



# Signal B

## Signal B Message Specification

### Broker Trades Signal

The definitive reference data service, direct from the source



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# Introduction

ASX Market Information is a financial information service provider delivering daily market information from the Australian Security Exchange's single integrated trading platform known as the ASX Trading System or ASX Trade – and the Market Announcements Platform (MAP).

## Signal B Introduction

Signal B is a progressive intra-day electronic signal which disseminates details of a member organisation's trades as soon as technically possible after they are executed on ASX Trade. Signal B provides subscribers with trade data for Equities, Exchange Traded Options, Fixed Interest securities and ASX Futures Contract securities.

Only member organisations or a bureau service designated by a member organisation may gain access to Signal B. Member organisations are only entitled to receive their own trades (i.e. any trade in which they are the buy or sell broker). If a bureau service has more than one client, all broker numbers for the relevant clients are disseminated down the one line. Consequently bureau services need to ensure that any member organisations using the bureau service only receive the trades in which they participated.

In November 2005, ASX implemented a range of Equity Market Reforms to improve overall market quality through increasing the fairness and liquidity of the markets operated by ASX. A key initiative identified in the Market Reforms was the decision to change the disclosure information which can be used to match brokers to orders or trades in the equities market. Consequently, broker identifiers are no longer disclosed to the market and therefore not disseminated. On Signal B, the broker identifier field for brokers who are on the other side of transactions from the Signal B subscriber is masked by the generic ASX identifier "7777". Hence, Signal B subscribers are able to identify their own transactions whether they are on the buy or sell side of the transaction. However, each Signal B subscriber is not able to identify their counter-party for equity trades.

## Signal B Availability and Access

Access to Signal B is via the Shared Virtual Private Network (VPN) or Internet Virtual Private Network (iVPN).

Access times for Signal B are from 07.00 hours to 19.00 hours Monday to Friday. The signal may be requested until midnight if subscribers are experiencing problems for any reason or require retransmissions.

Signal B is available from 07:00 hours AEST to 19:00 hours AEST on business days. Signals are unavailable from 07.00 hours AEST on Saturday until 07.00 hours AEST on Monday. On national public holidays and ASX non-trading days there is no trading so Signal B is not available. The progressive intra-day component is available from 07:00 hours AEST to 24:00 hours AEST. Although the progressive intra-day component generally ends between 19:00 hours and 19:30 hours, it is still available for access and downloading until midnight if the subscriber is experiencing problems.

To receive Signal B via VPN, the subscriber needs to log on with a signal request code of '30' and a service option code of '00'.

## Operating Sequences

This section outlines the operating sequence for Signal B and includes details regarding when message types are disseminated for different service option codes. References to operating times are based on Australian Eastern Standard Time (AEST). Subscribers should make allowances in their systems for changes in operating times as a result of daylight saving. Such changes are released in ASX Market Information Bulletins in order to notify subscribers.

### Data Sequence

The progressive intra-day component commences at 07:00 hours. Once a subscriber has logged onto the Gateway and requested Signal B with a signal request code of '30' and a service option code of '00', data messages are sent.

On market trading on ASXTrade commences at approximately 10:00 hours +/- 15 seconds randomly. Start of market can be inferred from either the arrival of the first TB on market trade message or via the notified market timing at approximately 10:00 hours. The Equity market opening is staggered with securities being alphabetically grouped (A to B; C to F; G to M; N to R and S to Z) and released for trading at approximately 2 minute intervals.

Trade information messages (types TA to TD, TF to TI and TK) are transmitted when there is relevant activity in the ASX Trading System or Loan Securities (see Message Type section for further details on message types).

On market trading on ASX Trade ceases at approximately 16:12 hours +/- 60 seconds randomly.

The transmission of the GC (End of Exchange Traded Option Trading) message signifies the end of all trading on ASX Trade. This occurs at approximately 18:00 hours. By the same token, the transmission of the GB (End of ASX Trade Trading) indicates the end of all trading on ASX Trade.

After the market as a whole closes (i.e. when there is no more trading activity to be reported), the end of trading messages (message types GB, GC) are sent. This occurs at approximately 19:00 hours.

When there is no further progressive intra-day data to be transmitted, the GE message type is sent. This occurs at approximately 19:30 hours.

## Other Information

### Sale Value Data Field for Ultra High Denomination Security Types 39, 52, 59 & 65

For Ultra High Denomination security types, the format/size of the Sale Value data field is the same as per existing specifications for the other security types as follow:

Sale Value Data Fields	
Bytes	9
Format	Numeric 9(10)V 9(2) Expressed as <b>dollars and cents to two (2) decimal places.</b>

#### Notes & Examples:

- The **maximum Sale Value** that can be disseminated **for all security types** is \$9,999,999,999.99 and displayed as 999999999999.
- With the existing Sale Value format/size, the maximum trade volume for a single transaction for an Ultra High Denomination security type is 1,000 units for a trade priced at the maximum price of \$9,999,999.99.

# Message Types

## General Message Types

Once a subscriber has logged onto the Gateway and requested Signal B, data messages are sent. The following general message types are disseminated on Signal B throughout the day:

Type	Name	Comments
GG	Date Label	The first data message disseminated in the Signal B file, indicating the date for which the data is applicable.
GB	End of Trading	Indicates the close of trading in all securities. One single GB message is sent to indicate the closure of both the Equities market and the Derivatives market. The GB message is the only General Information message type disseminated on Signals.
GC	End of Exchange Traded Option Trading	Disseminated when no more trading activity is possible on DTP and therefore no further messages can be expected from DTP.
GE	End of Transmission	Disseminated when no more messages are to be transmitted for the current trading day. Therefore, when no more Signal messages are to be sent, a GE message is sent. This automatically triggers a logoff from the Gateway. However, if, after logging off, a subscriber requires some data to be resent for any reason, they can log back in and request a retransmission of data (refer to Gateway System Retransmission Request sub section).

## Trade Message Types

Type	Name	Comments
TA	Equity Long Trade	While the majority of equity trades are disseminated using the TB message type, a TA is disseminated if any of the following fields are needed: Condition Codes, As At Date or Basis Of Quotation.
TB	Equity Short Trade	Disseminated for an equity trade if it does not require the additional fields described in the TA message type.
TC	Loan Security Trade	Disseminated whenever a loan security trade is executed on ASX Trade.
TD	Exchange Traded Option Trade	Disseminated for on market and off market Exchange Traded Option trades executed on ASX Trade.
TF	ASX Futures Contract Trade	Disseminated for on market and off market ASX Futures Contract trades in equity and index futures and for options over ASX Futures Contracts executed on ASX Trade.
TG	Equity Trade Cancellation	Disseminated for both the long and short form equity trades. TG message types are disseminated whenever an equity trade is cancelled. A trade can only be cancelled for the current or previous trading day.
TH	Loan Security Trade Cancellation	Disseminated whenever a loan security trade is cancelled. A trade can only be cancelled for the current or previous trading day.
TI	Exchange Traded Option Cancellation	Disseminated whenever an Exchange Traded Option trade is cancelled. A trade can only be cancelled for the current trading day.
TK	ASX Futures Contract Trade Cancellation	Disseminated whenever an ASX Futures Contract trade is cancelled. A trade can only be cancelled for the current trading day.



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# Message Structure

Each message type has a set format consisting of a specific number of bytes which are divided into fields. This section outlines the message formats on Signal B. Field definitions are detailed in the Field Definitions section.

## Message Header Structure

The standard message header attached to all messages has the following format:

---

:	Sequence	:	Message	:	Retransmit	:
:	Number	:	Type	:	ID	:
	6		2		1	

---

## General Record Formats – GB to GG

### GB End of Trading - 16 bytes

Sequence Number	Message Type	Retransmit I.D.	Exchange I.D.	Time
6	2	1	1	6

### GC End of Exchange Traded Option Trading - 16 bytes

Sequence Number	Message Type	Retransmit I.D.	Exchange I.D.	Time
6	2	1	1	6

### GE End of Transmission - 15 bytes

Sequence Number	Message Type	Retransmit I.D.	Time
6	2	1	6

### GG Date Label - 23 bytes

Sequence Number	Message Type	Retransmit I.D.	Time	Date
6	2	1	6	8



## Appendix 2 - Signal B Trade Record Fixed Format Structures: TA to TK

### TA Equity Trade (Long Form) – 159 bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time :	: :
6	2	1	1	6	
: Issuer : Code :	: Security : Code :	: Security : Type :	: Ticker : Permission : Indicator	: Buyer : I.D. :	: : :
3	3	2	1	4*	
: Seller : I.D. :	: Sale : Price :	: Sale : Volume :	: Sale : Value :	: Serial : Trade : Qualifier	: : :
4*	9	9	12	4	
: Trade : Date	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Settlement : Date	: :
8	6	16	8	8	
: Basis of : Quotation	: Special Markets : Indicator	: Buyer Order : Reference Number	: Seller Order : Reference Number	: Currency Exchange : Rate	: :
10	1	10**	10**	12***	
: <b>Market ID</b> : :	: : :				
<b>3</b>					

\* The identifier of the broker who is on the other side of the transaction from the Signal B subscriber is masked by the generic ASX identifier "7777".

