	Symbol	string	DD Demand Deposit Accounts This field indicates the NFN ticker symbol as assigned by NFN to instrument. To download the current NFN symbol directory without CUSIPs, please visit the Nasdaq Trader web site.	
Action	Action	string	This field indicates the type of corporate action update that is being disseminated for the stated Symbol, Cash Distribution Type and Ex-Date. The allowable values will be: Code Value N New record: Add corporate action record for stated symbol, cash distribution type and ex-date. C Corrected record: Update corporate action record for stated symbol, cash distribution type and ex-date with new field values.	

Cash Distribution Type	CashDistributionType	string	X Cancelled record: Remove corporate action record for stated symbol, cash distribution type and ex-date. E Restated / Corporate Action Spin record: Verify corporate action record for stated symbol, cash distribution type and ex-date in database. This field indicates the type of cash distribution being reported in the following cash distribution fields. The allowable values will be:	
			Code Value D Cash Dividend (Default for Mutual Funds) I Interest Income (Default for UITs) S Special Cash Dividend (Used on as of basis by all instrument types) <spa< td=""> Not applicable, no cash distribution being ce></spa<>	
Total Cash Distribution	CashDistributionTotal	string	 This field reflects the total cash dividend or total interest distribution being reported for the NFN instrument. Firms may report the breakdown of cash dividends / interest distribution in the fields that follow. The field format is as follows: If total cash distribution is entered, the amount will be stated in the following numeric format: \$	
Non-Qualified Cash Distribution	CashDistributionNonQ ualified	string	 This field reflects the portion of the cash dividend or interest income that is taxed as ordinary income to the shareholder. Please note that this value should be entered as a dollar amount (not a percentage). If a non-qualified cash distribution is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. If a non-qualified cash distribution is not entered, the field will contain the value "NA" (right justified, space filled). 	
Qualified Cash Distribution	CashDistributionQualif ied	string	 This field reflects the portion of the cash dividend or interest that is taxed as a qualified dividend to shareholder. Please note that this value should be entered as a dollar amount (not a percentage). If qualified cash distribution is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no qualified cash distribution is entered, the field will contain the value "NA" (right justified, space filled). 	
Tax-Free Cash Distribution	CashDistributionTaxFr ee	string	Reflects the portion of the cash dividend or interest attributable to bonds that is not taxed to the shareholder. Please note that this value should be entered as a dollar amount (not a percentage).	

			 If tax free cash distribution is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no tax free cash distribution is entered, the field will contain the value "NA" (right justified, space filled).
Ordinary Foreign Tax Credit	TaxCreditOrdinaryFore ign	string	 Reflects the portion of the cash dividend or interest from a foreign corporation that is not "qualified" by the IRS. Please note that this value should be entered as a dollar amount (not a percentage). The field format is as follows: If ordinary foreign tax credit is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no ordinary foreign tax credit is entered, the field will contain the value "NA" (right justified, space filled).
Qualified Foreign Tax Credit	TaxCreditQualifiedFore ign	string	 This field reflects the portion of the cash dividend or interest attributable to qualified foreign corporation as defined by the IRS. Please note that this value should be entered as a dollar amount (not a percentage). If qualified foreign tax credit is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no qualified foreign tax credit is entered, the field will contain the value "NA" (right justified, space filled).
Stock Dividend Ratio	StockDividendRatio	string	 This field indicates the stock split/dividend ratio for a NFN instrument. The field format is as follows: If a stock split/dividend is entered, the amount will be stated in the following numeric format: \$\$\$\$.dddddd. The field will be zero filled as necessary. Examples: 2-for-1 stock split should be reported as "0002.000000". 1-for-2 reverse stock split should be reported as "0001.100000". If no stock split/dividend would be reported as "0001.100000". If no stock split/dividend is entered, the field will contain the value "NA" (right justified, space filled).
Currency	Currency	string	This field indicates the ISO currency code associated with the NFN price-related fields. Default value will be: Code Value USD US Dollars
Payment Date	DivPaymentDate	string	 This field denotes the date on which dividends, interest payments or distributions will be distributed to the NFN instrument's shareholders of record. The field format is as follows: If a payment date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes

			 represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the payment date. If no payment date is entered, the field will either be space filled or contain the value of "NA".
Record Date	DivRecordDate	string	 This field denotes the date on which shareholders must hold fund shares to receive dividend, interest or distributions. The field format is as follows: If a record date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the record date. If no record date is entered, the field will either be space filled or contain the value "NA".
Ex Date	DivExDate	string	 This field indicates the ex date for the dividend or distribution. This is the date that NAV should be adjusted. If an ex date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. If no ex date is entered by the NFN inbound user, Nasdaq will populate this field with the current trading date.
Reinvest Date	DivReinvestDate	string	 This field indicates the reinvestment date for the dividend or distribution. If a reinvest date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. If no reinvest is entered, the value will be "NA".

Schema

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Sample
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]

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NFN Capital Distributions

Nasdaq will use the following message format is used to report capital distributions information for NFN instruments. Nasdaq disseminates the NFN Corporate Actions – Capital Distributions message format at the time of data entry as well as part of a pre-opening spin on ex-date.

