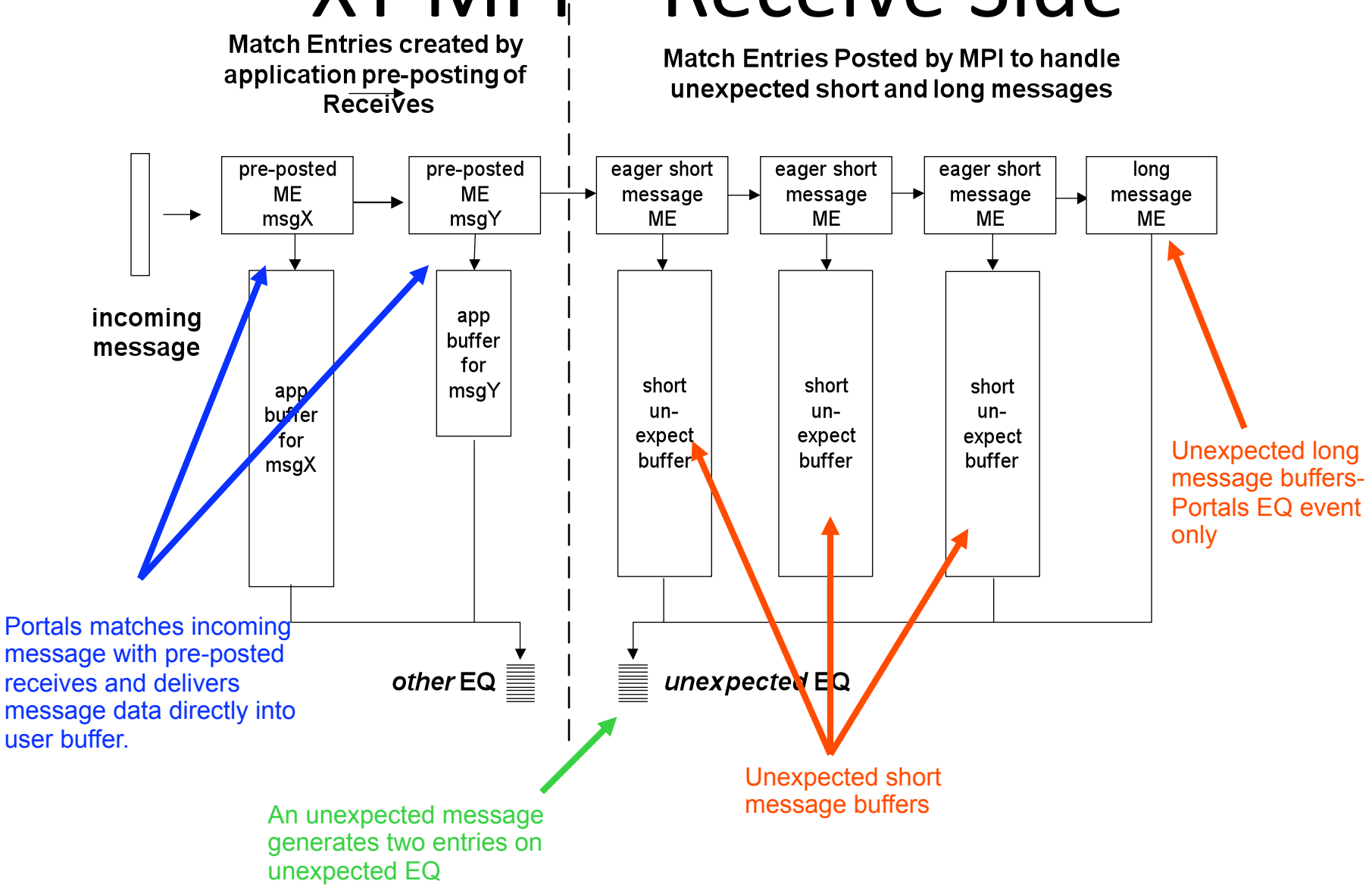
Efficient MPI

XT MPI – Receive Side



ninept_4 original

```
do j=jphys_b,jphys_e
    do i=iphys_b,iphys_e
       XOUT(i,j) = (9 pt. weighted sum)
    end do
end do

! fill buffers and send east-west
! boundary info
do n=1,num_ghost_cells
   do j=jphys_b,jphys_e
      buffer_east_snd(i)= ...
      buffer_west_snd(i)= ...
   end do
end do

call MPI_ISEND(buffer_east_snd, ...
call MPI_ISEND(buffer_west_snd, ...

! receive east-west boundary info and
! copy buffers into ghost cells
call MPI_RECV(buffer_west_rcv, ...
call MPI_RECV(buffer_east_rcv, ...
```

```
call MPI_WAITALL(2, …

do n=1,num_ghost_cells
   do j=jphys_b,jphys_e
      XOUT(n,j)          = ...
      XOUT(iphys_e+n,j) = ...
   end do
end do

! send north-south boundary info
call MPI_ISEND(XOUT(...
call MPI_ISEND(XOUT(...

! receive north-south boundary info
call MPI_RECV(XOUT(...
call MPI_RECV(XOUT(...
call MPI_WAITALL(2, …
```

ninept_4 modified

```
! Prepost receive requests
call MPI_IRECV(buffer_west_rcv, ...
call MPI_IRECV(buffer_east_rcv, ...
call MPI_IRECV(XOUT(...
call MPI_IRECV(XOUT(...

do j=jphys_b,jphys_e
    do i=iphys_b,iphys_e
       XOUT(i,j) = (9 pt. weighted sum)
    end do
end do

! fill buffers and send east-west
! boundary info
do n=1,num_ghost_cells
   do j=jphys_b,jphys_e
      buffer_east_snd(i)= ...
      buffer_west_snd(i)= ...
   end do
end do
```

```
call MPI_ISEND(buffer_east_snd, ...
call MPI_ISEND(buffer_west_snd, ...

! receive east-west boundary info and
! copy buffers into ghost cells
call MPI_WAITALL(2, …

do n=1,num_ghost_cells
   do j=jphys_b,jphys_e
      XOUT(n,j)          = ...
      XOUT(iphys_e+n,j) = ...
   end do
end do

! send north-south boundary info
call MPI_ISEND(XOUT(...
call MPI_ISEND(XOUT(...

! receive north-south bddy info
call MPI_WAITALL(6, …
```