\*\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.

\*\*\* Zero filled

### TB Equity Trade (Short Form) - 112 bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time	:
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	:
3	3	2	1	4*	
: Seller : I.D.	: Sale : Price	: Sale : Volume	: Sale : Value	: Serial : Trade : Qualifier	:
4*	9	9	12	4	
: Trade : Date	: Trade : Serial No.	: Buyer Order : Reference No.	: Seller Order : Reference No.	: Settlement : Date	:
8	6	10**	10**	8	
: <b>Market ID</b>	:				:
<b>3</b>					

\* The identifier of the broker who is on the other side of the transaction from the Signal B subscriber is masked by the generic ASX identifier "7777".

\*\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.

### TC Loan Security Trade - 159 bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time :	: : :
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security Type : Indicator	: Ticker : Permission	: Buyer : I.D.	: : :
3	3	2	1	4**	
: Seller : I.D.	: Sale : Price	: Sale : Volume	: Sale : Value	: Serial Trade : Qualifier	: : :
4**	9	9	12	4	
: Trade : Date	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Settlement : Date	: : :
8	6	16	8	8	
: Basis of : Quotation	: Sale* : Yield	: Accrued : Interest	: Accrued : Interest Sign	: Special Market : Indicator	: : :
10	5	6	1	1	
: Buyer Order : Reference : Number	: Seller Order : Reference : Number	: <b>Market ID</b> : :	: : : :		
10***	10***	<u>3</u>			

\* Currently zero filled

\*\* The identifier of the broker who is on the other side of the transaction from the Signal B subscriber is masked by the generic ASX identifier "7777".

\*\*\* Blank filled for the opposite side of the transaction from the Signal B Subscriber

### TD Exchange Traded Option Trade - 145\_bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time :	:
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	:
3	3	2	1	4	
: Seller : I.D.	: Sale : Premium	: Number of : Contracts	: Sale : Value	: Serial : Trade : Qualifier	:
4	9	9	12	4	
: Trade : Date:	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Exercise : Price	:
8	6	16	8	9	
: Buyer Order : Reference : Number	: Seller Order : Reference : Number	: <b>Buyer Clearing</b> : <b>Broker ID</b>	: <b>Seller Clearing</b> : <b>Broker ID</b>	: <b>Market ID</b>	:
10	10	<u>4*</u>	<u>4*</u>	<u>3</u>	

\* Data fields are zero filled.

### TF ASX Futures Contract Trade - 145 Bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time :	:
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	:
3	3	2	1	4	
: Seller : I.D.	: Sale : Premium	: Number of : Contracts	: Sale : Value	: Serial : Trade : Qualifier	:
4	9	9	12	4	
: Trade : Date	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Exercise : Price	:
8	6	16	8	9	
: Buyer Order : Reference : Number	: Seller Order : Reference : Number	: <b>Buyer Clearing : Broker ID</b>	: <b>Seller clearing : Broker ID</b>	: <b>Market ID</b>	:
10	10	<u>4*</u>	<u>4*</u>	<u>3</u>	

\* Data fields are zero filled.

## TG Equity Trade Cancellation - 168 bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time	:
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	:
3	3	2	1	4*	
: Seller : I.D.	: Sale : Price	: Sale : Volume	: Sale : Value	: Serial : Trade : Qualifier	:
4*	9	9	12	4	
: Trade : Date:	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Settlement : Date	:
8	6	16	8	8	
: Basis of : Quotation	: Original : Trade : Capture : Date	: Reversal : Reason : Code	: Special : Market : Indicator	: Buyer : Order : Reference : Number	:
10	8	1	1	10**	
: Seller Order : Reference : Number	: <b>Currency Exchange</b> : <b>Rate</b>	: <b>Market ID</b>	:	:	:
10**	<u>12***</u>	<u>3</u>			

\* The identifier of the broker who is on the other side of the transaction from the Signal B subscriber is masked by the generic ASX identifier "7777".

\*\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.

\*\*\* Zero filled.

### TH Loan Security Trade Cancellation - 168 bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time	: :
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	: :
3	3	2	1	4**	
: Seller : I.D. :	: Sale : Price	: Sale : Volume	: Sale : Value	: Serial : Trade : Qualifier	: :
4**	9	9	12	4	
: Trade : Date:	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Settlement : Date	: :
8	6	16	8	8	
: Basis of : Quotation	: Sale* : Yield	: Accrued : Interest	: Accrued : Interest : Sign	: Original : Trade : Capture Date	: :
10	5	6	1	8	
: Reversal : Reason : Code	: Special : Market : Indicator	: Buyer Order : Reference : Number	: Seller Order : Reference : Number	: <b>Market ID</b>	: :
1	1	10***	10***	<u>3</u>	

\* Currently zero filled.

\*\* The identifier of the broker who is on the other side of the transaction from the Signal B subscriber is masked by the generic ASX identifier "7777".

\*\*\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.



## TI Exchange Traded Option Trade Cancellation – 154 Bytes

: Sequence Number	: Message Type	: Retransmit I.D.	: Exchange I.D.	: Time	:
6	2	1	1	6	
: Issuer Code	: Security Code	: Security Type	: Ticker Permission Indicator	: Buyer I.D.	:
3	3	2	1	4	
: Seller I.D.	: Sale Premium	: Number of Contracts	: Sale Value	: Serial Trade Qualifier	:
4	9	9	12	4	
: Trade Date	: Trade Serial No.	: Condition Codes	: As At Date	: Original Trade Capture Date	:
8	6	16	8	8	
: Reversal Reason Code	: Exercise Price	: Buyer Order Reference Number	: Seller Order Reference Number	: <b>Buyer Clearing Broker ID</b>	:
1	9	10*	10*	<u>4**</u>	
: <b>Seller Clearing Broker ID</b>	: <b>Market ID</b>	:	:	:	:
<u>4**</u>	<u>3</u>				

\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.

\*\* Data fields are zero filled.

## TK ASX Futures Contract Trade Cancellation – 154 Bytes

: Sequence : Number	: Message : Type	: Retransmit : I.D.	: Exchange : I.D.	: Time :	:
6	2	1	1	6	
: Issuer : Code	: Security : Code	: Security : Type	: Ticker : Permission : Indicator	: Buyer : I.D.	:
3	3	2	1	4	
: Seller : I.D.	: Sale : Premium	: Number of : Contracts	: Sale : Value	: Serial Trade : Qualifier	:
4	9	9	12	4	
: Trade : Date	: Trade : Serial No.	: Condition : Codes	: As At : Date	: Original : Trade : Capture Date	:
8	6	16	8	8	
: Reversal : Reason : Code	: Exercise : Price	: Buyer Order : Reference : Number	: Seller Order : Reference : Number	: <b>Buyer Clearing</b> : <b>Broker ID</b>	:
1	9	10*	10*	<u>4**</u>	
: <b>Seller Clearing</b> : <b>Broker ID</b>	: <b>Market ID</b>	:	:	:	:
<u>4**</u>	<u>3</u>				

\* Blank filled for the opposite side of the transaction from the Signal B Subscriber.

\*\* Data fields are zero filled.

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## Field Definitions

The following alphabetic listing of all the field definitions provides details of bytes, format, description and valid values.

Please note that for all field definitions:

- Whenever a field shows a blank, it contains the ASCII space character (hex 20)
- All numeric fields are right-justified, zero filled and have implied decimal places.
- All alphabetic fields are left-justified and blank filled, unless otherwise stated.
- All messages have a fixed format.
- All times disseminated are based on a 24 hour clock.

As At Date	
Bytes	8
Format	Numeric YYYYMMDD where YYYY = Year MM = Month DD = Day
Description	The date on which the trade was transacted. ONLY contains a value if different from the date the trade was captured.
Valid Values	N/A

Accrued Interest	
Bytes	6
Format	Numeric 9(4)V9(2)  (Expressed as cents to two decimal places).
Description	The Accrued Interest per one-hundred dollars face value as at the Settlement Date (as defined on Trade Records).  Interest which has accumulated on a security since the Last Payment (as defined on Security Records).
Valid Values	N/A

Accrued Interest Sign	
Bytes	1
Format	Alphanumeric
Description	Identifies whether the accrued interest is a positive or a negative value.
Valid Values	+ = positive - = negative [] = space

ASX Code	
Bytes	6
Format	Alphanumeric
Description	A code allocated to identify securities and derivative products.  ASX Code = first 3 characters represent the Issuer Code and the last 3 characters represent the Security Code. The Security Code is blank for most of the equity instruments.  <b>Equities, Convertible Notes and Company Options:</b> The first three characters (Issuer Code) are a code assigned to the issuing body, and the last three characters (Security Code) are a code allocated to each security pertaining to an issuing body. In the case of ordinary shares, the last three characters are generally blank filled.  In relation to equity security codes, a period of 10 years needs to have elapsed before a given code may be reused.  ASX BookBuild securities will have specific ASX Codes and security descriptions to distinguish them from

## ASX Code

other Allocation Interest securities. Below is an example of an ASX code and security description that will be used for ASX BookBuild.