Category F – Type X

Field	Name	Туре	Description			
Message Category	MessageCategory	string	The message category for this table is Category "F"			
Message Type	MessageType	string	"X" Combined with Message Category "F" provides the messages in this table			
Session Identifier	SessionIdentifier	string	The session Identifier is comprised of one alphabetic by This field indicates the market session of the message to follow. The current allowable values are as follows: Code Description A Session Independent P NFN - U.S. Session (8:00 a.m 8:00 p.m., ET)			
Retransmission Requester	RetransmissionReques ter	string	R (space) Retransmission to All		This field indicates if the message is on or retransmission. If the hission, this field indicates the two- tion identifier of the intended data recipients must code their systems ng values: Description Original Transmission to All Retransmission to All To be assigned on vendor-	
Message Sequence Number	MessageSequenceNu mber	string	Specific Vendor IDTo be assigned on vendor- by-vendor basis.The Message Sequence Number is comprised of eight, numeric bytes. At the beginning of each operational cycle, this number will be set to 00000000 (for the Start of Day). Throughout the day, the message sequence number for each original transmission will be incremented by one with the exception of the following control messages: • The Start of Day (Category C – Type I) message is sent three times to ensure receipt. All three messages in this series will contain a message sequence number of zero.• The Line Integrity (Category C – Type T) message is sent at one-minute intervals. The message sequence number for these control messages will not be incremented. The message sequence number will contain the same value as the prior original transmission message.• The Sequence Number Reset (Category C – Type L) message will contain the number to which the Message Sequence Number counter is to be reset.			

			 This number is either zero or a number greater than the highest number previously transmitted. The End of Day (Category C – Type J) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Retransmission Requests (Category C – Type K) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be incremented. The End of Transmissions (Category C – Type Z) message is sent three times to ensure receipt. Only the first message in this sequence will be 		
Originator Id	OriginatorId	string	incremented. The Market Center Originator Identifier (ID) is comprised of one, alphabetic byte. This field indicates the market center or Nasdaq system that originated the message that follows. The allowable values are as follows: Code Description E NFN Data Service Data Feed Handler F Nasdaq Fund Network (NFN) host system		
Message Date Time	MessageDateTime	string	This fields denotes the date and time that the message was generated. "yyyy'-'MM'-'dd'T'HH':'mm':'ss'.'fffffffK" 		
Test Symbol Flag	TestSymbolFlag	string	Nasdaq uses this field to denote if the NFN Data Service data element to follow is related to a live or test symbol. The allowable values are: Code Description T NFN Test Symbol <space> NFN Live / Production Symbol</space>		
Instrument Type Tier	InstrumentTypeTier	string	This field indicates the level of participation of the instrument in NFN. The level of participation is based on minimum eligibility requirements established by NFN. The associated values are as follows:CodeValueMFMutual Fund – News Media ListMSMutual Fund –Supplemental List\$\$Money Market Fund – News Media List\$\$Money Market Fund – Supplemental List\$\$Woney Market Fund – Supplemental ListUSUnit Investment Trust (UIT)\$PStructured ProductANAnnuityAPAlternative Investment Product (AIP)EMNextShares Exchange Traded Managed FundCTCollective Investment TrustMAManaged Accounts\$ASeparate AccountsHFHedge FundDDDemand Deposit Accounts		
Symbol	Symbol	string	This field indicates the NFN ticker symbol as assigned by NFN to instrument. To download the current <u>NFN symbol directory</u> without CUSIPs, please visit the Nasdaq Trader web site.		

Action	Action	string	This field indicates the type of corporate action update that is being disseminated for the stated Symbol, Cash Distribution Type and Ex-Date. The allowable values will be:			
			Code	Value		
			N	New record: Add corporate action record for stated symbol, cash distribution type and ex-date.		
			C	Corrected record: Update corporate action record for stated symbol, cash distribution type and ex-date with new field values.		
			X	Cancelled record: Remove corporate action record for stated symbol, cash distribution type and ex-date.		
			E	Restated / Corporate Action Spin record: Verify corporate action record for stated symbol, cash distribution type and ex-date in database.		
Short-Term Capital Gain	ShortTermCapitalGain	string	 This field indicates the portion of the total capital gain for the NFN instrument that is taxed to the shareholder at the short-term capital gains rate. If short-term capital gain is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no short-term capital gain is entered, the field will contain the value "NA" (right justified, space filled). 			
Long-Term Capital Gain	LongTermCapitalGain	string	 This field indicates the portion of the total capital gain for the NFN instrument that is taxed to the shareholder at the long-term capital gains rate. If long-term capital gain is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no long-term capital gain is entered, the field will contain the value "NA" (right justified, space filled). 			
UnAllocated Distribution	UnAllocatedDistributio ns	string	 This field reflects the amount of unassigned term gains being reported for the NFN instrument. The field format is as follows: If unallocated distribution is entered, the amount will be stated in the following numeric format: \$\$\$\$\$\$.dddddd. The field will be zero filled as necessary. If no unallocated distribution is entered, the field will contain the value "NA" (right justified, space filled). 			
Return of Capital (ROC)	ROC	string	 This field reflects amount of return of capital to the NFN instrument's shareholders. Please note that this value should be entered as a dollar amount (not a percentage). If return of capital is entered, the amount will be stated in the following numeric format: \$\$\$\$\$.dddddd. The field will be zero filled as necessary. 			