### ASX Code

- Will contain the alphabet "X" or "Y" or "Z" in the fourth character
- Will contain the alphabet "B" in the fifth and sixth characters

i.e. ASXXBB or ASXYBB or ASXZBB

### Interest Rate Securities

The first three characters refer to the underlying security. The fourth character H indicates interest rate security, the fifth character is an alpha character - from A to Z, and the sixth character may be "empty/blank" or an alpha character - from A to Z.

For Exchange-traded Australian Government Bonds (AGBs), the following coding convention applies:

- First Two Characters                      GS
- 3<sup>rd</sup> Character                                B for Fixed coupon , I for Indexed
- 4<sup>th</sup> Character                                month of maturity  

<u>Values</u>	
A or B for January	C or D for February
E or F for March	G or H for April
I or J for May	K or L for June
M or N for July	O or P for August
Q or R for September	S or T for October
U or V for November	W or X for December
- 5<sup>th</sup> & 6<sup>th</sup> Characters                      year of maturity (i.e. 2014 will be represented as 14)

### Exchange Traded Options:

The first three characters refer to the underlying security. The fourth and fifth characters used in the coding of each strike of an option series are randomly generated. The sixth character will be the numeral 7, 8 or 9.

### ASX Futures Contracts:

The first three characters refer to the underlying security. The fourth and fifth characters are an identifier for the expiry / maturity of the contract.

### Warrants:

The first three characters refer to the underlying security; the fourth character signifying a warrant group may be a 'W', 'V', 'U', 'T', 'I', 'J', 'S', 'E', 'X', 'Y', 'Z', 'D', 'K', 'L', 'M', 'F' or 'Q' the fifth character indicates the warrant issuer; and the sixth character identifies the warrant series.

Warrant Group	Description
W, V, U or T	Trading-style warrants including equity calls and puts, index calls and puts, currency calls and puts.
I or J	Instalments
S	Self Funding Instalments (SFIs) and Structured Investment Products (SIPs - These include longer-term investment style products).
E	Endowments
X, Y or Z	Warrants which have significantly different structures to any of the above. Examples include equity and index knock-out warrants, and Capital Plus Warrants.
D	This is a temporary code assigned to a warrant trading on a deferred settlement basis. The warrant will revert to its original code on the first day of normal trading after deferred settlement ends.
K or Q	MINIs
L	Guaranteed Stop Loss (GSL) MINIs
M	Listed Protected Loan
F	New Product Types

In relation to warrant codes, there is no standard time frame for reusing codes that have previously been allocated to securities. This means that a given ASX warrant code may be reused within a period of 2 months.

ASX Code	
	<p><b>Un-sponsored Depository Receipts (UDRs)</b></p> <ul style="list-style-type: none"> <li>– UDRS will have four (4) characters ASX/Trading Code; the first 3 characters do not reference the issuing body.</li> <li>– The first character of the ASX/Trading code will be “U” signifying it is a UDR.</li> </ul> <p>The 2<sup>nd</sup> to 4<sup>th</sup> characters of the code reference the underlying stock on the home exchange.</p>
Valid Values	N/A

Basis Of Quotation																																																									
Bytes	2, occurs 5 times																																																								
Format	Alphabetic																																																								
Description	<p>Indicates the status under which a Security is quoted. In the case of trades, this field will only contain a value if special permission has been granted by the respective committees to trade outside the current stated Basis of Quotation.</p> <p>Note: Standard trading incorporates a fixed settlement period of 3 business days (T+3).</p>																																																								
Valid Values	<table border="0"> <thead> <tr> <th style="text-decoration: underline;">Code</th> <th style="text-decoration: underline;">Description</th> </tr> </thead> <tbody> <tr><td>CD</td><td>Cum Dividend</td></tr> <tr><td>XD</td><td>Ex Dividend</td></tr> <tr><td>CR</td><td>Cum Rights Issue</td></tr> <tr><td>XR</td><td>Ex Rights Issue</td></tr> <tr><td>CT</td><td>Conditional Trading</td></tr> <tr><td>CB</td><td>Cum Bonus Issue</td></tr> <tr><td>XB</td><td>Ex Bonus Issue</td></tr> <tr><td>CE</td><td>Cum Entitlement</td></tr> <tr><td>XE</td><td>Ex Entitlement</td></tr> <tr><td>CF</td><td>Cum Takeover Offer</td></tr> <tr><td>XF</td><td>Ex Takeover Offer</td></tr> <tr><td>CC</td><td>Cum Capital Return</td></tr> <tr><td>XC</td><td>Ex Capital Return</td></tr> <tr><td>PA</td><td>Protection Available</td></tr> <tr><td>PU</td><td>Protection Unavailable</td></tr> <tr><td>CM</td><td>Cum Premium Return</td></tr> <tr><td>XM</td><td>Ex Premium Return</td></tr> <tr><td>CQ</td><td>Cum Equal Access Buy-back</td></tr> <tr><td>XQ</td><td>Ex Equal Access Buy back</td></tr> <tr><td>NX</td><td>New Ex Interest</td></tr> <tr><td>XI</td><td>Ex Interest</td></tr> <tr><td>CL</td><td>Call Due</td></tr> <tr><td>CP</td><td>Call Paid</td></tr> <tr><td>CZ</td><td>Cum Priority</td></tr> <tr><td>XZ</td><td>Ex Priority</td></tr> <tr><td>RE</td><td>Reconstructed</td></tr> <tr><td>RA</td><td>Receiver Appointed</td></tr> </tbody> </table>	Code	Description	CD	Cum Dividend	XD	Ex Dividend	CR	Cum Rights Issue	XR	Ex Rights Issue	CT	Conditional Trading	CB	Cum Bonus Issue	XB	Ex Bonus Issue	CE	Cum Entitlement	XE	Ex Entitlement	CF	Cum Takeover Offer	XF	Ex Takeover Offer	CC	Cum Capital Return	XC	Ex Capital Return	PA	Protection Available	PU	Protection Unavailable	CM	Cum Premium Return	XM	Ex Premium Return	CQ	Cum Equal Access Buy-back	XQ	Ex Equal Access Buy back	NX	New Ex Interest	XI	Ex Interest	CL	Call Due	CP	Call Paid	CZ	Cum Priority	XZ	Ex Priority	RE	Reconstructed	RA	Receiver Appointed
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Buyer Identification	
Bytes	4
Format	Numeric
Description	A four-digit number used to identify the broker who made the trade. For equities, this field will be filled by a generic broker identifier (no. 7777) for Signals except where the broker is a buyer and receives their own number on Signal B.
Valid Values	N/A

Buyer Order Reference Number	
Bytes	10
Format	Alphanumeric
Description	Buy broker's own reference for in-house processing of the trade (for example to a particular account or client). Also used by ASX Settlement to notify brokers of delivery fail trades or securities lending loan transactions. In this case, the field contains the settlement generated trade key of the fail trade or loan trade.
Valid Values	Only the buy broker will receive a value in this field. The sell broker will receive a blank-filled Buyer Order Reference Number.

Condition Codes	
Bytes	2, occurs 8 times
Format	Alphabetic
Description	Two-character code indicating the condition(s) under which the sale was effected.
Valid Values	See <a href="#">Condition Code Table</a>  Note:  Short Sell "SH" condition code is only disseminated to the selling broker in the trade transaction. It is a broker specific restricted information that is only disseminated on Signal B.

Currency Exchange Rate	
Bytes	12
Format	Numeric 9(6)V9(6)  (Expressed in dollars to 6 decimal places).  Zero filled for trades in non Foreign Markets Securities.
Description	Expresses the rate at which the foreign currency traded price present in the sale price field is converted to the Australian dollar settlement value provided in the dale value.  For Foreign currency trades reported via Signals: Trade Value = Sale price * Volume / Currency Exchange Rate
Valid Values	N/A



Exchange Identification	
Bytes	1
Format	Numeric
Description	With the advent of automated trading, all Exchange identifications are national.
Valid Values	1 - National (Automated trading)

Exercise Price	
Bytes	9
Format	Numeric 9(5)V9(4) (Expressed as dollars to four decimal places)  <b>Numeric 9(7) v 9(2)</b> (Expressed as <b>dollars and cents to two [2] decimal places for Ultra High Denomination securities - Security types 39, 52, 59, 65)</b> )
Description	Also called Strike Price.  For Exchange Traded Options over <b>securities</b> , this is the price at which the underlying security may be bought or sold by exercise of the option.  For Exchange Traded Options over <b>indices</b> , this is the level at which the underlying index maybe bought or sold on expiry. As this level is expressed in points, this level must be multiplied by the Contract Multiplier to convert to a dollar value.  For Company Options, this is the total exercise capital plus exercise premium for the option.  For Warrants, this represents the price at which the underlying security may be bought or sold by exercise of the warrant. This figure will be fixed at a nominal amount of 1 cent for endowment warrants and does not refer to the amount actually outstanding on endowment warrants. An amount of \$0.0001 (i.e. 1/100 of a cent) will also be applicable to certain Capital Protected Warrants.
Valid Values	N/A

Issuer Code	
Bytes	3
Format	Alphabetic
Description	A code assigned to each issuing body. This field may be suffixed with the Security Code to make up a unique ASX Code.
Valid Values	N/A

Market ID	
Bytes	3
Format	Numeric
Description	Unique identifier for trading facility.
Valid Values	001 = ASX TradeMatch 002 = ASX PureMatch® 100 = All ASX Market (ASX TradeMatch + ASX PureMatch®)

Message Type	
Bytes	2
Format	Alphabetic
Description	Identifies the type of message being transmitted and enables the subscriber to identify the message format.
Valid Values	Refer to Message Type section for data message types and content.

Number Of Contracts	
Bytes	9
Format	Numeric
Description	The number of Options forming the trade.
Valid Values	N/A

Original Trade Capture Date	
Bytes	8
Format	Numeric YYYYMMDD where YYYY = Year MM = Month DD = Day
Description	The date on which the trade to be cancelled was originally reported.
Valid Values	N/A

Retransmit ID	
Bytes	1
Format	Numeric
Description	Indicates whether the message sent is as a result of a first-time service request or a retransmission request.
Valid Values	0 = Message sent in response to a normal service request 1 = Message sent in response to a retransmission request

Reversal Reason Code	
Bytes	1
Format	Alphabetic
Description	To allow the identification of incorrect data which caused the reversal of a trade.
Valid Values	B = Incorrect Broker P = Incorrect Price S = Incorrect ASX Code V = Incorrect Volume O = Omitted D = Data Entry Error

Sale Premium	
Bytes	9
Format	Numeric 9(5)V9(4)  (Expressed as dollars to four decimal places).
Description	The price of an option contract determined through the auction process and representing current market values.
Valid Values	N/A

Sale Price/Sale Contract Price	
Bytes	9
Format	Numeric 9(5)V9(4)  (Expressed as cents to four decimal places.)  For Security Types 11, 12, <b>33, 34, 35</b> , 48, 49, <b>57, 58</b> , 85, 87 and 90 to 97 (high denomination equities and warrants & structured products, options and LEPO"s), the <b>Price is expressed as dollars and cents to four decimal places.</b> ----- <b>Numeric 9(7) v 9(2)</b> For Security Types <b>39, 52, 59 &amp; 65</b> (Ultra High Denomination securities), the <b>Price is expressed as dollars and cents to two decimal places.</b>
Description	The price at which a trade/contract was transacted.
Valid Values	N/A

Sale Value	
Bytes	12
Format	Numeric 9(10)V9(2)  (Expressed as dollars to two decimal places.)
Description	The total cost in dollars of the sale transaction.
Valid Values	N/A

Sale Yield	
Bytes	5
Format	Numeric 9(2)V9(3) (Expressed as a percentage).
Description	The rate of return of a security over its life from the date of purchase to redemption. It includes interest payments and capital gain or loss.  This field has been zero filled since 04 September 2006.
Valid Values	N/A

Sale Volume	
Bytes	9
Format	Numeric
Description	The number of units transacted.
Valid Values	N/A

Security Code	
Bytes	3
Format	Alphanumeric
Description	A code allocated to each security pertaining to an issuing body.  This field may be prefixed with the Issuer Code to make up a unique ASX Code.
Valid Values	N/A

Security Type	
Bytes	2
Format	Numeric
Description	The type of Security as defined by the issuing body.
Valid Values	See <a href="#">Security Type Table</a> .

Seller Identification	
Bytes	4
Format	Numeric
Description	A four-digit number used to identify the selling Broker. This field will be filled by a generic broker identifier (no. 7777) for Signals except where the broker is a seller and receives their own number on Signal B.
Valid Values	N/A

Sequence Number	
Bytes	6
Format	Numeric
Description	A sequential number allocated by the Gateway system and specific to a particular session with a given Subscriber. Unless a retransmission request has been made, the first data message sent will always contain the sequence number "000001". Subsequent messages will have the sequence number incremented by one.
Valid Values	000001 to 999999

Serial Trade Qualifier	
Bytes	4
Format	Numeric
Description	<p>Four-digit identifier to aid in the identification of transactions. This is the first 4 digits of the 10 digit Trade Slip Number (TSN) generated by the ASX trading system. Below is the full breakdown of the TSN:</p> <p>ASX Trade Slip Number format is <b><u>1</u>OPNNNNNNN</b> where:</p> <ul style="list-style-type: none"> <li>a. <b><u>1</u></b>: always 1</li> <li>b. <b><u>O</u></b>: last digit of the Ordinal date</li> <li>c. <b><u>P</u></b>: Instance number of DC (Deal Capture)</li> <li>d. <b><u>NNNNNNN</u></b>: Trade Number</li> </ul> <p>The characters underlined and in bold font represent that part of the TSN that populates the Serial Trade Qualifier field.</p>
Valid Values	N/A

Settlement Date	
Bytes	8
Format	Numeric YYYYMMDD where  YYYY = Year MM = Month DD = Day
Description	Generally the date upon which settlement is due to occur as determined by the current fixed settlement regime or the anticipated date of settlement as mutually agreed between participants. The date when money and securities are due to change hands.
Valid Values	N/A

Seller Order Reference Number	
Bytes	10
Format	Alphanumeric
Description	Sell broker's own reference for in-house processing of the trade (for example to a particular account or client). Also used by ASX Settlement to notify brokers of delivery fail trades or securities lending loan transactions. In this case the field contains the settlement generated trade key of the fail trade or loan trade.
Valid Values	Only the sell broker will receive a value in this field. The buy broker will receive a blank-filled Seller Order Reference Number.

Special Market Indicator	
Bytes	1
Format	Alphabetic
Description	A notation indicating whether the message contains data relevant to a security which is being quoted on a basis different to the existing quotation. To determine what type of basis the security is being quoted under interrogate the Basis Of Quotation field.
Valid Values	<p>Y = Yes, the security is currently being quoted on a basis different to the existing quotation.</p> <p>N = No, the security is not currently being quoted on a basis different to the existing quotation.</p> <p>Note: Only the messages relevant to the special market security will ever contain an indicator of "Y" and this indicator will always be accompanied by a valid value/s in the Basis Of Quotation field.</p>

Ticker Permission Indicator	
Bytes	1
Format	Numeric
Description	An indicator to highlight which messages may be displayed on the ticker.
Valid Values	<p>0 = Do not display</p> <p>1 = Display on ticker</p> <p>2 = Display on ticker and indicate the trade as a crossing</p>

Time	
Bytes	6
Format	<p>Numeric HHMMSS where</p> <p>HH = Hours</p> <p>MM = Minutes</p> <p>SS = Seconds</p>
Description	<p>The following 'Time' field changes on the Trade, Quote and Snapshot messages apply after the Integrated trading System implementation in 2006.</p> <p>This field consists of several sub-fields and have a different definition depending on the message type. These other 'Time' definitions are detailed below.</p> <p>Trade / Trade Cancellation Time: this refers to the actual time of the trade or trade cancellation.</p> <p>Quote Capture Time: this refers to the time the ASX central system captured the quote message.</p> <p>Snapshot Dissemination Time: this refers to the time of snapshot dissemination.</p> <p>The 'Time' field on all other message types will continue to indicate "the time that the record was entered into the computer system to be disseminated".</p>
Valid Values	N/A

Trade Date	
Bytes	8
Format	Numeric YYYYMMDD, where YYYY = Century, Year MM = Month DD = Day
Description	A date reflecting the trade capture date.
Valid Values	N/A

Trade Serial Number	
Bytes	6
Format	Numeric
Description	<p>A six digit serial number generated by the ASX trading system to identify a transaction. This is the last 6 digits of the 10 digit Trade Slip Number (TSN) generated by the ASX trading system. Below is the full breakdown of the TSN:</p> <p>ASX Trade Slip Number format is 1OPN<u><b>NNNNNN</b></u> where:</p> <ul style="list-style-type: none"> <li>a. 1: always 1</li> <li>b. O: last digit of the Ordinal date</li> <li>c. P: Instance number of DC (Deal Capture)</li> <li>d. <u><b>NNNNNN</b></u>: Trade Number</li> </ul> <p>The characters underlined and in bold font represent that part of the TSN that populates the Trade Serial Number field.</p>
Valid Values	N/A



# General Information

## Basis of Quotation

Generally securities trade on a 'cum' basis. However, under certain circumstances, special markets may be created on a daily basis, which trade outside the 'normal' market and in addition to the normal market.

To identify trades that have occurred as a result of a special market, a subscriber should interrogate the basis of quotation and special market indicator fields. Trades which occur in a **normal** market do **not** contain any values in the basis of quotation field and contain a value of 'N' in the special market indicator field, regardless of whether it is an 'ex' or a 'cum' market. Trades that occur as the result of a **special** market, have one or more values in the basis of quotation field and a valid value of 'Y' in the special market indicator. Refer to the Basis of Quotations definition in the Fields Definition Section for the relevant valid values.

For example, if the normal market for XYZ is ex-dividend, then the basis of quotation field is blank filled and the special market indicator contains a value of 'N'. If a 'cum' dividend special market is established, any trades executed in this special market will contain 'CD' in the basis of quotation field and a value of 'Y' in the special market indicator field.