			• If no return of capital is entered, the field will contain the value "NA" (right justified, space filled).			
Currency	Currency	string	This field indicates the ISO currency code associated with the NFN price-related fields. Default value will be: Code Value USD US Dollars			
Payment Date	DstPaymentDate	string	 This field denotes the date on which dividends, interest payments or distributions will be distributed to the NFN instrument's shareholders of record. The field format is at follows: If a payment date is entered, the value will be stated in the following numeric format MMDDYYYY. In this value, the first two bytest represent the month (01-12), the next two bytest represent the day of the month (01-31), and the last four bytes represent the year of the payment date. If no payment date is entered, the field will either be space filled or contain the value of "NA". 			
Record Date	DstRecordDate	string	 This field denotes the date on which shareholders must hold fund shares to receive dividend, interest or distributions. The field format is as follows: If a record date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the record date. If no record date is entered, the field will either be space filled or contain the value "NA". 			
Ex Date	DstExDate	string	 This field indicates the ex date for the dividend or distribution. This is the date that NAV should be adjusted. If an ex date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. If no ex date is entered by the NFN inbound user, Nasdaq will populate this field with the current trading date. 			
Reinvest Date	DstReinvestDate	string	 This field indicates the reinvestment date for the dividend or distribution. If a reinvest date is entered, the value will be stated in the following numeric format: MMDDYYYY. In this value, the first two bytes represent the month (01-12), the next two bytes represent the day of the month (01-31), and the last four bytes represent the year of the date. If no reinvest is entered, the value will be "NA". 			

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"type": "record",
"name": "ValuationMessageDistributions",
"namespace": "com.nasdaq.ncds.nfn",
"fields": [
        {
                 "name": "MessageCategory",
                 "type": "string"
        },
        {
                 "name": "MessageType",
                 "type": "string"
        },
        {
                 "name": "SessionIdentifier",
                 "type": "string"
        },
        {
                 "name": "RetransmissionRequester",
                 "type": "string"
        },
        {
                 "name": "MessageSequenceNumber",
                 "type": "string"
        },
        {
                 "name": "OriginatorId",
                 "type": "string"
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                 "type": "string"
        },
        {
                 "name": "TestSymbolFlag",
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        },
        {
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                 "type": "string"
        },
        {
                 "name": "Symbol",
                 "type": "string"
        },
        {
                 "name": "Action",
                 "type": "string"
        },
        {
                 "name": "ShortTermCapitalGain",
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        },
        {
                 "name": "LongTermCapitalGain",
                 "type": "string"
        },
        {
                 "name": "UnAllocatedDistributions",
                 "type": "string"
```

```
},
        {
                  "name": "ROC",
                  "type": "string"
        },
        {
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        },
        {
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                  "type": "string"
        },
        {
                  "name": "DstRecordDate",
                  "type": "string"
        },
        {
                  "name": "DstExDate",
                  "type": "string"
        },
        {
                  "name": "DstReinvestDate",
                  "type": "string"
        }
]
```

Sample

}

```
{
  "ValuationMessageDistributions": {
    "MessageCategory": "F",
    "MessageType": "X",
    "SessionIdentifier": "P",
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    "MessageSequenceNumber": "00000000",
    "OriginatorId": "F",
    "MessageDateTime": "2020-08-31T15:24:02.6984998-04:00",
    "TestSymbolFlag": "",
    "InstrumentTypeTier": "MF",
    "Symbol": "ZZZZX",
    "Action": "N",
    "ShortTermCapitalGain": "NA
                                     ",
    "LongTermCapitalGain": "000001.000000",
    "UnAllocatedDistributions": "NA
                                        ",
    "ROC": "NA
                    ",
    "Currency": "USD",
    "DstPaymentDate": "08312020",
    "DstRecordDate": "08312020",
    "DstExDate": "08312020",
    "DstReinvestDate": "08312020"
 }
}
```

NFN Heartbeat Message

Nasdaq will produce this message every 10 minutes, 24 hours a day, Monday through Friday.

Heartbeat

Field	Name	Туре	Description
Time Stamp	TimeStamp	Long	Represents unix epoch timestamp in seconds.

Schema

```
"Heartbeat": {

"TimeStamp": "1600700196",

}

}
```

Version Control Log

Version	Date		Description of Documentation Change(s)				
2021-1	Dec 9, 2021	•	 Updated Instrument Registration to include UCITS (Code: U) 				
2022-1	August 3, 2022	•	Updated Instrument Codes for Structured Products				
			Code		Value		
			R		Growth		
			S		Income		
			т		Digital		
			U		Growth and Income		
2022-2	Oct 25, 2022	NFNDS via NCDS rebranded to NFNDS via Nasdaq Data Link Streaming API					
2024-1	May 3, 2024	Updated Instrument Registration to include: Canadian Securities Administration (Code: A)					