A special market may be established for a security that has more than one basis of quotation. For example, a cum dividend (CD), cum rights (CR) special market may be established for XYZ. Any trades executed in this special market would have 'CD' and 'CR' in the basis of quotation field and a value of 'Y' in the special market indicator.

**Any trade that contains a value other than spaces in the basis of quotation field, should not update the first, high, low or last fields.** These are considered off market trades, and thus only update the cumulative volume and cumulative value fields.

## Condition Code Table

Condition Code	Description
	<b>TRANSACTION TYPE</b>
BB	Bulletin Board Trade (now used instead of CT combination Trade. However, CT is still used in trade report situations LTCT, XTCT & SPCT.
BK	Buy Back
BP	Booking Purposes Only
CM	Tailor Made Combo 1 Side
<b>CP</b>	<b>Centre Point Preferred Matched Trade</b>
CT	Combination Trade
CX	Centre Point Trade
DR	Directed Reporting
EC	Exercise of Call
EP	Exercise of Put
EQ	Equity Combination
GL	Non-Screen Traded Government Instrument
LN	Loan
LR	Loan Return
QB	Quote Display Board Trade

Condition Code	Description
<b>SM</b>	<b>Self-Managed Super Fund (SMSF) Transfer</b>
ST	Stabilisation Trade
TM	Tailor Made Combination
VM	Volume Match Trade
WH	Non-Screen Traded Wholesale Instrument
	<b>TIME OR LOCATION</b>
LT	Late Trade Report <ul style="list-style-type: none"> <li>▪ Derivative Market Products</li> <li>▪ Cash Market Products post 5pm</li> </ul>
L1	Late Trade Report - Book Squaring
L2	Late Trade Report - Hedging Trades
L3	Late Trade Report - Order Completion
L4	Late Trade Report - Error Rectification
L5	Late Trade Report - Put Through
OS	Overseas
	<b>DELIVERY</b>
FD	Forward Delivery
OR	Overseas Resident
	<b>CROSSING/SPECIAL</b>
IB	Index Replicating Special Crossing
ET	Exchange Traded Funds Special
SA	Special Crossing Sale to complete client order
NX	NBBO Crossings
<b>OC</b>	<b>OTC Contingent Equity Trade</b>
P1	Put-Through Special Crossing $\geq$ T2
P2	Put-Through Special Crossing $\geq$ T3 < T2
SO	Other Special Sale (i.e. Special Sales other than 'SP', 'SX' and 'SA')
S1	Special Crossing $\geq$ T1
S2	Special Crossing $\geq$ T2 < T1
S3	Special Crossing $\geq$ T3 < T2
SP	Block Special Trade Report
SX	Special Sale Portfolio
XT	Crossed Trade
	<b>SHORT SALE</b>
SH	Short

## Security Type Table

Type	Description
<b>01-03</b>	<b>Ordinary Shares</b>
01	Ordinary
02	Restricted Ordinary
03	Employee Ordinary
04	Allocation Interest
05	Forfeited
06	Trust Units
07	Exchange Traded Fund Units
08	Reserved (N.Z.)
09	Entitlements
10	Rights
11	High Denomination Equities
12	High Denomination Convertible Notes
15	CHESS Miscellaneous Payments
<b>16-31</b>	<b>Preference</b>
16	Preference
17	Cumulative Preference
18	Cumulative Redeemable Preference
19	Cumulative Redeemable Convertible Preference
20	Cumulative Convertible Preference
21	Convertible Preference
22	Convertible Redeemable Preference
23	Redeemable Preference
24	Part Preference
25	Redeemable Part Preference
26	Cumulative Part Preference
27	Convertible Part Preference
28	Cumulative Redeemable Part Preference
29	Cumulative Redeemable Convertible Part Preference
30	Employee Preference
31	Cumulative Part Employee Preference
<b>32-38</b>	<b>Funds</b>
32	Trading Long Exposure
33	Trading Managed Fund – High Denomination
34	QDB Managed Fund (T+3) – High Denomination
35	QDB Managed Fund – High Denomination
36	Trading Managed Fund
37	QDB Managed Fund (T+3)

Type	Description
38	QDB Managed Fund
<b>40-42</b>	<b>Company Options</b>
40	Options
41	Employee Options
42	Restricted Option
43	Delivery Option
44	Bonus Delivery Option
45	Option Bonds
<b>46-49, 59, 65</b>	<b>Warrants</b>
46	Warrants (Calls)
47	Warrants (Puts)
48	High Denomination Warrants (Calls)
49	High Denomination Warrants (Puts)
59	Ultra High Denomination Warrants (Calls)
65	Ultra High Denomination Warrants (Puts)
<b>50-51</b>	<b>Convertible Notes</b>
50	Convertible Notes (Equity Security)
51	Convertible Notes (Interest Rate Security)
<b>39, 52-58</b>	<b>Structured Products</b>
39	Trading Structured Product (Calls) – Ultra High Denomination
52	Trading Structured Products (Puts) – Ultra High Denomination
53	Trading Structured Product Call
54	Trading Structured Product Put
55	QDB Structured Product Call
56	QDB Structured product Put
57	QDB Structured Product Call – High Denomination
58	QDB Structured Product Put – High Denomination
60	Debenture
61	Screen Traded Debentures
62	Transferable Deposits
63	Tax Free Loans
64	Semi-Government Loans
66	Screen Traded Semi Government Loans
70	Unsecured Notes (Non-Screen Traded)
71	Screen Traded Unsecured Notes (Cash Traded)
72	Floating Rate Notes
73	Wholesale Corporate Interest Rate Securities
80	Government Loans
81	<b>Government Bond</b>

Type	Description
83	Screen Traded Government Loans
85	Australian Grain Futures
87	Australian Wool Futures
90	Local Call Options
91	Local Put Options
92	International Call Options
93	International Put Options
94	ASX Futures Call Options
95	Low Exercise Price Options (LEPOs)
96	ASX Futures Put Options
97	ASX Futures Contracts
99	Australian Futures Strip

# Gateway Subscription

## What is a Gateway

The Gateway is a multi-purpose interface which allows the transfer of information between the ASX's computer systems and externally connected computers.

Communication between the Gateway and a subscriber requires a physical connection, a programmatic interface and knowledge of the Gateway application protocol.

## Becoming a Gateway Subscriber

In order to become a Gateway subscriber, a subscriber must have decided to take an ASX Market Information electronic data feed, and must have signed the relevant contract. The subscriber needs to also have contacted an ASX approved VPN provider and purchased and installed a VPN connection. At this stage, ASX will permission the user on the ASX gateway and will issue the subscriber with a unique login (username and password) to use to gain access to ReferencePoint service.

## Connecting to the ASX Gateway

Connection to ASX's computer systems is via a Transfer Control Protocol / Internet Protocol (TCP/IP) Virtual Private Network (VPN) supplied and managed by either::

- An ASX approved 3<sup>rd</sup> party network provider. For information on ASX approved VPN providers, contact the ASX Market Information team ([Market.Information@asx.com.au](mailto:Market.Information@asx.com.au))
- ASX utilising ASX's Internet VPN offering (iVPN)

## Connecting Through Shared Virtual Private Network

A connection to the Gateway can be made from any device that runs the TCP/IP protocol. The subscriber's carrier will supply the necessary infrastructure. This will comprise a router and, depending on what level of redundancy is required, either One/Two Frame Links. All told, the infrastructure will take up about ½ of a cabinet shelf and about 5 RU's.

With the Introduction of a TCP/IP network, security becomes a concern. ASX server side has been placed behind firewalls with locked down security. The security at a client's side is the responsibility of each individual client. Although not mandatory, it is highly recommended that all clients have a firewall or other security model in place, between themselves and the external VPN Network.

When the subscriber has decided to receive any signal, an application must be made to the Market Information department who will place the request through the appropriate channels.

## Connecting Through an Internet Virtual Private Network




A connection to the Gateway can be made from any device that runs the TCP/IP protocol. Internet VPN requires that customer has an internet connection and a VPN client application supported by CISCO's VPN concentrator platform. Customers must also be aware of the inherent risks associated with the internet delivery mechanism e.g.:

- Security.
- Availability
- And non guaranteed delivery.

## ASX Approved VPN Providers

Charges/fees may vary between carriers. For charges/fees information, refer to relevant VPN provider. All the ASX approved VPN providers understand what is required for the ASX service and will set the service up accordingly.

Below is the list of ASX approved VPN providers.

-  **Optus**  
Product Name: eFinity
-  **Radianz**  
Product Name: Radianz Net
-  **Telstra**  
Product Name: Telstra COIN

For more information, refer to the VPN Service Guide document found on ASX Online Market Information – Product Information web page under the Delivery and Support folder\Virtual Private Network sub-folder.

<https://www.asxonline.com/marketinfo/product.shtm>

## Transmission Format

The transmission is in TCP/IP format, each message disseminated comprises a:

- message length
- standard header
- message body

	<b>Application Message</b>	
<b>Message Length</b>	<b>Standard Header</b>	<b>Message Body</b>

### Message Length

The 2-bytes unsigned integer value represents the total length of the Application Message (i.e. the standard header and the message body). This 2-byte field must be transmitted in **big endian** byte ordering.

This message length value has been prefixed to the application message because TCP/IP is not record based and the application messages are of variable length.

### Application Message

The Application Message is a signal specific message. The Message Structure section in this manual provides details of the message structure of each of the messages disseminated as part of the ReferencePoint service. These messages represent the TCP/IP Application Message.

A subscriber will not have a carriage return appended to their records as the Big Endian programming protocol detects the message length (see Appendix D for details on the Big Endian protocol).

## Gateway System Retransmission Requests

An important feature of the Gateway system is the provision for subscribers to recover from errors of any sort by issuing retransmission requests.

A retransmission login request is achieved by setting the **RETRANSMIT FLAG** in the service request message to 'R'. Fields have to be set within the service request to specify the session plus the range of messages to be received.

The Job-ID should also be specified for the session to be retransmitted. If it is not specified, Gateway will resume at the most recent session for the subscriber and the service in question. However, ASX recommends that the Job-ID be identified.

The **RETRANSMIT FLAG** field is an alphanumeric field and is 1 byte in length. It forms part of the Signal service request message which subscribers are required to send to the ASX Gateway system to access Signals data. It should be set if the subscriber wishes to resume a previous Gateway session for the current trading day. The valid values that this field may carry are:

R	=	Retransmission Request
[ ]	=	Request for a new Gateway session

After sending a Signal request to the Gateway, subscribers should then receive the corresponding data message. The data message carries a **RETRANSMISSION INDICATOR** which is a 1 byte field of numeric format indicating whether the message sent is as a result of a first-time service request or a retransmission request. The valid values that this field may carry are:

0	=	Message sent in response to a normal service request
1	=	Message sent in response to a retransmission request

As the sequence numbers for retransmission are identical to those sent for the original request, the Subscriber can specify the sequence number from which the retransmission should commence. The Start Sequence Number specifies the first sequence number to be retransmitted for a range of messages, while the End Sequence Number is used to specify the last sequence number. The Gateway session will terminate as soon as the data message containing this sequence number has been sent. Where no end message has been specified, ASX will send all messages up to the logical end of the session.

Messages transmitted to a subscriber are logged periodically to a checkpoint journal. If no sequence number is specified, ASX will begin from the most recent message for which a checkpoint has been written. It is the responsibility of the Subscriber to check if any of the messages have already been correctly received.

If for some reason a subscriber tries to log onto Gateway and the service or data is not available, a subscriber **should not** attempt to log on at a later time using the retransmission format. Unless a service reply has been sent by Gateway **with** a job id, then the subscriber should assume Gateway has not acknowledged their log on and stored their latest details in its logs. Subscribers should therefore send a service request assuming a new (first-time) session format.

Gateway Message Definitions and Gateway Message Field Definitions sections of this Manual set out examples of Signal request message formats that carry the **RETRANSMIT FLAG** field. Subscribers should use these messages to access data from Gateway. The M and/or O in brackets after each field name, indicate whether the field is mandatory or optional. If a field is mandatory, either:

- Gateway will always transmit data in this field (if a Gateway response) OR
- The subscriber must enter data in this field (if the command is a subscriber response/reply)



## Gateway Message Flow

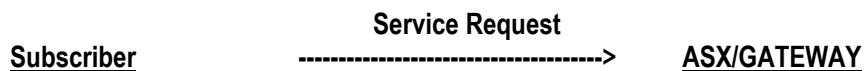
Once a Subscriber has established a connection with the ASX computer system, they are required to enter into a dialogue with the Gateway system. For each message type below, Gateway Message Structures section details the message definitions and Gateway Message Field Definitions section the field definitions.



The subscriber first sends a logon request, which identifies the subscriber to the Gateway system. This request is validated by ASX to ensure that the subscriber is authorised to use the system.

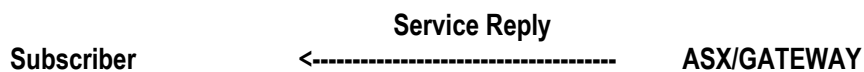


A logon reply is sent from ASX to the subscriber, with the status code and text fields indicating a successful logon, or the reason for rejecting the logon request.



Once successfully logged on, the subscriber sends a service request message. This may be a first time request, or a retransmission request to resume an earlier session. See Gateway System Retransmission Requests section for further details.

The service request is validated by ASX to ensure a valid service is being requested, the subscriber is authorised to receive the service, the service being requested is currently available, and the parameters making up the request are valid.

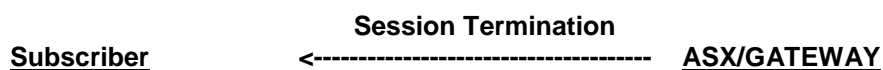


A service reply is then sent from ASX to the subscriber, with the status code and text fields indicating a successful request, or the reason for rejecting the request. A successful service reply will include a job identifier, which should be retained by the subscriber and used when making retransmission requests.

If the service request was not successful, then the service reply will be immediately followed by a logoff message.

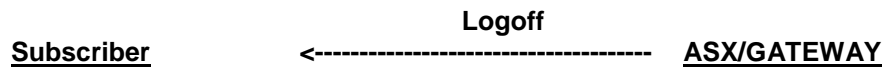


After a successful service request, ASX will begin transmission of data messages, the number and content of which will depend upon the nature of the request. (Refer to Message Types, Message Structures and Field Definitions sections for details of data message types and content.)



---

Once all data has been sent, or should an error occur before all data has been sent, ASX will send a session termination message. This message will contain status code and text fields, indicating the reason the session was terminated.



A session termination message will always be immediately followed by a logoff message. The subscriber is expected to clear the session once the logoff message has been received.

# Gateway Message Structures

The message formats for accessing data from Gateway are outlined below. Field definitions are detailed in the Gateway Message Field Definition section.

If a field is mandatory, either:

- Gateway will always transmit data in this field (if a Gateway response), OR
- The subscriber must enter data in this field (if the command is a subscriber response/reply).

<b>Logon Request</b>	<b>18 bytes</b>
----------------------	-----------------

Name	Size	Comments
Gateway Message Code	2	Mandatory – 01
Subscriber Code	8	Mandatory
Subscriber Password	8	Mandatory

<b>Logon Reply</b>	<b>128 bytes</b>
--------------------	------------------

Name	Size	Comments
Gateway Message Code	2	Mandatory – 02
Status Code	2	Mandatory
Text Length	3	Mandatory
Text	≤121	Optional

<b>Logoff</b>	<b>2 bytes</b>
---------------	----------------

Name	Size	Comments
Gateway Message Code	2	Mandatory – 03

<b>Data Message</b>	<b>variable length</b>
---------------------	------------------------

<b>Name</b>	<b>Size</b>	<b>Comments</b>
Gateway Message Code	2	Mandatory – 04
Sequence Number	6	Mandatory
Message Type	2	Mandatory
Retransmission Indicator	1	Mandatory
Data	variable	Mandatory

<b>Service Reply</b>	<b>128 bytes</b>
----------------------	------------------

<b>Name</b>	<b>Size</b>	<b>Comments</b>
Gateway Message Code	2	Mandatory – 05
Job ID	4	Mandatory
Status Code	2	Mandatory
Text Length	3	Mandatory
Text	≤117	Optional

<b>Session Termination</b>	<b>128 bytes</b>
----------------------------	------------------

<b>Name</b>	<b>Size</b>	<b>Comments</b>
Gateway Message Code	2	Mandatory – 07
Job ID	4	Mandatory
Status Code	2	Mandatory
Text Length	3	Mandatory
Text	≤117	Optional

<b>Generic Signal Request</b>	<b>23 bytes</b>
-------------------------------	-----------------

Name	Size	Comments
Signal Request Code	2	Mandatory
Job ID	4	Mandatory
Compression Indicator	1	Mandatory
Retransmit Flag	1	Mandatory
Service Option Code	2	Mandatory
Termination Flag	1	Mandatory
Start Sequence Number	6	Mandatory
End Sequence Number	6	Mandatory

Subscribers send this message to the ASX Gateway system to access data for Signal B.

# Gateway Message Field Definitions

Compression Indicator	
Bytes	1
Format	Alphabetic
Description	Indicates whether or not data is to be compressed before transmission.
Valid Values	C = Compression required = Compression not required.

End Sequence Number	
Bytes	6
Format	Numeric
Description	When issuing a retransmission request, this field indicates the last sequence number required. This session will be terminated as soon as this message has been retransmitted.
Valid Values	000000 (all zeros) YYMMDD (where YY = year, mm = month and DD=day)

Job ID	
Bytes	4
Format	Numeric
Description	A unique number allocated by the Gateway system to identify a particular Gateway session for a given subscriber and service. This number appears in the Service Reply message once a successful Service Request has been made and should be used by the subscriber in subsequent retransmission requests.
Valid Values	N/A

Gateway Message Code	
Bytes	2
Format	Numeric
Description	Specifies the reason for the Gateway message.
Valid Values	01 Logon request 02 Logon reply 03 Logoff 04 Data 05 Service Reply 07 Session Termination

<b>Message Type</b>	
Bytes	2
Format	Alphabetic
Description	Identifies the type of message being transmitted and enables the subscriber to identify the message format.
Valid Values	Refer to Message Formats and Field Definitions sections for data message types and content.

<b>Retransmission Indicator</b>	
Bytes	1
Format	Numeric
Description	Indicates whether the message sent is as a result of a first-time service request or a retransmission request.
Valid Values	0 = Message sent in response to a normal service request. 1 = Message sent in response to a retransmission request.

<b>Retransmit Flag</b>	
Bytes	1
Format	Alphabetic
Description	Forms part of the service request, and should be set if subscriber wishes to resume a previous Gateway session for the current trading day.
Valid Values	R = Retransmission Request = Request for a new Gateway session

<b>Service Option Code</b>	
Bytes	2
Format	Numeric
Description	Forms part of the service request for selecting the options required for a Signal.
Valid Values	00

<b>Sequence Number</b>	
Bytes	6
Format	Numeric
Description	A sequential number allocated by the Gateway system and specific to a particular session with a given Subscriber. Unless a retransmission request has been made, the first data message sent shall always contain the sequence number "000001". Subsequent messages will have the sequence number incremented by one.
Valid Values	N/A

<b>Signal Request Code</b>	
Bytes	2
Format	Numeric
Description	Value to request a specific signal.
Valid Values	30

<b>Start Sequence Number</b>	
Bytes	6
Format	Numeric
Description	Indicates the first sequence number required when requesting a retransmission.
Valid Values	N/A

<b>Status Code</b>	
Bytes	2
Format	Numeric
Description	Used in various Gateway messages to indicate the reason for message. Information is generally given in the text field.
Valid Values	See Status Codes Values table.

<b>Subscriber Code</b>	
Bytes	8
Format	Alphabetic
Description	Issued by the ASX to identify a particular subscriber. It is used in conjunction with the Subscriber Password to gain access to the Gateway system.
Valid Values	N/A



<b>Subscriber Password</b>	
Bytes	8
Format	Alphanumeric
Description	Issued by the ASX, it is used in conjunction with the Subscriber Code to gain access to the Gateway system.
Valid Values	N/A

<b>Termination Flag</b>	
Bytes	1
Format	Numeric
Description	Selects the conditions under which the Gateway session will be terminated.
Valid Values	0 = Terminate session as soon as all currently available data has been sent. 1 = Remain active until all data for the day has been sent

<b>Text</b>	
Bytes	Variable (see Status Code Values section.)
Format	Alphanumeric
Description	Used to give additional meaning to a status code.
Valid Values	N/A

<b>Text Length</b>	
Bytes	3
Format	Numeric
Description	Indicates the length of the message in the text field.
Valid Values	N/A

# Compression and Decompression Routines

ASX offers the use of data compression when accessing the Gateway.

The compression routine will compress all occurrences of five or more consecutive characters of the same type.

The Gateway Message Code and the Sequence Number will not be compressed. This will allow the subscriber to check for valid sequencing without having to decompress data.

Compressed data will be stored in the format:

Compression Indicator	Compression Character	Compression Count
-----------------------	-----------------------	-------------------

The Compression Indicator = Hex 16 (CTRL V)

The Compressed Character represents the character which has been compressed.

The Compression Count is a 2-byte numeric ASCII count of the number of times it has been repeated. The field allows for a maximum of 99 in any single compression.

If the compression character, itself, occurs in the data, it will be represented in compressed format. It is, therefore, possible to have a compression count of 1.

As an example, take a string of 10 letter A's:

"AAAAAAAAAA"

This would be represented in compressed format as:

HEX 16	A	1	0
-----------	---	---	---

To aid subscribers in utilising the data compression facility, we have documented, in pseudo-code, the data compression routine used by ASX and a suggested decompression algorithm. This is a guide only, and needs to be converted into the computer programming language utilised by the Subscriber.

## Compression

### PROCEDURE COMPRESS (IN-BUFFER, IN-LENGTH, OUT-BUFFER, OUT-LENGTH)

#### BEGIN

```

IN      := 8
OUT     := 8
NEXT    := 8
COUNT := 0

```

```

IN-LENGTH = IN-LENGTH + 1 ;
! Skip GATEWAY Function Code and Sequence Number.
FOR COUNT := 0 TO 7 DO
    OUT-BUFFER [COUNT] := IN-BUFFER [COUNT] ;

```

```

WHILE NEXT < IN-LENGTH DO
  BEGIN
    COUNT := 0 ;
    NEXT := NEXT + 1 ;
    ! COUNT will equal number of compressed characters
    WHILE (IN-BUFFER [IN] = IN-BUFFER [NEXT]) AND (NEXT < IN-
      LENGTH) AND (COUNT < 98) DO

```

```

  BEGIN
    COUNT := COUNT + 1
    NEXT := NEXT + 1
  END;

```

```

IF COUNT > 3 THEN
  BEGIN ! We have a compression
    OUT-BUFFER [OUT] := COMPRESSION-CHAR ;
    OUT-BUFFER [OUT+1] := IN-BUFFER [IN]
    OUT-BUFFER [OUT+2] := OUT + 3] := COUNT ;
    OUT := IN + 1 ;

    END
  UNTIL IN = NEXT ;

```

```

END
*
IN := NEXT ;
END;
*
OUT-LENGTH := OUT - 1
END;

```

## Decompression

```

PROCEDURE DECOMPRESS (IN-BUFFER, IN-LENGTH, OUT-BUFFER, OUT-LENGTH)

```

```

  BEGIN
    Count := 0
    I := 0
    IN := 0
    OUT := 0

    WHILE IN < IN-LENGTH DO
      BEGIN
        WHILE (IN-BUFFER [IN] <> COMPRESSION-CHAR) AND (IN < LENGTH)
          DO
            BEGIN ! More data from IN-BUFFER to OUT-BUFFER
              OUT-BUFFER [OUT] := IN-BUFFER [IN]
              OUT := OUT + 1 ;
              IN := IN + 1 ;
            END
          *
            IF IN-BUFFER [IN] = COMPRESSION-CHAR THEN
              BEGIN
                ! Get number of compressed characters
                COMPRESSION-COUNT = IN-BUFFER [ IN + 2] ;

```

```

*
  FOR I := 1 TO COMPRESSION-COUNT DO
  BEGIN
    OUT-BUFFER [OUT] := IN-BUFFER [IN + 1] ;
    ! Compressed character
    OUT                := OUT + 1
  END
*
  IN := IN + 4
END ;
END
OUT-LENGTH := OUT ;
END

```

## Status Code Values

The table below gives the Status Code Values and their meaning.

Code	Description	Comments
00	Successful	The request has been received and no validation error has occurred.
01	Invalid Password	The password supplied with log-on function is not the password contained on file.
02	Invalid Subscriber Code	The Subscriber Code does not exist on file.
03	Access to this Service not Permitted	The Subscriber has been disabled. Contact ASX for reason.
04	Gateway Closed	Gateway is not open for subscriber access.
08	Service Closed	The service is not open for use.
09	A Session is Already Active for this Service	The subscriber already has a session in progress for this service. Contact ASX if this is not the case.
11	Unspecified Gateway Error	An error has occurred within the Gateway system while attempting to service the request. Contact ASX for more information.
12	Invalid Parameters	A service request was received which contained incorrect or illogical parameters. Check the request parameters, and contact ASX if more information is required.
13	Subscriber not Configured to Receive this Service	The subscriber does not have access to this service.
17	Not a Known Signal	The Gateway message code received when expecting a service request does not correspond to a known signal.
18	Expecting a Logon Request	A Gateway message other than a logon request was received before the Subscriber had logged on.
19	Requested Job ID does not Match this Subscriber Service	A retransmission request was received for a job not belonging to the subscriber making the request, or not matching the service requested.
20	Signal Requested Outside the Allowable Times	A service request was received for a signal which is not available at this time of day.
21	Requested Job ID Cannot be Found	A retransmission request was made for a Job-ID which is not known to the Gateway system.
23	Data Not Available	The data required to satisfy a service request is not available. The subscriber will need to log in again at a later time, using a normal service request and not a retransmission request.

# ISO 8208 Frame And Packet Control Parameters

## Frame Control Parameters

ISO/CITT parameter description	Profile value
Timer T1 (milliseconds)	2000
Parameter T2 (milliseconds)	Null
Maximum number of bits in a Frame (N1) (bytes)	133
Maximum number of transmissions (N2) (count)	20
Maximum number of outstanding frames (K) (count)	7

## Packet Control Parameters

ISO/CITT parameter description	Profile value
DTE Restart request time (T20) (seconds)	180
DTE Call request time (T21) (seconds)	200
DTE Reset request time (T22) (seconds)	180
DTE Clear Request time (T23) (seconds)	180
Packet Size (default)	128
(bytes) (maximum)	4096
Restart Request Retransmission (R20) (count)	1
Reset Request Retransmission (R22) (count)	1
Clear request Retransmission (R23) (count)	1
Interrupt Response Time (T26) (seconds)	180
Window Size (default)	2
(count) (maximum)	7

# Big Endian Programming Protocol

## Big Endian

[From Swift's "Gulliver's Travels" via the famous paper "On Holy Wars and a Plea for Peace" by Danny Cohen, USC/ISI IEN 137, dated April 1, 1980] adj.

Describes a computer architecture in which, within a given multi-byte numeric representation, the most significant byte has the lowest address (the word is stored `big-end-first'). Most processors, including the IBM 370 family, the PDP-10, the Motorola microprocessor families, and most of the various RISC designs current in mid-1993, are big-endian.

## Data representation

Some computers are `big endian'. This refers to the representation of objects such as integers within a word. A big endian machine stores them in the expected way: the high byte of an integer is stored in the leftmost byte, while the low byte of an integer is stored in the rightmost byte.

Eg: The decimal number 101 (one hundred and one) when converted into hexadecimal (base 16) would be represented by the value 67, i.e.  $101 = 6 \cdot 16 + 7$ .

If this value was "stored" using big-endian, the digits would be stored as shown below:

		6	7
3	2	1	0

A "little endian" machine stores them the other way.

7	6		
3	2	1	0

To allow machines that use different memory architectures to communicate information correctly, they must agree on the data representation to use. The accepted standard for BSD IP networking is big-endian.

DSS will use big-endian as its standard of representing binary/hexadecimal values. This implies that the first byte received on the communication link is the highest order byte of the value being represented.

### Example: Transmitting the Logon Message to DP

Data to Transmit: 01AcctNamePassword

Length of Data: 18 (Decimal) = 12 (in Hexadecimal)

Actual Message to DP: <00><12>01AcctNamePassword

First two bytes contain the length in Hex followed by 18 bytes of ASCII data.

Computer systems, like VAX/VMS and Microsoft/NT, store numeric values in Little-Endian Byte Order. In order to transmit a numeric value from a VMS or a NT program to ASX's DP, the bytes need to be rearranged.

For programs that reference WinSock routines under Windows, it can call the **htons** function to convert a **u\_short** from host to TCP/IP network byte order. The **ntohs** function can be called to convert a **u\_short** from TCP/IP network byte order to host byte order.

The attached C program, T\_ENDIAN.C, demonstrates how an unsigned short value can be stored into or reconstructed from a character array storing data in Big Endian Byte Order.

T\_ENDIAN produces the following output:

\*\*\*\*\*

Testing conversion of 3 ( == 3 )

Dumping bytes in short (Little Endian)

Byte 0 in Decimal: 3,                   in Hex: 03

Byte 1 in Decimal: 0,                   in Hex: 00

Dumping bytes in array (Big Endian)

Byte 0 in Decimal: 0,                   in Hex: 00

Byte 1 in Decimal: 3,                   in Hex: 03

Restored Value is 3

\*\*\*\*\*

Testing conversion of 258 ( == 256 + 2 )

Dumping bytes in short (Little Endian)

Byte 0 in Decimal: 2,                   in Hex: 02

Byte 1 in Decimal: 1,                   in Hex: 01

Dumping bytes in array (Big Endian)

Byte 0 in Decimal: 1,                   in Hex: 01

Byte 1 in Decimal: 2,                   in Hex: 02

Restored Value is 258

\*\*\*\*\*

Testing conversion of 51201 ( == 200 \* 256 + 1 )

Dumping bytes in short (Little Endian)

Byte 0 in Decimal: 1,                   in Hex: 01

Byte 1 in Decimal: 200,                in Hex: c8

Dumping bytes in array (Big Endian)

Byte 0 in Decimal: 200,                in Hex: c8

Byte 1 in Decimal: 1,                   in Hex: 01

Restored Value is 51201

\*\*\*\*\*

## Signal Option Code and Signal Request Code Values

Signal Name	Option	VPN Filename Format	Signal Request Code	Service Option Code	Session Codes
Signal B	Broker Trades	B_00____YYMMDD_XXXXXXXXX.mag where: XXXXXXXX = Subscriber ID	30	00	-



# Manual Updates

Date	Bulletin/Version	Page	Changes Made
8/9/05	05/05	8	Removal of GS & GM market messages.
8/05	Information Services News - Issue 1/2005	22, 26	Updates to the fields; Buyer Identification and Seller Identification
5/4/06	06/06	30, 26, 28	Updates to Condition Code Table, Sale Yield field and Time field.
11/05/07	11/07	20	Letters K, L, M, U, T & Z added to the 4th position for Warrants in the ASX Code field definition.
15/05/07	13/07	25	Sale Price/Sale Contract Price field definition updated to include security type 12.
25/7/07	20/07	20	Warrants 4 <sup>th</sup> position letters K or L description changed to MINIs in the ASX Code field definition.
17/12/07	35/07	31	Addition of Late Trade Report Type condition codes. Updates to the Condition Code Table
21/02/08	06/08	20	Introduction of 6 character ETO coding convention where the 6th character will be the numeral 7, 8 or 9. Updated in the ASX Code field.
24/04/08	18/08	31	Introduction of new Block Special Crossing condition codes.
2/05/08	19/08	20	Introduction of F & Q in the ASX Code's 4 <sup>th</sup> position character for Warrants in the ASX Code field.
23/07/08	29/08	32, 33, 30	Introduction of: Security Types 32 – 37 and 53 – 56 in the Security Type table and Condition Code 'QB' in the Condition Code Table
18/08/08	31/08	20	Introduction of 6 character coding convention for quoted interest rate securities. Updated in the ASX Code field definition.
19/02/08		8	Removal of GF market message
16/01/09	01/09	31	Introduction of new Trade Condition Codes VM (Volume Match trade) and CX (Centre Point trade)
		25	Removed reference to FDI securities in the Sale Price/Sale Contract Price data field description since these are no longer disseminated.
19/02/10	06/10	21	Removal of "CI – Cum Interest" basis of quotation value from the Basis of Quotation data field.
		23	Exercise Price data field definition update.
29/07/10	20/10	27, 29	Change (effective 29 November 2010) in the content of the 10 digit Trade Slip Number (TSN) data generated by the ASX trading system. The TSN is represented in Signal B by the 4 digit Serial Trade Qualifier data field + the 6 digit Trade Serial Number data field.
14/06/11	20/11	9 -17	Changes to Trade Record Fixed Format Structures relating to the introduction of the ASX PureMatch® trading facility.
		24	New Market ID data field definition.
02/09/11	31/11	31	Introduction of "NX" trade condition code representing National Best Bid and Offer (NBBO) Crossings in ASX Trade.
20/10/11	35/11	20	<ul style="list-style-type: none"> <li>– Introduction of new Warrant Type "Guaranteed Stop Loss (GSL) MINIs to be represented by the character "L" in the 4<sup>th</sup> position of the ASX Code</li> <li>– Allocation of character "Q" in the 4<sup>th</sup> position of the ASX Code to represent MINIs warrant type.</li> </ul>
20/01/12	02/12	33	<ul style="list-style-type: none"> <li>– Introduction of fund like security type (Security Type 38)</li> <li>– Introduction of 4 structured product security types</li> </ul>

Date	Bulletin/Version	Page	Changes Made
			(Security Types 39, 52, 57 & 58) – Introduction of 2 ultra-high denomination warrants security types (Security Types 59 & 65) – Description change to Security Types 33-35, 37 & 53-56
25/01/12	04/12	23	– Exercise Price data field format for Ultra High denomination security types 39, 52, 59 & 65 is Numeric 9(7) v 9(2) in dollars and cents to 2 decimal places.
21/02/13	06/12	25	– Update to Sale Price data field definition.
02/03/12	08/12	31	– Addition of “OC” OTC Contingent Equity Trade
02/04/12	15/12	31	– Change to NXXT trade condition code trade statistics update rule – trade will be included in the calculation of VWAP.
01/06/12	24/12	20	– Update to ASX Code definition to include UDRs.
14/08/12	32/12	20	– Additional information on UDR ASX Code coding convention.
30/08/12	37/12	19	– Introduction of Exchange-traded Australian Government Bonds (AGBs). ○ ASX Code coding convention
08/11/12	42/12	19	– ASX BookBuild ASX Code coding convention
12/03/13	09/13	34	– Change to Security Type 81 description to “Government Bond”.
12/04/13	15/13	30, 31	– Two new trade condition codes “CP” & “SM” available effective 27 May 2013.
06/05/13	-	03	– Updated reference from Company Announcement Platform (CAP) to Market Announcement Platform (MAP).

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## Contact Details

### Content and System Support

Subscribers with data content and production problem queries can contact the Market Access Team for customer support from 08:00 hours to 18:00 hours on ASX designated Trading Days on the following numbers:

1800 663 053  
+61 2 9227 0372

OR via email to:

[Market.Access@asx.com.au](mailto:Market.Access@asx.com.au)

Subscribers requiring after-hours support for production problems can receive assistance on +61 2 9227 0821. Data content queries are not supported after hours.

Written queries may be addressed to:

Market Access  
ASX Limited  
P.O. Box H224  
Australia Square  
SYDNEY NSW 1215

Or sent by facsimile to:

+61 2 9227 0859

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